Navy_CLEAN_PFAS_FOIA_request_covers.indd

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 2001358

MCAS
El Toro, CA
April 2021

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

July 09, 2020

Vista Work Order No. 2001358

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 June 25, 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. 2001358
Case Narrative

Sample Condition on Receipt:

One blank water sample and six groundwater 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/LC-MSMS Method Compliant with Table B-15 of QSM 5.3 (Aqueous)

The samples were extracted and analyzed for a selected list of PFAS using Isotope Dilution and LC-MS/MS compliant with Table B-15 of QSM 5.3. 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 hold times.

Quality Control

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

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

As requested, an MS/MSD was performed on sample "24-GW-24MW10C-20200624". The MS/MSD recoveries and RPDs were within the acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

TABLE OF CONTENTS

Case Narrative..... 1

Table of Contents..... 3

Sample Inventory..... 4

Analytical Results..... 5

Qualifiers..... 18

Certifications..... 19

Sample Receipt..... 22

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2001358-01	EB02-20200624	24-Jun-20 07:30	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-02	24-GW-24MW06-20200624	24-Jun-20 08:50	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-03	DUP01-20200624	24-Jun-20 08:55	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-04	24-GW-24MW10D-20200624	24-Jun-20 10:30	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-05	DUP02-20200624	24-Jun-20 10:35	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-06	24-GW-24MW10C-20200624	MS/MSD24-Jun-20 11:45	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-07	24-GW-24MW07R-20200624	24-Jun-20 13:15	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

Sample ID: Method Blank

PFAS Isotope Dilution Table B-15

Client Data

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

Laboratory Data

Lab Sample: B0F0257-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		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFHxA	307-24-4	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
HFPO-DA	13252-13-6	ND	0.00241	0.00300	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFHpA	375-85-9	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
ADONA	919005-14-4	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFHxS	355-46-4	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFOA	335-67-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFNA	375-95-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFOS	1763-23-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
9Cl-PF3ONS	756426-58-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFDA	335-76-2	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
MeFOSAA	2355-31-9	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
EtFOSAA	2991-50-6	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFUnA	2058-94-8	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
11Cl-PF3OUdS	763051-92-9	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFDoA	307-55-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFTrDA	72629-94-8	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFTeDA	376-06-7	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	78.9	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C3-HFPO-DA	IS	69.4	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFHxA	IS	72.1	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C4-PFHpA	IS	71.7	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C3-PFHxS	IS	76.2	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C5-PFNA	IS	71.3	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFOA	IS	70.0	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C8-PFOS	IS	71.0	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFDA	IS	69.6	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
d3-MeFOSAA	IS	59.6	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFUnA	IS	59.5	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
d5-EtFOSAA	IS	64.3	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFDoA	IS	66.9	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFTeDA	IS	56.8	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1

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

Results reported to the DL.

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

Sample ID: LCSD **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-BS1/B0F0257-BSD1
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257
Matrix:	Aqueous	Samp Size:	0.250/0.250 L
		Date Extracted:	03-Jul-20
		Column:	BEH C18

Analyte	CAS Number	LCS (ug/L)	LCS Spike	LCS % Rec	LCS Quals	LCSD (ug/L)	LCSD Spike	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	375-73-5	0.0432	0.0400	108		0.0412	0.0400	103	4.63		72-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFHxA	307-24-4	0.0434	0.0400	108		0.0395	0.0400	98.8	9.22		72-129	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
HFPO-DA	13252-13-6	0.0395	0.0400	98.7		0.0448	0.0400	112	12.7		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFHpA	375-85-9	0.0414	0.0400	104		0.0383	0.0400	95.7	7.88		72-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
ADONA	919005-14-4	0.0404	0.0400	101		0.0350	0.0400	87.4	14.5		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFHxS	355-46-4	0.0377	0.0400	94.2		0.0398	0.0400	99.5	5.50		68-131	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFOA	335-67-1	0.0391	0.0400	97.7		0.0393	0.0400	98.2	0.463		71-133	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFNA	375-95-1	0.0400	0.0400	100		0.0400	0.0400	100	0.00915		69-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFOS	1763-23-1	0.0386	0.0400	96.5		0.0384	0.0400	96.1	0.435		65-140	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
9Cl-PF3ONS	756426-58-1	0.0431	0.0400	108		0.0373	0.0400	93.3	14.2		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFDA	335-76-2	0.0437	0.0400	109		0.0428	0.0400	107	1.94		71-129	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
MeFOSAA	2355-31-9	0.0434	0.0400	108		0.0408	0.0400	102	6.11		65-136	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
EtFOSAA	2991-50-6	0.0378	0.0400	94.6		0.0419	0.0400	105	10.1		61-135	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFUnA	2058-94-8	0.0431	0.0400	108		0.0406	0.0400	101	6.07		69-133	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
11Cl-PF3OUdS	763051-92-9	0.0448	0.0400	112		0.0419	0.0400	105	6.76		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFDoA	307-55-1	0.0389	0.0400	97.3		0.0364	0.0400	91.0	6.73		72-134	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFTrDA	72629-94-8	0.0370	0.0400	92.6		0.0357	0.0400	89.1	3.81		65-144	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFTeDA	376-06-7	0.0418	0.0400	105		0.0395	0.0400	98.8	5.62		71-132	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C3-PFBS	IS	73.7		87.0		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C3-HFPO-DA	IS	76.0		77.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFHxA	IS	74.6		84.4		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C4-PFHpA	IS	73.0		87.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C3-PFHxS	IS	74.6		80.5		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C5-PFNA	IS	75.0		82.5		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFOA	IS	76.9		85.4		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C8-PFOS	IS	73.0		85.7		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFDA	IS	70.8		81.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
d3-MeFOSAA	IS	64.8		75.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFUnA	IS	60.0		71.9		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
d5-EtFOSAA	IS	68.9		78.9		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFDoA	IS	69.0		79.4		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1

Sample ID: LCSD **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-BS1/B0F0257-BSD1	Date Extracted:	03-Jul-20
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257	Column:	BEH C18
Matrix:	Aqueous	Samp Size:	0.250/0.250 L		

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C2-PFTeDA	IS	61.2		70.3		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1

Sample ID: EB02-20200624

PFAS Isotope Dilution Table B-15

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Blank Water
Date Collected: 24-Jun-20 07:30

Laboratory Data

Lab Sample: 2001358-01
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFHxA	307-24-4	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
HFPO-DA	13252-13-6	ND	0.00250	0.00311	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFHpA	375-85-9	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
ADONA	919005-14-4	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFHxS	355-46-4	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFOA	335-67-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFNA	375-95-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFOS	1763-23-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
9Cl-PF3ONS	756426-58-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFDA	335-76-2	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
MeFOSAA	2355-31-9	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
EtFOSAA	2991-50-6	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFUnA	2058-94-8	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
11Cl-PF3OUdS	763051-92-9	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFDoA	307-55-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFTrDA	72629-94-8	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFTeDA	376-06-7	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	86.5	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C3-HFPO-DA	IS	77.2	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFHxA	IS	85.3	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C4-PFHpA	IS	83.1	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C3-PFHxS	IS	84.6	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C5-PFNA	IS	84.7	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFOA	IS	85.7	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C8-PFOS	IS	83.9	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFDA	IS	82.9	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
d3-MeFOSAA	IS	79.8	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFUnA	IS	73.2	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
d5-EtFOSAA	IS	78.4	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFDoA	IS	76.7	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFTeDA	IS	68.2	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	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-24MW06-20200624

PFAS Isotope Dilution Table B-15

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 08:50

Laboratory Data

Lab Sample: 2001358-02
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFHxA	307-24-4	0.00517	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
HFPO-DA	13252-13-6	ND	0.00228	0.00284	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFHpA	375-85-9	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
ADONA	919005-14-4	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFHxS	355-46-4	0.00959	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFOA	335-67-1	0.00360	0.00130	0.00189	0.00379	J	B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFNA	375-95-1	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFOS	1763-23-1	0.00199	0.00130	0.00189	0.00379	J	B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
9Cl-PF3ONS	756426-58-1	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFDA	335-76-2	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
MeFOSAA	2355-31-9	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
EtFOSAA	2991-50-6	0.00192	0.00130	0.00189	0.00379	J	B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFUnA	2058-94-8	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
11Cl-PF3OUdS	763051-92-9	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFDoA	307-55-1	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFTrDA	72629-94-8	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFTeDA	376-06-7	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	80.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C3-HFPO-DA	IS	64.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFHxA	IS	69.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C4-PFHpA	IS	67.7	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C3-PFHxS	IS	72.8	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C5-PFNA	IS	72.8	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFOA	IS	69.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C8-PFOS	IS	72.2	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFDA	IS	68.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
d3-MeFOSAA	IS	63.7	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFUnA	IS	60.5	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
d5-EtFOSAA	IS	67.3	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFDoA	IS	63.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFTeDA	IS	62.8	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	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: DUP01-20200624

PFAS Isotope Dilution Table B-15

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 08:55

Laboratory Data

Lab Sample: 2001358-03
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFHxA	307-24-4	0.00538	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
HFPO-DA	13252-13-6	ND	0.00229	0.00285	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFHpA	375-85-9	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
ADONA	919005-14-4	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFHxS	355-46-4	0.00980	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFOA	335-67-1	0.00385	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFNA	375-95-1	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFOS	1763-23-1	0.00176	0.00130	0.00190	0.00380	J	B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
9Cl-PF3ONS	756426-58-1	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFDA	335-76-2	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
MeFOSAA	2355-31-9	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
EtFOSAA	2991-50-6	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFUnA	2058-94-8	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
11Cl-PF3OUdS	763051-92-9	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFDoA	307-55-1	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFTrDA	72629-94-8	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFTeDA	376-06-7	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	102	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C3-HFPO-DA	IS	88.7	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFHxA	IS	91.2	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C4-PFHpA	IS	97.0	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C3-PFHxS	IS	95.1	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C5-PFNA	IS	86.0	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFOA	IS	89.4	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C8-PFOS	IS	90.5	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFDA	IS	87.6	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
d3-MeFOSAA	IS	91.0	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFUnA	IS	78.8	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
d5-EtFOSAA	IS	93.3	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFDoA	IS	75.6	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFTeDA	IS	71.2	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	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-24MW10D-20200624

PFAS Isotope Dilution Table B-15

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 10:30

Laboratory Data

Lab Sample: 2001358-04
Date Received: 25-Jun-20 09:33
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	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFHxA	307-24-4	0.00488	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
HFPO-DA	13252-13-6	ND	0.00232	0.00290	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFHpA	375-85-9	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
ADONA	919005-14-4	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFHxS	355-46-4	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFOA	335-67-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFNA	375-95-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFOS	1763-23-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
9Cl-PF3ONS	756426-58-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFDA	335-76-2	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
MeFOSAA	2355-31-9	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
EtFOSAA	2991-50-6	0.00154	0.00132	0.00193	0.00386	J	B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFUnA	2058-94-8	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
11Cl-PF3OUdS	763051-92-9	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFDoA	307-55-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFTrDA	72629-94-8	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFTeDA	376-06-7	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	82.0	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C3-HFPO-DA	IS	75.2	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFHxA	IS	74.9	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C4-PFHpA	IS	73.5	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C3-PFHxS	IS	82.5	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C5-PFNA	IS	76.7	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFOA	IS	75.4	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C8-PFOS	IS	84.1	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFDA	IS	73.3	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
d3-MeFOSAA	IS	74.7	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFUnA	IS	68.1	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
d5-EtFOSAA	IS	76.0	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFDoA	IS	72.9	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFTeDA	IS	67.8	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	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: DUP02-20200624

PFAS Isotope Dilution Table B-15

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 10:35

Laboratory Data

Lab Sample: 2001358-05
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFHxA	307-24-4	0.00539	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
HFPO-DA	13252-13-6	ND	0.00235	0.00293	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFHpA	375-85-9	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
ADONA	919005-14-4	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFHxS	355-46-4	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFOA	335-67-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFNA	375-95-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFOS	1763-23-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
9Cl-PF3ONS	756426-58-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFDA	335-76-2	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
MeFOSAA	2355-31-9	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
EtFOSAA	2991-50-6	0.00283	0.00134	0.00195	0.00391	J	B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFUnA	2058-94-8	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
11Cl-PF3OUdS	763051-92-9	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFDoA	307-55-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFTrDA	72629-94-8	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFTeDA	376-06-7	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	82.3	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C3-HFPO-DA	IS	63.8	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFHxA	IS	70.3	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C4-PFHpA	IS	75.2	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C3-PFHxS	IS	78.6	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C5-PFNA	IS	73.5	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFOA	IS	76.8	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C8-PFOS	IS	75.1	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFDA	IS	70.7	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
d3-MeFOSAA	IS	74.3	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFUnA	IS	64.4	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
d5-EtFOSAA	IS	75.0	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFDoA	IS	70.7	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFTeDA	IS	64.5	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	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-24MW10C-20200624 **PFAS Isotope Dilution Table B-15**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 11:45

Laboratory Data

Lab Sample: 2001358-06
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0787	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFHxA	307-24-4	0.228	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
HFPO-DA	13252-13-6	ND	0.00236	0.00294	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFHpA	375-85-9	0.0133	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
ADONA	919005-14-4	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFHxS	355-46-4	0.0360	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFOA	335-67-1	0.0422	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFNA	375-95-1	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFOS	1763-23-1	0.00176	0.00134	0.00196	0.00392	J, Q	B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
9Cl-PF3ONS	756426-58-1	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFDA	335-76-2	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
MeFOSAA	2355-31-9	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
EtFOSAA	2991-50-6	0.00155	0.00134	0.00196	0.00392	J	B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFUnA	2058-94-8	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
11Cl-PF3OUdS	763051-92-9	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFDoA	307-55-1	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFTrDA	72629-94-8	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFTeDA	376-06-7	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	79.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C3-HFPO-DA	IS	73.9	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFHxA	IS	77.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C4-PFHpA	IS	77.6	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C3-PFHxS	IS	80.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C5-PFNA	IS	74.2	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFOA	IS	76.0	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C8-PFOS	IS	80.6	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFDA	IS	71.0	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
d3-MeFOSAA	IS	76.2	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFUnA	IS	62.7	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
d5-EtFOSAA	IS	75.3	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFDoA	IS	68.3	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFTeDA	IS	65.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	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-24MW10C-20200624 **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-MS1/B0F0257-MSD1	Source Lab Sample:	2001358-06
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257	Date Extracted:	03-Jul-20
Matrix:	Aqueous	Samp Size:	0.251/0.242 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	0.0787	0.120	0.0398	104		0.112	0.0413	79.9	26.2		72-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFHxA	307-24-4	0.228	0.268	0.0398	98.7		0.262	0.0413	81.8	18.7		72-129	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
HFPO-DA	13252-13-6	ND	0.0442	0.0398	111		0.0404	0.0413	97.9	12.5		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFHpA	375-85-9	0.0133	0.0558	0.0398	107		0.0558	0.0413	103	3.81		72-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
ADONA	919005-14-4	ND	0.0383	0.0398	96.3		0.0416	0.0413	101	4.76		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFHxS	355-46-4	0.0360	0.0760	0.0398	100		0.0846	0.0413	118	16.5		68-131	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFOA	335-67-1	0.0422	0.0791	0.0398	92.7		0.0837	0.0413	100	7.58		71-133	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFNA	375-95-1	ND	0.0397	0.0398	99.8		0.0420	0.0413	102	2.18		69-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFOS	1763-23-1	0.00176	0.0383	0.0398	91.9		0.0394	0.0413	91.1	0.874		65-140	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
9Cl-PF3ONS	756426-58-1	ND	0.0400	0.0398	101		0.0380	0.0413	92.0	9.33		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFDA	335-76-2	ND	0.0425	0.0398	107		0.0435	0.0413	105	1.89		71-129	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
MeFOSAA	2355-31-9	ND	0.0411	0.0398	103		0.0372	0.0413	90.1	13.4		65-136	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
EtFOSAA	2991-50-6	0.00155	0.0454	0.0398	110		0.0388	0.0413	90.2	19.8		61-135	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFUnA	2058-94-8	ND	0.0401	0.0398	101		0.0407	0.0413	98.5	2.51		69-133	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
11Cl-PF3OUdS	763051-92-9	ND	0.0403	0.0398	101		0.0418	0.0413	101	0		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFDoA	307-55-1	ND	0.0410	0.0398	103		0.0393	0.0413	95.3	7.77		72-134	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFTrDA	72629-94-8	ND	0.0379	0.0398	95.1		0.0371	0.0413	89.8	5.73		65-144	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFTeDA	376-06-7	ND	0.0384	0.0398	96.6		0.0406	0.0413	98.3	1.74		71-132	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C3-PFBS	IS	74.6		86.6		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C3-HFPO-DA	IS	67.6		73.3		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFHxA	IS	73.7		80.4		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C4-PFHpA	IS	74.2		76.2		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C3-PFHxS	IS	75.3		75.5		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C5-PFNA	IS	75.1		83.4		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFOA	IS	72.7		79.7		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C8-PFOS	IS	74.0		85.7		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFDA	IS	69.8		80.5		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
d3-MeFOSAA	IS	68.0		81.9		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFUnA	IS	61.6		71.0		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
d5-EtFOSAA	IS	65.6		80.1		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFDoA	IS	64.0		75.2		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1

Sample ID: 24-GW-24MW10C-20200624 **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-MS1/B0F0257-MSD1	Source Lab Sample:	2001358-06
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257	Date Extracted:	03-Jul-20
Matrix:	Aqueous	Samp Size:	0.251/0.242 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	62.0		75.1		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1

Sample ID: 24-GW-24MW07R-20200624

PFAS Isotope Dilution Table B-15

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 13:15

Laboratory Data

Lab Sample: 2001358-07
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0323	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFHxA	307-24-4	0.134	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
HFPO-DA	13252-13-6	ND	0.00237	0.00295	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFHpA	375-85-9	0.0131	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
ADONA	919005-14-4	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFHxS	355-46-4	0.0299	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFOA	335-67-1	0.0907	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFNA	375-95-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFOS	1763-23-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
9Cl-PF3ONS	756426-58-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFDA	335-76-2	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
MeFOSAA	2355-31-9	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
EtFOSAA	2991-50-6	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFUnA	2058-94-8	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
11Cl-PF3OUdS	763051-92-9	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFDoA	307-55-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFTrDA	72629-94-8	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFTeDA	376-06-7	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	77.5	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C3-HFPO-DA	IS	72.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFHxA	IS	68.3	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C4-PFHpA	IS	69.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C3-PFHxS	IS	74.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C5-PFNA	IS	69.8	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFOA	IS	72.7	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C8-PFOS	IS	73.8	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFDA	IS	68.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
d3-MeFOSAA	IS	68.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFUnA	IS	64.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
d5-EtFOSAA	IS	69.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFDoA	IS	65.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFTeDA	IS	60.6	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	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

2001358
0.7°C
Vista PM: Jade White-Dobbs

CHAIN OF CUSTODY RECORD

DATE: 6/24/2020
PAGE: 1 OF 1

LABORATORY CLIENT: KMEA	CLIENT PROJECT NAME / NUMBER: MCAS El Toro and Tustin, PFAS	P.O. NO.: TO 008 Mod 6
ADDRESS: 9210 Sky Park Court, Suite 220	PROJECT CONTACT: Kimberly Shiroodi / Brian Johnson	CONTRACT NO.: N62473-16-D-2405
CITY: San Diego, CA 92123	SAMPLER(S): (SIGNATURE) Uly Rubio	LAB USE ONLY
TEL: (619) 399-5900 / E-Mail: kimberly.shiroodi@woodplc.com / E-MAIL: brian.johnson@woodplc.com		

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
GW samples potentially contain elevated levels of PFAS. Separate SDG (EL Toro)

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	QC Level	PFAS by LC/MS-MS
	EB02-20200624	6/24/20	7:30	BW	2		X
	24-GW-24MW06-20200624		8:50	GW		IV	X
	DUP01-20200624		8:55	"			X
	24-GW-24MW10D-20200624		10:30	"		IV	X
	DUP02-20200626		10:35	"			X
	24-GW-24MW10C-20200624		11:45	"	6	IV	X
	24-GW-24MW07R-20200624		13:15	"	2	IV	X

MS/MSD

UK 6-24-20

Relinquished by: (Signature) Uly Rubio	Received by: (Signature) / Carrier Tracking Number FedEx	Date: 6/24/20	Time: 17:40
Relinquished by: (Signature) Fedex	Received by: (Signature) Conor Mallon	Date: 06/25/20	Time: 0933
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 2001358 TAT Std

Samples Arrival:	**Date/Time** 06/25/20 0933 ~~1012~~ per COC		**Initials:** CM			**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: 0.7 (uncorrected) **Temp °C:** 0.7 (corrected)			**Probe used:** Y / (N)			**Thermometer ID:** IR-4	

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Airbill — Trk # 8142 4183 5158	✓		
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** 06/25/20 1143	**Initials:** KS	**Location:** R-13 / WR-2 **Shelf/Rack:** A-2 / F-4	
COC Anomaly/Sample Acceptance Form completed?			✓	✓

Comments:

CoC/Label Reconciliation Report WO# 2001358

LabNumber	CoC Sample ID		SampleAlias	Sample Date/Time		Container	BaseMatrix	Sample Comments
2001358-01	A EB02-20200624	☑		24-Jun-20 07:30	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-01	B EB02-20200624	☑		24-Jun-20 07:30	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-02	A 24-GW-24MW06-20200624	☑		24-Jun-20 08:50	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-02	B 24-GW-24MW06-20200624	☑		24-Jun-20 08:50	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-03	A DUP01-20200624	☑		24-Jun-20 08:55	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-03	B DUP01-20200624	☑		24-Jun-20 08:55	☐	HDPE Bottle, 250 mL	Aqueous	
2001358-04	A 24-GW-24MW10D-20200624	☑		24-Jun-20 10:30	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-04	B 24-GW-24MW10D-20200624	☑		24-Jun-20 10:30	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-05	A DUP02-20200624	☑		24-Jun-20 10:35	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-05	B DUP02-20200624	☑		24-Jun-20 10:35	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-06	A 24-GW-24MW10C-20200624	☑		24-Jun-20 11:45	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	B 24-GW-24MW10C-20200624	☑		24-Jun-20 11:45	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	C 24-GW-24MW10C-20200624	☑		24-Jun-20 11:45	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	D 24-GW-24MW10C-20200624	☑		24-Jun-20 11:45	☐	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	E 24-GW-24MW10C-20200624	☑		24-Jun-20 11:45	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	F 24-GW-24MW10C-20200624	☑		24-Jun-20 11:45	☑	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-07	A 24-GW-24MW07R-20200624	☑		24-Jun-20 13:15	☑	HDPE Bottle, 250 mL	Aqueous	
2001358-07	B 24-GW-24MW07R-20200624	☑		24-Jun-20 13:15	☑	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:

Verifed by/Date: NA 06/25/20

July 09, 2020

Vista Work Order No. 2001358

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 June 25, 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. 2001358
Case Narrative

Sample Condition on Receipt:

One blank water sample and six groundwater 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/LC-MSMS Method Compliant with Table B-15 of QSM 5.3 (Aqueous)

The samples were extracted and analyzed for a selected list of PFAS using Isotope Dilution and LC-MS/MS compliant with Table B-15 of QSM 5.3. 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 hold times.

Quality Control

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

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

As requested, an MS/MSD was performed on sample "24-GW-24MW10C-20200624". The MS/MSD recoveries and RPDs were within the acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

TABLE OF CONTENTS

Case Narrative..... 1
Table of Contents..... 3
Sample Inventory..... 4
Analytical Results..... 5
Qualifiers..... 18
Certifications..... 19
Sample Receipt..... 22
Extraction Information..... 26
Sample Data - PFAS Isotope Dilution Table B-15..... 32
IBs and CCVs..... 117
ICAL with ICV and IB..... 167
Tune Checks..... 375
Standards..... 382

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
2001358-01	EB02-20200624	24-Jun-20 07:30	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-02	24-GW-24MW06-20200624	24-Jun-20 08:50	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-03	DUP01-20200624	24-Jun-20 08:55	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-04	24-GW-24MW10D-20200624	24-Jun-20 10:30	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-05	DUP02-20200624	24-Jun-20 10:35	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-06	24-GW-24MW10C-20200624	MS/MSD24-Jun-20 11:45	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
2001358-07	24-GW-24MW07R-20200624	24-Jun-20 13:15	25-Jun-20 09:33	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

Vista Project: 2001358

Client Project: MCAS El Toro and Tustin, PFAS

ANALYTICAL RESULTS

Vista Analytical Laboratory

Sample ID: Method Blank — **PFAS Isotope Dilution Table B-15**

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

Laboratory Data
Lab Sample: B0F0257-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		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFHxA	307-24-4	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
HFPO-DA	13252-13-6	ND	0.00241	0.00300	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFHpA	375-85-9	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
ADONA	919005-14-4	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFHxS	355-46-4	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFOA	335-67-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFNA	375-95-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFOS	1763-23-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
9Cl-PF3ONS	756426-58-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFDA	335-76-2	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
MeFOSAA	2355-31-9	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
EtFOSAA	2991-50-6	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFUnA	2058-94-8	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
11Cl-PF3OUdS	763051-92-9	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFDoA	307-55-1	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFTrDA	72629-94-8	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
PFTeDA	376-06-7	ND	0.00137	0.00200	0.00400		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	78.9	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C3-HFPO-DA	IS	69.4	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFHxA	IS	72.1	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C4-PFHpA	IS	71.7	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C3-PFHxS	IS	76.2	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C5-PFNA	IS	71.3	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFOA	IS	70.0	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C8-PFOS	IS	71.0	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFDA	IS	69.6	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
d3-MeFOSAA	IS	59.6	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFUnA	IS	59.5	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
d5-EtFOSAA	IS	64.3	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFDoA	IS	66.9	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	1
13C2-PFTeDA	IS	56.8	50 - 150		B0F0257	03-Jul-20	0.250 L	06-Jul-20 19:03	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: LCSD **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-BS1/B0F0257-BSD1	Date Extracted:	03-Jul-20
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257	Column:	BEH C18
Matrix:	Aqueous	Samp Size:	0.250/0.250 L		

Analyte	CAS Number	LCS (ug/L)	LCS Spike	LCS % Rec	LCS Quals	LCSD (ug/L)	LCSD Spike	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	375-73-5	0.0432	0.0400	108		0.0412	0.0400	103	4.63		72-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFHxA	307-24-4	0.0434	0.0400	108		0.0395	0.0400	98.8	9.22		72-129	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
HFPO-DA	13252-13-6	0.0395	0.0400	98.7		0.0448	0.0400	112	12.7		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFHpA	375-85-9	0.0414	0.0400	104		0.0383	0.0400	95.7	7.88		72-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
ADONA	919005-14-4	0.0404	0.0400	101		0.0350	0.0400	87.4	14.5		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFHxS	355-46-4	0.0377	0.0400	94.2		0.0398	0.0400	99.5	5.50		68-131	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFOA	335-67-1	0.0391	0.0400	97.7		0.0393	0.0400	98.2	0.463		71-133	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFNA	375-95-1	0.0400	0.0400	100		0.0400	0.0400	100	0.00915		69-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFOS	1763-23-1	0.0386	0.0400	96.5		0.0384	0.0400	96.1	0.435		65-140	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
9Cl-PF3ONS	756426-58-1	0.0431	0.0400	108		0.0373	0.0400	93.3	14.2		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFDA	335-76-2	0.0437	0.0400	109		0.0428	0.0400	107	1.94		71-129	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
MeFOSAA	2355-31-9	0.0434	0.0400	108		0.0408	0.0400	102	6.11		65-136	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
EtFOSAA	2991-50-6	0.0378	0.0400	94.6		0.0419	0.0400	105	10.1		61-135	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFUnA	2058-94-8	0.0431	0.0400	108		0.0406	0.0400	101	6.07		69-133	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
11Cl-PF3OUdS	763051-92-9	0.0448	0.0400	112		0.0419	0.0400	105	6.76		70-130	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFDoA	307-55-1	0.0389	0.0400	97.3		0.0364	0.0400	91.0	6.73		72-134	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFTrDA	72629-94-8	0.0370	0.0400	92.6		0.0357	0.0400	89.1	3.81		65-144	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1
PFTeDA	376-06-7	0.0418	0.0400	105		0.0395	0.0400	98.8	5.62		71-132	30	06-Jul-20 19:13	1	06-Jul-20 19:24	1

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C3-PFBS	IS	73.7		87.0		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C3-HFPO-DA	IS	76.0		77.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFHxA	IS	74.6		84.4		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C4-PFHpA	IS	73.0		87.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C3-PFHxS	IS	74.6		80.5		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C5-PFNA	IS	75.0		82.5		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFOA	IS	76.9		85.4		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C8-PFOS	IS	73.0		85.7		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFDA	IS	70.8		81.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
d3-MeFOSAA	IS	64.8		75.1		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFUnA	IS	60.0		71.9		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
d5-EtFOSAA	IS	68.9		78.9		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1
13C2-PFDoA	IS	69.0		79.4		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1

Sample ID: LCSD **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-BS1/B0F0257-BSD1	Date Extracted:	03-Jul-20
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257	Column:	BEH C18
Matrix:	Aqueous	Samp Size:	0.250/0.250 L		

Labeled Standards	Type	LCS % Rec	LCS Quals	LCSD % Rec	LCSD Quals	Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C2-PFTeDA	IS	61.2		70.3		50-150	06-Jul-20 19:13	1	06-Jul-20 19:24	1

Vista Analytical Laboratory

Sample ID: EB02-20200624 — **PFAS Isotope Dilution Table B-15**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Blank Water
Date Collected: 24-Jun-20 07:30

Laboratory Data

Lab Sample: 2001358-01
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFHxA	307-24-4	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
HFPO-DA	13252-13-6	ND	0.00250	0.00311	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFHpA	375-85-9	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
ADONA	919005-14-4	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFHxS	355-46-4	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFOA	335-67-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFNA	375-95-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFOS	1763-23-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
9Cl-PF3ONS	756426-58-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFDA	335-76-2	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
MeFOSAA	2355-31-9	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
EtFOSAA	2991-50-6	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFUnA	2058-94-8	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
11Cl-PF3OUdS	763051-92-9	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFDoA	307-55-1	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFTrDA	72629-94-8	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
PFTeDA	376-06-7	ND	0.00142	0.00207	0.00414		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	86.5	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C3-HFPO-DA	IS	77.2	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFHxA	IS	85.3	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C4-PFHpA	IS	83.1	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C3-PFHxS	IS	84.6	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C5-PFNA	IS	84.7	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFOA	IS	85.7	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C8-PFOS	IS	83.9	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFDA	IS	82.9	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
d3-MeFOSAA	IS	79.8	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFUnA	IS	73.2	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
d5-EtFOSAA	IS	78.4	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFDoA	IS	76.7	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	1
13C2-PFTeDA	IS	68.2	50 - 150		B0F0257	03-Jul-20	0.241 L	06-Jul-20 21:19	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-24MW06-20200624 — **PFAS Isotope Dilution Table B-15**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 08:50

Laboratory Data

Lab Sample: 2001358-02
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFHxA	307-24-4	0.00517	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
HFPO-DA	13252-13-6	ND	0.00228	0.00284	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFHpA	375-85-9	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
ADONA	919005-14-4	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFHxS	355-46-4	0.00959	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFOA	335-67-1	0.00360	0.00130	0.00189	0.00379	J	B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFNA	375-95-1	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFOS	1763-23-1	0.00199	0.00130	0.00189	0.00379	J	B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
9Cl-PF3ONS	756426-58-1	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFDA	335-76-2	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
MeFOSAA	2355-31-9	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
EtFOSAA	2991-50-6	0.00192	0.00130	0.00189	0.00379	J	B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFUnA	2058-94-8	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
11Cl-PF3OUdS	763051-92-9	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFDoA	307-55-1	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFTrDA	72629-94-8	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
PFTeDA	376-06-7	ND	0.00130	0.00189	0.00379		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	80.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C3-HFPO-DA	IS	64.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFHxA	IS	69.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C4-PFHpA	IS	67.7	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C3-PFHxS	IS	72.8	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C5-PFNA	IS	72.8	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFOA	IS	69.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C8-PFOS	IS	72.2	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFDA	IS	68.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
d3-MeFOSAA	IS	63.7	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFUnA	IS	60.5	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
d5-EtFOSAA	IS	67.3	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFDoA	IS	63.4	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	1
13C2-PFTeDA	IS	62.8	50 - 150		B0F0257	03-Jul-20	0.264 L	06-Jul-20 21:30	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: DUP01-20200624 — **PFAS Isotope Dilution Table B-15**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 08:55

Laboratory Data

Lab Sample: 2001358-03
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFHxA	307-24-4	0.00538	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
HFPO-DA	13252-13-6	ND	0.00229	0.00285	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFHpA	375-85-9	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
ADONA	919005-14-4	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFHxS	355-46-4	0.00980	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFOA	335-67-1	0.00385	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFNA	375-95-1	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFOS	1763-23-1	0.00176	0.00130	0.00190	0.00380	J	B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
9Cl-PF3ONS	756426-58-1	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFDA	335-76-2	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
MeFOSAA	2355-31-9	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
EtFOSAA	2991-50-6	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFUnA	2058-94-8	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
11Cl-PF3OUdS	763051-92-9	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFDoA	307-55-1	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFTrDA	72629-94-8	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
PFTeDA	376-06-7	ND	0.00130	0.00190	0.00380		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	102	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C3-HFPO-DA	IS	88.7	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFHxA	IS	91.2	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C4-PFHpA	IS	97.0	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C3-PFHxS	IS	95.1	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C5-PFNA	IS	86.0	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFOA	IS	89.4	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C8-PFOS	IS	90.5	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFDA	IS	87.6	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
d3-MeFOSAA	IS	91.0	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFUnA	IS	78.8	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
d5-EtFOSAA	IS	93.3	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFDoA	IS	75.6	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	1
13C2-PFTeDA	IS	71.2	50 - 150		B0F0257	03-Jul-20	0.263 L	06-Jul-20 21:40	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-24MW10D-20200624 — **PFAS Isotope Dilution Table B-15**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 10:30

Laboratory Data

Lab Sample: 2001358-04
Date Received: 25-Jun-20 09:33
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	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFHxA	307-24-4	0.00488	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
HFPO-DA	13252-13-6	ND	0.00232	0.00290	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFHpA	375-85-9	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
ADONA	919005-14-4	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFHxS	355-46-4	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFOA	335-67-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFNA	375-95-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFOS	1763-23-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
9Cl-PF3ONS	756426-58-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFDA	335-76-2	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
MeFOSAA	2355-31-9	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
EtFOSAA	2991-50-6	0.00154	0.00132	0.00193	0.00386	J	B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFUnA	2058-94-8	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
11Cl-PF3OUdS	763051-92-9	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFDoA	307-55-1	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFTrDA	72629-94-8	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
PFTeDA	376-06-7	ND	0.00132	0.00193	0.00386		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	82.0	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C3-HFPO-DA	IS	75.2	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFHxA	IS	74.9	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C4-PFHpA	IS	73.5	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C3-PFHxS	IS	82.5	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C5-PFNA	IS	76.7	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFOA	IS	75.4	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C8-PFOS	IS	84.1	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFDA	IS	73.3	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
d3-MeFOSAA	IS	74.7	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFUnA	IS	68.1	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
d5-EtFOSAA	IS	76.0	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFDoA	IS	72.9	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	1
13C2-PFTeDA	IS	67.8	50 - 150		B0F0257	03-Jul-20	0.259 L	06-Jul-20 21:51	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: DUP02-20200624 — **PFAS Isotope Dilution Table B-15**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 10:35

Laboratory Data

Lab Sample: 2001358-05
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFHxA	307-24-4	0.00539	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
HFPO-DA	13252-13-6	ND	0.00235	0.00293	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFHpA	375-85-9	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
ADONA	919005-14-4	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFHxS	355-46-4	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFOA	335-67-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFNA	375-95-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFOS	1763-23-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
9Cl-PF3ONS	756426-58-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFDA	335-76-2	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
MeFOSAA	2355-31-9	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
EtFOSAA	2991-50-6	0.00283	0.00134	0.00195	0.00391	J	B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFUnA	2058-94-8	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
11Cl-PF3OUdS	763051-92-9	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFDoA	307-55-1	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFTrDA	72629-94-8	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
PFTeDA	376-06-7	ND	0.00134	0.00195	0.00391		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	82.3	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C3-HFPO-DA	IS	63.8	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFHxA	IS	70.3	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C4-PFHpA	IS	75.2	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C3-PFHxS	IS	78.6	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C5-PFNA	IS	73.5	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFOA	IS	76.8	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C8-PFOS	IS	75.1	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFDA	IS	70.7	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
d3-MeFOSAA	IS	74.3	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFUnA	IS	64.4	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
d5-EtFOSAA	IS	75.0	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFDoA	IS	70.7	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	1
13C2-PFTeDA	IS	64.5	50 - 150		B0F0257	03-Jul-20	0.256 L	06-Jul-20 22:01	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-24MW10C-20200624 — **PFAS Isotope Dilution Table B-15**

Client Data

Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 11:45

Laboratory Data

Lab Sample: 2001358-06
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0787	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFHxA	307-24-4	0.228	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
HFPO-DA	13252-13-6	ND	0.00236	0.00294	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFHpA	375-85-9	0.0133	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
ADONA	919005-14-4	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFHxS	355-46-4	0.0360	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFOA	335-67-1	0.0422	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFNA	375-95-1	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFOS	1763-23-1	0.00176	0.00134	0.00196	0.00392	J, Q	B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
9Cl-PF3ONS	756426-58-1	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFDA	335-76-2	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
MeFOSAA	2355-31-9	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
EtFOSAA	2991-50-6	0.00155	0.00134	0.00196	0.00392	J	B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFUnA	2058-94-8	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
11Cl-PF3OUdS	763051-92-9	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFDoA	307-55-1	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFTrDA	72629-94-8	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
PFTeDA	376-06-7	ND	0.00134	0.00196	0.00392		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	79.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C3-HFPO-DA	IS	73.9	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFHxA	IS	77.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C4-PFHpA	IS	77.6	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C3-PFHxS	IS	80.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C5-PFNA	IS	74.2	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFOA	IS	76.0	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C8-PFOS	IS	80.6	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFDA	IS	71.0	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
d3-MeFOSAA	IS	76.2	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFUnA	IS	62.7	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
d5-EtFOSAA	IS	75.3	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFDoA	IS	68.3	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	1
13C2-PFTeDA	IS	65.8	50 - 150		B0F0257	03-Jul-20	0.255 L	06-Jul-20 22:12	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-24MW10C-20200624 **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-MS1/B0F0257-MSD1	Source Lab Sample:	2001358-06
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257	Date Extracted:	03-Jul-20
Matrix:	Aqueous	Samp Size:	0.251/0.242 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	0.0787	0.120	0.0398	104		0.112	0.0413	79.9	26.2		72-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFHxA	307-24-4	0.228	0.268	0.0398	98.7		0.262	0.0413	81.8	18.7		72-129	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
HFPO-DA	13252-13-6	ND	0.0442	0.0398	111		0.0404	0.0413	97.9	12.5		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFHpA	375-85-9	0.0133	0.0558	0.0398	107		0.0558	0.0413	103	3.81		72-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
ADONA	919005-14-4	ND	0.0383	0.0398	96.3		0.0416	0.0413	101	4.76		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFHxS	355-46-4	0.0360	0.0760	0.0398	100		0.0846	0.0413	118	16.5		68-131	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFOA	335-67-1	0.0422	0.0791	0.0398	92.7		0.0837	0.0413	100	7.58		71-133	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFNA	375-95-1	ND	0.0397	0.0398	99.8		0.0420	0.0413	102	2.18		69-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFOS	1763-23-1	0.00176	0.0383	0.0398	91.9		0.0394	0.0413	91.1	0.874		65-140	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
9Cl-PF3ONS	756426-58-1	ND	0.0400	0.0398	101		0.0380	0.0413	92.0	9.33		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFDA	335-76-2	ND	0.0425	0.0398	107		0.0435	0.0413	105	1.89		71-129	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
MeFOSAA	2355-31-9	ND	0.0411	0.0398	103		0.0372	0.0413	90.1	13.4		65-136	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
EtFOSAA	2991-50-6	0.00155	0.0454	0.0398	110		0.0388	0.0413	90.2	19.8		61-135	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFUnA	2058-94-8	ND	0.0401	0.0398	101		0.0407	0.0413	98.5	2.51		69-133	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
11Cl-PF3OUdS	763051-92-9	ND	0.0403	0.0398	101		0.0418	0.0413	101	0		70-130	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFDoA	307-55-1	ND	0.0410	0.0398	103		0.0393	0.0413	95.3	7.77		72-134	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFTrDA	72629-94-8	ND	0.0379	0.0398	95.1		0.0371	0.0413	89.8	5.73		65-144	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1
PFTeDA	376-06-7	ND	0.0384	0.0398	96.6		0.0406	0.0413	98.3	1.74		71-132	30	06-Jul-20 19:34	1	06-Jul-20 19:45	1

Labeled Standards	Type	MS % Rec	MS Quals	MSD % Rec	MSD Quals	Limits	MS Analyzed	MS Dil	MSD Analyzed	MSD Dil
13C3-PFBS	IS	74.6		86.6		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C3-HFPO-DA	IS	67.6		73.3		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFHxA	IS	73.7		80.4		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C4-PFHpA	IS	74.2		76.2		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C3-PFHxS	IS	75.3		75.5		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C5-PFNA	IS	75.1		83.4		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFOA	IS	72.7		79.7		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C8-PFOS	IS	74.0		85.7		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFDA	IS	69.8		80.5		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
d3-MeFOSAA	IS	68.0		81.9		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFUnA	IS	61.6		71.0		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
d5-EtFOSAA	IS	65.6		80.1		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1
13C2-PFDoA	IS	64.0		75.2		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1

Sample ID: 24-GW-24MW10C-20200624 **PFAS Isotope Dilution Table B-15**

Name:	KMEA	Lab Sample:	B0F0257-MS1/B0F0257-MSD1	Source Lab Sample:	2001358-06
Project:	MCAS El Toro and Tustin, PFAS	QC Batch:	B0F0257	Date Extracted:	03-Jul-20
Matrix:	Aqueous	Samp Size:	0.251/0.242 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	62.0		75.1		50-150	06-Jul-20 19:34	1	06-Jul-20 19:45	1

Vista Analytical Laboratory

Sample ID: 24-GW-24MW07R-20200624 **PFAS Isotope Dilution Table B-15**

Client Data
Name: KMEA
Project: MCAS El Toro and Tustin, PFAS
Matrix: Groundwater
Date Collected: 24-Jun-20 13:15

Laboratory Data
Lab Sample: 2001358-07
Date Received: 25-Jun-20 09:33
Column: BEH C18

Analyte	CAS Number	Conc. (ug/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	0.0323	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFHxA	307-24-4	0.134	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
HFPO-DA	13252-13-6	ND	0.00237	0.00295	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFHpA	375-85-9	0.0131	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
ADONA	919005-14-4	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFHxS	355-46-4	0.0299	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFOA	335-67-1	0.0907	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFNA	375-95-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFOS	1763-23-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
9Cl-PF3ONS	756426-58-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFDA	335-76-2	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
MeFOSAA	2355-31-9	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
EtFOSAA	2991-50-6	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFUnA	2058-94-8	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
11Cl-PF3OUdS	763051-92-9	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFDoA	307-55-1	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFTrDA	72629-94-8	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
PFTeDA	376-06-7	ND	0.00135	0.00197	0.00393		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	77.5	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C3-HFPO-DA	IS	72.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFHxA	IS	68.3	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C4-PFHpA	IS	69.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C3-PFHxS	IS	74.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C5-PFNA	IS	69.8	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFOA	IS	72.7	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C8-PFOS	IS	73.8	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFDA	IS	68.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
d3-MeFOSAA	IS	68.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFUnA	IS	64.1	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
d5-EtFOSAA	IS	69.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFDoA	IS	65.0	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	1
13C2-PFTeDA	IS	60.6	50 - 150		B0F0257	03-Jul-20	0.254 L	06-Jul-20 22:22	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

2001358
0.7°C
Vista PM: Jade White-Dobbs

CHAIN OF CUSTODY RECORD

DATE: 6/24/2020
PAGE: 1 OF 1

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 6
CITY: San Diego, CA 92123	PROJECT CONTACT: Kimberly Shiroodi / Brian Johnson
TEL: (619) 399-5900	CONTRACT NO.: N62473-16-D-2405
E-Mail: kimberly.shiroodi@woodplc.com	SAMPLER(S): (SIGNATURE) [signature]
E-MAIL: brian.johnson@woodplc.com	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: GW samples potentially contain elevated levels of PFAS. Separate SDG (El Toro)

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	QC Level	PFAS by LC/MS-MS	
	EB02-20200624	6/24/20	7:30	BW	2		X	
	24-GW-24MW06-20200624	↓	8:50	GW	↓	IV	X	
	DUP01-20200624		8:55	"			X	
	24-GW-24MW10D-20200624		10:30	"		IV	X	
	DUP02-20200626		10:35	"			X	
	24-GW-24MW10C-20200624		11:45	"	6	IV	X	MS/MSD
	24-GW-24MW07R-20200624		13:15	"	2	IV	X	

[initials] 6-24-20

Relinquished by: (Signature)	Received by: (Signature) / Carrier Tracking Number	Date:	Time:
[signature]	FedEx	6/24/20	17:00
Fedex	[signature]	06/25/20	0933

Vista Analytical Laboratory

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 2001358 TAT Std

Samples Arrival:	**Date/Time** 06/25/20 0833 ~~1012~~		**Initials:** CM		**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: 0.7 (uncorrected)	**Probe used:** Y / (N)				**Thermometer ID:** IR-4		
Temp °C: 0.7 (corrected)							

	YES	NO	NA
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Airbill — Trk # 8142 4183 5158	✓		
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** 06/25/20 1143	**Initials:** KS	**Location:** R-13 / WR-2 **Shelf/Rack:** A-2 / F-4	
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# 2001358

LabNumber	CoC Sample ID	SampleAlias	Sample Date/Time	Container	BaseMatrix	Sample Comments
2001358-01	A EB02-20200624		24-Jun-20 07:30	HDPE Bottle, 250 mL	Aqueous	
2001358-01	B EB02-20200624		24-Jun-20 07:30	HDPE Bottle, 250 mL	Aqueous	
2001358-02	A 24-GW-24MW06-20200624		24-Jun-20 08:50	HDPE Bottle, 250 mL	Aqueous	
2001358-02	B 24-GW-24MW06-20200624		24-Jun-20 08:50	HDPE Bottle, 250 mL	Aqueous	
2001358-03	A DUP01-20200624		24-Jun-20 08:55	HDPE Bottle, 250 mL	Aqueous	
2001358-03	B DUP01-20200624		24-Jun-20 08:55	HDPE Bottle, 250 mL	Aqueous	
2001358-04	A 24-GW-24MW10D-20200624		24-Jun-20 10:30	HDPE Bottle, 250 mL	Aqueous	
2001358-04	B 24-GW-24MW10D-20200624		24-Jun-20 10:30	HDPE Bottle, 250 mL	Aqueous	
2001358-05	A DUP02-20200624		24-Jun-20 10:35	HDPE Bottle, 250 mL	Aqueous	
2001358-05	B DUP02-20200624		24-Jun-20 10:35	HDPE Bottle, 250 mL	Aqueous	
2001358-06	A 24-GW-24MW10C-20200624		24-Jun-20 11:45	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	B 24-GW-24MW10C-20200624		24-Jun-20 11:45	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	C 24-GW-24MW10C-20200624		24-Jun-20 11:45	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	D 24-GW-24MW10C-20200624		24-Jun-20 11:45	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	E 24-GW-24MW10C-20200624		24-Jun-20 11:45	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-06	F 24-GW-24MW10C-20200624		24-Jun-20 11:45	HDPE Bottle, 250 mL	Aqueous	MS/MSD
2001358-07	A 24-GW-24MW07R-20200624		24-Jun-20 13:15	HDPE Bottle, 250 mL	Aqueous	
2001358-07	B 24-GW-24MW07R-20200624		24-Jun-20 13:15	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.

Printed: 6/25/2020 1:24:08PM

2001358

Page 1 of 2

	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:

Verifed by/Date: NA 06/25/20

EXTRACTION INFORMATION

Process Sheet

Workorder: 2001358

Prep Expiration: 2020-07-08
Client: KMEA

Workorder Due: 16-Jul-20 00:00
TAT: 21

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

Prep Batch: BOI=0257

Prep Data Entered: ME 07/06/2020
Date and Initials

Version: 537.1 List of 18-EIS
DoD: DoD QSM 5.3

Initial Sequence: S060013

LabSampID	A/B	Prep Rec	Spike Rec	ClientSampleID	Comments	Location	Container
2001358-01	A	☑	☑	EB02-20200624		R-13 A-2	HDPE Bottle, 250 mL
2001358-02		☑	☑	24-GW-24MW06-20200624		R-13 A-2	HDPE Bottle, 250 mL
2001358-03		☑	☑	DUP01-20200624		R-13 A-2	HDPE Bottle, 250 mL
2001358-04		☑	☑	24-GW-24MW10D-20200624		R-13 A-2	HDPE Bottle, 250 mL
2001358-05		☑	☑	DUP02-20200624	✓ ✓	R-13 A-2	HDPE Bottle, 250 mL
2001358-06		☑	☑	24-GW-24MW10C-20200624	**MS/MSD**	R-13 A-2	HDPE Bottle, 250 mL
2001358-07		☑	☑	24-GW-24MW07R-20200624		R-13 A-2	HDPE Bottle, 250 mL

WO Comments: **May have elevated PFAS levels - isolate samples.** ME 07/03/2020
Instrument - begin w/ dils.
Report to DL

Pre-Prep Check Out: CHT 06/26/20
Pre-Prep Check In: CHT 06/26/20

Prep Check Out: HP 07/03/20
Prep Check In: N/A

Prep Reconciled Initals/Date: CHT 06/26/20
Spike Reconciled Initals/Date: HP 07/03/20
VialBoxID: Viper

Page 1 of 3

Matrix: Aqueous

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

PREPARATION BENCH SHEET

B0F0257

Chemist: Hp

Prep Date: 07/03/20

Prep Time: 07:52

Hood#: 5

Prepared using: ☐ Sonication Shaker ☑ SPE Extraction ☑ Centrifuge ID: ~~C5~~ Hp 07/03/20 Hp 07/03/20

Rec Date/Initals: TC 07/06/20 | Date/Initals: CHT 06/26/20 | BalanceID: HRMG-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
☐	B0F0257-BLK1	☑	☑	5	0	NA	NA	(0.250)	Hp ME 07/03/20	Hp 07/03/20	Hp 07/03/20
☐	B0F0257-BS1	☑	☑	5	0			(0.250)			
☐	B0F0257-BSD1	☑	☑	5	0			(0.250)			
☐	B0F0257-MS1 2001358-06	☑	☑	6	0	276.79	25.69	0.25110			
☐	B0F0257-MSD1 2001358-06	☑	☑	6	0	268.36	26.25	0.24211			
☐	2001356-01	☑	☑	5	0	283.55	25.73	0.25782			
☐	2001357-01	☑	☑	4	0	272.54	26.00	0.24654			
☐	2001357-02	☑	☑	4	0	273.91	25.87	0.24804			
☐	2001357-03	☑	☑	6	0	282.11	26.48	0.25563			
☐	2001357-04	☑	☑	6	0	279.78	25.75	0.25403			
☐	2001358-01	☑	☑	4	0	267.04	25.76	0.24128			
☐	2001358-02	☑	☑	6	0	290.23	26.34	0.26389			
☐	2001358-03	☑	☑	6	0	289.29	26.28	0.26301			
☐	2001358-04	☑	☑	6	0	285.12	25.94	0.25918			

IS: 20E1201 10uL (V12)

IS SUP: N/A

NS: 20E1202 10uL (V8)

NS SUP: N/A

SPE Chem: Strata XL Aw 100um 200mg/6mL

SPE Lot#: 518-0068603

ENVI-Carb Lot#: B021C1

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)

Matrix: Aqueous

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

PREPARATION BENCH SHEET

B0F0257

Chemist: Hp
Prep Date: 07/03/20
Prep Time: 07:52
Hood#: 5

Prepared using: ☐ Sonication Shaker ☑ SPE Extraction ☑ Centrifuge ID: C5

Hp 07/03/20 Hp 07/03/20

Rec Date/Initals: Date/Initals: CHT 06/26/20 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
☐	2001358-05	☑	☑	6	0	281.96	26.06	0.25590	Hp ME 07/03/20	Hp 07/03/20	Hp 07/03/20
☐	2001358-06	☑	☑	6	0	281.20	26.23	0.25497	"	"	"
☐	2001358-07	☑	☑	6	0	280.11	25.67	0.25444	↓	↓	↓

IS: 20E1207 10mL (V12)
IS SUP: N/A
NS: 20E1202 10mL (V8)
NS SUP: N/A

SPE Chem: Strata XL-AW 200mg/6mL
SPE Lot#: S19500068663
ENVI-Carb Lot#: B021G1
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)

Matrix: Aqueous

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

Vista Internal Chain-of-Custody

B0F0257

Vista Analytical Laboratory

	Location		L2	R13	L2	R12	L2	R12	L4		
	Reason		Prep	R9	R4	R9	R6	R9	R10		
	Initials		CHT	CHT	HP	ME	TL	TC	OM		
	Date/Time		06/26/20 0855	06/26/20 0930	07/03/20 7:22	07/03/20 17:10	07/06/20 08:51	07/06/20 15:11	7/9/2020 1700		
Initial Storage	LabNumber	Cont	[redacted]								
R-13 A-2	2001356-01	A	O	O	O	E	F	B	E		
R-13 A-2	2001357-01										
R-13 A-2	2001357-02										
R-13 A-2	2001357-03										
R-13 A-2	2001357-04										
R-13 A-2	2001358-01										
R-13 A-2	2001358-02										
R-13 A-2	2001358-03										
R-13 A-2	2001358-04										
R-13 A-2	2001358-05										
R-13 A-2	2001358-06	ABC									
R-13 A-2	2001358-07	A									

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

Batch: B0F0257

Matrix: Aqueous

LabNumber	WetWeight (Initial)	% Solids (Extraction Solids)	DryWeight	Final	Extracted	Ext By	Spike	SpikeAmount	ClientMatrix	Analysis
2001356-01	0.25782 ✓	N/A	N/A	1000	03-Jul-20 07:52 ✓	HRP ✓			Wastewater	537M PFAS DOD QSM 5.3
2001357-01	0.24654 ✓			1000	03-Jul-20 07:52	HRP			Blank Water	537M PFAS DOD QSM 5.3
2001357-02	0.24804 ✓			1000	03-Jul-20 07:52	HRP			Blank Water	537M PFAS DOD QSM 5.3
2001357-03	0.25563 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
2001357-04	0.25403 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
2001358-01	0.24128 ✓			1000	03-Jul-20 07:52	HRP			Blank Water	537M PFAS DOD QSM 5.3
2001358-02	0.26389 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
2001358-03	0.26301 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
2001358-04	0.25918 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
2001358-05	0.2559 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
2001358-06	0.25497 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
2001358-07	0.25444 ✓			1000	03-Jul-20 07:52	HRP			Groundwater	537M PFAS DOD QSM 5.3
B0F0257-BLK1	0.25 ✓			1000	03-Jul-20 07:52	HRP				QC
B0F0257-BS1	0.25 ✓			1000	03-Jul-20 07:52	HRP	20E1202 ✓	10 ✓		QC
B0F0257-BSD1	0.25 ✓			1000	03-Jul-20 07:52	HRP	20E1202 ✓	10 ✓		QC
B0F0257-MS1	0.2511 ✓			1000	03-Jul-20 07:52	HRP	20E1202 ✓	10 ✓		QC
B0F0257-MSD1	0.24211 ✓			1000	03-Jul-20 07:52	HRP	20E1202 ✓	10 ✓		QC

All bolded data on report verified against written benchsheet by (initial/date) ME 07/06/2020

Printed: 7/6/2020 8:41:24AM
Page 1 of 1

Sample Data – PFAS Isotope Dilution Table B-15

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-50.qld

Last Altered: Wednesday, July 08, 2020 17:49:14 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 17:49:30 Pacific Daylight Time

Name: 200706P1-50, Date: 06-Jul-2020, Time: 19:03:20, ID: B0F0257-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 > 80		1.026e3	0.250		2.86						YES
2	7	PFHxA	313.0 > 269.0		9.832e3	0.250		3.38						YES
3	9	HFPO-DA	285.1 > 168.9		1.981e3	0.250		3.58						YES
4	11	PFHpA	363.0 > 319		8.811e3	0.250		3.97						YES
5	12	ADONA	376.8 > 250.9		8.811e3	0.250		4.07						YES
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.026e3		0.250	104.004	2.87	2.86	1030	39.465	78.9		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	9.832e3		0.250	1090.353	3.38	3.38	9830	36.069	72.1		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.981e3		0.250	228.261	3.59	3.58	1980	34.716	69.4		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	8.811e3		0.250	983.154	3.98	3.97	8810	35.848	71.7		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	8.811e3		0.250	983.154	3.98	3.97	8810	35.848	71.7		
11	-1													
12	13	L-PFHxS	399 > 79.9		2.097e3	0.250		4.11						YES
13	1...	Total PFHxS	399 > 79.9	0.000e0	2.097e3	0.250		3.93		0.000				
14	16	L-PFOA	413 > 369		1.010e4	0.250		4.49						YES
15	1...	Total PFOA	413 > 369	0.000e0	1.010e4	0.250		4.60		0.000				
16	21	PFNA	463.0 > 418.8		1.082e4	0.250		4.93						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.097e3		0.250	220.112	4.13	4.11	2100	38.107	76.2		
18	61	13C3-PFHxS-EIS	402 > 80	2.097e3		0.250	220.112	4.13	4.11	2100	38.107	76.2		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.010e4		0.250	1154.443	4.67	4.49	10100	34.985	70.0		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.010e4		0.250	1154.443	4.67	4.49	10100	34.985	70.0		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.082e4		0.250	1213.140	5.13	4.93	10800	35.671	71.3		
22	-1													
23	23	L-PFOS	499 > 80		2.001e3	0.250		5.00						YES
24	1...	Total PFOS	499> 80	0.000e0	2.001e3	0.250		4.60		0.000				
25	25	9Cl-PF30NS	531 > 351		2.001e3	0.250		5.22						YES
26	26	PFDA	513 > 469		1.298e4	0.250		5.30						YES
27	33	PFUdA	563.0 > 519		1.176e4	0.250		5.62						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.001e3		0.250	225.510	5.02	5.00	2000	35.496	71.0		
29	71	13C8-PFOS-EIS	507.1 > 80	2.001e3		0.250	225.510	5.02	5.00	2000	35.496	71.0		
30	71	13C8-PFOS-EIS	507.1 > 80	2.001e3		0.250	225.510	5.02	5.00	2000	35.496	71.0		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.298e4		0.250	1491.471	5.31	5.30	13000	34.805	69.6		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.176e4		0.250	1581.335	5.54	5.62	11800	29.738	59.5		
33	-1													
34	29	L-MeFOSAA	570 > 419		2.469e3	0.250		5.44						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	2.469e3	0.250		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419		2.524e3	0.250		5.59						YES

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-50.qld

Last Altered: Wednesday, July 08, 2020 17:49:14 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 17:49:30 Pacific Daylight Time

Name: 200706P1-50, Date: 06-Jul-2020, Time: 19:03:20, ID: B0F0257-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	583.9 > 419	0.000e0	2.524e3	0.250		5.37		0.000				
38	35	11Cl-PF30UdS	631 > 451		1.563e4	0.250		5.82						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.469e3		0.250	331.163	5.46	5.44	2470	29.822	59.6		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.469e3		0.250	331.163	5.46	5.44	2470	29.822	59.6		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.524e3		0.250	313.941	5.61	5.59	2520	32.163	64.3		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.524e3		0.250	313.941	5.61	5.59	2520	32.163	64.3		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.563e4		0.250	1868.510	6.13	5.89	15600	33.463	66.9		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.563e4	0.250		5.89						YES
46	39	PFTrDA	662.9 > 618.9		1.563e4	0.250		6.15						YES
47	41	PFTeDA	713.0 > 669.0		1.354e4	0.250		6.32						YES
48	1...	TDCA	498.3>106.9			0.250	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.001e3		0.250	225.510	5.02	5.00	2000	35.496	71.0		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.563e4		0.250	1868.510	6.13	5.89	15600	33.463	66.9		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.563e4		0.250	1868.510	6.13	5.89	15600	33.463	66.9		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.354e4		0.250	1905.823	6.34	6.32	13500	28.413	56.8		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

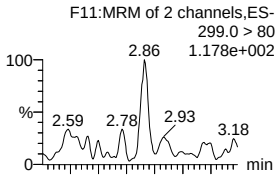
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-50.qld

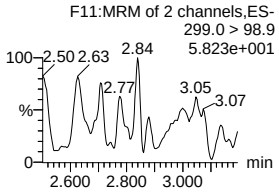
Last Altered: Wednesday, July 08, 2020 17:49:14 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 17:49:30 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 17:41:55
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

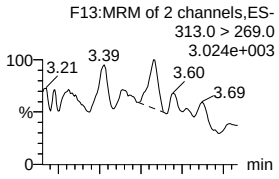
Name: 200706P1-50, Date: 06-Jul-2020, Time: 19:03:20, ID: B0F0257-BLK1 Method Blank 0.25, Description: Method Blank

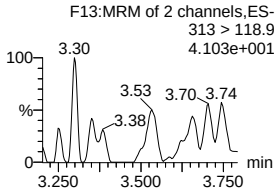
PFBS



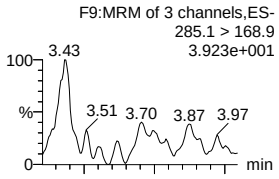


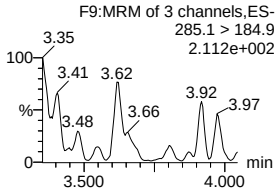
PFHxA



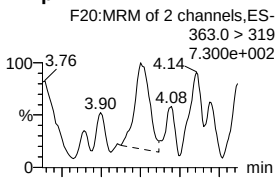


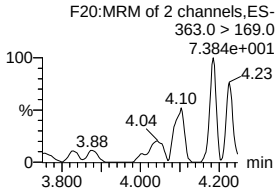
HFPO-DA



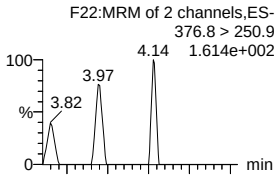


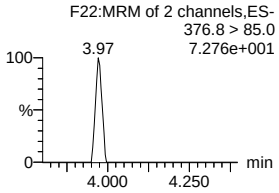
PFHpA



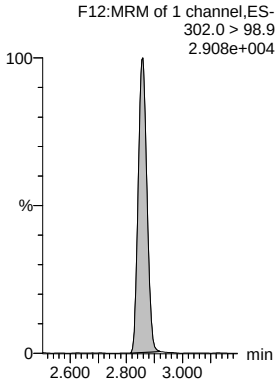


ADONA

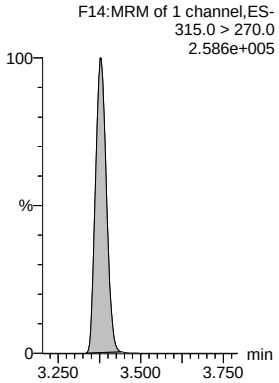




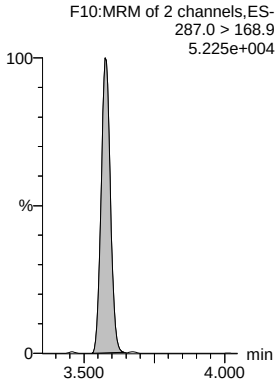
13C3-PFBS-EIS



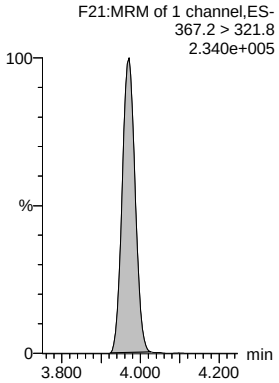
13C2-PFHxA-EIS



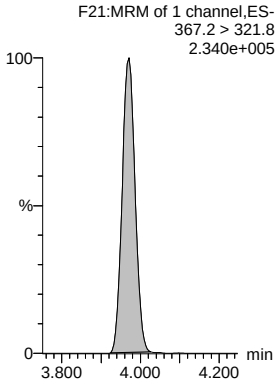
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

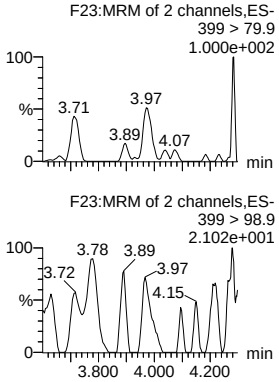
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-50.qld

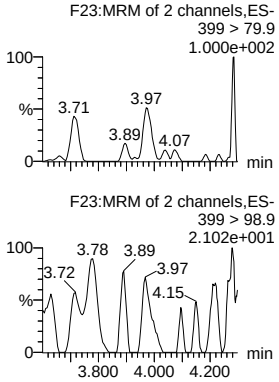
Last Altered: Wednesday, July 08, 2020 17:49:14 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 17:49:30 Pacific Daylight Time

Name: 200706P1-50, Date: 06-Jul-2020, Time: 19:03:20, ID: B0F0257-BLK1 Method Blank 0.25, Description: Method Blank

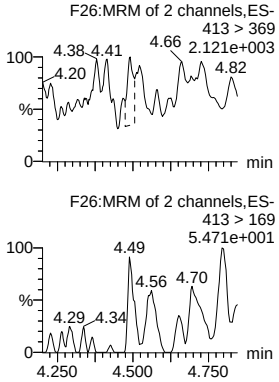
L-PFHxS



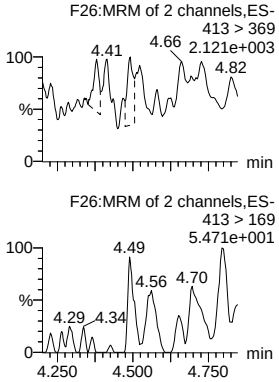
Total PFHxS



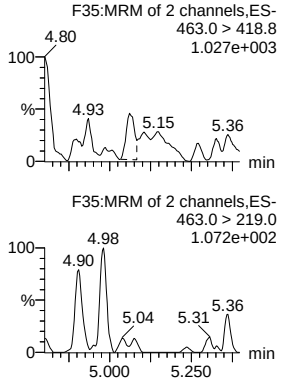
L-PFOA



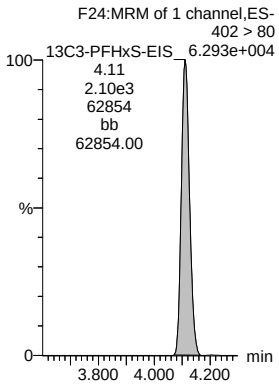
Total PFOA



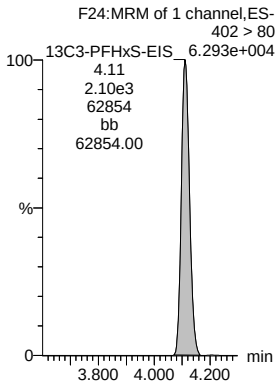
PFNA



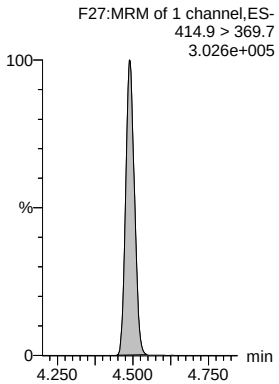
13C3-PFHxS-EIS



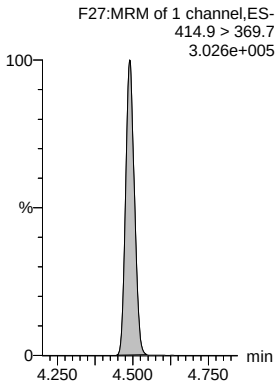
13C3-PFHxS-EIS



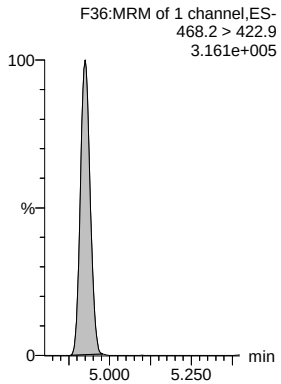
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

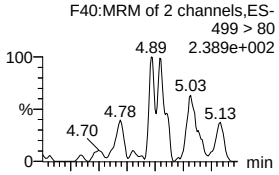
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

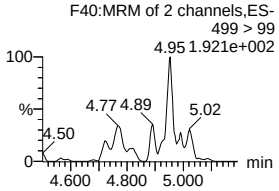
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-50.qld

Last Altered: Wednesday, July 08, 2020 17:49:14 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 17:49:30 Pacific Daylight Time

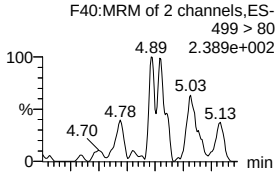
Name: 200706P1-50, Date: 06-Jul-2020, Time: 19:03:20, ID: B0F0257-BLK1 Method Blank 0.25, Description: Method Blank

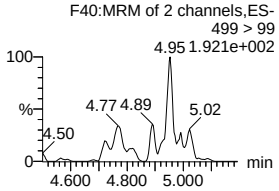
L-PFOS



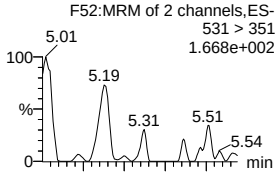


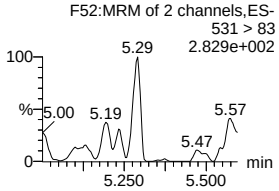
Total PFOS



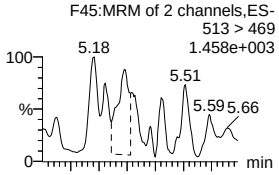


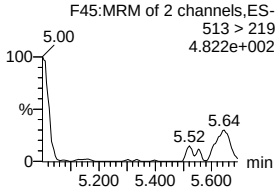
9Cl-PF30NS



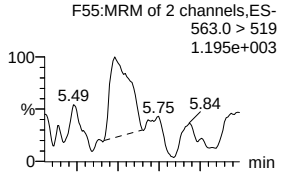


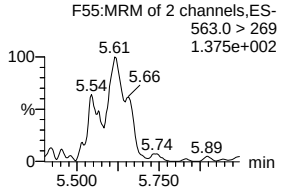
PFDA



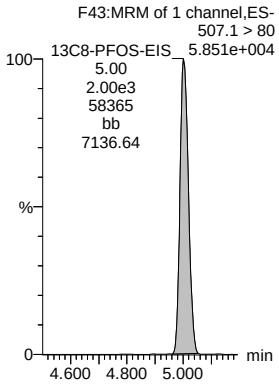


PFUdA

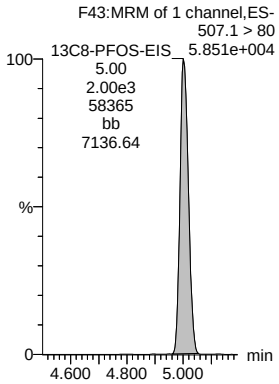




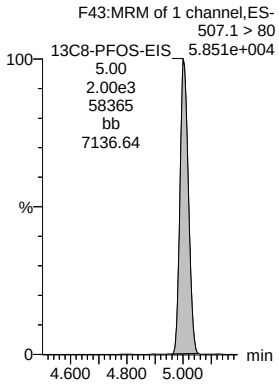
13C8-PFOS-EIS



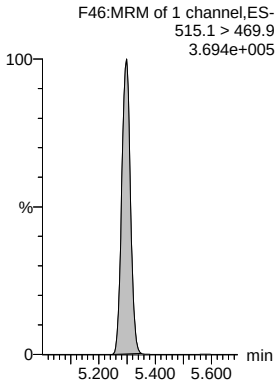
13C8-PFOS-EIS



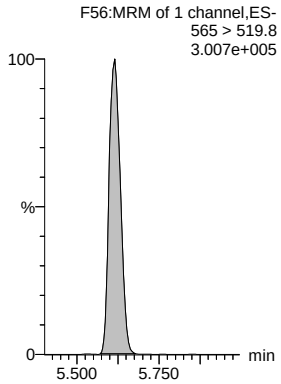
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

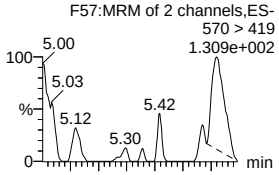
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

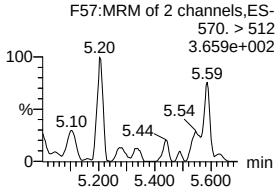
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-50.qld

Last Altered: Wednesday, July 08, 2020 17:49:14 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 17:49:30 Pacific Daylight Time

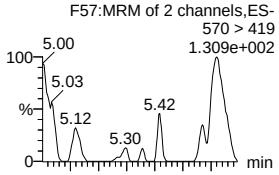
Name: 200706P1-50, Date: 06-Jul-2020, Time: 19:03:20, ID: B0F0257-BLK1 Method Blank 0.25, Description: Method Blank

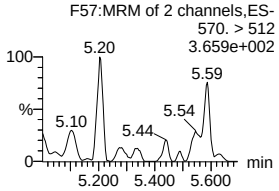
L-MeFOSAA



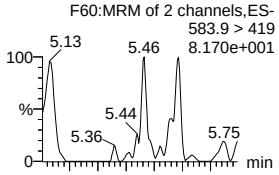


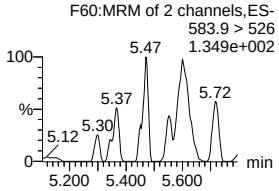
Total N-MeFOSAA



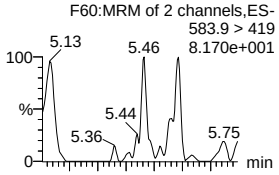


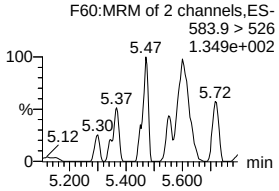
L-EtFOSAA



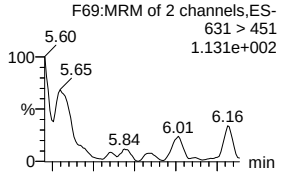


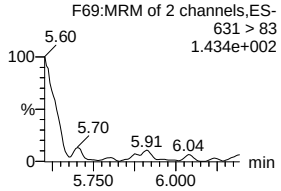
Total N-EtFOSAA



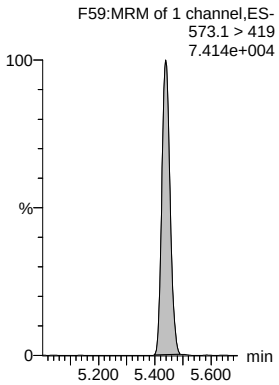


11Cl-PF30UdS

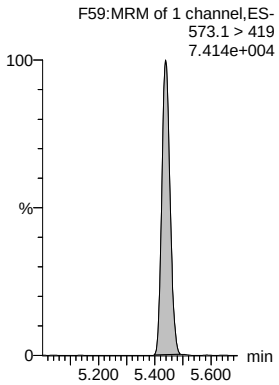




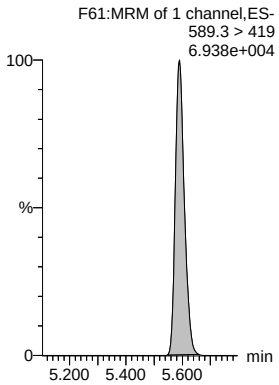
d3-N-MeFOSAA-EIS



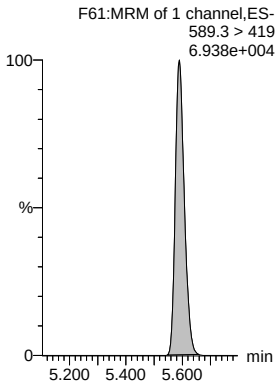
d3-N-MeFOSAA-EIS



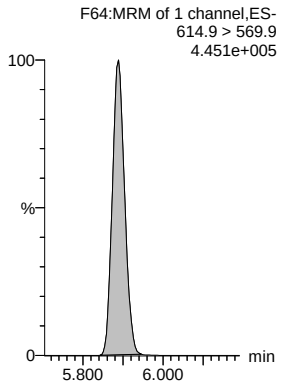
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

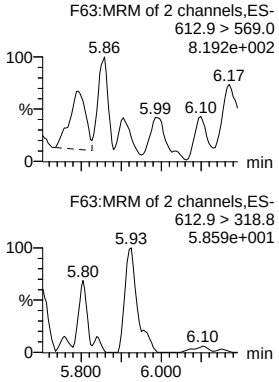
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-50.qld

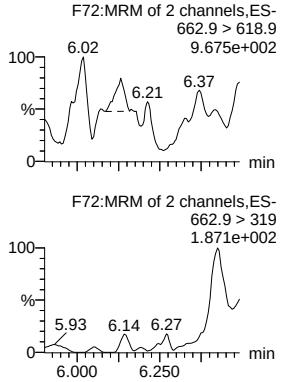
Last Altered: Wednesday, July 08, 2020 17:49:14 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 17:49:30 Pacific Daylight Time

Name: 200706P1-50, Date: 06-Jul-2020, Time: 19:03:20, ID: B0F0257-BLK1 Method Blank 0.25, Description: Method Blank

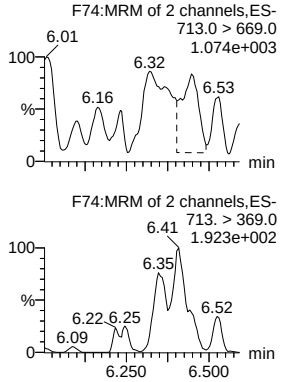
PFDoA



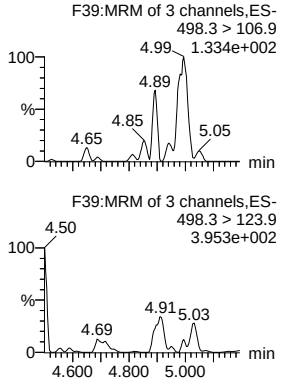
PFTrDA



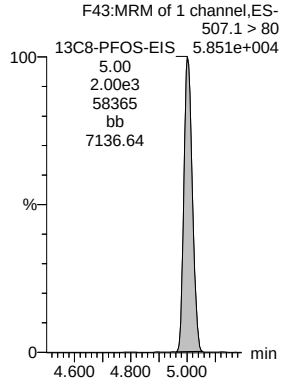
PFTeDA



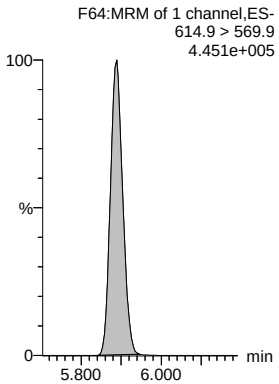
TDCA



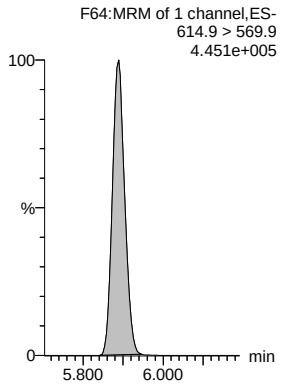
13C8-PFOS-EIS



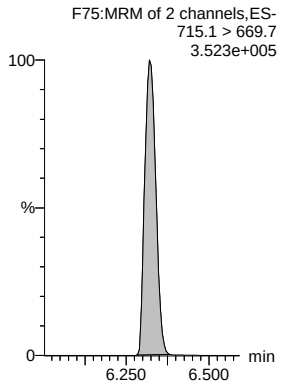
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-51.qld

Last Altered: Wednesday, July 08, 2020 17:59:59 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:00:50 Pacific Daylight Time

Name: 200706P1-51, Date: 06-Jul-2020, Time: 19:13:50, ID: B0F0257-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 > 80	2.117e3	9.581e2	0.250		2.86	2.86	27.6	43.186	108.0	2.411	NO
2	7	PFHxA	313.0 > 269.0	9.197e3	1.017e4	0.250		3.38	3.38	11.3	43.361	108.4	15.746	NO
3	9	HFPO-DA	285.1 > 168.9	1.723e3	2.169e3	0.250		3.58	3.58	9.93	39.492	98.7	2.405	NO
4	11	PFHpA	363.0 > 319	9.683e3	8.977e3	0.250		3.97	3.97	13.5	41.430	103.6	65.168	NO
5	12	ADONA	376.8 > 250.9	1.579e4	8.977e3	0.250		4.07	4.08	22.0	40.449	101.1	3.953	NO
6	51	13C3-PFBS-EIS	302.0 > 98.9	9.581e2		0.250	104.004	2.87	2.86	958	36.848	73.7		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.017e4		0.250	1090.353	3.38	3.38	10200	37.321	74.6		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.169e3		0.250	228.261	3.59	3.58	2170	38.002	76.0		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	8.977e3		0.250	983.154	3.98	3.97	8980	36.522	73.0		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	8.977e3		0.250	983.154	3.98	3.97	8980	36.522	73.0		
11	-1													
12	13	L-PFHxS	399 > 79.9	1.703e3	2.053e3	0.250		4.11	4.11	10.4	37.682	94.2	3.870	NO
13	1...	Total PFHxS	399 > 79.9	1.703e3	2.053e3	0.250		3.93		10.4	37.682			
14	16	L-PFOA	413 > 369	9.841e3	1.110e4	0.250		4.49	4.49	11.1	39.095	97.7	3.192	NO
15	1...	Total PFOA	413 > 369	9.841e3	1.110e4	0.250		4.60		11.1	39.095			
16	21	PFNA	463.0 > 418.8	1.017e4	1.137e4	0.250		4.93	4.92	11.2	39.989	100.0	13.373	NO
17	61	13C3-PFHxS-EIS	402 > 80	2.053e3		0.250	220.112	4.13	4.11	2050	37.308	74.6		
18	61	13C3-PFHxS-EIS	402 > 80	2.053e3		0.250	220.112	4.13	4.11	2050	37.308	74.6		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.110e4		0.250	1154.443	4.67	4.49	11100	38.464	76.9		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.110e4		0.250	1154.443	4.67	4.49	11100	38.464	76.9		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.137e4		0.250	1213.140	5.13	4.93	11400	37.492	75.0		
22	-1													
23	23	L-PFOS	499 > 80	2.015e3	2.059e3	0.250		5.00	5.00	12.2	38.612	96.5	2.236	NO
24	1...	Total PFOS	499> 80	2.015e3	2.059e3	0.250		4.60		12.2	38.612			
25	25	9Cl-PF30NS	531 > 351	5.047e3	2.059e3	0.250		5.22	5.22	30.6	43.052	107.6	40.084	NO
26	26	PFDA	513 > 469	9.783e3	1.319e4	0.250		5.30	5.30	9.27	43.660	109.2	5.671	NO
27	33	PFUdA	563.0 > 519	1.124e4	1.186e4	0.250		5.61	5.61	11.8	43.092	107.7	20.120	NO
28	71	13C8-PFOS-EIS	507.1 > 80	2.059e3		0.250	225.510	5.02	5.00	2060	36.520	73.0		
29	71	13C8-PFOS-EIS	507.1 > 80	2.059e3		0.250	225.510	5.02	5.00	2060	36.520	73.0		
30	71	13C8-PFOS-EIS	507.1 > 80	2.059e3		0.250	225.510	5.02	5.00	2060	36.520	73.0		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.319e4		0.250	1491.471	5.31	5.30	13200	35.385	70.8		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.186e4		0.250	1581.335	5.54	5.61	11900	30.010	60.0		
33	-1													
34	29	L-MeFOSAA	570 > 419	2.832e3	2.684e3	0.250		5.44	5.44	13.2	43.382	108.5	2.029	NO
35	1...	Total N-MeFOSAA	570. > 419	2.832e3	2.684e3	0.250		5.19		13.2	43.382			
36	31	L-EtFOSAA	583.9 > 419	2.837e3	2.702e3	0.250		5.59	5.60	13.1	37.845	94.6	1.284	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-51.qld

Last Altered: Wednesday, July 08, 2020 17:59:59 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:00:50 Pacific Daylight Time

Name: 200706P1-51, Date: 06-Jul-2020, Time: 19:13:50, ID: B0F0257-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	583.9 > 419	2.837e3	2.702e3	0.250		5.37		13.1	37.845			
38	35	11Cl-PF30UdS	631 > 451	3.727e3	1.611e4	0.250		5.81	5.81	2.89	44.805	112.0	15.128	NO
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.684e3		0.250	331.163	5.46	5.44	2680	32.417	64.8		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.684e3		0.250	331.163	5.46	5.44	2680	32.417	64.8		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.702e3		0.250	313.941	5.61	5.59	2700	34.431	68.9		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.702e3		0.250	313.941	5.61	5.59	2700	34.431	68.9		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.611e4		0.250	1868.510	6.13	5.88	16100	34.477	69.0		
44	-1													
45	37	PFDoA	612.9 > 569.0	1.230e4	1.611e4	0.250		5.88	5.89	9.54	38.922	97.3	12.014	NO
46	39	PFTrDA	662.9 > 618.9	1.241e4	1.611e4	0.250		6.15	6.13	9.64	37.041	92.6	123.274	NO
47	41	PFTeDA	713.0 > 669.0	8.099e3	1.458e4	0.250		6.32	6.32	6.95	41.808	104.5	14.033	NO
48	1...	TDCA	498.3>106.9			0.250	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.059e3		0.250	225.510	5.02	5.00	2060	36.520	73.0		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.611e4		0.250	1868.510	6.13	5.88	16100	34.477	69.0		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.611e4		0.250	1868.510	6.13	5.88	16100	34.477	69.0		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.458e4		0.250	1905.823	6.34	6.32	14600	30.595	61.2		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

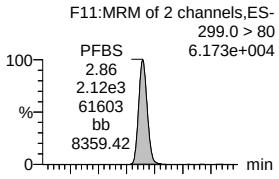
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-51.qld

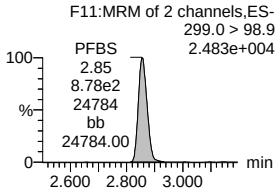
Last Altered: Wednesday, July 08, 2020 17:59:59 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:00:50 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 17:57:04
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

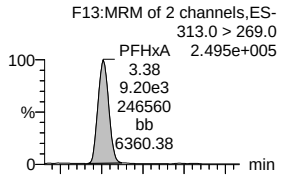
Name: 200706P1-51, Date: 06-Jul-2020, Time: 19:13:50, ID: B0F0257-BS1 OPR 0.25, Description: OPR

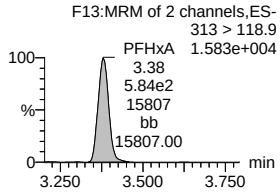
PFBS



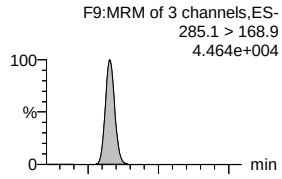


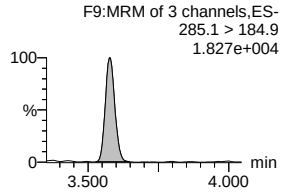
PFHxA



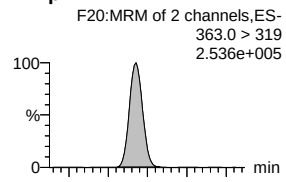


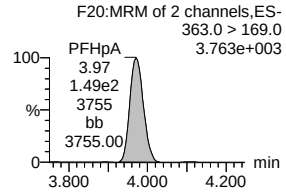
HFPO-DA



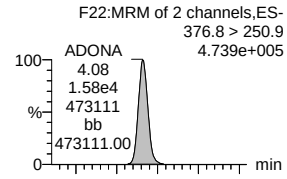


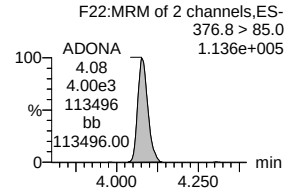
PFHpA



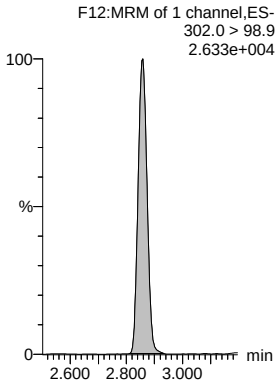


ADONA

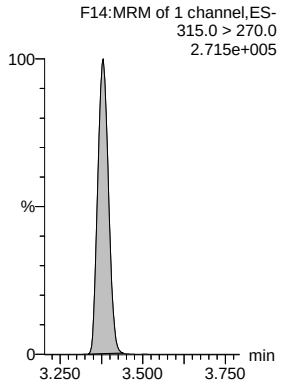




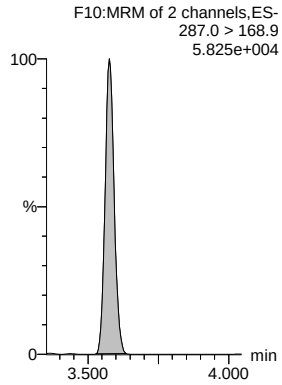
13C3-PFBS-EIS



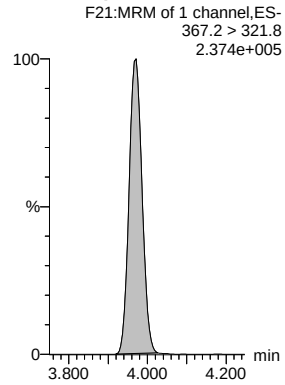
13C2-PFHxA-EIS



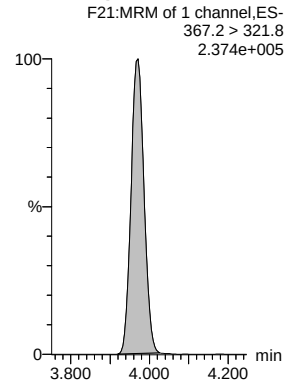
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

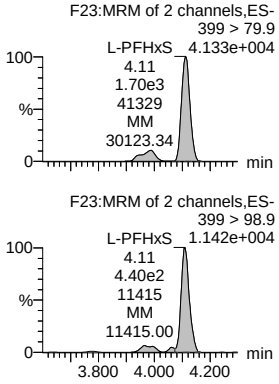
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-51.qld

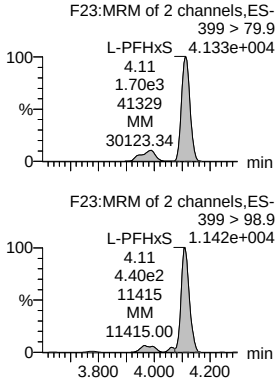
Last Altered: Wednesday, July 08, 2020 17:59:59 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:00:50 Pacific Daylight Time

Name: 200706P1-51, Date: 06-Jul-2020, Time: 19:13:50, ID: B0F0257-BS1 OPR 0.25, Description: OPR

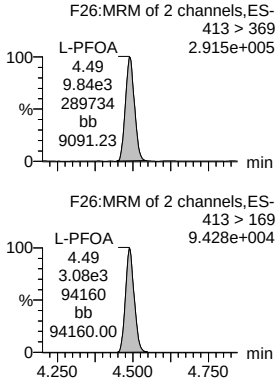
L-PFHxS



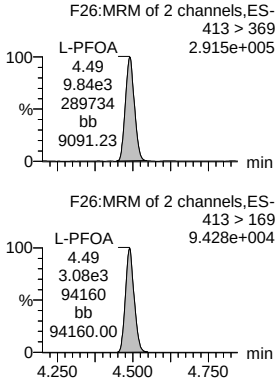
Total PFHxS



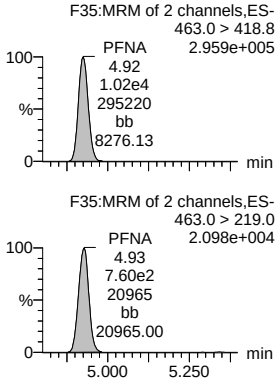
L-PFOA



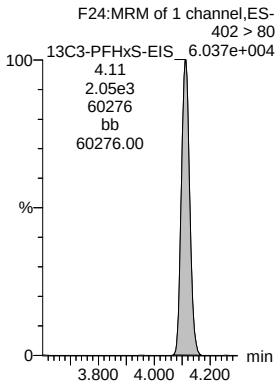
Total PFOA



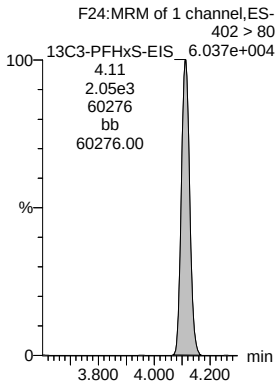
PFNA



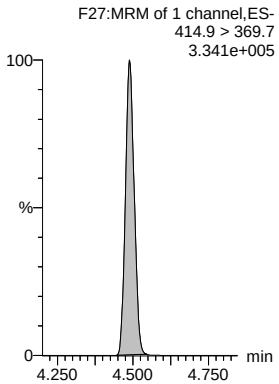
13C3-PFHxS-EIS



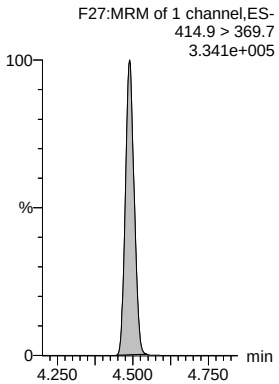
13C3-PFHxS-EIS



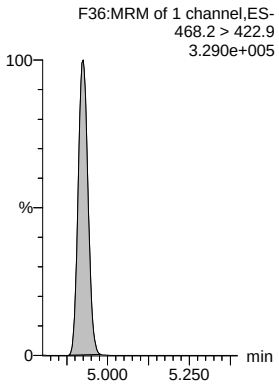
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

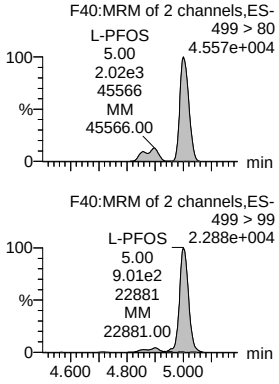
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-51.qld

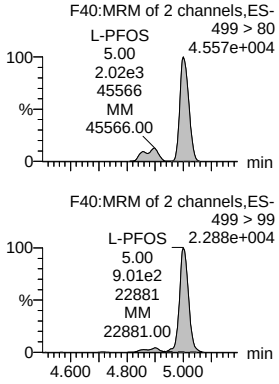
Last Altered: Wednesday, July 08, 2020 17:59:59 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:00:50 Pacific Daylight Time

Name: 200706P1-51, Date: 06-Jul-2020, Time: 19:13:50, ID: B0F0257-BS1 OPR 0.25, Description: OPR

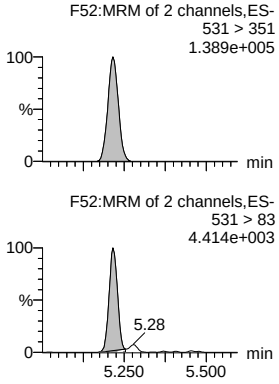
L-PFOS



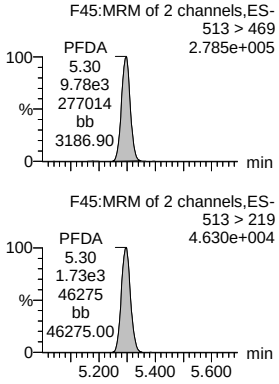
Total PFOS



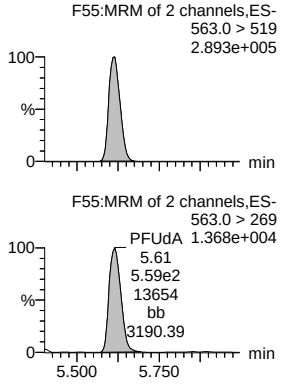
9Cl-PF30NS



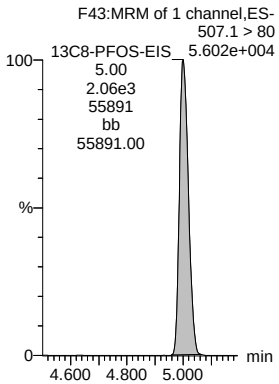
PFDA



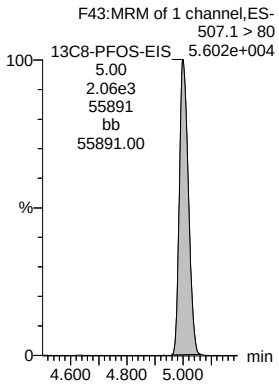
PFUdA



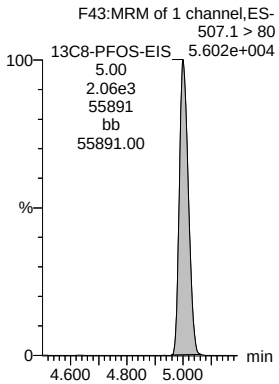
13C8-PFOS-EIS



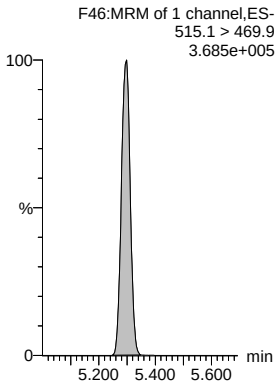
13C8-PFOS-EIS



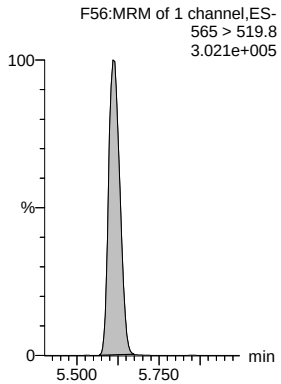
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

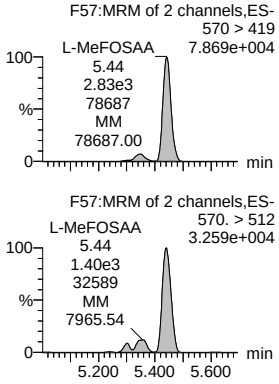
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-51.qld

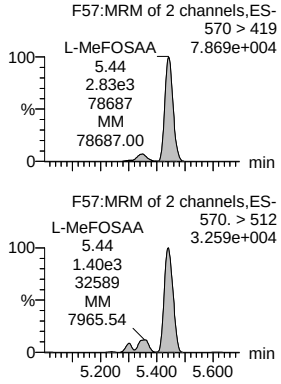
Last Altered: Wednesday, July 08, 2020 17:59:59 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:00:50 Pacific Daylight Time

Name: 200706P1-51, Date: 06-Jul-2020, Time: 19:13:50, ID: B0F0257-BS1 OPR 0.25, Description: OPR

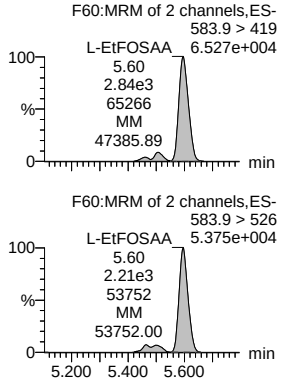
L-MeFOSAA



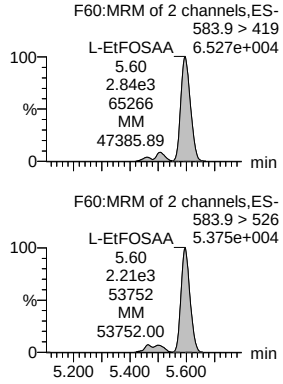
Total N-MeFOSAA



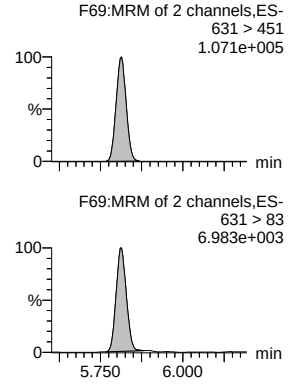
L-EtFOSAA



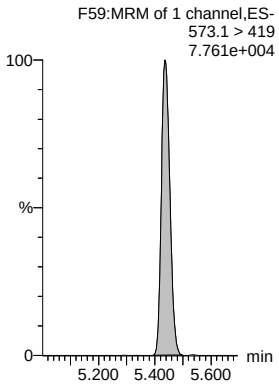
Total N-EtFOSAA



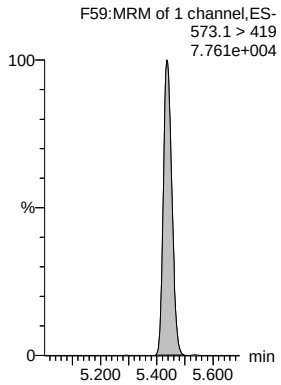
11Cl-PF30UdS



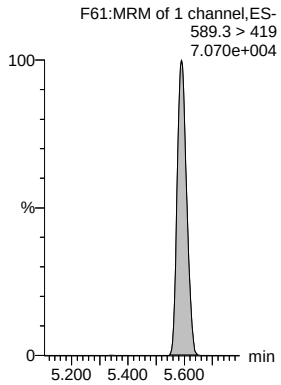
d3-N-MeFOSAA-EIS



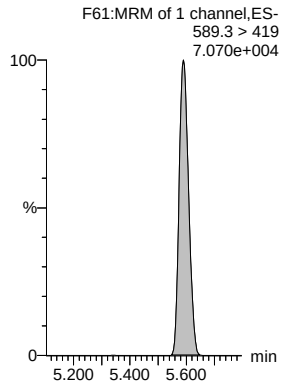
d3-N-MeFOSAA-EIS



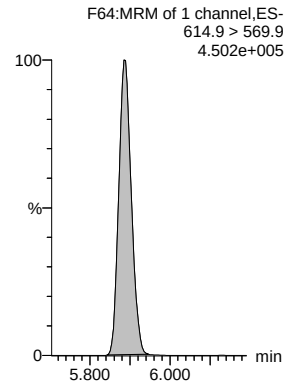
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

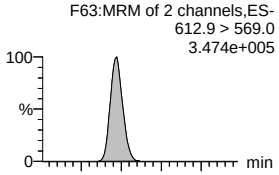
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

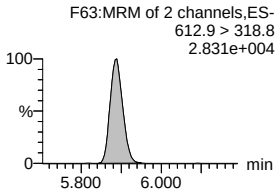
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-51.qld

Last Altered: Wednesday, July 08, 2020 17:59:59 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:00:50 Pacific Daylight Time

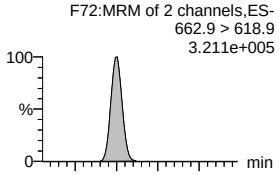
Name: 200706P1-51, Date: 06-Jul-2020, Time: 19:13:50, ID: B0F0257-BS1 OPR 0.25, Description: OPR

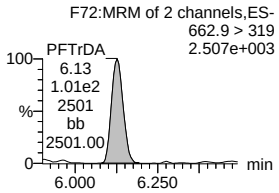
PFDoA



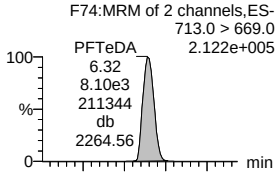


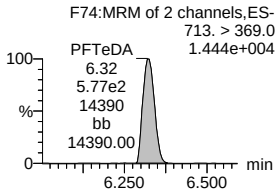
PFTrDA



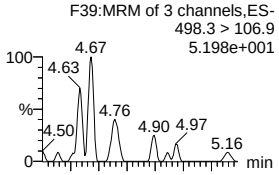


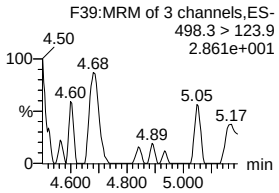
PFTeDA



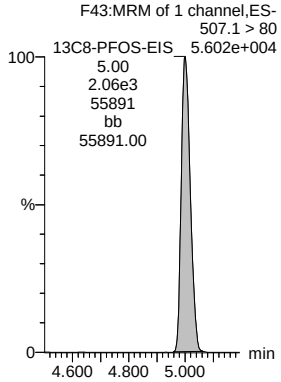


TDCA

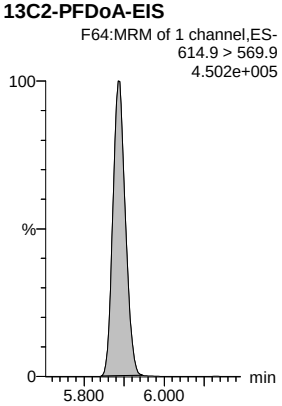




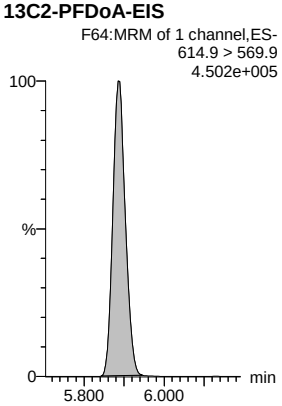
13C8-PFOS-EIS



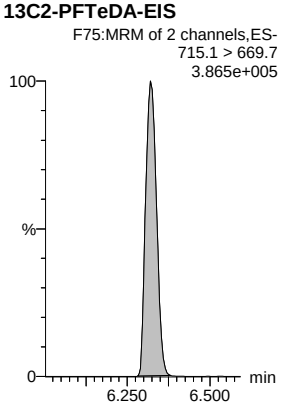
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-52.qld

Last Altered: Wednesday, July 08, 2020 18:04:33 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:05:34 Pacific Daylight Time

Name: 200706P1-52, Date: 06-Jul-2020, Time: 19:24:18, ID: B0F0257-BSD1 LCSD 0.25, Description: LCSD

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80	2.386e3	1.131e3	0.250		2.85	2.85	26.4	41.232	103.1	2.510	NO
2	7	PFHxA	313.0 > 269.0	9.485e3	1.150e4	0.250		3.38	3.38	10.3	39.539	98.8	13.854	NO
3	9	HFPO-DA	285.1 > 168.9	1.983e3	2.199e3	0.250		3.58	3.58	11.3	44.849	112.1	2.429	NO
4	11	PFHpA	363.0 > 319	1.067e4	1.070e4	0.250		3.97	3.97	12.5	38.290	95.7	45.208	NO
5	12	ADONA	376.8 > 250.9	1.628e4	1.070e4	0.250		4.07	4.08	19.0	34.973	87.4	3.819	NO
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.131e3		0.250	104.004	2.87	2.85	1130	43.490	87.0		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.150e4		0.250	1090.353	3.38	3.38	11500	42.182	84.4		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.199e3		0.250	228.261	3.59	3.58	2200	38.528	77.1		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.070e4		0.250	983.154	3.98	3.97	10700	43.526	87.1		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.070e4		0.250	983.154	3.98	3.97	10700	43.526	87.1		
11	-1													
12	13	L-PFHxS	399 > 79.9	1.941e3	2.215e3	0.250		4.11	4.11	11.0	39.812	99.5	3.618	NO
13	1...	Total PFHxS	399 > 79.9	1.941e3	2.215e3	0.250		3.93		11.0	39.812			
14	16	L-PFOA	413 > 369	1.097e4	1.232e4	0.250		4.49	4.49	11.1	39.277	98.2	3.129	NO
15	1...	Total PFOA	413 > 369	1.097e4	1.232e4	0.250		4.60		11.1	39.277			
16	21	PFNA	463.0 > 418.8	1.118e4	1.251e4	0.250		4.92	4.93	11.2	39.985	100.0	12.450	NO
17	61	13C3-PFHxS-EIS	402 > 80	2.215e3		0.250	220.112	4.13	4.11	2220	40.255	80.5		
18	61	13C3-PFHxS-EIS	402 > 80	2.215e3		0.250	220.112	4.13	4.11	2220	40.255	80.5		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.232e4		0.250	1154.443	4.67	4.49	12300	42.689	85.4		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.232e4		0.250	1154.443	4.67	4.49	12300	42.689	85.4		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.251e4		0.250	1213.140	5.13	4.92	12500	41.247	82.5		
22	-1													
23	23	L-PFOS	499 > 80	2.356e3	2.417e3	0.250		5.00	5.00	12.2	38.444	96.1	2.445	NO
24	1...	Total PFOS	499> 80	2.356e3	2.417e3	0.250		4.60		12.2	38.444			
25	25	9Cl-PF30NS	531 > 351	5.139e3	2.417e3	0.250		5.22	5.22	26.6	37.332	93.3	32.912	NO
26	26	PFDA	513 > 469	1.100e4	1.512e4	0.250		5.29	5.30	9.09	42.822	107.1	5.297	NO
27	33	PFUdA	563.0 > 519	1.267e4	1.420e4	0.250		5.61	5.61	11.1	40.554	101.4	18.627	NO
28	71	13C8-PFOS-EIS	507.1 > 80	2.417e3		0.250	225.510	5.02	5.00	2420	42.875	85.7		
29	71	13C8-PFOS-EIS	507.1 > 80	2.417e3		0.250	225.510	5.02	5.00	2420	42.875	85.7		
30	71	13C8-PFOS-EIS	507.1 > 80	2.417e3		0.250	225.510	5.02	5.00	2420	42.875	85.7		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.512e4		0.250	1491.471	5.31	5.29	15100	40.547	81.1		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.420e4		0.250	1581.335	5.54	5.61	14200	35.928	71.9		
33	-1													
34	29	L-MeFOSAA	570 > 419	3.085e3	3.108e3	0.250		5.44	5.44	12.4	40.811	102.0	1.825	NO
35	1...	Total N-MeFOSAA	570. > 419	3.085e3	3.108e3	0.250		5.19		12.4	40.811			
36	31	L-EtFOSAA	583.9 > 419	3.596e3	3.096e3	0.250		5.59	5.59	14.5	41.871	104.7	1.447	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-52.qld

Last Altered: Wednesday, July 08, 2020 18:04:33 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:05:34 Pacific Daylight Time

Name: 200706P1-52, Date: 06-Jul-2020, Time: 19:24:18, ID: B0F0257-BSD1 LCSD 0.25, Description: LCSD

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	3.596e3	3.096e3	0.250		5.37		14.5	41.871			
38	35	11Cl-PF30UdS	631 > 451	4.011e3	1.854e4	0.250		5.82	5.81	2.70	41.876	104.7	17.080	NO
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.108e3		0.250	331.163	5.46	5.44	3110	37.540	75.1		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.108e3		0.250	331.163	5.46	5.44	3110	37.540	75.1		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.096e3		0.250	313.941	5.61	5.59	3100	39.441	78.9		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.096e3		0.250	313.941	5.61	5.59	3100	39.441	78.9		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.854e4		0.250	1868.510	6.13	5.89	18500	39.682	79.4		
44	-1													
45	37	PFDoA	612.9 > 569.0	1.324e4	1.854e4	0.250		5.89	5.88	8.93	36.389	91.0	13.412	NO
46	39	PFTrDA	662.9 > 618.9	1.376e4	1.854e4	0.250		6.15	6.13	9.28	35.657	89.1	124.616	NO
47	41	PFTeDA	713.0 > 669.0	8.804e3	1.675e4	0.250		6.32	6.32	6.57	39.523	98.8	14.213	NO
48	1...	TDCA	498.3>106.9			0.250	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.417e3		0.250	225.510	5.02	5.00	2420	42.875	85.7		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.854e4		0.250	1868.510	6.13	5.89	18500	39.682	79.4		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.854e4		0.250	1868.510	6.13	5.89	18500	39.682	79.4		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.675e4		0.250	1905.823	6.34	6.32	16800	35.158	70.3		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

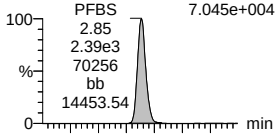
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-52.qld

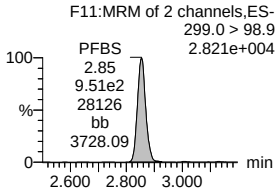
Last Altered: Wednesday, July 08, 2020 18:04:33 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:05:34 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 18:02:02
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

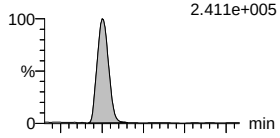
Name: 200706P1-52, Date: 06-Jul-2020, Time: 19:24:18, ID: B0F0257-BSD1 LCSD 0.25, Description: LCSD

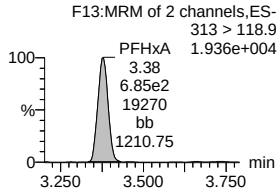
PFBS



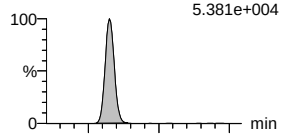


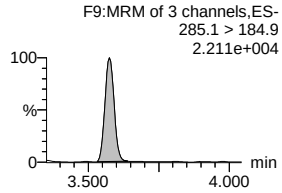
PFHxA



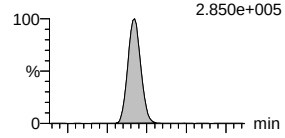


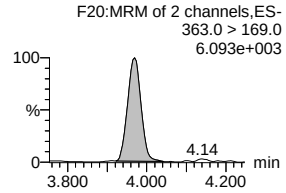
HFPO-DA



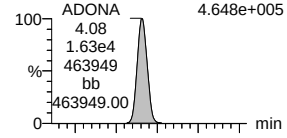


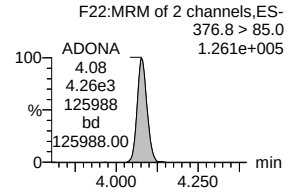
PFHpA



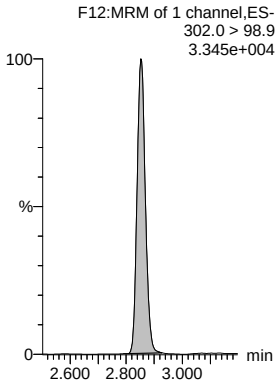


ADONA

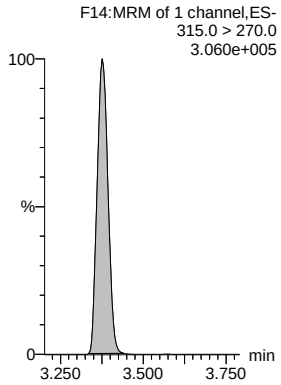




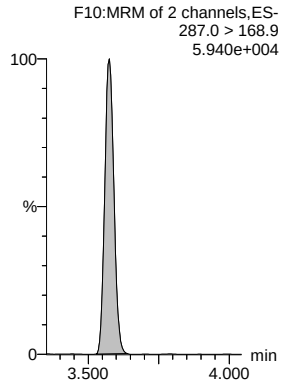
13C3-PFBS-EIS



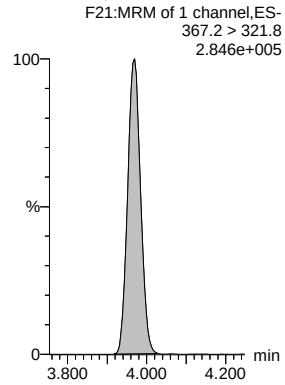
13C2-PFHxA-EIS



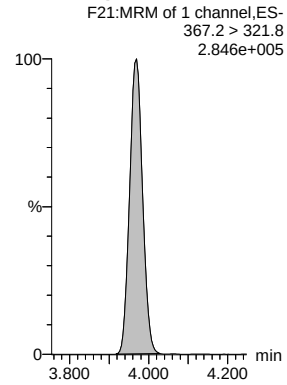
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

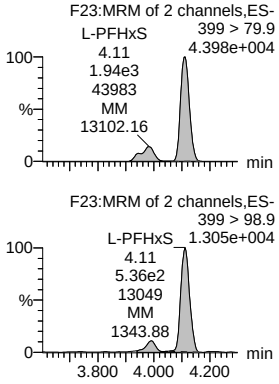
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-52.qld

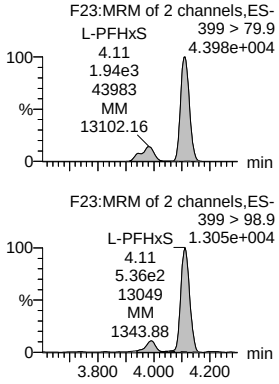
Last Altered: Wednesday, July 08, 2020 18:04:33 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:05:34 Pacific Daylight Time

Name: 200706P1-52, Date: 06-Jul-2020, Time: 19:24:18, ID: B0F0257-BSD1 LCSD 0.25, Description: LCSD

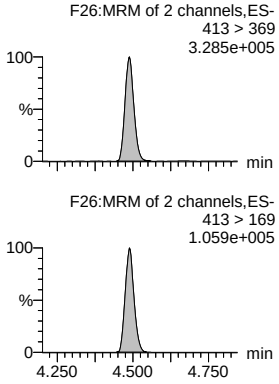
L-PFHxS



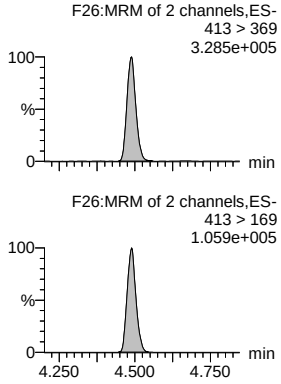
Total PFHxS



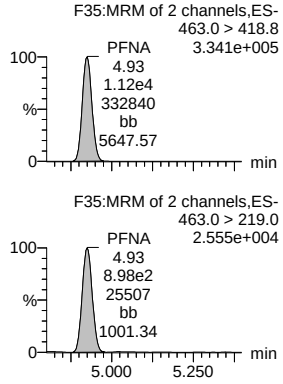
L-PFOA



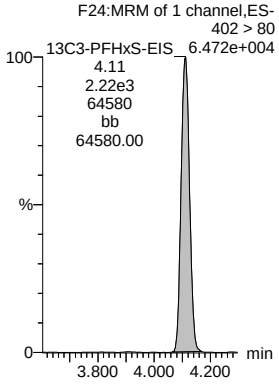
Total PFOA



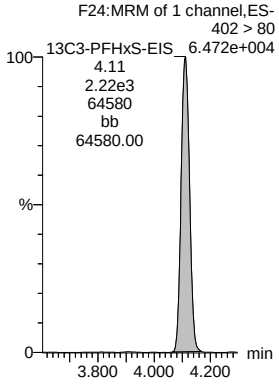
PFNA



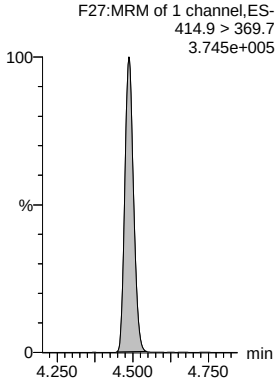
13C3-PFHxS-EIS



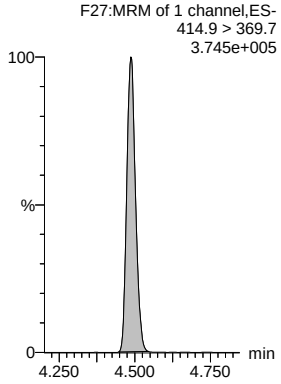
13C3-PFHxS-EIS



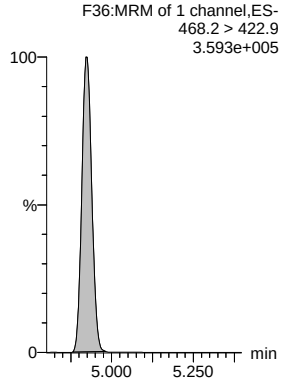
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

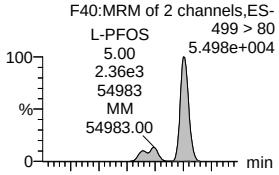
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-52.qld

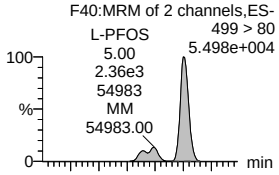
Last Altered: Wednesday, July 08, 2020 18:04:33 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:05:34 Pacific Daylight Time

Name: 200706P1-52, Date: 06-Jul-2020, Time: 19:24:18, ID: B0F0257-BSD1 LCSD 0.25, Description: LCSD

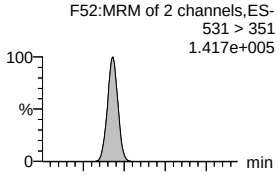
L-PFOS



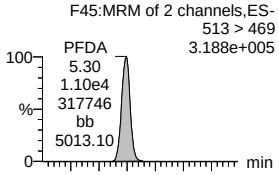
Total PFOS



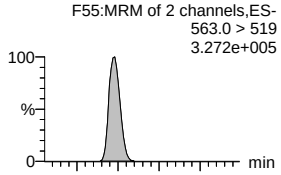
9Cl-PF30NS



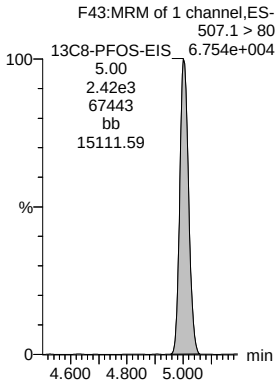
PFDA



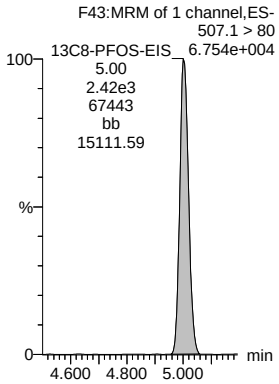
PFUdA



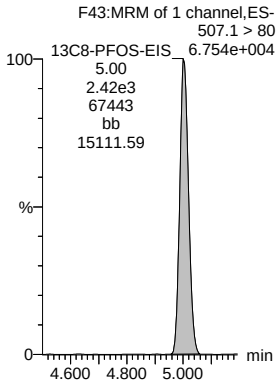
13C8-PFOS-EIS



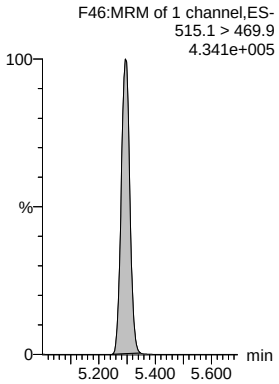
13C8-PFOS-EIS



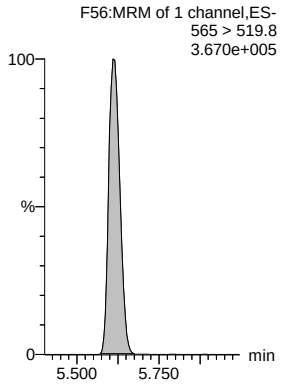
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

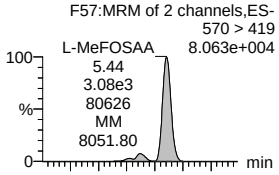
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

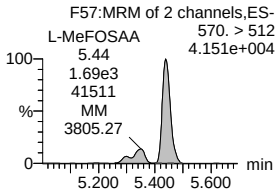
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-52.qld

Last Altered: Wednesday, July 08, 2020 18:04:33 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:05:34 Pacific Daylight Time

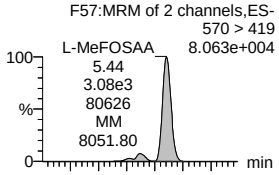
Name: 200706P1-52, Date: 06-Jul-2020, Time: 19:24:18, ID: B0F0257-BSD1 LCSD 0.25, Description: LCSD

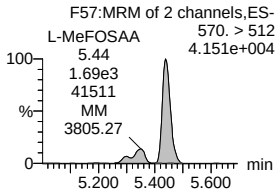
L-MeFOSAA



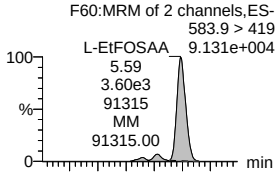


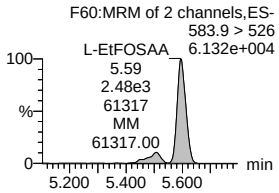
Total N-MeFOSAA



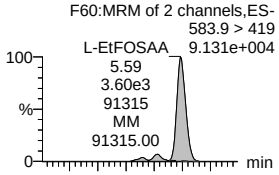


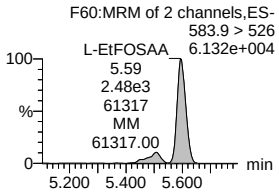
L-EtFOSAA



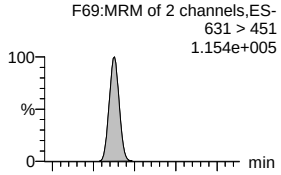


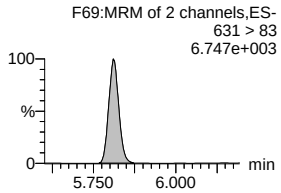
Total N-EtFOSAA



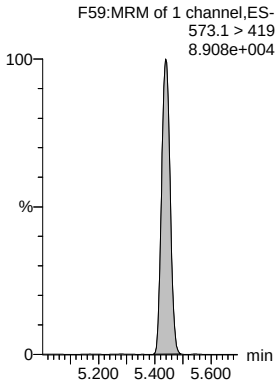


11Cl-PF30UdS

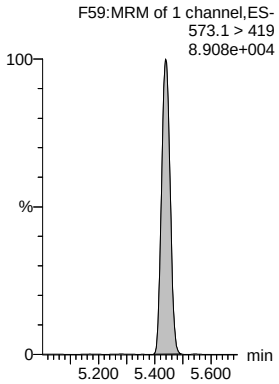




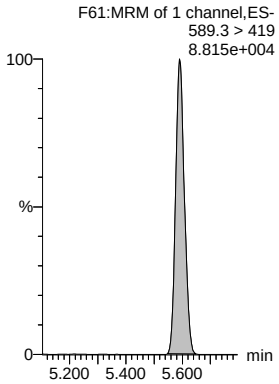
d3-N-MeFOSAA-EIS



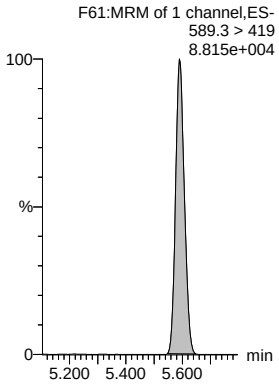
d3-N-MeFOSAA-EIS



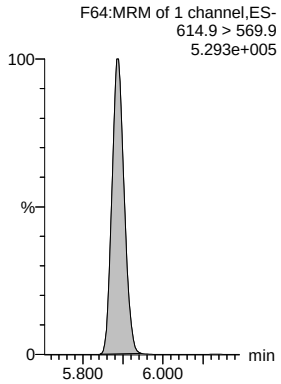
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

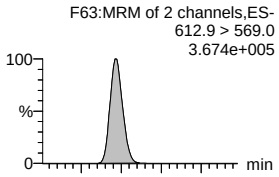
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

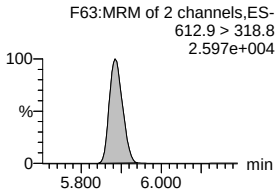
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-52.qld

Last Altered: Wednesday, July 08, 2020 18:04:33 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:05:34 Pacific Daylight Time

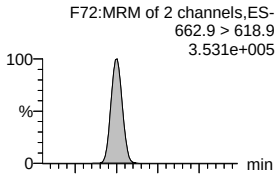
Name: 200706P1-52, Date: 06-Jul-2020, Time: 19:24:18, ID: B0F0257-BSD1 LCSD 0.25, Description: LCSD

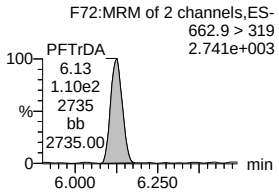
PFDoA



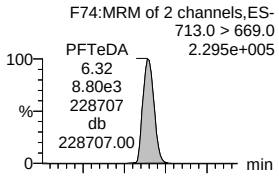


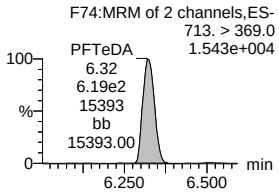
PFTrDA



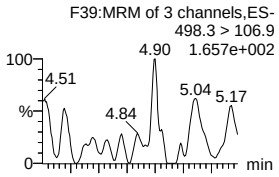


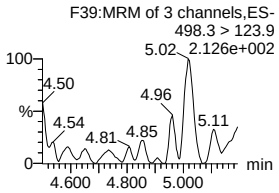
PFTeDA



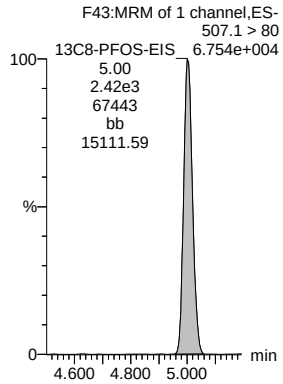


TDCA

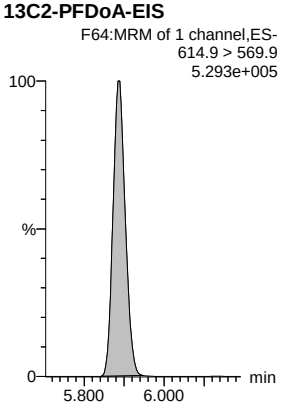




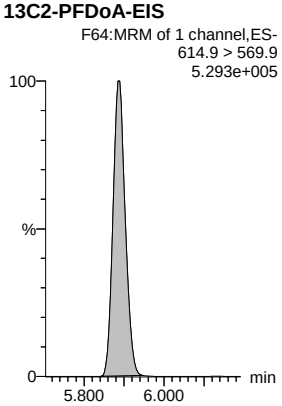
13C8-PFOS-EIS



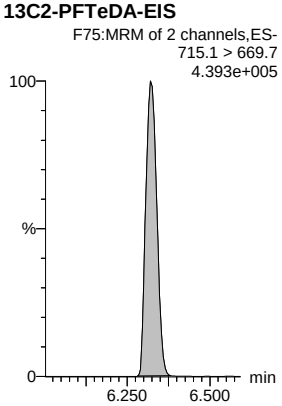
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-63.qld

Last Altered: Wednesday, July 08, 2020 19:08:55 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:11:39 Pacific Daylight Time

Name: 200706P1-63, Date: 06-Jul-2020, Time: 21:19:52, ID: 2001358-01 EB02-20200624 0.24128, Description: EB02-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80		1.125e3	0.241		2.85						YES
2	7	PFHxA	313.0 > 269.0		1.162e4	0.241		3.37						YES
3	9	HFPO-DA	285.1 > 168.9		2.202e3	0.241		3.57						YES
4	11	PFHpA	363.0 > 319		1.021e4	0.241		3.96						YES
5	12	ADONA	376.8 > 250.9		1.021e4	0.241		4.06						YES
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.125e3		0.241	104.004	2.87	2.85	1120	44.821	86.5		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.162e4		0.241	1090.353	3.38	3.37	11600	44.176	85.3		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.202e3		0.241	228.261	3.59	3.57	2200	39.987	77.2		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.021e4		0.241	983.154	3.98	3.96	10200	43.054	83.1		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.021e4		0.241	983.154	3.98	3.96	10200	43.054	83.1		
11	-1													
12	13	L-PFHxS	399 > 79.9		2.329e3	0.241		4.10						YES
13	1...	Total PFHxS	399 > 79.9	0.000e0	2.329e3	0.241		3.93		0.000				
14	16	L-PFOA	413 > 369		1.237e4	0.241		4.48						YES
15	1...	Total PFOA	413 > 369	0.000e0	1.237e4	0.241		4.60		0.000				
16	21	PFNA	463.0 > 418.8		1.285e4	0.241		4.92						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.329e3		0.241	220.112	4.13	4.10	2330	43.848	84.6		
18	61	13C3-PFHxS-EIS	402 > 80	2.329e3		0.241	220.112	4.13	4.10	2330	43.848	84.6		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.237e4		0.241	1154.443	4.67	4.48	12400	44.394	85.7		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.237e4		0.241	1154.443	4.67	4.48	12400	44.394	85.7		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.285e4		0.241	1213.140	5.13	4.92	12900	43.902	84.7		
22	-1													
23	23	L-PFOS	499 > 80		2.364e3	0.241		4.99						YES
24	1...	Total PFOS	499> 80	0.000e0	2.364e3	0.241		4.60		0.000				
25	25	9Cl-PF30NS	531 > 351		2.364e3	0.241		5.21						YES
26	26	PFDA	513 > 469		1.546e4	0.241		5.29						YES
27	33	PFUdA	563.0 > 519		1.446e4	0.241		5.60						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.364e3		0.241	225.510	5.02	4.99	2360	43.452	83.9		
29	71	13C8-PFOS-EIS	507.1 > 80	2.364e3		0.241	225.510	5.02	4.99	2360	43.452	83.9		
30	71	13C8-PFOS-EIS	507.1 > 80	2.364e3		0.241	225.510	5.02	4.99	2360	43.452	83.9		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.546e4		0.241	1491.471	5.31	5.29	15500	42.969	82.9		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.446e4		0.241	1581.335	5.54	5.60	14500	37.906	73.2		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.303e3	0.241		5.43						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	3.303e3	0.241		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419	2.134e1	3.075e3	0.241		5.58	5.59	0.0868	0.446		19.669	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-63.qld

Last Altered: Wednesday, July 08, 2020 19:08:55 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:11:39 Pacific Daylight Time

Name: 200706P1-63, Date: 06-Jul-2020, Time: 21:19:52, ID: 2001358-01 EB02-20200624 0.24128, Description: EB02-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	2.134e1	3.075e3	0.241		5.37		0.0868	0.446			
38	35	11Cl-PF30UdS	631 > 451		1.792e4	0.241		5.81						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.303e3		0.241	331.163	5.46	5.43	3300	41.334	79.8		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.303e3		0.241	331.163	5.46	5.43	3300	41.334	79.8		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.075e3		0.241	313.941	5.61	5.58	3070	40.594	78.4		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.075e3		0.241	313.941	5.61	5.58	3070	40.594	78.4		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.792e4		0.241	1868.510	6.13	5.88	17900	39.754	76.7		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.792e4	0.241		5.88						YES
46	39	PFTrDA	662.9 > 618.9		1.792e4	0.241		6.15						YES
47	41	PFTeDA	713.0 > 669.0		1.624e4	0.241		6.31						YES
48	1...	TDCA	498.3>106.9			0.241	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.364e3		0.241	225.510	5.02	4.99	2360	43.452	83.9		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.792e4		0.241	1868.510	6.13	5.88	17900	39.754	76.7		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.792e4		0.241	1868.510	6.13	5.88	17900	39.754	76.7		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.624e4		0.241	1905.823	6.34	6.31	16200	35.316	68.2		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

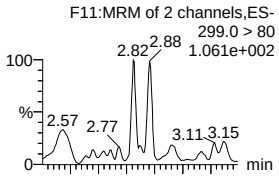
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-63.qld

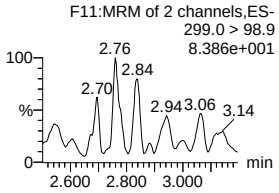
Last Altered: Wednesday, July 08, 2020 19:08:55 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:11:39 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 19:06:47
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

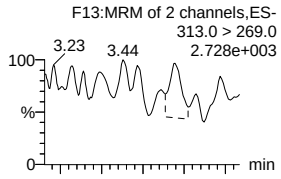
Name: 200706P1-63, Date: 06-Jul-2020, Time: 21:19:52, ID: 2001358-01 EB02-20200624 0.24128, Description: EB02-20200624

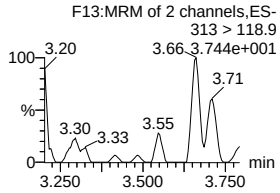
PFBS



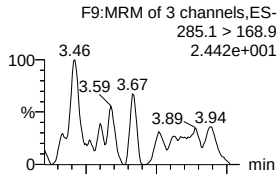


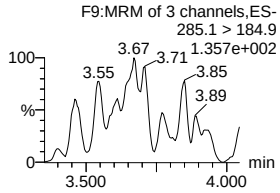
PFHxA



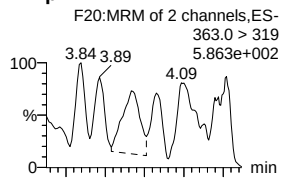


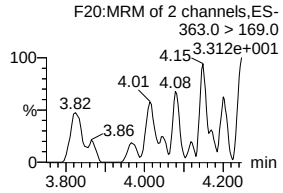
HFPO-DA



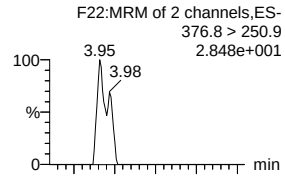


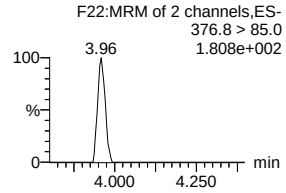
PFHpA



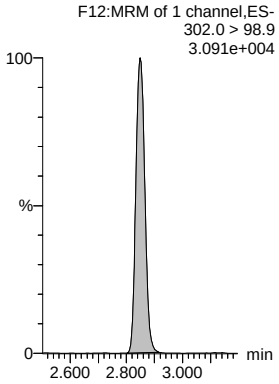


ADONA

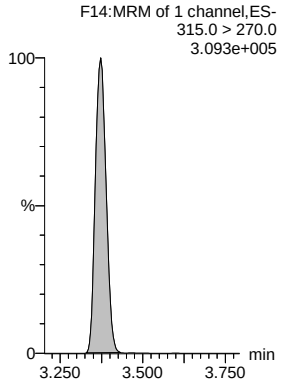




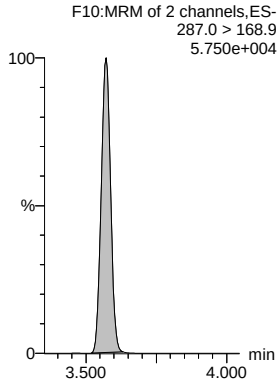
13C3-PFBS-EIS



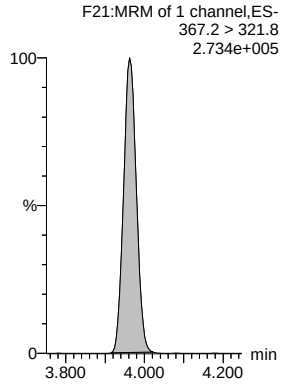
13C2-PFHxA-EIS



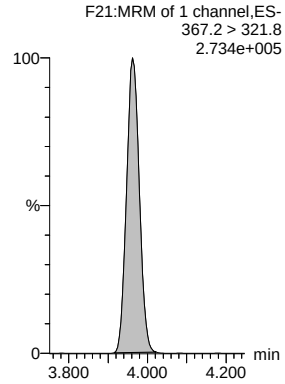
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

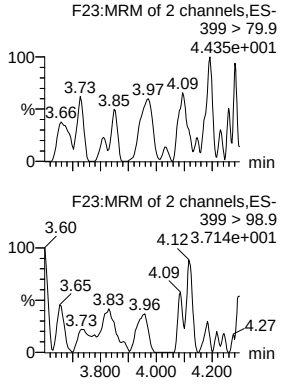
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-63.qld

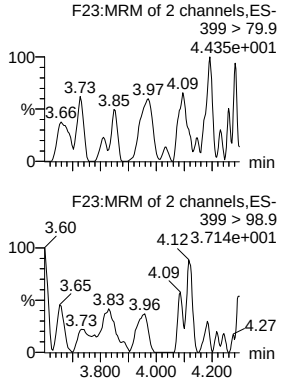
Last Altered: Wednesday, July 08, 2020 19:08:55 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:11:39 Pacific Daylight Time

Name: 200706P1-63, Date: 06-Jul-2020, Time: 21:19:52, ID: 2001358-01 EB02-20200624 0.24128, Description: EB02-20200624

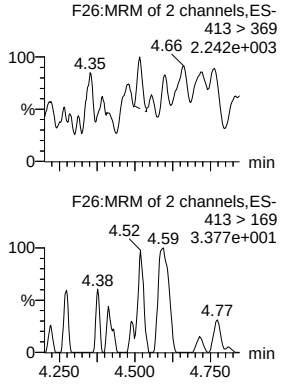
L-PFHxS



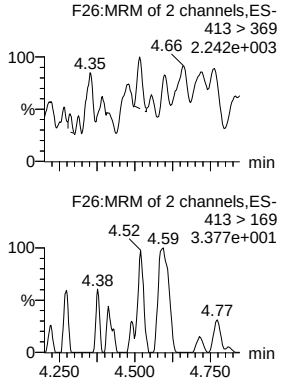
Total PFHxS



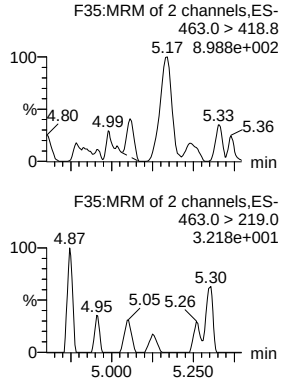
L-PFOA



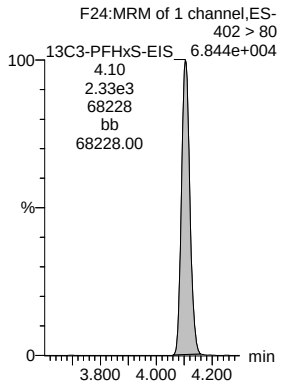
Total PFOA



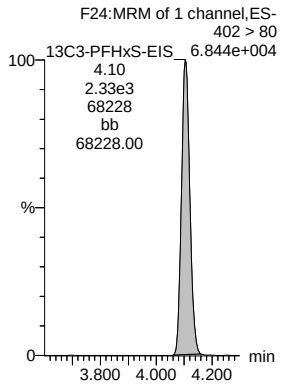
PFNA



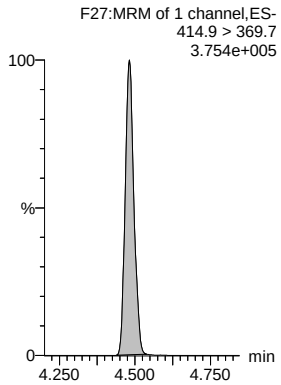
13C3-PFHxS-EIS



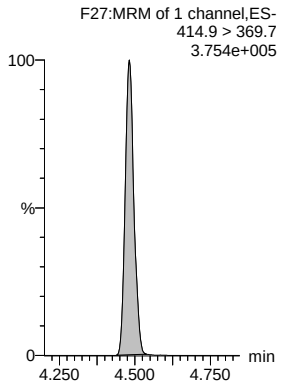
13C3-PFHxS-EIS



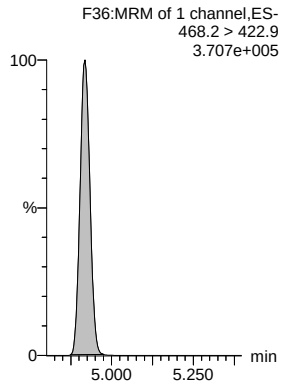
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

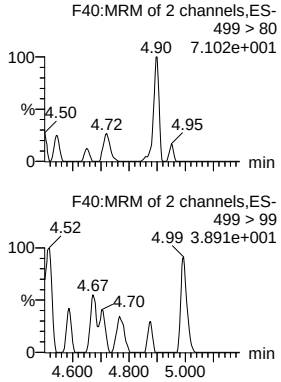
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-63.qld

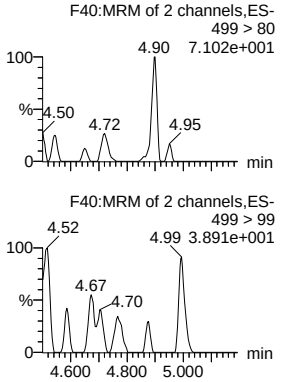
Last Altered: Wednesday, July 08, 2020 19:08:55 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:11:39 Pacific Daylight Time

Name: 200706P1-63, Date: 06-Jul-2020, Time: 21:19:52, ID: 2001358-01 EB02-20200624 0.24128, Description: EB02-20200624

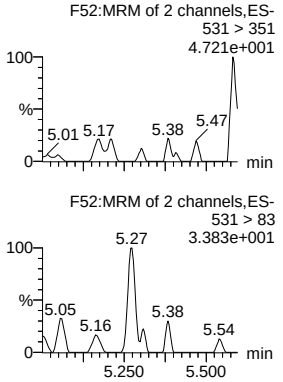
L-PFOS



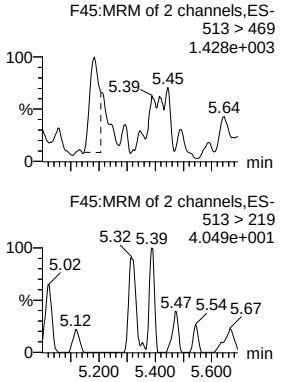
Total PFOS



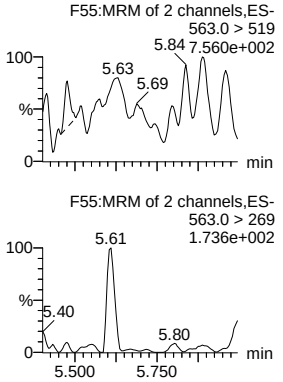
9Cl-PF30NS



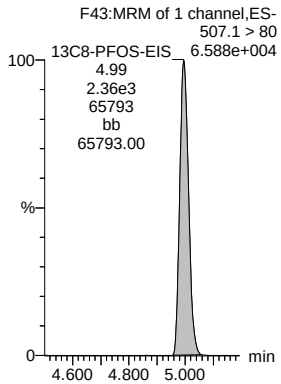
PFDA



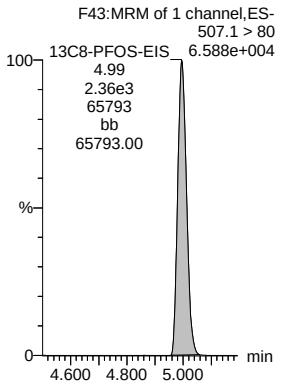
PFUdA



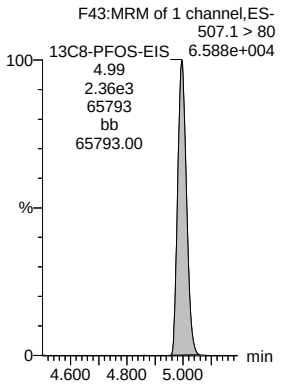
13C8-PFOS-EIS



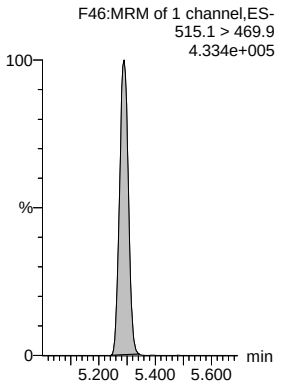
13C8-PFOS-EIS



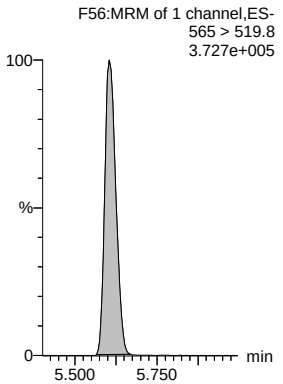
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

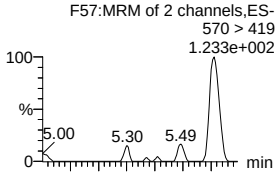
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-63.qld

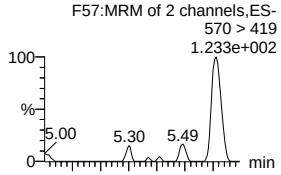
Last Altered: Wednesday, July 08, 2020 19:08:55 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:11:39 Pacific Daylight Time

Name: 200706P1-63, Date: 06-Jul-2020, Time: 21:19:52, ID: 2001358-01 EB02-20200624 0.24128, Description: EB02-20200624

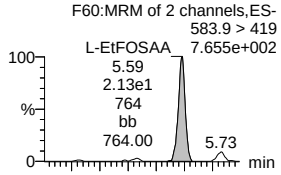
L-MeFOSAA



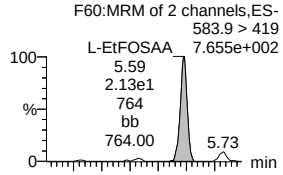
Total N-MeFOSAA



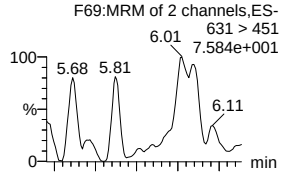
L-EtFOSAA



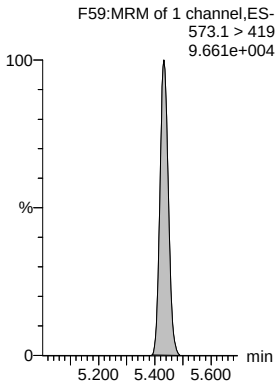
Total N-EtFOSAA



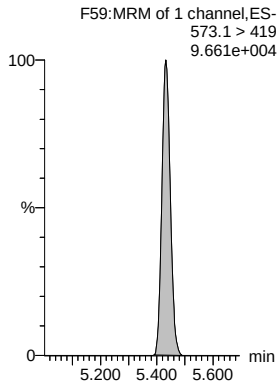
11Cl-PF30UdS



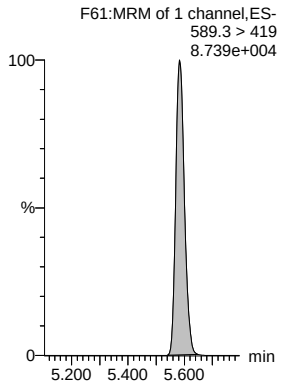
d3-N-MeFOSAA-EIS



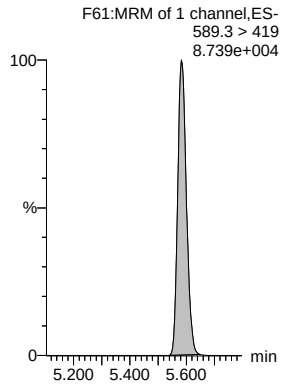
d3-N-MeFOSAA-EIS



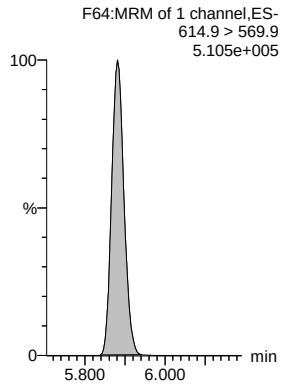
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

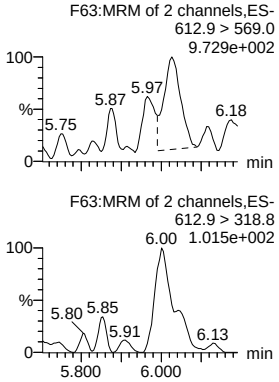
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-63.qld

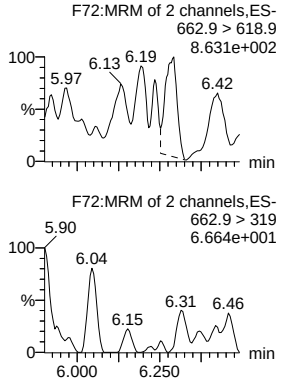
Last Altered: Wednesday, July 08, 2020 19:08:55 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:11:39 Pacific Daylight Time

Name: 200706P1-63, Date: 06-Jul-2020, Time: 21:19:52, ID: 2001358-01 EB02-20200624 0.24128, Description: EB02-20200624

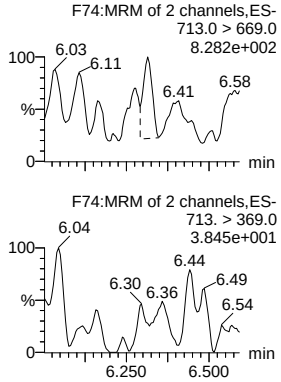
PFDoA



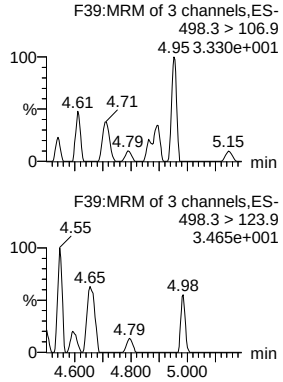
PFTrDA



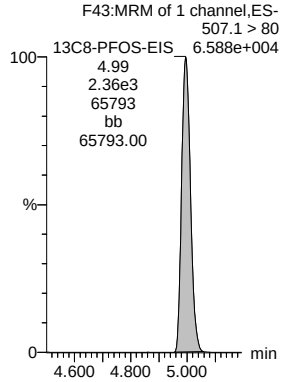
PFTeDA



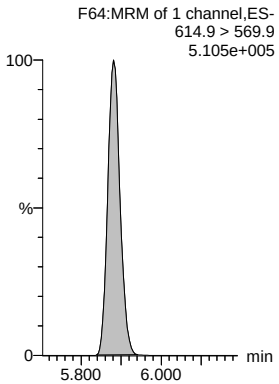
TDCA



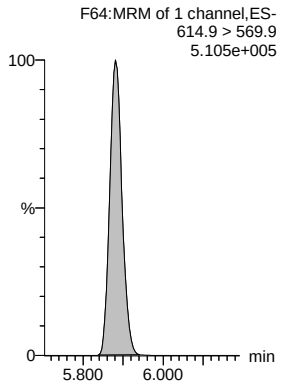
13C8-PFOS-EIS



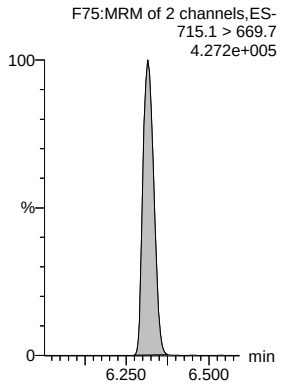
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 6 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: Y:\PFAS5.PRO\RESULTS\200706P1\200706P1-64.qld

Last Altered: Thursday, July 09, 2020 11:42:22 Pacific Daylight Time
Printed: Thursday, July 09, 2020 11:43:11 Pacific Daylight Time

Name: 200706P1-64, Date: 06-Jul-2020, Time: 21:30:23, ID: 2001358-02 24-GW-24MW06-20200624 0.26389, Description: 24-GW-24MW06-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80	4.430e1	1.045e3	0.264		2.85	2.85	0.530	0.771		2.282	NO
2	7	PFHxA	313.0 > 269.0	1.127e3	9.463e3	0.264		3.37	3.37	1.49	5.172		19.215	NO
3	9	HFPO-DA	285.1 > 168.9		1.838e3	0.264		3.57						YES
4	11	PFHpA	363.0 > 319		8.319e3	0.264		3.96						YES
5	12	ADONA	376.8 > 250.9		8.319e3	0.264		4.06						YES
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.045e3		0.264	104.004	2.87	2.85	1050	38.086	80.4		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	9.463e3		0.264	1090.353	3.38	3.37	9460	32.888	69.4		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.838e3		0.264	228.261	3.59	3.57	1840	30.514	64.4		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	8.319e3		0.264	983.154	3.98	3.96	8320	32.064	67.7		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	8.319e3		0.264	983.154	3.98	3.96	8320	32.064	67.7		
11	-1													
12	13	L-PFHxS	399 > 79.9	4.558e2	2.004e3	0.264		4.11	4.11	2.84	9.592		5.020	NO
13	1...	Total PFHxS	399 > 79.9	4.558e2	2.004e3	0.264		3.93		2.84	9.592			
14	16	L-PFOA	413 > 369	9.027e2	1.001e4	0.264		4.48	4.48	1.13	3.597		3.452	NO
15	1...	Total PFOA	413 > 369	9.027e2	1.001e4	0.264		4.60		1.13	3.597			
16	21	PFNA	463.0 > 418.8		1.104e4	0.264		4.92						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.004e3		0.264	220.112	4.13	4.11	2000	34.501	72.8		
18	61	13C3-PFHxS-EIS	402 > 80	2.004e3		0.264	220.112	4.13	4.11	2000	34.501	72.8		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.001e4		0.264	1154.443	4.67	4.48	10000	32.871	69.4		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.001e4		0.264	1154.443	4.67	4.48	10000	32.871	69.4		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.104e4		0.264	1213.140	5.13	4.92	11000	34.474	72.8		
22	-1													
23	23	L-PFOS	499 > 80	9.411e1	2.035e3	0.264		5.00	5.00	0.578	1.993		3.382	NO
24	1...	Total PFOS	499> 80	9.411e1	2.035e3	0.264		4.60		0.578	1.993			
25	25	9Cl-PF30NS	531 > 351		2.035e3	0.264		5.22						YES
26	26	PFDA	513 > 469		1.275e4	0.264		5.29						YES
27	33	PFUdA	563.0 > 519		1.196e4	0.264		5.61						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.035e3		0.264	225.510	5.02	5.00	2040	34.196	72.2		
29	71	13C8-PFOS-EIS	507.1 > 80	2.035e3		0.264	225.510	5.02	5.00	2040	34.196	72.2		
30	71	13C8-PFOS-EIS	507.1 > 80	2.035e3		0.264	225.510	5.02	5.00	2040	34.196	72.2		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.275e4		0.264	1491.471	5.31	5.29	12700	32.392	68.4		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.196e4		0.264	1581.335	5.54	5.61	12000	28.655	60.5		
33	-1													
34	29	L-MeFOSAA	570 > 419		2.635e3	0.264		5.44						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	2.635e3	0.264		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419	1.361e2	2.642e3	0.264		5.59	5.59	0.644	1.920		2.878	NO

AMR for RK 7/9/2020

Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory L18

OC 7/9/2020

Dataset: Y:\PFAS5.PRO\RESULTS\200706P1\200706P1-64.qld

Last Altered: Thursday, July 09, 2020 11:42:22 Pacific Daylight Time
Printed: Thursday, July 09, 2020 11:43:11 Pacific Daylight Time

Name: 200706P1-64, Date: 06-Jul-2020, Time: 21:30:23, ID: 2001358-02 24-GW-24MW06-20200624 0.26389, Description: 24-GW-24MW06-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	1.361e2	2.642e3	0.264		5.37		0.644	1.920			
38	35	11Cl-PF30UdS	631 > 451		1.480e4	0.264		5.81						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.635e3		0.264	331.163	5.46	5.44	2640	30.156	63.7		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.635e3		0.264	331.163	5.46	5.44	2640	30.156	63.7		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.642e3		0.264	313.941	5.61	5.59	2640	31.895	67.3		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.642e3		0.264	313.941	5.61	5.59	2640	31.895	67.3		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.480e4		0.264	1868.510	6.13	5.89	14800	30.022	63.4		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.480e4	0.264		5.89						YES
46	39	PFTrDA	662.9 > 618.9		1.480e4	0.264		6.15						YES
47	41	PFTeDA	713.0 > 669.0		1.496e4	0.264		6.32						YES
48	1...	TDCA	498.3>106.9			0.264	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.035e3		0.264	225.510	5.02	5.00	2040	34.196	72.2		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.480e4		0.264	1868.510	6.13	5.89	14800	30.022	63.4		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.480e4		0.264	1868.510	6.13	5.89	14800	30.022	63.4		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.496e4		0.264	1905.823	6.34	6.32	15000	29.741	62.8		

AMR for RK 7/9/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 1 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

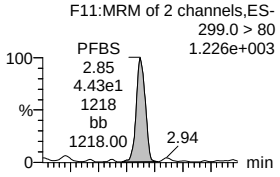
Dataset: Y:\PFAS5.PRO\RESULTS\200706P1\200706P1-64.qld

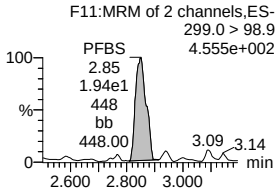
Last Altered: Thursday, July 09, 2020 11:42:22 Pacific Daylight Time
Printed: Thursday, July 09, 2020 11:43:11 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 19:13:10
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

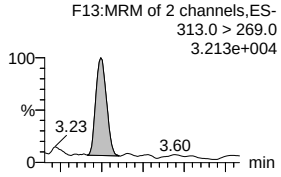
Name: 200706P1-64, Date: 06-Jul-2020, Time: 21:30:23, ID: 2001358-02 24-GW-24MW06-20200624 0.26389, Description: 24-GW-24MW06-20200624

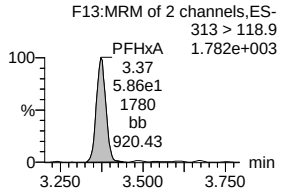
PFBS



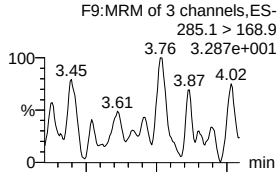


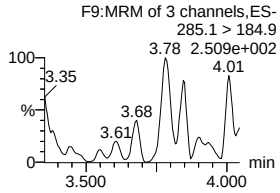
PFHxA



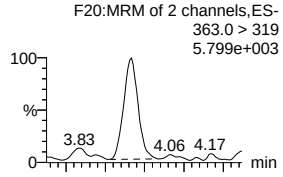


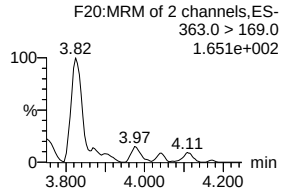
HFPO-DA



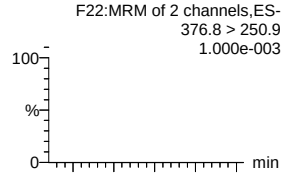


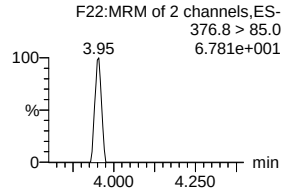
PFHpA



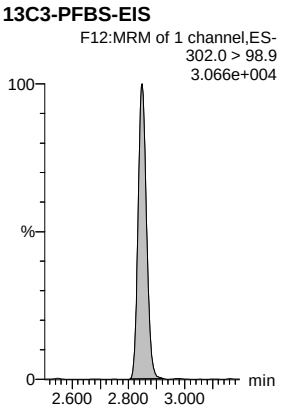


ADONA

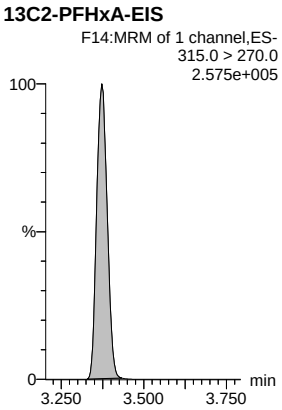




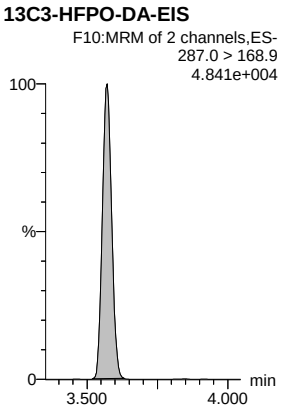
13C3-PFBS-EIS



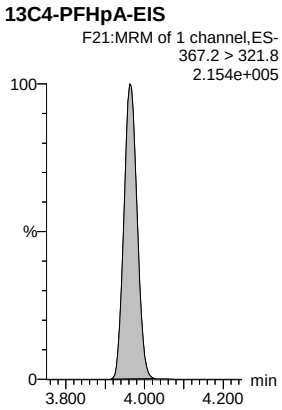
13C2-PFHxA-EIS



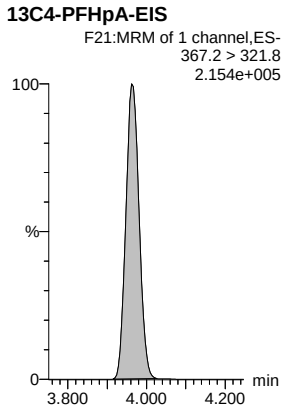
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



AMR for RK 7/9/2020

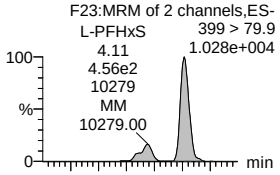
Quantify Sample Report **MassLynx V4.2 SCN977** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

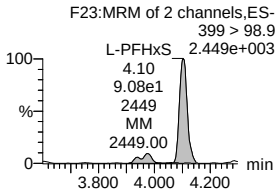
Dataset: Y:\PFAS5.PRO\RESULTS\200706P1\200706P1-64.qld

Last Altered: Thursday, July 09, 2020 11:42:22 Pacific Daylight Time
Printed: Thursday, July 09, 2020 11:43:11 Pacific Daylight Time

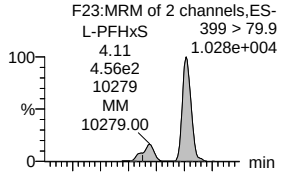
Name: 200706P1-64, Date: 06-Jul-2020, Time: 21:30:23, ID: 2001358-02 24-GW-24MW06-20200624 0.26389, Description: 24-GW-24MW06-20200624

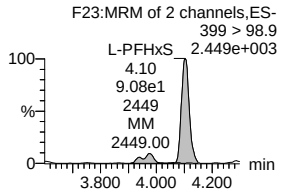
L-PFHxS



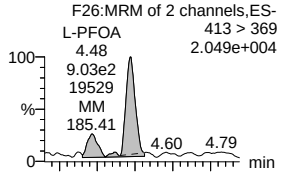


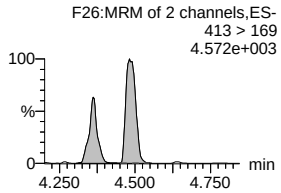
Total PFHxS



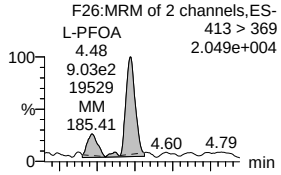


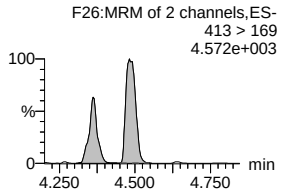
L-PFOA



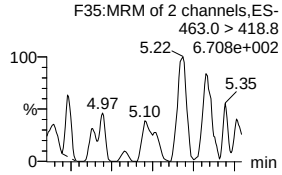


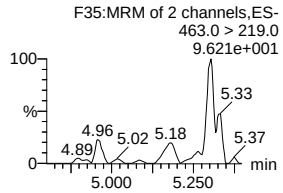
Total PFOA



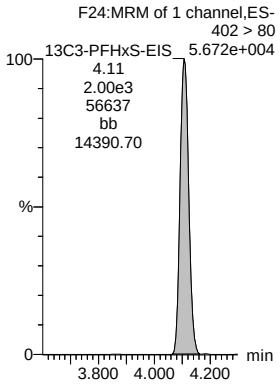


PFNA

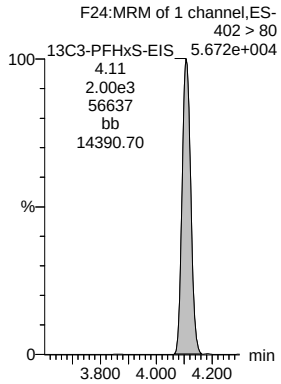




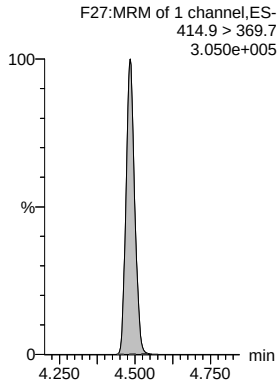
13C3-PFHxS-EIS



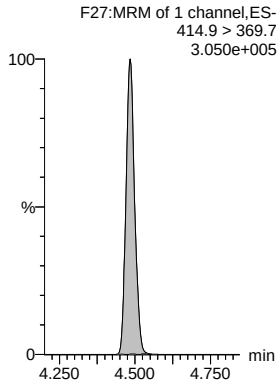
13C3-PFHxS-EIS



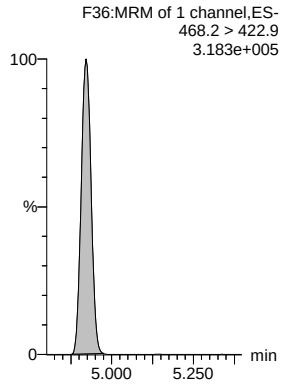
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



AMR for RK 7/9/2020

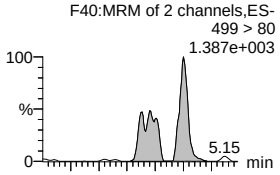
Quantify Sample Report **MassLynx V4.2 SCN977** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

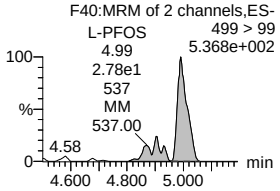
Dataset: Y:\PFAS5.PRO\RESULTS\200706P1\200706P1-64.qld

Last Altered: Thursday, July 09, 2020 11:42:22 Pacific Daylight Time
Printed: Thursday, July 09, 2020 11:43:11 Pacific Daylight Time

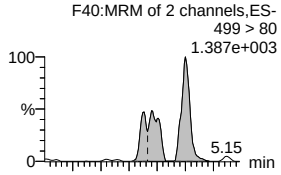
Name: 200706P1-64, Date: 06-Jul-2020, Time: 21:30:23, ID: 2001358-02 24-GW-24MW06-20200624 0.26389, Description: 24-GW-24MW06-20200624

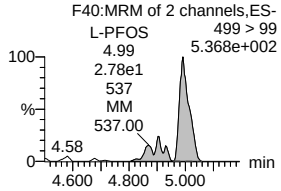
L-PFOS



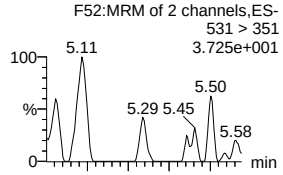


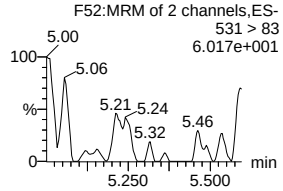
Total PFOS



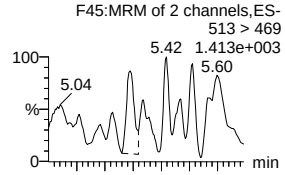


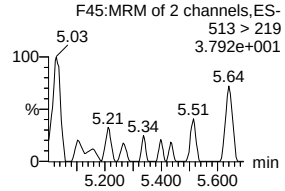
9Cl-PF30NS



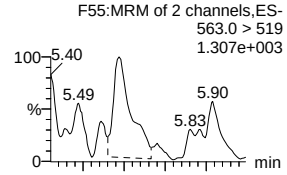


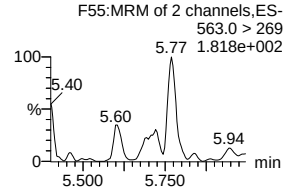
PFDA



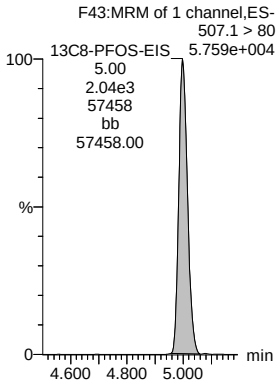


PFUdA

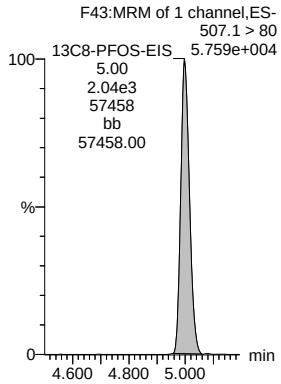




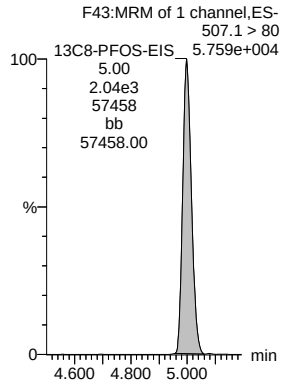
13C8-PFOS-EIS



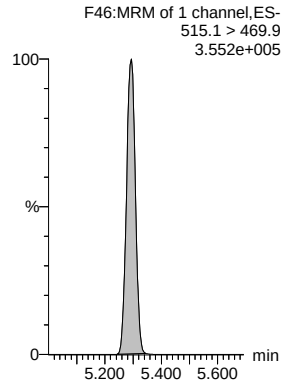
13C8-PFOS-EIS



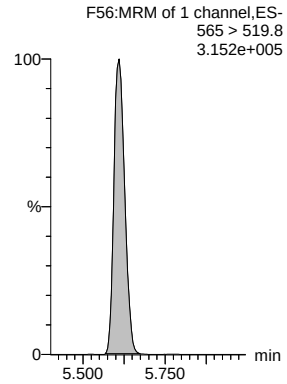
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



AMR for RK 7/9/2020

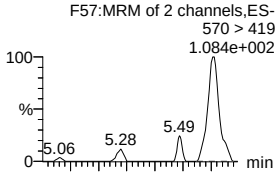
Quantify Sample Report **MassLynx V4.2 SCN977** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: Y:\PFAS5.PRO\RESULTS\200706P1\200706P1-64.qld

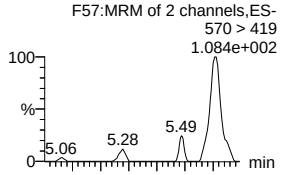
Last Altered: Thursday, July 09, 2020 11:42:22 Pacific Daylight Time
Printed: Thursday, July 09, 2020 11:43:11 Pacific Daylight Time

Name: 200706P1-64, Date: 06-Jul-2020, Time: 21:30:23, ID: 2001358-02 24-GW-24MW06-20200624 0.26389, Description: 24-GW-24MW06-20200624

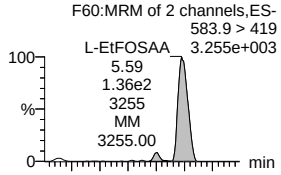
L-MeFOSAA



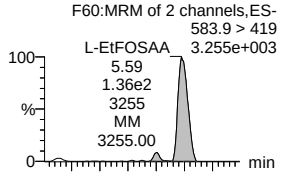
Total N-MeFOSAA



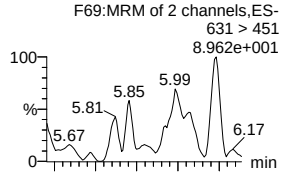
L-EtFOSAA



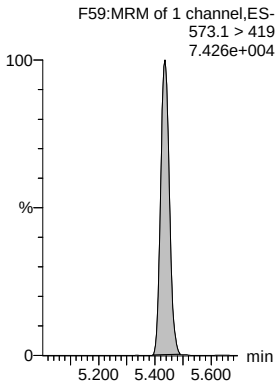
Total N-EtFOSAA



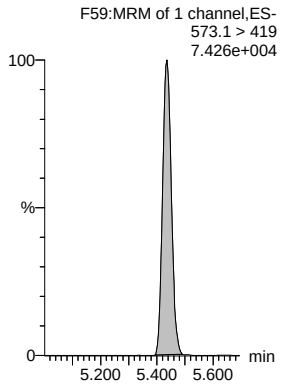
11Cl-PF30UdS



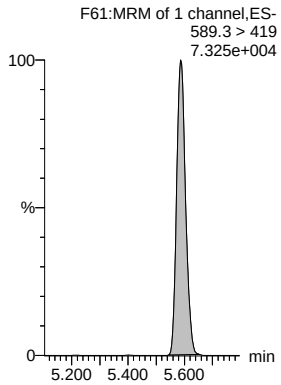
d3-N-MeFOSAA-EIS



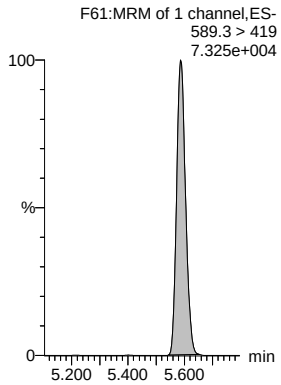
d3-N-MeFOSAA-EIS



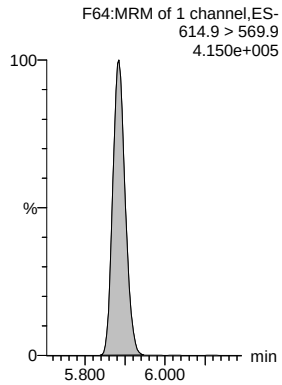
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



AMR for RK 7/9/2020

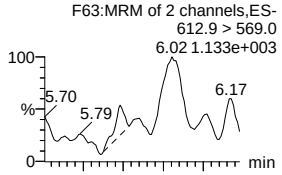
Quantify Sample Report **MassLynx V4.2 SCN977** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

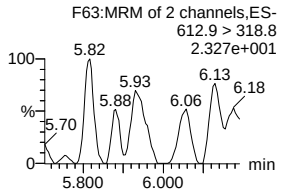
Dataset: Y:\PFAS5.PRO\RESULTS\200706P1\200706P1-64.qld

Last Altered: Thursday, July 09, 2020 11:42:22 Pacific Daylight Time
Printed: Thursday, July 09, 2020 11:43:11 Pacific Daylight Time

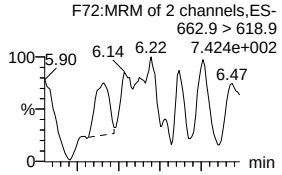
Name: 200706P1-64, Date: 06-Jul-2020, Time: 21:30:23, ID: 2001358-02 24-GW-24MW06-20200624 0.26389, Description: 24-GW-24MW06-20200624

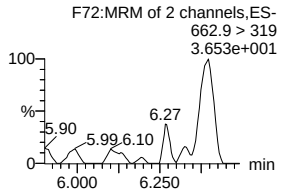
PFDoA



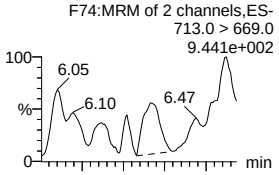


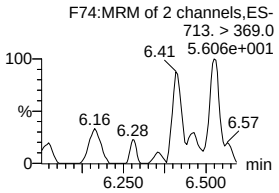
PFTrDA



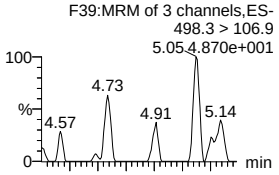


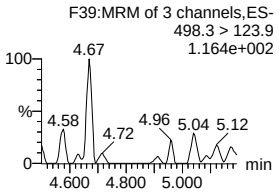
PFTeDA



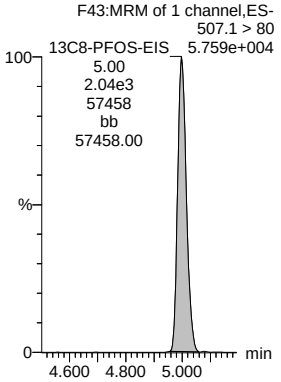


TDCA

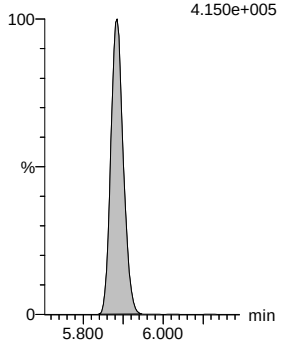




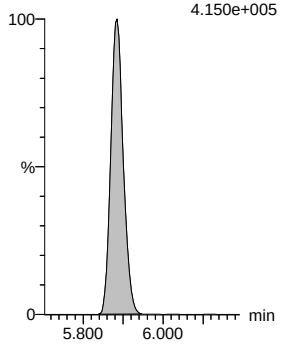
13C8-PFOS-EIS



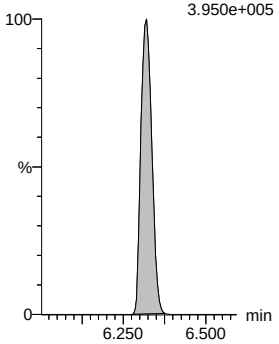
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



AMR for RK 7/9/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-65.qld

Last Altered: Wednesday, July 08, 2020 19:23:56 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:25:53 Pacific Daylight Time

Name: 200706P1-65, Date: 06-Jul-2020, Time: 21:40:52, ID: 2001358-03 DUP01-20200624 0.26301, Description: DUP01-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80	5.385e1	1.329e3	0.263		2.85	2.85	0.506	0.738		1.742	NO
2	7	PFHxA	313.0 > 269.0	1.533e3	1.243e4	0.263		3.37	3.37	1.54	5.382		20.908	NO
3	9	HFPO-DA	285.1 > 168.9		2.530e3	0.263		3.57						YES
4	11	PFHpA	363.0 > 319	2.826e2	1.192e4	0.263		3.96	3.97	0.296	0.761		63.820	NO
5	12	ADONA	376.8 > 250.9		1.192e4	0.263		4.06						YES
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.329e3		0.263	104.004	2.87	2.85	1330	48.602	102.3		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.243e4		0.263	1090.353	3.38	3.37	12400	43.347	91.2		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.530e3		0.263	228.261	3.59	3.57	2530	42.139	88.7		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	1.192e4		0.263	983.154	3.98	3.96	11900	46.081	97.0		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	1.192e4		0.263	983.154	3.98	3.96	11900	46.081	97.0		
11	-1													
12	13	L-PFHxS	399 > 79.9	6.061e2	2.618e3	0.263		4.11	4.11	2.89	9.804		5.154	NO
13	1...	Total PFHxS	399 > 79.9	6.061e2	2.618e3	0.263		3.93		2.89	9.804			
14	16	L-PFOA	413 > 369	1.238e3	1.291e4	0.263		4.48	4.48	1.20	3.851		3.470	NO
15	1...	Total PFOA	413 > 369	1.238e3	1.291e4	0.263		4.60		1.20	3.851			
16	21	PFNA	463.0 > 418.8		1.304e4	0.263		4.92						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.618e3		0.263	220.112	4.13	4.11	2620	45.215	95.1		
18	61	13C3-PFHxS-EIS	402 > 80	2.618e3		0.263	220.112	4.13	4.11	2620	45.215	95.1		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.291e4		0.263	1154.443	4.67	4.48	12900	42.509	89.4		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.291e4		0.263	1154.443	4.67	4.48	12900	42.509	89.4		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.304e4		0.263	1213.140	5.13	4.92	13000	40.873	86.0		
22	-1													
23	23	L-PFOS	499 > 80	1.015e2	2.550e3	0.263		4.99	4.86	0.497	1.759		2.778	NO
24	1...	Total PFOS	499> 80	1.015e2	2.550e3	0.263		4.60		0.497	1.759			
25	25	9Cl-PF30NS	531 > 351		2.550e3	0.263		5.21						YES
26	26	PFDA	513 > 469		1.634e4	0.263		5.29						YES
27	33	PFUdA	563.0 > 519		1.558e4	0.263		5.60						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.550e3		0.263	225.510	5.02	4.99	2550	42.999	90.5		
29	71	13C8-PFOS-EIS	507.1 > 80	2.550e3		0.263	225.510	5.02	4.99	2550	42.999	90.5		
30	71	13C8-PFOS-EIS	507.1 > 80	2.550e3		0.263	225.510	5.02	4.99	2550	42.999	90.5		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.634e4		0.263	1491.471	5.31	5.29	16300	41.650	87.6		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.558e4		0.263	1581.335	5.54	5.60	15600	37.464	78.8		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.767e3	0.263		5.43						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	3.767e3	0.263		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419	8.789e1	3.661e3	0.263		5.59	5.59	0.300	0.990		1.564	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-65.qld

Last Altered: Wednesday, July 08, 2020 19:23:56 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:25:53 Pacific Daylight Time

Name: 200706P1-65, Date: 06-Jul-2020, Time: 21:40:52, ID: 2001358-03 DUP01-20200624 0.26301, Description: DUP01-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	8.789e1	3.661e3	0.263		5.37		0.300	0.990			
38	35	11Cl-PF30UdS	631 > 451		1.766e4	0.263		5.81						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.767e3		0.263	331.163	5.46	5.43	3770	43.246	91.0		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.767e3		0.263	331.163	5.46	5.43	3770	43.246	91.0		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.661e3		0.263	313.941	5.61	5.59	3660	44.342	93.3		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.661e3		0.263	313.941	5.61	5.59	3660	44.342	93.3		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.766e4		0.263	1868.510	6.13	5.88	17700	35.945	75.6		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.766e4	0.263		5.88						YES
46	39	PFTrDA	662.9 > 618.9		1.766e4	0.263		6.15						YES
47	41	PFTeDA	713.0 > 669.0		1.697e4	0.263		6.31						YES
48	1...	TDCA	498.3>106.9			0.263	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.550e3		0.263	225.510	5.02	4.99	2550	42.999	90.5		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.766e4		0.263	1868.510	6.13	5.88	17700	35.945	75.6		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.766e4		0.263	1868.510	6.13	5.88	17700	35.945	75.6		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.697e4		0.263	1905.823	6.34	6.31	17000	33.852	71.2		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

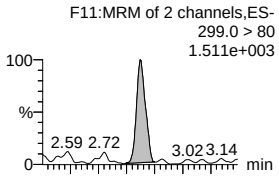
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-65.qld

Last Altered: Wednesday, July 08, 2020 19:23:56 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:25:53 Pacific Daylight Time

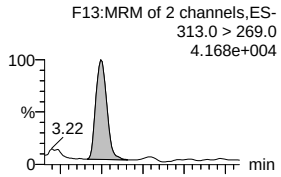
Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 19:17:48
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-65, Date: 06-Jul-2020, Time: 21:40:52, ID: 2001358-03 DUP01-20200624 0.26301, Description: DUP01-20200624

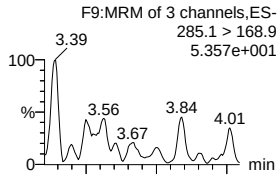
PFBS



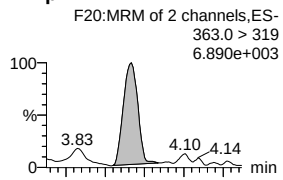
PFHxA



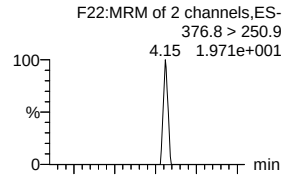
HFPO-DA



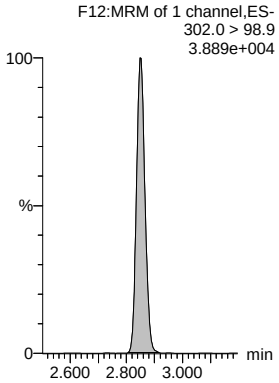
PFHpA



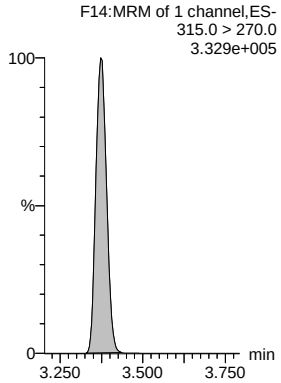
ADONA



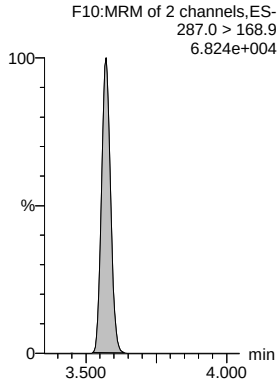
13C3-PFBS-EIS



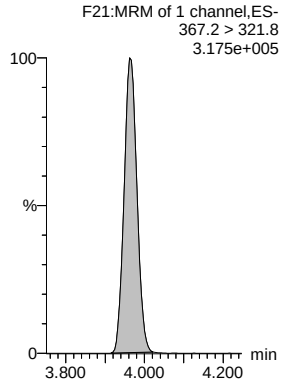
13C2-PFHxA-EIS



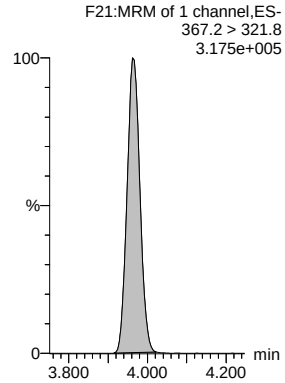
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

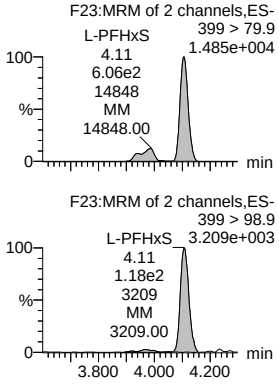
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-65.qld

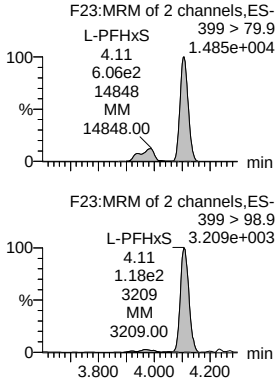
Last Altered: Wednesday, July 08, 2020 19:23:56 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:25:53 Pacific Daylight Time

Name: 200706P1-65, Date: 06-Jul-2020, Time: 21:40:52, ID: 2001358-03 DUP01-20200624 0.26301, Description: DUP01-20200624

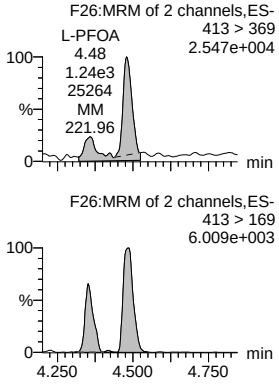
L-PFHxS



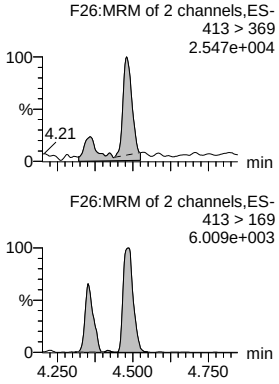
Total PFHxS



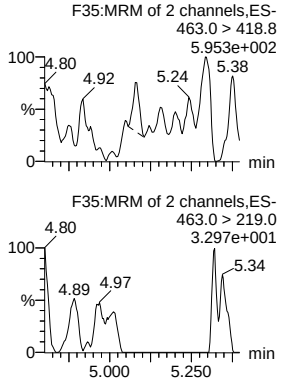
L-PFOA



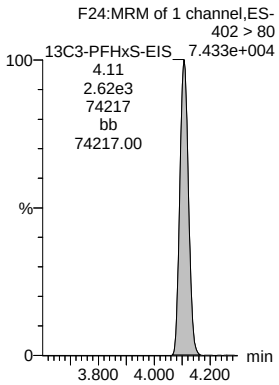
Total PFOA



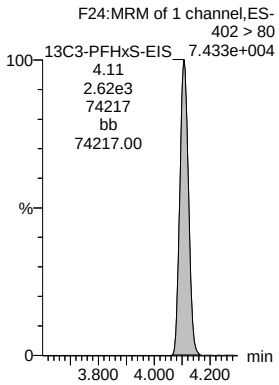
PFNA



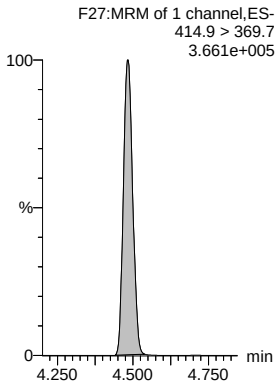
13C3-PFHxS-EIS



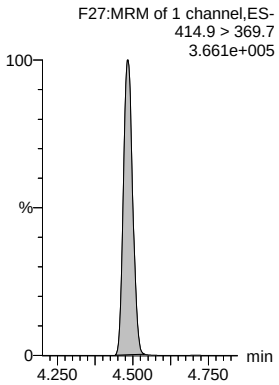
13C3-PFHxS-EIS



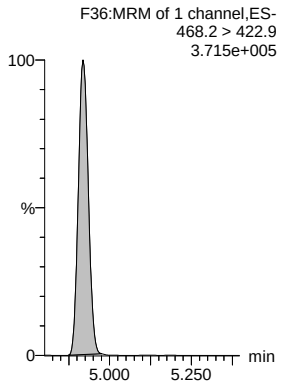
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

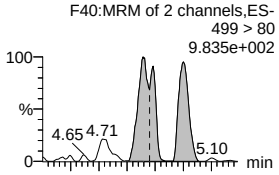
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

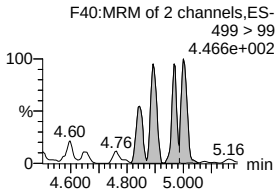
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-65.qld

Last Altered: Wednesday, July 08, 2020 19:23:56 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:25:53 Pacific Daylight Time

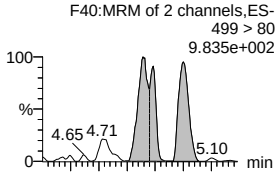
Name: 200706P1-65, Date: 06-Jul-2020, Time: 21:40:52, ID: 2001358-03 DUP01-20200624 0.26301, Description: DUP01-20200624

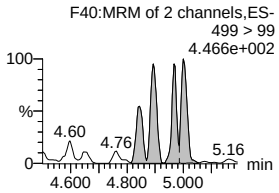
L-PFOS



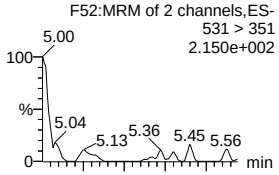


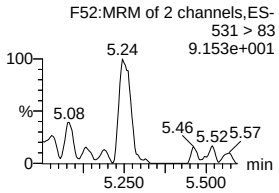
Total PFOS



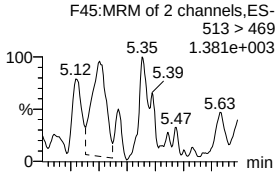


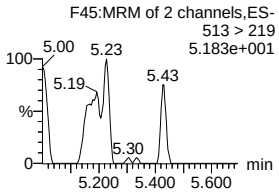
9Cl-PF30NS



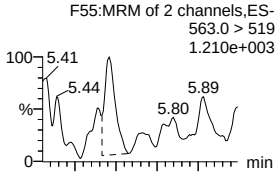


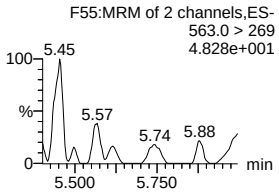
PFDA



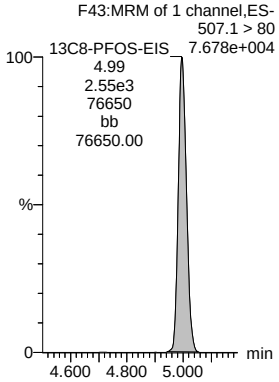


PFUdA

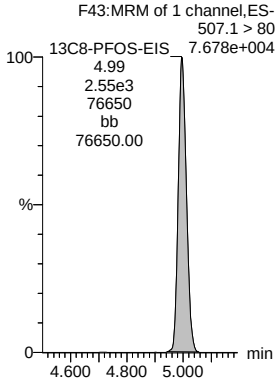




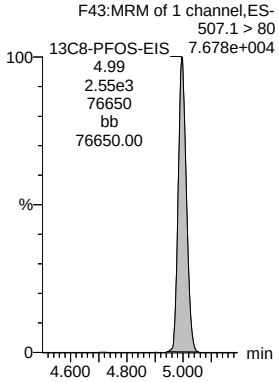
13C8-PFOS-EIS



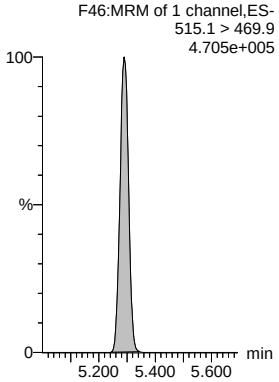
13C8-PFOS-EIS



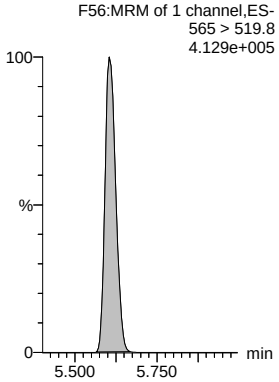
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

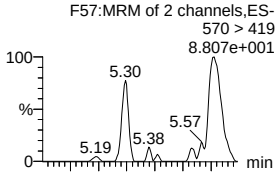
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

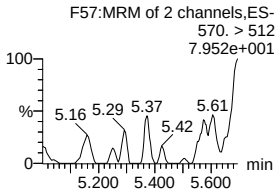
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-65.qld

Last Altered: Wednesday, July 08, 2020 19:23:56 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:25:53 Pacific Daylight Time

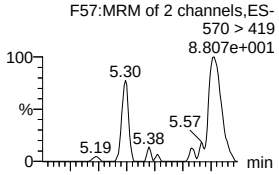
Name: 200706P1-65, Date: 06-Jul-2020, Time: 21:40:52, ID: 2001358-03 DUP01-20200624 0.26301, Description: DUP01-20200624

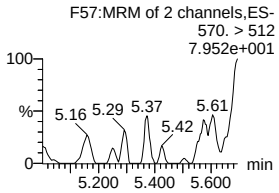
L-MeFOSAA



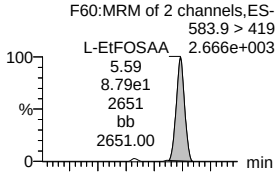


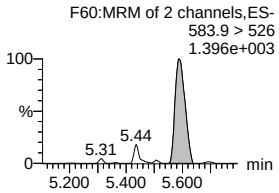
Total N-MeFOSAA



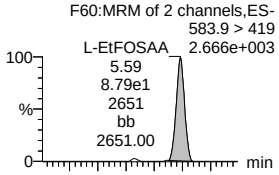


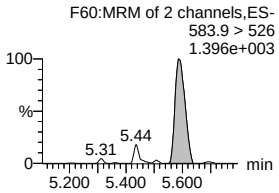
L-EtFOSAA



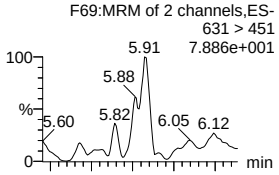


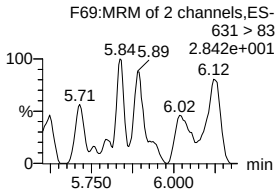
Total N-EtFOSAA



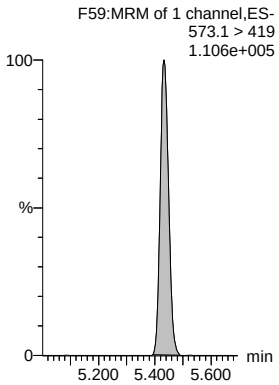


11Cl-PF30UdS

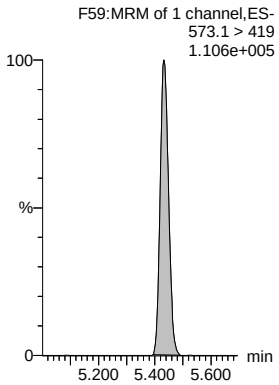




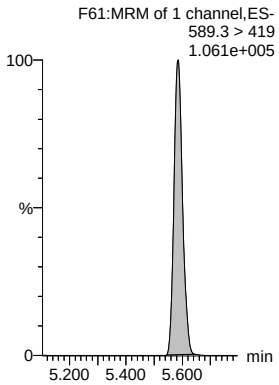
d3-N-MeFOSAA-EIS



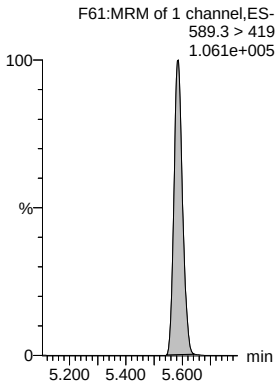
d3-N-MeFOSAA-EIS



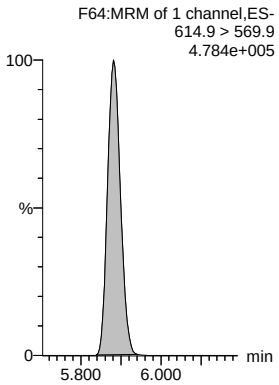
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

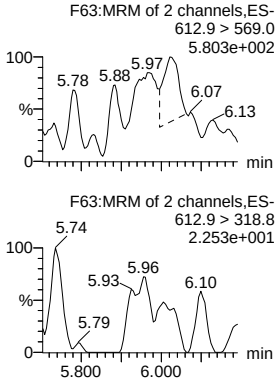
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-65.qld

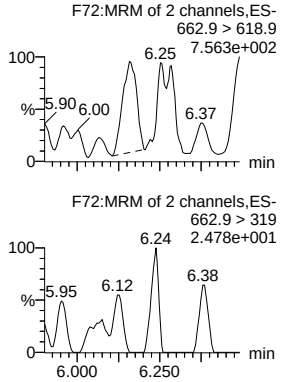
Last Altered: Wednesday, July 08, 2020 19:23:56 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:25:53 Pacific Daylight Time

Name: 200706P1-65, Date: 06-Jul-2020, Time: 21:40:52, ID: 2001358-03 DUP01-20200624 0.26301, Description: DUP01-20200624

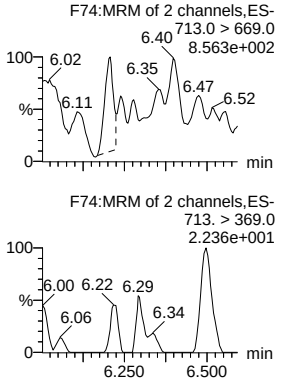
PFDoA



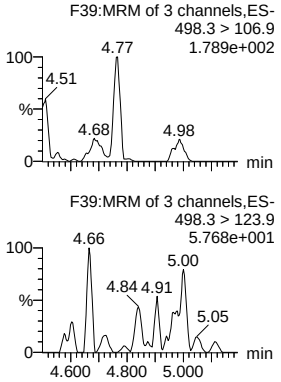
PFTrDA



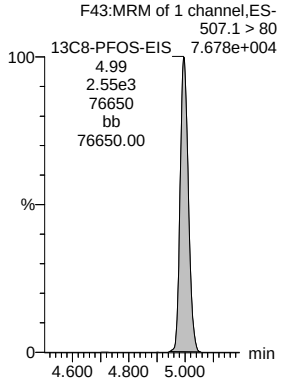
PFTeDA



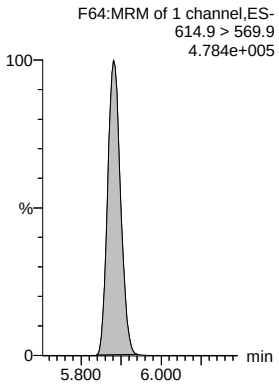
TDCA



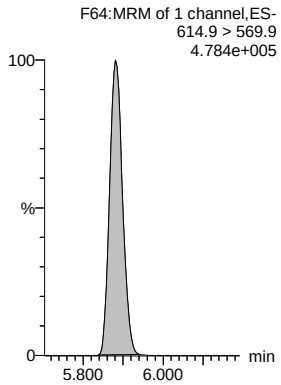
13C8-PFOS-EIS



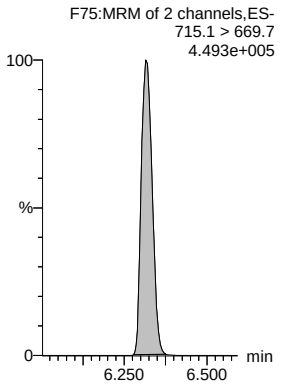
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-66.qld

Last Altered: Wednesday, July 08, 2020 19:31:17 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:31:54 Pacific Daylight Time

Name: 200706P1-66, Date: 06-Jul-2020, Time: 21:51:24, ID: 2001358-04 24-GW-24MW10D-20200624 0.25918, Description: 24-GW-24MW10D-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80	6.938e1	1.066e3	0.259		2.85	2.85	0.813	1.212		2.639	NO
2	7	PFHxA	313.0 > 269.0	1.130e3	1.021e4	0.259		3.37	3.37	1.38	4.876		13.357	NO
3	9	HFPO-DA	285.1 > 168.9		2.145e3	0.259		3.57						YES
4	11	PFHpA	363.0 > 319		9.039e3	0.259		3.96						YES
5	12	ADONA	376.8 > 250.9		9.039e3	0.259		4.06						YES
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.066e3		0.259	104.004	2.87	2.85	1070	39.556	82.0		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.021e4		0.259	1090.353	3.38	3.37	10200	36.126	74.9		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.145e3		0.259	228.261	3.59	3.57	2150	36.258	75.2		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	9.039e3		0.259	983.154	3.98	3.96	9040	35.472	73.5		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	9.039e3		0.259	983.154	3.98	3.96	9040	35.472	73.5		
11	-1													
12	13	L-PFHxS	399 > 79.9		2.270e3	0.259		4.10						YES
13	1...	Total PFHxS	399 > 79.9	0.000e0	2.270e3	0.259		3.93		0.000				
14	16	L-PFOA	413 > 369	2.831e2	1.088e4	0.259		4.48	4.48	0.325	0.924		6.552	NO
15	1...	Total PFOA	413 > 369	2.831e2	1.088e4	0.259		4.60		0.325	0.924			
16	21	PFNA	463.0 > 418.8		1.163e4	0.259		4.92						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.270e3		0.259	220.112	4.13	4.10	2270	39.787	82.5		
18	61	13C3-PFHxS-EIS	402 > 80	2.270e3		0.259	220.112	4.13	4.10	2270	39.787	82.5		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.088e4		0.259	1154.443	4.67	4.48	10900	36.377	75.4		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.088e4		0.259	1154.443	4.67	4.48	10900	36.377	75.4		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.163e4		0.259	1213.140	5.13	4.92	11600	36.997	76.7		
22	-1													
23	23	L-PFOS	499 > 80		2.370e3	0.259		4.99						YES
24	1...	Total PFOS	499> 80	0.000e0	2.370e3	0.259		4.60		0.000				
25	25	9Cl-PF30NS	531 > 351		2.370e3	0.259		5.21						YES
26	26	PFDA	513 > 469		1.366e4	0.259		5.29						YES
27	33	PFUdA	563.0 > 519		1.346e4	0.259		5.60						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.370e3		0.259	225.510	5.02	4.99	2370	40.555	84.1		
29	71	13C8-PFOS-EIS	507.1 > 80	2.370e3		0.259	225.510	5.02	4.99	2370	40.555	84.1		
30	71	13C8-PFOS-EIS	507.1 > 80	2.370e3		0.259	225.510	5.02	4.99	2370	40.555	84.1		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.366e4		0.259	1491.471	5.31	5.29	13700	35.337	73.3		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.346e4		0.259	1581.335	5.54	5.60	13500	32.832	68.1		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.093e3	0.259		5.43						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	3.093e3	0.259		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419	1.175e2	2.982e3	0.259		5.58	5.59	0.493	1.537		1.481	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-66.qld

Last Altered: Wednesday, July 08, 2020 19:31:17 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:31:54 Pacific Daylight Time

Name: 200706P1-66, Date: 06-Jul-2020, Time: 21:51:24, ID: 2001358-04 24-GW-24MW10D-20200624 0.25918, Description: 24-GW-24MW10D-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	1.175e2	2.982e3	0.259		5.37		0.493	1.537			
38	35	11Cl-PF30UdS	631 > 451		1.703e4	0.259		5.81						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.093e3		0.259	331.163	5.46	5.43	3090	36.031	74.7		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.093e3		0.259	331.163	5.46	5.43	3090	36.031	74.7		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.982e3		0.259	313.941	5.61	5.58	2980	36.649	76.0		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.982e3		0.259	313.941	5.61	5.58	2980	36.649	76.0		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.703e4		0.259	1868.510	6.13	5.88	17000	35.156	72.9		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.703e4	0.259		5.88						YES
46	39	PFTrDA	662.9 > 618.9		1.703e4	0.259		6.14						YES
47	41	PFTeDA	713.0 > 669.0		1.616e4	0.259		6.31						YES
48	1...	TDCA	498.3>106.9			0.259	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.370e3		0.259	225.510	5.02	4.99	2370	40.555	84.1		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.703e4		0.259	1868.510	6.13	5.88	17000	35.156	72.9		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.703e4		0.259	1868.510	6.13	5.88	17000	35.156	72.9		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.616e4		0.259	1905.823	6.34	6.31	16200	32.717	67.8		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

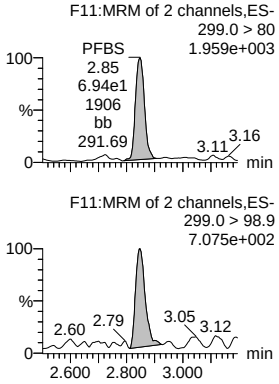
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-66.qld

Last Altered: Wednesday, July 08, 2020 19:31:17 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:31:54 Pacific Daylight Time

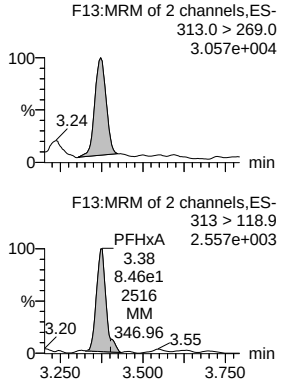
Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 19:26:54
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-66, Date: 06-Jul-2020, Time: 21:51:24, ID: 2001358-04 24-GW-24MW10D-20200624 0.25918, Description: 24-GW-24MW10D-20200624

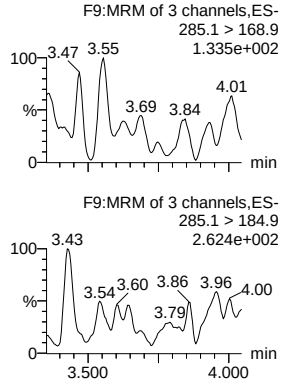
PFBS



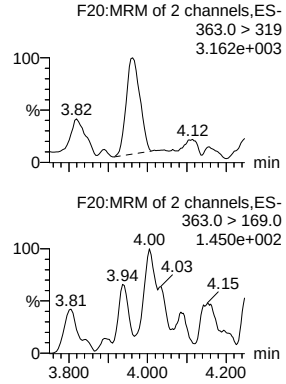
PFHxA



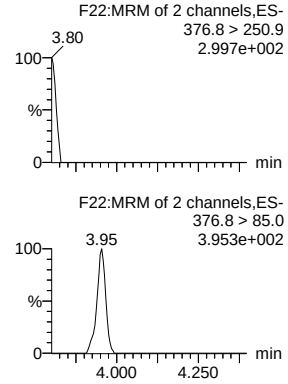
HFPO-DA



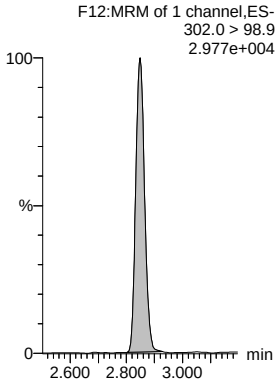
PFHpA



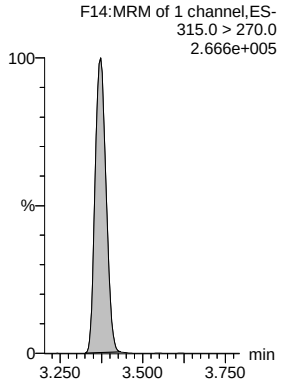
ADONA



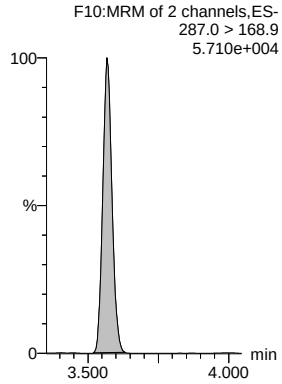
13C3-PFBS-EIS



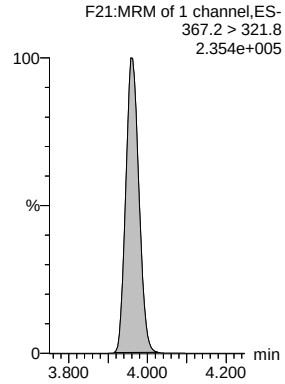
13C2-PFHxA-EIS



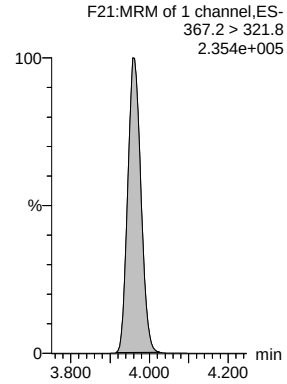
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

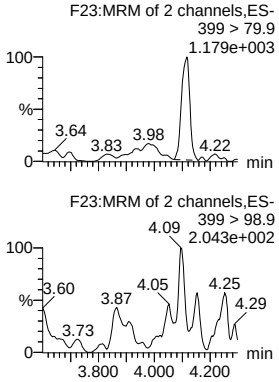
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-66.qld

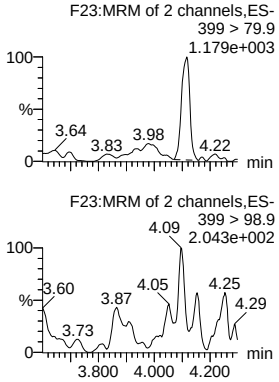
Last Altered: Wednesday, July 08, 2020 19:31:17 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:31:54 Pacific Daylight Time

Name: 200706P1-66, Date: 06-Jul-2020, Time: 21:51:24, ID: 2001358-04 24-GW-24MW10D-20200624 0.25918, Description: 24-GW-24MW10D-20200624

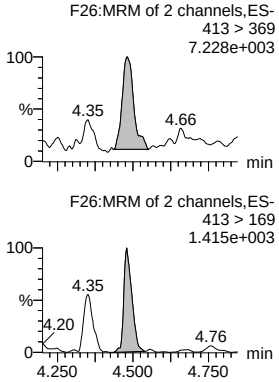
L-PFHxS



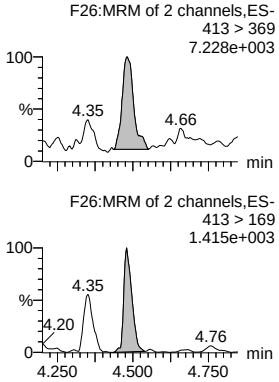
Total PFHxS



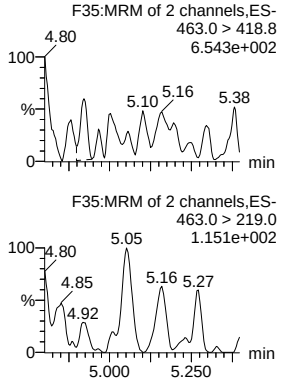
L-PFOA



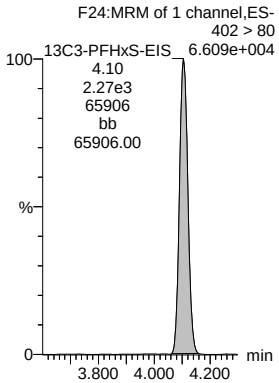
Total PFOA



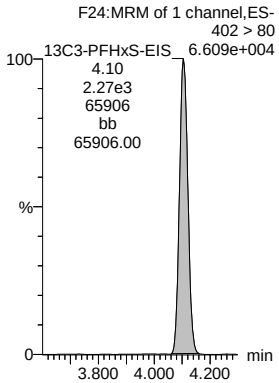
PFNA



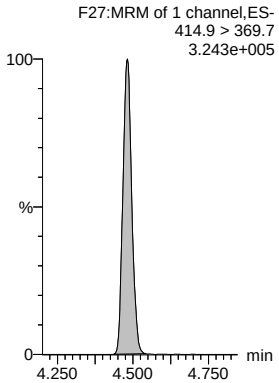
13C3-PFHxS-EIS



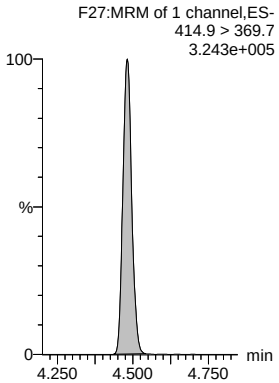
13C3-PFHxS-EIS



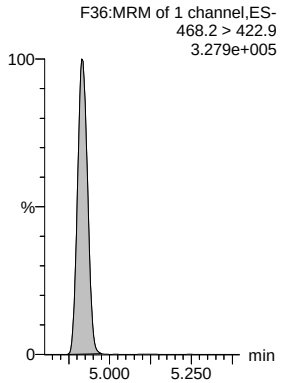
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

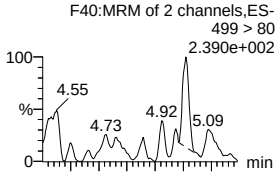
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-66.qld

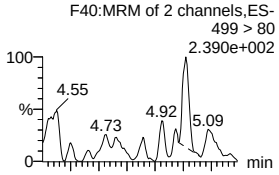
Last Altered: Wednesday, July 08, 2020 19:31:17 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:31:54 Pacific Daylight Time

Name: 200706P1-66, Date: 06-Jul-2020, Time: 21:51:24, ID: 2001358-04 24-GW-24MW10D-20200624 0.25918, Description: 24-GW-24MW10D-20200624

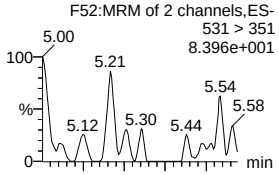
L-PFOS



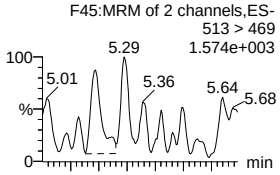
Total PFOS



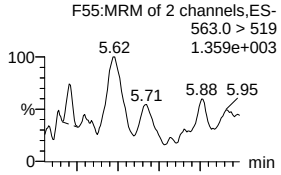
9Cl-PF30NS



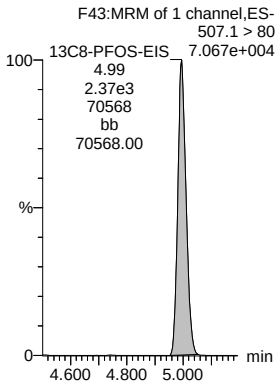
PFDA



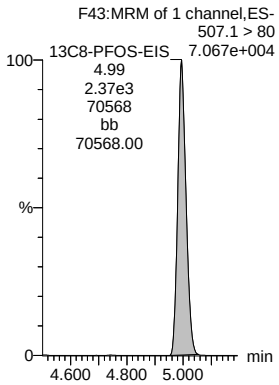
PFUdA



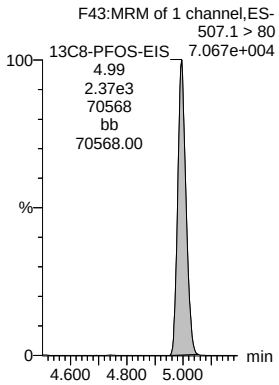
13C8-PFOS-EIS



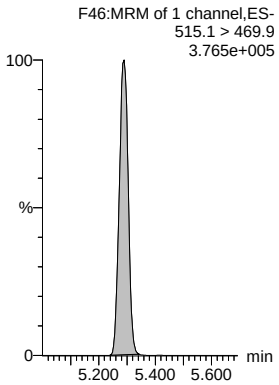
13C8-PFOS-EIS



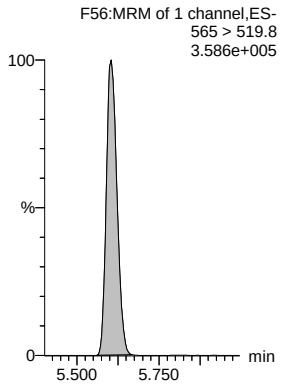
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

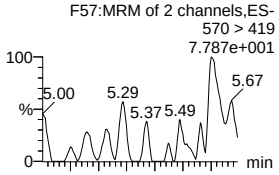
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

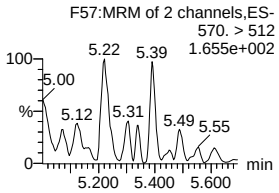
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-66.qld

Last Altered: Wednesday, July 08, 2020 19:31:17 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:31:54 Pacific Daylight Time

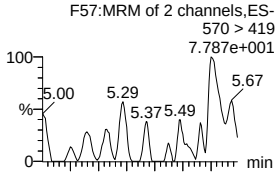
Name: 200706P1-66, Date: 06-Jul-2020, Time: 21:51:24, ID: 2001358-04 24-GW-24MW10D-20200624 0.25918, Description: 24-GW-24MW10D-20200624

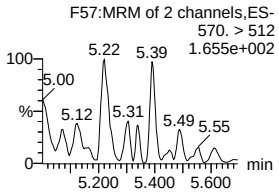
L-MeFOSAA



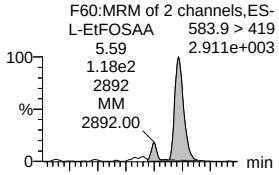


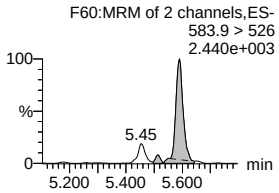
Total N-MeFOSAA



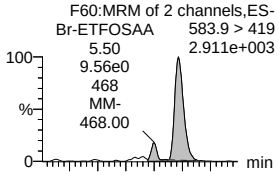


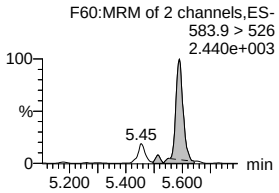
L-EtFOSAA



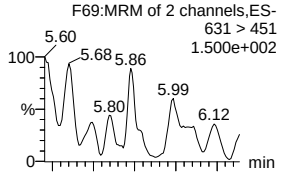


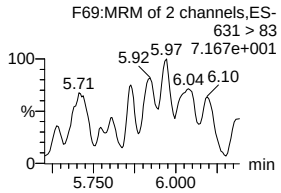
Total N-EtFOSAA



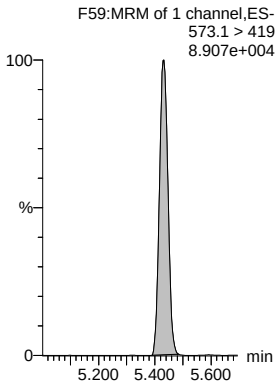


11Cl-PF30UdS

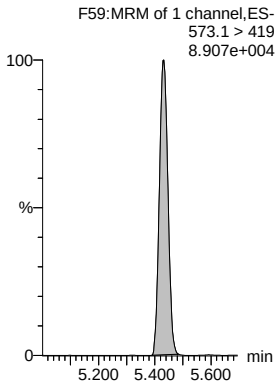




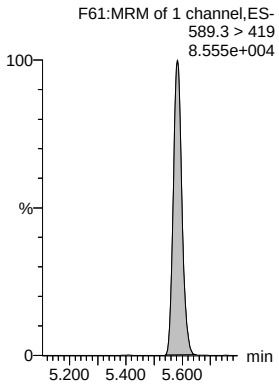
d3-N-MeFOSAA-EIS



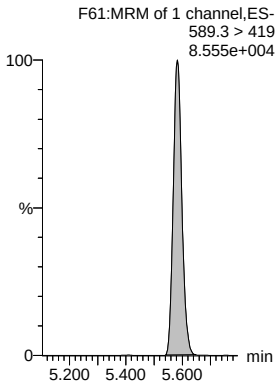
d3-N-MeFOSAA-EIS



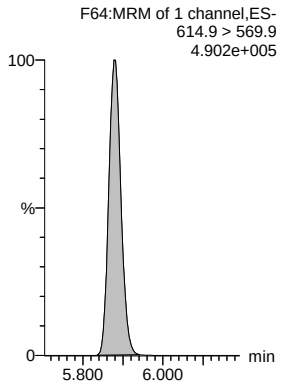
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

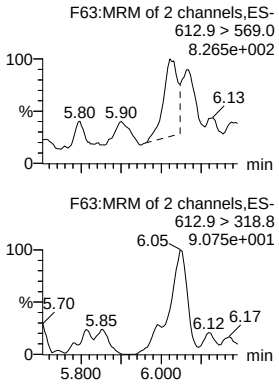
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-66.qld

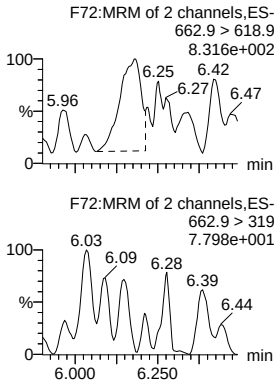
Last Altered: Wednesday, July 08, 2020 19:31:17 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:31:54 Pacific Daylight Time

Name: 200706P1-66, Date: 06-Jul-2020, Time: 21:51:24, ID: 2001358-04 24-GW-24MW10D-20200624 0.25918, Description: 24-GW-24MW10D-20200624

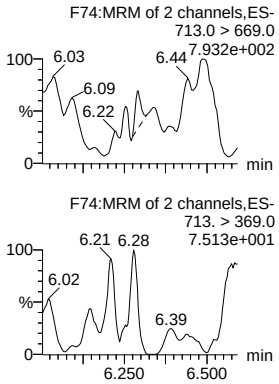
PFDoA



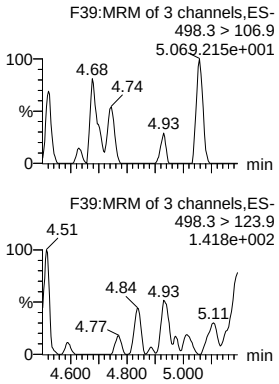
PFTrDA



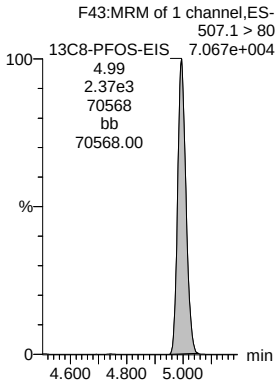
PFTeDA



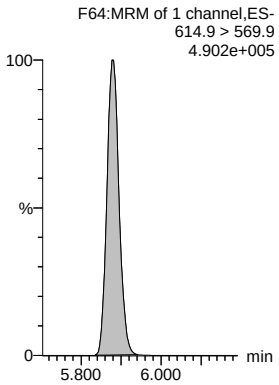
TDCA



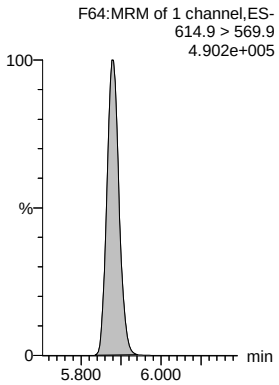
13C8-PFOS-EIS



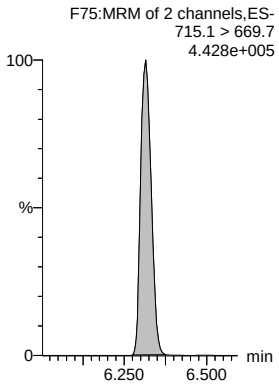
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-67.qld

Last Altered: Wednesday, July 08, 2020 19:39:43 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:40:34 Pacific Daylight Time

Name: 200706P1-67, Date: 06-Jul-2020, Time: 22:01:54, ID: 2001358-05 DUP02-20200624 0.2559, Description: DUP02-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80	6.760e1	1.070e3	0.256		2.85	2.84	0.790	1.192		2.844	NO
2	7	PFHxA	313.0 > 269.0	1.153e3	9.577e3	0.256		3.37	3.37	1.50	5.392		19.242	NO
3	9	HFPO-DA	285.1 > 168.9		1.821e3	0.256		3.57						YES
4	11	PFHpA	363.0 > 319		9.240e3	0.256		3.96						YES
5	12	ADONA	376.8 > 250.9	1.907e0	9.240e3	0.256		4.06	3.96	0.00258			2.720	NO
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.070e3		0.256	104.004	2.87	2.85	1070	40.197	82.3		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	9.577e3		0.256	1090.353	3.38	3.37	9580	34.325	70.3		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.821e3		0.256	228.261	3.59	3.57	1820	31.176	63.8		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	9.240e3		0.256	983.154	3.98	3.96	9240	36.727	75.2		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	9.240e3		0.256	983.154	3.98	3.96	9240	36.727	75.2		
11	-1													
12	13	L-PFHxS	399 > 79.9	2.454e1	2.161e3	0.256		4.11	4.10	0.142	0.232		3.825	NO
13	1...	Total PFHxS	399 > 79.9	2.454e1	2.161e3	0.256		3.93		0.142	0.232			
14	16	L-PFOA	413 > 369	1.855e2	1.108e4	0.256		4.48	4.48	0.209	0.536		5.808	NO
15	1...	Total PFOA	413 > 369	1.855e2	1.108e4	0.256		4.60		0.209	0.536			
16	21	PFNA	463.0 > 418.8		1.115e4	0.256		4.92						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.161e3		0.256	220.112	4.13	4.11	2160	38.372	78.6		
18	61	13C3-PFHxS-EIS	402 > 80	2.161e3		0.256	220.112	4.13	4.11	2160	38.372	78.6		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.108e4		0.256	1154.443	4.67	4.48	11100	37.513	76.8		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.108e4		0.256	1154.443	4.67	4.48	11100	37.513	76.8		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.115e4		0.256	1213.140	5.13	4.92	11200	35.926	73.5		
22	-1													
23	23	L-PFOS	499 > 80		2.117e3	0.256		4.99						YES
24	1...	Total PFOS	499> 80	0.000e0	2.117e3	0.256		4.60		0.000				
25	25	9Cl-PF30NS	531 > 351		2.117e3	0.256		5.21						YES
26	26	PFDA	513 > 469		1.318e4	0.256		5.29						YES
27	33	PFUdA	563.0 > 519		1.274e4	0.256		5.60						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.117e3		0.256	225.510	5.02	4.99	2120	36.680	75.1		
29	71	13C8-PFOS-EIS	507.1 > 80	2.117e3		0.256	225.510	5.02	4.99	2120	36.680	75.1		
30	71	13C8-PFOS-EIS	507.1 > 80	2.117e3		0.256	225.510	5.02	4.99	2120	36.680	75.1		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.318e4		0.256	1491.471	5.31	5.29	13200	34.527	70.7		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.274e4		0.256	1581.335	5.54	5.60	12700	31.479	64.4		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.077e3	0.256		5.43						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	3.077e3	0.256		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419	2.235e2	2.944e3	0.256		5.58	5.58	0.949	2.834		1.631	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-67.qld

Last Altered: Wednesday, July 08, 2020 19:39:43 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:40:34 Pacific Daylight Time

Name: 200706P1-67, Date: 06-Jul-2020, Time: 22:01:54, ID: 2001358-05 DUP02-20200624 0.2559, Description: DUP02-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	2.235e2	2.944e3	0.256		5.37		0.949	2.834			
38	35	11Cl-PF30UdS	631 > 451		1.652e4	0.256		5.81						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.077e3		0.256	331.163	5.46	5.43	3080	36.312	74.3		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.077e3		0.256	331.163	5.46	5.43	3080	36.312	74.3		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.944e3		0.256	313.941	5.61	5.58	2940	36.643	75.0		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.944e3		0.256	313.941	5.61	5.58	2940	36.643	75.0		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.652e4		0.256	1868.510	6.13	5.88	16500	34.539	70.7		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.652e4	0.256		5.88						YES
46	39	PFTrDA	662.9 > 618.9		1.652e4	0.256		6.14						YES
47	41	PFTeDA	713.0 > 669.0		1.536e4	0.256		6.31						YES
48	1...	TDCA	498.3>106.9			0.256	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.117e3		0.256	225.510	5.02	4.99	2120	36.680	75.1		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.652e4		0.256	1868.510	6.13	5.88	16500	34.539	70.7		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.652e4		0.256	1868.510	6.13	5.88	16500	34.539	70.7		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.536e4		0.256	1905.823	6.34	6.31	15400	31.499	64.5		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

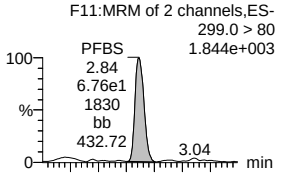
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-67.qld

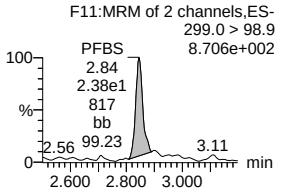
Last Altered: Wednesday, July 08, 2020 19:39:43 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:40:34 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 19:34:21
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

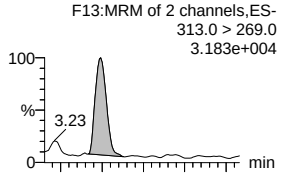
Name: 200706P1-67, Date: 06-Jul-2020, Time: 22:01:54, ID: 2001358-05 DUP02-20200624 0.2559, Description: DUP02-20200624

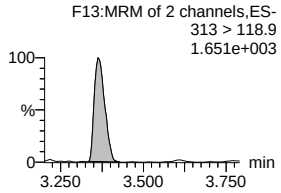
PFBS



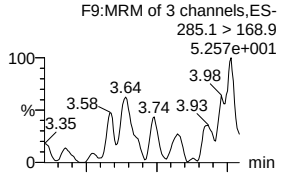


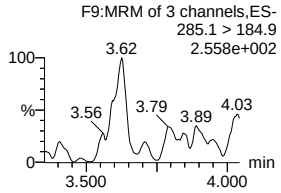
PFHxA



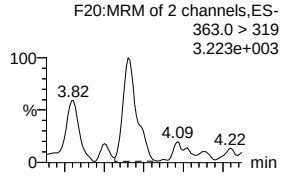


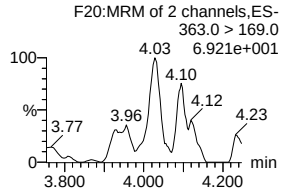
HFPO-DA



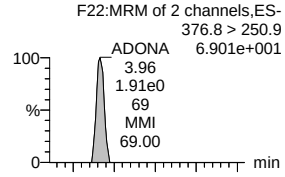


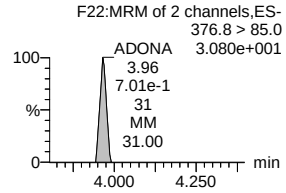
PFHpA



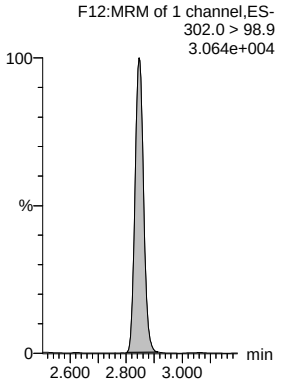


ADONA

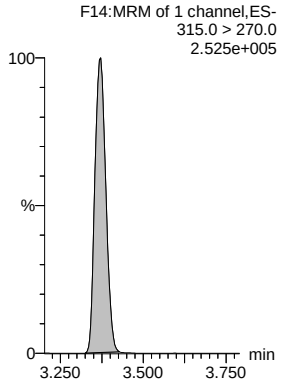




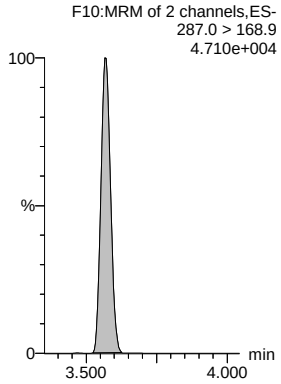
13C3-PFBS-EIS



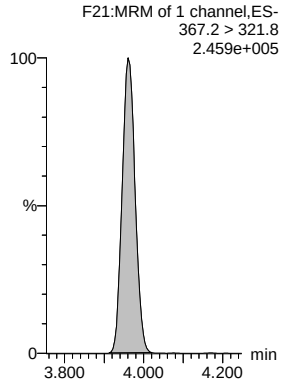
13C2-PFHxA-EIS



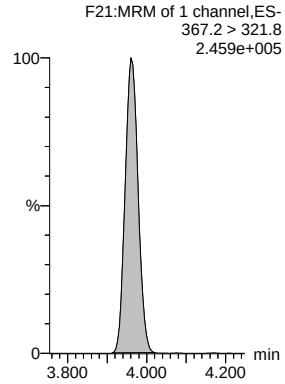
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

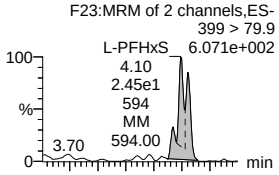
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

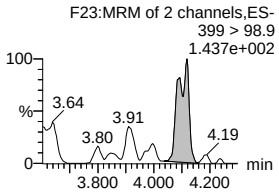
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-67.qld

Last Altered: Wednesday, July 08, 2020 19:39:43 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:40:34 Pacific Daylight Time

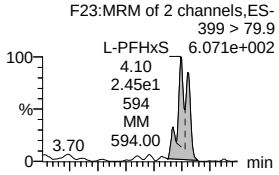
Name: 200706P1-67, Date: 06-Jul-2020, Time: 22:01:54, ID: 2001358-05 DUP02-20200624 0.2559, Description: DUP02-20200624

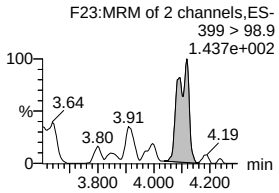
L-PFHxS



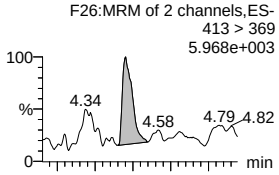


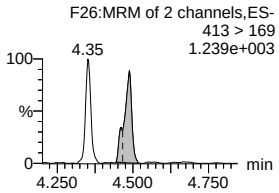
Total PFHxS



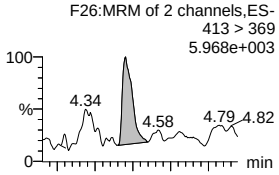


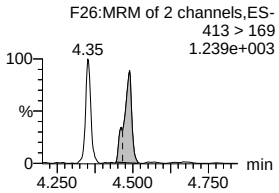
L-PFOA



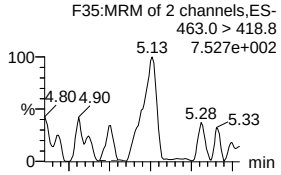


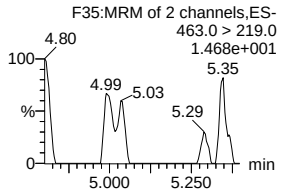
Total PFOA



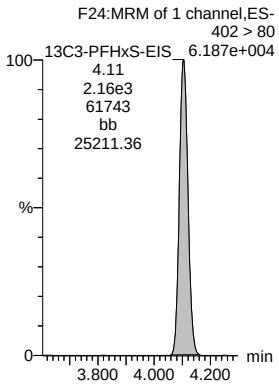


PFNA

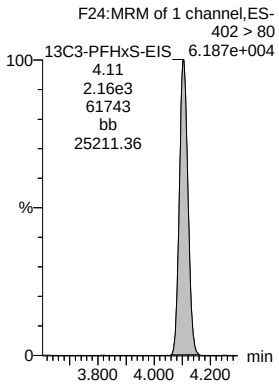




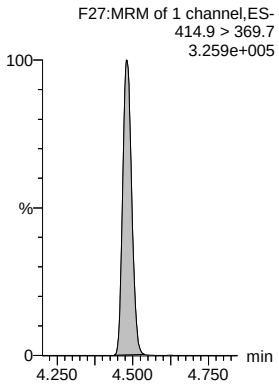
13C3-PFHxS-EIS



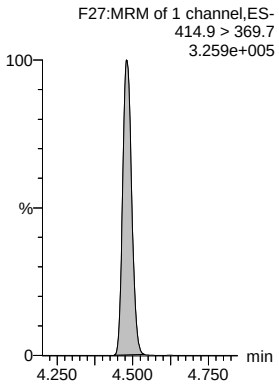
13C3-PFHxS-EIS



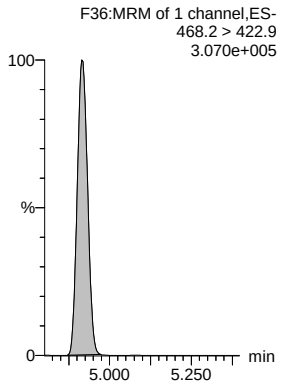
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

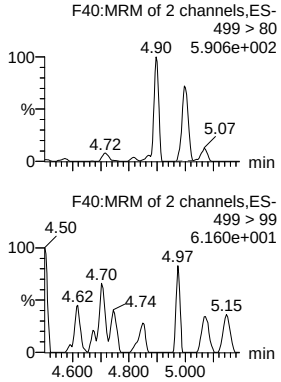
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-67.qld

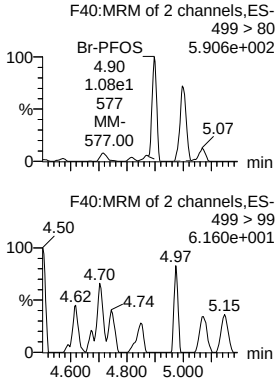
Last Altered: Wednesday, July 08, 2020 19:39:43 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:40:34 Pacific Daylight Time

Name: 200706P1-67, Date: 06-Jul-2020, Time: 22:01:54, ID: 2001358-05 DUP02-20200624 0.2559, Description: DUP02-20200624

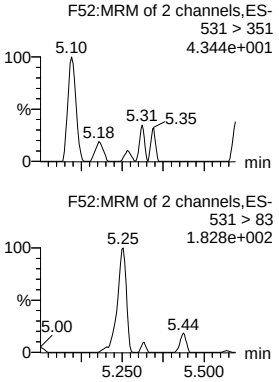
L-PFOS



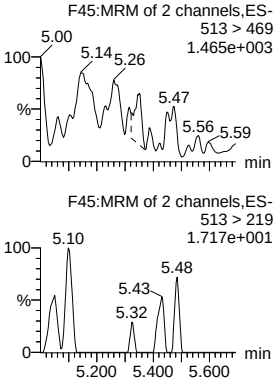
Total PFOS



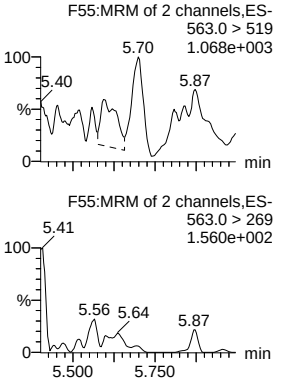
9Cl-PF30NS



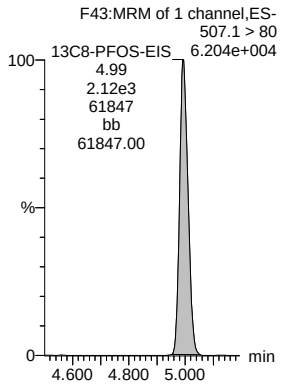
PFDA



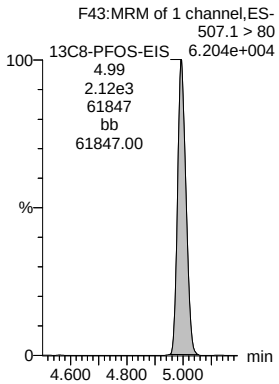
PFUdA



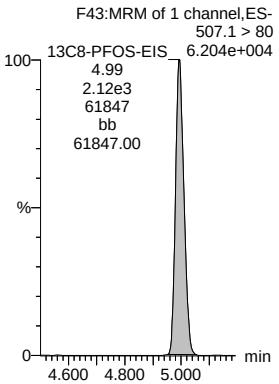
13C8-PFOS-EIS



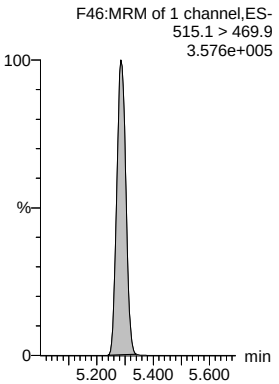
13C8-PFOS-EIS



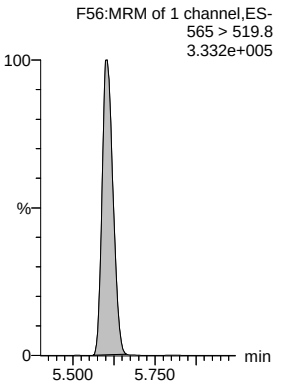
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

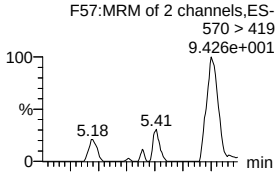
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-67.qld

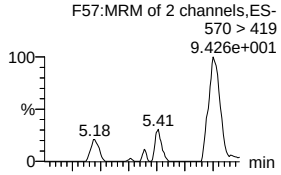
Last Altered: Wednesday, July 08, 2020 19:39:43 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:40:34 Pacific Daylight Time

Name: 200706P1-67, Date: 06-Jul-2020, Time: 22:01:54, ID: 2001358-05 DUP02-20200624 0.2559, Description: DUP02-20200624

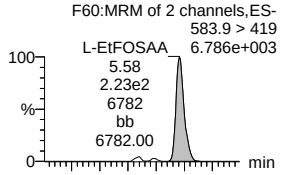
L-MeFOSAA



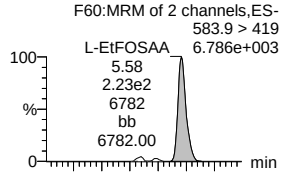
Total N-MeFOSAA



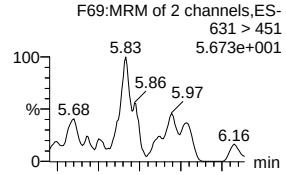
L-EtFOSAA



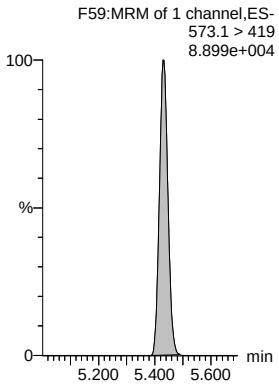
Total N-EtFOSAA



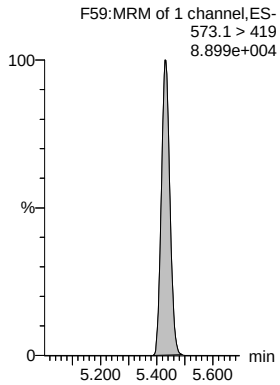
11Cl-PF30UdS



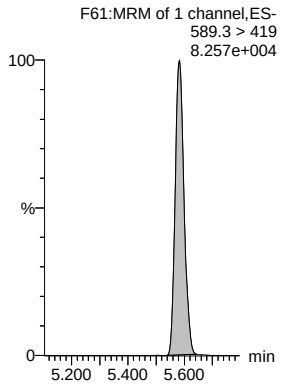
d3-N-MeFOSAA-EIS



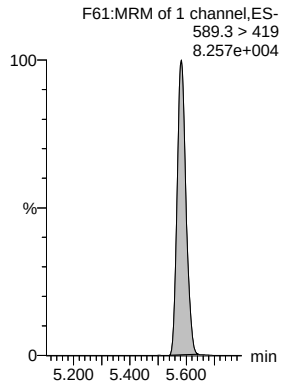
d3-N-MeFOSAA-EIS



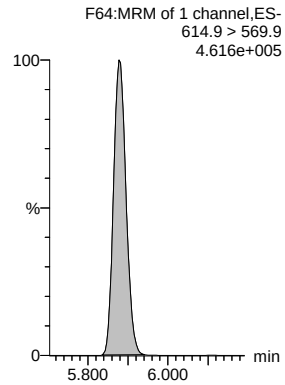
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

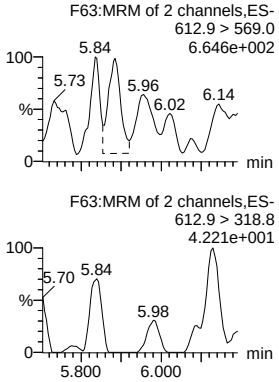
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-67.qld

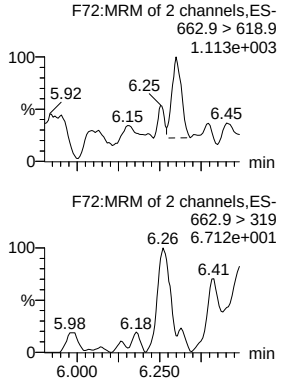
Last Altered: Wednesday, July 08, 2020 19:39:43 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 19:40:34 Pacific Daylight Time

Name: 200706P1-67, Date: 06-Jul-2020, Time: 22:01:54, ID: 2001358-05 DUP02-20200624 0.2559, Description: DUP02-20200624

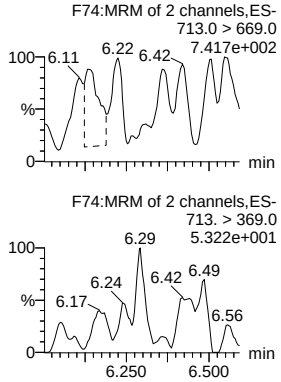
PFDoA



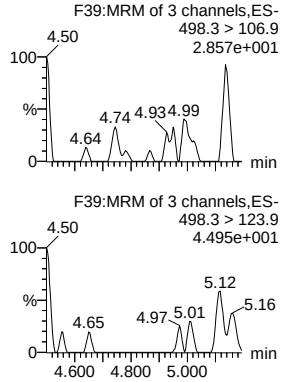
PFTrDA



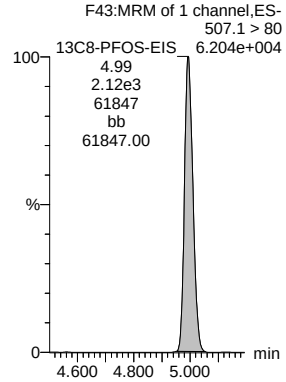
PFTeDA



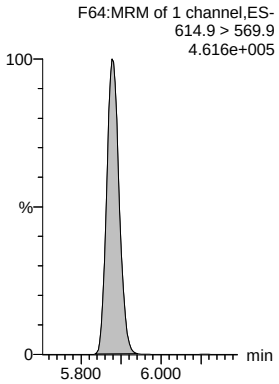
TDCA



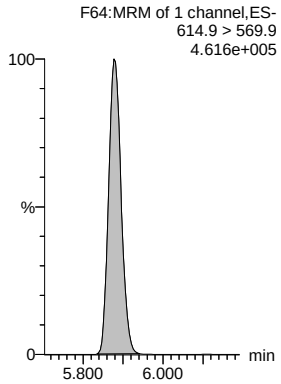
13C8-PFOS-EIS



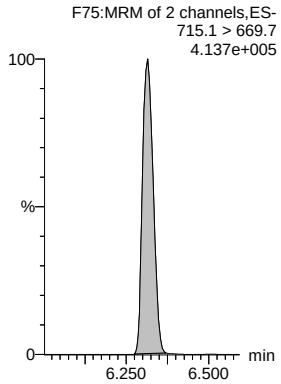
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-68.qld

Last Altered: Wednesday, July 08, 2020 20:06:25 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:08:41 Pacific Daylight Time

Name: 200706P1-68, Date: 06-Jul-2020, Time: 22:12:25, ID: 2001358-06 24-GW-24MW10C-20200624 0.25497, Description: 24-GW-24MW10C-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80	4.256e3	1.037e3	0.255		2.85	2.84	51.3	78.677		2.560	NO
2	7	PFHxA	313.0 > 269.0	5.118e4	1.060e4	0.255		3.37	3.37	60.4	228.351		17.518	NO
3	9	HFPO-DA	285.1 > 168.9		2.110e3	0.255		3.57						YES
4	11	PFHpA	363.0 > 319	3.393e3	9.542e3	0.255		3.96	3.96	4.45	13.306		55.821	NO
5	12	ADONA	376.8 > 250.9		9.542e3	0.255		4.06						YES
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.037e3		0.255	104.004	2.87	2.85	1040	39.121	79.8		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.060e4		0.255	1090.353	3.38	3.37	10600	38.126	77.8		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.110e3		0.255	228.261	3.59	3.57	2110	36.250	73.9		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	9.542e3		0.255	983.154	3.98	3.96	9540	38.066	77.6		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	9.542e3		0.255	983.154	3.98	3.96	9540	38.066	77.6		
11	-1													
12	13	L-PFHxS	399 > 79.9	1.797e3	2.224e3	0.255		4.10	4.10	10.1	35.989		4.619	NO
13	1...	Total PFHxS	399 > 79.9	1.797e3	2.224e3	0.255		3.93		10.1	35.989			
14	16	L-PFOA	413 > 369	1.069e4	1.097e4	0.255		4.48	4.48	12.2	42.166		2.843	NO
15	1...	Total PFOA	413 > 369	1.069e4	1.097e4	0.255		4.60		12.2	42.166			
16	21	PFNA	463.0 > 418.8		1.126e4	0.255		4.92						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.224e3		0.255	220.112	4.13	4.10	2220	39.620	80.8		
18	61	13C3-PFHxS-EIS	402 > 80	2.224e3		0.255	220.112	4.13	4.10	2220	39.620	80.8		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.097e4		0.255	1154.443	4.67	4.48	11000	37.268	76.0		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.097e4		0.255	1154.443	4.67	4.48	11000	37.268	76.0		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.126e4		0.255	1213.140	5.13	4.92	11300	36.400	74.2		
22	-1													
23	23	L-PFOS	499 > 80	8.720e1	2.271e3	0.255		4.99	4.99	0.480	1.761		4.052	YES
24	1...	Total PFOS	499> 80	8.720e1	2.271e3	0.255		4.60		0.480	1.761			
25	25	9Cl-PF30NS	531 > 351		2.271e3	0.255		5.21						YES
26	26	PFDA	513 > 469		1.323e4	0.255		5.29						YES
27	33	PFUdA	563.0 > 519		1.240e4	0.255		5.60						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.271e3		0.255	225.510	5.02	4.99	2270	39.504	80.6		
29	71	13C8-PFOS-EIS	507.1 > 80	2.271e3		0.255	225.510	5.02	4.99	2270	39.504	80.6		
30	71	13C8-PFOS-EIS	507.1 > 80	2.271e3		0.255	225.510	5.02	4.99	2270	39.504	80.6		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.323e4		0.255	1491.471	5.31	5.29	13200	34.793	71.0		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.240e4		0.255	1581.335	5.54	5.60	12400	30.757	62.7		
33	-1													
34	29	L-MeFOSAA	570 > 419		3.155e3	0.255		5.43						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	3.155e3	0.255		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419	1.152e2	2.957e3	0.255		5.58	5.59	0.487	1.546		1.528	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-68.qld

Last Altered: Wednesday, July 08, 2020 20:06:25 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:08:41 Pacific Daylight Time

Name: 200706P1-68, Date: 06-Jul-2020, Time: 22:12:25, ID: 2001358-06 24-GW-24MW10C-20200624 0.25497, Description: 24-GW-24MW10C-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	1.152e2	2.957e3	0.255		5.37		0.487	1.546			
38	35	11Cl-PF30UdS	631 > 451		1.596e4	0.255		5.81						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.155e3		0.255	331.163	5.46	5.43	3160	37.367	76.2		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.155e3		0.255	331.163	5.46	5.43	3160	37.367	76.2		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.957e3		0.255	313.941	5.61	5.58	2960	36.939	75.3		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.957e3		0.255	313.941	5.61	5.58	2960	36.939	75.3		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.596e4		0.255	1868.510	6.13	5.88	16000	33.499	68.3		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.596e4	0.255		5.88						YES
46	39	PFTrDA	662.9 > 618.9		1.596e4	0.255		6.14						YES
47	41	PFTeDA	713.0 > 669.0		1.568e4	0.255		6.31						YES
48	1...	TDCA	498.3>106.9			0.255	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.271e3		0.255	225.510	5.02	4.99	2270	39.504	80.6		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.596e4		0.255	1868.510	6.13	5.88	16000	33.499	68.3		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.596e4		0.255	1868.510	6.13	5.88	16000	33.499	68.3		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.568e4		0.255	1905.823	6.34	6.31	15700	32.267	65.8		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

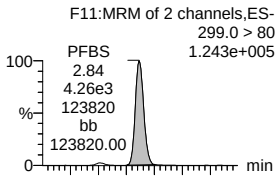
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-68.qld

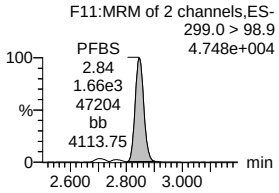
Last Altered: Wednesday, July 08, 2020 20:06:25 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:08:41 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 19:41:53
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

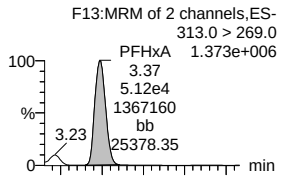
Name: 200706P1-68, Date: 06-Jul-2020, Time: 22:12:25, ID: 2001358-06 24-GW-24MW10C-20200624 0.25497, Description: 24-GW-24MW10C-20200624

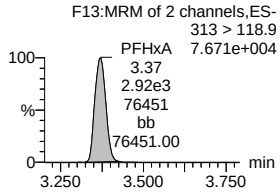
PFBS



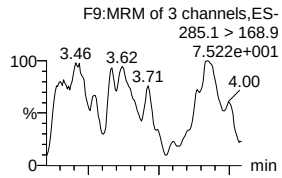


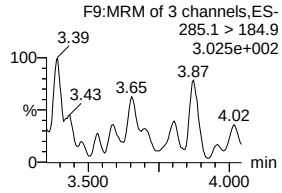
PFHxA



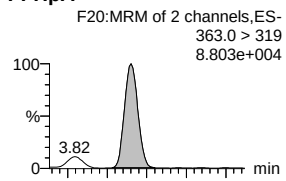


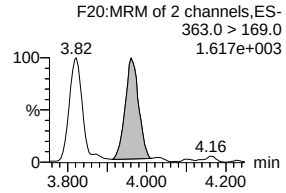
HFPO-DA



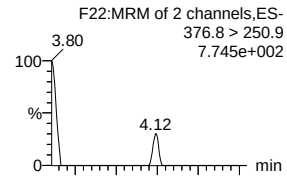


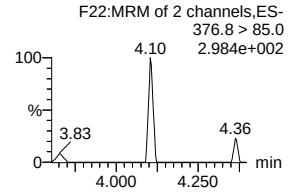
PFHpA



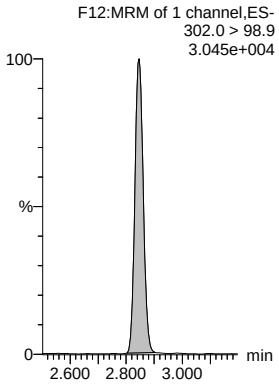


ADONA

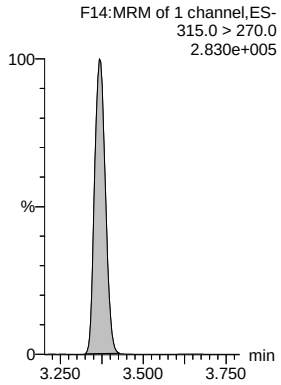




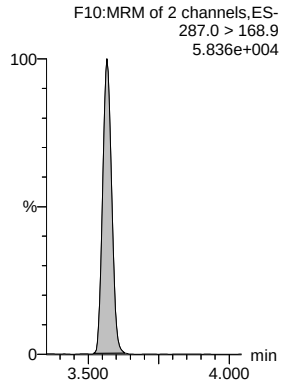
13C3-PFBS-EIS



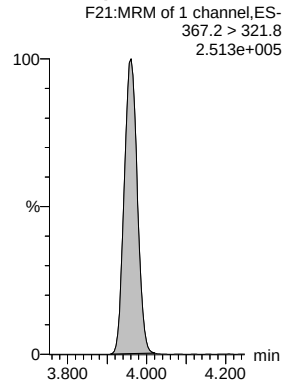
13C2-PFHxA-EIS



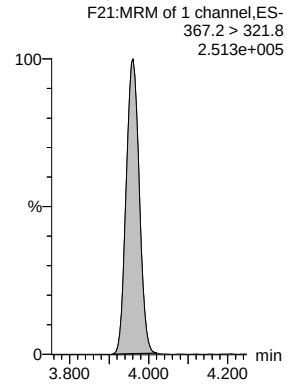
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

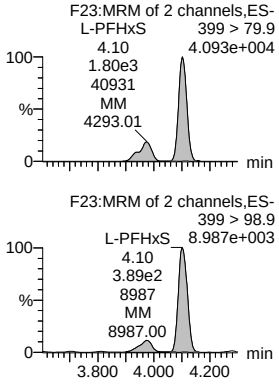
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-68.qld

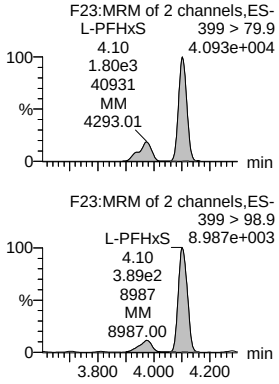
Last Altered: Wednesday, July 08, 2020 20:06:25 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:08:41 Pacific Daylight Time

Name: 200706P1-68, Date: 06-Jul-2020, Time: 22:12:25, ID: 2001358-06 24-GW-24MW10C-20200624 0.25497, Description: 24-GW-24MW10C-20200624

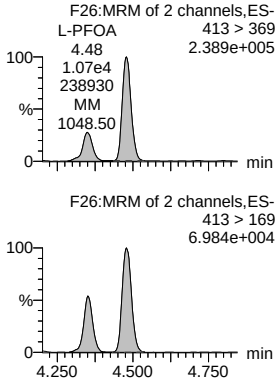
L-PFHxS



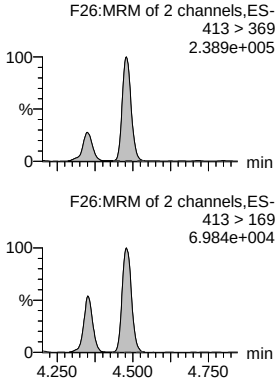
Total PFHxS



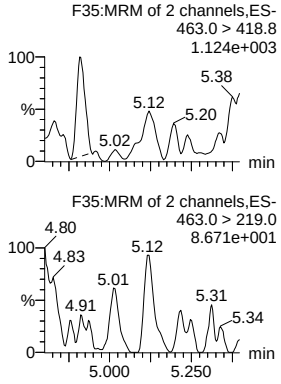
L-PFOA



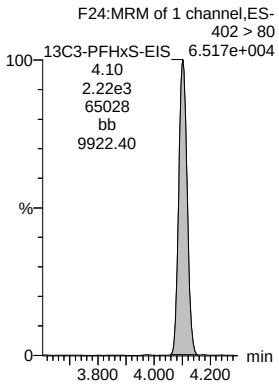
Total PFOA



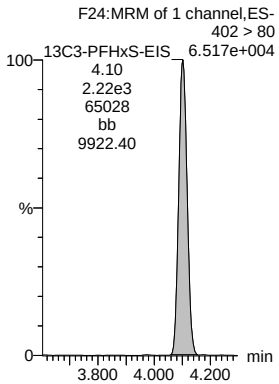
PFNA



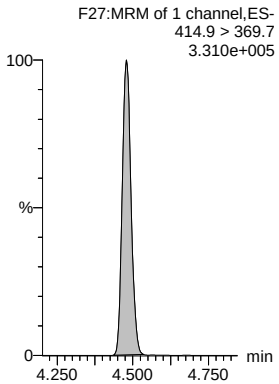
13C3-PFHxS-EIS



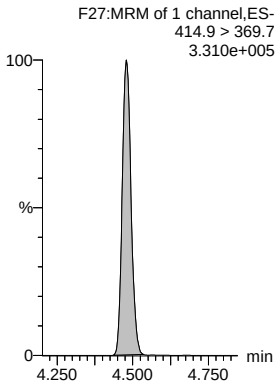
13C3-PFHxS-EIS



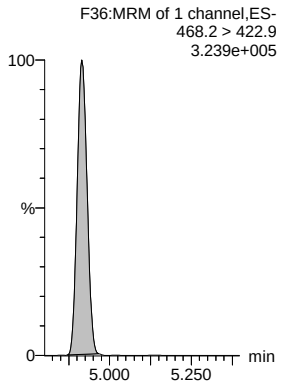
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

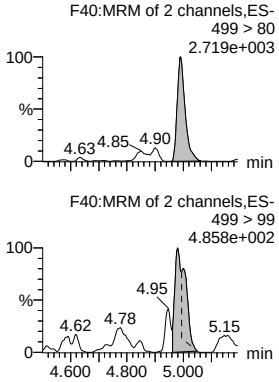
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-68.qld

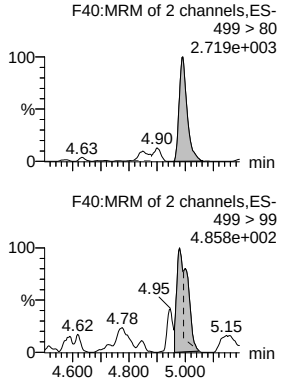
Last Altered: Wednesday, July 08, 2020 20:06:25 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:08:41 Pacific Daylight Time

Name: 200706P1-68, Date: 06-Jul-2020, Time: 22:12:25, ID: 2001358-06 24-GW-24MW10C-20200624 0.25497, Description: 24-GW-24MW10C-20200624

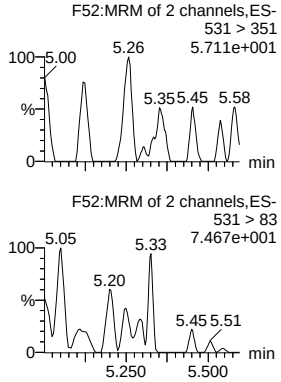
L-PFOS



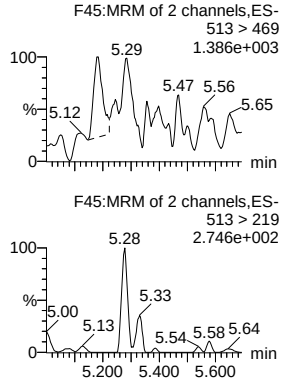
Total PFOS



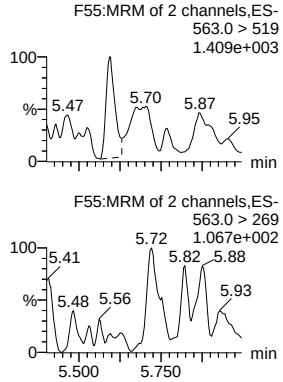
9Cl-PF30NS



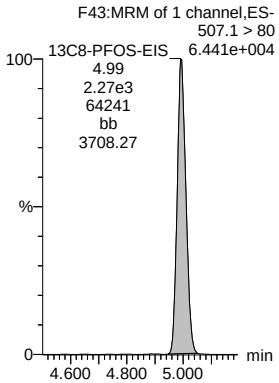
PFDA



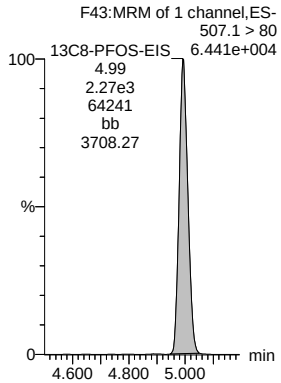
PFUdA



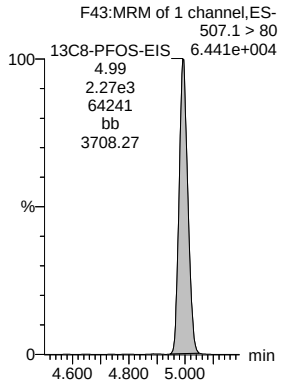
13C8-PFOS-EIS



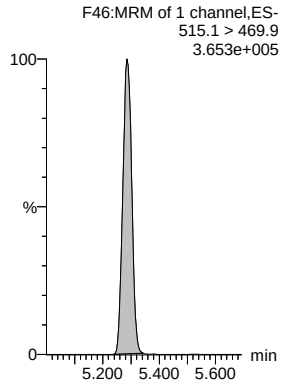
13C8-PFOS-EIS



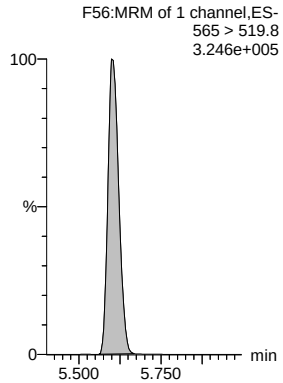
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

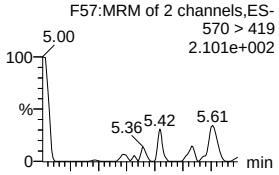
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

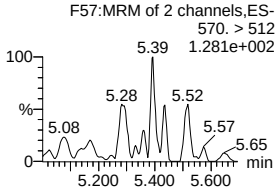
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-68.qld

Last Altered: Wednesday, July 08, 2020 20:06:25 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:08:41 Pacific Daylight Time

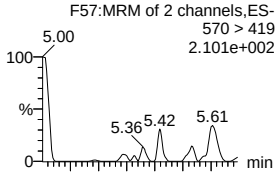
Name: 200706P1-68, Date: 06-Jul-2020, Time: 22:12:25, ID: 2001358-06 24-GW-24MW10C-20200624 0.25497, Description: 24-GW-24MW10C-20200624

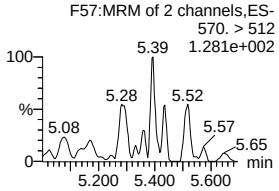
L-MeFOSAA



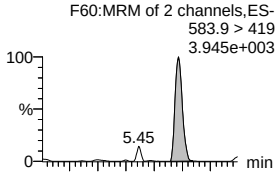


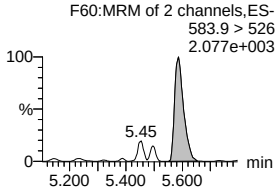
Total N-MeFOSAA



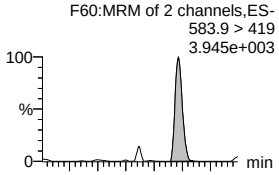


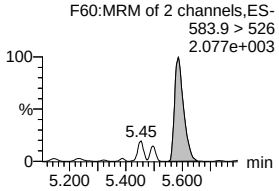
L-EtFOSAA



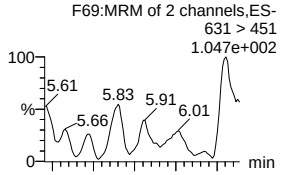


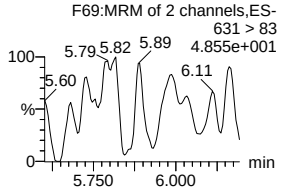
Total N-EtFOSAA



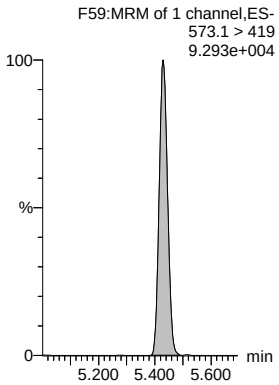


11Cl-PF30UdS

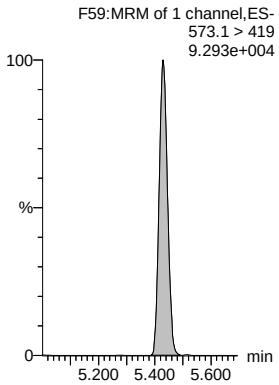




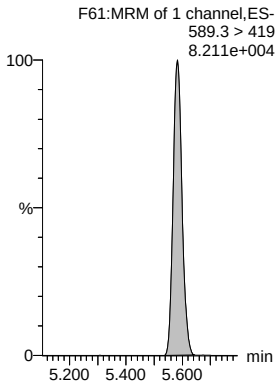
d3-N-MeFOSAA-EIS



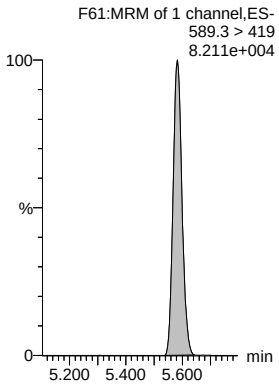
d3-N-MeFOSAA-EIS



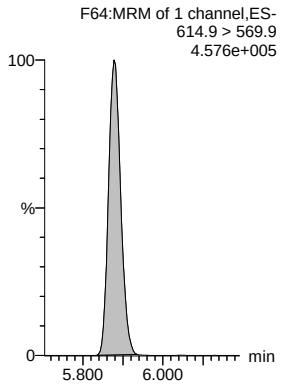
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

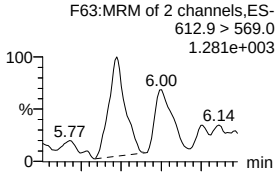
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

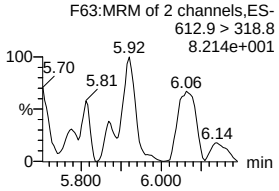
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-68.qld

Last Altered: Wednesday, July 08, 2020 20:06:25 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:08:41 Pacific Daylight Time

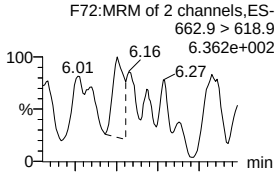
Name: 200706P1-68, Date: 06-Jul-2020, Time: 22:12:25, ID: 2001358-06 24-GW-24MW10C-20200624 0.25497, Description: 24-GW-24MW10C-20200624

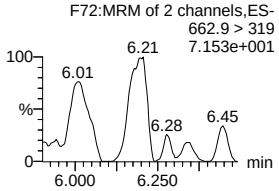
PFDoA



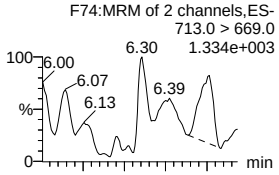


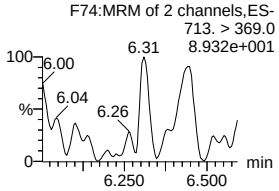
PFTrDA



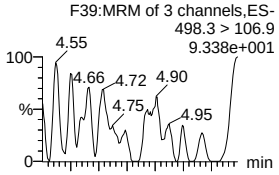


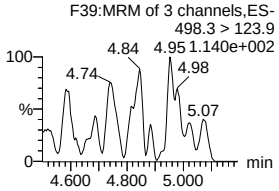
PFTeDA



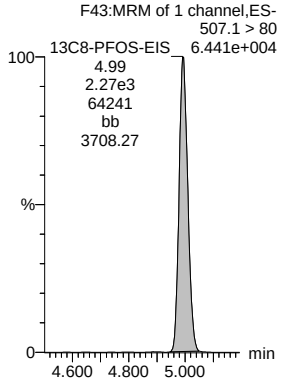


TDCA

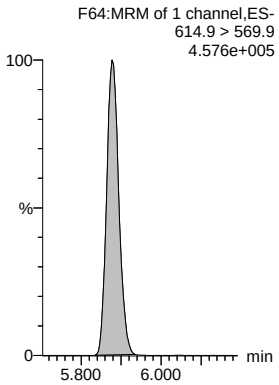




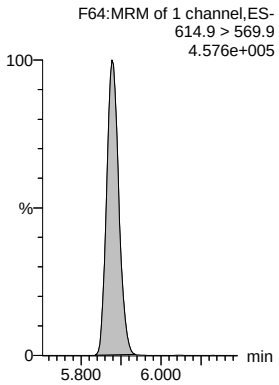
13C8-PFOS-EIS



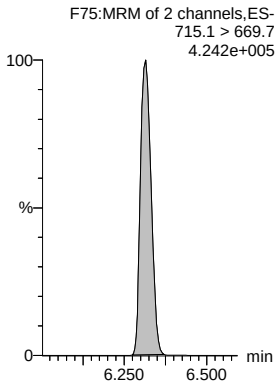
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-53.qld

Last Altered: Wednesday, July 08, 2020 18:10:41 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:12:20 Pacific Daylight Time

Name: 200706P1-53, Date: 06-Jul-2020, Time: 19:34:50, ID: B0F0257-MS1 Matrix Spike 0.2511, 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 > 80	5.975e3	9.696e2	0.251		2.85	2.85	77.0	120.100		2.578	NO
2	7	PFHxA	313.0 > 269.0	5.595e4	1.004e4	0.251		3.38	3.38	69.7	267.637		17.274	NO
3	9	HFPO-DA	285.1 > 168.9	1.722e3	1.930e3	0.251		3.58	3.58	11.2	44.168		2.416	NO
4	11	PFHpA	363.0 > 319	1.329e4	9.114e3	0.251		3.97	3.97	18.2	55.807		48.837	NO
5	12	ADONA	376.8 > 250.9	1.527e4	9.114e3	0.251		4.07	4.08	20.9	38.341		4.345	NO
6	51	13C3-PFBS-EIS	302.0 > 98.9	9.696e2		0.251	104.004	2.87	2.85	970	37.128	74.6		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.004e4		0.251	1090.353	3.38	3.38	10000	36.668	73.7		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	1.930e3		0.251	228.261	3.59	3.58	1930	33.670	67.6		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	9.114e3		0.251	983.154	3.98	3.97	9110	36.920	74.2		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	9.114e3		0.251	983.154	3.98	3.97	9110	36.920	74.2		
11	-1													
12	13	L-PFHxS	399 > 79.9	3.465e3	2.071e3	0.251		4.11	4.11	20.9	75.975		3.874	NO
13	1...	Total PFHxS	399 > 79.9	3.465e3	2.071e3	0.251		3.93		20.9	75.975			
14	16	L-PFOA	413 > 369	1.882e4	1.050e4	0.251		4.49	4.49	22.4	79.073		2.872	NO
15	1...	Total PFOA	413 > 369	1.882e4	1.050e4	0.251		4.60		22.4	79.073			
16	21	PFNA	463.0 > 418.8	1.015e4	1.138e4	0.251		4.92	4.92	11.1	39.707		14.264	NO
17	61	13C3-PFHxS-EIS	402 > 80	2.071e3		0.251	220.112	4.13	4.11	2070	37.467	75.3		
18	61	13C3-PFHxS-EIS	402 > 80	2.071e3		0.251	220.112	4.13	4.11	2070	37.467	75.3		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.050e4		0.251	1154.443	4.67	4.49	10500	36.211	72.7		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.050e4		0.251	1154.443	4.67	4.49	10500	36.211	72.7		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.138e4		0.251	1213.140	5.13	4.92	11400	37.364	75.1		
22	-1													
23	23	L-PFOS	499 > 80	2.035e3	2.085e3	0.251		5.00	5.00	12.2	38.335		2.502	NO
24	1...	Total PFOS	499> 80	2.035e3	2.085e3	0.251		4.60		12.2	38.335			
25	25	9Cl-PF30NS	531 > 351	4.772e3	2.085e3	0.251		5.22	5.22	28.6	40.007		41.408	NO
26	26	PFDA	513 > 469	9.436e3	1.301e4	0.251		5.29	5.29	9.07	42.523		5.568	NO
27	33	PFUdA	563.0 > 519	1.080e4	1.218e4	0.251		5.61	5.61	11.1	40.139		18.453	NO
28	71	13C8-PFOS-EIS	507.1 > 80	2.085e3		0.251	225.510	5.02	5.00	2090	36.824	74.0		
29	71	13C8-PFOS-EIS	507.1 > 80	2.085e3		0.251	225.510	5.02	5.00	2090	36.824	74.0		
30	71	13C8-PFOS-EIS	507.1 > 80	2.085e3		0.251	225.510	5.02	5.00	2090	36.824	74.0		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.301e4		0.251	1491.471	5.31	5.29	13000	34.734	69.8		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.218e4		0.251	1581.335	5.54	5.61	12200	30.675	61.6		
33	-1													
34	29	L-MeFOSAA	570 > 419	2.828e3	2.813e3	0.251		5.44	5.44	12.6	41.144		1.834	NO
35	1...	Total N-MeFOSAA	570. > 419	2.828e3	2.813e3	0.251		5.19		12.6	41.144			
36	31	L-EtFOSAA	583.9 > 419	3.260e3	2.576e3	0.251		5.59	5.59	15.8	45.405		1.430	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-53.qld

Last Altered: Wednesday, July 08, 2020 18:10:41 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:12:20 Pacific Daylight Time

Name: 200706P1-53, Date: 06-Jul-2020, Time: 19:34:50, ID: B0F0257-MS1 Matrix Spike 0.2511, 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	583.9 > 419	3.260e3	2.576e3	0.251		5.37		15.8	45.405			
38	35	11Cl-PF30UdS	631 > 451	3.127e3	1.495e4	0.251		5.81	5.81	2.62	40.312		16.203	NO
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.813e3		0.251	331.163	5.46	5.44	2810	33.832	68.0		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.813e3		0.251	331.163	5.46	5.44	2810	33.832	68.0		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.576e3		0.251	313.941	5.61	5.59	2580	32.677	65.6		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.576e3		0.251	313.941	5.61	5.59	2580	32.677	65.6		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.495e4		0.251	1868.510	6.13	5.89	14900	31.861	64.0		
44	-1													
45	37	PFDoA	612.9 > 569.0	1.208e4	1.495e4	0.251		5.89	5.88	10.1	41.024		12.928	NO
46	39	PFTrDA	662.9 > 618.9	1.183e4	1.495e4	0.251		6.15	6.12	9.89	37.863		94.284	NO
47	41	PFTeDA	713.0 > 669.0	7.592e3	1.478e4	0.251		6.32	6.32	6.42	38.447		14.253	NO
48	1...	TDCA	498.3>106.9			0.251	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.085e3		0.251	225.510	5.02	5.00	2090	36.824	74.0		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.495e4		0.251	1868.510	6.13	5.89	14900	31.861	64.0		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.495e4		0.251	1868.510	6.13	5.89	14900	31.861	64.0		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.478e4		0.251	1905.823	6.34	6.32	14800	30.884	62.0		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

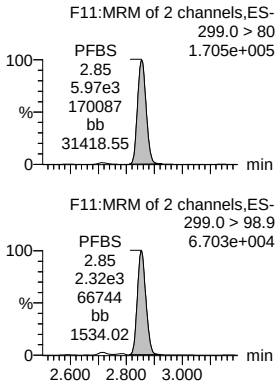
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-53.qld

Last Altered: Wednesday, July 08, 2020 18:10:41 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:12:20 Pacific Daylight Time

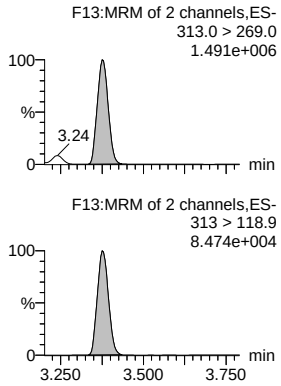
Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 18:06:39
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-53, Date: 06-Jul-2020, Time: 19:34:50, ID: B0F0257-MS1 Matrix Spike 0.2511, Description: Matrix Spike

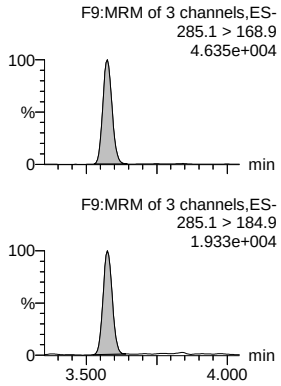
PFBS



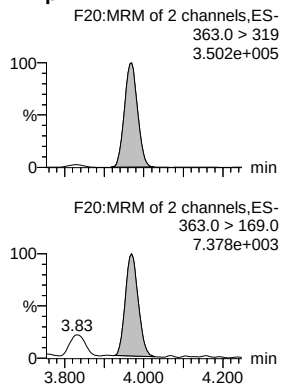
PFHxA



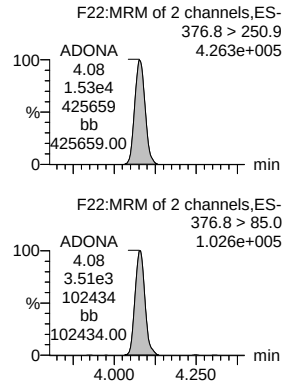
HFPO-DA



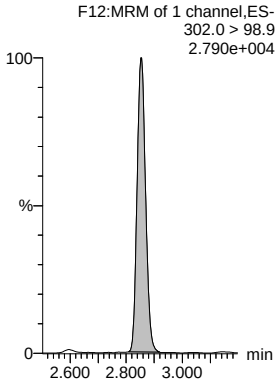
PFHpA



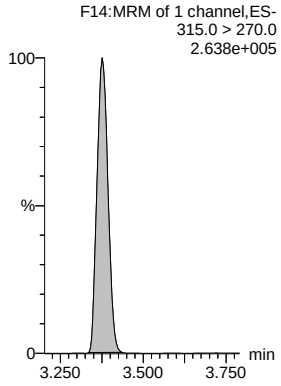
ADONA



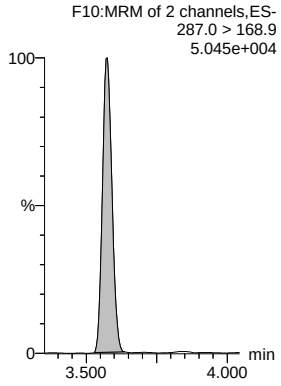
13C3-PFBS-EIS



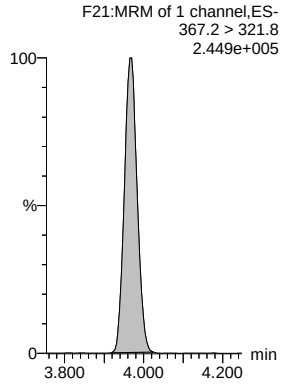
13C2-PFHxA-EIS



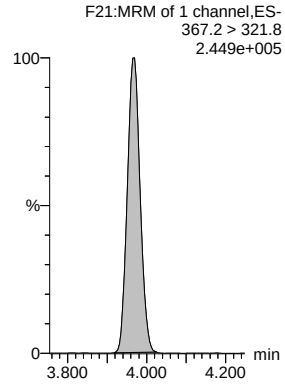
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

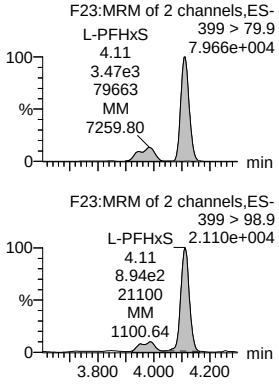
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-53.qld

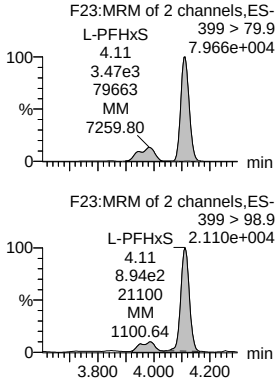
Last Altered: Wednesday, July 08, 2020 18:10:41 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:12:20 Pacific Daylight Time

Name: 200706P1-53, Date: 06-Jul-2020, Time: 19:34:50, ID: B0F0257-MS1 Matrix Spike 0.2511, Description: Matrix Spike

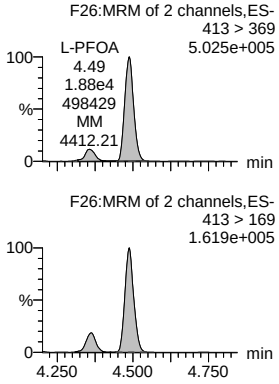
L-PFHxS



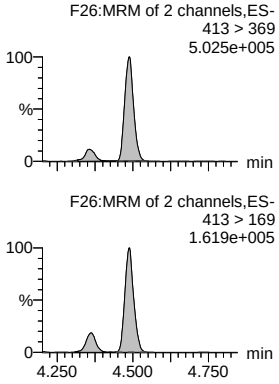
Total PFHxS



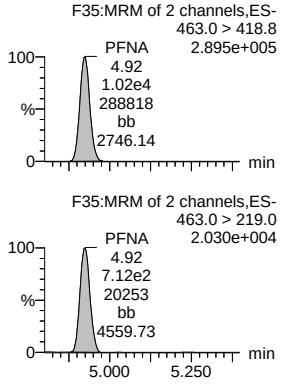
L-PFOA



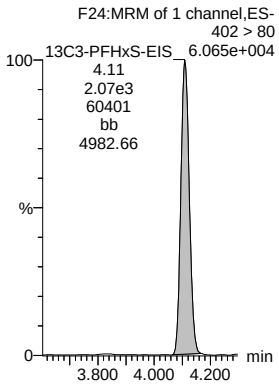
Total PFOA



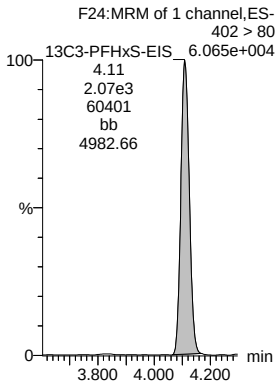
PFNA



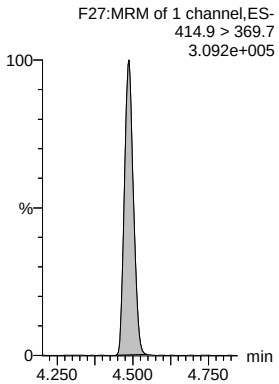
13C3-PFHxS-EIS



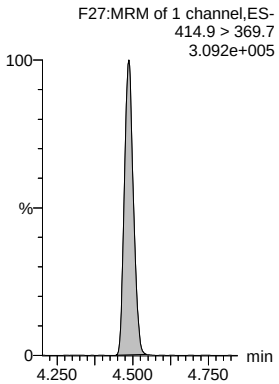
13C3-PFHxS-EIS



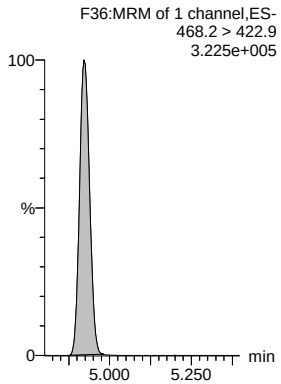
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

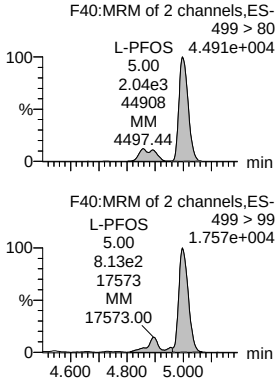
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-53.qld

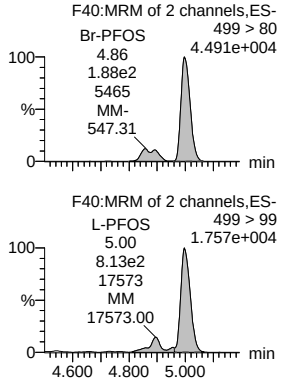
Last Altered: Wednesday, July 08, 2020 18:10:41 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:12:20 Pacific Daylight Time

Name: 200706P1-53, Date: 06-Jul-2020, Time: 19:34:50, ID: B0F0257-MS1 Matrix Spike 0.2511, Description: Matrix Spike

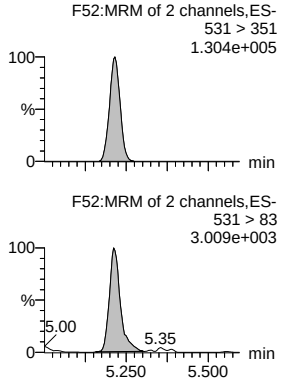
L-PFOS



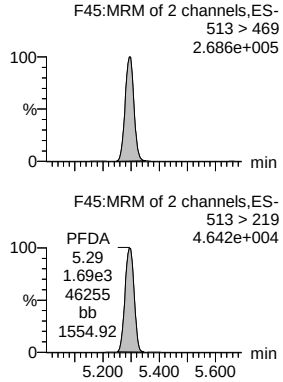
Total PFOS



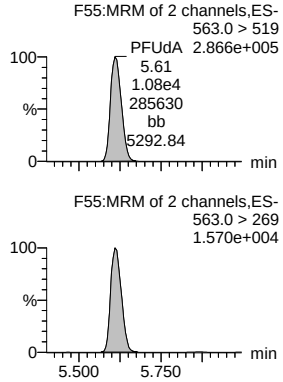
9Cl-PF30NS



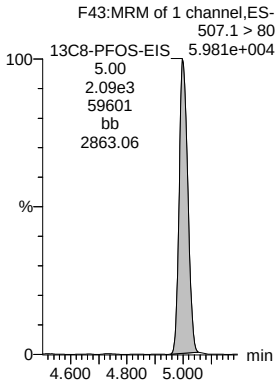
PFDA



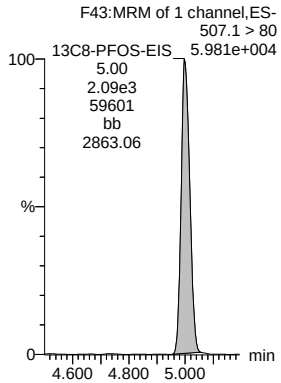
PFUdA



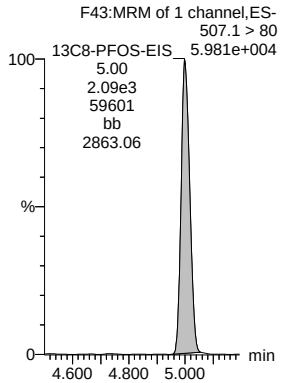
13C8-PFOS-EIS



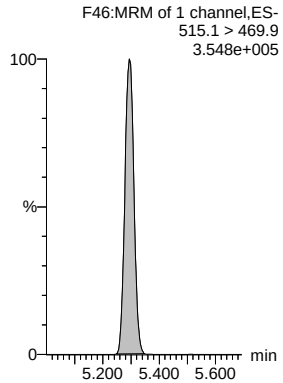
13C8-PFOS-EIS



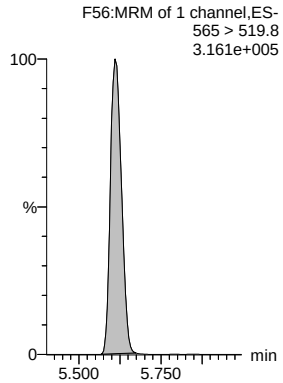
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

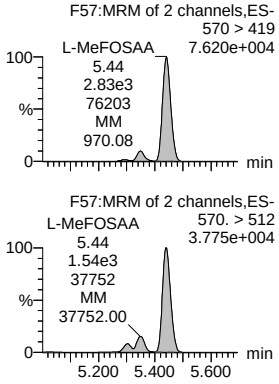
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-53.qld

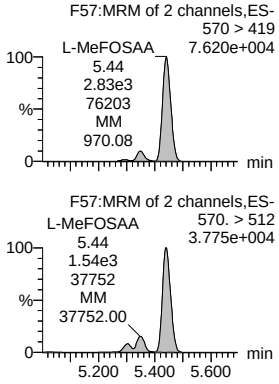
Last Altered: Wednesday, July 08, 2020 18:10:41 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:12:20 Pacific Daylight Time

Name: 200706P1-53, Date: 06-Jul-2020, Time: 19:34:50, ID: B0F0257-MS1 Matrix Spike 0.2511, Description: Matrix Spike

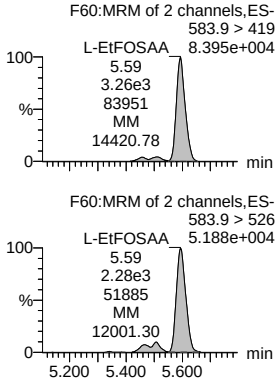
L-MeFOSAA



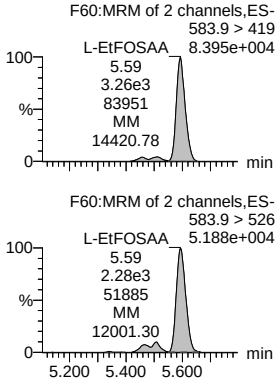
Total N-MeFOSAA



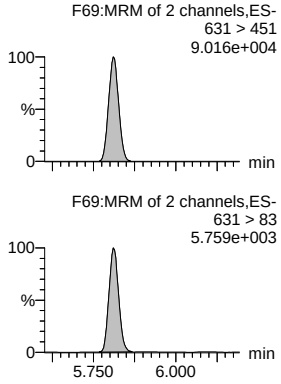
L-EtFOSAA



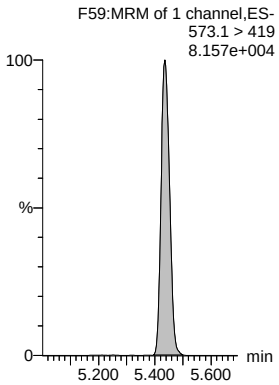
Total N-EtFOSAA



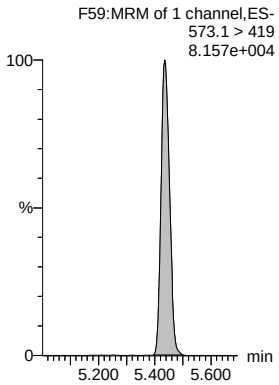
11Cl-PF30UdS



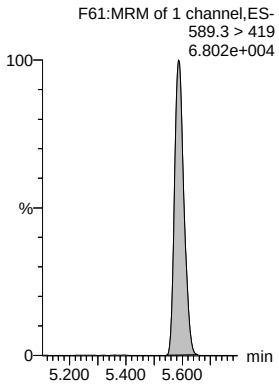
d3-N-MeFOSAA-EIS



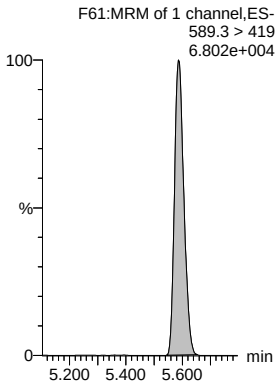
d3-N-MeFOSAA-EIS



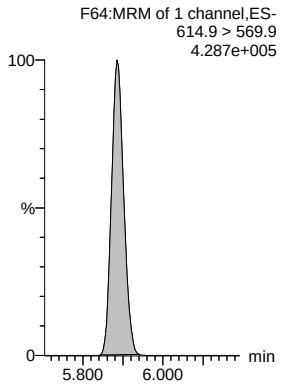
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

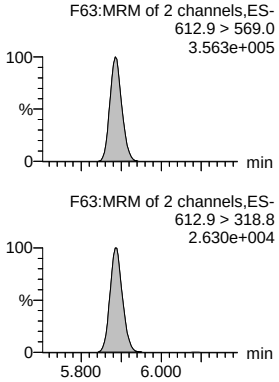
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-53.qld

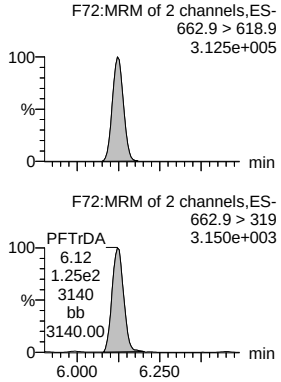
Last Altered: Wednesday, July 08, 2020 18:10:41 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:12:20 Pacific Daylight Time

Name: 200706P1-53, Date: 06-Jul-2020, Time: 19:34:50, ID: B0F0257-MS1 Matrix Spike 0.2511, Description: Matrix Spike

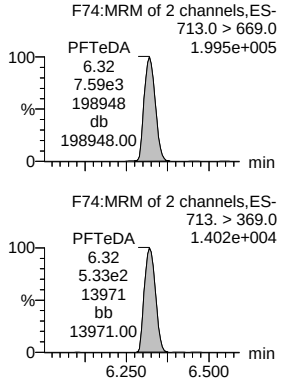
PFDoA



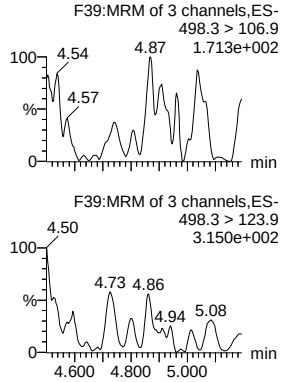
PFTrDA



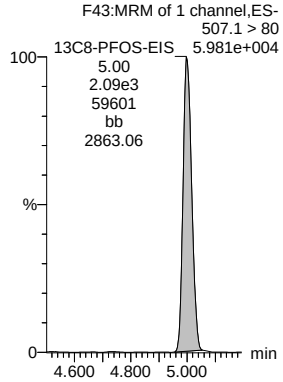
PFTeDA



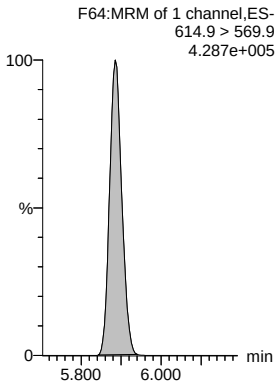
TDCA



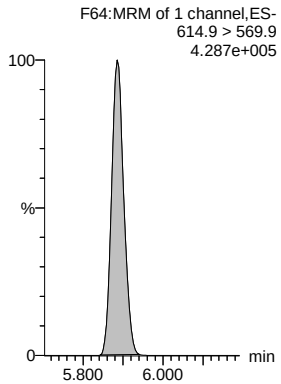
13C8-PFOS-EIS



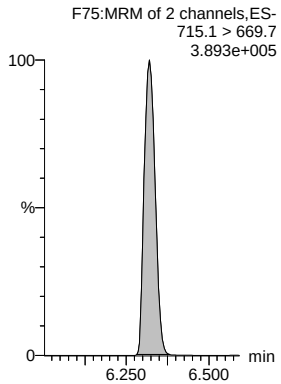
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-54.qld

Last Altered: Wednesday, July 08, 2020 18:16:57 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:17:45 Pacific Daylight Time

Name: 200706P1-54, Date: 06-Jul-2020, Time: 19:45:19, ID: B0F0257-MSD1 Matrix Spike Dup 0.24211, 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 > 80	6.221e3	1.126e3	0.242		2.85	2.85	69.1	111.695		2.532	NO
2	7	PFHxA	313.0 > 269.0	5.769e4	1.096e4	0.242		3.38	3.38	65.8	262.127		16.593	NO
3	9	HFPO-DA	285.1 > 168.9	1.646e3	2.091e3	0.242		3.58	3.58	9.84	40.415		2.241	NO
4	11	PFHpA	363.0 > 319	1.315e4	9.360e3	0.242		3.97	3.97	17.6	55.786		48.406	NO
5	12	ADONA	376.8 > 250.9	1.641e4	9.360e3	0.242		4.07	4.08	21.9	41.625		3.769	NO
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.126e3		0.242	104.004	2.87	2.85	1130	44.699	86.6		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	1.096e4		0.242	1090.353	3.38	3.38	11000	41.524	80.4		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.091e3		0.242	228.261	3.59	3.58	2090	37.829	73.3		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	9.360e3		0.242	983.154	3.98	3.97	9360	39.321	76.2		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	9.360e3		0.242	983.154	3.98	3.97	9360	39.321	76.2		
11	-1													
12	13	L-PFHxS	399 > 79.9	3.728e3	2.077e3	0.242		4.11	4.11	22.4	84.556		3.961	NO
13	1...	Total PFHxS	399 > 79.9	3.728e3	2.077e3	0.242		3.93		22.4	84.556			
14	16	L-PFOA	413 > 369	2.104e4	1.150e4	0.242		4.49	4.49	22.9	83.657		2.970	NO
15	1...	Total PFOA	413 > 369	2.104e4	1.150e4	0.242		4.60		22.9	83.657			
16	21	PFNA	463.0 > 418.8	1.150e4	1.265e4	0.242		4.92	4.93	11.4	41.980		14.088	NO
17	61	13C3-PFHxS-EIS	402 > 80	2.077e3		0.242	220.112	4.13	4.11	2080	38.971	75.5		
18	61	13C3-PFHxS-EIS	402 > 80	2.077e3		0.242	220.112	4.13	4.11	2080	38.971	75.5		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.150e4		0.242	1154.443	4.67	4.49	11500	41.153	79.7		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.150e4		0.242	1154.443	4.67	4.49	11500	41.153	79.7		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.265e4		0.242	1213.140	5.13	4.92	12700	43.082	83.4		
22	-1													
23	23	L-PFOS	499 > 80	2.333e3	2.414e3	0.242		5.00	5.00	12.1	39.368		2.405	NO
24	1...	Total PFOS	499> 80	2.333e3	2.414e3	0.242		4.60		12.1	39.368			
25	25	9Cl-PF30NS	531 > 351	5.059e3	2.414e3	0.242		5.22	5.22	26.2	37.989		40.741	NO
26	26	PFDA	513 > 469	1.073e4	1.501e4	0.242		5.29	5.29	8.94	43.464		5.000	NO
27	33	PFUdA	563.0 > 519	1.215e4	1.403e4	0.242		5.61	5.61	10.8	40.666		19.782	NO
28	71	13C8-PFOS-EIS	507.1 > 80	2.414e3		0.242	225.510	5.02	5.00	2410	44.221	85.7		
29	71	13C8-PFOS-EIS	507.1 > 80	2.414e3		0.242	225.510	5.02	5.00	2410	44.221	85.7		
30	71	13C8-PFOS-EIS	507.1 > 80	2.414e3		0.242	225.510	5.02	5.00	2410	44.221	85.7		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.501e4		0.242	1491.471	5.31	5.29	15000	41.562	80.5		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.403e4		0.242	1581.335	5.54	5.61	14000	36.637	71.0		
33	-1													
34	29	L-MeFOSAA	570 > 419	2.971e3	3.392e3	0.242		5.44	5.44	10.9	37.191		1.664	NO
35	1...	Total N-MeFOSAA	570. > 419	2.971e3	3.392e3	0.242		5.19		10.9	37.191			
36	31	L-EtFOSAA	583.9 > 419	3.274e3	3.143e3	0.242		5.59	5.59	13.0	38.786		1.365	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-54.qld

Last Altered: Wednesday, July 08, 2020 18:16:57 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:17:45 Pacific Daylight Time

Name: 200706P1-54, Date: 06-Jul-2020, Time: 19:45:19, ID: B0F0257-MSD1 Matrix Spike Dup 0.24211, 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	583.9 > 419	3.274e3	3.143e3	0.242		5.37		13.0	38.786			
38	35	11Cl-PF30UdS	631 > 451	3.675e3	1.756e4	0.242		5.81	5.81	2.62	41.839		16.055	NO
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.392e3		0.242	331.163	5.46	5.44	3390	42.308	81.9		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	3.392e3		0.242	331.163	5.46	5.44	3390	42.308	81.9		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.143e3		0.242	313.941	5.61	5.59	3140	41.344	80.1		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	3.143e3		0.242	313.941	5.61	5.59	3140	41.344	80.1		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.756e4		0.242	1868.510	6.13	5.89	17600	38.805	75.2		
44	-1													
45	37	PFDoA	612.9 > 569.0	1.312e4	1.756e4	0.242		5.89	5.88	9.35	39.348		12.631	NO
46	39	PFTrDA	662.9 > 618.9	1.313e4	1.756e4	0.242		6.15	6.12	9.35	37.102		82.618	NO
47	41	PFTeDA	713.0 > 669.0	9.359e3	1.790e4	0.242		6.32	6.32	6.54	40.597		14.163	NO
48	1...	TDCA	498.3>106.9			0.242	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.414e3		0.242	225.510	5.02	5.00	2410	44.221	85.7		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.756e4		0.242	1868.510	6.13	5.89	17600	38.805	75.2		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.756e4		0.242	1868.510	6.13	5.89	17600	38.805	75.2		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.790e4		0.242	1905.823	6.34	6.32	17900	38.792	75.1		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

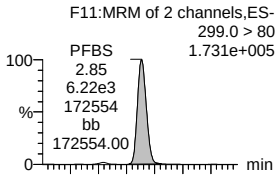
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-54.qld

Last Altered: Wednesday, July 08, 2020 18:16:57 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:17:45 Pacific Daylight Time

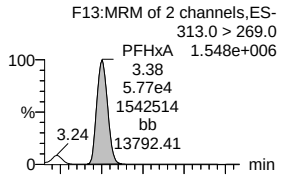
Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 18:13:54
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-54, Date: 06-Jul-2020, Time: 19:45:19, ID: B0F0257-MSD1 Matrix Spike Dup 0.24211, Description: Matrix Spike Dup

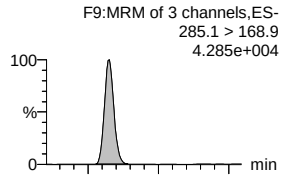
PFBS



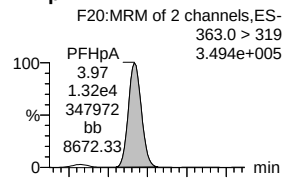
PFHxA



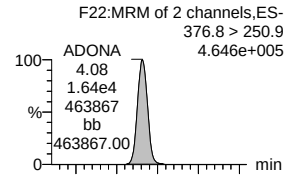
HFPO-DA



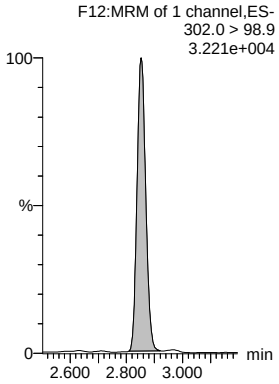
PFHpA



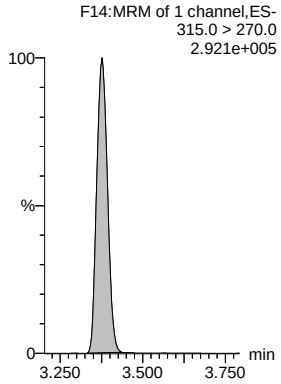
ADONA



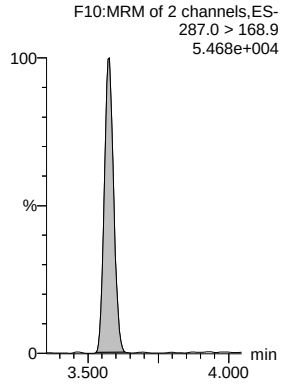
13C3-PFBS-EIS



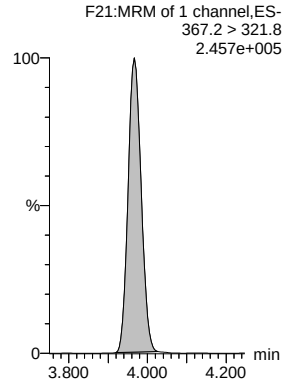
13C2-PFHxA-EIS



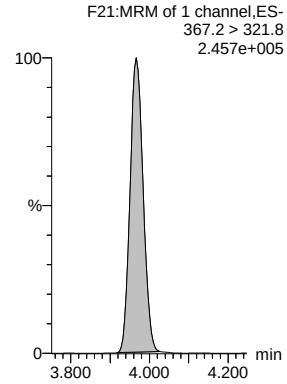
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

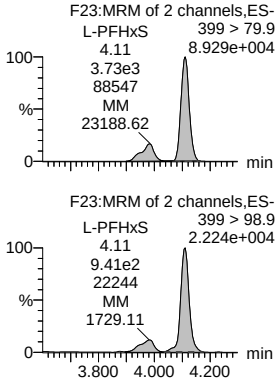
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-54.qld

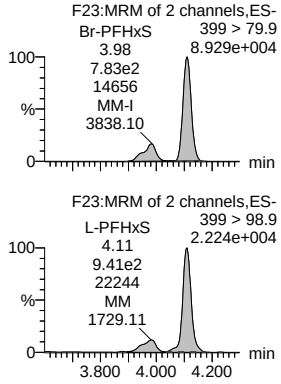
Last Altered: Wednesday, July 08, 2020 18:16:57 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:17:45 Pacific Daylight Time

Name: 200706P1-54, Date: 06-Jul-2020, Time: 19:45:19, ID: B0F0257-MSD1 Matrix Spike Dup 0.24211, Description: Matrix Spike Dup

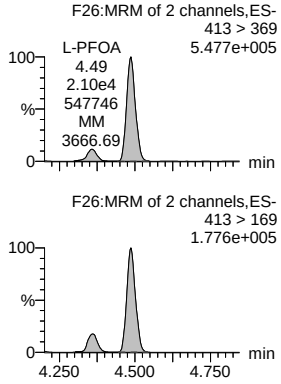
L-PFHxS



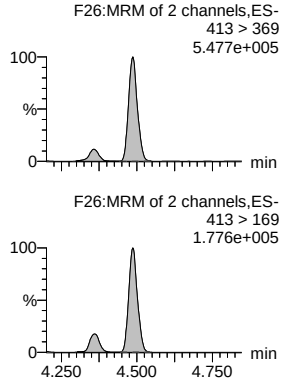
Total PFHxS



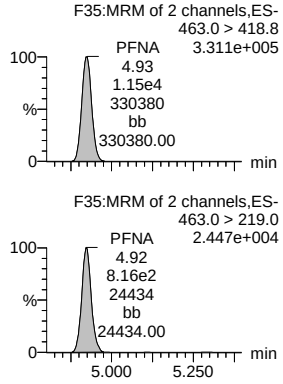
L-PFOA



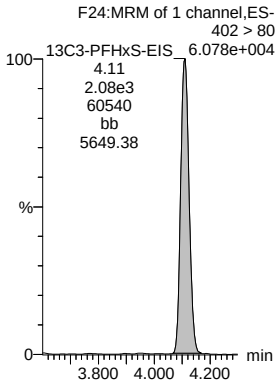
Total PFOA



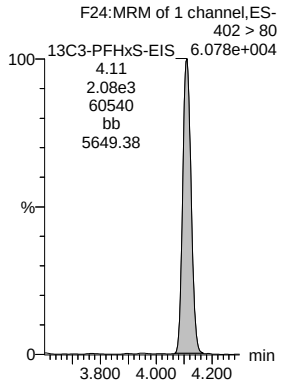
PFNA



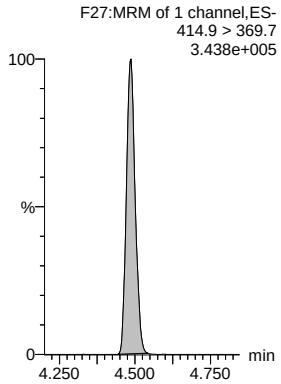
13C3-PFHxS-EIS



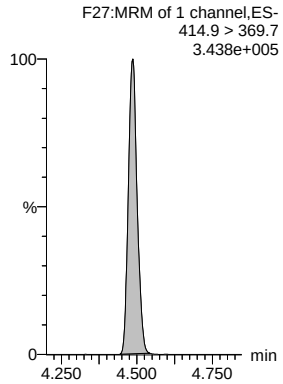
13C3-PFHxS-EIS



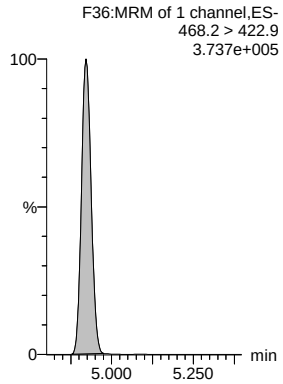
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

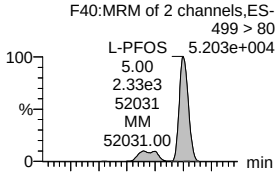
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

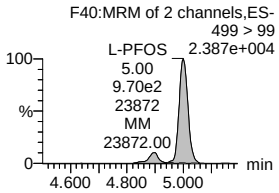
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-54.qld

Last Altered: Wednesday, July 08, 2020 18:16:57 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:17:45 Pacific Daylight Time

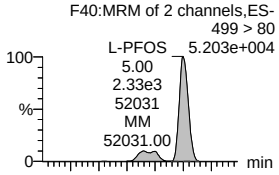
Name: 200706P1-54, Date: 06-Jul-2020, Time: 19:45:19, ID: B0F0257-MSD1 Matrix Spike Dup 0.24211, Description: Matrix Spike Dup

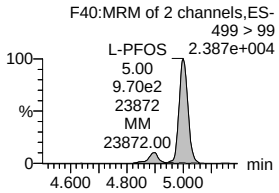
L-PFOS



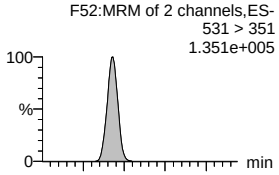


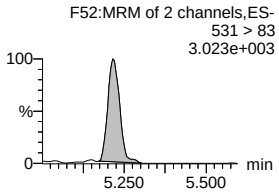
Total PFOS



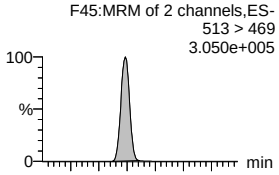


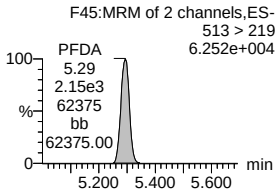
9Cl-PF30NS



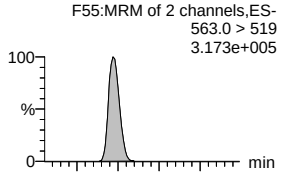


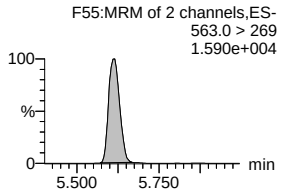
PFDA



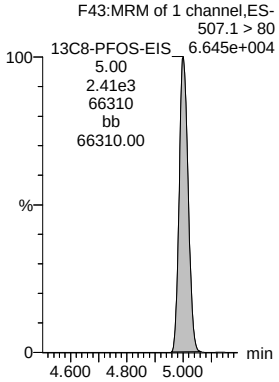


PFUdA

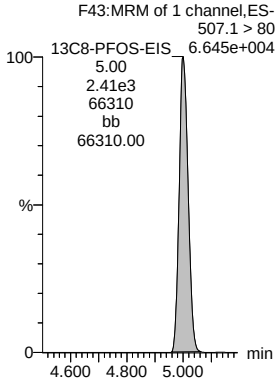




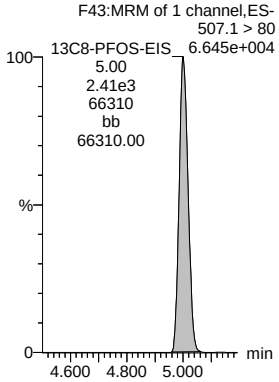
13C8-PFOS-EIS



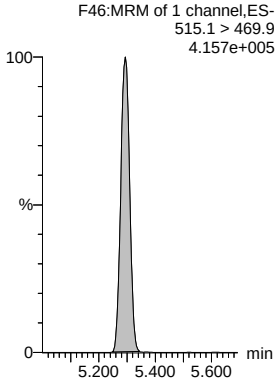
13C8-PFOS-EIS



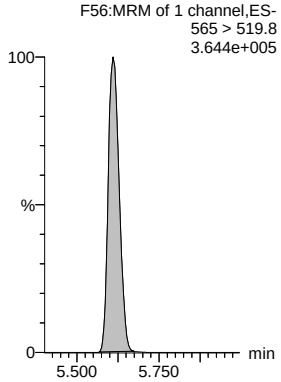
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

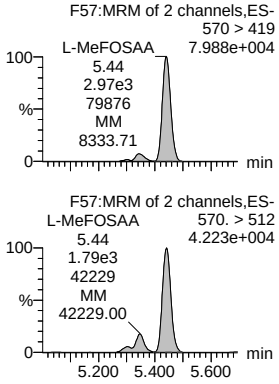
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-54.qld

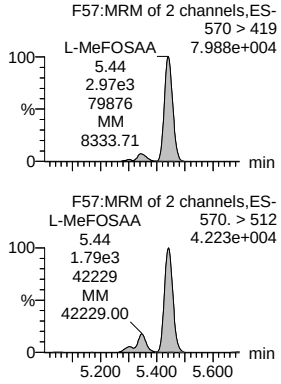
Last Altered: Wednesday, July 08, 2020 18:16:57 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:17:45 Pacific Daylight Time

Name: 200706P1-54, Date: 06-Jul-2020, Time: 19:45:19, ID: B0F0257-MSD1 Matrix Spike Dup 0.24211, Description: Matrix Spike Dup

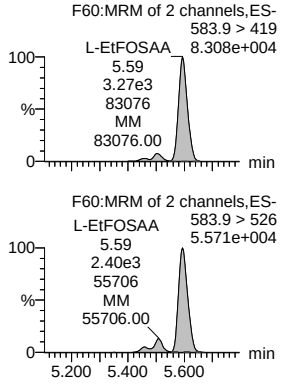
L-MeFOSAA



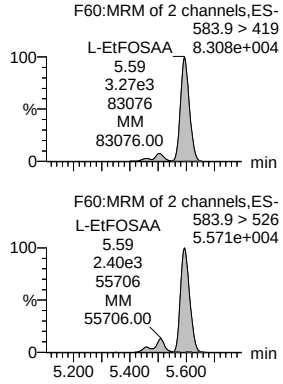
Total N-MeFOSAA



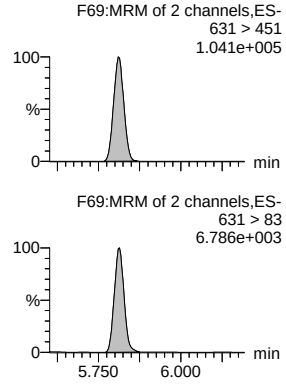
L-EtFOSAA



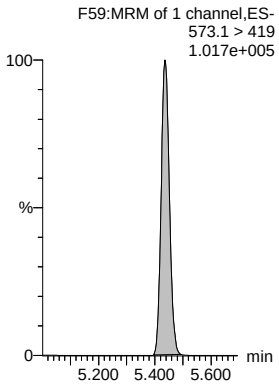
Total N-EtFOSAA



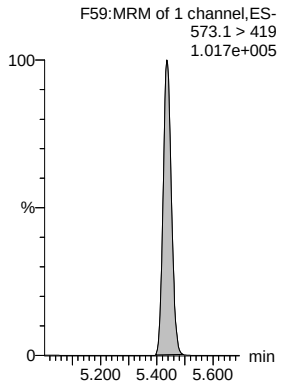
11Cl-PF30UdS



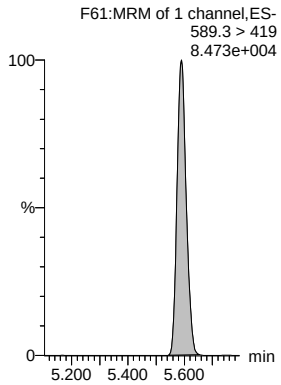
d3-N-MeFOSAA-EIS



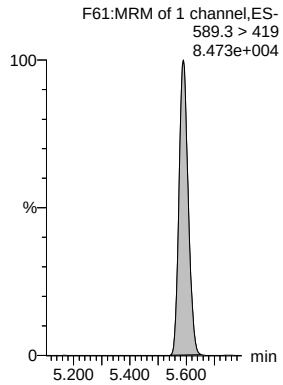
d3-N-MeFOSAA-EIS



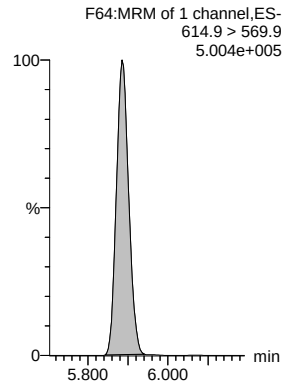
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

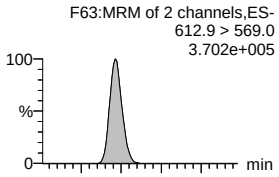
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

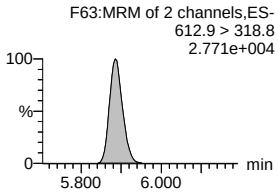
Dataset: P:\PFAS5.PRO\RESULTS\200706P1\200706P1-54.qld

Last Altered: Wednesday, July 08, 2020 18:16:57 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 18:17:45 Pacific Daylight Time

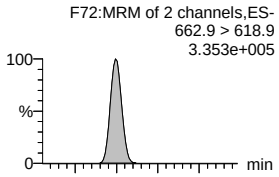
Name: 200706P1-54, Date: 06-Jul-2020, Time: 19:45:19, ID: B0F0257-MSD1 Matrix Spike Dup 0.24211, Description: Matrix Spike Dup

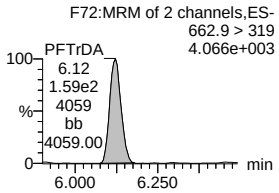
PFDoA



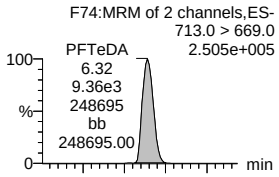


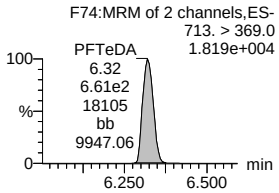
PFTrDA



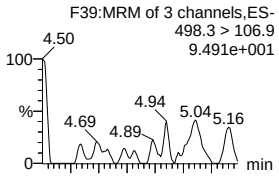


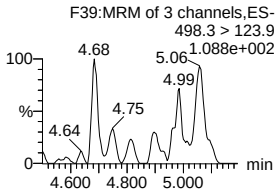
PFTeDA



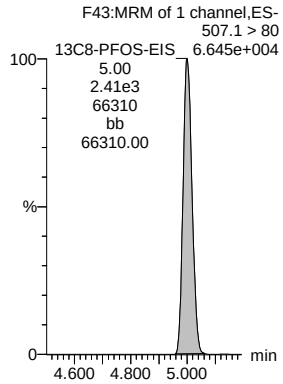


TDCA

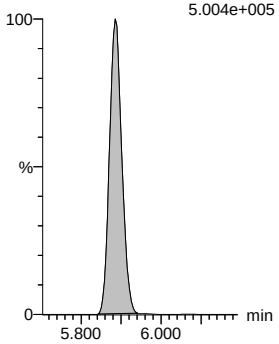




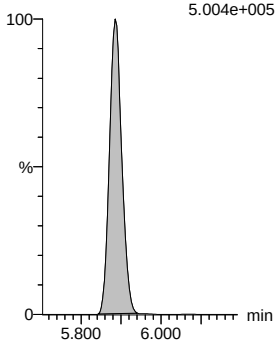
13C8-PFOS-EIS



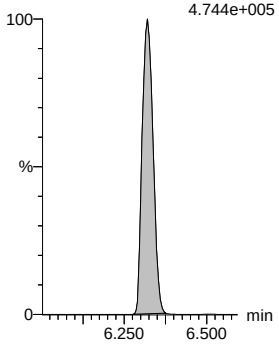
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 6 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200630P1\200630P1-69.qld

Last Altered: Wednesday, July 08, 2020 20:12:30 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:13:05 Pacific Daylight Time

Name: 200706P1-69, Date: 06-Jul-2020, Time: 22:22:53, ID: 2001358-07 24-GW-24MW07R-20200624 0.25444, Description: 24-GW-24MW07R-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
1	5	PFBS	299.0 > 80	1.698e3	1.008e3	0.254		2.85	2.84	21.1	32.334		2.546	NO
2	7	PFHxA	313.0 > 269.0	2.626e4	9.305e3	0.254		3.37	3.37	35.3	133.619		16.871	NO
3	9	HFPO-DA	285.1 > 168.9		2.056e3	0.254		3.57						YES
4	11	PFHpA	363.0 > 319	2.969e3	8.497e3	0.254		3.96	3.96	4.37	13.100		38.949	NO
5	12	ADONA	376.8 > 250.9		8.497e3	0.254		4.06						YES
6	51	13C3-PFBS-EIS	302.0 > 98.9	1.008e3		0.254	104.004	2.87	2.85	1010	38.087	77.5		
7	57	13C2-PFHxA-EIS	315.0 > 270.0	9.305e3		0.254	1090.353	3.38	3.37	9300	33.539	68.3		
8	53	13C3-HFPO-DA-EIS	287.0 > 168.9	2.056e3		0.254	228.261	3.59	3.57	2060	35.398	72.1		
9	59	13C4-PFHpA-EIS	367.2 > 321.8	8.497e3		0.254	983.154	3.98	3.96	8500	33.967	69.1		
10	59	13C4-PFHpA-EIS	367.2 > 321.8	8.497e3		0.254	983.154	3.98	3.96	8500	33.967	69.1		
11	-1													
12	13	L-PFHxS	399 > 79.9	1.366e3	2.036e3	0.254		4.10	4.10	8.39	29.898		4.316	NO
13	1...	Total PFHxS	399 > 79.9	1.366e3	2.036e3	0.254		3.93		8.39	29.898			
14	16	L-PFOA	413 > 369	2.186e4	1.050e4	0.254		4.48	4.48	26.0	90.693		2.849	NO
15	1...	Total PFOA	413 > 369	2.186e4	1.050e4	0.254		4.60		26.0	90.693			
16	21	PFNA	463.0 > 418.8		1.058e4	0.254		4.92						YES
17	61	13C3-PFHxS-EIS	402 > 80	2.036e3		0.254	220.112	4.13	4.10	2040	36.348	74.0		
18	61	13C3-PFHxS-EIS	402 > 80	2.036e3		0.254	220.112	4.13	4.10	2040	36.348	74.0		
19	69	13C2-PFOA-EIS	414.9 > 369.7	1.050e4		0.254	1154.443	4.67	4.48	10500	35.737	72.7		
20	69	13C2-PFOA-EIS	414.9 > 369.7	1.050e4		0.254	1154.443	4.67	4.48	10500	35.737	72.7		
21	65	13C5-PFNA-EIS	468.2 > 422.9	1.058e4		0.254	1213.140	5.13	4.92	10600	34.271	69.8		
22	-1													
23	23	L-PFOS	499 > 80		2.081e3	0.254		4.99						YES
24	1...	Total PFOS	499> 80	0.000e0	2.081e3	0.254		4.60		0.000				
25	25	9Cl-PF30NS	531 > 351		2.081e3	0.254		5.21						YES
26	26	PFDA	513 > 469		1.269e4	0.254		5.29						YES
27	33	PFUdA	563.0 > 519		1.267e4	0.254		5.60						YES
28	71	13C8-PFOS-EIS	507.1 > 80	2.081e3		0.254	225.510	5.02	4.99	2080	36.274	73.8		
29	71	13C8-PFOS-EIS	507.1 > 80	2.081e3		0.254	225.510	5.02	4.99	2080	36.274	73.8		
30	71	13C8-PFOS-EIS	507.1 > 80	2.081e3		0.254	225.510	5.02	4.99	2080	36.274	73.8		
31	73	13C2-PFDA-EIS	515.1 > 469.9	1.269e4		0.254	1491.471	5.31	5.29	12700	33.449	68.1		
32	79	13C2-PFUdA-EIS	565 > 519.8	1.267e4		0.254	1581.335	5.54	5.60	12700	31.494	64.1		
33	-1													
34	29	L-MeFOSAA	570 > 419		2.815e3	0.254		5.43						YES
35	1...	Total N-MeFOSAA	570. > 419	0.000e0	2.815e3	0.254		5.19		0.000				
36	31	L-EtFOSAA	583.9 > 419	4.202e1	2.708e3	0.254		5.58	5.59	0.194	0.725		1.570	NO

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 7 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200630P1\200630P1-69.qld

Last Altered: Wednesday, July 08, 2020 20:12:30 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:13:05 Pacific Daylight Time

Name: 200706P1-69, Date: 06-Jul-2020, Time: 22:22:53, ID: 2001358-07 24-GW-24MW07R-20200624 0.25444, Description: 24-GW-24MW07R-20200624

	#	Name	Trace	Area	IS Area	wt/vol	RRF Mean	Pred.RT	RT	Response	Conc.	%Rec	Ion Ratio	Ratio Out?
37	1...	Total N-EtFOSAA	583.9 > 419	4.202e1	2.708e3	0.254		5.37		0.194	0.725			
38	35	11Cl-PF30UdS	631 > 451		1.517e4	0.254		5.81						YES
39	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.815e3		0.254	331.163	5.46	5.43	2810	33.407	68.0		
40	77	d3-N-MeFOSAA-EIS	573.1 > 419	2.815e3		0.254	331.163	5.46	5.43	2810	33.407	68.0		
41	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.708e3		0.254	313.941	5.61	5.58	2710	33.900	69.0		
42	81	d5-N-EtFOSAA-EIS	589.3 > 419	2.708e3		0.254	313.941	5.61	5.58	2710	33.900	69.0		
43	83	13C2-PFDoA-EIS	614.9 > 569.9	1.517e4		0.254	1868.510	6.13	5.88	15200	31.909	65.0		
44	-1													
45	37	PFDoA	612.9 > 569.0		1.517e4	0.254		5.88						YES
46	39	PFTrDA	662.9 > 618.9		1.517e4	0.254		6.14						YES
47	41	PFTeDA	713.0 > 669.0		1.444e4	0.254		6.31						YES
48	1...	TDCA	498.3>106.9			0.254	0.022	4.47						YES
49	71	13C8-PFOS-EIS	507.1 > 80	2.081e3		0.254	225.510	5.02	4.99	2080	36.274	73.8		
50	83	13C2-PFDoA-EIS	614.9 > 569.9	1.517e4		0.254	1868.510	6.13	5.88	15200	31.909	65.0		
51	83	13C2-PFDoA-EIS	614.9 > 569.9	1.517e4		0.254	1868.510	6.13	5.88	15200	31.909	65.0		
52	89	13C2-PFTeDA-EIS	715.1 > 669.7	1.444e4		0.254	1905.823	6.34	6.31	14400	29.772	60.6		

RK 7/8/2020

Quantify Sample Report **MassLynx V4.2 SCN982** Page 1 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

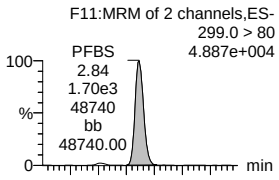
Dataset: P:\PFAS5.PRO\RESULTS\200630P1\200630P1-69.qld

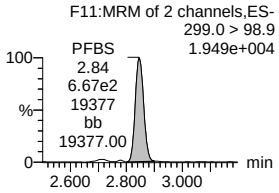
Last Altered: Wednesday, July 08, 2020 20:12:30 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:13:05 Pacific Daylight Time

Method: P:\PFAS5.pro\MethDB\NEW_PFAS_80C_070620.mdb 08 Jul 2020 20:09:56
Calibration: P:\PFAS5.pro\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

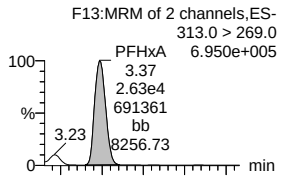
Name: 200706P1-69, Date: 06-Jul-2020, Time: 22:22:53, ID: 2001358-07 24-GW-24MW07R-20200624 0.25444, Description: 24-GW-24MW07R-20200624

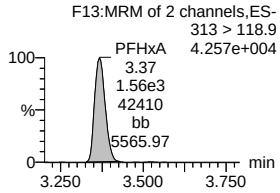
PFBS



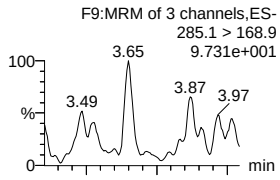


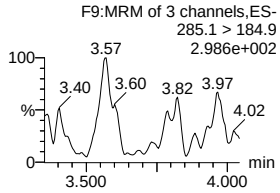
PFHxA



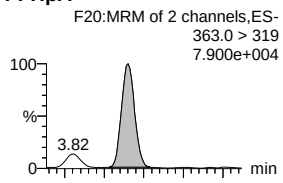


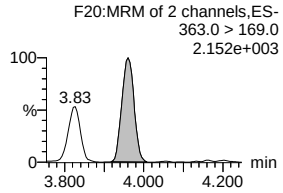
HFPO-DA



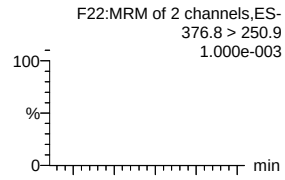


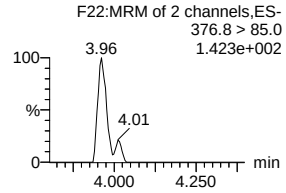
PFHpA



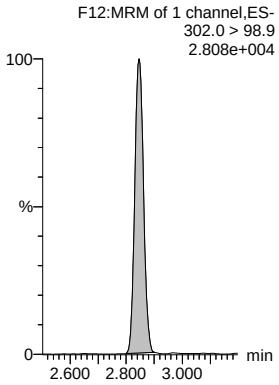


ADONA

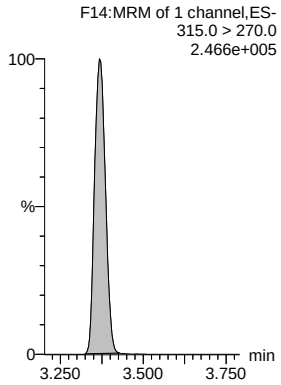




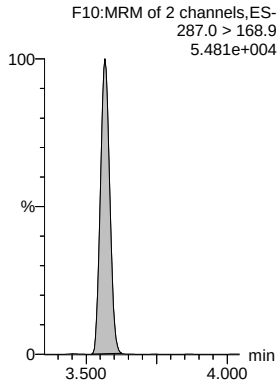
13C3-PFBS-EIS



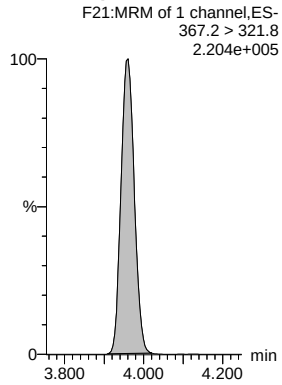
13C2-PFHxA-EIS



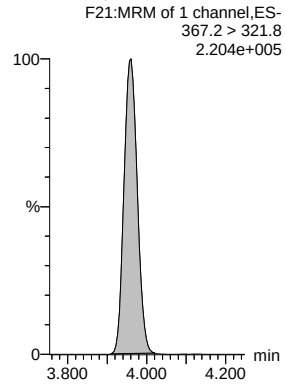
13C3-HFPO-DA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



RK 7/8/2020

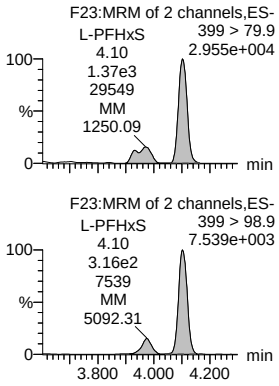
Quantify Sample Report **MassLynx V4.2 SCN982** Page 2 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200630P1\200630P1-69.qld

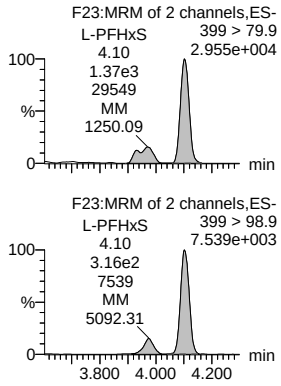
Last Altered: Wednesday, July 08, 2020 20:12:30 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:13:05 Pacific Daylight Time

Name: 200706P1-69, Date: 06-Jul-2020, Time: 22:22:53, ID: 2001358-07 24-GW-24MW07R-20200624 0.25444, Description: 24-GW-24MW07R-20200624

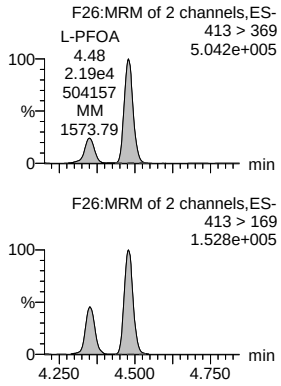
L-PFHxS



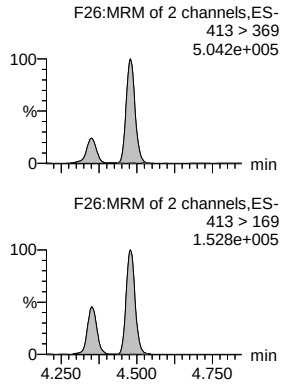
Total PFHxS



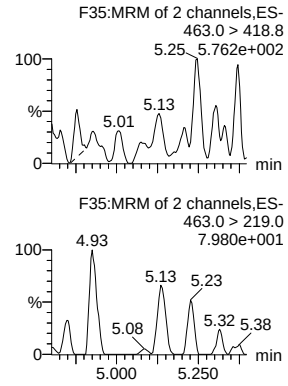
L-PFOA



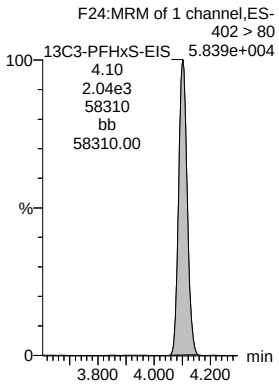
Total PFOA



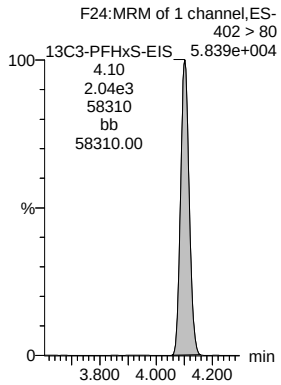
PFNA



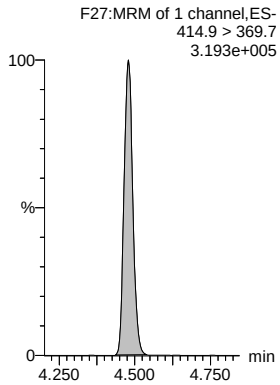
13C3-PFHxS-EIS



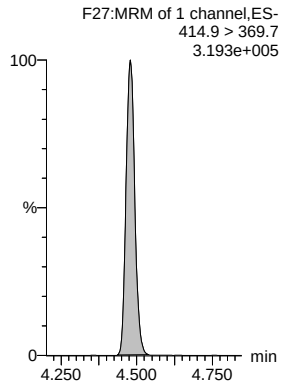
13C3-PFHxS-EIS



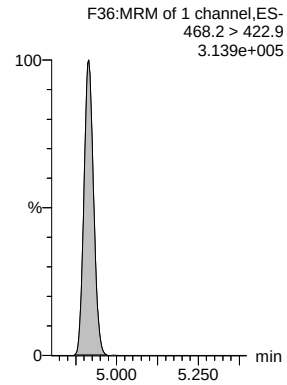
13C2-PFOA-EIS



13C2-PFOA-EIS



13C5-PFNA-EIS



RK 7/8/2020

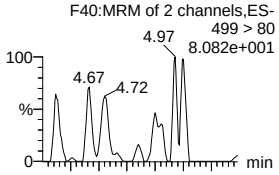
Quantify Sample Report **MassLynx V4.2 SCN982** Page 3 of 7
Vista Analytical Laboratory L18
OC 7/9/2020

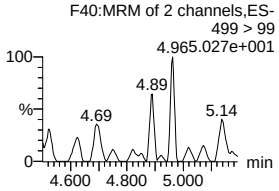
Dataset: P:\PFAS5.PRO\RESULTS\200630P1\200630P1-69.qld

Last Altered: Wednesday, July 08, 2020 20:12:30 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:13:05 Pacific Daylight Time

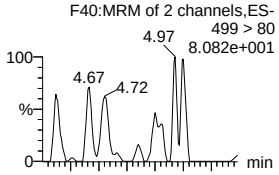
Name: 200706P1-69, Date: 06-Jul-2020, Time: 22:22:53, ID: 2001358-07 24-GW-24MW07R-20200624 0.25444, Description: 24-GW-24MW07R-20200624

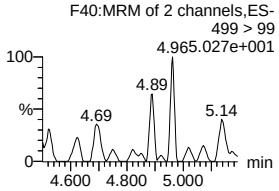
L-PFOS



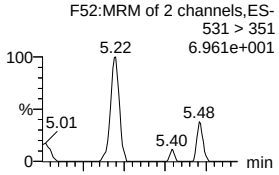


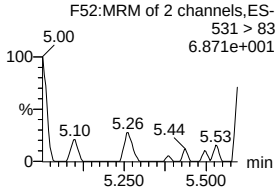
Total PFOS



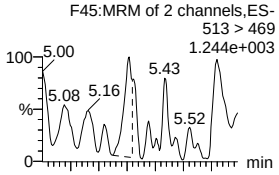


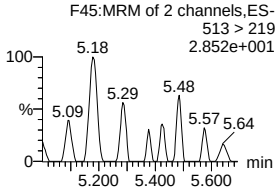
9Cl-PF30NS



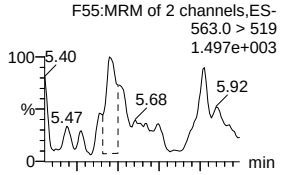


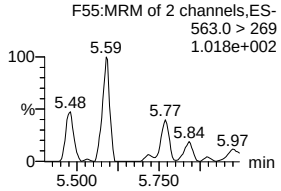
PFDA



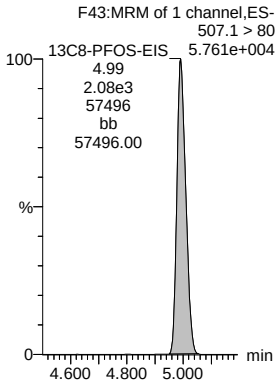


PFUdA

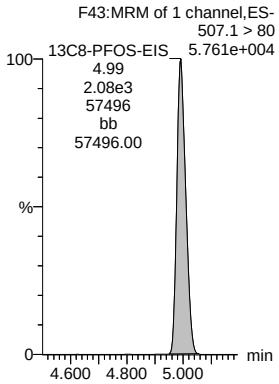




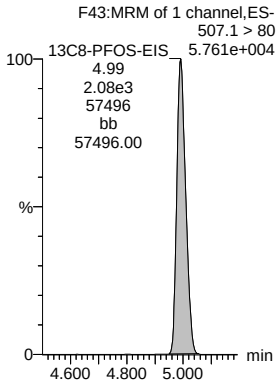
13C8-PFOS-EIS



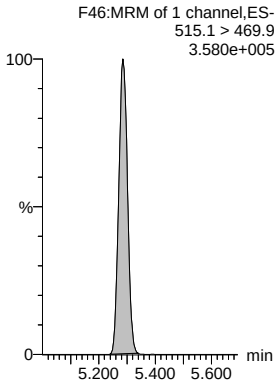
13C8-PFOS-EIS



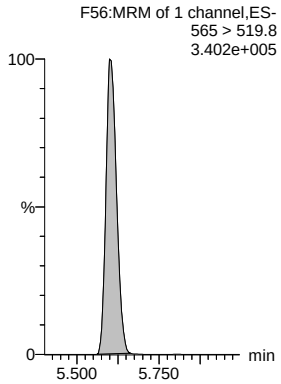
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-PFUdA-EIS



RK 7/8/2020

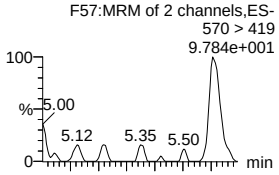
Quantify Sample Report **MassLynx V4.2 SCN982** Page 4 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

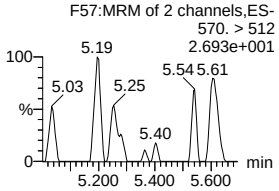
Dataset: P:\PFAS5.PRO\RESULTS\200630P1\200630P1-69.qld

Last Altered: Wednesday, July 08, 2020 20:12:30 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:13:05 Pacific Daylight Time

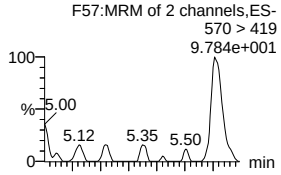
Name: 200706P1-69, Date: 06-Jul-2020, Time: 22:22:53, ID: 2001358-07 24-GW-24MW07R-20200624 0.25444, Description: 24-GW-24MW07R-20200624

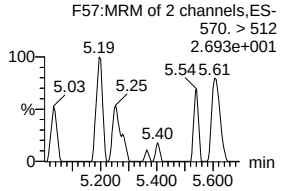
L-MeFOSAA



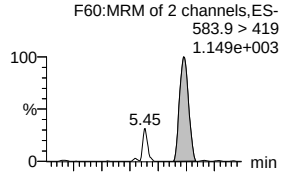


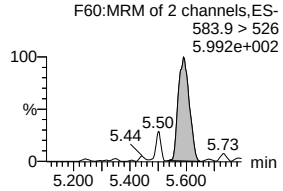
Total N-MeFOSAA



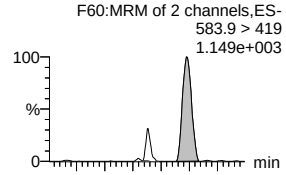


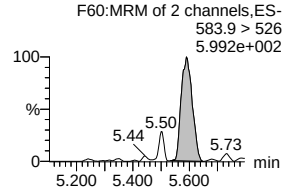
L-EtFOSAA



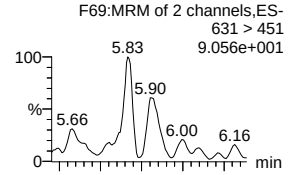


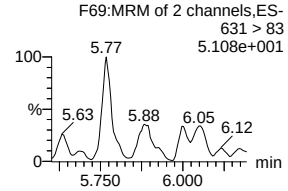
Total N-EtFOSAA



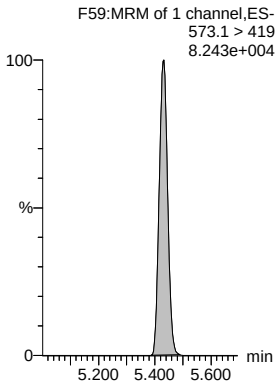


11Cl-PF30UdS

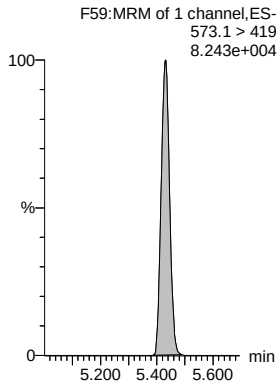




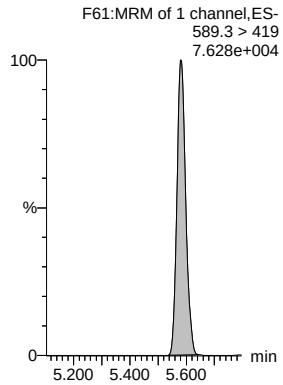
d3-N-MeFOSAA-EIS



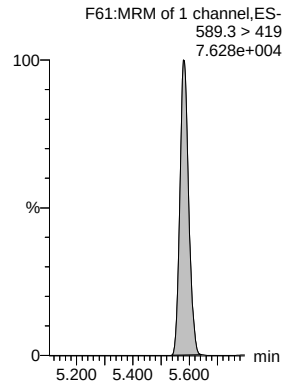
d3-N-MeFOSAA-EIS



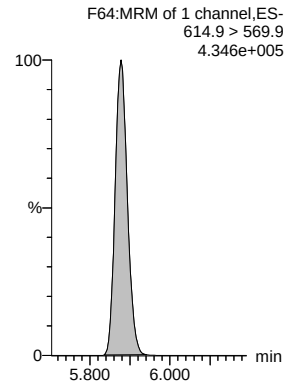
d5-N-EtFOSAA-EIS



d5-N-EtFOSAA-EIS



13C2-PFDoA-EIS



RK 7/8/2020

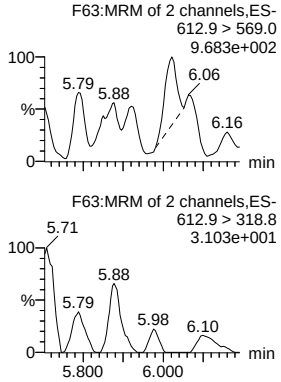
Quantify Sample Report **MassLynx V4.2 SCN982** Page 5 of 7
Vista Analytical Laboratory L18 OC 7/9/2020

Dataset: P:\PFAS5.PRO\RESULTS\200630P1\200630P1-69.qld

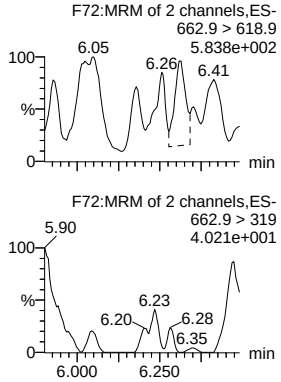
Last Altered: Wednesday, July 08, 2020 20:12:30 Pacific Daylight Time
Printed: Wednesday, July 08, 2020 20:13:05 Pacific Daylight Time

Name: 200706P1-69, Date: 06-Jul-2020, Time: 22:22:53, ID: 2001358-07 24-GW-24MW07R-20200624 0.25444, Description: 24-GW-24MW07R-20200624

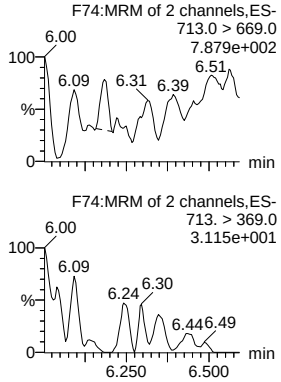
PFDoA



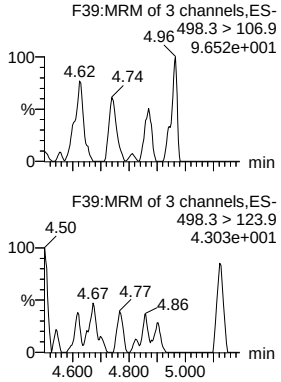
PFTrDA



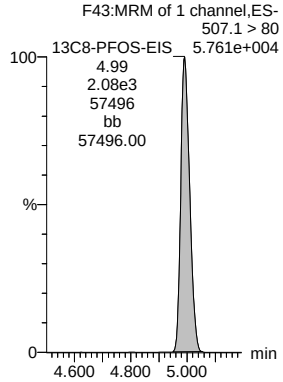
PFTeDA



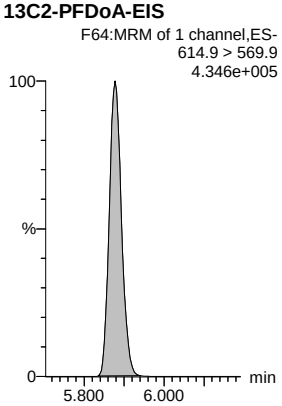
TDCA



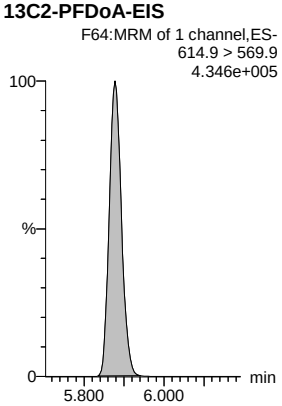
13C8-PFOS-EIS



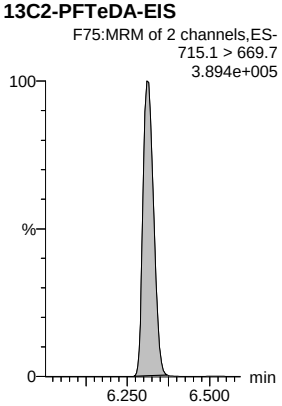
13C2-PFDoA-EIS



13C2-PFDoA-EIS



13C2-PFTeDA-EIS



RK 7/8/2020

INSTRUMENT BLANKS (IB)

AND

CONTINUTING CALIBRATION VERIFICATIONS (CCV)

Quantify Sample Report **MassLynx V4.2 SCN977** Page 1 of 14
Vista Analytical Laboratory

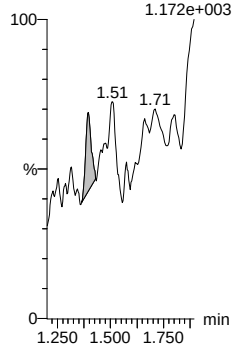
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

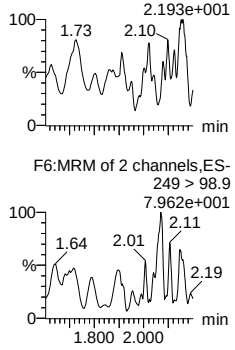
Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

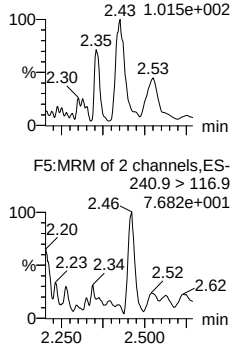
PFBA



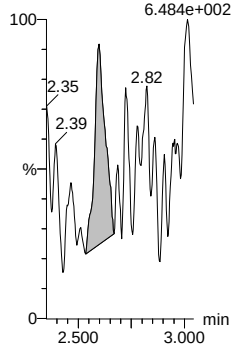
PFPrS



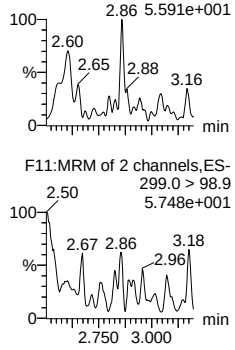
3:3 FTCA



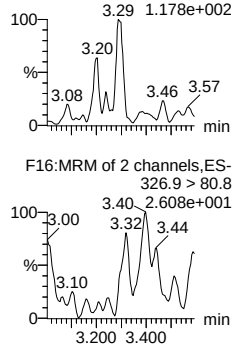
PFPeA



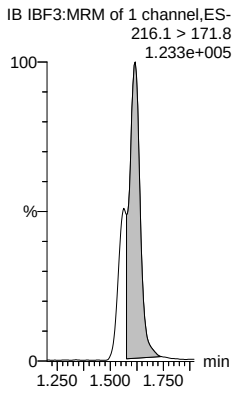
PFBS



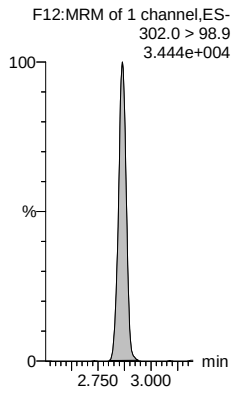
4:2 FTS



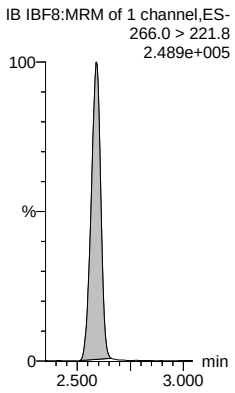
13C3-PFBA-EIS



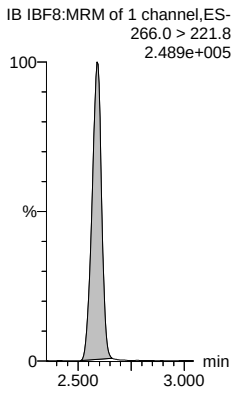
13C3-PFBS-EIS



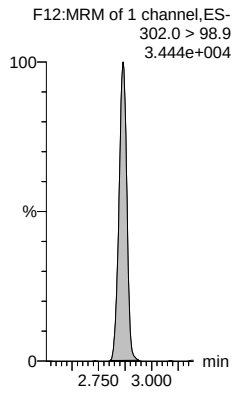
13C3-PFPeA-EIS



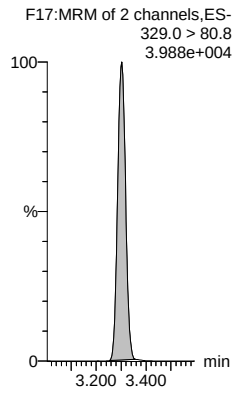
13C3-PFPeA-EIS



13C3-PFBS-EIS



13C2-4:2 FTS-EIS



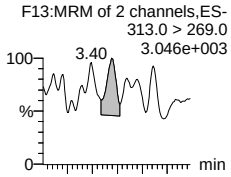
Quantify Sample Report **MassLynx V4.2 SCN977** Page 2 of 14
Vista Analytical Laboratory

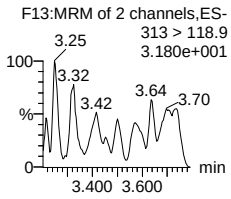
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

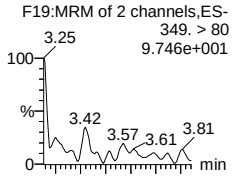
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

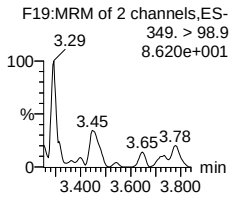
PFHxA



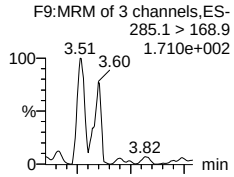


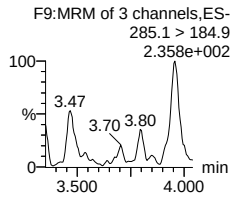
PFPeS



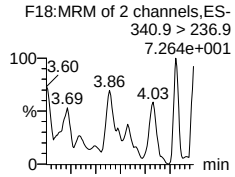


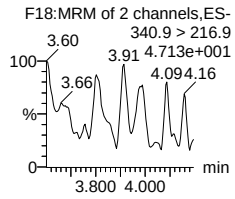
HFPO-DA



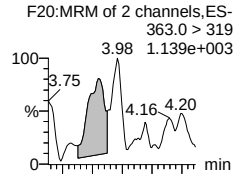


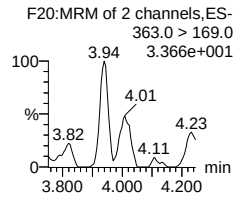
5:3 FTCA



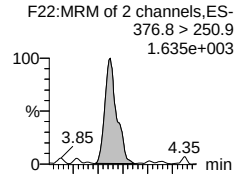


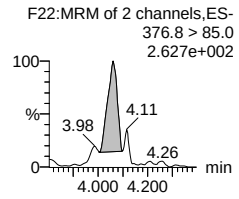
PFHpA



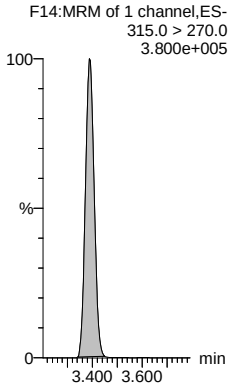


ADONA

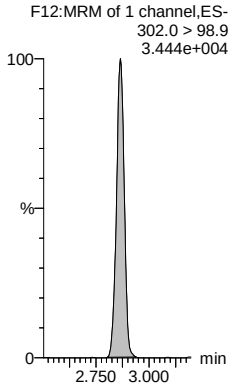




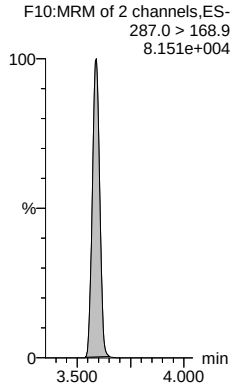
13C2-PFHxA-EIS



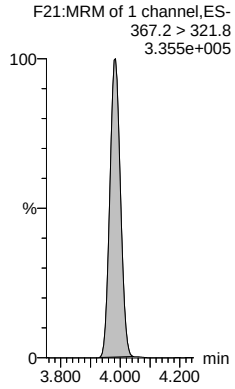
13C3-PFBS-EIS



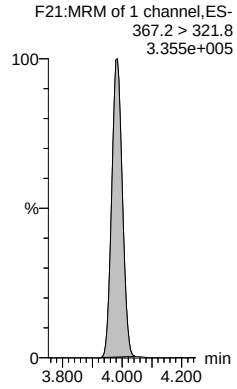
13C3-HFPO-DA-EIS



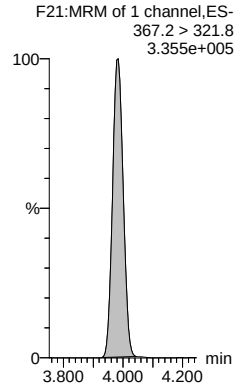
13C4-PFHpA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



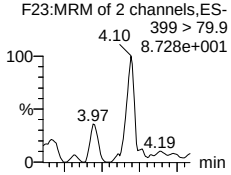
Quantify Sample Report **MassLynx V4.2 SCN977** Page 3 of 14
Vista Analytical Laboratory

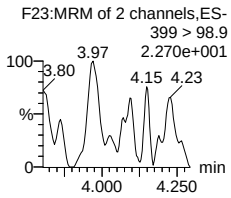
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

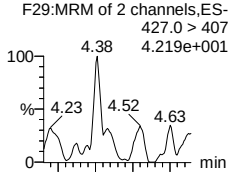
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

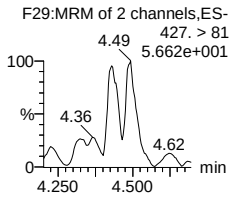
L-PFHxS



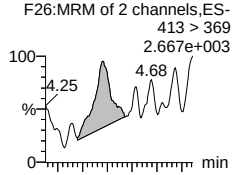


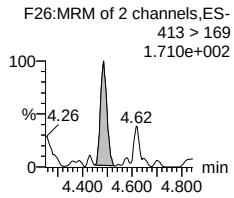
6:2 FTS



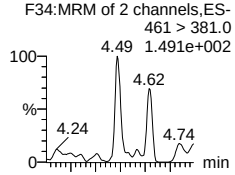


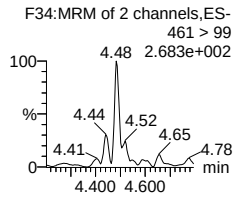
L-PFOA



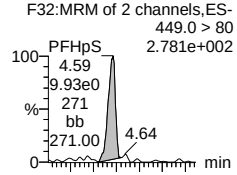


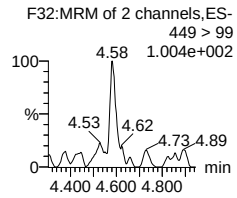
PFEChS



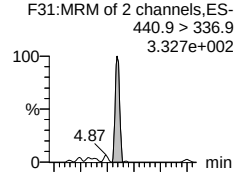


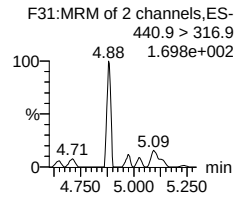
PFHpS



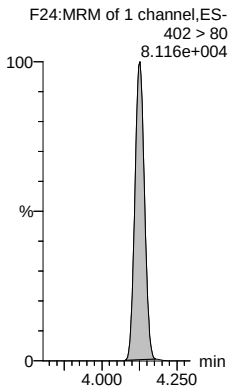


7:3 FTCA

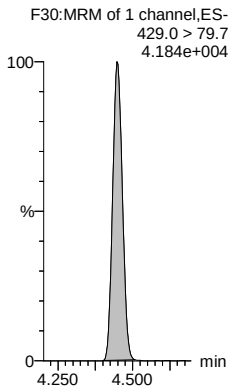




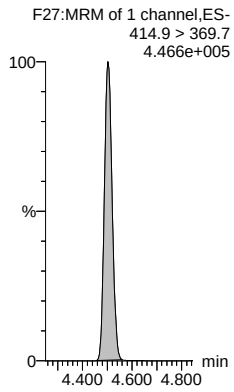
13C3-PFHxS-EIS



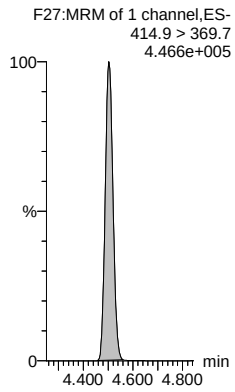
13C2-6:2 FTS-EIS



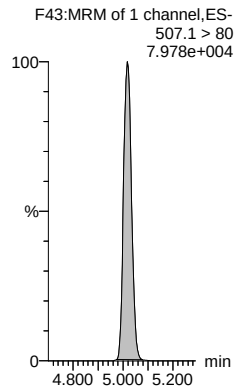
13C2-PFOA-EIS



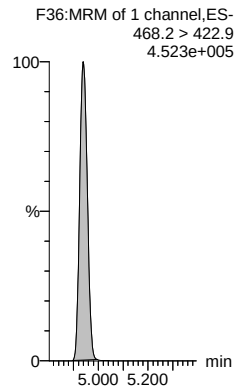
13C2-PFOA-EIS



13C8-PFOS-EIS



13C5-PFNA-EIS



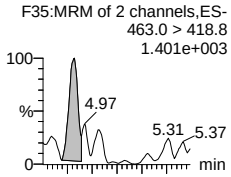
Quantify Sample Report **MassLynx V4.2 SCN977** Page 4 of 14
Vista Analytical Laboratory

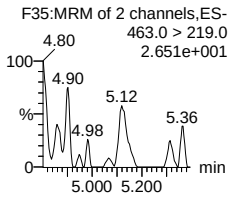
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

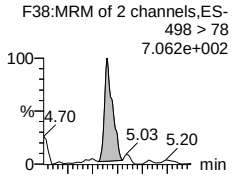
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

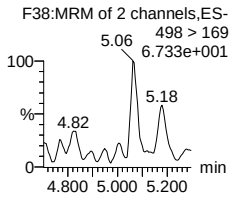
PFNA



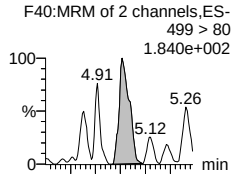


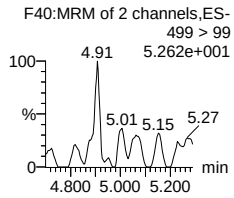
PFOSA



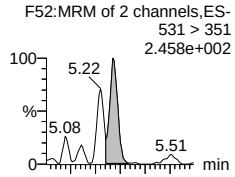


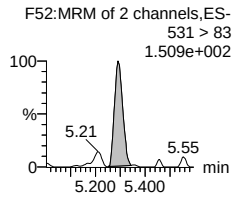
L-PFOS



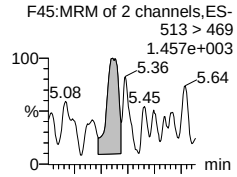


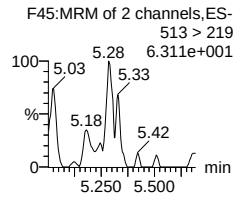
9Cl-PF30NS



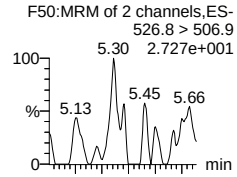


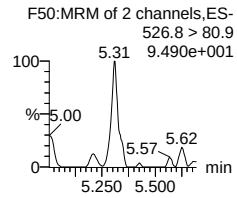
PFDA



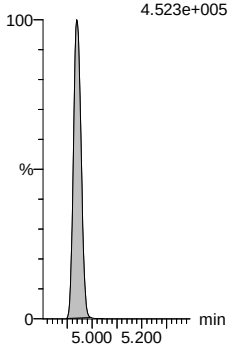


8:2 FTS

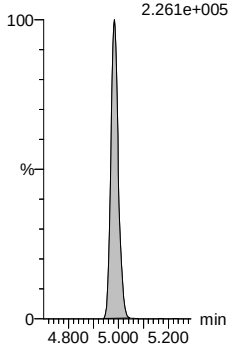




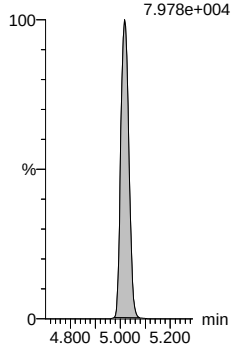
13C5-PFNA-EIS



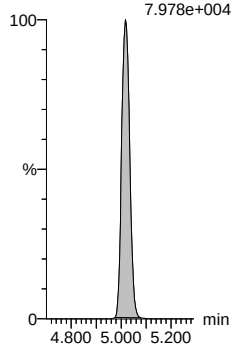
13C8-PFOSA-EIS



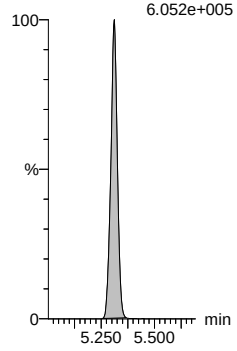
13C8-PFOS-EIS



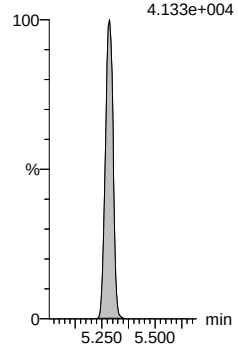
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-8:2 FTS-EIS



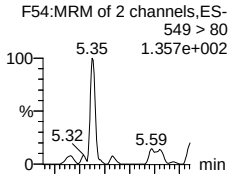
Quantify Sample Report **MassLynx V4.2 SCN977** Page 5 of 14
Vista Analytical Laboratory

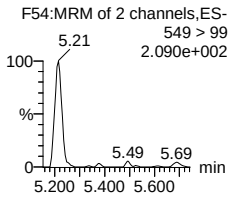
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

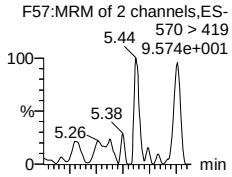
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

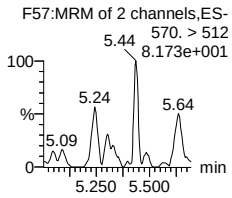
PFNS



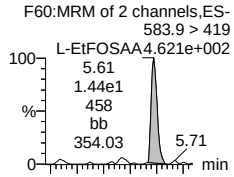


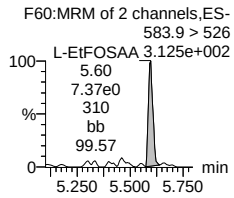
L-MeFOSAA



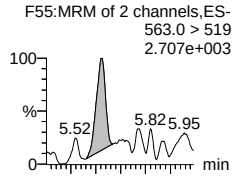


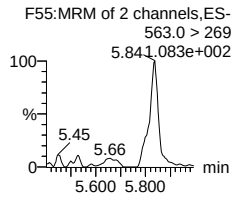
L-EtFOSAA



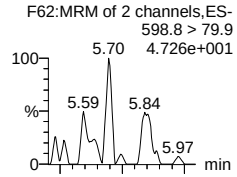


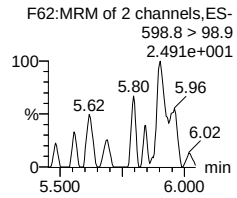
PFUdA



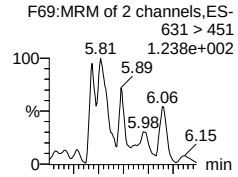


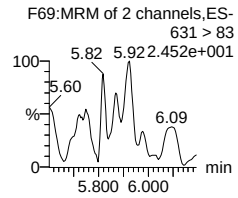
PFDS



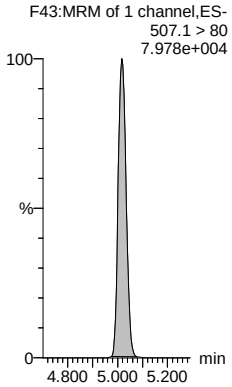


11Cl-PF30UdS

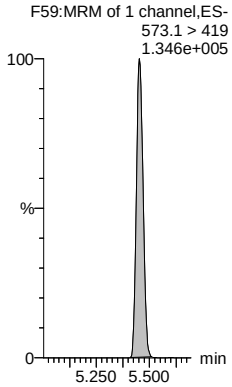




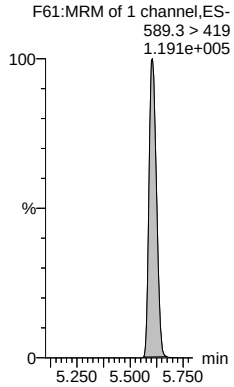
13C8-PFOS-EIS



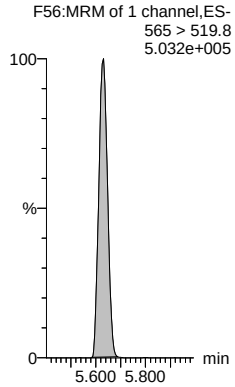
d3-N-MeFOSAA-EIS



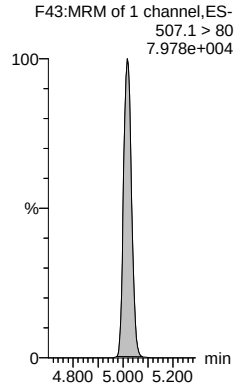
d5-N-EtFOSAA-EIS



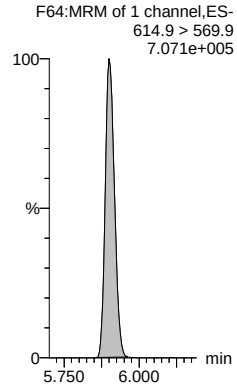
13C2-PFUdA-EIS



13C8-PFOS-EIS



13C2-PFDoA-EIS



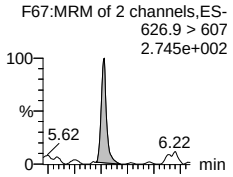
Quantify Sample Report **MassLynx V4.2 SCN977** Page 6 of 14
Vista Analytical Laboratory

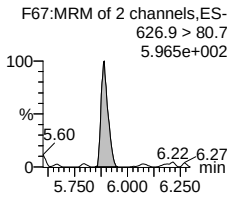
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

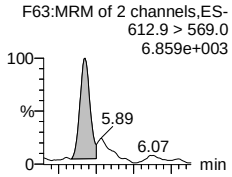
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

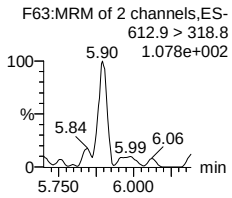
10:2 FTS



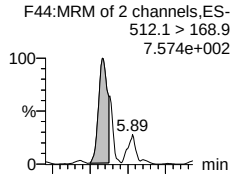


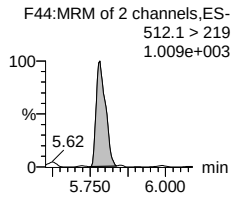
PFDoA



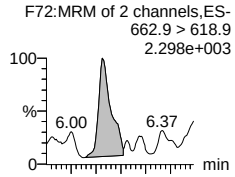


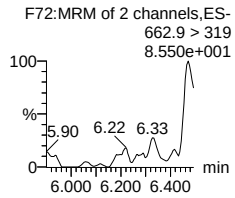
N-MeFOSA



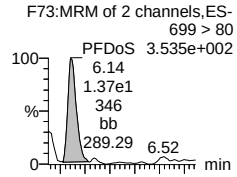


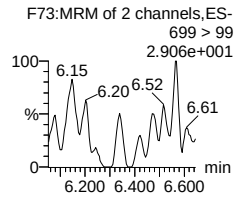
PFTrDA



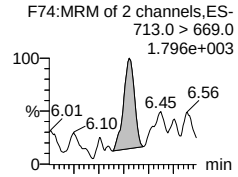


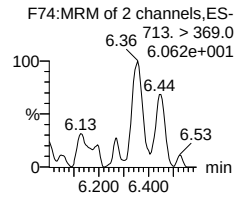
PFDoS



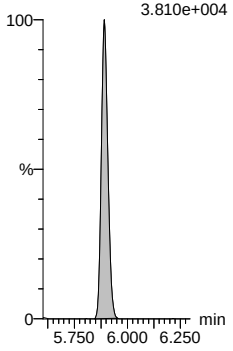


PFTeDA

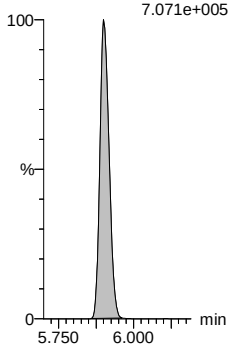




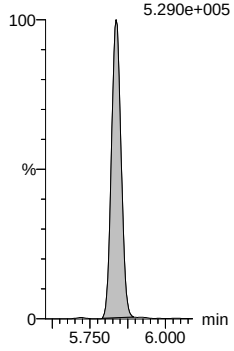
13C2-10:2 FTS-EIS



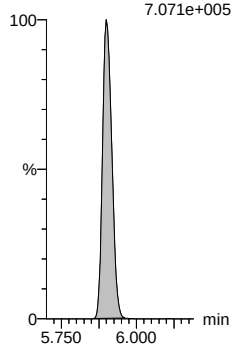
13C2-PFDoA-EIS



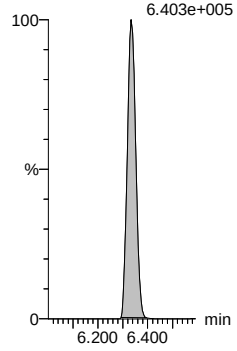
d3-N-MeFOSA-EIS



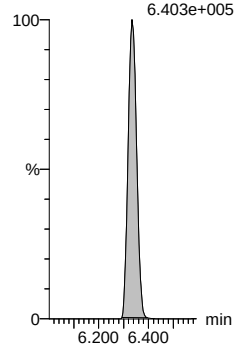
13C2-PFDoA-EIS



13C2-PFTeDA-EIS



13C2-PFTeDA-EIS



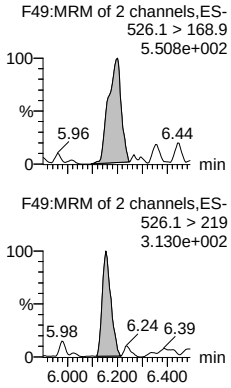
Quantify Sample Report **MassLynx V4.2 SCN977** Page 7 of 14
Vista Analytical Laboratory

Dataset: Untitled

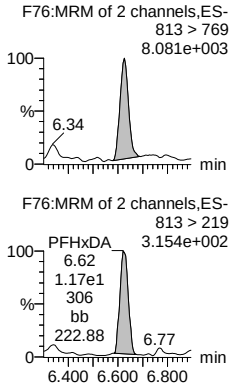
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

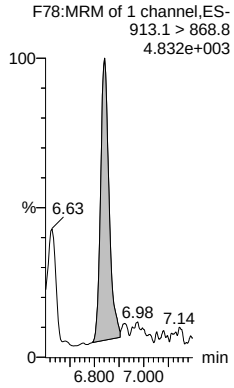
N-EtFOSA



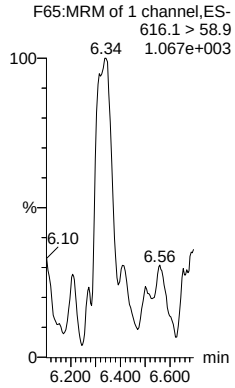
PFHxDA



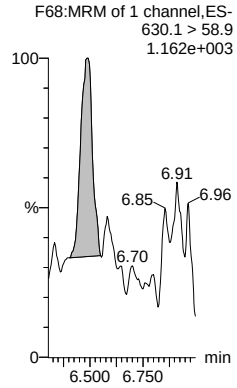
PFODA



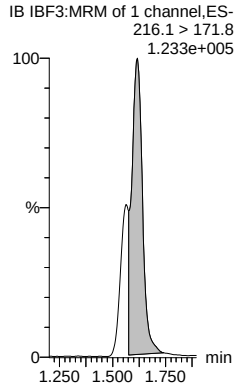
N-MeFOSE



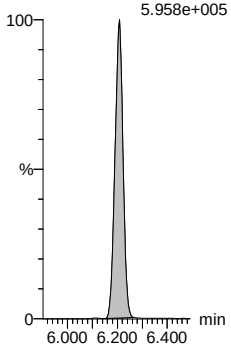
N-EtFOSE



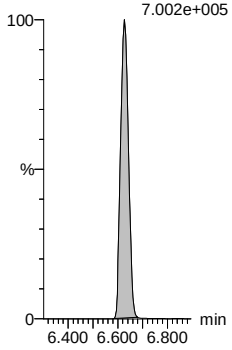
13C3-PFBA-RSD



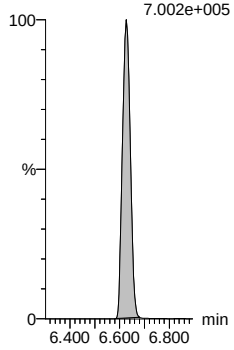
d5-N-ETFOSA-EIS



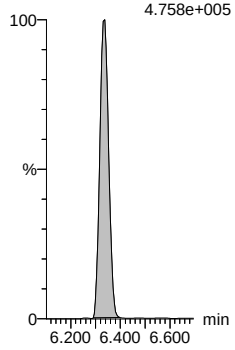
13C2-PFHxDA-EIS



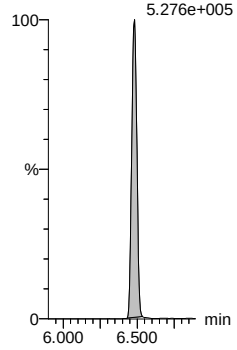
13C2-PFHxDA-EIS



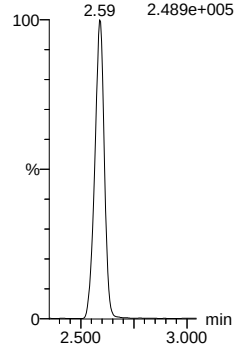
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



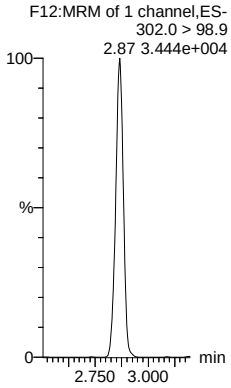
Quantify Sample Report **MassLynx V4.2 SCN977** Page 8 of 14
Vista Analytical Laboratory

Dataset: Untitled

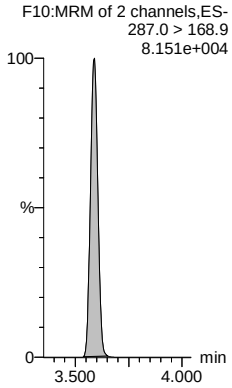
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

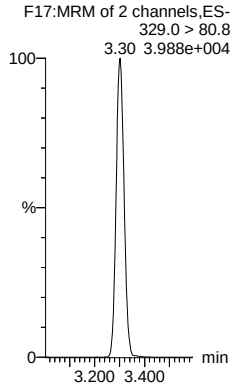
13C3-PFBS-RSD



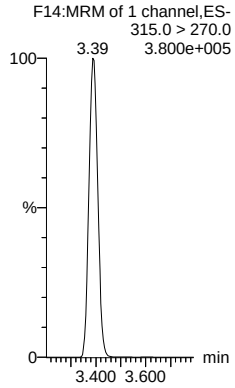
13C3-HFPO-DA-RSD



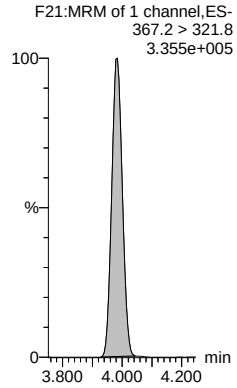
13C2-4:2 FTS-RSD



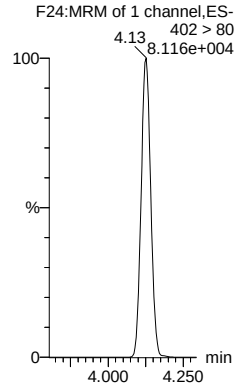
13C2-PFHxA-RSD



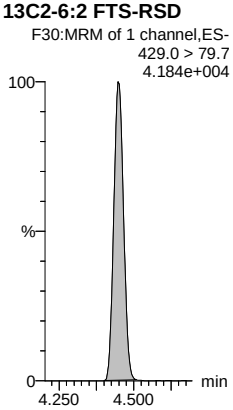
13C4-PFHpA-RSD



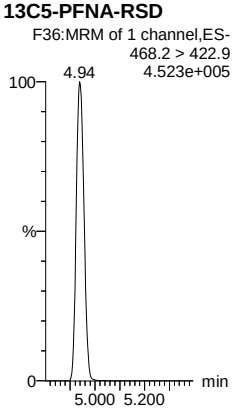
13C3-PFHxS-RSD



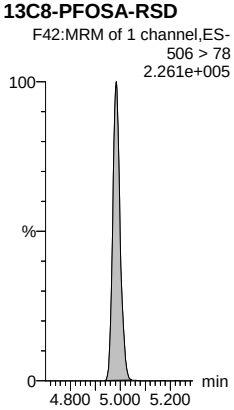
13C2-6:2 FTS-RSD



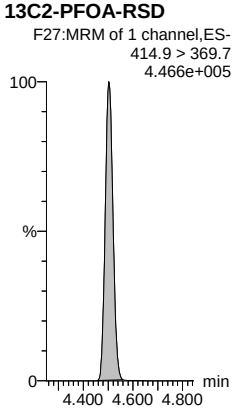
13C5-PFNA-RSD



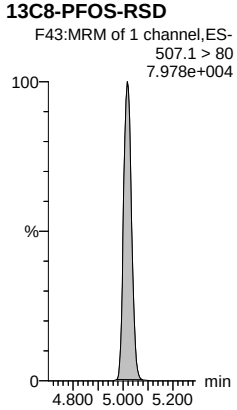
13C8-PFOSA-RSD



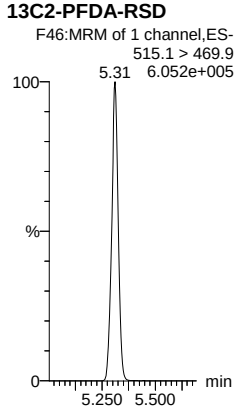
13C2-PFOA-RSD



13C8-PFOS-RSD



13C2-PFDA-RSD



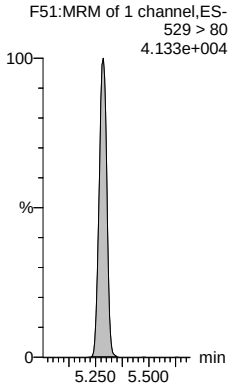
Quantify Sample Report **MassLynx V4.2 SCN977** Page 9 of 14
Vista Analytical Laboratory

Dataset: Untitled

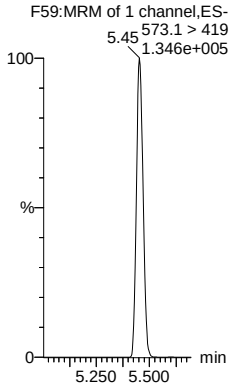
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

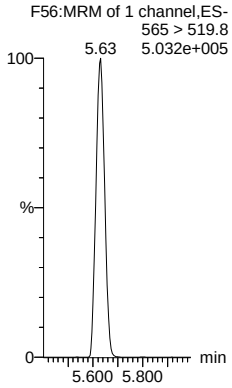
13C2-8:2 FTS-RSD



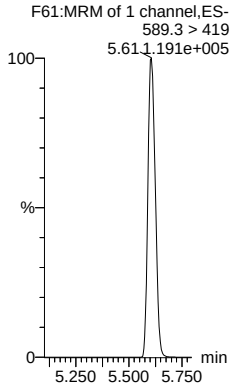
d3-N-MeFOSAA-RSD



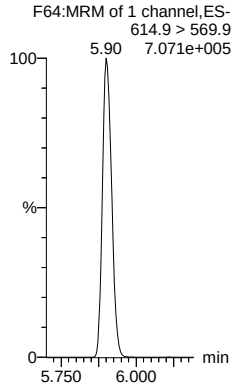
13C2-PFUdA-RSD



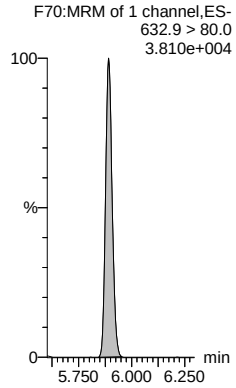
d5-N-EtFOSAA-RSD



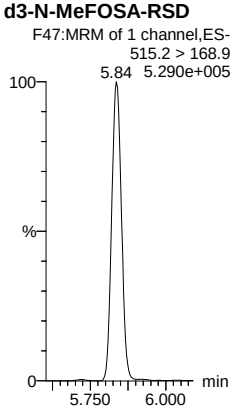
13C2-PFDoA-RSD



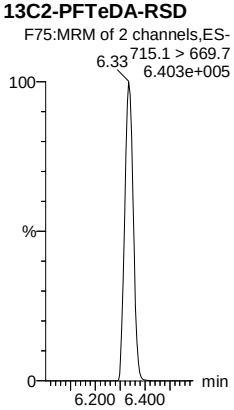
13C2-10:2 FTS-RSD



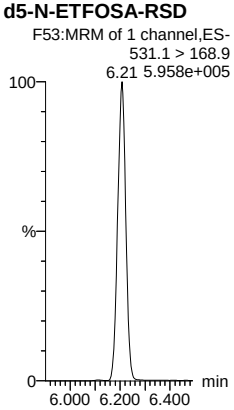
d3-N-MeFOSA-RSD



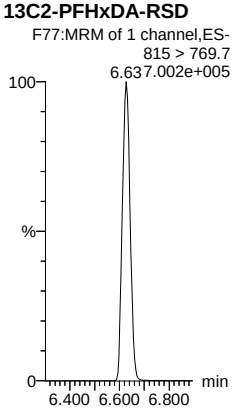
13C2-PFTeDA-RSD



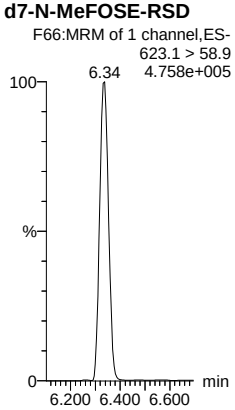
d5-N-ETFOSA-RSD



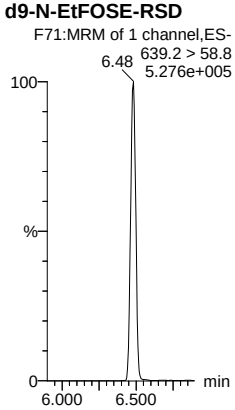
13C2-PFHxDA-RSD



d7-N-MeFOSE-RSD



d9-N-EtFOSE-RSD



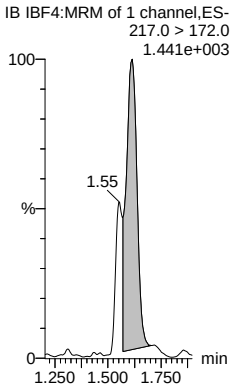
Quantify Sample Report **MassLynx V4.2 SCN977** Page 10 of 14
Vista Analytical Laboratory

Dataset: Untitled

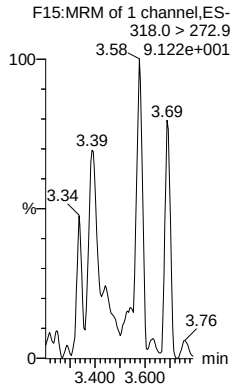
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

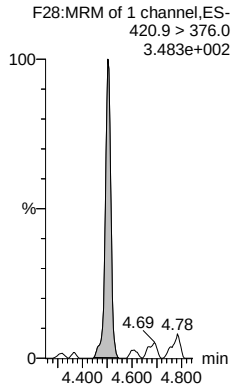
13C4-PFBA



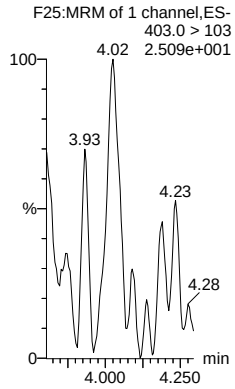
13C5-PFHxA



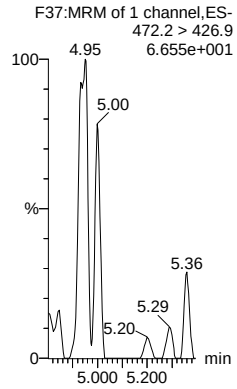
13C8-PFOA



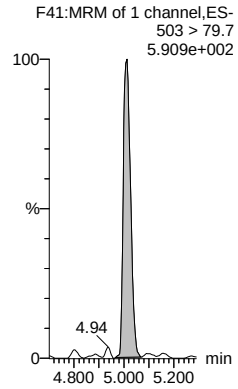
18O2-PFHxS



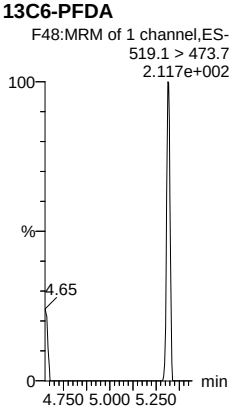
13C9-PFNA



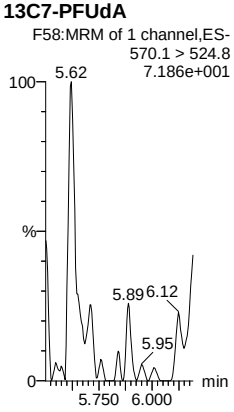
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Quantify Sample Report **MassLynx V4.2 SCN977** Page 11 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, 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	213.0 > 168.8	9.237	7031.754	1.00	1.40	0.016				NO		
2	2	PFPrS	249 > 80		1445.272	1.00						NO		YES
3	3	3:3 FTCA	240.9 > 176.9		12721.932	1.00						NO		YES
4	4	PFPeA	263.1 > 218.9	25.230	12721.932	1.00	2.60	0.025		0.0220		NO		
5	5	PFBS	299.0 > 80		1445.272	1.00						NO		YES
6	6	4:2 FTS	326.9 > 306.9		1446.075	1.00						NO		YES
7	47	13C3-PFBA-EIS	216.1 > 171.8	7031.754		1.00	1.62	7031.754	12.500	10.2	81.6	NO		
8	51	13C3-PFBS-EIS	302.0 > 98.9	1445.272		1.00	2.87	1445.272	12.500	13.9	111.2	NO		
9	49	13C3-PFPeA-EIS	266.0 > 221.8	12721.932		1.00	2.59	12721.932	12.500	13.2	105.8	NO		
10	49	13C3-PFPeA-EIS	266.0 > 221.8	12721.932		1.00	2.59	12721.932	12.500	13.2	105.8	NO		
11	51	13C3-PFBS-EIS	302.0 > 98.9	1445.272		1.00	2.87	1445.272	12.500	13.9	111.2	NO		
12	55	13C2-4:2 FTS-EIS	329.0 >80.8	1446.075		1.00	3.30	1446.075	12.500	14.3	114.6	NO		
13	-1													
14	7	PFHxA	313.0 > 269.0	72.555	15300.678	1.00	3.48	0.059				NO		YES
15	8	PFPeS	349.>80		1445.272	1.00						NO		YES
16	9	HFPO-DA	285.1 > 168.9		3189.258	1.00						NO		YES
17	10	5:3 FTCA	340.9 > 236.9		13649.274	1.00						NO		YES
18	11	PFHpA	363.0 > 319	52.108	13649.274	1.00	3.92	0.048		0.00883		NO		YES
19	12	ADONA	376.8 > 250.9	88.752	13649.274	1.00	4.05	0.081		0.00188		NO	8.841	YES
20	57	13C2-PFHxA-EIS	315.0 > 270.0	15300.678		1.00	3.39	15300.678	12.500	14.0	112.3	NO		
21	51	13C3-PFBS-EIS	302.0 > 98.9	1445.272		1.00	2.87	1445.272	12.500	13.9	111.2	NO		
22	53	13C3-HFPO-DA-EIS	287.0 > 168.9	3189.258		1.00	3.59	3189.258	12.500	14.0	111.8	NO		
23	59	13C4-PFHpA-EIS	367.2 > 321.8	13649.274		1.00	3.98	13649.274	12.500	13.9	111.1	NO		
24	59	13C4-PFHpA-EIS	367.2 > 321.8	13649.274		1.00	3.98	13649.274	12.500	13.9	111.1	NO		
25	59	13C4-PFHpA-EIS	367.2 > 321.8	13649.274		1.00	3.98	13649.274	12.500	13.9	111.1	NO		
26	-1													
27	13	L-PFHxS	399 > 79.9		2956.690	1.00						NO		YES
28	15	6:2 FTS	427.0 > 407		1567.986	1.00						NO		YES
29	16	L-PFOA	413 > 369	129.786	15770.835	1.00	4.48	0.103		0.0430		NO	25.854	YES
30	18	PFecHS	461 > 381.0		15770.835	1.00						NO		YES
31	19	PFHpS	449.0 > 80	9.934	2919.588	1.00	4.59	0.043		0.0384		NO		YES
32	20	7:3 FTCA	440.9 > 336.9	7.772	16049.925	1.00	4.92	0.006		0.0180		NO		YES
33	61	13C3-PFHxS-EIS	402 > 80	2956.690		1.00	4.13	2956.690	12.500	13.4	107.5	NO		
34	63	13C2-6:2 FTS-EIS	429.0 >79.7	1567.986		1.00	4.45	1567.986	12.500	12.2	97.4	NO		
35	69	13C2-PFOA-EIS	414.9 > 369.7	15770.835		1.00	4.50	15770.835	12.500	13.7	109.3	NO		
36	69	13C2-PFOA-EIS	414.9 > 369.7	15770.835		1.00	4.50	15770.835	12.500	13.7	109.3	NO		

Quantify Sample Report **MassLynx V4.2 SCN977** Page 12 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, 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	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
38	65	13C5-PFNA-EIS	468.2 > 422.9	16049.925		1.00	4.94	16049.925	12.500	13.2	105.8	NO		
39	-1													
40	21	PFNA	463.0 > 418.8	57.165	16049.925	1.00	4.93	0.045		0.0224		NO		YES
41	22	PFOSA	498 > 78	25.110	7728.135	1.00	4.96	0.041		0.0514		NO		YES
42	23	L-PFOS	499 > 80	8.560	2919.588	1.00	5.01	0.037		0.103		NO		YES
43	25	9Cl-PF30NS	531 > 351	9.123	2919.588	1.00	5.27	0.039		0.00792		NO	1.599	YES
44	26	PFDA	513 > 469	85.108	21328.793	1.00	5.30	0.050		0.00680		NO		YES
45	27	8:2 FTS	526.8 > 506.9		1698.056	1.00						NO		YES
46	65	13C5-PFNA-EIS	468.2 > 422.9	16049.925		1.00	4.94	16049.925	12.500	13.2	105.8	NO		
47	67	13C8-PFOSA-EIS	506 > 78	7728.135		1.00	4.98	7728.135	12.500	13.5	108.2	NO		
48	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
49	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
50	73	13C2-PFDA-EIS	515.1 > 469.9	21328.793		1.00	5.31	21328.793	12.500	14.3	114.4	NO		
51	75	13C2-8:2 FTS-EIS	529 > 80	1698.056		1.00	5.29	1698.056	12.500	15.4	123.1	NO		
52	-1													
53	28	PFNS	549 > 80		2919.588	1.00						NO		YES
54	29	L-MeFOSAA	570 > 419		4765.928	1.00						NO		YES
55	31	L-EtFOSAA	583.9 > 419	14.370	4706.535	1.00	5.61	0.038		0.0729		NO	1.950	NO
56	33	PFUdA	563.0 > 519	100.840	20308.568	1.00	5.63	0.062		0.0393		NO		YES
57	34	PFDS	598.8 >79.9		2919.588	1.00						NO		YES
58	35	11Cl-PF30UdS	631 > 451		24925.619	1.00						NO		YES
59	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
60	77	d3-N-MeFOSAA-EIS	573.1 > 419	4765.928		1.00	5.45	4765.928	12.500	14.4	115.1	NO		
61	81	d5-N-EtFOSAA-EIS	589.3 > 419	4706.535		1.00	5.61	4706.535	12.500	15.0	119.9	NO		
62	79	13C2-PFUdA-EIS	565 > 519.8	20308.568		1.00	5.63	20308.568	12.500	12.8	102.7	NO		
63	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
64	83	13C2-PFDoA-EIS	614.9 > 569.9	24925.619		1.00	5.90	24925.619	12.500	13.3	106.7	NO		
65	-1													
66	36	10:2 FTS	626.9 > 607	7.920	1352.273	1.00	5.89	0.073				NO	0.352	NO
67	37	PFDoA	612.9 > 569.0	251.215	24925.619	1.00	5.84	0.126		0.123		NO		YES
68	38	N-MeFOSA	512.1 > 168.9	24.563	19283.832	1.00	5.79	0.190		0.115		NO	0.693	YES
69	39	PFTrDA	662.9 > 618.9	124.413	24925.619	1.00	6.13	0.062		0.0581		NO		YES
70	40	PFDoS	699 > 80	13.725	24932.619	1.00	6.14	0.007		0.0634		NO		YES
71	41	PFTeDA	713.0 > 669.0	77.320	24932.619	1.00	6.32	0.039				NO		YES
72	85	13C2-10:2 FTS-EIS	632.9 > 80.0	1352.273		1.00	5.89	1352.273	12.500	12.4	99.6	NO		

Quantify Sample Report **MassLynx V4.2 SCN977** Page 13 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, 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	614.9 > 569.9	24925.619		1.00	5.90	24925.619	12.500	13.3	106.7	NO		
74	87	d3-N-MeFOSA-EIS	515.2 > 168.9	19283.832		1.00	5.84	19283.832	149.200	139	93.4	NO		
75	83	13C2-PFDoA-EIS	614.9 > 569.9	24925.619		1.00	5.90	24925.619	12.500	13.3	106.7	NO		
76	89	13C2-PFTeDA-EIS	715.1 > 669.7	24932.619		1.00	6.33	24932.619	12.500	13.1	104.7	NO		
77	89	13C2-PFTeDA-EIS	715.1 > 669.7	24932.619		1.00	6.33	24932.619	12.500	13.1	104.7	NO		
78	-1													
79	42	N-EtFOSA	526.1 > 168.9	32.074	22029.455	1.00	6.20	0.217		0.279		NO	2.593	NO
80	43	PFHxDA	813 > 769	298.843	25212.395	1.00	6.63	0.148				NO	25.568	NO
81	44	PFODA	913.1 > 868.8	179.740	25212.395	1.00	6.84	0.089		0.0930		NO		
82	45	N-MeFOSE	616.1 > 58.9		19306.602	1.00						NO		
83	46	N-EtFOSE	630.1 > 58.9	49.654	20422.244	1.00	6.49	0.363		0.0274		NO		
84	48	13C3-PFBA-RSD	216.1 > 171.8	7031.754	81.232	1.00	1.62	1082.048	12.500	1270	10132.7	YES		
85	91	d5-N-ETFOSA-EIS	531.1 > 168.9	22029.455		1.00	6.21	22029.455	149.200	142	95.1	NO		
86	93	13C2-PFHxDA-EIS	815 > 769.7	25212.395		1.00	6.63	25212.395	12.500	12.0	95.6	NO		
87	93	13C2-PFHxDA-EIS	815 > 769.7	25212.395		1.00	6.63	25212.395	12.500	12.0	95.6	NO		
88	95	d7-N-MeFOSE-EIS	623.1 > 58.9	19306.602		1.00	6.34	19306.602	149.200	143	96.0	NO		
89	97	d9-N-EtFOSE-EIS	639.2 > 58.8	20422.244		1.00	6.48	20422.244	149.200	137	92.0	NO		
90	50	13C3-PFPeA-RSD	266.0 > 221.8			1.00			12.500			NO		
91	-1													
92	52	13C3-PFBS-RSD	302.0 > 98.9			1.00			12.500			NO		
93	54	13C3-HFPO-DA-RSD	287.0 > 168.9	3189.258		1.00	3.59		12.500			NO		
94	56	13C2-4:2 FTS-RSD	329.0 >80.8			1.00			12.500			NO		
95	58	13C2-PFHxA-RSD	315.0 > 270.0			1.00			12.500			NO		
96	60	13C4-PFHpA-RSD	367.2 > 321.8	13649.274		1.00	3.98		12.500			NO		
97	62	13C3-PFHxS-RSD	402 > 80			1.00			12.500			NO		
98	64	13C2-6:2 FTS-RSD	429.0 >79.7	1567.986	19.889	1.00	4.45	985.461	12.500	2080	16676.0	YES		
99	66	13C5-PFNA-RSD	468.2 > 422.9			1.00			12.500			NO		
100	68	13C8-PFOSA-RSD	506 > 78	7728.135		1.00	4.98		12.500			NO		
101	70	13C2-PFOA-RSD	414.9 > 369.7	15770.835	8.783	1.00	4.50	22445.114	12.500	20500	16418...	YES		
102	72	13C8-PFOS-RSD	507.1 > 80	2919.588	19.889	1.00	5.02	1834.926	12.500	2100	16783.2	YES		
103	74	13C2-PFDA-RSD	515.1 > 469.9			1.00			12.500			NO		
104	-1													
105	76	13C2-8:2 FTS-RSD	529 > 80	1698.056	19.889	1.00	5.29	1067.208	12.500	2340	18699.8	YES		
106	78	d3-N-MeFOSAA-RSD	573.1 > 419			1.00			12.500			NO		
107	80	13C2-PFUdA-RSD	565 > 519.8			1.00			12.500			NO		
108	82	d5-N-EtFOSAA-RSD	589.3 > 419			1.00			12.500			NO		

Quantify Sample Report **MassLynx V4.2 SCN977** Page 14 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
109	84	13C2-PFDoA-RSD	614.9 > 569.9			1.00			12.500			NO		
110	86	13C2-10:2 FTS-RSD	632.9 > 80.0	1352.273	19.889	1.00	5.89	849.888	12.500	2210	17709.6	YES		
111	88	d3-N-MeFOSA-RSD	515.2 > 168.9			1.00			149.200			NO		
112	90	13C2-PFTeDA-RSD	715.1 > 669.7			1.00			12.500			NO		
113	92	d5-N-ETFOSA-RSD	531.1 > 168.9			1.00			149.200			NO		
114	94	13C2-PFHxDA-RSD	815 > 769.7			1.00			12.500			NO		
115	96	d7-N-MeFOSE-RSD	623.1 > 58.9			1.00			149.200			NO		
116	98	d9-N-EtFOSE-RSD	639.2 > 58.8			1.00			149.200			NO		
117	-1													
118	99	13C4-PFBA	217.0 > 172.0	81.232	81.232	1.00	1.61	12.500	12.500	12.5	100.0	NO		
119	1...	13C5-PFHxA	318.0 > 272.9			1.00			12.500			NO		
120	1...	13C8-PFOA	420.9 > 376.0	8.783	8.783	1.00	4.50	12.500	12.500	12.5	100.0	NO		
121	1...	18O2-PFHxS	403.0 > 103			1.00			12.500			NO		
122	1...	13C9-PFNA	472.2 > 426.9			1.00			12.500			NO		
123	1...	13C4-PFOS	503 > 79.7	19.889	19.889	1.00	5.01	12.500	12.500	12.5	100.0	NO		
124	1...	13C6-PFDA	519.1 > 473.7			1.00			12.500			NO		
125	1...	13C7-PFUdA	570.1 > 524.8			1.00			12.500			NO		

LC Calibration Standards Review Checklist Q5

			ION Ratio	Concentration	C-Cals Name	Sign Date	Correct I-Cal	Manual Integrations	NA
Calibration ID:	ST20070601-11	L (M) H	☒	☒	☒	☒	☒	☒	☐
Calibration ID:	-12	L (M) H	☒	☒	☒	☒	☒	☒	☐
Calibration ID:	-13	L (M) H	☒	☒	☒	☒	☒	☒	☐
Calibration ID:	-14	L (M) H	☒	☒	☒	☒	☒	☒	☐
Calibration ID:	-15	L (M) H	☒	☒	☒	☒	☒	☒	☐
Calibration ID:	-16	L M H	☒	☒	☒	☒	☒	☒	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐
Calibration ID:		L M H	☐	☐	☐	☐	☐	☐	☐

NA QW 07/07/20

Full Mass Cal. Date: 06-22-20

Run Log Present: ☒

# of Samples per Sequence Checked: ☒

Instrument Blank Saved ☒

All Branches in Acquisition Window ☒

IIS Area Saved ~~☒~~

Reviewed By: JR 07/07/2020
Initials/Date

Comments:

ID: LR - LCSRC *Rev. No.: 2* *Rev. Date: 04/29/2019* *Page: 1 of 1*

Quantify Sample Report **MassLynx V4.2 SCN977** Page 11 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

✓ TR 07/07/2020

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

1	PFBA	213.0 > 168.8	7874.219	9536.798	1.00	1.61	10.321	10.000	9.97	99.7	NO		
2	PFPrS	249 > 80	1603.595	1379.378	1.00	1.95	14.532	10.000	10.9	108.9	NO	2.885	NO
3	3:3 FTCA	240.9 > 176.9	787.836	12698.616	1.00	2.43	0.776	10.000	9.39	93.9	NO	3.568	NO
4	PFPeA	263.1 > 218.9	9577.079	12698.616	1.00	2.58	9.427	10.000	10.2	101.8	NO		
5	PFBS	299.0 > 80	2939.529	1379.378	1.00	2.85	26.638	10.000	10.4	104.1	NO	2.563	NO
6	4:2 FTS	326.9 > 306.9	2884.368	1268.590	1.00	3.29	28.421	10.000	9.98	99.8	NO	12.212	NO
47	13C3-PFBA-EIS	216.1 > 171.8	9536.798		1.00	1.61	9536.798	12.500	13.8	110.6	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1379.378		1.00	2.85	1379.378	12.500	13.3	106.1	NO		
49	13C3-PFPeA-EIS	266.0 > 221.8	12698.616		1.00	2.58	12698.616	12.500	13.2	105.6	NO		
49	13C3-PFPeA-EIS	266.0 > 221.8	12698.616		1.00	2.58	12698.616	12.500	13.2	105.6	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1379.378		1.00	2.85	1379.378	12.500	13.3	106.1	NO		
55	13C2-4:2 FTS-EIS	329.0 >80.8	1268.590		1.00	3.29	1268.590	12.500	12.6	100.6	NO		
-1													
7	PFHxA	313.0 > 269.0	12637.913	14639.554	1.00	3.38	10.791	10.000	10.3	103.5	NO	16.642	NO
8	PFPeS	349.>80	2371.695	1379.378	1.00	3.55	21.492	10.000	10.3	103.0	NO	2.548	NO
9	HFPO-DA	285.1 > 168.9	2447.118	3140.680	1.00	3.58	9.740	10.000	9.68	96.8	NO	2.367	NO
10	5:3 FTCA	340.9 > 236.9	1698.485	13493.209	1.00	3.91	1.573	10.000	8.91	89.1	NO	1.735	NO
11	PFHpA	363.0 > 319	13770.608	13493.209	1.00	3.97	12.757	10.000	9.80	98.0	NO	49.800	NO
12	ADONA	376.8 > 250.9	22669.070	13493.209	1.00	4.08	21.000	10.000	9.65	96.5	NO	4.104	NO
57	13C2-PFHxA-EIS	315.0 > 270.0	14639.554		1.00	3.38	14639.554	12.500	13.4	107.4	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1379.378		1.00	2.85	1379.378	12.500	13.3	106.1	NO		
53	13C3-HFPO-DA-EIS	287.0 > 168.9	3140.680		1.00	3.58	3140.680	12.500	13.8	110.1	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	13493.209		1.00	3.97	13493.209	12.500	13.7	109.8	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	13493.209		1.00	3.97	13493.209	12.500	13.7	109.8	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	13493.209		1.00	3.97	13493.209	12.500	13.7	109.8	NO		
-1													
13	L-PFHxS	399 > 79.9	2369.503	2816.630	1.00	4.11	10.516	10.000	9.55	95.5	NO	3.828	NO
15	6:2 FTS	427.0 > 407	1483.914	1483.901	1.00	4.44	12.500	10.000	10.9	109.3	NO	0.755	NO
16	L-PFOA	413 > 369	13964.295	15274.092	1.00	4.49	11.428	10.000	10.1	100.8	NO	3.251	NO
18	PFecHS	461 > 381.0	2537.762	15274.092	1.00	4.50	2.077	10.000	9.21	92.1	NO	0.526	NO
19	PFHpS	449.0 > 80	2314.510	2809.042	1.00	4.60	10.299	10.000	10.6	105.8	NO	1.771	NO
20	7:3 FTCA	440.9 > 336.9	3588.461	15371.896	1.00	4.92	2.918	10.000	9.44	94.4	NO	1.217	NO
61	13C3-PFHxS-EIS	402 > 80	2816.630		1.00	4.11	2816.630	12.500	12.8	102.4	NO		
63	13C2-6:2 FTS-EIS	429.0 >79.7	1483.901		1.00	4.44	1483.901	12.500	11.5	92.2	NO		
69	13C2-PFOA-EIS	414.9 > 369.7	15274.092		1.00	4.49	15274.092	12.500	13.2	105.8	NO		
69	13C2-PFOA-EIS	414.9 > 369.7	15274.092		1.00	4.49	15274.092	12.500	13.2	105.8	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 12 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

71 13C8-PFOS-EIS	507.1 > 80	2809.042		1.00	5.00	2809.042	12.500	12.5	99.7	NO		
65 13C5-PFNA-EIS	468.2 > 422.9	15371.896		1.00	4.93	15371.896	12.500	12.7	101.4	NO		
-1												
21 PFNA	463.0 > 418.8	14387.799	15371.896	1.00	4.93	11.700	10.000	10.5	104.7	NO	13.296	NO
22 PFOSA	498 > 78	3948.826	7335.037	1.00	4.97	6.729	10.000	9.75	97.5	NO	22.785	NO
23 L-PFOS	499 > 80	2822.769	2809.042	1.00	5.00	12.561	10.000	9.91	99.1	NO	2.674	NO
25 9Cl-PF30NS	531 > 351	6474.327	2809.042	1.00	5.22	28.810	10.000	10.1	101.2	NO	36.430	NO
26 PFDA	513 > 469	13442.274	19905.363	1.00	5.30	8.441	10.000	9.94	99.4	NO	4.946	NO
27 8:2 FTS	526.8 > 506.9	1390.938	1581.411	1.00	5.27	10.994	10.000	8.13	81.3	NO	0.663	NO
65 13C5-PFNA-EIS	468.2 > 422.9	15371.896		1.00	4.93	15371.896	12.500	12.7	101.4	NO		
67 13C8-PFOSA-EIS	506 > 78	7335.037		1.00	4.97	7335.037	12.500	12.8	102.7	NO		
71 13C8-PFOS-EIS	507.1 > 80	2809.042		1.00	5.00	2809.042	12.500	12.5	99.7	NO		
71 13C8-PFOS-EIS	507.1 > 80	2809.042		1.00	5.00	2809.042	12.500	12.5	99.7	NO		
73 13C2-PFDA-EIS	515.1 > 469.9	19905.363		1.00	5.30	19905.363	12.500	13.3	106.8	NO		
75 13C2-8:2 FTS-EIS	529 > 80	1581.411		1.00	5.27	1581.411	12.500	14.3	114.6	NO		
-1												
28 PFNS	549 > 80	2958.070	2809.042	1.00	5.36	13.163	10.000	9.94	99.4	NO	2.475	NO
29 L-MeFOSAA	570 > 419	4402.238	4350.112	1.00	5.44	12.650	10.000	10.4	104.0	NO	1.777	NO
31 L-EtFOSAA	583.9 > 419	4806.518	4658.295	1.00	5.60	12.898	10.000	9.30	93.0	NO	1.406	NO
33 PFUdA	563.0 > 519	15835.691	19243.490	1.00	5.62	10.286	10.000	9.35	93.5	NO	17.115	NO
34 PFDS	598.8 >79.9	2976.634	2809.042	1.00	5.66	13.246	10.000	10.4	103.7	NO	2.406	NO
35 11Cl-PF30UdS	631 > 451	5303.702	24612.705	1.00	5.81	2.694	10.000	10.4	104.3	NO	19.668	NO
71 13C8-PFOS-EIS	507.1 > 80	2809.042		1.00	5.00	2809.042	12.500	12.5	99.7	NO		
77 d3-N-MeFOSAA-EIS	573.1 > 419	4350.112		1.00	5.44	4350.112	12.500	13.1	105.1	NO		
81 d5-N-EtFOSAA-EIS	589.3 > 419	4658.295		1.00	5.59	4658.295	12.500	14.8	118.7	NO		
79 13C2-PFUdA-EIS	565 > 519.8	19243.490		1.00	5.62	19243.490	12.500	12.2	97.4	NO		
71 13C8-PFOS-EIS	507.1 > 80	2809.042		1.00	5.00	2809.042	12.500	12.5	99.7	NO		
83 13C2-PFDoA-EIS	614.9 > 569.9	24612.705		1.00	5.89	24612.705	12.500	13.2	105.4	NO		
-1												
36 10:2 FTS	626.9 > 607	2053.163	1239.527	1.00	5.88	20.705	10.000	11.3	113.2	NO	1.036	NO
37 PFDoA	612.9 > 569.0	18605.541	24612.705	1.00	5.89	9.449	10.000	9.63	96.3	NO	12.492	NO
38 N-MeFOSA	512.1 > 168.9	7966.409	20646.926	1.00	5.81	57.567	50.000	51.5	102.9	NO	1.918	NO
39 PFTrDA	662.9 > 618.9	20404.146	24612.705	1.00	6.13	10.363	10.000	9.96	99.6	NO	86.475	NO
40 PFDoS	699 > 80	3484.474	24741.564	1.00	6.15	1.760	10.000	10.4	103.8	NO	2.123	NO
41 PFTeDA	713.0 > 669.0	12995.239	24741.564	1.00	6.33	6.565	10.000	9.87	98.7	NO	14.437	NO
85 13C2-10:2 FTS-EIS	632.9 > 80.0	1239.527		1.00	5.88	1239.527	12.500	11.4	91.3	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 13 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

83	13C2-PFDoA-EIS	614.9 > 569.9	24612.705		1.00	5.89	24612.705	12.500	13.2	105.4	NO		
87	d3-N-MeFOSA-EIS	515.2 > 168.9	20646.926		1.00	5.83	20646.926	149.200	149	100.0	NO		
83	13C2-PFDoA-EIS	614.9 > 569.9	24612.705		1.00	5.89	24612.705	12.500	13.2	105.4	NO		
89	13C2-PFTeDA-EIS	715.1 > 669.7	24741.564		1.00	6.33	24741.564	12.500	13.0	103.9	NO		
89	13C2-PFTeDA-EIS -1	715.1 > 669.7	24741.564		1.00	6.33	24741.564	12.500	13.0	103.9	NO		
42	N-EtFOSA	526.1 > 168.9	9452.549	23806.791	1.00	6.19	59.240	50.000	51.2	102.4	NO	1.936	NO
43	PFHxDA	813 > 769	22556.393	27070.467	1.00	6.62	10.416	10.000	9.95	99.5	NO	32.558	NO
44	PFODA	913.1 > 868.8	18473.520	27070.467	1.00	6.83	8.530	10.000	10.3	102.9	NO		
45	N-MeFOSE	616.1 > 58.9	8003.121	22491.145	1.00	6.34	53.090	50.000	47.9	95.8	NO		
46	N-EtFOSE	630.1 > 58.9	8566.042	23170.283	1.00	6.49	55.159	50.000	54.6	109.1	NO		
48	13C3-PFBA-RSD	216.1 > 171.8	9538.545	10884.140	1.00	1.61	10.955	12.500	12.8	102.6	NO		
91	d5-N-ETFOSA-EIS	531.1 > 168.9	23806.791		1.00	6.20	23806.791	149.200	153	102.8	NO		
93	13C2-PFHxDA-EIS	815 > 769.7	27070.467		1.00	6.62	27070.467	12.500	12.8	102.7	NO		
93	13C2-PFHxDA-EIS	815 > 769.7	27070.467		1.00	6.62	27070.467	12.500	12.8	102.7	NO		
95	d7-N-MeFOSE-EIS	623.1 > 58.9	22491.145		1.00	6.33	22491.145	149.200	167	111.9	NO		
97	d9-N-EtFOSE-EIS	639.2 > 58.8	23170.283		1.00	6.48	23170.283	149.200	156	104.4	NO		
50	13C3-PFPeA-RSD -1	266.0 > 221.8	12698.616	16866.539	1.00	2.58	9.411	12.500	12.5	100.2	NO		
52	13C3-PFBS-RSD	302.0 > 98.9	1379.378	1056.683	1.00	2.85	16.317	12.500	13.3	106.5	NO		
54	13C3-HFPO-DA-RSD	287.0 > 168.9	3140.680	16866.539	1.00	3.58	2.328	12.500	12.3	98.4	NO		
56	13C2-4:2 FTS-RSD	329.0 >80.8	1268.590	1056.683	1.00	3.29	15.007	12.500	13.3	106.1	NO		
58	13C2-PFHxA-RSD	315.0 > 270.0	14639.554	16866.539	1.00	3.38	10.850	12.500	12.3	98.7	NO		
60	13C4-PFHpA-RSD	367.2 > 321.8	13493.209	16866.539	1.00	3.97	10.000	12.500	13.2	105.4	NO		
62	13C3-PFHxS-RSD	402 > 80	2816.630	1056.683	1.00	4.11	33.319	12.500	13.5	108.2	NO		
64	13C2-6:2 FTS-RSD	429.0 >79.7	1483.901	3316.298	1.00	4.44	5.593	12.500	11.8	94.6	NO		
66	13C5-PFNA-RSD	468.2 > 422.9	15371.896	17627.199	1.00	4.93	10.901	12.500	11.6	92.7	NO		
68	13C8-PFOSA-RSD	506 > 78	7335.037	14754.097	1.00	4.97	6.214	12.500	12.8	102.2	NO		
70	13C2-PFOA-RSD	414.9 > 369.7	15274.092	14290.067	1.00	4.49	13.361	12.500	12.2	97.7	NO		
72	13C8-PFOS-RSD	507.1 > 80	2809.042	3316.298	1.00	5.00	10.588	12.500	12.1	96.8	NO		
74	13C2-PFDA-RSD -1	515.1 > 469.9	19905.363	16237.306	1.00	5.30	15.324	12.500	12.2	97.8	NO		
76	13C2-8:2 FTS-RSD	529 > 80	1581.411	3316.298	1.00	5.27	5.961	12.500	13.1	104.4	NO		
78	d3-N-MeFOSAA-RSD	573.1 > 419	4350.112	14754.097	1.00	5.44	3.686	12.500	12.6	100.6	NO		
80	13C2-PFUdA-RSD	565 > 519.8	19243.490	14754.097	1.00	5.62	16.304	12.500	12.6	100.7	NO		
82	d5-N-EtFOSAA-RSD	589.3 > 419	4658.295	14754.097	1.00	5.59	3.947	12.500	14.0	111.6	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 14 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

84	13C2-PFDoA-RSD	614.9 > 569.9	24612.705	16237.306	1.00	5.89	18.948	12.500	12.2	97.8	NO
86	13C2-10:2 FTS-RSD	632.9 > 80.0	1239.527	3316.298	1.00	5.88	4.672	12.500	12.2	97.4	NO
88	d3-N-MeFOSA-RSD	515.2 > 168.9	20646.926	14754.097	1.00	5.83	17.493	149.200	151	101.3	NO
90	13C2-PFTeDA-RSD	715.1 > 669.7	24741.564	14754.097	1.00	6.33	20.962	12.500	12.8	102.7	NO
92	d5-N-ETFOSA-RSD	531.1 > 168.9	23806.791	14754.097	1.00	6.20	20.170	149.200	155	103.7	NO
94	13C2-PFHxDA-RSD	815 > 769.7	27070.467	14754.097	1.00	6.62	22.935	12.500	12.9	103.3	NO
96	d7-N-MeFOSE-RSD	623.1 > 58.9	22617.865	14754.097	1.00	6.33	19.162	149.200	161	108.0	NO
98	d9-N-EtFOSE-RSD	639.2 > 58.8	23431.799	14754.097	1.00	6.48	19.852	149.200	151	101.0	NO
-1											
99	13C4-PFBA	217.0 > 172.0	10884.140	10884.140	1.00	1.60	12.500	12.500	12.5	100.0	NO
1...	13C5-PFHxA	318.0 > 272.9	16866.539	16866.539	1.00	3.38	12.500	12.500	12.5	100.0	NO
1...	13C8-PFOA	420.9 > 376.0	14290.067	14290.067	1.00	4.49	12.500	12.500	12.5	100.0	NO
1...	18O2-PFHxS	403.0 > 103	1056.683	1056.683	1.00	4.11	12.500	12.500	12.5	100.0	NO
1...	13C9-PFNA	472.2 > 426.9	17627.199	17627.199	1.00	4.93	12.500	12.500	12.5	100.0	NO
1...	13C4-PFOS	503 > 79.7	3316.298	3316.298	1.00	5.00	12.500	12.500	12.5	100.0	NO
1...	13C6-PFDA	519.1 > 473.7	16237.306	16237.306	1.00	5.30	12.500	12.500	12.5	100.0	NO
1...	13C7-PFUdA	570.1 > 524.8	14754.097	14754.097	1.00	5.62	12.500	12.500	12.5	100.0	NO

OPV 7/7/2020

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 1 of 3
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 12:16:39 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 12:17:00 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Compound name: PFBA

1	200706P1-19	ST200706P1-1 PFC CS-2 20F1901	06-Jul-20	13:13:57
2	200706P1-20	ST200706P1-2 PFC CS-1 20F1902	06-Jul-20	13:24:27
3	200706P1-21	ST200706P1-3 PFC CS0 20F1903	06-Jul-20	13:34:57
4	200706P1-22	ST200706P1-4 PFC CS1 20F1904	06-Jul-20	13:45:26
5	200706P1-23	ST200706P1-5 PFC CS2 20F1905	06-Jul-20	13:55:58
6	200706P1-24	ST200706P1-6 PFC CS3 20F1906	06-Jul-20	14:06:27
7	200706P1-25	ST200706P1-7 PFC CS4 20F1907	06-Jul-20	14:16:59
8	200706P1-26	ST200706P1-8 PFC CS5 20F1908	06-Jul-20	14:27:27
9	200706P1-27	ST200706P1-9 PFC CS6 20F1909	06-Jul-20	14:37:59
10	200706P1-28	ST200706P1-10 PFC CS7 20F1910	06-Jul-20	14:48:28
11	200706P1-29	IB	06-Jul-20	14:58:58
12	200706P1-30	ICV200706P1-1 PFC ICV 20F1911	06-Jul-20	15:09:30
13	200706P1-31	IB	06-Jul-20	15:19:59
14	200706P1-32	B0F0205-BS1 OPR 0.25	06-Jul-20	15:30:30
15	200706P1-33	2001315-06 24-GW-24NEW4-20200618 0.25948	06-Jul-20	15:41:01
16	200706P1-34	2001315-08 24-GW-08DGMW73-20200618 0.25501	06-Jul-20	15:51:31
17	200706P1-35	2001345-06@5X Septic Receiving 0.11338	06-Jul-20	16:02:00
18	200706P1-36	IB	06-Jul-20	16:12:35
19	200706P1-37	2001315-06 24-GW-24NEW4-20200618 0.25948	06-Jul-20	16:46:41
20	200706P1-38	2001315-08 24-GW-08DGMW73-20200618 0.25501	06-Jul-20	16:57:15
21	200706P1-39	2001326-01 REEPEF2658FS 0.11212	06-Jul-20	17:07:46
22	200706P1-40	B0G0023-BLK1 Method Blank 0.01	06-Jul-20	17:18:14
23	200706P1-41	B0G0023-BS1 OPR 0.01	06-Jul-20	17:28:46
24	200706P1-42	B0G0023-BSD1 LCSD 0.01	06-Jul-20	17:39:17
25	200706P1-43	2001353-01RE1 CAVERLY 0.01	06-Jul-20	17:49:46
26	200706P1-44	2001353-02RE1 SOMERSET FARMS 0.01	06-Jul-20	18:00:17
27	200706P1-45	2001353-03 TOZIER 0.01	06-Jul-20	18:10:46
28	200706P1-46	2001353-04RE1 TOZIER (2 vials-same) 0.01	06-Jul-20	18:21:18
29	200706P1-47	IB	06-Jul-20	18:31:47
30	200706P1-48	ST200706P1-11 PFC CS3 20F1906	06-Jul-20	18:42:17
31	200706P1-49	IB	06-Jul-20	18:52:49
32	200706P1-50	B0F0257-BLK1 Method Blank 0.25	06-Jul-20	19:03:20

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 12:16:39 Pacific Daytight Time
Printed: Tuesday, July 07, 2020 12:17:00 Pacific Daytight Time

Compound name: PFBA

33	200706P1-51	B0F0257-BS1 OPR 0.25	06-Jul-20	19:13:50
34	200706P1-52	B0F0257-BSD1 LCSD 0.25	06-Jul-20	19:24:18
35	200706P1-53	B0F0257-MS1 Matrix Spike 0.2511	06-Jul-20	19:34:50
36	200706P1-54	B0F0257-MSD1 Matrix Spike Dup 0.24211	06-Jul-20	19:45:19
37	200706P1-55	2001356-01 ET-LW02-2020 0.25782	06-Jul-20	19:55:51
38	200706P1-56	IB	06-Jul-20	20:06:19
39	200706P1-57	2001357-01 SB01-20200624 0.24654	06-Jul-20	20:16:52
40	200706P1-58	2001357-02 EB01-20200624 0.24804	06-Jul-20	20:27:21
41	200706P1-59	2001357-03 I006MW065-20200624 0.25563	06-Jul-20	20:37:52
42	200706P1-60	IB	06-Jul-20	20:48:23
43	200706P1-61	2001357-04 DUP01-20200624 0.25403	06-Jul-20	20:58:53
44	200706P1-62	IB	06-Jul-20	21:09:22
45	200706P1-63	2001358-01 EB02-20200624 0.24128	06-Jul-20	21:19:52
46	200706P1-64	2001358-02 24-GW-24MW06-20200624 0.26389	06-Jul-20	21:30:23
47	200706P1-65	2001358-03 DUP01-20200624 0.26301	06-Jul-20	21:40:52
48	200706P1-66	2001358-04 24-GW-24MW10D-20200624 0.25918	06-Jul-20	21:51:24
49	200706P1-67	2001358-05 DUP02-20200624 0.2559	06-Jul-20	22:01:54
50	200706P1-68	2001358-06 24-GW-24MW10C-20200624 0.25497	06-Jul-20	22:12:25
51	200706P1-69	2001358-07 24-GW-24MW07R-20200624 0.25444	06-Jul-20	22:22:53
52	200706P1-70	B0F0172-BLK1 Method Blank 0.25	06-Jul-20	22:33:25
53	200706P1-71	B0F0172-BS1 OPR 0.25	06-Jul-20	22:43:54
54	200706P1-72	2001276-01 Equipment Blank-1 0.22934	06-Jul-20	22:54:26
55	200706P1-73	ST200706P1-12 PFC CS3 20F1906	06-Jul-20	23:04:55
56	200706P1-74	IB	06-Jul-20	23:15:27
57	200706P1-75	2001276-02 MW-20-01 0.25109	06-Jul-20	23:25:56
58	200706P1-76	2001276-03 Field Blank 0.24862	06-Jul-20	23:36:27
59	200706P1-77	2001276-04 MW-20-02 0.26126	06-Jul-20	23:46:56
60	200706P1-78	2001276-05 MW-20-03 0.24623	06-Jul-20	23:57:28
61	200706P1-79	2001276-06 Equipment Blank-2 0.24081	07-Jul-20	00:07:57
62	200706P1-80	2001276-07 Duplicate-1 0.24702	07-Jul-20	00:18:27
63	200706P1-81	B0F0088-BLK1 Method Blank 5	07-Jul-20	00:28:59
64	200706P1-82	B0F0088-BS1 OPR 5	07-Jul-20	00:39:27
65	200706P1-83	B0F0088-BSD1 LCSD 5	07-Jul-20	00:50:00
66	200706P1-84	2001248-01 05082020 B 5	07-Jul-20	01:00:28
67	200706P1-85	2001250-01 05082020 A 5	07-Jul-20	01:10:58
68	200706P1-86	ST200706P1-13 PFC CS3 20F1906	07-Jul-20	01:21:30

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 12:16:39 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 12:17:00 Pacific Daylight Time

Compound name: PFBA

69	200706P1-87	IB	07-Jul-20	01:31:59
70	200706P1-88	2001251-01 05082020 C 5	07-Jul-20	01:42:31
71	200706P1-89	2001252-01 05082020 E 2.5	07-Jul-20	01:53:00
72	200706P1-90	2001351-01 05082020AY 2.5	07-Jul-20	02:03:30
73	200706P1-91	2001375-01 05082020AF 3	07-Jul-20	02:14:01
74	200706P1-92	2001376-01 05082020T 2.5	07-Jul-20	02:24:33
75	200706P1-93	2001383-01 05082020AO 3	07-Jul-20	02:35:01
76	200706P1-94	2001384-01 05082020AG 2.5	07-Jul-20	02:45:33
77	200706P1-95	2001391-01 05082020J 2.5	07-Jul-20	02:56:03
78	200706P1-96	2001392-01 05082020R 3	07-Jul-20	03:06:32
79	200706P1-97	2001393-01 05082020G 2.5	07-Jul-20	03:17:04
80	200706P1-98	ST200706P1-14 PFC CS3 20F1906	07-Jul-20	03:27:34
81	200706P1-99	IB	07-Jul-20	03:38:03
82	200706P1-100	2001402-01 06122020A 5	07-Jul-20	03:48:35
83	200706P1-101	2001403-01 05082020AN 2.5	07-Jul-20	03:59:04
84	200706P1-102	2001302-01@5X OP-1 0.03392	07-Jul-20	04:09:35
85	200706P1-103	2001302-02@5X OP-2 0.03359	07-Jul-20	04:20:04
86	200706P1-104	2001302-03@5X OP-3 0.0336	07-Jul-20	04:30:36
87	200706P1-105	2001302-04@5X OP-4 0.03354	07-Jul-20	04:41:05
88	200706P1-106	2001302-05@5X OP-5 0.03336	07-Jul-20	04:51:36
89	200706P1-107	2001302-06@5X OP-6 0.03266	07-Jul-20	05:02:06
90	200706P1-108	2001302-07@5X OP-7 0.03389	07-Jul-20	05:12:35
91	200706P1-109	2001302-08@5X OP-8 0.03326	07-Jul-20	05:23:07
92	200706P1-110	ST200706P1-15 PFC CS3 20F1906	07-Jul-20	05:33:36
93	200706P1-111	IB	07-Jul-20	05:44:07
94	200706P1-112	2001302-09@5X OP-9 0.03376	07-Jul-20	05:54:38
95	200706P1-113	2001302-10@5X OP-10 0.03297	07-Jul-20	06:05:07
96	200706P1-114	2001302-11@5X OP-11 0.03382	07-Jul-20	06:15:39
97	200706P1-115	2001302-12@5X OP-12 0.03372	07-Jul-20	06:26:08
98	200706P1-116	2001302-13@5X OP-13 0.03255	07-Jul-20	06:36:39
99	200706P1-117	2001302-14@5X OP-14 0.03286	07-Jul-20	06:47:10
100	200706P1-118	2001302-15@5X OP-15 0.03232	07-Jul-20	06:57:39
101	200706P1-119	2001302-16@5X OP-16 0.03366	07-Jul-20	07:08:11
102	200706P1-120	2001302-17@5X OP-17 0.03283	07-Jul-20	07:18:40
103	200706P1-121	2001302-18@5X OP-18 0.03296	07-Jul-20	07:29:10
104	200706P1-122	ST200706P1-16 PFC CS3 20F1906	07-Jul-20	07:39:40

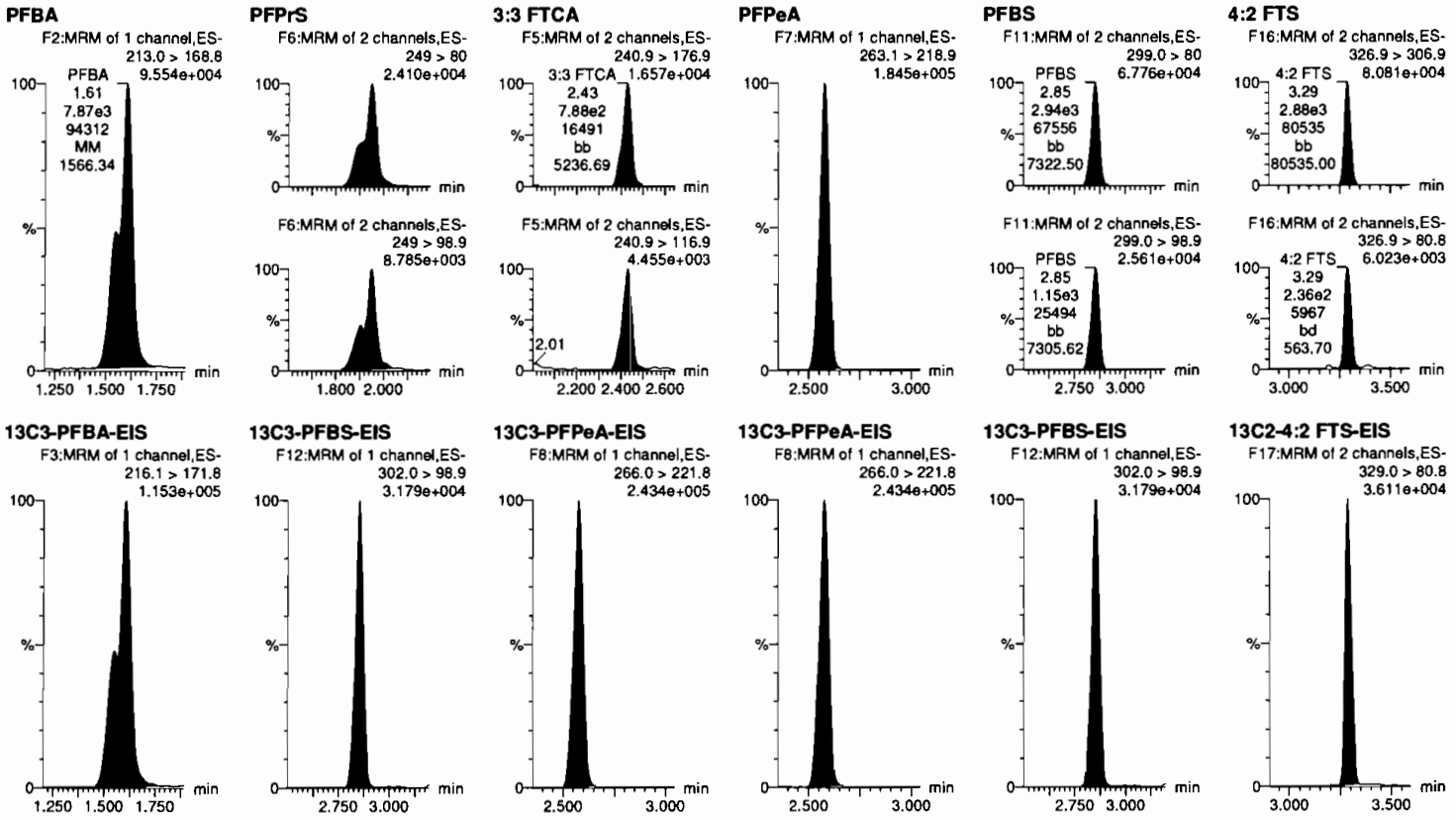
Quantify Sample Report **MassLynx V4.2 SCN977** Page 1 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906



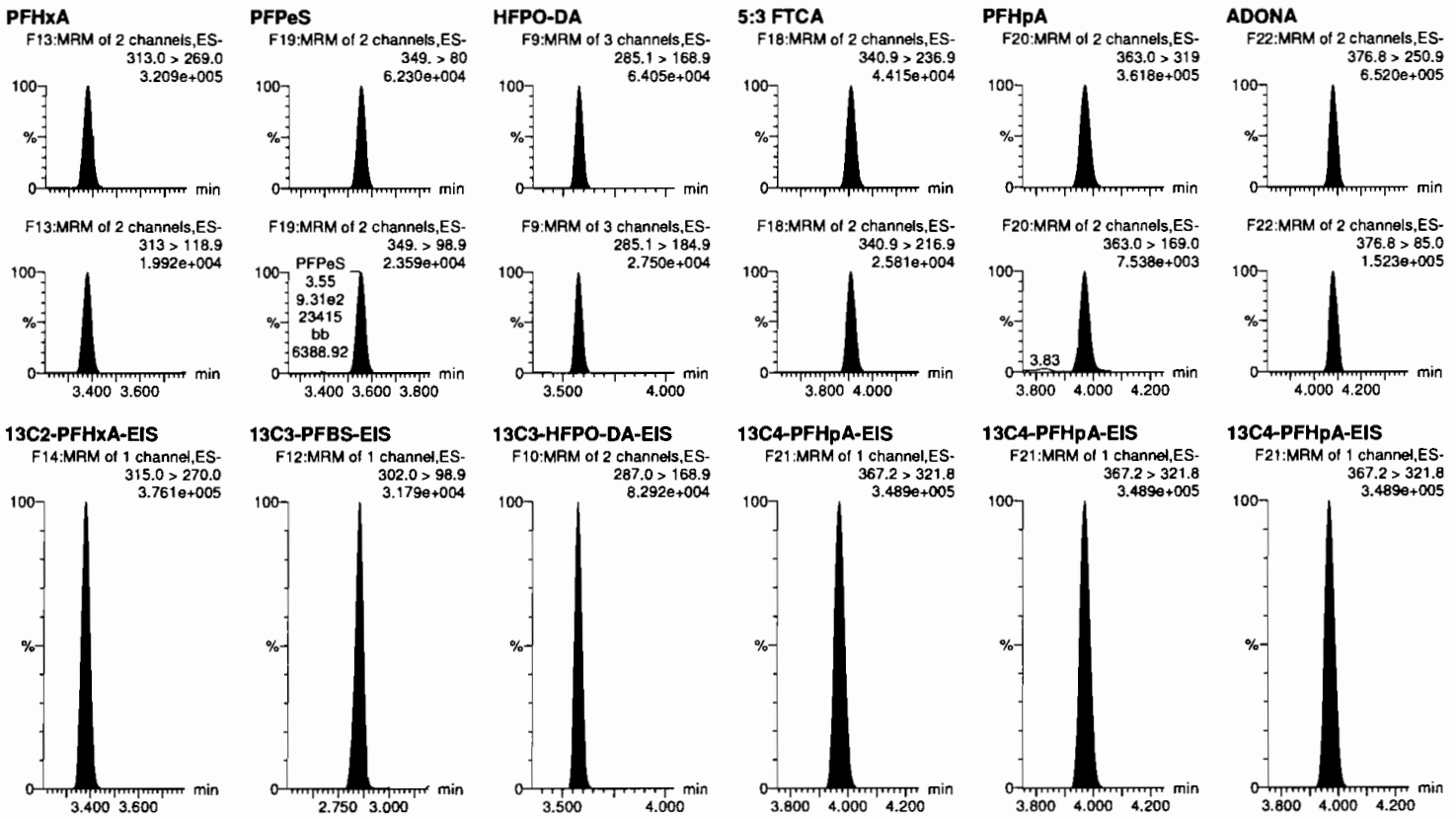
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 2 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906



OPV 7/7/2020

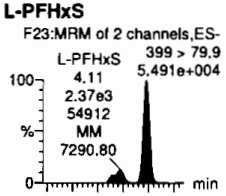
Quantify Sample Report **MassLynx V4.2 SCN977** Page 3 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

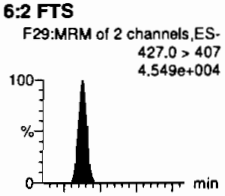
Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

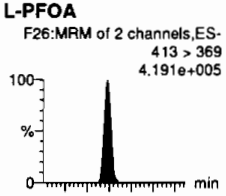
L-PFHxS



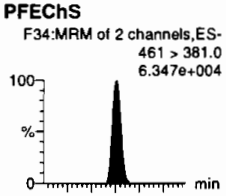
6:2 FTS



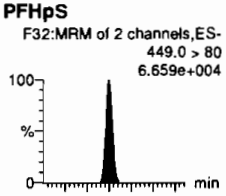
L-PFOA



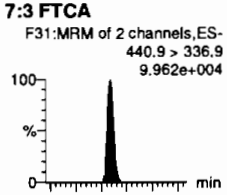
PFEChS



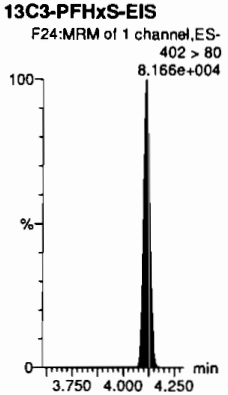
PFHpS



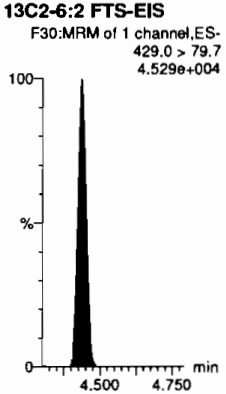
7:3 FTCA



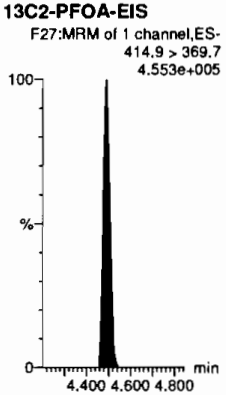
13C3-PFHxS-EIS



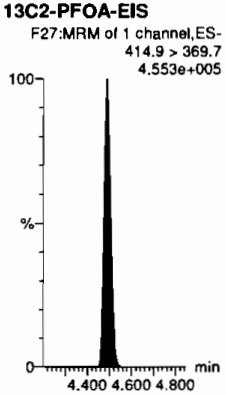
13C2-6:2 FTS-EIS



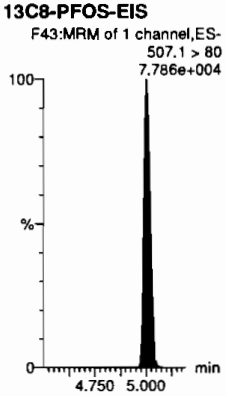
13C2-PFOA-EIS



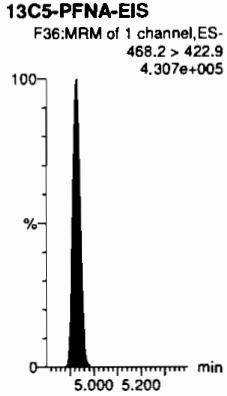
13C2-PFOA-EIS



13C8-PFOS-EIS



13C5-PFNA-EIS



OPV 7/7/2020

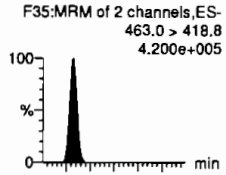
Quantify Sample Report **MassLynx V4.2 SCN977** Page 4 of 14
Vista Analytical Laboratory

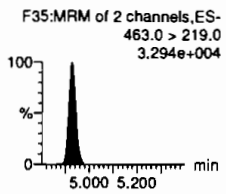
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

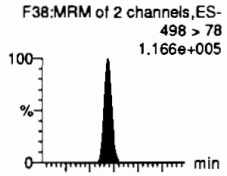
Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

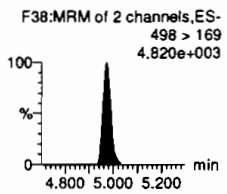
PFNA



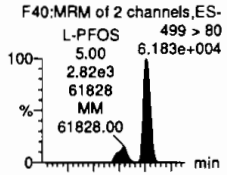


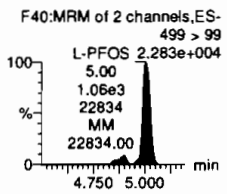
PFOSA



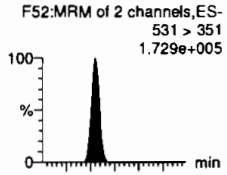


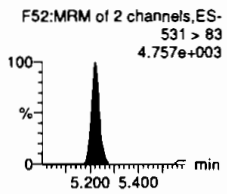
L-PFOS



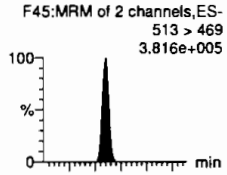


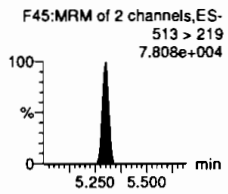
9Cl-PF30NS



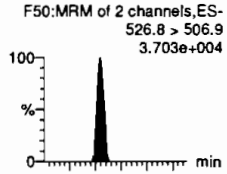


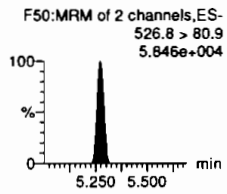
PFDA



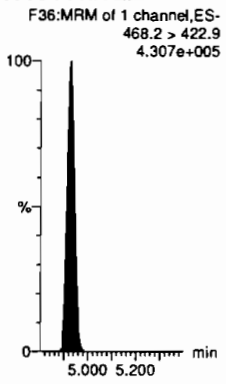


8:2 FTS

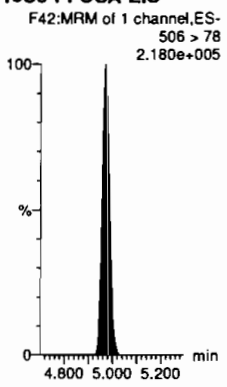




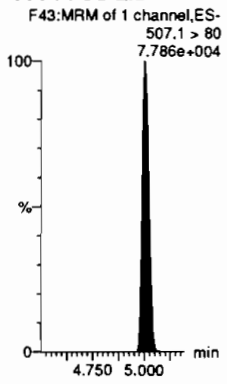
13C5-PFNA-EIS



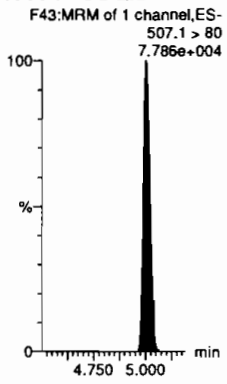
13C8-PFOSA-EIS



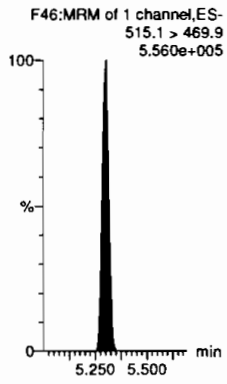
13C8-PFOS-EIS



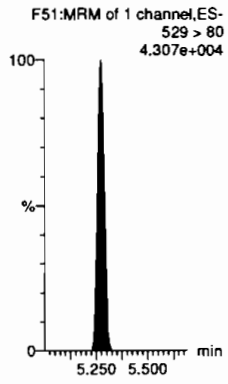
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-8:2 FTS-EIS



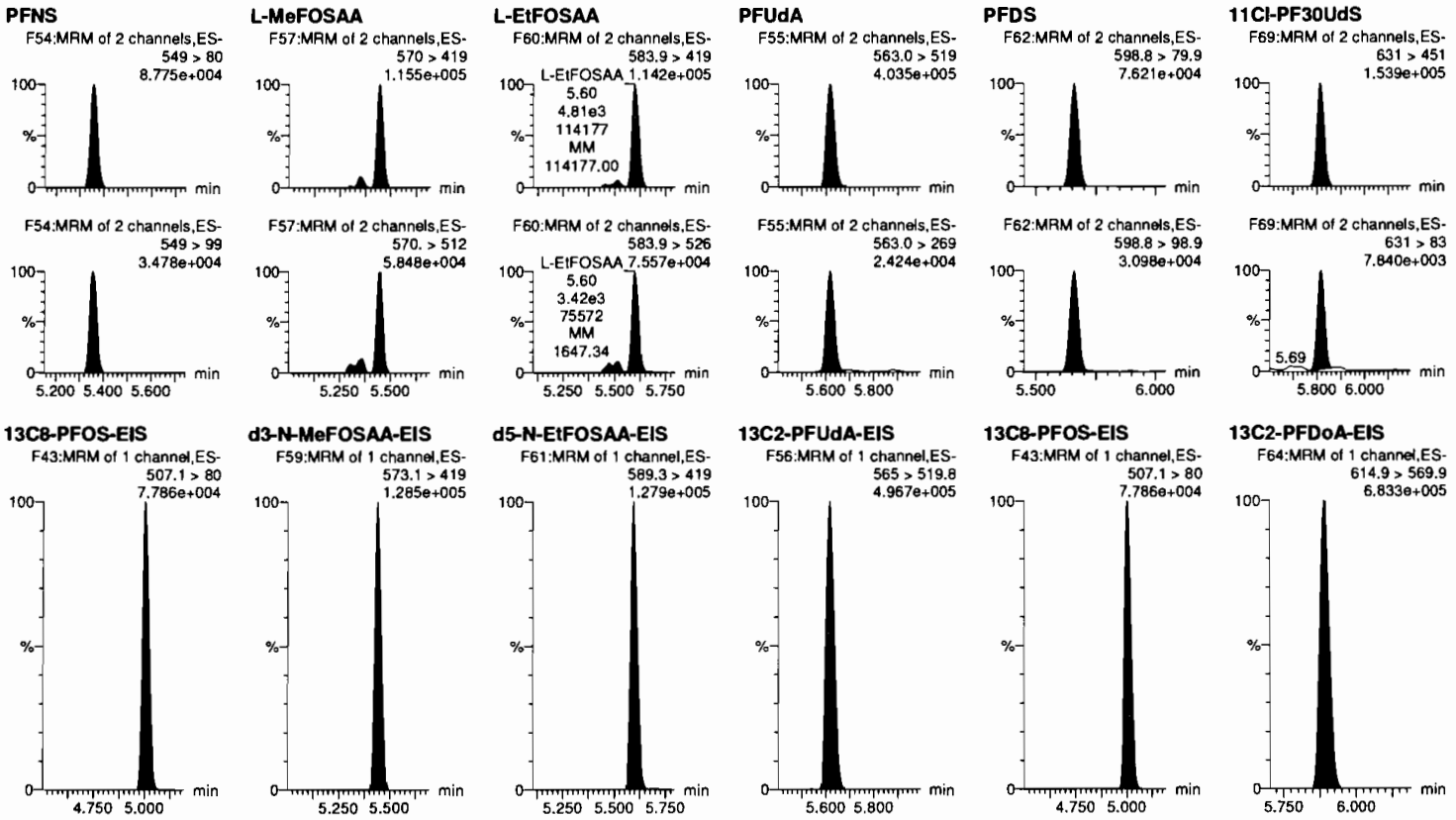
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 5 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906



OPV 7/7/2020

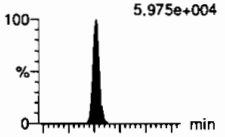
Quantify Sample Report **MassLynx V4.2 SCN977** Page 6 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

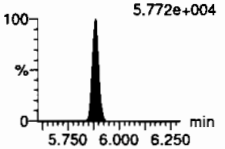
Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

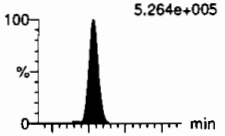
10:2 FTS
F67:MRM of 2 channels,ES-
626.9 > 607
5.975e+004



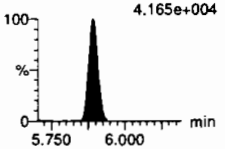
F67:MRM of 2 channels,ES-
626.9 > 80.7
5.772e+004



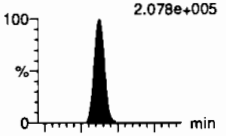
PFDoA
F63:MRM of 2 channels,ES-
612.9 > 569.0
5.264e+005



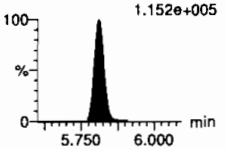
F63:MRM of 2 channels,ES-
612.9 > 318.8
4.165e+004



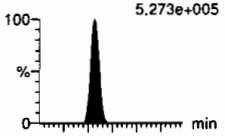
N-MeFOSA
F44:MRM of 2 channels,ES-
512.1 > 168.9
2.078e+005



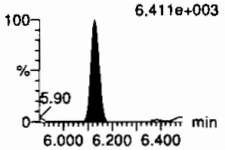
F44:MRM of 2 channels,ES-
512.1 > 219
1.152e+005



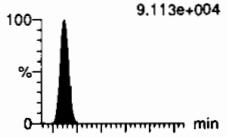
PFTrDA
F72:MRM of 2 channels,ES-
662.9 > 618.9
5.273e+005



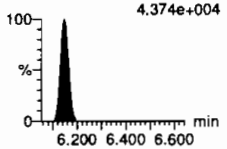
F72:MRM of 2 channels,ES-
662.9 > 319
6.411e+003



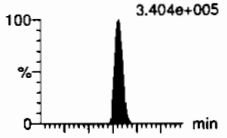
PFDoS
F73:MRM of 2 channels,ES-
699 > 80
9.113e+004



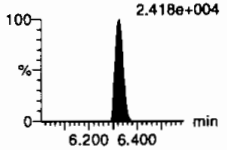
F73:MRM of 2 channels,ES-
699 > 99
4.374e+004



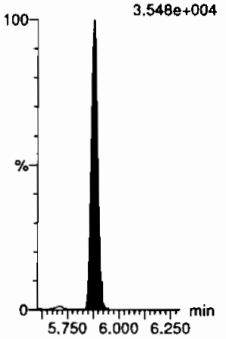
PFTeDA
F74:MRM of 2 channels,ES-
713.0 > 669.0
3.404e+005



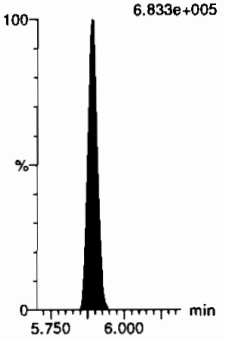
F74:MRM of 2 channels,ES-
713. > 369.0
2.418e+004



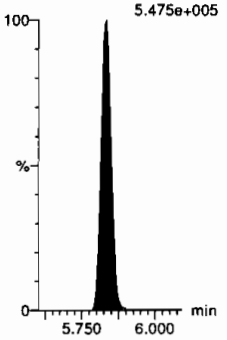
13C2-10:2 FTS-EIS
F70:MRM of 1 channel,ES-
632.9 > 80.0
3.548e+004



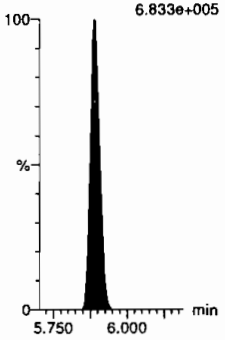
13C2-PFDoA-EIS
F64:MRM of 1 channel,ES-
614.9 > 569.9
6.833e+005



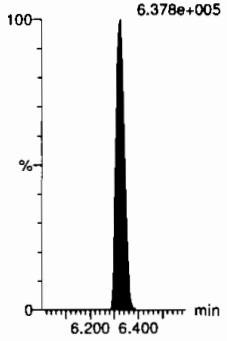
d3-N-MeFOSA-EIS
F47:MRM of 1 channel,ES-
515.2 > 168.9
5.475e+005



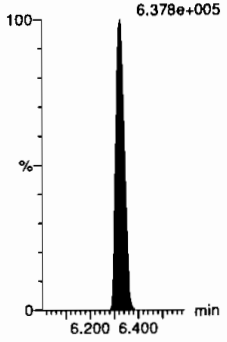
13C2-PFDoA-EIS
F64:MRM of 1 channel,ES-
614.9 > 569.9
6.833e+005



13C2-PFTeDA-EIS
F75:MRM of 2 channels,ES-
715.1 > 669.7
6.378e+005



13C2-PFTeDA-EIS
F75:MRM of 2 channels,ES-
715.1 > 669.7
6.378e+005



OPV 7/7/2020

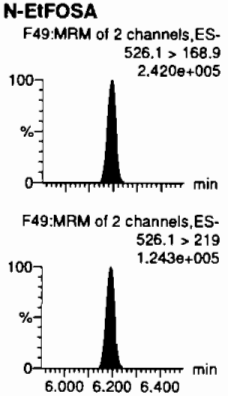
Quantify Sample Report **MassLynx V4.2 SCN977** Page 7 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

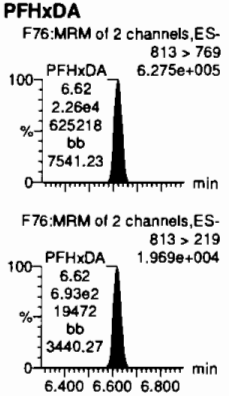
Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

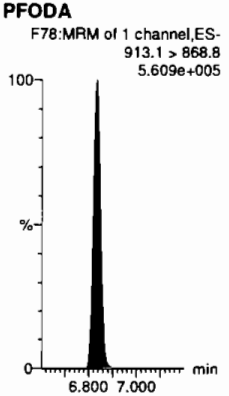
N-EtFOSA



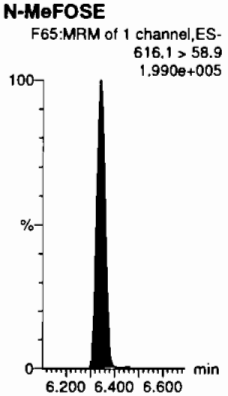
PFHxDA



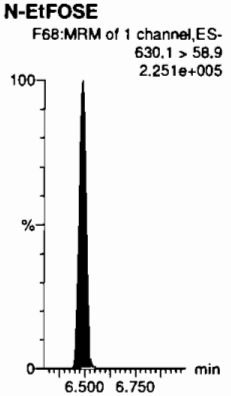
PFODA



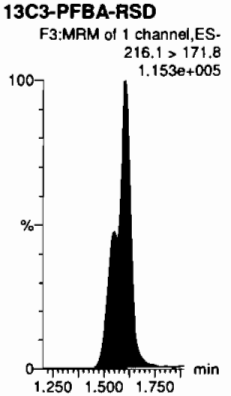
N-MeFOSE



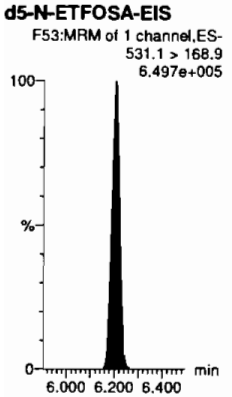
N-EtFOSE



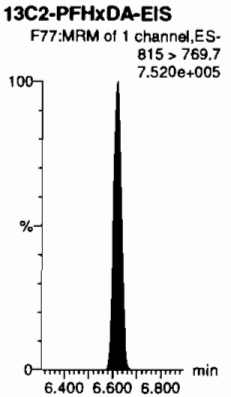
13C3-PFBA-RSD



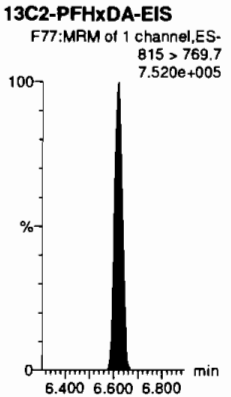
d5-N-ETFOSA-EIS



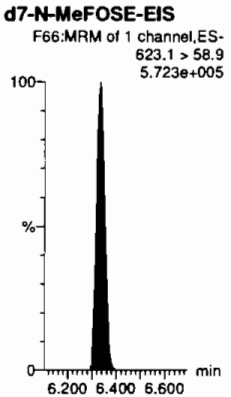
13C2-PFHxDA-EIS



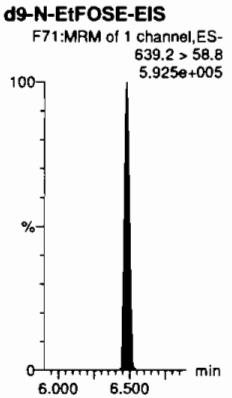
13C2-PFHxDA-EIS



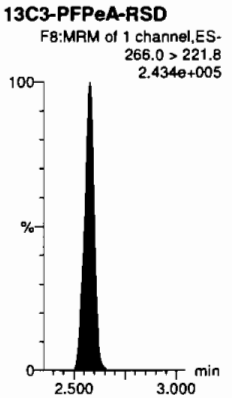
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



OPV 7/7/2020

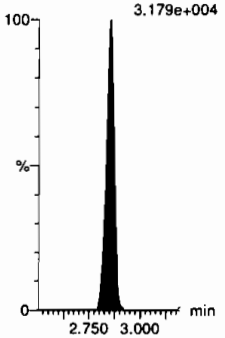
Quantify Sample Report **MassLynx V4.2 SCN977** Page 8 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

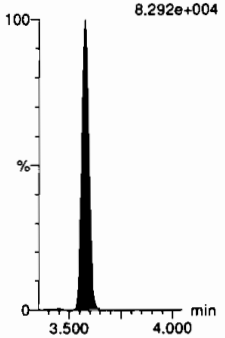
Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

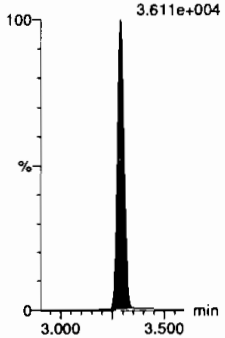
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 98.9
3.179e+004



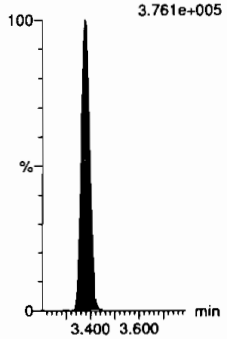
13C3-HFPO-DA-RSD
F10:MRM of 2 channels,ES-
287.0 > 168.9
8.292e+004



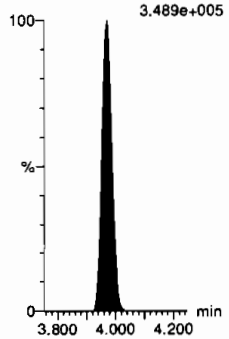
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 80.8
3.611e+004



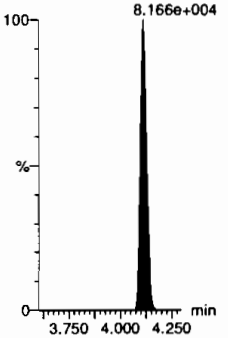
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
3.761e+005



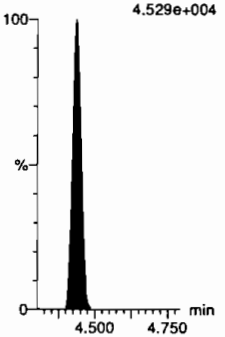
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.489e+005



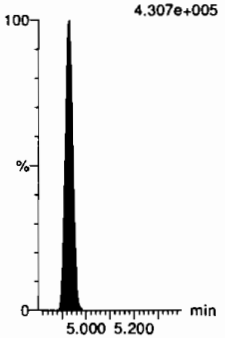
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
402 > 80
8.166e+004



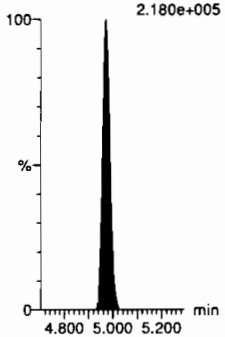
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 79.7
4.529e+004



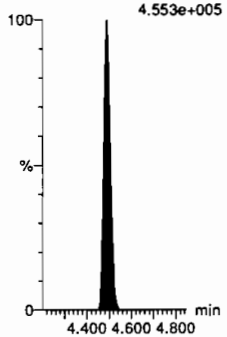
13C5-PFNA-RSD
F36:MRM of 1 channel,ES-
468.2 > 422.9
4.307e+005



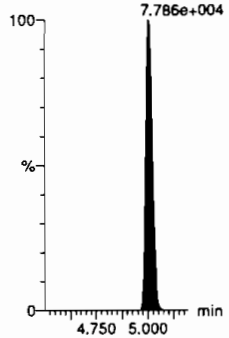
13C8-PFOSA-RSD
F42:MRM of 1 channel,ES-
506 > 78
2.180e+005



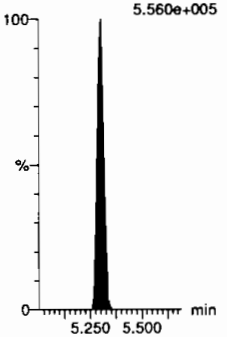
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
4.553e+005



13C8-PFOS-RSD
F43:MRM of 1 channel,ES-
507.1 > 80
7.786e+004



13C2-PFDA-RSD
F46:MRM of 1 channel,ES-
515.1 > 469.9
5.560e+005



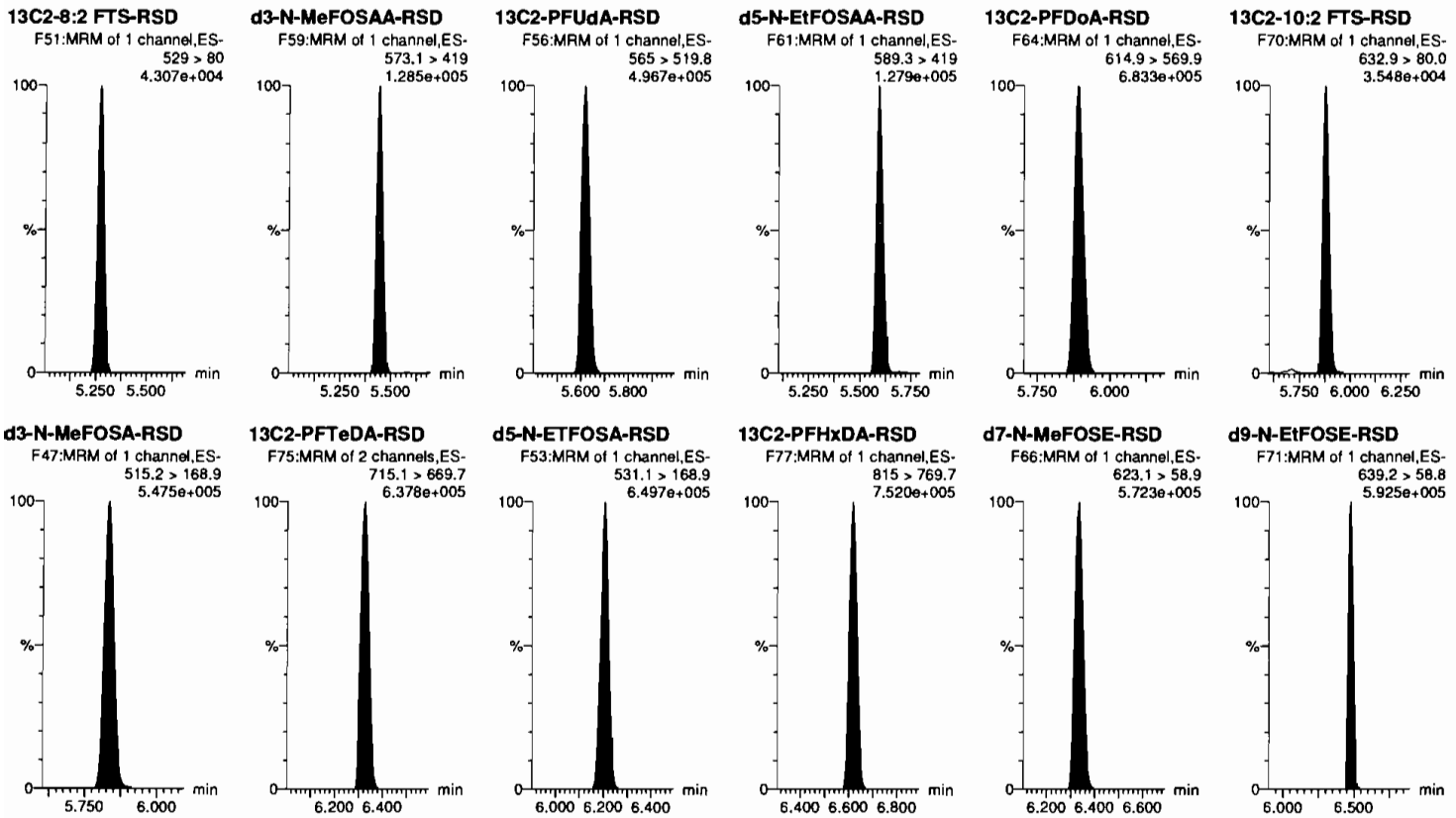
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 9 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906



OPV 7/7/2020

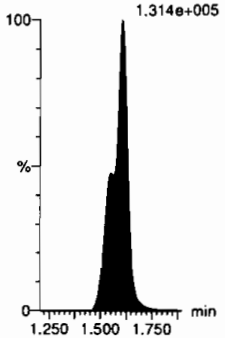
Quantify Sample Report **MassLynx V4.2 SCN977** Page 10 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-48.qld

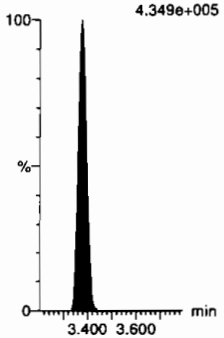
Last Altered: Tuesday, July 07, 2020 10:14:25 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:16:23 Pacific Daylight Time

Name: 200706P1-48, Date: 06-Jul-2020, Time: 18:42:17, ID: ST200706P1-11 PFC CS3 20F1906, Description: PFC CS3 20F1906

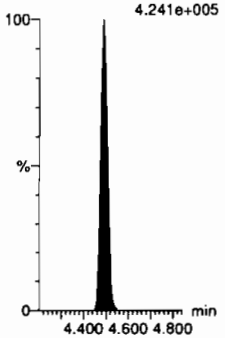
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.314e+005



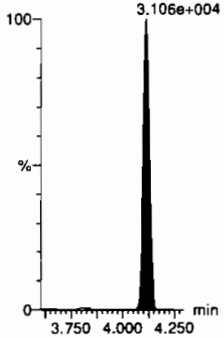
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
4.349e+005



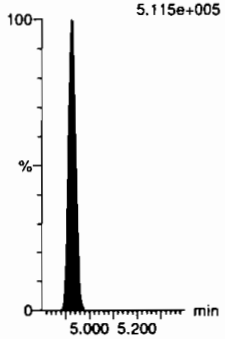
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
4.241e+005



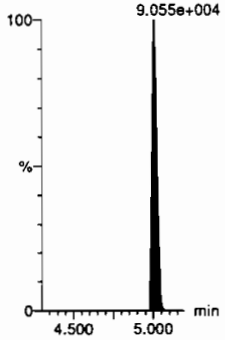
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
3.106e+004



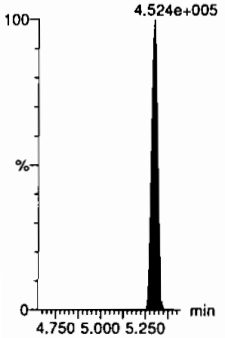
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
5.115e+005



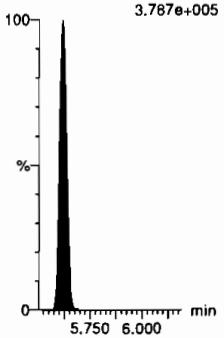
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
9.055e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
4.524e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
3.787e+005



OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 11 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

√ FR 07/07/2020

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

1	PFBA	213.0 > 168.8	8012.707	10050.552	1.00	1.60	9.966	10.000	9.62	96.2	NO		
2	PFPrS	249 > 80	1558.559	1527.099	1.00	1.94	12.758	10.000	9.56	95.6	NO	2.713	NO
3	3:3 FTCA	240.9 > 176.9	800.662	13437.363	1.00	2.42	0.745	10.000	9.01	90.1	NO	3.368	NO
4	PFPeA	263.1 > 218.9	10089.282	13437.363	1.00	2.57	9.385	10.000	10.1	101.3	NO		
5	PFBS	299.0 > 80	3015.340	1527.099	1.00	2.84	24.682	10.000	9.64	96.4	NO	2.439	NO
6	4:2 FTS	326.9 > 306.9	3093.074	1346.214	1.00	3.28	28.720	10.000	10.1	100.8	NO	12.003	NO
47	13C3-PFBA-EIS	216.1 > 171.8	10050.552		1.00	1.59	10050.552	12.500	14.6	116.6	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1527.099		1.00	2.84	1527.099	12.500	14.7	117.5	NO		
49	13C3-PFPeA-EIS	266.0 > 221.8	13437.363		1.00	2.57	13437.363	12.500	14.0	111.8	NO		
49	13C3-PFPeA-EIS	266.0 > 221.8	13437.363		1.00	2.57	13437.363	12.500	14.0	111.8	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1527.099		1.00	2.84	1527.099	12.500	14.7	117.5	NO		
55	13C2-4:2 FTS-EIS -1	329.0 >80.8	1346.214		1.00	3.28	1346.214	12.500	13.3	106.7	NO		
7	PFHxA	313.0 > 269.0	13166.781	15047.628	1.00	3.36	10.938	10.000	10.5	104.9	NO	16.582	NO
8	PFPeS	349.>80	2493.285	1527.099	1.00	3.54	20.409	10.000	9.78	97.8	NO	2.152	NO
9	HFPO-DA	285.1 > 168.9	2560.337	3145.659	1.00	3.56	10.174	10.000	10.1	101.2	NO	2.332	NO
10	5:3 FTCA	340.9 > 236.9	1612.937	12937.038	1.00	3.90	1.558	10.000	8.82	88.2	NO	1.516	NO
11	PFHpA	363.0 > 319	13780.732	12937.038	1.00	3.96	13.315	10.000	10.2	102.3	NO	56.292	NO
12	ADONA	376.8 > 250.9	22759.811	12937.038	1.00	4.07	21.991	10.000	10.1	101.1	NO	3.990	NO
57	13C2-PFHxA-EIS	315.0 > 270.0	15047.628		1.00	3.36	15047.628	12.500	13.8	110.4	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1527.099		1.00	2.84	1527.099	12.500	14.7	117.5	NO		
53	13C3-HFPO-DA-EIS	287.0 > 168.9	3145.659		1.00	3.56	3145.659	12.500	13.8	110.2	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	12937.038		1.00	3.96	12937.038	12.500	13.2	105.3	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	12937.038		1.00	3.96	12937.038	12.500	13.2	105.3	NO		
59	13C4-PFHpA-EIS -1	367.2 > 321.8	12937.038		1.00	3.96	12937.038	12.500	13.2	105.3	NO		
13	L-PFHxS	399 > 79.9	2658.051	2861.496	1.00	4.10	11.611	10.000	10.6	105.6	NO	4.082	NO
15	6:2 FTS	427.0 > 407	1592.953	1651.599	1.00	4.42	12.056	10.000	10.5	105.4	NO	0.761	NO
16	L-PFOA	413 > 369	13238.193	14884.313	1.00	4.48	11.118	10.000	9.81	98.1	NO	2.982	NO
18	PFecHS	461 > 381.0	2762.227	14884.313	1.00	4.49	2.320	10.000	10.3	102.9	NO	0.563	NO
19	PFHpS	449.0 > 80	2459.571	3135.890	1.00	4.58	9.804	10.000	10.1	100.7	NO	1.839	NO
20	7:3 FTCA	440.9 > 336.9	3562.670	15884.413	1.00	4.90	2.804	10.000	9.07	90.7	NO	1.307	NO
61	13C3-PFHxS-EIS	402 > 80	2861.496		1.00	4.10	2861.496	12.500	13.0	104.0	NO		
63	13C2-6:2 FTS-EIS	429.0 >79.7	1651.599		1.00	4.42	1651.599	12.500	12.8	102.6	NO		
69	13C2-PFOA-EIS	414.9 > 369.7	14884.313		1.00	4.48	14884.313	12.500	12.9	103.1	NO		
69	13C2-PFOA-EIS	414.9 > 369.7	14884.313		1.00	4.48	14884.313	12.500	12.9	103.1	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 12 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

71	13C8-PFOS-EIS	507.1 > 80	3135.890		1.00	4.99	3135.890	12.500	13.9	111.2	NO		
65	13C5-PFNA-EIS	468.2 > 422.9	15884.413		1.00	4.92	15884.413	12.500	13.1	104.7	NO		
-1													
21	PFNA	463.0 > 418.8	14460.560	15884.413	1.00	4.91	11.380	10.000	10.2	101.8	NO	13.189	NO
22	PFOSA	498 > 78	4086.348	7173.675	1.00	4.96	7.120	10.000	10.3	103.2	NO	20.769	NO
23	L-PFOS	499 > 80	3224.913	3135.890	1.00	4.99	12.855	10.000	10.1	101.4	NO	2.804	NO
25	9Cl-PF30NS	531 > 351	6707.201	3135.890	1.00	5.21	26.736	10.000	9.39	93.9	NO	33.447	NO
26	PFDA	513 > 469	13145.316	19387.570	1.00	5.29	8.475	10.000	9.98	99.8	NO	5.260	NO
27	8:2 FTS	526.8 > 506.9	1575.071	1594.212	1.00	5.26	12.350	10.000	9.13	91.3	NO	0.717	NO
65	13C5-PFNA-EIS	468.2 > 422.9	15884.413		1.00	4.92	15884.413	12.500	13.1	104.7	NO		
67	13C8-PFOSA-EIS	506 > 78	7173.675		1.00	4.96	7173.675	12.500	12.6	100.4	NO		
71	13C8-PFOS-EIS	507.1 > 80	3135.890		1.00	4.99	3135.890	12.500	13.9	111.2	NO		
71	13C8-PFOS-EIS	507.1 > 80	3135.890		1.00	4.99	3135.890	12.500	13.9	111.2	NO		
73	13C2-PFDA-EIS	515.1 > 469.9	19387.570		1.00	5.29	19387.570	12.500	13.0	104.0	NO		
75	13C2-8:2 FTS-EIS	529 > 80	1594.212		1.00	5.26	1594.212	12.500	14.4	115.6	NO		
-1													
28	PFNS	549 > 80	3021.391	3135.890	1.00	5.34	12.044	10.000	9.10	91.0	NO	2.340	NO
29	L-MeFOSAA	570 > 419	4150.127	4534.687	1.00	5.43	11.440	10.000	9.41	94.1	NO	1.763	NO
31	L-EtFOSAA	583.9 > 419	5476.769	4785.992	1.00	5.59	14.304	10.000	10.3	103.1	NO	1.452	NO
33	PFUdA	563.0 > 519	16435.328	18140.504	1.00	5.60	11.325	10.000	10.3	103.0	NO	18.070	NO
34	PFDS	598.8 >79.9	3061.262	3135.890	1.00	5.65	12.203	10.000	9.56	95.6	NO	2.237	NO
35	11Cl-PF30UdS	631 > 451	5486.008	25011.080	1.00	5.80	2.742	10.000	10.6	106.1	NO	15.344	NO
71	13C8-PFOS-EIS	507.1 > 80	3135.890		1.00	4.99	3135.890	12.500	13.9	111.2	NO		
77	d3-N-MeFOSAA-EIS	573.1 > 419	4534.687		1.00	5.43	4534.687	12.500	13.7	109.5	NO		
81	d5-N-EtFOSAA-EIS	589.3 > 419	4785.992		1.00	5.58	4785.992	12.500	15.2	122.0	NO		
79	13C2-PFUdA-EIS	565 > 519.8	18140.504		1.00	5.60	18140.504	12.500	11.5	91.8	NO		
71	13C8-PFOS-EIS	507.1 > 80	3135.890		1.00	4.99	3135.890	12.500	13.9	111.2	NO		
83	13C2-PFDoA-EIS	614.9 > 569.9	25011.080		1.00	5.88	25011.080	12.500	13.4	107.1	NO		
-1													
36	10:2 FTS	626.9 > 607	2052.625	1329.525	1.00	5.87	19.298	10.000	10.5	105.5	NO	0.966	NO
37	PFDoA	612.9 > 569.0	18328.338	25011.080	1.00	5.88	9.160	10.000	9.34	93.4	NO	11.313	NO
38	N-MeFOSA	512.1 > 168.9	8237.125	21553.410	1.00	5.81	57.020	50.000	51.0	101.9	NO	1.902	NO
39	PFTrDA	662.9 > 618.9	19784.354	25011.080	1.00	6.12	9.888	10.000	9.50	95.0	NO	101.735	NO
40	PFDoS	699 > 80	3542.618	24087.088	1.00	6.14	1.838	10.000	10.8	108.4	NO	2.102	NO
41	PFTeDA	713.0 > 669.0	13017.293	24087.088	1.00	6.31	6.755	10.000	10.2	101.6	NO	13.478	NO
85	13C2-10:2 FTS-EIS	632.9 > 80.0	1329.525		1.00	5.87	1329.525	12.500	12.2	97.9	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 13 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

				IS Area								
83	13C2-PFDoA-EIS	614.9 > 569.9	25011.080		1.00	5.88	25011.080	12.500	13.4	107.1	NO	
87	d3-N-MeFOSA-EIS	515.2 > 168.9	21553.410		1.00	5.83	21553.410	149.200	156	104.4	NO	
83	13C2-PFDoA-EIS	614.9 > 569.9	25011.080		1.00	5.88	25011.080	12.500	13.4	107.1	NO	
89	13C2-PFTeDA-EIS	715.1 > 669.7	24087.088		1.00	6.31	24087.088	12.500	12.6	101.1	NO	
89	13C2-PFTeDA-EIS -1	715.1 > 669.7	24087.088		1.00	6.31	24087.088	12.500	12.6	101.1	NO	
42	N-EtFOSA	526.1 > 168.9	9368.911	24071.305	1.00	6.19	58.071	50.000	50.2	100.4	NO	1.867	NO
43	PFHxDA	813 > 769	22748.705	27401.508	1.00	6.61	10.377	10.000	9.91	99.1	NO	29.821	NO
44	PFODA	913.1 > 868.8	18665.713	27401.508	1.00	6.82	8.515	10.000	10.3	102.7	NO		
45	N-MeFOSE	616.1 > 58.9	8446.872	22000.695	1.00	6.35	57.283	50.000	51.7	103.4	NO		
46	N-EtFOSE	630.1 > 58.9	8577.006	24234.545	1.00	6.49	52.804	50.000	52.2	104.4	NO		
48	13C3-PFBA-RSD	216.1 > 171.8	9954.403	11285.294	1.00	1.59	11.026	12.500	12.9	103.3	NO		
91	d5-N-ETFOSA-EIS	531.1 > 168.9	24071.305		1.00	6.20	24071.305	149.200	155	103.9	NO		
93	13C2-PFHxDA-EIS	815 > 769.7	27401.508		1.00	6.61	27401.508	12.500	13.0	103.9	NO		
93	13C2-PFHxDA-EIS	815 > 769.7	27401.508		1.00	6.61	27401.508	12.500	13.0	103.9	NO		
95	d7-N-MeFOSE-EIS	623.1 > 58.9	22000.695		1.00	6.33	22000.695	149.200	163	109.4	NO		
97	d9-N-EtFOSE-EIS	639.2 > 58.8	24234.545		1.00	6.48	24234.545	149.200	163	109.2	NO		
50	13C3-PFPeA-RSD -1	266.0 > 221.8	13437.363	17339.709	1.00	2.57	9.687	12.500	12.9	103.1	NO		
52	13C3-PFBS-RSD	302.0 > 98.9	1527.099	1201.153	1.00	2.84	15.892	12.500	13.0	103.7	NO		
54	13C3-HFPO-DA-RSD	287.0 > 168.9	3145.659	17339.709	1.00	3.56	2.268	12.500	12.0	95.9	NO		
56	13C2-4:2 FTS-RSD	329.0 >80.8	1346.214	1201.153	1.00	3.28	14.010	12.500	12.4	99.0	NO		
58	13C2-PFHxA-RSD	315.0 > 270.0	15047.628	17339.709	1.00	3.36	10.848	12.500	12.3	98.7	NO		
60	13C4-PFHpA-RSD	367.2 > 321.8	12937.038	17339.709	1.00	3.96	9.326	12.500	12.3	98.3	NO		
62	13C3-PFHxS-RSD	402 > 80	2861.496	1201.153	1.00	4.10	29.779	12.500	12.1	96.7	NO		
64	13C2-6:2 FTS-RSD	429.0 >79.7	1651.599	3680.862	1.00	4.42	5.609	12.500	11.9	94.9	NO		
66	13C5-PFNA-RSD	468.2 > 422.9	15884.413	17489.506	1.00	4.92	11.353	12.500	12.1	96.5	NO		
68	13C8-PFOSA-RSD	506 > 78	7173.675	15077.218	1.00	4.96	5.947	12.500	12.2	97.8	NO		
70	13C2-PFOA-RSD	414.9 > 369.7	14884.313	13697.632	1.00	4.48	13.583	12.500	12.4	99.4	NO		
72	13C8-PFOS-RSD	507.1 > 80	3135.890	3680.862	1.00	4.99	10.649	12.500	12.2	97.4	NO		
74	13C2-PFDA-RSD -1	515.1 > 469.9	19387.570	15966.805	1.00	5.29	15.178	12.500	12.1	96.8	NO		
76	13C2-8:2 FTS-RSD	529 > 80	1594.163	3680.862	1.00	5.26	5.414	12.500	11.9	94.9	NO		
78	d3-N-MeFOSAA-RSD	573.1 > 419	4534.687	15077.218	1.00	5.43	3.760	12.500	12.8	102.6	NO		
80	13C2-PFUdA-RSD	565 > 519.8	18140.504	15077.218	1.00	5.60	15.040	12.500	11.6	92.9	NO		
82	d5-N-EtFOSAA-RSD	589.3 > 419	4785.992	15077.218	1.00	5.58	3.968	12.500	14.0	112.2	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 14 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

84	13C2-PFDoA-RSD	614.9 > 569.9	25011.080	15966.805	1.00	5.88	19.581	12.500	12.6	101.1	NO
86	13C2-10:2 FTS-RSD	632.9 > 80.0	1329.525	3680.862	1.00	5.87	4.515	12.500	11.8	94.1	NO
88	d3-N-MeFOSA-RSD	515.2 > 168.9	21553.410	15077.218	1.00	5.83	17.869	149.200	154	103.4	NO
90	13C2-PFTeDA-RSD	715.1 > 669.7	24087.088	15077.218	1.00	6.31	19.970	12.500	12.2	97.8	NO
92	d5-N-ETFOSA-RSD	531.1 > 168.9	24071.305	15077.218	1.00	6.20	19.957	149.200	153	102.6	NO
94	13C2-PFHxDA-RSD	815 > 769.7	27401.508	15077.218	1.00	6.61	22.718	12.500	12.8	102.3	NO
96	d7-N-MeFOSE-RSD	623.1 > 58.9	22151.820	15077.218	1.00	6.33	18.365	149.200	154	103.5	NO
98	d9-N-EtFOSE-RSD -1	639.2 > 58.8	24389.221	15077.218	1.00	6.48	20.220	149.200	154	102.9	NO
99	13C4-PFBA	217.0 > 172.0	11285.294	11285.294	1.00	1.60	12.500	12.500	12.5	100.0	NO
1...	13C5-PFHxA	318.0 > 272.9	17339.709	17339.709	1.00	3.36	12.500	12.500	12.5	100.0	NO
1...	13C8-PFOA	420.9 > 376.0	13697.632	13697.632	1.00	4.48	12.500	12.500	12.5	100.0	NO
1...	18O2-PFHxS	403.0 > 103	1201.153	1201.153	1.00	4.10	12.500	12.500	12.5	100.0	NO
1...	13C9-PFNA	472.2 > 426.9	17489.506	17489.506	1.00	4.92	12.500	12.500	12.5	100.0	NO
1...	13C4-PFOS	503 > 79.7	3680.862	3680.862	1.00	4.99	12.500	12.500	12.5	100.0	NO
1...	13C6-PFDA	519.1 > 473.7	15966.805	15966.805	1.00	5.29	12.500	12.500	12.5	100.0	NO
1...	13C7-PFUdA	570.1 > 524.8	15077.218	15077.218	1.00	5.60	12.500	12.500	12.5	100.0	NO

OPV 7/7/2020

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 1 of 3
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 12:16:39 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 12:17:00 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Compound name: PFBA

1	200706P1-19	ST200706P1-1 PFC CS-2 20F1901	06-Jul-20	13:13:57
2	200706P1-20	ST200706P1-2 PFC CS-1 20F1902	06-Jul-20	13:24:27
3	200706P1-21	ST200706P1-3 PFC CS0 20F1903	06-Jul-20	13:34:57
4	200706P1-22	ST200706P1-4 PFC CS1 20F1904	06-Jul-20	13:45:26
5	200706P1-23	ST200706P1-5 PFC CS2 20F1905	06-Jul-20	13:55:58
6	200706P1-24	ST200706P1-6 PFC CS3 20F1906	06-Jul-20	14:06:27
7	200706P1-25	ST200706P1-7 PFC CS4 20F1907	06-Jul-20	14:16:59
8	200706P1-26	ST200706P1-8 PFC CS5 20F1908	06-Jul-20	14:27:27
9	200706P1-27	ST200706P1-9 PFC CS6 20F1909	06-Jul-20	14:37:59
10	200706P1-28	ST200706P1-10 PFC CS7 20F1910	06-Jul-20	14:48:28
11	200706P1-29	IB	06-Jul-20	14:58:58
12	200706P1-30	ICV200706P1-1 PFC ICV 20F1911	06-Jul-20	15:09:30
13	200706P1-31	IB	06-Jul-20	15:19:59
14	200706P1-32	B0F0205-BS1 OPR 0.25	06-Jul-20	15:30:30
15	200706P1-33	2001315-06 24-GW-24NEW4-20200618 0.25948	06-Jul-20	15:41:01
16	200706P1-34	2001315-08 24-GW-08DGMW73-20200618 0.25501	06-Jul-20	15:51:31
17	200706P1-35	2001345-06@5X Septic Receiving 0.11338	06-Jul-20	16:02:00
18	200706P1-36	IB	06-Jul-20	16:12:35
19	200706P1-37	2001315-06 24-GW-24NEW4-20200618 0.25948	06-Jul-20	16:46:41
20	200706P1-38	2001315-08 24-GW-08DGMW73-20200618 0.25501	06-Jul-20	16:57:15
21	200706P1-39	2001326-01 REEPEF2658FS 0.11212	06-Jul-20	17:07:46
22	200706P1-40	B0G0023-BLK1 Method Blank 0.01	06-Jul-20	17:18:14
23	200706P1-41	B0G0023-BS1 OPR 0.01	06-Jul-20	17:28:46
24	200706P1-42	B0G0023-BSD1 LCSD 0.01	06-Jul-20	17:39:17
25	200706P1-43	2001353-01RE1 CAVERLY 0.01	06-Jul-20	17:49:46
26	200706P1-44	2001353-02RE1 SOMERSET FARMS 0.01	06-Jul-20	18:00:17
27	200706P1-45	2001353-03 TOZIER 0.01	06-Jul-20	18:10:46
28	200706P1-46	2001353-04RE1 TOZIER (2 vials-same) 0.01	06-Jul-20	18:21:18
29	200706P1-47	IB	06-Jul-20	18:31:47
30	200706P1-48	ST200706P1-11 PFC CS3 20F1906	06-Jul-20	18:42:17
31	200706P1-49	IB	06-Jul-20	18:52:49
32	200706P1-50	B0F0257-BLK1 Method Blank 0.25	06-Jul-20	19:03:20

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 12:16:39 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 12:17:00 Pacific Daylight Time

Compound name: PFBA

33	200706P1-51	B0F0257-BS1 OPR 0.25	06-Jul-20	19:13:50
34	200706P1-52	B0F0257-BSD1 LCSD 0.25	06-Jul-20	19:24:18
35	200706P1-53	B0F0257-MS1 Matrix Spike 0.2511	06-Jul-20	19:34:50
36	200706P1-54	B0F0257-MSD1 Matrix Spike Dup 0.24211	06-Jul-20	19:45:19
37	200706P1-55	2001356-01 ET-LW02-2020 0.25782	06-Jul-20	19:55:51
38	200706P1-56	IB	06-Jul-20	20:06:19
39	200706P1-57	2001357-01 SB01-20200624 0.24654	06-Jul-20	20:16:52
40	200706P1-58	2001357-02 EB01-20200624 0.24804	06-Jul-20	20:27:21
41	200706P1-59	2001357-03 I006MW065-20200624 0.25563	06-Jul-20	20:37:52
42	200706P1-60	IB	06-Jul-20	20:48:23
43	200706P1-61	2001357-04 DUP01-20200624 0.25403	06-Jul-20	20:58:53
44	200706P1-62	IB	06-Jul-20	21:09:22
45	200706P1-63	2001358-01 EB02-20200624 0.24128	06-Jul-20	21:19:52
46	200706P1-64	2001358-02 24-GW-24MW06-20200624 0.26389	06-Jul-20	21:30:23
47	200706P1-65	2001358-03 DUP01-20200624 0.26301	06-Jul-20	21:40:52
48	200706P1-66	2001358-04 24-GW-24MW10D-20200624 0.25918	08-Jul-20	21:51:24
49	200706P1-67	2001358-05 DUP02-20200624 0.2559	06-Jul-20	22:01:54
50	200706P1-68	2001358-06 24-GW-24MW10C-20200624 0.25497	06-Jul-20	22:12:25
51	200706P1-69	2001358-07 24-GW-24MW07R-20200624 0.25444	06-Jul-20	22:22:53
52	200706P1-70	B0F0172-BLK1 Method Blank 0.25	06-Jul-20	22:33:25
53	200706P1-71	B0F0172-BS1 OPR 0.25	06-Jul-20	22:43:54
54	200706P1-72	2001276-01 Equipment Blank-1 0.22934	06-Jul-20	22:54:26
55	200706P1-73	ST200706P1-12 PFC CS3 20F1906	06-Jul-20	23:04:55
56	200706P1-74	IB	06-Jul-20	23:15:27
57	200706P1-75	2001276-02 MW-20-01 0.25109	06-Jul-20	23:25:56
58	200706P1-76	2001276-03 Field Blank 0.24862	06-Jul-20	23:36:27
59	200706P1-77	2001276-04 MW-20-02 0.26126	06-Jul-20	23:46:56
60	200706P1-78	2001276-05 MW-20-03 0.24623	06-Jul-20	23:57:28
61	200706P1-79	2001276-06 Equipment Blank-2 0.24081	07-Jul-20	00:07:57
62	200706P1-80	2001276-07 Duplicate-1 0.24702	07-Jul-20	00:18:27
63	200706P1-81	B0F0088-BLK1 Method Blank 5	07-Jul-20	00:28:59
84	200706P1-82	B0F0088-BS1 OPR 5	07-Jul-20	00:39:27
65	200706P1-83	B0F0088-BSD1 LCSD 5	07-Jul-20	00:50:00
66	200706P1-84	2001248-01 05082020 B 5	07-Jul-20	01:00:28
67	200706P1-85	2001250-01 05082020 A 5	07-Jul-20	01:10:58
68	200706P1-86	ST200706P1-13 PFC CS3 20F1906	07-Jul-20	01:21:30

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 12:16:39 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 12:17:00 Pacific Daylight Time

Compound name: PFBA

	Name	ID	Acq.Date	Acq.Time
69	200706P1-87	IB	07-Jul-20	01:31:59
70	200706P1-88	2001251-01 05082020 C 5	07-Jul-20	01:42:31
71	200706P1-89	2001252-01 05082020 E 2.5	07-Jul-20	01:53:00
72	200706P1-90	2001351-01 05082020AY 2.5	07-Jul-20	02:03:30
73	200706P1-91	2001375-01 05082020AF 3	07-Jul-20	02:14:01
74	200706P1-92	2001376-01 05082020T 2.5	07-Jul-20	02:24:33
75	200706P1-93	2001383-01 05082020AQ 3	07-Jul-20	02:35:01
76	200706P1-94	2001384-01 05082020AG 2.5	07-Jul-20	02:45:33
77	200706P1-95	2001391-01 05082020J 2.5	07-Jul-20	02:56:03
78	200706P1-96	2001392-01 05082020R 3	07-Jul-20	03:06:32
79	200706P1-97	2001393-01 05082020G 2.5	07-Jul-20	03:17:04
80	200706P1-98	ST200706P1-14 PFC CS3 20F1906	07-Jul-20	03:27:34
81	200706P1-99	IB	07-Jul-20	03:38:03
82	200706P1-100	2001402-01 06122020A 5	07-Jul-20	03:48:35
83	200706P1-101	2001403-01 05082020AN 2.5	07-Jul-20	03:59:04
84	200706P1-102	2001302-01@5X QP-1 0.03392	07-Jul-20	04:09:35
85	200706P1-103	2001302-02@5X QP-2 0.03359	07-Jul-20	04:20:04
86	200706P1-104	2001302-03@5X QP-3 0.0336	07-Jul-20	04:30:36
87	200706P1-105	2001302-04@5X QP-4 0.03354	07-Jul-20	04:41:05
88	200706P1-106	2001302-05@5X QP-5 0.03336	07-Jul-20	04:51:36
89	200706P1-107	2001302-06@5X QP-6 0.03266	07-Jul-20	05:02:06
90	200706P1-108	2001302-07@5X QP-7 0.03389	07-Jul-20	05:12:35
91	200706P1-109	2001302-08@5X QP-8 0.03326	07-Jul-20	05:23:07
92	200706P1-110	ST200706P1-15 PFC CS3 20F1906	07-Jul-20	05:33:36
93	200706P1-111	IB	07-Jul-20	05:44:07
94	200706P1-112	2001302-09@5X QP-9 0.03376	07-Jul-20	05:54:38
95	200706P1-113	2001302-10@5X QP-10 0.03297	07-Jul-20	06:05:07
96	200706P1-114	2001302-11@5X QP-11 0.03382	07-Jul-20	06:15:39
97	200706P1-115	2001302-12@5X QP-12 0.03372	07-Jul-20	06:26:08
98	200706P1-116	2001302-13@5X QP-13 0.03255	07-Jul-20	06:36:39
99	200706P1-117	2001302-14@5X QP-14 0.03286	07-Jul-20	06:47:10
100	200706P1-118	2001302-15@5X QP-15 0.03232	07-Jul-20	06:57:39
101	200706P1-119	2001302-16@5X QP-16 0.03366	07-Jul-20	07:08:11
102	200706P1-120	2001302-17@5X QP-17 0.03283	07-Jul-20	07:18:40
103	200706P1-121	2001302-18@5X QP-18 0.03296	07-Jul-20	07:29:10
104	200706P1-122	ST200706P1-16 PFC CS3 20F1906	07-Jul-20	07:39:40

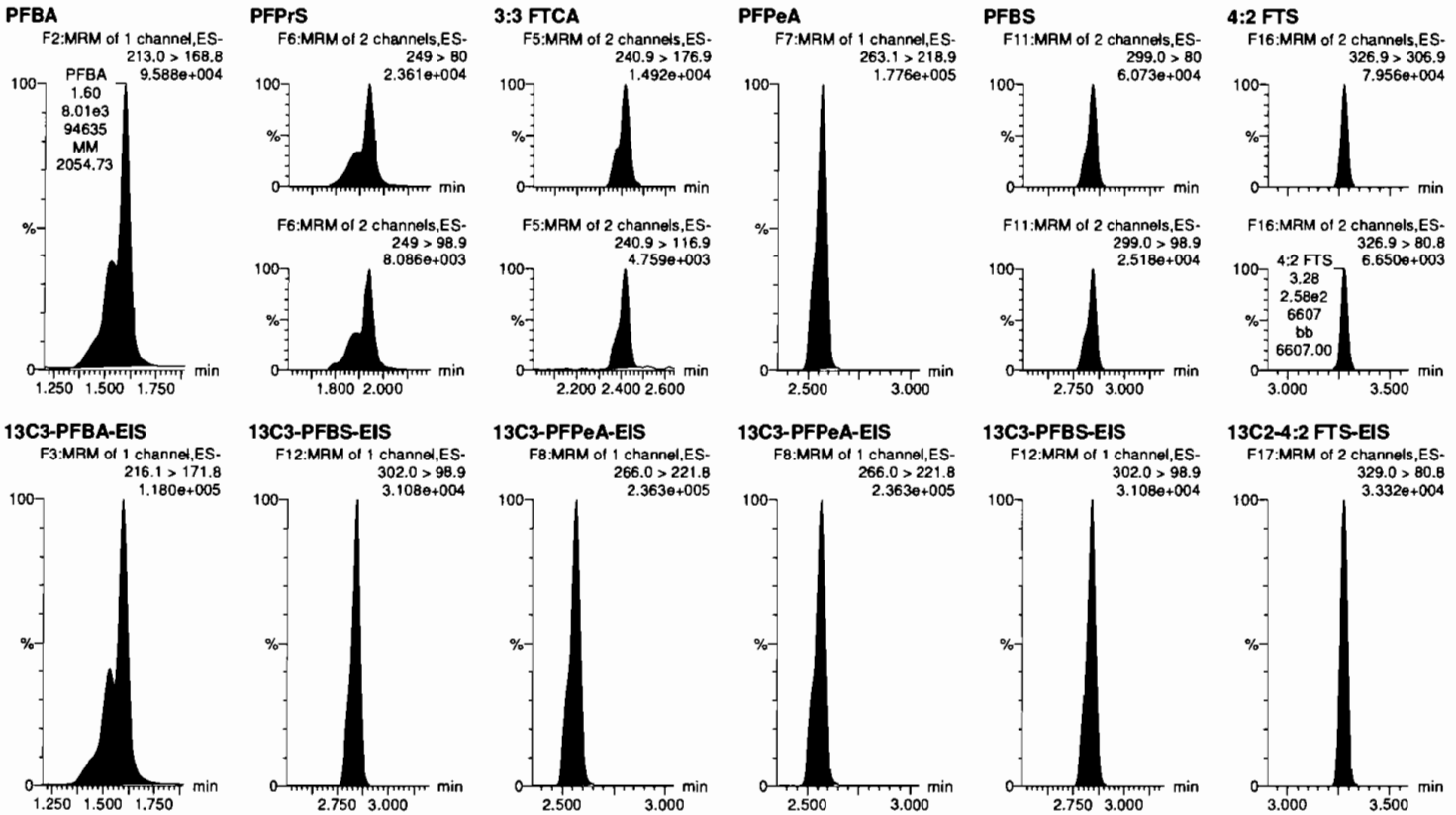
Quantify Sample Report **MassLynx V4.2 SCN977** Page 1 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906



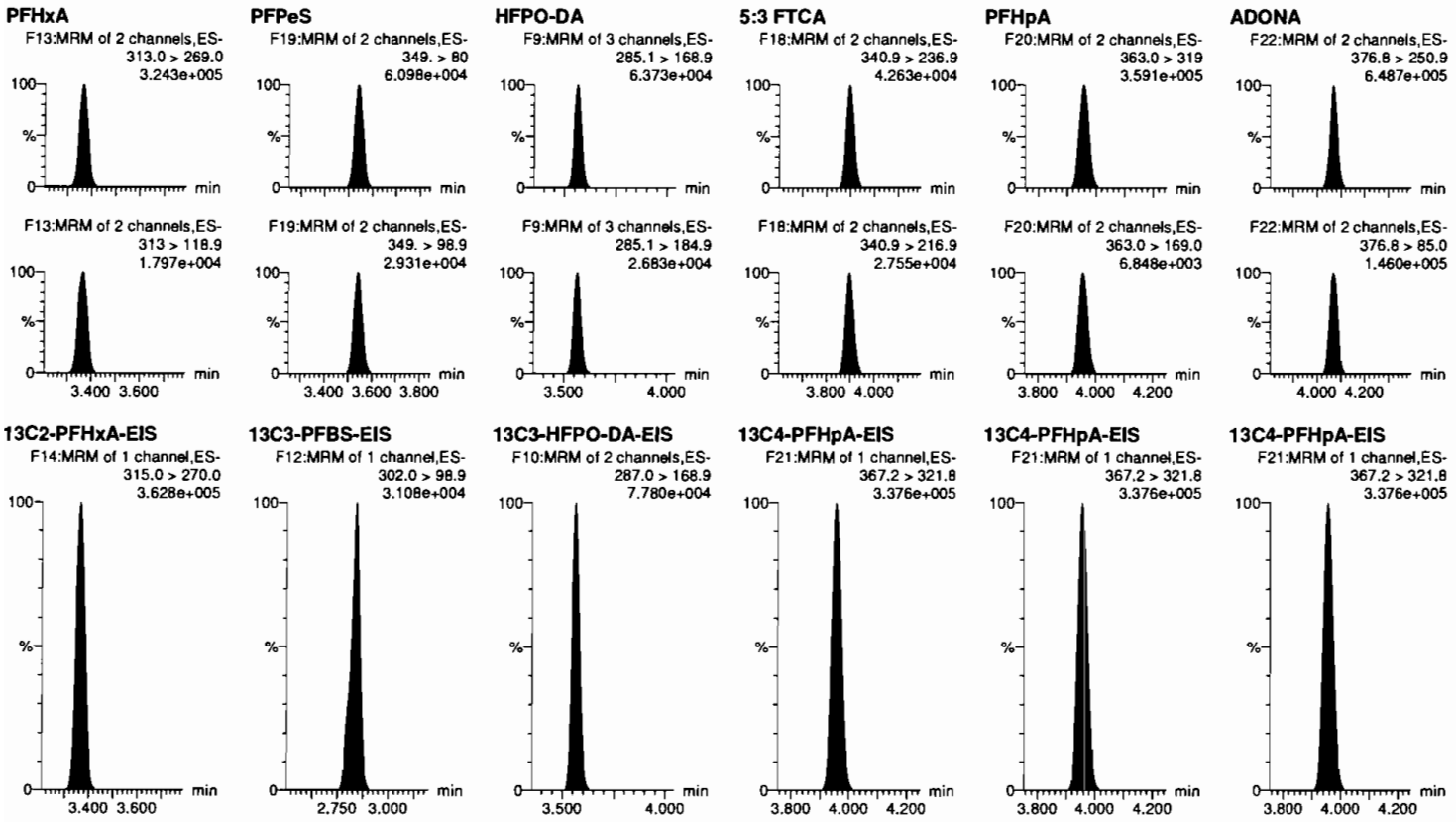
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 2 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906



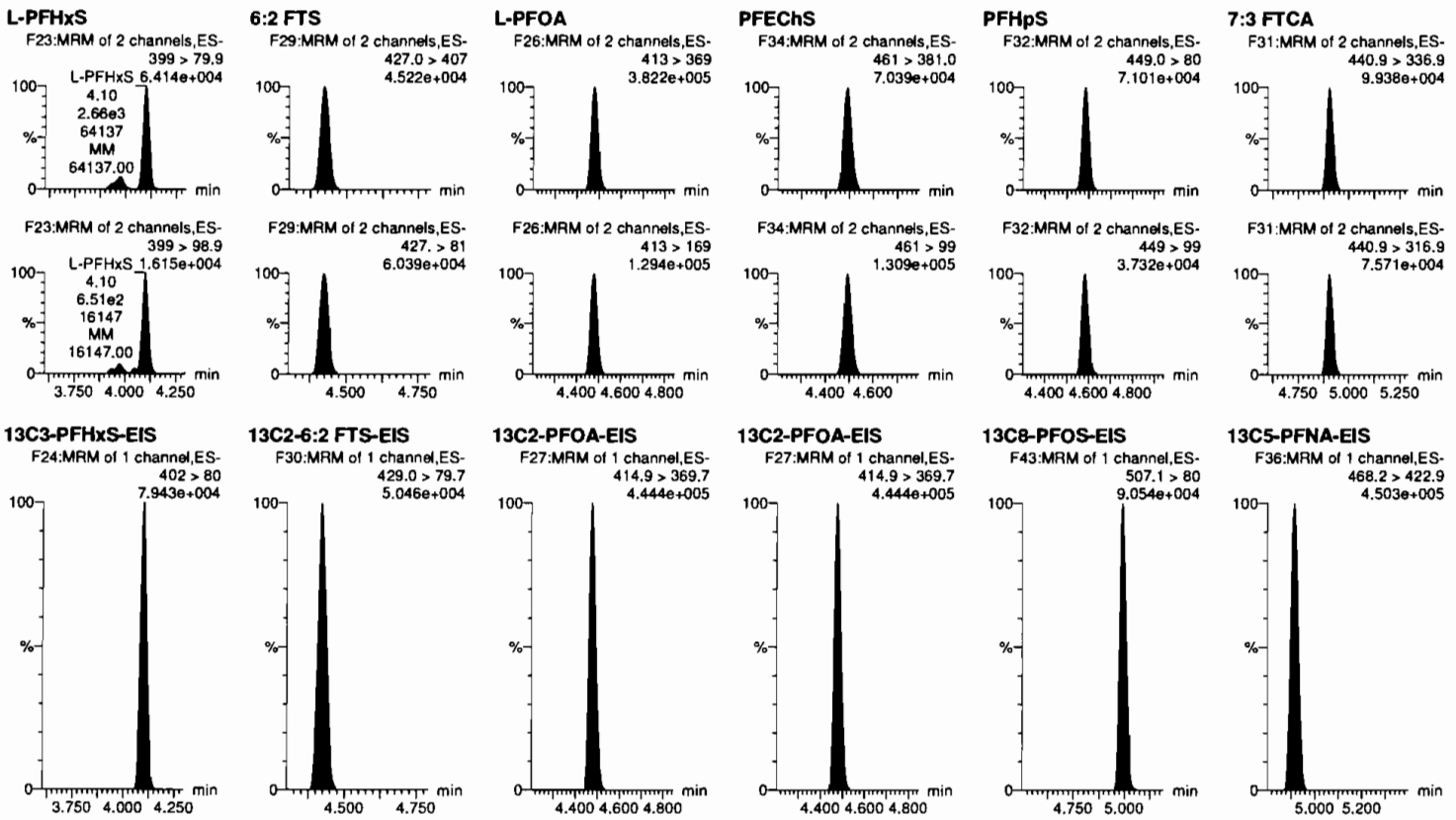
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 3 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906



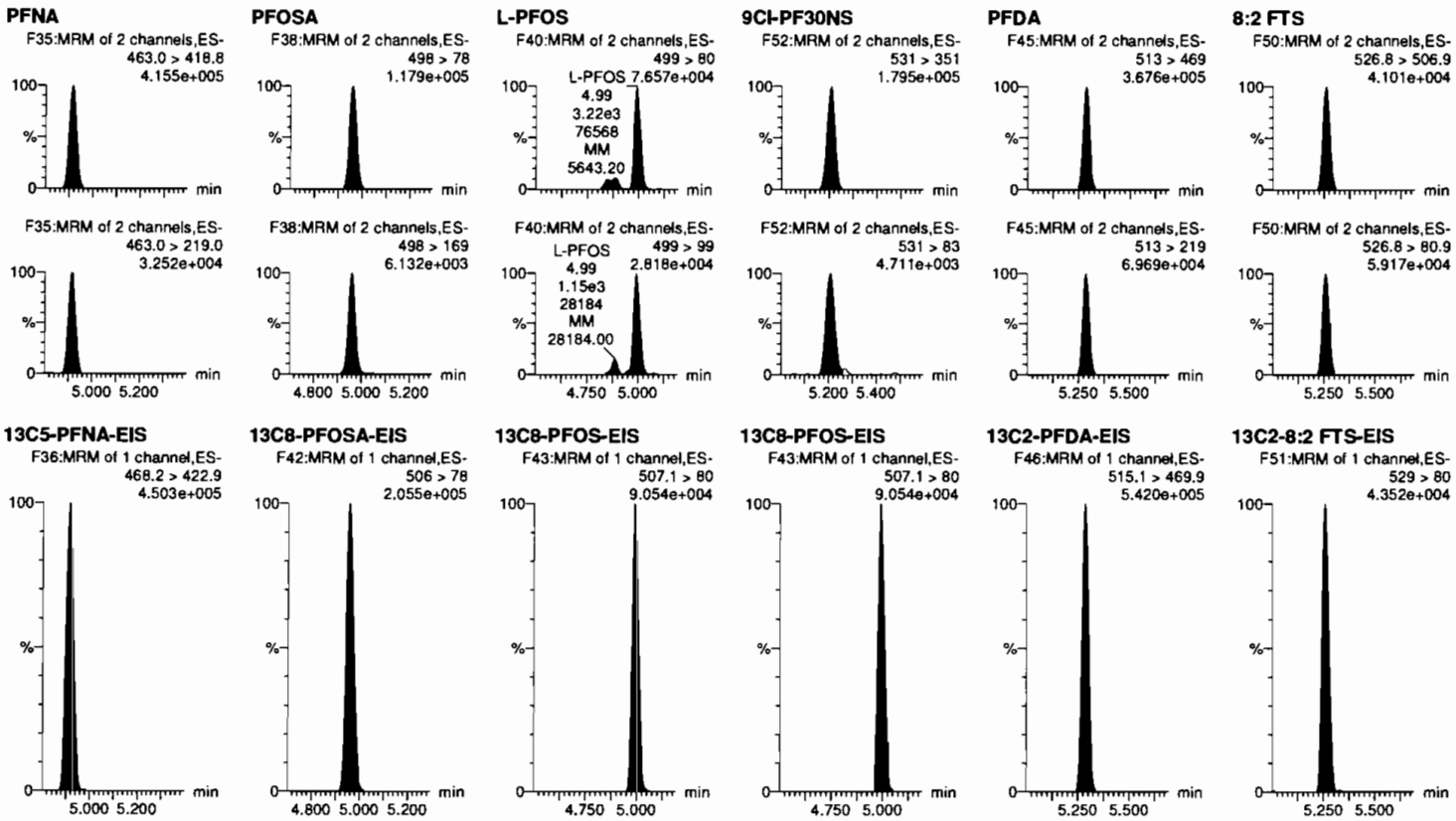
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 4 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906



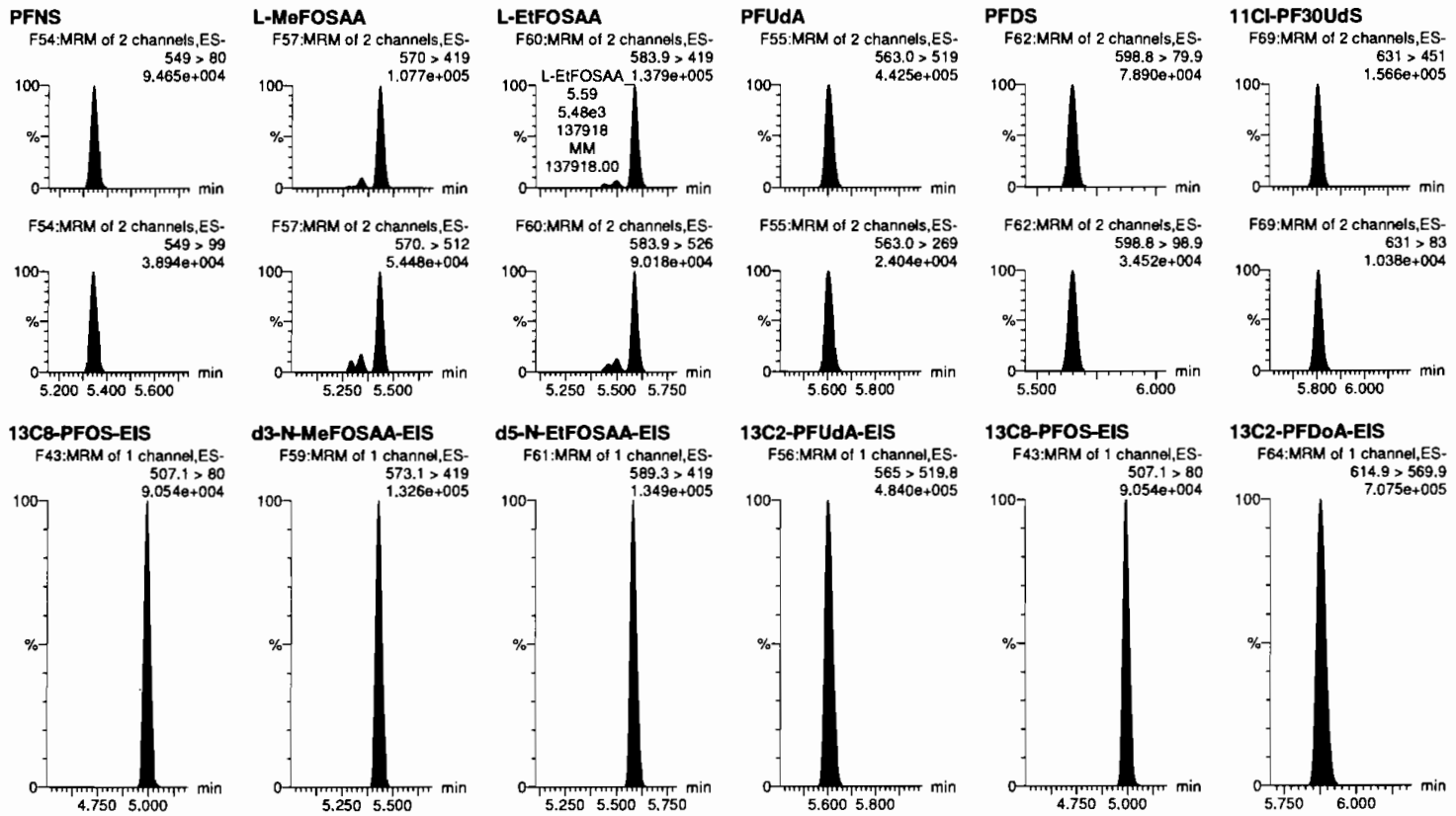
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 5 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

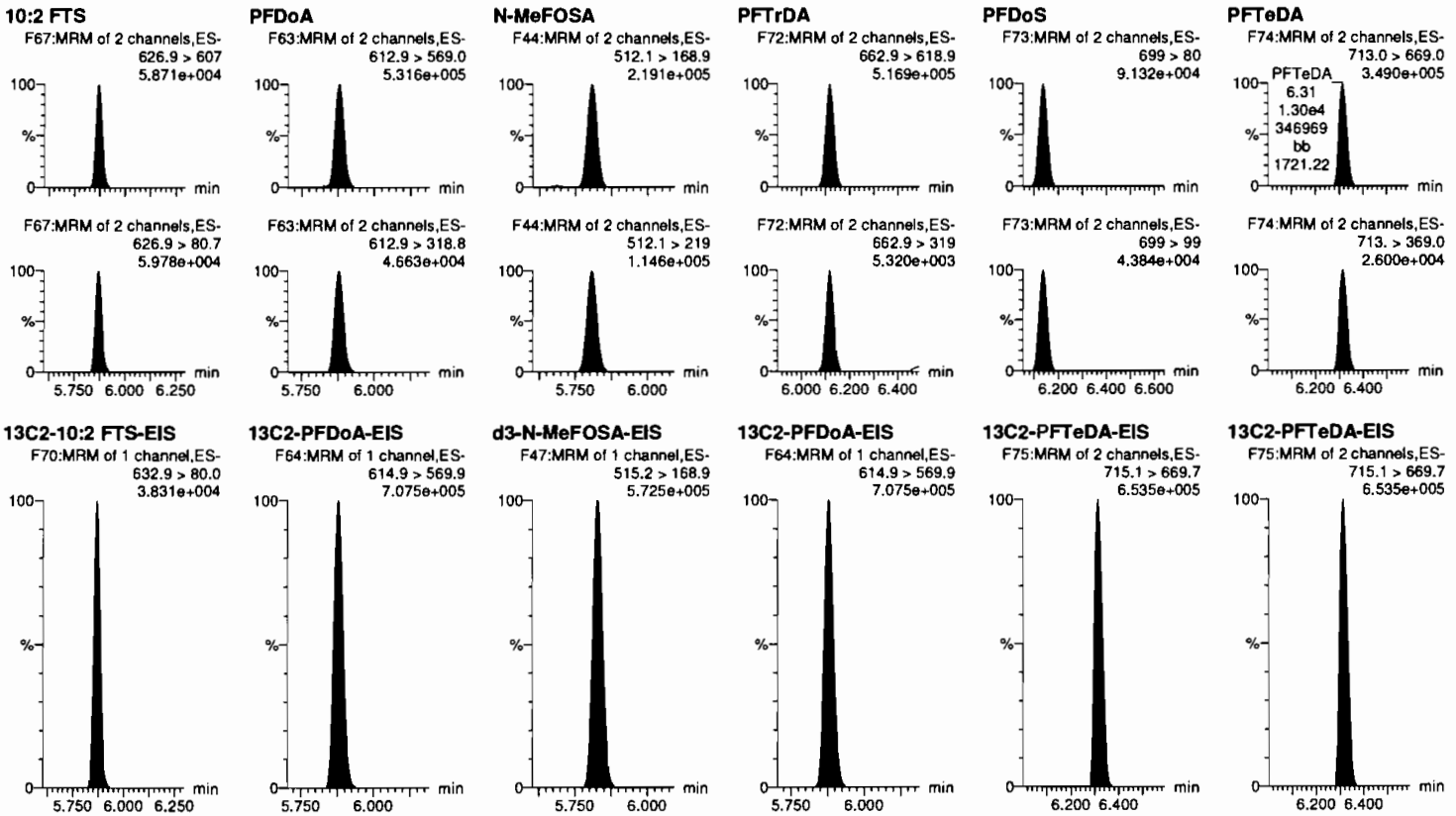


Quantify Sample Report **MassLynx V4.2 SCN977** Page 6 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906



OPV 7/7/2020

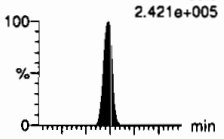
Quantify Sample Report **MassLynx V4.2 SCN977** Page 7 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

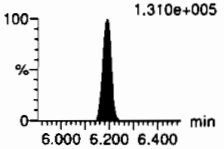
Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

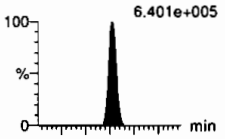
N-EtFOSA
F49:MRM of 2 channels,ES-
526.1 > 168.9
2.421e+005



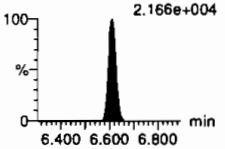
F49:MRM of 2 channels,ES-
526.1 > 219
1.310e+005



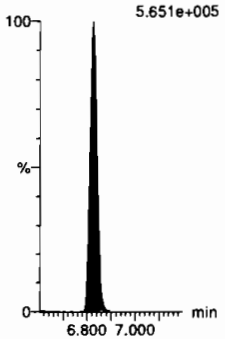
PFHxDA
F76:MRM of 2 channels,ES-
813 > 769
6.401e+005



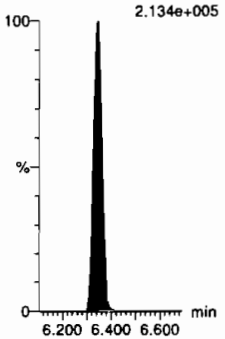
F76:MRM of 2 channels,ES-
813 > 219
2.166e+004



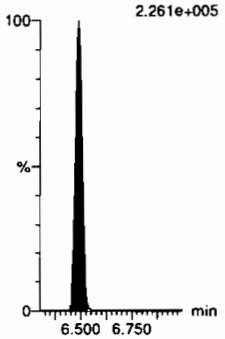
PFODA
F78:MRM of 1 channel,ES-
913.1 > 868.8
5.651e+005



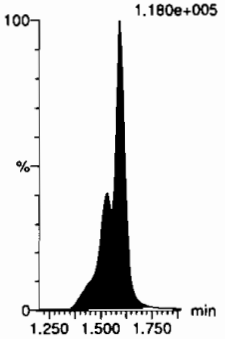
N-MeFOSE
F65:MRM of 1 channel,ES-
616.1 > 58.9
2.134e+005



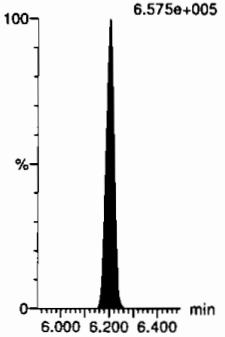
N-EtFOSE
F68:MRM of 1 channel,ES-
630.1 > 58.9
2.261e+005



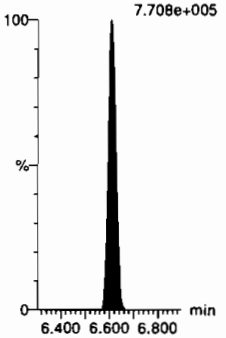
13C3-PFBA-RSD
F3:MRM of 1 channel,ES-
216.1 > 171.8
1.180e+005



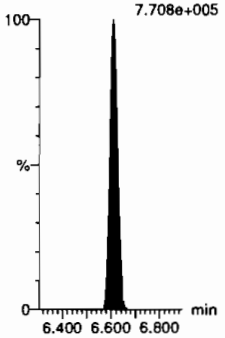
d5-N-ETFOSA-EIS
F53:MRM of 1 channel,ES-
531.1 > 168.9
6.575e+005



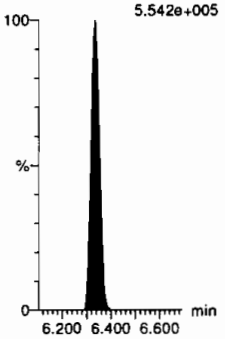
13C2-PFHxDA-EIS
F77:MRM of 1 channel,ES-
815 > 769.7
7.708e+005



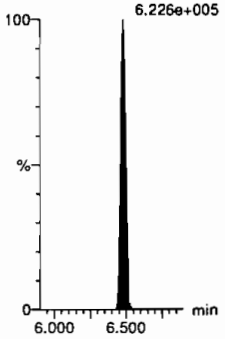
13C2-PFHxDA-EIS
F77:MRM of 1 channel,ES-
815 > 769.7
7.708e+005



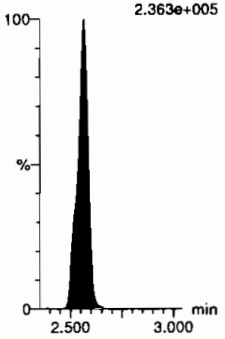
d7-N-MeFOSE-EIS
F66:MRM of 1 channel,ES-
623.1 > 58.9
5.542e+005



d9-N-EtFOSE-EIS
F71:MRM of 1 channel,ES-
639.2 > 58.8
6.226e+005



13C3-PFPeA-RSD
F8:MRM of 1 channel,ES-
266.0 > 221.8
2.363e+005



OPV 7/7/2020

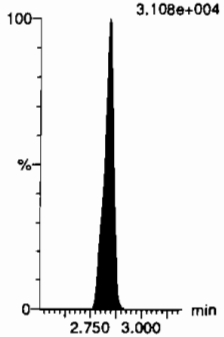
Quantify Sample Report **MassLynx V4.2 SCN977** Page 8 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

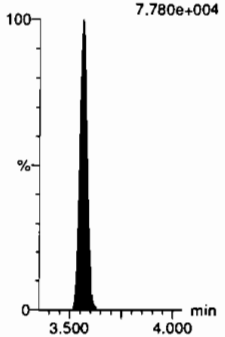
Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

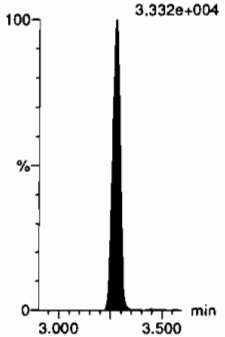
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 98.9
3.108e+004



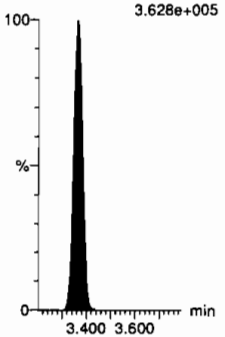
13C3-HFPO-DA-RSD
F10:MRM of 2 channels,ES-
287.0 > 168.9
7.780e+004



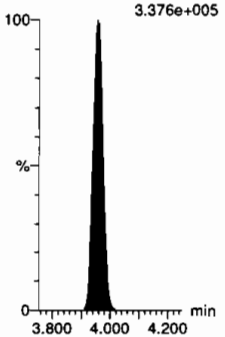
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 80.8
3.332e+004



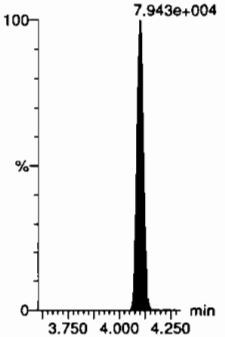
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
3.628e+005



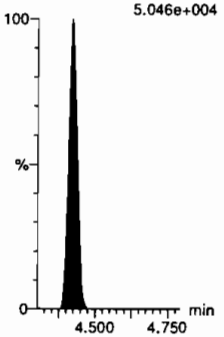
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.376e+005



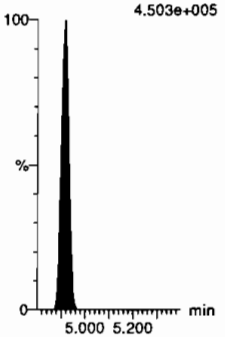
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
402 > 80
7.943e+004



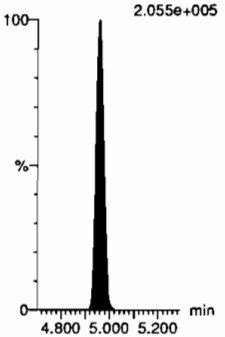
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 79.7
5.046e+004



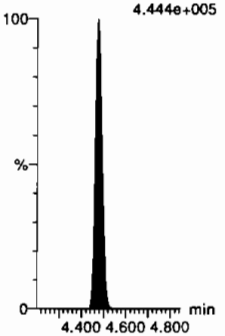
13C5-PFNA-RSD
F36:MRM of 1 channel,ES-
468.2 > 422.9
4.503e+005



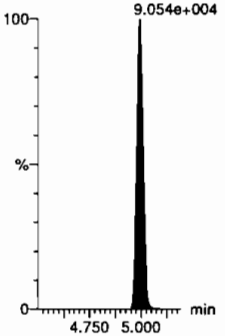
13C8-PFOSA-RSD
F42:MRM of 1 channel,ES-
506 > 78
2.055e+005



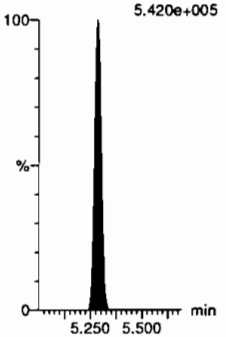
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
4.444e+005



13C8-PFOS-RSD
F43:MRM of 1 channel,ES-
507.1 > 80
9.054e+004



13C2-PFDA-RSD
F46:MRM of 1 channel,ES-
515.1 > 469.9
5.420e+005



OPV 7/7/2020

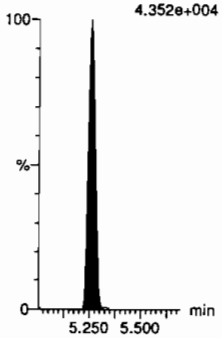
Quantify Sample Report **MassLynx V4.2 SCN977** Page 9 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

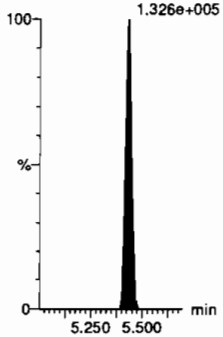
Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

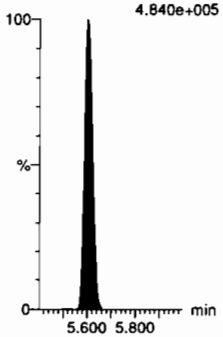
13C2-8:2 FTS-RSD
F51:MRM of 1 channel,ES-
529 > 80
4.352e+004



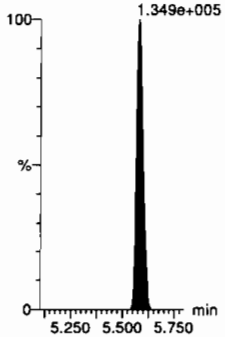
d3-N-MeFOSAA-RSD
F59:MRM of 1 channel,ES-
573.1 > 419
1.326e+005



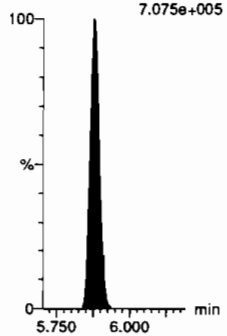
13C2-PFUdA-RSD
F56:MRM of 1 channel,ES-
565 > 519.8
4.840e+005



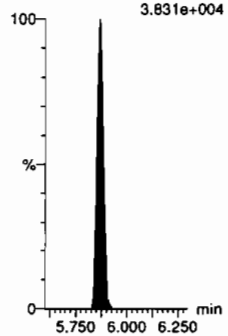
d5-N-EtFOSAA-RSD
F61:MRM of 1 channel,ES-
589.3 > 419
1.349e+005



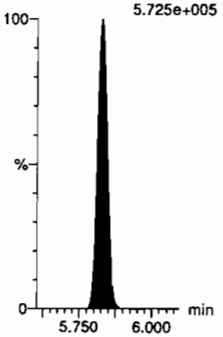
13C2-PFDoA-RSD
F64:MRM of 1 channel,ES-
614.9 > 569.9
7.075e+005



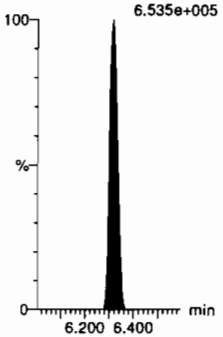
13C2-10:2 FTS-RSD
F70:MRM of 1 channel,ES-
632.9 > 80.0
3.831e+004



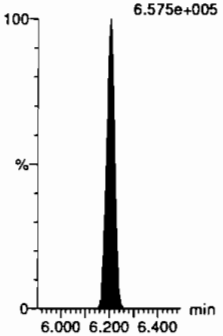
d3-N-MeFOSA-RSD
F47:MRM of 1 channel,ES-
515.2 > 168.9
5.725e+005



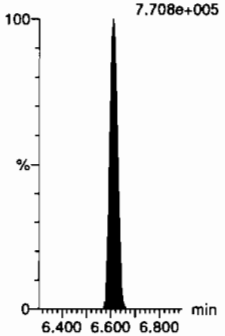
13C2-PFTeDA-RSD
F75:MRM of 2 channels,ES-
715.1 > 669.7
6.535e+005



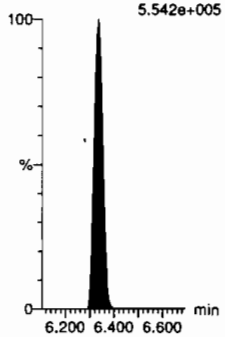
d5-N-ETFOSA-RSD
F53:MRM of 1 channel,ES-
531.1 > 168.9
6.575e+005



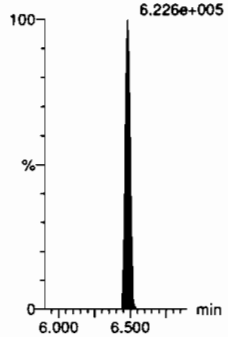
13C2-PFHxDA-RSD
F77:MRM of 1 channel,ES-
815 > 769.7
7.708e+005



d7-N-MeFOSE-RSD
F66:MRM of 1 channel,ES-
623.1 > 58.9
5.542e+005



d9-N-EtFOSE-RSD
F71:MRM of 1 channel,ES-
639.2 > 58.8
6.226e+005



OPV 7/7/2020

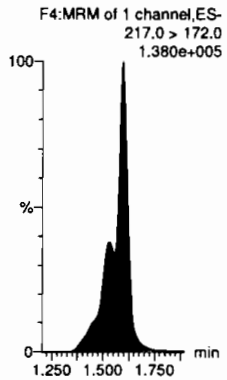
Quantify Sample Report **MassLynx V4.2 SCN977** Page 10 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-73.qld

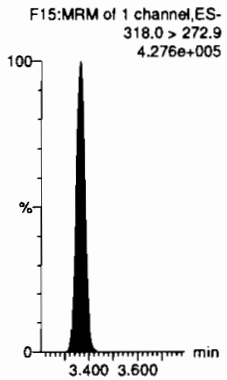
Last Altered: Tuesday, July 07, 2020 10:23:37 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:23:55 Pacific Daylight Time

Name: 200706P1-73, Date: 06-Jul-2020, Time: 23:04:55, ID: ST200706P1-12 PFC CS3 20F1906, Description: PFC CS3 20F1906

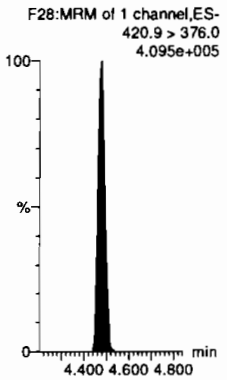
13C4-PFBA



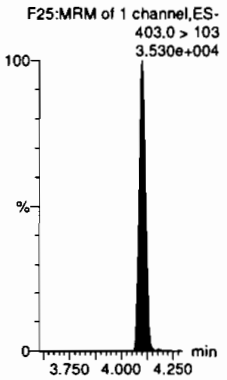
13C5-PFHxA



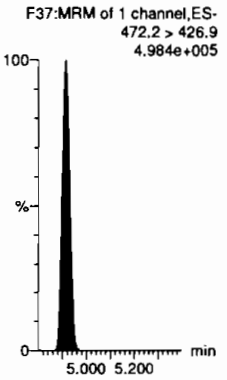
13C8-PFOA



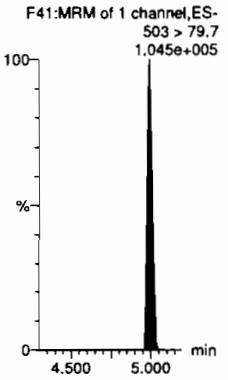
18O2-PFHxS



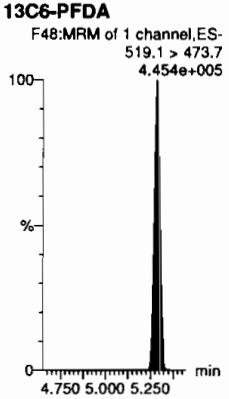
13C9-PFNA



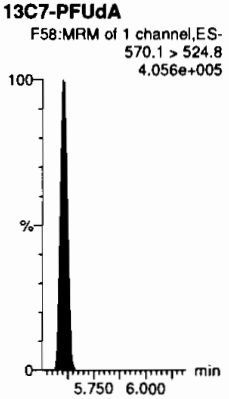
13C4-PFOS



13C6-PFDA



13C7-PFUdA



OPV 7/7/2020

INITIAL CALIBRATION (ICAL)

INCLUDING ASSOCIATED

INITIAL CALIBRATION VERIFICATION (ICV) AND INSTRUMENT BLANK (IB)

High Points
3:3FTCA: 10
5:3FTCA:
7:3FTCA:
HFPO-DA: 250

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

✓ 7R 07/07/2020

Compound name: PFBA
Correlation coefficient: r = 0.999694, r^2 = 0.999388
Calibration curve: 1.03125 * x + 0.0440308
Response type: Internal Std (Ref 47), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	1.62	224.138	8928.727	0.314	0.3	4.6	NO	0.999	NO	MM
2	200706P1-20	Standard	0.500	1.63	361.015	8907.738	0.507	0.4	-10.3	NO	0.999	NO	MM
3	200706P1-21	Standard	1.000	1.62	709.130	8876.085	0.999	0.9	-7.4	NO	0.999	NO	MM
4	200706P1-22	Standard	2.000	1.62	1468.812	8766.956	2.094	2.0	-0.6	NO	0.999	NO	MM
5	200706P1-23	Standard	5.000	1.62	4013.645	9407.555	5.333	5.1	2.6	NO	0.999	NO	MM
6	200706P1-24	Standard	10.000	1.62	7317.820	8620.372	10.611	10.2	2.5	NO	0.999	NO	MM
7	200706P1-25	Standard	50.000	1.62	38762.715	8816.157	54.960	53.3	6.5	NO	0.999	NO	MM
8	200706P1-26	Standard	100.000	1.62	78662.734	9290.569	105.837	102.6	2.6	NO	0.999	NO	MM
9	200706P1-27	Standard	250.000	1.62	191600.359	9147.883	261.810	253.8	1.5	NO	0.999	NO	MM
10	200706P1-28	Standard	500.000	1.62	379082.063	9375.081	505.438	490.1	-2.0	NO	0.999	NO	MM

Compound name: PFPrS
Coefficient of Determination: R^2 = 0.999729
Calibration curve: 0.000149868 * x^2 + 1.33446 * x + -0.0189522
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	1.98	36.254	1430.774	0.317	0.3	0.6	NO	1.000	NO	MM
2	200706P1-20	Standard	0.500	1.97	66.678	1426.593	0.584	0.5	-9.6	NO	1.000	NO	MM
3	200706P1-21	Standard	1.000	1.96	126.238	1288.172	1.225	0.9	-6.8	NO	1.000	NO	MM
4	200706P1-22	Standard	2.000	1.97	309.717	1362.586	2.841	2.1	7.1	NO	1.000	NO	MM
5	200706P1-23	Standard	5.000	1.97	806.974	1453.176	6.941	5.2	4.3	NO	1.000	NO	MM
6	200706P1-24	Standard	10.000	1.97	1418.837	1300.054	13.642	10.2	2.3	NO	1.000	NO	MM
7	200706P1-25	Standard	50.000	1.97	7679.092	1359.451	70.608	52.6	5.2	NO	1.000	NO	MM
8	200706P1-26	Standard	100.000	1.97	15324.713	1462.386	130.991	97.1	-2.9	NO	1.000	NO	MM
9	200706P1-27	Standard	250.000	1.97	37135.824	1358.583	341.678	249.1	-0.4	NO	1.000	NO	MM
10	200706P1-28	Standard	500.000	1.96	72343.227	1281.324	705.747	500.7	0.1	NO	1.000	NO	MM

ORV 07/07/20

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: 3:3 FTCA
Coefficient of Determination: R^2 = 0.999100
Calibration curve: -0.000123651 * x^2 + 0.0842724 * x + -0.00450239
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	2.45	16.831	12471.803	0.017	0.3	1.5	NO	0.999	NO	MM
2	200706P1-20	Standard	0.500	2.44	36.185	12358.682	0.037	0.5	-2.4	NO	0.999	NO	bb
3	200706P1-21	Standard	1.000	2.45	74.965	12332.146	0.076	1.0	-4.4	NO	0.999	NO	MM
4	200706P1-22	Standard	2.000	2.44	146.643	12447.334	0.147	1.8	-9.7	NO	0.999	NO	bb
5	200706P1-23	Standard	5.000	2.44	406.714	13036.096	0.390	4.7	-5.7	NO	0.999	NO	bb
6	200706P1-24	Standard	10.000	2.44	767.598	12020.107	0.798	9.7	-3.4	NO	0.999	NO	MM
7	200706P1-25	Standard	50.000	2.45	4122.975	12771.221	4.035	51.9	3.8	NO	0.999	NO	MM
8	200706P1-26	Standard	100.000	2.44	7452.707	13078.910	7.123	98.9	-1.1	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	2.44	4127.253	12597.564	4.095	52.7	-78.9	YES	0.999	NO	MMX
10	200706P1-28	Standard	500.000	2.44	7500.442	11987.368	7.821	110.9	-77.8	YES	0.999	NO	MMX

Compound name: PFPeA
Coefficient of Determination: R^2 = 0.999942
Calibration curve: -4.09095e-005 * x^2 + 0.926116 * x + 0.00438806
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	2.60	238.196	12471.803	0.239	0.3	1.2	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	2.60	460.626	12358.682	0.466	0.5	-0.3	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	2.60	850.795	12332.146	0.862	0.9	-7.4	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	2.59	1880.688	12447.334	1.889	2.0	1.7	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	2.60	5018.948	13036.096	4.813	5.2	3.9	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	2.59	9078.976	12020.107	9.441	10.2	1.9	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	2.60	47747.203	12771.221	46.733	50.6	1.1	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	2.59	96911.305	13078.910	92.622	100.5	0.5	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	2.59	228499.891	12597.564	226.730	247.5	-1.0	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	2.59	435206.156	11987.368	453.817	501.1	0.2	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999832
Calibration curve: -0.000209368 * x^2 + 2.56013 * x + 0.0091719
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	2.87	67.622	1430.774	0.591	0.2	-9.1	NO	1.000	NO	MM
2	200706P1-20	Standard	0.500	2.87	145.417	1426.593	1.274	0.5	-1.2	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	2.87	250.462	1288.172	2.430	0.9	-5.4	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	2.87	595.881	1362.586	5.466	2.1	6.6	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	2.87	1584.747	1453.176	13.632	5.3	6.5	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	2.87	2727.353	1300.054	26.223	10.2	2.5	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	2.87	14348.611	1359.451	131.934	51.7	3.5	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	2.87	29385.908	1462.386	251.181	98.9	-1.1	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	2.87	67410.695	1358.583	620.230	247.3	-1.1	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	2.87	126203.414	1281.324	1231.182	501.5	0.3	NO	1.000	NO	bb

Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999612
Calibration curve: -0.00110944 * x^2 + 2.87043 * x + -0.114307
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	3.31	61.119	1271.797	0.601	0.2	-0.4	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	3.31	123.574	1275.190	1.211	0.5	-7.6	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	3.31	282.822	1294.699	2.731	1.0	-0.9	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	3.31	597.155	1286.646	5.801	2.1	3.1	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	3.31	1471.553	1387.692	13.255	4.7	-6.7	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	3.31	2754.299	1261.296	27.296	9.6	-4.2	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	3.31	14316.868	1305.578	137.074	48.7	-2.6	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	3.30	27991.281	1218.574	287.132	104.3	4.3	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	3.30	60501.387	1180.548	640.607	246.7	-1.3	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	3.31	109654.984	1181.993	1159.641	501.1	0.2	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: PFHxA
Correlation coefficient: r = 0.999727, r^2 = 0.999454
Calibration curve: 1.03548 * x + 0.0754497
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	3.38	431.505	14936.540	0.361	0.3	10.4	NO	0.999	NO	bb
2	200706P1-20	Standard	0.500	3.39	599.944	14827.862	0.506	0.4	-16.9	NO	0.999	NO	bb
3	200706P1-21	Standard	1.000	3.39	1380.920	14195.111	1.216	1.1	10.1	NO	0.999	NO	bb
4	200706P1-22	Standard	2.000	3.39	2554.808	14182.590	2.252	2.1	5.1	NO	0.999	NO	bb
5	200706P1-23	Standard	5.000	3.39	6792.274	15680.674	5.415	5.2	3.1	NO	0.999	NO	MM
6	200706P1-24	Standard	10.000	3.39	12631.318	13629.407	11.585	11.1	11.1	NO	0.999	NO	bb
7	200706P1-25	Standard	50.000	3.39	63029.477	14633.210	53.841	51.9	3.8	NO	0.999	NO	bb
8	200706P1-26	Standard	100.000	3.39	125325.680	14554.702	107.633	103.9	3.9	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	3.39	294457.438	14243.385	258.416	249.5	-0.2	NO	0.999	NO	bb
10	200706P1-28	Standard	500.000	3.39	566684.250	13865.558	510.874	493.3	-1.3	NO	0.999	NO	bb

Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999616
Calibration curve: -0.000388732 * x^2 + 2.09219 * x + -0.0212532
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	3.57	46.266	1430.774	0.404	0.2	-18.7	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	3.57	120.203	1426.593	1.053	0.5	2.7	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	3.57	248.538	1288.172	2.412	1.2	16.3	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	3.57	412.033	1362.586	3.780	1.8	-9.1	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	3.57	1295.522	1453.176	11.144	5.3	6.8	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	3.57	2134.522	1300.054	20.523	9.8	-1.6	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	3.57	11848.764	1359.451	108.948	52.6	5.2	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	3.57	23990.066	1462.386	205.059	99.9	-0.1	NO	1.000	NO	MM
9	200706P1-27	Standard	250.000	3.57	53147.805	1358.583	489.000	244.9	-2.0	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	3.57	97715.898	1281.324	953.271	502.6	0.5	NO	1.000	NO	MM

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: HFPO-DA
Coefficient of Determination: R^2 = 0.999787
Calibration curve: -0.00042067 * x^2 + 1.01205 * x + -0.0211231
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	3.58	39.732	2996.421	0.166	0.2	-26.1	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	3.59	133.603	3291.715	0.507	0.5	4.5	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	3.59	284.533	3299.751	1.078	1.1	8.6	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	3.59	479.142	2848.392	2.103	2.1	5.0	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	3.59	1296.487	3231.837	5.015	5.0	-0.3	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	3.59	2324.764	2853.265	10.185	10.1	1.3	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	3.59	12478.461	3226.841	48.339	48.8	-2.5	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	3.59	24613.289	3134.820	98.145	101.3	1.3	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	3.59	57722.828	3186.079	226.465	249.7	-0.1	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	3.59	110444.586	3076.034	448.811	586.4	17.3	NO	1.000	NO	bbX

Compound name: 5:3 FTCA
Coefficient of Determination: R^2 = 0.999294
Calibration curve: -0.000279748 * x^2 + 0.179933 * x + -0.0070197
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	3.92	44.897	12966.955	0.043	0.3	11.9	NO	0.999	NO	bb
2	200706P1-20	Standard	0.500	3.93	71.677	12233.538	0.073	0.4	-10.7	NO	0.999	NO	bb
3	200706P1-21	Standard	1.000	3.92	161.051	12536.285	0.161	0.9	-6.7	NO	0.999	NO	bb
4	200706P1-22	Standard	2.000	3.92	342.720	12763.619	0.336	1.9	-4.5	NO	0.999	NO	bb
5	200706P1-23	Standard	5.000	3.92	881.611	12970.818	0.850	4.8	-4.1	NO	0.999	NO	bb
6	200706P1-24	Standard	10.000	3.92	1668.424	12289.430	1.697	9.6	-3.9	NO	0.999	NO	bb
7	200706P1-25	Standard	50.000	3.92	8728.139	12769.633	8.544	51.7	3.3	NO	0.999	NO	bb
8	200706P1-26	Standard	100.000	3.92	15605.692	12943.463	15.071	99.1	-0.9	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	3.92	8733.977	11840.771	9.220	56.2	-77.5	YES	0.999	NO	bbX
10	200706P1-28	Standard	500.000	3.92	16260.669	11650.135	17.447	119.0	-76.2	YES	0.999	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: PFHpA
Coefficient of Determination: R^2 = 0.999869
Calibration curve: -0.000182594 * x^2 + 1.3002 * x + 0.0362384
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	3.99	418.160	12966.955	0.403	0.3	12.9	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	3.99	658.920	12233.538	0.673	0.5	-2.0	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	3.98	1310.164	12536.285	1.306	1.0	-2.3	NO	1.000	NO	MM
4	200706P1-22	Standard	2.000	3.98	2635.286	12763.619	2.581	2.0	-2.1	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	3.98	6939.015	12970.818	6.687	5.1	2.4	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	3.98	12993.593	12289.430	13.216	10.2	1.5	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	3.98	67866.617	12769.633	66.434	51.4	2.9	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	3.98	129715.906	12943.463	125.272	97.7	-2.3	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	3.98	297924.625	11840.771	314.511	250.7	0.3	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	3.98	563375.000	11650.135	604.473	500.0	-0.0	NO	1.000	NO	bb

Compound name: ADONA
Coefficient of Determination: R^2 = 0.999933
Calibration curve: -0.000211186 * x^2 + 2.1692 * x + 0.077206
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.10	554.163	12966.955	0.534	0.2	-15.7	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	4.10	1238.257	12233.538	1.265	0.5	9.5	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	4.10	2290.803	12536.285	2.284	1.0	1.8	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	4.10	4434.866	12763.619	4.343	2.0	-1.6	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	4.10	11838.877	12970.818	11.409	5.2	4.5	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	4.10	21671.572	12289.430	22.043	10.1	1.4	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	4.10	112033.008	12769.633	109.667	50.8	1.5	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	4.10	219256.641	12943.463	211.745	98.5	-1.5	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	4.09	501761.875	11840.771	529.697	250.3	0.1	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	4.09	961901.500	11650.135	1032.071	500.1	0.0	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 7 of 13
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.998975
Calibration curve: -1.6968e-005 * x^2 + 1.09268 * x + 0.0771315
Response type: Internal Std (Ref 61), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.13	72.119	2847.260	0.317	0.2	-12.3	NO	0.999	NO	MM
2	200706P1-20	Standard	0.500	4.13	145.439	2779.479	0.654	0.5	5.6	NO	0.999	NO	MM
3	200706P1-21	Standard	1.000	4.13	249.120	2651.918	1.174	1.0	0.4	NO	0.999	NO	MM
4	200706P1-22	Standard	2.000	4.13	541.163	2816.980	2.401	2.1	6.4	NO	0.999	NO	MM
5	200706P1-23	Standard	5.000	4.13	1349.779	3217.580	5.244	4.7	-5.4	NO	0.999	NO	MM
6	200706P1-24	Standard	10.000	4.13	2401.274	2751.402	10.909	9.9	-0.9	NO	0.999	NO	MM
7	200706P1-25	Standard	50.000	4.13	12677.968	2742.332	57.788	52.9	5.7	NO	0.999	NO	MM
8	200706P1-26	Standard	100.000	4.13	24617.160	2706.095	113.712	104.2	4.2	NO	0.999	NO	MM
9	200706P1-27	Standard	250.000	4.13	54337.816	2614.377	259.803	238.6	-4.6	NO	0.999	NO	MM
10	200706P1-28	Standard	500.000	4.13	108657.328	2482.339	547.152	504.6	0.9	NO	0.999	NO	MM

Compound name: 6:2 FTS
Coefficient of Determination: R^2 = 0.997712
Calibration curve: -0.000191359 * x^2 + 1.14566 * x + 0.00198468
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.46	32.399	1614.767	0.251	0.2	-13.1	NO	0.998	NO	bb
2	200706P1-20	Standard	0.500	4.45	79.715	1610.712	0.619	0.5	7.7	NO	0.998	NO	bb
3	200706P1-21	Standard	1.000	4.46	131.763	1404.711	1.173	1.0	2.2	NO	0.998	NO	bb
4	200706P1-22	Standard	2.000	4.45	272.289	1542.265	2.207	1.9	-3.7	NO	0.998	NO	bb
5	200706P1-23	Standard	5.000	4.45	750.350	1637.135	5.729	5.0	0.1	NO	0.998	NO	bb
6	200706P1-24	Standard	10.000	4.45	1442.196	1609.265	11.202	9.8	-2.1	NO	0.998	NO	bb
7	200706P1-25	Standard	50.000	4.45	7648.623	1440.831	66.356	58.5	17.0	NO	0.998	NO	bb
8	200706P1-26	Standard	100.000	4.45	13593.849	1590.387	106.844	94.8	-5.2	NO	0.998	NO	bb
9	200706P1-27	Standard	250.000	4.45	31713.313	1483.970	267.132	243.0	-2.8	NO	0.998	NO	bb
10	200706P1-28	Standard	500.000	4.45	62559.508	1478.616	528.869	504.1	0.8	NO	0.998	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 8 of 13
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999173
Calibration curve: -0.000202972 * x^2 + 1.13013 * x + 0.0543225
Response type: Internal Std (Ref 69), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.51	402.750	14231.127	0.354	0.3	6.0	NO	0.999	NO	bb
2	200706P1-20	Standard	0.500	4.51	746.570	14540.555	0.642	0.5	4.0	NO	0.999	NO	MM
3	200706P1-21	Standard	1.000	4.51	1359.390	14506.504	1.171	1.0	-1.1	NO	0.999	NO	bb
4	200706P1-22	Standard	2.000	4.51	2821.796	14455.132	2.440	2.1	5.6	NO	0.999	NO	bb
5	200706P1-23	Standard	5.000	4.51	7101.591	14986.464	5.923	5.2	4.0	NO	0.999	NO	bb
6	200706P1-24	Standard	10.000	4.51	12739.101	14430.539	11.035	9.7	-2.7	NO	0.999	NO	bb
7	200706P1-25	Standard	50.000	4.51	64434.711	14123.512	57.028	50.9	1.8	NO	0.999	NO	bb
8	200706P1-26	Standard	100.000	4.50	125726.648	13491.245	116.489	105.0	5.0	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	4.50	279348.875	13468.371	259.264	239.7	-4.1	NO	0.999	NO	bb
10	200706P1-28	Standard	500.000	4.50	516969.813	12462.934	518.507	504.5	0.9	NO	0.999	NO	bb

Compound name: PFecHS
Coefficient of Determination: R^2 = 0.999583
Calibration curve: -1.03658e-005 * x^2 + 0.226457 * x + -0.0088356
Response type: Internal Std (Ref 69), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.52	50.094	14231.127	0.044	0.2	-6.7	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	4.52	101.628	14540.555	0.087	0.4	-15.0	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	4.52	253.716	14506.504	0.219	1.0	0.4	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	4.52	534.832	14455.132	0.462	2.1	4.1	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	4.52	1394.911	14986.464	1.163	5.2	3.6	NO	1.000	NO	bd
6	200706P1-24	Standard	10.000	4.52	2494.757	14430.539	2.161	9.6	-4.1	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	4.52	12767.402	14123.512	11.300	50.1	0.1	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	4.52	25309.250	13491.245	23.450	104.1	4.1	NO	1.000	NO	MM
9	200706P1-27	Standard	250.000	4.52	58804.926	13468.371	54.577	243.8	-2.5	NO	1.000	NO	MM
10	200706P1-28	Standard	500.000	4.52	110806.039	12462.934	111.136	502.3	0.5	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999887
Calibration curve: -0.000106932 * x^2 + 0.973986 * x + 0.00516936
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.61	53.117	2884.344	0.230	0.2	-7.6	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	4.61	138.128	2845.779	0.607	0.6	23.5	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	4.61	218.210	3008.333	0.907	0.9	-7.4	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	4.61	453.914	2875.965	1.973	2.0	1.0	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	4.61	1119.986	3118.928	4.489	4.6	-7.9	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	4.61	2148.840	2818.869	9.529	9.8	-2.1	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	4.61	11341.566	2950.445	48.050	49.6	-0.8	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	4.61	21786.094	2787.149	97.708	101.4	1.4	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	4.61	50363.949	2663.154	236.392	249.5	-0.2	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	4.61	94909.617	2577.664	460.250	500.0	-0.0	NO	1.000	NO	bb

Compound name: 7:3 FTCA
Coefficient of Determination: R^2 = 0.999371
Calibration curve: -0.000492227 * x^2 + 0.313584 * x + 0.000408564
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.93	111.070	14827.067	0.094	0.3	19.0	NO	0.999	NO	bb
2	200706P1-20	Standard	0.500	4.93	194.742	15608.248	0.156	0.5	-0.7	NO	0.999	NO	bb
3	200706P1-21	Standard	1.000	4.93	314.573	15269.105	0.258	0.8	-17.9	NO	0.999	NO	bb
4	200706P1-22	Standard	2.000	4.93	719.897	14161.967	0.635	2.0	1.6	NO	0.999	NO	bb
5	200706P1-23	Standard	5.000	4.93	2008.997	15977.628	1.572	5.1	1.0	NO	0.999	NO	bb
6	200706P1-24	Standard	10.000	4.93	3579.841	15164.249	2.951	9.6	-4.5	NO	0.999	NO	bb
7	200706P1-25	Standard	50.000	4.93	18687.814	15860.334	14.728	51.1	2.1	NO	0.999	NO	bb
8	200706P1-26	Standard	100.000	4.93	32013.811	15209.911	26.310	99.4	-0.6	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	4.93	17797.135	14402.273	15.446	53.8	-78.5	YES	0.999	NO	bbX
10	200706P1-28	Standard	500.000	4.93	30134.631	13593.457	27.711	106.0	-78.8	YES	0.999	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 10 of 13
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999826
Calibration curve: -9.83022e-005 * x^2 + 1.11707 * x + 0.0195168
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.94	353.683	14827.067	0.298	0.2	-0.2	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	4.94	686.247	15608.248	0.550	0.5	-5.1	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	4.94	1390.156	15269.105	1.138	1.0	0.1	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	4.94	2837.898	14161.967	2.505	2.2	11.3	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	4.94	6815.411	15977.628	5.332	4.8	-4.8	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	4.94	13724.298	15164.249	11.313	10.1	1.2	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	4.94	68681.820	15860.334	54.130	48.6	-2.7	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	4.94	133434.094	15209.911	109.660	99.0	-1.0	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	4.94	319612.250	14402.273	277.397	254.0	1.6	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	4.94	578770.500	13593.457	532.214	498.3	-0.3	NO	1.000	NO	bb

Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999934
Calibration curve: -5.74782e-005 * x^2 + 0.690246 * x + 0.00511601
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	4.99	104.279	7350.009	0.177	0.2	-0.2	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	4.99	185.141	7155.503	0.323	0.5	-7.8	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	4.99	396.909	6949.531	0.714	1.0	2.7	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	4.99	820.227	7224.200	1.419	2.0	2.5	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	4.98	2290.898	7949.741	3.602	5.2	4.3	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	4.99	3983.124	7142.181	6.971	10.1	1.0	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	4.99	20044.924	7268.384	34.473	50.1	0.3	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	4.99	39994.836	7226.727	69.179	101.1	1.1	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	4.99	90138.398	6740.430	167.160	247.3	-1.1	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	4.99	168738.094	6362.523	331.508	501.2	0.2	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 11 of 13
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999703
Calibration curve: -0.000187013 * x^2 + 1.27905 * x + -0.0944633
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.02	53.010	2884.344	0.230	0.3	1.4	NO	1.000	NO	MM
2	200706P1-20	Standard	0.500	5.02	112.943	2845.779	0.496	0.5	-7.7	NO	1.000	NO	MM
3	200706P1-21	Standard	1.000	5.02	242.326	3008.333	1.007	0.9	-13.9	NO	1.000	NO	MM
4	200706P1-22	Standard	2.000	5.02	569.359	2875.965	2.475	2.0	0.5	NO	1.000	NO	MM
5	200706P1-23	Standard	5.000	5.02	1445.085	3118.928	5.792	4.6	-7.9	NO	1.000	NO	MM
6	200706P1-24	Standard	10.000	5.02	2835.026	2818.869	12.572	9.9	-0.8	NO	1.000	NO	MM
7	200706P1-25	Standard	50.000	5.02	14350.122	2950.445	60.796	47.9	-4.1	NO	1.000	NO	MM
8	200706P1-26	Standard	100.000	5.02	28907.240	2787.149	129.645	103.0	3.0	NO	1.000	NO	MM
9	200706P1-27	Standard	250.000	5.02	65694.383	2663.154	308.349	250.3	0.1	NO	1.000	NO	MM
10	200706P1-28	Standard	500.000	5.02	122082.406	2577.664	592.021	499.4	-0.1	NO	1.000	NO	MM

Compound name: 9Cl-PF30NS
Coefficient of Determination: R^2 = 0.999799
Calibration curve: -0.000316616 * x^2 + 2.84896 * x + 0.0165096
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.24	199.800	2884.344	0.866	0.3	19.3	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	5.24	286.510	2845.779	1.258	0.4	-12.8	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	5.23	691.518	3008.333	2.873	1.0	0.3	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	5.24	1367.717	2875.965	5.945	2.1	4.1	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	5.23	3352.800	3118.928	13.437	4.7	-5.7	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	5.23	6173.412	2818.869	27.375	9.6	-3.9	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	5.24	33013.273	2950.445	139.866	49.4	-1.3	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	5.23	61952.328	2787.149	277.848	98.6	-1.4	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	5.23	150274.875	2663.154	705.343	254.8	1.9	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	5.23	276304.250	2577.664	1339.897	497.8	-0.4	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 12 of 13
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999933
Calibration curve: -0.000101556 * x^2 + 0.846184 * x + 0.0441258
Response type: Internal Std (Ref 73), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.31	370.801	18137.861	0.256	0.2	-0.1	NO	1.000	NO	MM
2	200706P1-20	Standard	0.500	5.31	761.356	19338.936	0.492	0.5	5.9	NO	1.000	NO	MM
3	200706P1-21	Standard	1.000	5.31	1374.172	18429.492	0.932	1.0	4.9	NO	1.000	NO	MM
4	200706P1-22	Standard	2.000	5.31	2759.825	19687.527	1.752	2.0	1.0	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	5.31	7278.292	19663.701	4.627	5.4	8.4	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	5.31	12883.442	18643.387	8.638	10.2	1.7	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	5.31	66944.820	19964.771	41.914	49.8	-0.4	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	5.31	132335.688	19861.670	83.286	99.6	-0.4	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	5.31	314015.188	19146.473	205.009	249.7	-0.1	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	5.31	582916.063	18310.025	397.949	500.3	0.1	NO	1.000	NO	bb

Compound name: 8:2 FTS
Coefficient of Determination: R^2 = 0.998921
Calibration curve: -0.000876709 * x^2 + 1.37036 * x + -0.084038
Response type: Internal Std (Ref 75), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.29	19.813	1541.506	0.161	0.2	-28.6	NO	0.999	NO	bb
2	200706P1-20	Standard	0.500	5.29	101.800	1580.063	0.805	0.6	29.9	NO	0.999	NO	bb
3	200706P1-21	Standard	1.000	5.29	163.951	1512.862	1.355	1.1	5.1	NO	0.999	NO	bb
4	200706P1-22	Standard	2.000	5.29	297.397	1542.955	2.409	1.8	-8.9	NO	0.999	NO	bb
5	200706P1-23	Standard	5.000	5.29	644.510	1469.703	5.482	4.1	-18.6	NO	0.999	NO	bb
6	200706P1-24	Standard	10.000	5.29	1466.993	1379.408	13.294	9.8	-1.8	NO	0.999	NO	bb
7	200706P1-25	Standard	50.000	5.29	7679.081	1477.570	64.964	49.0	-2.0	NO	0.999	NO	bb
8	200706P1-26	Standard	100.000	5.29	13518.479	1351.704	125.013	97.4	-2.6	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	5.29	34192.176	1433.317	298.191	261.4	4.5	NO	0.999	NO	bb
10	200706P1-28	Standard	500.000	5.29	57850.203	1567.050	461.458	491.1	-1.8	NO	0.999	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 13 of 13
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Compound name: PFNS
Coefficient of Determination: R^2 = 0.999393
Calibration curve: -0.000161375 * x^2 + 1.33537 * x + -0.0984438
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.37	43.194	2884.344	0.187	0.2	-14.4	NO	0.999	NO	bb
2	200706P1-20	Standard	0.500	5.37	107.916	2845.779	0.474	0.4	-14.3	NO	0.999	NO	bb
3	200706P1-21	Standard	1.000	5.37	283.382	3008.333	1.177	1.0	-4.4	NO	0.999	NO	bb
4	200706P1-22	Standard	2.000	5.37	662.211	2875.965	2.878	2.2	11.5	NO	0.999	NO	bb
5	200706P1-23	Standard	5.000	5.37	1595.811	3118.928	6.396	4.9	-2.7	NO	0.999	NO	bb
6	200706P1-24	Standard	10.000	5.37	2824.457	2818.869	12.525	9.5	-5.4	NO	0.999	NO	bb
7	200706P1-25	Standard	50.000	5.37	15054.567	2950.445	63.781	48.1	-3.8	NO	0.999	NO	bb
8	200706P1-26	Standard	100.000	5.37	30957.924	2787.149	138.842	105.4	5.4	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	5.37	67847.297	2663.154	318.454	245.9	-1.7	NO	0.999	NO	bb
10	200706P1-28	Standard	500.000	5.37	129647.547	2577.664	628.707	501.2	0.2	NO	0.999	NO	bb

Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999777
Calibration curve: -0.000326513 * x^2 + 1.22499 * x + -0.0565243
Response type: Internal Std (Ref 77), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.46	71.988	4408.401	0.204	0.2	-14.9	NO	1.000	NO	MM
2	200706P1-20	Standard	0.500	5.46	224.694	4346.208	0.646	0.6	14.8	NO	1.000	NO	MM
3	200706P1-21	Standard	1.000	5.46	360.872	4230.765	1.066	0.9	-8.3	NO	1.000	NO	MM
4	200706P1-22	Standard	2.000	5.46	790.665	4359.749	2.267	1.9	-5.1	NO	1.000	NO	MM
5	200706P1-23	Standard	5.000	5.46	2062.203	4489.936	5.741	4.7	-5.2	NO	1.000	NO	MM
6	200706P1-24	Standard	10.000	5.46	4063.961	4139.533	12.272	10.1	0.9	NO	1.000	NO	MM
7	200706P1-25	Standard	50.000	5.46	20269.383	4321.417	58.631	48.5	-2.9	NO	1.000	NO	MM
8	200706P1-26	Standard	100.000	5.46	41898.453	4277.929	122.426	102.8	2.8	NO	1.000	NO	MM
9	200706P1-27	Standard	250.000	5.46	94387.063	4146.951	284.507	248.8	-0.5	NO	1.000	NO	MM
10	200706P1-28	Standard	500.000	5.46	179868.844	4234.389	530.976	500.2	0.0	NO	1.000	NO	MM

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 1 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999878
Calibration curve: -0.000317928 * x^2 + 1.39659 * x + -0.0635925
Response type: Internal Std (Ref 81), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.62	84.529	3974.848	0.266	0.2	-5.6	NO	1.000	NO	MM
2	200706P1-20	Standard	0.500	5.62	239.245	4387.888	0.682	0.5	6.7	NO	1.000	NO	MM
3	200706P1-21	Standard	1.000	5.61	432.019	4370.321	1.236	0.9	-6.9	NO	1.000	NO	MM
4	200706P1-22	Standard	2.000	5.62	918.698	4172.910	2.752	2.0	0.8	NO	1.000	NO	MM
5	200706P1-23	Standard	5.000	5.61	2404.692	4350.434	6.909	5.0	-0.0	NO	1.000	NO	MM
6	200706P1-24	Standard	10.000	5.61	4571.777	3924.268	14.563	10.5	5.0	NO	1.000	NO	MM
7	200706P1-25	Standard	50.000	5.62	23885.766	4351.004	68.621	49.7	-0.5	NO	1.000	NO	MM
8	200706P1-26	Standard	100.000	5.61	46426.203	4188.651	138.548	101.6	1.6	NO	1.000	NO	MM
9	200706P1-27	Standard	250.000	5.61	105011.930	4036.783	325.172	246.7	-1.3	NO	1.000	NO	MM
10	200706P1-28	Standard	500.000	5.61	187964.344	3787.376	620.365	501.5	0.3	NO	1.000	NO	MM

Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999582
Calibration curve: -0.000302944 * x^2 + 1.10094 * x + 0.0188328
Response type: Internal Std (Ref 79), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.63	461.576	18683.264	0.309	0.3	5.4	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	5.63	937.633	19852.086	0.590	0.5	3.8	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	5.63	1553.115	18480.219	1.051	0.9	-6.3	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	5.63	3505.071	19143.811	2.289	2.1	3.1	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	5.63	9315.438	20906.857	5.570	5.0	1.0	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	5.63	15562.638	19766.689	9.841	8.9	-10.6	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	5.63	84420.508	19028.625	55.456	51.1	2.1	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	5.63	167107.594	18950.932	110.224	103.0	3.0	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	5.63	374620.313	18632.748	251.318	244.7	-2.1	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	5.63	640302.250	16795.816	476.534	502.2	0.4	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 2 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999869
Calibration curve: -0.000337564 * x^2 + 1.29291 * x + -0.129711
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.67	32.038	2884.344	0.139	0.2	-16.9	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	5.67	121.310	2845.779	0.533	0.5	2.5	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	5.67	326.817	3008.333	1.358	1.2	15.1	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	5.67	587.988	2875.965	2.556	2.1	3.9	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	5.67	1529.713	3118.928	6.131	4.8	-3.0	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	5.67	2892.042	2818.869	12.824	10.0	0.5	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	5.67	14611.049	2950.445	61.902	48.6	-2.8	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	5.67	28054.248	2787.149	125.820	100.0	0.0	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	5.67	64957.836	2663.154	304.891	252.6	1.0	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	5.67	115615.516	2577.664	560.660	498.7	-0.3	NO	1.000	NO	bb

Compound name: 11Cl-PF30UdS
Correlation coefficient: r = 0.999153, r^2 = 0.998308
Calibration curve: 0.257476 * x + 0.00892294
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.83	118.626	22810.775	0.065	0.2	-12.9	NO	0.998	NO	bb
2	200706P1-20	Standard	0.500	5.83	272.501	25244.645	0.135	0.5	-2.1	NO	0.998	NO	bb
3	200706P1-21	Standard	1.000	5.83	462.737	24211.764	0.239	0.9	-10.7	NO	0.998	NO	bb
4	200706P1-22	Standard	2.000	5.83	1046.674	24340.117	0.538	2.1	2.7	NO	0.998	NO	bb
5	200706P1-23	Standard	5.000	5.83	2744.988	25408.879	1.350	5.2	4.2	NO	0.998	NO	bb
6	200706P1-24	Standard	10.000	5.83	5078.613	23356.371	2.718	10.5	5.2	NO	0.998	NO	bb
7	200706P1-25	Standard	50.000	5.83	26426.852	23355.100	14.144	54.9	9.8	NO	0.998	NO	bb
8	200706P1-26	Standard	100.000	5.83	51772.281	24096.184	26.857	104.3	4.3	NO	0.998	NO	bb
9	200706P1-27	Standard	250.000	5.83	118299.969	22303.783	66.300	257.5	3.0	NO	0.998	NO	bb
10	200706P1-28	Standard	500.000	5.83	212004.250	21320.014	124.299	482.7	-3.5	NO	0.998	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 10:2 FTS
Correlation coefficient: r = 0.998475, r^2 = 0.996952
Calibration curve: 1.81347 * x + 0.168501
Response type: Internal Std (Ref 85), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.90	73.153	1299.524	0.704	0.3	18.0	NO	0.997	NO	bb
2	200706P1-20	Standard	0.500	5.90	106.562	1409.232	0.945	0.4	-14.3	NO	0.997	NO	bb
3	200706P1-21	Standard	1.000	5.89	216.690	1381.627	1.960	1.0	-1.2	NO	0.997	NO	bb
4	200706P1-22	Standard	2.000	5.89	381.125	1355.605	3.514	1.8	-7.8	NO	0.997	NO	bb
5	200706P1-23	Standard	5.000	5.90	1091.328	1274.760	10.701	5.8	16.2	NO	0.997	NO	bb
6	200706P1-24	Standard	10.000	5.89	2124.764	1357.960	19.558	10.7	6.9	NO	0.997	NO	bb
7	200706P1-25	Standard	50.000	5.90	10322.251	1263.989	102.080	56.2	12.4	NO	0.997	NO	bb
8	200706P1-26	Standard	100.000	5.89	18470.209	1154.229	200.028	110.2	10.2	NO	0.997	NO	bb
9	200706P1-27	Standard	250.000	5.89	40601.520	1113.270	455.881	251.3	0.5	NO	0.997	NO	bb
10	200706P1-28	Standard	500.000	5.89	66252.156	949.242	872.435	481.0	-3.8	NO	0.997	NO	bb

Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999844
Calibration curve: -0.000264449 * x^2 + 0.982944 * x + 0.00539633
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	5.90	505.708	22810.775	0.277	0.3	10.6	NO	1.000	NO	db
2	200706P1-20	Standard	0.500	5.90	1033.096	25244.645	0.512	0.5	3.0	NO	1.000	NO	db
3	200706P1-21	Standard	1.000	5.90	1840.692	24211.764	0.950	1.0	-3.8	NO	1.000	NO	MM
4	200706P1-22	Standard	2.000	5.90	3658.658	24340.117	1.879	1.9	-4.6	NO	1.000	NO	MM
5	200706P1-23	Standard	5.000	5.90	9857.521	25408.879	4.849	4.9	-1.3	NO	1.000	NO	MM
6	200706P1-24	Standard	10.000	5.90	17716.777	23356.371	9.482	9.7	-3.3	NO	1.000	NO	MM
7	200706P1-25	Standard	50.000	5.90	93610.125	23355.100	50.102	51.7	3.4	NO	1.000	NO	MM
8	200706P1-26	Standard	100.000	5.90	180757.547	24096.184	93.769	98.0	-2.0	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	5.90	410882.656	22303.783	230.276	251.3	0.5	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	5.90	724978.313	21320.014	425.057	499.6	-0.1	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999940
Calibration curve: -7.96999e-005 * x^2 + 1.12175 * x + 0.0605427
Response type: Internal Std (Ref 87), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	1.250	5.81	171.562	20355.828	1.257	1.1	-14.6	NO	1.000	NO	bb
2	200706P1-20	Standard	2.500	5.81	429.880	20279.811	3.163	2.8	10.6	NO	1.000	NO	bb
3	200706P1-21	Standard	5.000	5.82	799.827	20965.770	5.692	5.0	0.4	NO	1.000	NO	bb
4	200706P1-22	Standard	10.000	5.82	1629.668	20813.816	11.682	10.4	3.7	NO	1.000	NO	bb
5	200706P1-23	Standard	25.000	5.82	4178.511	21672.008	28.767	25.6	2.5	NO	1.000	NO	bb
6	200706P1-24	Standard	50.000	5.82	7871.369	20647.168	56.880	50.8	1.7	NO	1.000	NO	bb
7	200706P1-25	Standard	250.000	5.82	39017.539	21174.100	274.931	249.5	-0.2	NO	1.000	NO	bb
8	200706P1-26	Standard	500.000	5.82	74542.289	20387.346	545.520	504.3	0.9	NO	1.000	NO	bb
9	200706P1-27	Standard	1250.000	5.81	159620.969	18792.607	1267.278	1238.7	-0.9	NO	1.000	NO	bb
10	200706P1-28	Standard	2500.000	5.81	275508.969	17789.584	2310.675	2506.0	0.2	NO	1.000	NO	bb

Compound name: PFTrDA
Coefficient of Determination: R^2 = 0.999936
Calibration curve: -0.000414303 * x^2 + 1.04415 * x + 0.00171537
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	6.14	468.496	22810.775	0.257	0.2	-2.3	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	6.14	1152.923	25244.645	0.571	0.5	9.0	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	6.14	1977.301	24211.764	1.021	1.0	-2.4	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	6.14	3935.513	24340.117	2.021	1.9	-3.2	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	6.14	10632.552	25408.879	5.231	5.0	0.4	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	6.14	19007.156	23356.371	10.172	9.8	-2.2	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	6.14	97115.727	23355.100	51.978	50.8	1.6	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	6.14	190868.766	24096.184	99.014	98.7	-1.3	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	6.14	421501.438	22303.783	236.228	251.3	0.5	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	6.14	713175.125	21320.014	418.137	499.4	-0.1	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 5 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: PFDoS
Coefficient of Determination: R^2 = 0.999610
Calibration curve: -4.68396e-005 * x^2 + 0.17052 * x + -0.00392295
Response type: Internal Std (Ref 89), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	6.16	79.862	23296.811	0.043	0.3	9.7	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	6.16	176.105	25347.914	0.087	0.5	6.5	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	6.16	283.332	24321.422	0.146	0.9	-12.3	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	6.16	567.318	23906.566	0.297	1.8	-11.8	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	6.16	1829.969	25577.697	0.894	5.3	5.5	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	6.16	3312.936	23822.789	1.738	10.2	2.5	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	6.16	16284.360	24780.746	8.214	48.9	-2.3	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	6.16	32384.986	23560.986	17.181	103.7	3.7	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	6.16	72912.734	23364.986	39.007	245.3	-1.9	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	6.16	128623.484	21788.924	73.789	502.0	0.4	NO	1.000	NO	bb

Compound name: PFTeDA
Correlation coefficient: r = 0.999411, r^2 = 0.998822
Calibration curve: 0.656798 * x + 0.0803604
Response type: Internal Std (Ref 89), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	6.34	414.867	23296.811	0.223	0.2	-13.4	NO	0.999	NO	MM
2	200706P1-20	Standard	0.500	6.34	773.273	25347.914	0.381	0.5	-8.4	NO	0.999	NO	MM
3	200706P1-21	Standard	1.000	6.34	1385.224	24321.422	0.712	1.0	-3.8	NO	0.999	NO	bb
4	200706P1-22	Standard	2.000	6.34	2799.478	23906.566	1.464	2.1	5.3	NO	0.999	NO	MM
5	200706P1-23	Standard	5.000	6.34	7070.250	25577.697	3.455	5.1	2.8	NO	0.999	NO	bb
6	200706P1-24	Standard	10.000	6.34	13621.163	23822.789	7.147	10.8	7.6	NO	0.999	NO	bb
7	200706P1-25	Standard	50.000	6.34	68093.477	24780.746	34.348	52.2	4.3	NO	0.999	NO	bb
8	200706P1-26	Standard	100.000	6.34	132185.453	23560.986	70.129	106.7	6.7	NO	0.999	NO	bb
9	200706P1-27	Standard	250.000	6.33	312192.125	23364.986	167.019	254.2	1.7	NO	0.999	NO	bb
10	200706P1-28	Standard	500.000	6.33	556678.000	21788.924	319.358	486.1	-2.8	NO	0.999	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999747
Calibration curve: -6.96201e-005 * x^2 + 1.16259 * x + -0.107454
Response type: Internal Std (Ref 91), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	1.250	6.19	187.912	23217.701	1.208	1.1	-9.5	NO	1.000	NO	bb
2	200706P1-20	Standard	2.500	6.19	457.506	23650.156	2.886	2.6	3.0	NO	1.000	NO	bb
3	200706P1-21	Standard	5.000	6.19	938.745	23147.498	6.051	5.3	6.0	NO	1.000	NO	bb
4	200706P1-22	Standard	10.000	6.19	1790.665	23462.338	11.387	9.9	-1.1	NO	1.000	NO	bb
5	200706P1-23	Standard	25.000	6.19	4815.911	24914.057	28.841	24.9	-0.3	NO	1.000	NO	bb
6	200706P1-24	Standard	50.000	6.19	8962.970	23161.109	57.738	49.9	-0.2	NO	1.000	NO	bb
7	200706P1-25	Standard	250.000	6.19	45685.664	23538.484	289.581	253.0	1.2	NO	1.000	NO	bb
8	200706P1-26	Standard	500.000	6.19	86995.922	22448.846	578.194	513.2	2.6	NO	1.000	NO	bb
9	200706P1-27	Standard	1250.000	6.19	189637.125	21512.914	1315.203	1220.6	-2.4	NO	1.000	NO	bb
10	200706P1-28	Standard	2500.000	6.19	324338.656	19492.205	2482.599	2514.0	0.6	NO	1.000	NO	bb

Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999789
Calibration curve: -0.000190466 * x^2 + 1.03254 * x + 0.163583
Response type: Internal Std (Ref 93), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	6.63	799.401	25406.275	0.393	0.2	-11.0	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	6.63	1483.510	27130.332	0.684	0.5	0.7	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	6.63	2491.544	26103.717	1.193	1.0	-0.3	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	6.63	4777.866	26556.000	2.249	2.0	1.0	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	6.63	12350.689	27161.623	5.684	5.4	7.0	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	6.63	22227.100	26370.029	10.536	10.1	0.6	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	6.63	109164.680	26053.225	52.376	51.0	2.1	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	6.63	217865.219	26467.854	102.891	101.4	1.4	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	6.63	492183.344	25481.225	241.444	244.7	-2.1	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	6.63	902398.125	23953.805	470.905	502.5	0.5	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: PFODA
Coefficient of Determination: R^2 = 0.999877
Calibration curve: -8.33174e-005 * x^2 + 0.828517 * x + 0.0120589
Response type: Internal Std (Ref 93), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	0.250	6.85	450.793	25406.275	0.222	0.3	1.3	NO	1.000	NO	bb
2	200706P1-20	Standard	0.500	6.84	896.249	27130.332	0.413	0.5	-3.2	NO	1.000	NO	bb
3	200706P1-21	Standard	1.000	6.84	1791.579	26103.717	0.858	1.0	2.1	NO	1.000	NO	bb
4	200706P1-22	Standard	2.000	6.84	3588.470	26556.000	1.689	2.0	1.2	NO	1.000	NO	bb
5	200706P1-23	Standard	5.000	6.84	9227.053	27161.623	4.246	5.1	2.3	NO	1.000	NO	bb
6	200706P1-24	Standard	10.000	6.84	17499.887	26370.029	8.295	10.0	0.1	NO	1.000	NO	bb
7	200706P1-25	Standard	50.000	6.85	89170.227	26053.225	42.783	51.9	3.8	NO	1.000	NO	bb
8	200706P1-26	Standard	100.000	6.84	171890.313	26467.854	81.179	99.0	-1.0	NO	1.000	NO	bb
9	200706P1-27	Standard	250.000	6.84	408207.031	25481.225	200.249	247.9	-0.9	NO	1.000	NO	bb
10	200706P1-28	Standard	500.000	6.84	755594.000	23953.805	394.297	501.1	0.2	NO	1.000	NO	bb

Compound name: N-MeFOSE
Correlation coefficient: r = 0.999753, r^2 = 0.999506
Calibration curve: 1.10054 * x + 0.364944
Response type: Internal Std (Ref 95), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	1.250	6.34	195.169	20481.053	1.422	1.0	-23.2	NO	1.000	NO	MM
2	200706P1-20	Standard	2.500	6.34	439.277	20843.604	3.144	2.5	1.0	NO	1.000	NO	bb
3	200706P1-21	Standard	5.000	6.34	818.329	20414.760	5.981	5.1	2.1	NO	1.000	NO	bb
4	200706P1-22	Standard	10.000	6.34	1592.070	20055.193	11.844	10.4	4.3	NO	1.000	NO	MM
5	200706P1-23	Standard	25.000	6.34	4282.778	22627.299	28.240	25.3	1.3	NO	1.000	NO	bb
6	200706P1-24	Standard	50.000	6.34	7981.183	20102.832	59.235	53.5	7.0	NO	1.000	NO	bb
7	200706P1-25	Standard	250.000	6.35	40518.207	20711.023	291.889	264.9	6.0	NO	1.000	NO	bb
8	200706P1-26	Standard	500.000	6.34	79844.242	20885.109	570.395	518.0	3.6	NO	1.000	NO	bb
9	200706P1-27	Standard	1250.000	6.34	188797.938	20707.771	1360.294	1235.7	-1.1	NO	1.000	NO	bb
10	200706P1-28	Standard	2500.000	6.34	353058.344	19318.008	2726.798	2477.4	-0.9	NO	1.000	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 8 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: N-EtFOSE
Correlation coefficient: r = 0.999137, r^2 = 0.998274
Calibration curve: 1.00495 * x + 0.335204
Response type: Internal Std (Ref 97), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None

1	200706P1-19	Standard	1.250	6.49	207.125	22385.490	1.380	1.0	-16.8	NO	0.998	NO	bb
2	200706P1-20	Standard	2.500	6.49	430.853	22515.381	2.855	2.5	0.3	NO	0.998	NO	bb
3	200706P1-21	Standard	5.000	6.49	806.541	22580.791	5.329	5.0	-0.6	NO	0.998	NO	bb
4	200706P1-22	Standard	10.000	6.49	1687.779	21905.441	11.496	11.1	11.1	NO	0.998	NO	bb
5	200706P1-23	Standard	25.000	6.49	4436.875	23437.969	28.244	27.8	11.1	NO	0.998	NO	bb
6	200706P1-24	Standard	50.000	6.49	8060.291	22186.262	54.205	53.6	7.2	NO	0.998	NO	bb
7	200706P1-25	Standard	250.000	6.49	41995.930	22694.074	276.098	274.4	9.8	NO	0.998	NO	bb
8	200706P1-26	Standard	500.000	6.49	84331.070	23318.145	539.588	536.6	7.3	NO	0.998	NO	bb
9	200706P1-27	Standard	1250.000	6.49	196343.016	23270.990	1258.837	1252.3	0.2	NO	0.998	NO	bb
10	200706P1-28	Standard	2500.000	6.49	382750.500	23386.736	2441.827	2429.5	-2.8	NO	0.998	NO	bb

Compound name: 13C3-PFBA-EIS
Response Factor: 689.63
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	1.63	8928.727	8928.727	12.9	3.6	NO	NO	MMX
2	200706P1-20	Standard	12.500	1.62	8907.738	8907.738	12.9	3.3	NO	NO	MMX
3	200706P1-21	Standard	12.500	1.62	8876.085	8876.085	12.9	3.0	NO	NO	MMX
4	200706P1-22	Standard	12.500	1.62	8766.956	8766.956	12.7	1.7	NO	NO	MMX
5	200706P1-23	Standard	12.500	1.62	9407.555	9407.555	13.6	9.1	NO	NO	MMX
6	200706P1-24	Standard	12.500	1.62	8620.372	8620.372	12.5	0.0	NO	NO	MM
7	200706P1-25	Standard	12.500	1.62	8816.157	8816.157	12.8	2.3	NO	NO	MMX
8	200706P1-26	Standard	12.500	1.62	9290.569	9290.569	13.5	7.8	NO	NO	MMX
9	200706P1-27	Standard	12.500	1.62	9147.883	9147.883	13.3	6.1	NO	NO	MMX
10	200706P1-28	Standard	12.500	1.62	9375.081	9375.081	13.6	8.8	NO	NO	MMX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 9 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C3-PFBA-RSD
Response Factor: 0.854301
RRF SD: 0.0333349, Relative SD: 3.90201
Response type: Internal Std (Ref 99), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	1.63	9004.832	9571.630	11.760	13.8	10.1	NO	NO	MM
2	200706P1-20	Standard	12.500	1.62	8792.936	10495.767	10.472	12.3	-1.9	NO	NO	MM
3	200706P1-21	Standard	12.500	1.62	8849.034	10322.609	10.716	12.5	0.3	NO	NO	MM
4	200706P1-22	Standard	12.500	1.62	8712.763	10427.793	10.444	12.2	-2.2	NO	NO	MM
5	200706P1-23	Standard	12.500	1.62	9389.854	10992.993	10.677	12.5	-0.0	NO	NO	MM
6	200706P1-24	Standard	12.500	1.62	8525.373	10121.277	10.529	12.3	-1.4	NO	NO	MM
7	200706P1-25	Standard	12.500	1.62	8712.147	10409.653	10.462	12.2	-2.0	NO	NO	MM
8	200706P1-26	Standard	12.500	1.62	9265.158	10665.174	10.859	12.7	1.7	NO	NO	MM
9	200706P1-27	Standard	12.500	1.62	8912.315	10876.274	10.243	12.0	-4.1	NO	NO	MM
10	200706P1-28	Standard	12.500	1.62	9235.906	10864.321	10.626	12.4	-0.5	NO	NO	MM

Compound name: 13C3-PFPeA-EIS
Response Factor: 961.609
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	2.60	12471.803	12471.803	13.0	3.8	NO	NO	MMX
2	200706P1-20	Standard	12.500	2.60	12358.682	12358.682	12.9	2.8	NO	NO	MMX
3	200706P1-21	Standard	12.500	2.59	12332.146	12332.146	12.8	2.6	NO	NO	MMX
4	200706P1-22	Standard	12.500	2.59	12447.334	12447.334	12.9	3.6	NO	NO	MMX
5	200706P1-23	Standard	12.500	2.60	13036.096	13036.096	13.6	8.5	NO	NO	MMX
6	200706P1-24	Standard	12.500	2.59	12020.107	12020.107	12.5	0.0	NO	NO	MM
7	200706P1-25	Standard	12.500	2.59	12771.221	12771.221	13.3	6.2	NO	NO	MMX
8	200706P1-26	Standard	12.500	2.59	13078.910	13078.910	13.6	8.8	NO	NO	MMX
9	200706P1-27	Standard	12.500	2.59	12597.564	12597.564	13.1	4.8	NO	NO	MMX
10	200706P1-28	Standard	12.500	2.59	11987.368	11987.368	12.5	-0.3	NO	NO	MMX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 10 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C3-PFPeA-RSD
Response Factor: 0.751613
RRF SD: 0.0255308, Relative SD: 3.39681
Response type: Internal Std (Ref 101), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	2.60	12294.415	15792.443	9.731	12.9	3.6	NO	NO	bb
2	200706P1-20	Standard	12.500	2.60	12221.346	16933.953	9.021	12.0	-4.0	NO	NO	bb
3	200706P1-21	Standard	12.500	2.59	12213.532	16418.008	9.299	12.4	-1.0	NO	NO	bb
4	200706P1-22	Standard	12.500	2.59	12291.335	16457.064	9.336	12.4	-0.6	NO	NO	bb
5	200706P1-23	Standard	12.500	2.60	12950.499	18353.051	8.820	11.7	-6.1	NO	NO	bb
6	200706P1-24	Standard	12.500	2.59	11947.754	15564.020	9.596	12.8	2.1	NO	NO	bb
7	200706P1-25	Standard	12.500	2.59	12611.794	17166.877	9.183	12.2	-2.3	NO	NO	bb
8	200706P1-26	Standard	12.500	2.59	12776.837	16410.266	9.732	12.9	3.6	NO	NO	bb
9	200706P1-27	Standard	12.500	2.59	12498.843	16063.282	9.726	12.9	3.5	NO	NO	bb
10	200706P1-28	Standard	12.500	2.59	11893.112	15638.367	9.506	12.6	1.2	NO	NO	bb

Compound name: 13C3-PFBS-EIS
Response Factor: 104.004
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	2.87	1430.774	1430.774	13.8	10.1	NO	NO	bbX
2	200706P1-20	Standard	12.500	2.87	1426.593	1426.593	13.7	9.7	NO	NO	bbX
3	200706P1-21	Standard	12.500	2.87	1288.172	1288.172	12.4	-0.9	NO	NO	bbX
4	200706P1-22	Standard	12.500	2.87	1362.586	1362.586	13.1	4.8	NO	NO	bbX
5	200706P1-23	Standard	12.500	2.87	1453.176	1453.176	14.0	11.8	NO	NO	bbX
6	200706P1-24	Standard	12.500	2.87	1300.054	1300.054	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	2.87	1359.451	1359.451	13.1	4.6	NO	NO	bbX
8	200706P1-26	Standard	12.500	2.87	1462.386	1462.386	14.1	12.5	NO	NO	bbX
9	200706P1-27	Standard	12.500	2.87	1358.583	1358.583	13.1	4.5	NO	NO	bbX
10	200706P1-28	Standard	12.500	2.87	1281.324	1281.324	12.3	-1.4	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 11 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C3-PFBS-RSD
Response Factor: 1.22602
RRF SD: 0.060142, Relative SD: 4.90549
Response type: Internal Std (Ref 102), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	2.87	1430.774	1112.618	16.074	13.1	4.9	NO	NO	bb
2	200706P1-20	Standard	12.500	2.87	1426.593	1135.557	15.704	12.8	2.5	NO	NO	bb
3	200706P1-21	Standard	12.500	2.87	1288.172	1029.912	15.634	12.8	2.0	NO	NO	bb
4	200706P1-22	Standard	12.500	2.87	1362.586	1172.076	14.532	11.9	-5.2	NO	NO	bb
5	200706P1-23	Standard	12.500	2.87	1453.176	1315.580	13.807	11.3	-9.9	NO	NO	bb
6	200706P1-24	Standard	12.500	2.87	1300.054	1066.013	15.244	12.4	-0.5	NO	NO	bb
7	200706P1-25	Standard	12.500	2.87	1359.451	1118.342	15.195	12.4	-0.8	NO	NO	bb
8	200706P1-26	Standard	12.500	2.87	1462.386	1109.793	16.471	13.4	7.5	NO	NO	bb
9	200706P1-27	Standard	12.500	2.87	1358.583	1116.404	15.212	12.4	-0.7	NO	NO	bb
10	200706P1-28	Standard	12.500	2.87	1281.324	1041.527	15.378	12.5	0.3	NO	NO	bb

Compound name: 13C3-HFPO-DA-EIS
Response Factor: 228.261
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	3.59	2996.421		2996.421	13.1	5.0	NO	NO	bbX
2	200706P1-20	Standard	12.500	3.59	3291.715		3291.715	14.4	15.4	NO	NO	bbX
3	200706P1-21	Standard	12.500	3.59	3299.751		3299.751	14.5	15.6	NO	NO	bbX
4	200706P1-22	Standard	12.500	3.59	2848.392		2848.392	12.5	-0.2	NO	NO	bbX
5	200706P1-23	Standard	12.500	3.59	3231.837		3231.837	14.2	13.3	NO	NO	bbX
6	200706P1-24	Standard	12.500	3.59	2853.265		2853.265	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	3.59	3226.841		3226.841	14.1	13.1	NO	NO	bbX
8	200706P1-26	Standard	12.500	3.59	3134.820		3134.820	13.7	9.9	NO	NO	bbX
9	200706P1-27	Standard	12.500	3.59	3186.079		3186.079	14.0	11.7	NO	NO	bbX
10	200706P1-28	Standard	12.500	3.59	3076.034		3076.034	13.5	7.8	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 12 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C3-HFPO-DA-RSD
Response Factor: 0.189164
RRF SD: 0.00929102, Relative SD: 4.91161
Response type: Internal Std (Ref 101), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	3.59	2996.421	15792.443	2.372	12.5	0.3	NO	NO	bb
2	200706P1-20	Standard	12.500	3.59	3291.715	16933.953	2.430	12.8	2.8	NO	NO	bb
3	200706P1-21	Standard	12.500	3.59	3299.751	16418.008	2.512	13.3	6.2	NO	NO	bb
4	200706P1-22	Standard	12.500	3.59	2848.392	16457.064	2.164	11.4	-8.5	NO	NO	bb
5	200706P1-23	Standard	12.500	3.59	3231.837	18353.051	2.201	11.6	-6.9	NO	NO	bb
6	200706P1-24	Standard	12.500	3.59	2853.265	15564.020	2.292	12.1	-3.1	NO	NO	bb
7	200706P1-25	Standard	12.500	3.59	3226.841	17166.877	2.350	12.4	-0.6	NO	NO	bb
8	200706P1-26	Standard	12.500	3.59	3134.820	16410.266	2.388	12.6	1.0	NO	NO	bb
9	200706P1-27	Standard	12.500	3.59	3186.079	16063.282	2.479	13.1	4.9	NO	NO	bb
10	200706P1-28	Standard	12.500	3.59	3076.034	15638.367	2.459	13.0	4.0	NO	NO	bb

Compound name: 13C2-4:2 FTS-EIS
Response Factor: 100.904
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	3.31	1271.797		1271.797	12.6	0.8	NO	NO	bbX
2	200706P1-20	Standard	12.500	3.31	1275.190		1275.190	12.6	1.1	NO	NO	bbX
3	200706P1-21	Standard	12.500	3.31	1294.699		1294.699	12.8	2.6	NO	NO	bbX
4	200706P1-22	Standard	12.500	3.31	1286.646		1286.646	12.8	2.0	NO	NO	bbX
5	200706P1-23	Standard	12.500	3.31	1387.692		1387.692	13.8	10.0	NO	NO	bbX
6	200706P1-24	Standard	12.500	3.31	1261.296		1261.296	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	3.31	1305.578		1305.578	12.9	3.5	NO	NO	bbX
8	200706P1-26	Standard	12.500	3.30	1218.574		1218.574	12.1	-3.4	NO	NO	bbX
9	200706P1-27	Standard	12.500	3.30	1180.548		1180.548	11.7	-6.4	NO	NO	bbX
10	200706P1-28	Standard	12.500	3.30	1181.993		1181.993	11.7	-6.3	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 13 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-4:2 FTS-RSD
Response Factor: 1.13166
RRF SD: 0.0610809, Relative SD: 5.39744
Response type: Internal Std (Ref 102), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	3.31	1271.797	1112.618	14.288	12.6	1.0	NO	NO	bb
2	200706P1-20	Standard	12.500	3.31	1275.190	1135.557	14.037	12.4	-0.8	NO	NO	bb
3	200706P1-21	Standard	12.500	3.31	1294.699	1029.912	15.714	13.9	11.1	NO	NO	bb
4	200706P1-22	Standard	12.500	3.31	1286.646	1172.076	13.722	12.1	-3.0	NO	NO	bb
5	200706P1-23	Standard	12.500	3.31	1387.692	1315.580	13.185	11.7	-6.8	NO	NO	bb
6	200706P1-24	Standard	12.500	3.31	1261.296	1066.013	14.790	13.1	4.6	NO	NO	bb
7	200706P1-25	Standard	12.500	3.31	1305.578	1118.342	14.593	12.9	3.2	NO	NO	bb
8	200706P1-26	Standard	12.500	3.30	1218.574	1109.793	13.725	12.1	-3.0	NO	NO	bb
9	200706P1-27	Standard	12.500	3.30	1180.548	1116.404	13.218	11.7	-6.6	NO	NO	bb
10	200706P1-28	Standard	12.500	3.30	1181.993	1041.527	14.186	12.5	0.3	NO	NO	bb

Compound name: 13C2-PFHxA-EIS
Response Factor: 1090.35
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	3.38	14936.540	14936.540	13.7	9.6	NO	NO	bbX
2	200706P1-20	Standard	12.500	3.39	14827.862	14827.862	13.6	8.8	NO	NO	bbX
3	200706P1-21	Standard	12.500	3.39	14195.111	14195.111	13.0	4.2	NO	NO	bbX
4	200706P1-22	Standard	12.500	3.39	14182.590	14182.590	13.0	4.1	NO	NO	bbX
5	200706P1-23	Standard	12.500	3.39	15680.674	15680.674	14.4	15.1	NO	NO	bbX
6	200706P1-24	Standard	12.500	3.39	13629.407	13629.407	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	3.39	14633.210	14633.210	13.4	7.4	NO	NO	bbX
8	200706P1-26	Standard	12.500	3.39	14554.702	14554.702	13.3	6.8	NO	NO	bbX
9	200706P1-27	Standard	12.500	3.39	14243.385	14243.385	13.1	4.5	NO	NO	bbX
10	200706P1-28	Standard	12.500	3.39	13865.558	13865.558	12.7	1.7	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 14 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-PFHxA-RSD
Response Factor: 0.87906
RRF SD: 0.0268355, Relative SD: 3.05275
Response type: Internal Std (Ref 101), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	3.38	14936.540	15792.443	11.823	13.4	7.6	NO	NO	bb
2	200706P1-20	Standard	12.500	3.39	14827.862	16933.953	10.945	12.5	-0.4	NO	NO	bb
3	200706P1-21	Standard	12.500	3.39	14195.111	16418.008	10.808	12.3	-1.6	NO	NO	bb
4	200706P1-22	Standard	12.500	3.39	14182.590	16457.064	10.772	12.3	-2.0	NO	NO	bb
5	200706P1-23	Standard	12.500	3.39	15680.674	18353.051	10.680	12.1	-2.8	NO	NO	bb
6	200706P1-24	Standard	12.500	3.39	13629.407	15564.020	10.946	12.5	-0.4	NO	NO	bb
7	200706P1-25	Standard	12.500	3.39	14633.210	17166.877	10.655	12.1	-3.0	NO	NO	bb
8	200706P1-26	Standard	12.500	3.39	14554.702	16410.266	11.087	12.6	0.9	NO	NO	bb
9	200706P1-27	Standard	12.500	3.39	14243.385	16063.282	11.084	12.6	0.9	NO	NO	bb
10	200706P1-28	Standard	12.500	3.39	13865.558	15638.367	11.083	12.6	0.9	NO	NO	bb

Compound name: 13C4-PFHpA-EIS
Response Factor: 983.154
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	3.98	12966.955		12966.955	13.2	5.5	NO	NO	bbX
2	200706P1-20	Standard	12.500	3.98	12233.538		12233.538	12.4	-0.5	NO	NO	bbX
3	200706P1-21	Standard	12.500	3.98	12536.285		12536.285	12.8	2.0	NO	NO	bbX
4	200706P1-22	Standard	12.500	3.98	12763.619		12763.619	13.0	3.9	NO	NO	bbX
5	200706P1-23	Standard	12.500	3.98	12970.818		12970.818	13.2	5.5	NO	NO	bbX
6	200706P1-24	Standard	12.500	3.98	12289.430		12289.430	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	3.98	12769.633		12769.633	13.0	3.9	NO	NO	bbX
8	200706P1-26	Standard	12.500	3.98	12943.463		12943.463	13.2	5.3	NO	NO	bbX
9	200706P1-27	Standard	12.500	3.98	11840.771		11840.771	12.0	-3.7	NO	NO	bbX
10	200706P1-28	Standard	12.500	3.98	11650.135		11650.135	11.8	-5.2	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 15 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C4-PFHpA-RSD
Response Factor: 0.75937
RRF SD: 0.03487, Relative SD: 4.59197
Response type: Internal Std (Ref 101), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	3.98	12966.955	15792.443	10.264	13.5	8.1	NO	NO	bb
2	200706P1-20	Standard	12.500	3.98	12233.538	16933.953	9.030	11.9	-4.9	NO	NO	bb
3	200706P1-21	Standard	12.500	3.98	12536.285	16418.008	9.545	12.6	0.6	NO	NO	bb
4	200706P1-22	Standard	12.500	3.98	12763.619	16457.064	9.695	12.8	2.1	NO	NO	bb
5	200706P1-23	Standard	12.500	3.98	12970.818	18353.051	8.834	11.6	-6.9	NO	NO	bb
6	200706P1-24	Standard	12.500	3.98	12289.430	15564.020	9.870	13.0	4.0	NO	NO	bb
7	200706P1-25	Standard	12.500	3.98	12769.633	17166.877	9.298	12.2	-2.0	NO	NO	bb
8	200706P1-26	Standard	12.500	3.98	12943.463	16410.266	9.859	13.0	3.9	NO	NO	bb
9	200706P1-27	Standard	12.500	3.98	11840.771	16063.282	9.214	12.1	-2.9	NO	NO	bb
10	200706P1-28	Standard	12.500	3.98	11650.135	15638.367	9.312	12.3	-1.9	NO	NO	bb

Compound name: 13C3-PFHxS-EIS
Response Factor: 220.112
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	4.13	2847.260	2847.260	12.9	3.5	NO	NO	bbX
2	200706P1-20	Standard	12.500	4.13	2779.479	2779.479	12.6	1.0	NO	NO	bbX
3	200706P1-21	Standard	12.500	4.13	2651.918	2651.918	12.0	-3.6	NO	NO	bbX
4	200706P1-22	Standard	12.500	4.13	2816.980	2816.980	12.8	2.4	NO	NO	bbX
5	200706P1-23	Standard	12.500	4.13	3217.580	3217.580	14.6	16.9	NO	NO	bbX
6	200706P1-24	Standard	12.500	4.13	2751.402	2751.402	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.13	2742.332	2742.332	12.5	-0.3	NO	NO	bbX
8	200706P1-26	Standard	12.500	4.13	2706.095	2706.095	12.3	-1.6	NO	NO	bbX
9	200706P1-27	Standard	12.500	4.13	2614.377	2614.377	11.9	-5.0	NO	NO	bbX
10	200706P1-28	Standard	12.500	4.13	2482.339	2482.339	11.3	-9.8	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C3-PFHxS-RSD
Response Factor: 2.46275
RRF SD: 0.0826774, Relative SD: 3.35712
Response type: Internal Std (Ref 102), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.13	2847.260	1112.618	31.988	13.0	3.9	NO	NO	bb
2	200706P1-20	Standard	12.500	4.13	2779.479	1135.557	30.596	12.4	-0.6	NO	NO	bb
3	200706P1-21	Standard	12.500	4.13	2651.918	1029.912	32.186	13.1	4.6	NO	NO	bb
4	200706P1-22	Standard	12.500	4.13	2816.980	1172.076	30.043	12.2	-2.4	NO	NO	bb
5	200706P1-23	Standard	12.500	4.13	3217.580	1315.580	30.572	12.4	-0.7	NO	NO	bb
6	200706P1-24	Standard	12.500	4.13	2751.402	1066.013	32.263	13.1	4.8	NO	NO	bb
7	200706P1-25	Standard	12.500	4.13	2742.332	1118.342	30.652	12.4	-0.4	NO	NO	bb
8	200706P1-26	Standard	12.500	4.13	2706.095	1109.793	30.480	12.4	-1.0	NO	NO	bb
9	200706P1-27	Standard	12.500	4.13	2614.377	1116.404	29.272	11.9	-4.9	NO	NO	bb
10	200706P1-28	Standard	12.500	4.13	2482.339	1041.527	29.792	12.1	-3.2	NO	NO	bb

Compound name: 13C2-6:2 FTS-EIS
Response Factor: 128.741
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	4.45	1614.767		1614.767	12.5	0.3	NO	NO	bbX
2	200706P1-20	Standard	12.500	4.45	1610.712		1610.712	12.5	0.1	NO	NO	bbX
3	200706P1-21	Standard	12.500	4.45	1404.711		1404.711	10.9	-12.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	4.45	1542.265		1542.265	12.0	-4.2	NO	NO	bbX
5	200706P1-23	Standard	12.500	4.45	1637.135		1637.135	12.7	1.7	NO	NO	bbX
6	200706P1-24	Standard	12.500	4.45	1609.265		1609.265	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.45	1440.831		1440.831	11.2	-10.5	NO	NO	bbX
8	200706P1-26	Standard	12.500	4.45	1590.387		1590.387	12.4	-1.2	NO	NO	bbX
9	200706P1-27	Standard	12.500	4.45	1483.970		1483.970	11.5	-7.8	NO	NO	bbX
10	200706P1-28	Standard	12.500	4.45	1478.616		1478.616	11.5	-8.1	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-6:2 FTS-RSD
Response Factor: 0.472755
RRF SD: 0.0294663, Relative SD: 6.2329
Response type: Internal Std (Ref 105), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.45	1614.767	3112.113	6.486	13.7	9.8	NO	NO	bb
2	200706P1-20	Standard	12.500	4.45	1610.712	3516.579	5.725	12.1	-3.1	NO	NO	bb
3	200706P1-21	Standard	12.500	4.45	1404.711	3143.465	5.586	11.8	-5.5	NO	NO	bb
4	200706P1-22	Standard	12.500	4.45	1542.265	3349.641	5.755	12.2	-2.6	NO	NO	bb
5	200706P1-23	Standard	12.500	4.45	1637.135	3463.788	5.908	12.5	-0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	4.45	1609.265	3222.088	6.243	13.2	5.6	NO	NO	bb
7	200706P1-25	Standard	12.500	4.45	1440.831	3410.395	5.281	11.2	-10.6	NO	NO	bb
8	200706P1-26	Standard	12.500	4.45	1590.387	3432.673	5.791	12.3	-2.0	NO	NO	bb
9	200706P1-27	Standard	12.500	4.45	1483.970	3113.743	5.957	12.6	0.8	NO	NO	bb
10	200706P1-28	Standard	12.500	4.45	1478.616	2905.585	6.361	13.5	7.6	NO	NO	bb

Compound name: 13C5-PFNA-EIS
Response Factor: 1213.14
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	4.94	14827.067	14827.067	12.2	-2.2	NO	NO	bbX
2	200706P1-20	Standard	12.500	4.94	15608.248	15608.248	12.9	2.9	NO	NO	bbX
3	200706P1-21	Standard	12.500	4.94	15269.105	15269.105	12.6	0.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	4.94	14161.967	14161.967	11.7	-6.6	NO	NO	bbX
5	200706P1-23	Standard	12.500	4.94	15977.628	15977.628	13.2	5.4	NO	NO	bbX
6	200706P1-24	Standard	12.500	4.94	15164.249	15164.249	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.94	15860.334	15860.334	13.1	4.6	NO	NO	bbX
8	200706P1-26	Standard	12.500	4.94	15209.911	15209.911	12.5	0.3	NO	NO	bbX
9	200706P1-27	Standard	12.500	4.94	14402.273	14402.273	11.9	-5.0	NO	NO	bbX
10	200706P1-28	Standard	12.500	4.94	13593.457	13593.457	11.2	-10.4	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 18 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C5-PFNA-RSD
Response Factor: 0.941081
RRF SD: 0.0326164, Relative SD: 3.46585
Response type: Internal Std (Ref 104), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.94	14827.067	14826.541	12.500	13.3	6.3	NO	NO	bb
2	200706P1-20	Standard	12.500	4.94	15608.248	16698.430	11.684	12.4	-0.7	NO	NO	bb
3	200706P1-21	Standard	12.500	4.94	15269.105	16406.395	11.634	12.4	-1.1	NO	NO	bb
4	200706P1-22	Standard	12.500	4.94	14161.967	16149.805	10.961	11.6	-6.8	NO	NO	bb
5	200706P1-23	Standard	12.500	4.94	15977.628	17268.395	11.566	12.3	-1.7	NO	NO	bb
6	200706P1-24	Standard	12.500	4.94	15164.249	15863.199	11.949	12.7	1.6	NO	NO	bb
7	200706P1-25	Standard	12.500	4.94	15860.334	16381.950	12.102	12.9	2.9	NO	NO	bb
8	200706P1-26	Standard	12.500	4.94	15209.911	15859.456	11.988	12.7	1.9	NO	NO	bb
9	200706P1-27	Standard	12.500	4.94	14402.273	15578.559	11.556	12.3	-1.8	NO	NO	bb
10	200706P1-28	Standard	12.500	4.94	13593.457	14529.391	11.695	12.4	-0.6	NO	NO	bb

Compound name: 13C8-PFOSA-EIS
Response Factor: 571.374
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	4.99	7350.009	7350.009	12.9	2.9	NO	NO	bbX
2	200706P1-20	Standard	12.500	4.99	7155.503	7155.503	12.5	0.2	NO	NO	bbX
3	200706P1-21	Standard	12.500	4.99	6949.531	6949.531	12.2	-2.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	4.99	7224.200	7224.200	12.6	1.1	NO	NO	bbX
5	200706P1-23	Standard	12.500	4.99	7949.741	7949.741	13.9	11.3	NO	NO	bbX
6	200706P1-24	Standard	12.500	4.98	7142.181	7142.181	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.99	7268.384	7268.384	12.7	1.8	NO	NO	bbX
8	200706P1-26	Standard	12.500	4.99	7226.727	7226.727	12.6	1.2	NO	NO	bbX
9	200706P1-27	Standard	12.500	4.99	6740.430	6740.430	11.8	-5.6	NO	NO	bbX
10	200706P1-28	Standard	12.500	4.98	6362.523	6362.523	11.1	-10.9	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 19 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C8-PFOSA-RSD
Response Factor: 0.486256
RRF SD: 0.0261204, Relative SD: 5.37173
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.99	7350.009	14039.590	6.544	13.5	7.7	NO	NO	bb
2	200706P1-20	Standard	12.500	4.99	7155.503	15869.678	5.636	11.6	-7.3	NO	NO	bb
3	200706P1-21	Standard	12.500	4.99	6949.531	14615.809	5.944	12.2	-2.2	NO	NO	bb
4	200706P1-22	Standard	12.500	4.99	7224.200	14751.563	6.122	12.6	0.7	NO	NO	bb
5	200706P1-23	Standard	12.500	4.99	7949.741	15184.211	6.544	13.5	7.7	NO	NO	bb
6	200706P1-24	Standard	12.500	4.98	7142.181	14215.874	6.280	12.9	3.3	NO	NO	bb
7	200706P1-25	Standard	12.500	4.99	7268.384	15481.095	5.869	12.1	-3.4	NO	NO	bb
8	200706P1-26	Standard	12.500	4.99	7226.727	15001.885	6.022	12.4	-0.9	NO	NO	bb
9	200706P1-27	Standard	12.500	4.99	6740.430	14984.139	5.623	11.6	-7.5	NO	NO	bb
10	200706P1-28	Standard	12.500	4.98	6362.523	12829.642	6.199	12.7	2.0	NO	NO	bb

Compound name: 13C2-PFOA-EIS
Response Factor: 1154.44
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	4.51	14231.127	14231.127	12.3	-1.4	NO	NO	bbX
2	200706P1-20	Standard	12.500	4.51	14540.555	14540.555	12.6	0.8	NO	NO	bbX
3	200706P1-21	Standard	12.500	4.51	14506.504	14506.504	12.6	0.5	NO	NO	bbX
4	200706P1-22	Standard	12.500	4.51	14455.132	14455.132	12.5	0.2	NO	NO	bbX
5	200706P1-23	Standard	12.500	4.51	14986.464	14986.464	13.0	3.9	NO	NO	bbX
6	200706P1-24	Standard	12.500	4.51	14430.539	14430.539	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.51	14123.512	14123.512	12.2	-2.1	NO	NO	bbX
8	200706P1-26	Standard	12.500	4.51	13491.245	13491.245	11.7	-6.5	NO	NO	bbX
9	200706P1-27	Standard	12.500	4.50	13468.371	13468.371	11.7	-6.7	NO	NO	bbX
10	200706P1-28	Standard	12.500	4.50	12462.934	12462.934	10.8	-13.6	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 20 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-PFOA-RSD
Response Factor: 1.09364
RRF SD: 0.0333738, Relative SD: 3.05162
Response type: Internal Std (Ref 103), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.51	14231.127	12519.366	14.209	13.0	3.9	NO	NO	bb
2	200706P1-20	Standard	12.500	4.51	14540.555	13839.076	13.134	12.0	-3.9	NO	NO	bb
3	200706P1-21	Standard	12.500	4.51	14506.504	13084.422	13.859	12.7	1.4	NO	NO	bb
4	200706P1-22	Standard	12.500	4.51	14455.132	13029.019	13.868	12.7	1.4	NO	NO	bb
5	200706P1-23	Standard	12.500	4.51	14986.464	14240.478	13.155	12.0	-3.8	NO	NO	bb
6	200706P1-24	Standard	12.500	4.51	14430.539	13030.224	13.843	12.7	1.3	NO	NO	bb
7	200706P1-25	Standard	12.500	4.51	14123.512	13296.607	13.277	12.1	-2.9	NO	NO	bb
8	200706P1-26	Standard	12.500	4.51	13491.245	12409.222	13.590	12.4	-0.6	NO	NO	bb
9	200706P1-27	Standard	12.500	4.50	13468.371	12509.283	13.458	12.3	-1.6	NO	NO	bb
10	200706P1-28	Standard	12.500	4.50	12462.934	10884.975	14.312	13.1	4.7	NO	NO	bb

Compound name: 13C8-PFOS-EIS
Response Factor: 225.51
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.02	2884.344	2884.344	12.8	2.3	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.02	2845.779	2845.779	12.6	1.0	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.02	3008.333	3008.333	13.3	6.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.02	2875.965	2875.965	12.8	2.0	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.02	3118.928	3118.928	13.8	10.6	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.02	2818.869	2818.869	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.02	2950.445	2950.445	13.1	4.7	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.02	2787.149	2787.149	12.4	-1.1	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.02	2663.154	2663.154	11.8	-5.5	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.02	2577.664	2577.664	11.4	-8.6	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 21 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C8-PFOS-RSD
Response Factor: 0.874647
RRF SD: 0.0462578, Relative SD: 5.28874
Response type: Internal Std (Ref 105), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.02	2884.344	3112.113	11.585	13.2	6.0	NO	NO	bb
2	200706P1-20	Standard	12.500	5.02	2845.779	3516.579	10.116	11.6	-7.5	NO	NO	bb
3	200706P1-21	Standard	12.500	5.02	3008.333	3143.465	11.963	13.7	9.4	NO	NO	bb
4	200706P1-22	Standard	12.500	5.02	2875.965	3349.641	10.732	12.3	-1.8	NO	NO	bb
5	200706P1-23	Standard	12.500	5.02	3118.928	3463.788	11.255	12.9	2.9	NO	NO	bb
6	200706P1-24	Standard	12.500	5.02	2818.869	3222.088	10.936	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.02	2950.445	3410.395	10.814	12.4	-1.1	NO	NO	bb
8	200706P1-26	Standard	12.500	5.02	2787.149	3432.673	10.149	11.6	-7.2	NO	NO	bb
9	200706P1-27	Standard	12.500	5.02	2663.154	3113.743	10.691	12.2	-2.2	NO	NO	bb
10	200706P1-28	Standard	12.500	5.02	2577.664	2905.585	11.089	12.7	1.4	NO	NO	bb

Compound name: 13C2-PFDA-EIS
Response Factor: 1491.47
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.31	18137.861	18137.861	12.2	-2.7	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.31	19338.936	19338.936	13.0	3.7	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.31	18429.492	18429.492	12.4	-1.1	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.31	19687.527	19687.527	13.2	5.6	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.31	19663.701	19663.701	13.2	5.5	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.31	18643.387	18643.387	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.31	19964.771	19964.771	13.4	7.1	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.31	19861.670	19861.670	13.3	6.5	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.31	19146.473	19146.473	12.8	2.7	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.31	18310.025	18310.025	12.3	-1.8	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 22 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-PFDA-RSD
Response Factor: 1.25394
RRF SD: 0.0652637, Relative SD: 5.20471
Response type: Internal Std (Ref 106), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.31	18137.861	14024.693	16.166	12.9	3.1	NO	NO	bb
2	200706P1-20	Standard	12.500	5.31	19338.936	16270.641	14.857	11.8	-5.2	NO	NO	bb
3	200706P1-21	Standard	12.500	5.31	18429.492	15005.021	15.353	12.2	-2.1	NO	NO	bb
4	200706P1-22	Standard	12.500	5.31	19687.527	15649.067	15.726	12.5	0.3	NO	NO	bb
5	200706P1-23	Standard	12.500	5.31	19663.701	16678.373	14.737	11.8	-6.0	NO	NO	bb
6	200706P1-24	Standard	12.500	5.31	18643.387	13685.886	17.028	13.6	8.6	NO	NO	bb
7	200706P1-25	Standard	12.500	5.31	19964.771	15985.261	15.612	12.5	-0.4	NO	NO	bb
8	200706P1-26	Standard	12.500	5.31	19861.670	16564.369	14.988	12.0	-4.4	NO	NO	bb
9	200706P1-27	Standard	12.500	5.31	19146.473	15629.832	15.312	12.2	-2.3	NO	NO	bb
10	200706P1-28	Standard	12.500	5.31	18310.025	13493.237	16.962	13.5	8.2	NO	NO	bb

Compound name: 13C2-8:2 FTS-EIS
Response Factor: 110.353
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.29	1541.506		1541.506	14.0	11.8	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.29	1580.063		1580.063	14.3	14.5	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.29	1512.862		1512.862	13.7	9.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.29	1542.955		1542.955	14.0	11.9	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.29	1469.703		1469.703	13.3	6.5	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.29	1379.408		1379.408	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.29	1477.570		1477.570	13.4	7.1	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.29	1351.704		1351.704	12.2	-2.0	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.29	1433.317		1433.317	13.0	3.9	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.29	1567.050		1567.050	14.2	13.6	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-8:2 FTS-RSD
Response Factor: 0.456564
RRF SD: 0.0413402, Relative SD: 9.05463
Response type: Internal Std (Ref 105), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.29	1541.506	3112.113	6.192	13.6	8.5	NO	NO	bb
2	200706P1-20	Standard	12.500	5.29	1580.063	3516.579	5.616	12.3	-1.6	NO	NO	bb
3	200706P1-21	Standard	12.500	5.29	1512.862	3143.465	6.016	13.2	5.4	NO	NO	bb
4	200706P1-22	Standard	12.500	5.29	1542.955	3349.641	5.758	12.6	0.9	NO	NO	bb
5	200706P1-23	Standard	12.500	5.29	1469.703	3463.788	5.304	11.6	-7.1	NO	NO	bb
6	200706P1-24	Standard	12.500	5.29	1379.408	3222.088	5.351	11.7	-6.2	NO	NO	bb
7	200706P1-25	Standard	12.500	5.29	1477.570	3410.395	5.416	11.9	-5.1	NO	NO	bb
8	200706P1-26	Standard	12.500	5.29	1351.704	3432.673	4.922	10.8	-13.8	NO	NO	bb
9	200706P1-27	Standard	12.500	5.29	1433.317	3113.743	5.754	12.6	0.8	NO	NO	bb
10	200706P1-28	Standard	12.500	5.29	1567.050	2905.585	6.742	14.8	18.1	NO	NO	bb

Compound name: d3-N-MeFOSAA-EIS
Response Factor: 331.163
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.46	4408.401	4408.401	13.3	6.5	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.46	4346.208	4346.208	13.1	5.0	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.46	4230.765	4230.765	12.8	2.2	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.46	4359.749	4359.749	13.2	5.3	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.46	4489.936	4489.936	13.6	8.5	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.45	4139.533	4139.533	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.46	4321.417	4321.417	13.0	4.4	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.46	4277.929	4277.929	12.9	3.3	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.45	4146.951	4146.951	12.5	0.2	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.45	4234.389	4234.389	12.8	2.3	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 24 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: d3-N-MeFOSAA-RSD
Response Factor: 0.293087
RRF SD: 0.0174045, Relative SD: 5.93836
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.46	4408.401	14039.590	3.925	13.4	7.1	NO	NO	bb
2	200706P1-20	Standard	12.500	5.46	4346.208	15869.678	3.423	11.7	-6.6	NO	NO	bb
3	200706P1-21	Standard	12.500	5.46	4230.765	14615.809	3.618	12.3	-1.2	NO	NO	bb
4	200706P1-22	Standard	12.500	5.46	4359.749	14751.563	3.694	12.6	0.8	NO	NO	bb
5	200706P1-23	Standard	12.500	5.46	4489.936	15184.211	3.696	12.6	0.9	NO	NO	bb
6	200706P1-24	Standard	12.500	5.45	4139.533	14215.874	3.640	12.4	-0.6	NO	NO	bb
7	200706P1-25	Standard	12.500	5.46	4321.417	15481.095	3.489	11.9	-4.8	NO	NO	bb
8	200706P1-26	Standard	12.500	5.46	4277.929	15001.885	3.564	12.2	-2.7	NO	NO	bb
9	200706P1-27	Standard	12.500	5.45	4146.951	14984.139	3.459	11.8	-5.6	NO	NO	bb
10	200706P1-28	Standard	12.500	5.45	4234.389	12829.642	4.126	14.1	12.6	NO	NO	bb

Compound name: 13C2-PFUdA-EIS
Response Factor: 1581.34
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.63	18683.264		18683.264	11.8	-5.5	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.63	19852.086		19852.086	12.6	0.4	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.63	18480.219		18480.219	11.7	-6.5	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.63	19143.811		19143.811	12.1	-3.2	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.63	20906.857		20906.857	13.2	5.8	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.63	19766.689		19766.689	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.63	19028.625		19028.625	12.0	-3.7	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.63	18950.932		18950.932	12.0	-4.1	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.63	18632.748		18632.748	11.8	-5.7	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.63	16795.816		16795.816	10.6	-15.0	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 25 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-PFUdA-RSD
Response Factor: 1.29562
RRF SD: 0.0559514, Relative SD: 4.31849
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.63	18683.264	14039.590	16.634	12.8	2.7	NO	NO	bb
2	200706P1-20	Standard	12.500	5.63	19852.086	15869.678	15.637	12.1	-3.4	NO	NO	bb
3	200706P1-21	Standard	12.500	5.63	18480.219	14615.809	15.805	12.2	-2.4	NO	NO	bb
4	200706P1-22	Standard	12.500	5.63	19143.811	14751.563	16.222	12.5	0.2	NO	NO	bb
5	200706P1-23	Standard	12.500	5.63	20906.857	15184.211	17.211	13.3	6.3	NO	NO	bb
6	200706P1-24	Standard	12.500	5.63	19766.689	14215.874	17.381	13.4	7.3	NO	NO	bb
7	200706P1-25	Standard	12.500	5.63	19028.625	15481.095	15.364	11.9	-5.1	NO	NO	bb
8	200706P1-26	Standard	12.500	5.63	18950.932	15001.885	15.790	12.2	-2.5	NO	NO	bb
9	200706P1-27	Standard	12.500	5.63	18632.748	14984.139	15.544	12.0	-4.0	NO	NO	bb
10	200706P1-28	Standard	12.500	5.63	16795.816	12829.642	16.364	12.6	1.0	NO	NO	bb

Compound name: d5-N-EtFOSAA-EIS
Response Factor: 313.941
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.61	3974.848		3974.848	12.7	1.3	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.61	4387.888		4387.888	14.0	11.8	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.61	4370.321		4370.321	13.9	11.4	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.61	4172.910		4172.910	13.3	6.3	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.61	4350.434		4350.434	13.9	10.9	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.61	3924.268		3924.268	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.61	4351.004		4351.004	13.9	10.9	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.61	4188.651		4188.651	13.3	6.7	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.60	4036.783		4036.783	12.9	2.9	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.60	3787.376		3787.376	12.1	-3.5	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 26 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: d5-N-EtFOSAA-RSD
Response Factor: 0.282893
RRF SD: 0.00889003, Relative SD: 3.14254
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.61	3974.848	14039.590	3.539	12.5	0.1	NO	NO	bb
2	200706P1-20	Standard	12.500	5.61	4387.888	15869.678	3.456	12.2	-2.3	NO	NO	bb
3	200706P1-21	Standard	12.500	5.61	4370.321	14615.809	3.738	13.2	5.7	NO	NO	bb
4	200706P1-22	Standard	12.500	5.61	4172.910	14751.563	3.536	12.5	-0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	5.61	4350.434	15184.211	3.581	12.7	1.3	NO	NO	bb
6	200706P1-24	Standard	12.500	5.61	3924.268	14215.874	3.451	12.2	-2.4	NO	NO	bb
7	200706P1-25	Standard	12.500	5.61	4351.004	15481.095	3.513	12.4	-0.7	NO	NO	bb
8	200706P1-26	Standard	12.500	5.61	4188.651	15001.885	3.490	12.3	-1.3	NO	NO	bb
9	200706P1-27	Standard	12.500	5.60	4036.783	14984.139	3.368	11.9	-4.8	NO	NO	bb
10	200706P1-28	Standard	12.500	5.60	3787.376	12829.642	3.690	13.0	4.4	NO	NO	bb

Compound name: 13C2-PFDoA-EIS
Response Factor: 1868.51
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.90	22810.775	22810.775	12.2	-2.3	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.90	25244.645	25244.645	13.5	8.1	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.90	24211.764	24211.764	13.0	3.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.90	24340.117	24340.117	13.0	4.2	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.90	25408.879	25408.879	13.6	8.8	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.90	23356.371	23356.371	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.90	23355.100	23355.100	12.5	-0.0	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.90	24096.184	24096.184	12.9	3.2	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.90	22303.783	22303.783	11.9	-4.5	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.90	21320.014	21320.014	11.4	-8.7	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-PFDoA-RSD
Response Factor: 1.54998
RRF SD: 0.0870364, Relative SD: 5.61531
Response type: Internal Std (Ref 106), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.90	22810.775	14024.693	20.331	13.1	4.9	NO	NO	bb
2	200706P1-20	Standard	12.500	5.90	25244.645	16270.641	19.394	12.5	0.1	NO	NO	bb
3	200706P1-21	Standard	12.500	5.90	24211.764	15005.021	20.170	13.0	4.1	NO	NO	bb
4	200706P1-22	Standard	12.500	5.90	24340.117	15649.067	19.442	12.5	0.3	NO	NO	bb
5	200706P1-23	Standard	12.500	5.90	25408.879	16678.373	19.043	12.3	-1.7	NO	NO	bb
6	200706P1-24	Standard	12.500	5.90	23356.371	13685.886	21.333	13.8	10.1	NO	NO	bb
7	200706P1-25	Standard	12.500	5.90	23355.100	15985.261	18.263	11.8	-5.7	NO	NO	bb
8	200706P1-26	Standard	12.500	5.90	24096.184	16564.369	18.184	11.7	-6.1	NO	NO	bb
9	200706P1-27	Standard	12.500	5.90	22303.783	15629.832	17.838	11.5	-7.9	NO	NO	bb
10	200706P1-28	Standard	12.500	5.90	21320.014	13493.237	19.751	12.7	1.9	NO	NO	bb

Compound name: 13C2-10:2 FTS-EIS
Response Factor: 108.637
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.89	1299.524	1299.524	12.0	-4.3	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.89	1409.232	1409.232	13.0	3.8	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.89	1381.627	1381.627	12.7	1.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.89	1355.605	1355.605	12.5	-0.2	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.89	1274.760	1274.760	11.7	-6.1	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.89	1357.960	1357.960	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.89	1263.989	1263.989	11.6	-6.9	NO	NO	MMX
8	200706P1-26	Standard	12.500	5.89	1154.229	1154.229	10.6	-15.0	NO	NO	MMX
9	200706P1-27	Standard	12.500	5.89	1113.270	1113.270	10.2	-18.0	NO	NO	MMX
10	200706P1-28	Standard	12.500	5.89	949.242	949.242	8.7	-30.1	YES	NO	MMX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 28 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-10:2 FTS-RSD
Response Factor: 0.383921
RRF SD: 0.038237, Relative SD: 9.95958
Response type: Internal Std (Ref 105), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.89	1299.524	3112.113	5.220	13.6	8.8	NO	NO	bb
2	200706P1-20	Standard	12.500	5.89	1409.232	3516.579	5.009	13.0	4.4	NO	NO	bb
3	200706P1-21	Standard	12.500	5.89	1381.627	3143.465	5.494	14.3	14.5	NO	NO	bb
4	200706P1-22	Standard	12.500	5.89	1355.605	3349.641	5.059	13.2	5.4	NO	NO	bb
5	200706P1-23	Standard	12.500	5.89	1274.760	3463.788	4.600	12.0	-4.1	NO	NO	bb
6	200706P1-24	Standard	12.500	5.89	1357.960	3222.088	5.268	13.7	9.8	NO	NO	bb
7	200706P1-25	Standard	12.500	5.89	1250.593	3410.395	4.584	11.9	-4.5	NO	NO	bb
8	200706P1-26	Standard	12.500	5.89	1157.615	3432.673	4.215	11.0	-12.2	NO	NO	MM
9	200706P1-27	Standard	12.500	5.89	1113.269	3113.743	4.469	11.6	-6.9	NO	NO	MM
10	200706P1-28	Standard	12.500	5.89	946.437	2905.585	4.072	10.6	-15.2	NO	NO	db

Compound name: d3-N-MeFOSA-EIS
Response Factor: 138.386
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	149.200	5.84	20355.828	20355.828	147.1	-1.4	NO	NO	bbX
2	200706P1-20	Standard	149.200	5.84	20279.811	20279.811	146.5	-1.8	NO	NO	bbX
3	200706P1-21	Standard	149.200	5.84	20965.770	20965.770	151.5	1.5	NO	NO	bbX
4	200706P1-22	Standard	149.200	5.84	20813.816	20813.816	150.4	0.8	NO	NO	bbX
5	200706P1-23	Standard	149.200	5.84	21672.008	21672.008	156.6	5.0	NO	NO	bbX
6	200706P1-24	Standard	149.200	5.84	20647.168	20647.168	149.2	0.0	NO	NO	bb
7	200706P1-25	Standard	149.200	5.84	21174.100	21174.100	153.0	2.6	NO	NO	bbX
8	200706P1-26	Standard	149.200	5.84	20387.346	20387.346	147.3	-1.3	NO	NO	bbX
9	200706P1-27	Standard	149.200	5.84	18792.607	18792.607	135.8	-9.0	NO	NO	bbX
10	200706P1-28	Standard	149.200	5.84	17789.584	17789.584	128.6	-13.8	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: d3-N-MeFOSA-RSD
Response Factor: 0.115787
RRF SD: 0.00580031, Relative SD: 5.00945
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	149.200	5.84	20355.828	14039.590	18.124	156.5	4.9	NO	NO	bb
2	200706P1-20	Standard	149.200	5.84	20279.811	15869.678	15.974	138.0	-7.5	NO	NO	bb
3	200706P1-21	Standard	149.200	5.84	20965.770	14615.809	17.931	154.9	3.8	NO	NO	bb
4	200706P1-22	Standard	149.200	5.84	20813.816	14751.563	17.637	152.3	2.1	NO	NO	bb
5	200706P1-23	Standard	149.200	5.84	21672.008	15184.211	17.841	154.1	3.3	NO	NO	bb
6	200706P1-24	Standard	149.200	5.84	20647.168	14215.874	18.155	156.8	5.1	NO	NO	bb
7	200706P1-25	Standard	149.200	5.84	21174.100	15481.095	17.097	147.7	-1.0	NO	NO	bb
8	200706P1-26	Standard	149.200	5.84	20387.346	15001.885	16.987	146.7	-1.7	NO	NO	bb
9	200706P1-27	Standard	149.200	5.84	18792.607	14984.139	15.677	135.4	-9.3	NO	NO	bb
10	200706P1-28	Standard	149.200	5.84	17789.584	12829.642	17.333	149.7	0.3	NO	NO	bb

Compound name: 13C2-PFTeDA-EIS
Response Factor: 1905.82
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	6.34	23296.811	23296.811	12.2	-2.2	NO	NO	bbX
2	200706P1-20	Standard	12.500	6.34	25347.914	25347.914	13.3	6.4	NO	NO	bbX
3	200706P1-21	Standard	12.500	6.34	24321.422	24321.422	12.8	2.1	NO	NO	bbX
4	200706P1-22	Standard	12.500	6.34	23906.566	23906.566	12.5	0.4	NO	NO	bbX
5	200706P1-23	Standard	12.500	6.33	25577.697	25577.697	13.4	7.4	NO	NO	bbX
6	200706P1-24	Standard	12.500	6.33	23822.789	23822.789	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	6.34	24780.746	24780.746	13.0	4.0	NO	NO	bbX
8	200706P1-26	Standard	12.500	6.34	23560.986	23560.986	12.4	-1.1	NO	NO	bbX
9	200706P1-27	Standard	12.500	6.33	23364.986	23364.986	12.3	-1.9	NO	NO	bbX
10	200706P1-28	Standard	12.500	6.33	21788.924	21788.924	11.4	-8.5	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-PFTeDA-RSD
Response Factor: 1.63304
RRF SD: 0.0496816, Relative SD: 3.04227
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	6.34	23296.811	14039.590	20.742	12.7	1.6	NO	NO	bb
2	200706P1-20	Standard	12.500	6.34	25347.914	15869.678	19.966	12.2	-2.2	NO	NO	bb
3	200706P1-21	Standard	12.500	6.34	24321.422	14615.809	20.801	12.7	1.9	NO	NO	bb
4	200706P1-22	Standard	12.500	6.34	23906.566	14751.563	20.258	12.4	-0.8	NO	NO	bb
5	200706P1-23	Standard	12.500	6.33	25577.697	15184.211	21.056	12.9	3.2	NO	NO	bb
6	200706P1-24	Standard	12.500	6.33	23822.789	14215.874	20.947	12.8	2.6	NO	NO	bb
7	200706P1-25	Standard	12.500	6.34	24780.746	15481.095	20.009	12.3	-2.0	NO	NO	bb
8	200706P1-26	Standard	12.500	6.34	23560.986	15001.885	19.632	12.0	-3.8	NO	NO	bb
9	200706P1-27	Standard	12.500	6.33	23364.986	14984.139	19.491	11.9	-4.5	NO	NO	bb
10	200706P1-28	Standard	12.500	6.33	21788.924	12829.642	21.229	13.0	4.0	NO	NO	bb

Compound name: d5-N-ETFOSA-EIS
Response Factor: 155.235
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	149.200	6.21	23217.701	23217.701	149.6	0.2	NO	NO	bbX
2	200706P1-20	Standard	149.200	6.21	23650.156	23650.156	152.4	2.1	NO	NO	bbX
3	200706P1-21	Standard	149.200	6.21	23147.498	23147.498	149.1	-0.1	NO	NO	bbX
4	200706P1-22	Standard	149.200	6.21	23462.338	23462.338	151.1	1.3	NO	NO	bbX
5	200706P1-23	Standard	149.200	6.21	24914.057	24914.057	160.5	7.6	NO	NO	bbX
6	200706P1-24	Standard	149.200	6.21	23161.109	23161.109	149.2	0.0	NO	NO	bb
7	200706P1-25	Standard	149.200	6.21	23538.484	23538.484	151.6	1.6	NO	NO	bbX
8	200706P1-26	Standard	149.200	6.21	22448.846	22448.846	144.6	-3.1	NO	NO	bbX
9	200706P1-27	Standard	149.200	6.21	21512.914	21512.914	138.6	-7.1	NO	NO	bbX
10	200706P1-28	Standard	149.200	6.21	19492.205	19492.205	125.6	-15.8	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 31 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: d5-N-ETFOSA-RSD
Response Factor: 0.130363
RRF SD: 0.0061827, Relative SD: 4.74267
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	149.200	6.21	23217.701	14039.590	20.672	158.6	6.3	NO	NO	bb
2	200706P1-20	Standard	149.200	6.21	23650.156	15869.678	18.628	142.9	-4.2	NO	NO	bb
3	200706P1-21	Standard	149.200	6.21	23147.498	14615.809	19.797	151.9	1.8	NO	NO	bb
4	200706P1-22	Standard	149.200	6.21	23462.338	14751.563	19.881	152.5	2.2	NO	NO	bb
5	200706P1-23	Standard	149.200	6.21	24914.057	15184.211	20.510	157.3	5.4	NO	NO	bb
6	200706P1-24	Standard	149.200	6.21	23161.109	14215.874	20.366	156.2	4.7	NO	NO	bb
7	200706P1-25	Standard	149.200	6.21	23538.484	15481.095	19.006	145.8	-2.3	NO	NO	bb
8	200706P1-26	Standard	149.200	6.21	22448.846	15001.885	18.705	143.5	-3.8	NO	NO	bb
9	200706P1-27	Standard	149.200	6.21	21512.914	14984.139	17.946	137.7	-7.7	NO	NO	bb
10	200706P1-28	Standard	149.200	6.21	19492.205	12829.642	18.991	145.7	-2.4	NO	NO	bb

Compound name: 13C2-PFHxDA-EIS
Response Factor: 2109.6
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	6.63	25406.275	25406.275	12.0	-3.7	NO	NO	bbX
2	200706P1-20	Standard	12.500	6.63	27130.332	27130.332	12.9	2.9	NO	NO	bbX
3	200706P1-21	Standard	12.500	6.63	26103.717	26103.717	12.4	-1.0	NO	NO	bbX
4	200706P1-22	Standard	12.500	6.63	26556.000	26556.000	12.6	0.7	NO	NO	bbX
5	200706P1-23	Standard	12.500	6.63	27161.623	27161.623	12.9	3.0	NO	NO	bbX
6	200706P1-24	Standard	12.500	6.63	26370.029	26370.029	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	6.63	26053.225	26053.225	12.3	-1.2	NO	NO	bbX
8	200706P1-26	Standard	12.500	6.63	26467.854	26467.854	12.5	0.4	NO	NO	bbX
9	200706P1-27	Standard	12.500	6.63	25481.225	25481.225	12.1	-3.4	NO	NO	bbX
10	200706P1-28	Standard	12.500	6.63	23953.805	23953.805	11.4	-9.2	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 32 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-PFHxDA-RSD
Response Factor: 1.7764
RRF SD: 0.0627321, Relative SD: 3.53142
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	6.63	25406.275	14039.590	22.620	12.7	1.9	NO	NO	bb
2	200706P1-20	Standard	12.500	6.63	27130.332	15869.678	21.370	12.0	-3.8	NO	NO	bb
3	200706P1-21	Standard	12.500	6.63	26103.717	14615.809	22.325	12.6	0.5	NO	NO	bb
4	200706P1-22	Standard	12.500	6.63	26556.000	14751.563	22.503	12.7	1.3	NO	NO	bb
5	200706P1-23	Standard	12.500	6.63	27161.623	15184.211	22.360	12.6	0.7	NO	NO	bb
6	200706P1-24	Standard	12.500	6.63	26370.029	14215.874	23.187	13.1	4.4	NO	NO	bb
7	200706P1-25	Standard	12.500	6.63	26053.225	15481.095	21.036	11.8	-5.3	NO	NO	bb
8	200706P1-26	Standard	12.500	6.63	26467.854	15001.885	22.054	12.4	-0.7	NO	NO	bb
9	200706P1-27	Standard	12.500	6.63	25481.225	14984.139	21.257	12.0	-4.3	NO	NO	bb
10	200706P1-28	Standard	12.500	6.63	23953.805	12829.642	23.338	13.1	5.1	NO	NO	bb

Compound name: d7-N-MeFOSE-EIS
Response Factor: 134.737
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	149.200	6.33	20481.053	20481.053	152.0	1.9	NO	NO	bbX
2	200706P1-20	Standard	149.200	6.33	20843.604	20843.604	154.7	3.7	NO	NO	bbX
3	200706P1-21	Standard	149.200	6.33	20414.760	20414.760	151.5	1.6	NO	NO	bbX
4	200706P1-22	Standard	149.200	6.33	20055.193	20055.193	148.8	-0.2	NO	NO	bbX
5	200706P1-23	Standard	149.200	6.33	22627.299	22627.299	167.9	12.6	NO	NO	bbX
6	200706P1-24	Standard	149.200	6.33	20102.832	20102.832	149.2	0.0	NO	NO	bb
7	200706P1-25	Standard	149.200	6.34	20711.023	20711.023	153.7	3.0	NO	NO	bbX
8	200706P1-26	Standard	149.200	6.34	20885.109	20885.109	155.0	3.9	NO	NO	bbX
9	200706P1-27	Standard	149.200	6.34	20707.771	20707.771	153.7	3.0	NO	NO	bbX
10	200706P1-28	Standard	149.200	6.33	19318.008	19318.008	143.4	-3.9	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: d7-N-MeFOSE-RSD
Response Factor: 0.118964
RRF SD: 0.00547466, Relative SD: 4.60196
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	149.200	6.33	20625.156	14039.590	18.363	154.4	3.5	NO	NO	MM
2	200706P1-20	Standard	149.200	6.33	21038.611	15869.678	16.571	139.3	-6.6	NO	NO	MM
3	200706P1-21	Standard	149.200	6.33	20577.102	14615.809	17.598	147.9	-0.9	NO	NO	MM
4	200706P1-22	Standard	149.200	6.33	20244.988	14751.563	17.155	144.2	-3.3	NO	NO	MM
5	200706P1-23	Standard	149.200	6.33	22883.443	15184.211	18.838	158.4	6.1	NO	NO	MM
6	200706P1-24	Standard	149.200	6.33	20361.439	14215.874	17.904	150.5	0.9	NO	NO	MM
7	200706P1-25	Standard	149.200	6.34	20966.053	15481.095	16.929	142.3	-4.6	NO	NO	MM
8	200706P1-26	Standard	149.200	6.34	21032.818	15001.885	17.525	147.3	-1.3	NO	NO	MM
9	200706P1-27	Standard	149.200	6.34	20971.070	14984.139	17.494	147.1	-1.4	NO	NO	MM
10	200706P1-28	Standard	149.200	6.33	19619.432	12829.642	19.115	160.7	7.7	NO	NO	MM

Compound name: d9-N-EtFOSE-EIS
Response Factor: 148.701
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	149.200	6.48	22385.490	22385.490	150.5	0.9	NO	NO	bbX
2	200706P1-20	Standard	149.200	6.48	22515.381	22515.381	151.4	1.5	NO	NO	bbX
3	200706P1-21	Standard	149.200	6.48	22580.791	22580.791	151.9	1.8	NO	NO	bbX
4	200706P1-22	Standard	149.200	6.48	21905.441	21905.441	147.3	-1.3	NO	NO	bbX
5	200706P1-23	Standard	149.200	6.48	23437.969	23437.969	157.6	5.6	NO	NO	bbX
6	200706P1-24	Standard	149.200	6.48	22186.262	22186.262	149.2	0.0	NO	NO	bb
7	200706P1-25	Standard	149.200	6.48	22694.074	22694.074	152.6	2.3	NO	NO	bbX
8	200706P1-26	Standard	149.200	6.48	23318.145	23318.145	156.8	5.1	NO	NO	bbX
9	200706P1-27	Standard	149.200	6.48	23270.990	23270.990	156.5	4.9	NO	NO	bbX
10	200706P1-28	Standard	149.200	6.48	23386.736	23386.736	157.3	5.4	NO	NO	bbX

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 34 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: d9-N-EtFOSE-RSD
Response Factor: 0.131719
RRF SD: 0.00914172, Relative SD: 6.94031
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	149.200	6.48	22589.941	14039.590	20.113	152.7	2.3	NO	NO	MM
2	200706P1-20	Standard	149.200	6.48	22768.420	15869.678	17.934	136.2	-8.7	NO	NO	MM
3	200706P1-21	Standard	149.200	6.48	22925.510	14615.809	19.607	148.9	-0.2	NO	NO	MM
4	200706P1-22	Standard	149.200	6.48	22139.848	14751.563	18.761	142.4	-4.5	NO	NO	MM
5	200706P1-23	Standard	149.200	6.48	23738.180	15184.211	19.542	148.4	-0.6	NO	NO	MM
6	200706P1-24	Standard	149.200	6.48	22478.828	14215.874	19.766	150.1	0.6	NO	NO	MM
7	200706P1-25	Standard	149.200	6.48	22952.611	15481.095	18.533	140.7	-5.7	NO	NO	MM
8	200706P1-26	Standard	149.200	6.48	23540.660	15001.885	19.615	148.9	-0.2	NO	NO	MM
9	200706P1-27	Standard	149.200	6.48	23510.197	14984.139	19.613	148.9	-0.2	NO	NO	MM
10	200706P1-28	Standard	149.200	6.48	23651.098	12829.642	23.043	174.9	17.3	NO	NO	MM

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

1	200706P1-19	Standard	12.500	1.62	9571.630	9571.630	12.500	12.5	0.0	NO	NO	MM
2	200706P1-20	Standard	12.500	1.62	10495.767	10495.767	12.500	12.5	0.0	NO	NO	MM
3	200706P1-21	Standard	12.500	1.62	10322.609	10322.609	12.500	12.5	0.0	NO	NO	MM
4	200706P1-22	Standard	12.500	1.62	10427.793	10427.793	12.500	12.5	0.0	NO	NO	MM
5	200706P1-23	Standard	12.500	1.62	10992.993	10992.993	12.500	12.5	0.0	NO	NO	MM
6	200706P1-24	Standard	12.500	1.62	10121.277	10121.277	12.500	12.5	0.0	NO	NO	MM
7	200706P1-25	Standard	12.500	1.62	10409.653	10409.653	12.500	12.5	0.0	NO	NO	MM
8	200706P1-26	Standard	12.500	1.62	10665.174	10665.174	12.500	12.5	0.0	NO	NO	MM
9	200706P1-27	Standard	12.500	1.62	10876.274	10876.274	12.500	12.5	0.0	NO	NO	MM
10	200706P1-28	Standard	12.500	1.62	10864.321	10864.321	12.500	12.5	0.0	NO	NO	MM

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 35 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C2-FOUEA-EIS
Response Factor: 1951.29
RRF SD: 0, Relative SD: 0
Response type: External Std, Area
Curve type: RF

1	200706P1-19	Standard	12.500	5.01	23514.066	23514.066	12.1	-3.6	NO	NO	bbX
2	200706P1-20	Standard	12.500	5.01	25451.172	25451.172	13.0	4.3	NO	NO	bbX
3	200706P1-21	Standard	12.500	5.01	23973.270	23973.270	12.3	-1.7	NO	NO	bbX
4	200706P1-22	Standard	12.500	5.01	25472.313	25472.313	13.1	4.4	NO	NO	bbX
5	200706P1-23	Standard	12.500	5.01	26638.104	26638.104	13.7	9.2	NO	NO	bbX
6	200706P1-24	Standard	12.500	5.00	24391.166	24391.166	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.01	25232.289	25232.289	12.9	3.4	NO	NO	bbX
8	200706P1-26	Standard	12.500	5.01	22912.313	22912.313	11.7	-6.1	NO	NO	bbX
9	200706P1-27	Standard	12.500	5.00	23091.492	23091.492	11.8	-5.3	NO	NO	bbX
10	200706P1-28	Standard	12.500	5.00	19672.584	19672.584	10.1	-19.3	NO	NO	bbX

Compound name: 13C5-PFHxA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 101), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	3.38	15792.443	15792.443	12.500	12.5	0.0	NO	NO	bb
2	200706P1-20	Standard	12.500	3.39	16933.953	16933.953	12.500	12.5	0.0	NO	NO	bb
3	200706P1-21	Standard	12.500	3.39	16418.008	16418.008	12.500	12.5	0.0	NO	NO	bb
4	200706P1-22	Standard	12.500	3.39	16457.064	16457.064	12.500	12.5	0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	3.39	18353.051	18353.051	12.500	12.5	0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	3.39	15564.020	15564.020	12.500	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	3.39	17166.877	17166.877	12.500	12.5	0.0	NO	NO	bb
8	200706P1-26	Standard	12.500	3.39	16410.266	16410.266	12.500	12.5	0.0	NO	NO	bb
9	200706P1-27	Standard	12.500	3.39	16063.282	16063.282	12.500	12.5	0.0	NO	NO	bb
10	200706P1-28	Standard	12.500	3.39	15638.367	15638.367	12.500	12.5	0.0	NO	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 36 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 18O2-PFHxS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 102), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.13	1112.618	1112.618	12.500	12.5	0.0	NO	NO	bb
2	200706P1-20	Standard	12.500	4.13	1135.557	1135.557	12.500	12.5	0.0	NO	NO	bb
3	200706P1-21	Standard	12.500	4.13	1029.912	1029.912	12.500	12.5	0.0	NO	NO	bb
4	200706P1-22	Standard	12.500	4.13	1172.076	1172.076	12.500	12.5	0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	4.13	1315.580	1315.580	12.500	12.5	0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	4.13	1066.013	1066.013	12.500	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.13	1118.342	1118.342	12.500	12.5	0.0	NO	NO	bb
8	200706P1-26	Standard	12.500	4.13	1109.793	1109.793	12.500	12.5	0.0	NO	NO	bb
9	200706P1-27	Standard	12.500	4.13	1116.404	1116.404	12.500	12.5	0.0	NO	NO	bb
10	200706P1-28	Standard	12.500	4.13	1041.527	1041.527	12.500	12.5	0.0	NO	NO	bb

Compound name: 13C8-PFOA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 103), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.51	12519.366	12519.366	12.500	12.5	0.0	NO	NO	bb
2	200706P1-20	Standard	12.500	4.51	13839.076	13839.076	12.500	12.5	0.0	NO	NO	bb
3	200706P1-21	Standard	12.500	4.51	13084.422	13084.422	12.500	12.5	0.0	NO	NO	bb
4	200706P1-22	Standard	12.500	4.51	13029.019	13029.019	12.500	12.5	0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	4.51	14240.478	14240.478	12.500	12.5	0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	4.51	13030.224	13030.224	12.500	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.51	13296.607	13296.607	12.500	12.5	0.0	NO	NO	bb
8	200706P1-26	Standard	12.500	4.50	12409.222	12409.222	12.500	12.5	0.0	NO	NO	bb
9	200706P1-27	Standard	12.500	4.50	12509.283	12509.283	12.500	12.5	0.0	NO	NO	bb
10	200706P1-28	Standard	12.500	4.50	10884.975	10884.975	12.500	12.5	0.0	NO	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 37 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C9-PFNA
Response Factor: 1
RRF SD: 7.40149e-017, Relative SD: 7.40149e-015
Response type: Internal Std (Ref 104), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	4.94	14826.541	14826.541	12.500	12.5	0.0	NO	NO	bb
2	200706P1-20	Standard	12.500	4.94	16698.430	16698.430	12.500	12.5	0.0	NO	NO	bb
3	200706P1-21	Standard	12.500	4.94	16406.395	16406.395	12.500	12.5	0.0	NO	NO	bb
4	200706P1-22	Standard	12.500	4.94	16149.805	16149.805	12.500	12.5	0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	4.94	17268.395	17268.395	12.500	12.5	0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	4.94	15863.199	15863.199	12.500	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	4.94	16381.950	16381.950	12.500	12.5	0.0	NO	NO	bb
8	200706P1-26	Standard	12.500	4.94	15859.456	15859.456	12.500	12.5	0.0	NO	NO	bb
9	200706P1-27	Standard	12.500	4.94	15578.559	15578.559	12.500	12.5	0.0	NO	NO	bb
10	200706P1-28	Standard	12.500	4.94	14529.391	14529.391	12.500	12.5	0.0	NO	NO	bb

Compound name: 13C4-PFOS
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 105), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.02	3112.113	3112.113	12.500	12.5	0.0	NO	NO	bb
2	200706P1-20	Standard	12.500	5.02	3516.579	3516.579	12.500	12.5	0.0	NO	NO	bb
3	200706P1-21	Standard	12.500	5.02	3143.465	3143.465	12.500	12.5	0.0	NO	NO	bb
4	200706P1-22	Standard	12.500	5.02	3349.641	3349.641	12.500	12.5	0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	5.02	3463.788	3463.788	12.500	12.5	0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	5.02	3222.088	3222.088	12.500	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.02	3410.395	3410.395	12.500	12.5	0.0	NO	NO	bb
8	200706P1-26	Standard	12.500	5.02	3432.673	3432.673	12.500	12.5	0.0	NO	NO	bb
9	200706P1-27	Standard	12.500	5.02	3113.743	3113.743	12.500	12.5	0.0	NO	NO	bb
10	200706P1-28	Standard	12.500	5.02	2905.585	2905.585	12.500	12.5	0.0	NO	NO	bb

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 38 of 38
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Compound name: 13C6-PFDA
Response Factor: 1
RRF SD: 0, Relative SD: 0
Response type: Internal Std (Ref 106), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.31	14024.693	14024.693	12.500	12.5	0.0	NO	NO	bb
2	200706P1-20	Standard	12.500	5.31	16270.641	16270.641	12.500	12.5	0.0	NO	NO	bb
3	200706P1-21	Standard	12.500	5.31	15005.021	15005.021	12.500	12.5	0.0	NO	NO	bb
4	200706P1-22	Standard	12.500	5.31	15649.067	15649.067	12.500	12.5	0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	5.31	16678.373	16678.373	12.500	12.5	0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	5.31	13685.886	13685.886	12.500	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.31	15985.261	15985.261	12.500	12.5	0.0	NO	NO	bb
8	200706P1-26	Standard	12.500	5.31	16564.369	16564.369	12.500	12.5	0.0	NO	NO	bb
9	200706P1-27	Standard	12.500	5.31	15629.832	15629.832	12.500	12.5	0.0	NO	NO	bb
10	200706P1-28	Standard	12.500	5.31	13493.237	13493.237	12.500	12.5	0.0	NO	NO	bb

Compound name: 13C7-PFUdA
Response Factor: 1
RRF SD: 3.70074e-017, Relative SD: 3.70074e-015
Response type: Internal Std (Ref 107), Area * (IS Conc. / IS Area)
Curve type: RF

1	200706P1-19	Standard	12.500	5.63	14039.590	14039.590	12.500	12.5	0.0	NO	NO	bb
2	200706P1-20	Standard	12.500	5.63	15869.678	15869.678	12.500	12.5	0.0	NO	NO	bb
3	200706P1-21	Standard	12.500	5.63	14615.809	14615.809	12.500	12.5	0.0	NO	NO	bb
4	200706P1-22	Standard	12.500	5.63	14751.563	14751.563	12.500	12.5	0.0	NO	NO	bb
5	200706P1-23	Standard	12.500	5.63	15184.211	15184.211	12.500	12.5	0.0	NO	NO	bb
6	200706P1-24	Standard	12.500	5.63	14215.874	14215.874	12.500	12.5	0.0	NO	NO	bb
7	200706P1-25	Standard	12.500	5.63	15481.095	15481.095	12.500	12.5	0.0	NO	NO	bb
8	200706P1-26	Standard	12.500	5.63	15001.885	15001.885	12.500	12.5	0.0	NO	NO	bb
9	200706P1-27	Standard	12.500	5.63	14984.139	14984.139	12.500	12.5	0.0	NO	NO	bb
10	200706P1-28	Standard	12.500	5.63	12829.642	12829.642	12.500	12.5	0.0	NO	NO	bb

Quantify Sample Summary Report **MassLynx V4.2 SCN977** Page 1 of 10
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:02:28 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

1	PFBA	47	0.9994	NO
2	PFPrS	51	0.9997	NO
3	3:3 FTCA	49	0.9991	NO
4	PFPeA	49	0.9999	NO
5	PFBS	51	0.9998	NO
6	4:2 FTS	55	0.9996	NO
7	PFHxA	57	0.9995	NO
8	PFPeS	51	0.9996	NO
9	HFPO-DA	53	0.9998	NO
10	5:3 FTCA	59	0.9993	NO
11	PFHpA	59	0.9999	NO
12	ADONA	59	0.9999	NO
13	L-PFHxS	61	0.9990	NO
15	6:2 FTS	63	0.9977	NO
16	L-PFOA	69	0.9992	NO
18	PFecHS	69	0.9996	NO
19	PFHpS	71	0.9999	NO
20	7:3 FTCA	65	0.9994	NO
21	PFNA	65	0.9998	NO
22	PFOSA	67	0.9999	NO
23	L-PFOS	71	0.9997	NO
25	9Cl-PF30NS	71	0.9998	NO
26	PFDA	73	0.9999	NO
27	8:2 FTS	75	0.9989	NO
28	PFNS	71	0.9994	NO
29	L-MeFOSAA	77	0.9998	NO

Quantify Sample Summary Report **MassLynx V4.2 SCN977** Page 1 of 30
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

31	L-EtFOSAA	81	0.9999	NO	
33	PFUdA	79	0.9996	NO	
34	PFDS	71	0.9999	NO	
35	11Cl-PF30UdS	83	0.9983	NO	
36	10:2 FTS	85	0.9970	NO	
37	PFDoA	83	0.9998	NO	
38	N-MeFOSA	87	0.9999	NO	
39	PFTrDA	83	0.9999	NO	
40	PFDoS	89	0.9996	NO	
41	PFTeDA	89	0.9988	NO	
42	N-EtFOSA	91	0.9997	NO	
43	PFHxDA	93	0.9998	NO	
44	PFODA	93	0.9999	NO	
45	N-MeFOSE	95	0.9995	NO	
46	N-EtFOSE	97	0.9983	NO	
47	13C3-PFBA-EIS			NO	0.000
48	13C3-PFBA-RSD	99		NO	3.902
49	13C3-PFPeA-EIS			NO	0.000
50	13C3-PFPeA-RSD	101		NO	3.397
51	13C3-PFBS-EIS			NO	0.000
52	13C3-PFBS-RSD	102		NO	4.905
53	13C3-HFPO-DA-EIS			NO	0.000
54	13C3-HFPO-DA-RSD	101		NO	4.912
55	13C2-4:2 FTS-EIS			NO	0.000
56	13C2-4:2 FTS-RSD	102		NO	5.397
57	13C2-PFHxA-EIS			NO	0.000
58	13C2-PFHxA-RSD	101		NO	3.053
59	13C4-PFHpA-EIS			NO	0.000
60	13C4-PFHpA-RSD	101		NO	4.592
61	13C3-PFHxS-EIS			NO	0.000
62	13C3-PFHxS-RSD	102		NO	3.357
63	13C2-6:2 FTS-EIS			NO	0.000

Quantify Sample Summary Report **MassLynx V4.2 SCN977** Page 2 of 30
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

64	13C2-6:2 FTS-RSD	105	NO	6.233
65	13C5-PFNA-EIS		NO	0.000
66	13C5-PFNA-RSD	104	NO	3.466
67	13C8-PFOSA-EIS		NO	0.000
68	13C8-PFOSA-RSD	107	NO	5.372
69	13C2-PFOA-EIS		NO	0.000
70	13C2-PFOA-RSD	103	NO	3.052
71	13C8-PFOS-EIS		NO	0.000
72	13C8-PFOS-RSD	105	NO	5.289
73	13C2-PFDA-EIS		NO	0.000
74	13C2-PFDA-RSD	106	NO	5.205
75	13C2-8:2 FTS-EIS		NO	0.000
76	13C2-8:2 FTS-RSD	105	NO	9.055
77	d3-N-MeFOSAA-EIS		NO	0.000
78	d3-N-MeFOSAA-RSD	107	NO	5.938
79	13C2-PFUdA-EIS		NO	0.000
80	13C2-PFUdA-RSD	107	NO	4.318
81	d5-N-EtFOSAA-EIS		NO	0.000
82	d5-N-EtFOSAA-RSD	107	NO	3.143
83	13C2-PFDoA-EIS		NO	0.000
84	13C2-PFDoA-RSD	106	NO	5.615
85	13C2-10:2 FTS-EIS		NO	0.000
86	13C2-10:2 FTS-RSD	105	NO	9.960
87	d3-N-MeFOSA-EIS		NO	0.000
88	d3-N-MeFOSA-RSD	107	NO	5.009
89	13C2-PFTeDA-EIS		NO	0.000
90	13C2-PFTeDA-RSD	107	NO	3.042
91	d5-N-ETFOSA-EIS		NO	0.000
92	d5-N-ETFOSA-RSD	107	NO	4.743
93	13C2-PFHxDA-EIS		NO	0.000
94	13C2-PFHxDA-RSD	107	NO	3.531
95	d7-N-MeFOSE-EIS		NO	0.000
96	d7-N-MeFOSE-RSD	107	NO	4.602
97	d9-N-EtFOSE-EIS		NO	0.000
98	d9-N-EtFOSE-RSD	107	NO	6.940
99	13C4-PFBA	99	NO	0.000

Quantify Sample Summary Report **MassLynx V4.2 SCN977** Page 3 of 30
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:07:57 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

	1... 13C2-FOUEA-EIS		NO	0.000
	1... 13C5-PFHxA	101	NO	0.000
	1... 18O2-PFHxS	102	NO	0.000
	1... 13C8-PFOA	103	NO	0.000
	1... 13C9-PFNA	104	NO	0.000
	1... 13C4-PFOS	105	NO	0.000
	1... 13C6-PFDA	106	NO	0.000
	1... 13C7-PFUdA	107	NO	0.000

Quantify Sample Summary Report **MassLynx V4.2 SCN977** Page 1 of 1

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:14:38 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:15:00 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 09:14:35
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

1	PFBA	1.62	1.62			
2	PFPrS	1.81	1.97	2.684	2.684	NO
3	3:3 FTCA	2.43	2.44	3.536	3.536	NO
4	PFPeA	2.59	2.59			
5	PFBS	2.87	2.87	2.400	2.400	NO
6	4:2 FTS	3.31	3.31	11.507	11.507	NO
7	PFHxA	3.39	3.39	16.343	16.343	NO
8	PFPeS	3.80	3.57	1.941	1.941	NO
9	HFPO-DA	3.59	3.59	2.253	2.253	NO
10	5:3 FTCA	3.94	3.92	1.715	1.715	NO
11	PFHpA	3.98	3.98	53.515	53.515	NO
12	ADONA	4.08	4.10	3.855	3.855	NO
13	L-PFHxS	4.13	4.13	4.017	4.017	NO
15	6:2 FTS	4.45	4.45	0.844	0.844	NO
16	L-PFOA	4.51	4.51	3.193	3.193	NO
18	PFecHS	4.52	4.52	0.538	0.538	NO
19	PFHpS	4.56	4.61	1.736	1.736	NO
20	7:3 FTCA	4.85	4.93	1.270	1.270	NO
21	PFNA	4.94	4.94	14.123	14.123	NO
22	PFOSA	4.98	4.99	20.977	20.977	NO
23	L-PFOS	5.02	5.02	2.598	2.598	NO
25	9Cl-PF30NS	5.24	5.23	38.597	38.597	NO
26	PFDA	5.31	5.31	5.220	5.220	NO
27	8:2 FTS	5.29	5.29	0.833	0.833	NO
28	PFNS	5.39	5.37	2.459	2.459	NO
29	L-MeFOSAA	5.45	5.46	1.779	1.779	NO

Quantify Sample Summary Report **MassLynx V4.2 SCN977** Page 1 of 1

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:14:38 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:15:18 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 09:14:35
Callbration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

	31 L-EtFOSAA	5.61	5.61	1.390	1.390	NO
	33 PFUdA	5.63	5.63	20.067	20.067	NO
	34 PFDS	5.78	5.67	2.265	2.265	NO
	35 11Cl-PF30UdS	5.83	5.83	17.809	17.809	NO
	36 10:2 FTS	5.89	5.89	1.054	1.054	NO
	37 PFDoA	5.90	5.90	12.755	12.755	NO
	38 N-MeFOSA	5.83	5.82	1.955	1.955	NO
	39 PFTrDA	6.16	6.14	116.572	116.572	NO
	40 PFDoS	6.13	6.16	2.251	2.251	NO
	41 PFTeDA	6.33	6.34	14.405	14.405	NO
	42 N-EtFOSA	6.19	6.19	1.875	1.875	NO
	43 PFHxDA	6.63	6.63	32.756	32.756	NO
	44 PFODA	6.85	6.84			
	45 N-MeFOSE	6.33	6.34			
	46 N-EtFOSE	6.48	6.49			

Quantify Compound Summary Report **MassLynx V4.2 SCN977** Page 1 of 1
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 09:16:38 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:16:52 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Compound name: PFBA

1	200706P1-19	ST200706P1-1 PFC CS-2 20F1901	06-Jul-20	13:13:57
2	200706P1-20	ST200706P1-2 PFC CS-1 20F1902	06-Jul-20	13:24:27
3	200706P1-21	ST200706P1-3 PFC CS0 20F1903	06-Jul-20	13:34:57
4	200706P1-22	ST200706P1-4 PFC CS1 20F1904	06-Jul-20	13:45:26
5	200706P1-23	ST200706P1-5 PFC CS2 20F1905	06-Jul-20	13:55:58
6	200706P1-24	ST200706P1-6 PFC CS3 20F1906	06-Jul-20	14:06:27
7	200706P1-25	ST200706P1-7 PFC CS4 20F1907	06-Jul-20	14:16:59
8	200706P1-26	ST200706P1-8 PFC CS5 20F1908	06-Jul-20	14:27:27
9	200706P1-27	ST200706P1-9 PFC CS6 20F1909	06-Jul-20	14:37:59
10	200706P1-28	ST200706P1-10 PFC CS7 20F1910	06-Jul-20	14:48:28
11	200706P1-29	IB	06-Jul-20	14:58:58
12	200706P1-30	ICV200706P1-1 PFC ICV 20F1911	06-Jul-20	15:09:30
13	200706P1-31	IB	06-Jul-20	15:19:59

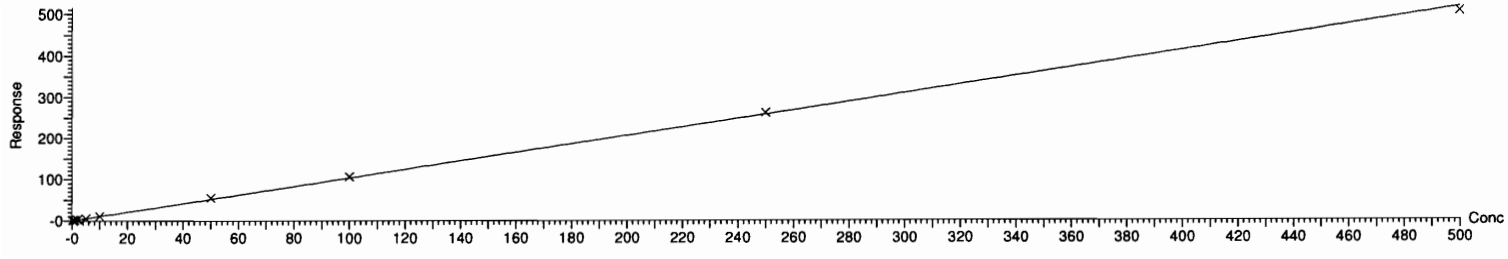
Quantify Calibration Report **MassLynx V4.2 SCN977** Page 1 of 13
Vista Analytical Laboratory Q1

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

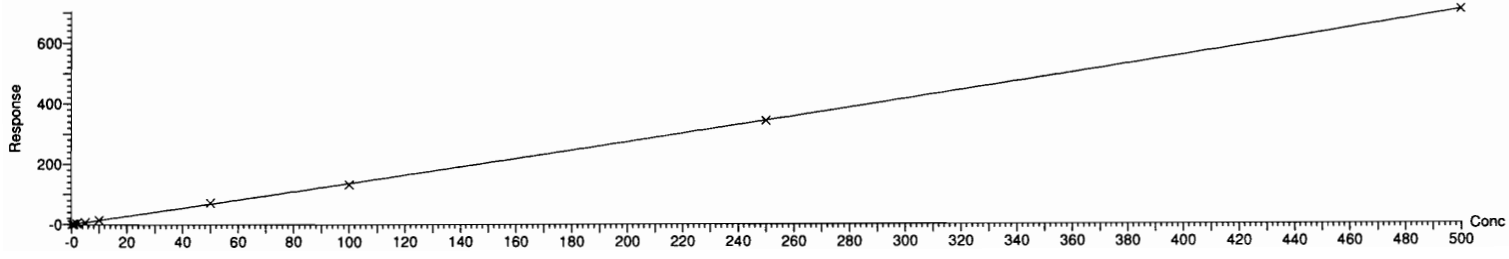
Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Compound name: PFBA
Correlation coefficient: r = 0.999694, r^2 = 0.999388
Calibration curve: 1.03125 * x + 0.0440308
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 = 0.999729
Calibration curve: 0.000149868 * x^2 + 1.33446 * x + -0.0189522
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

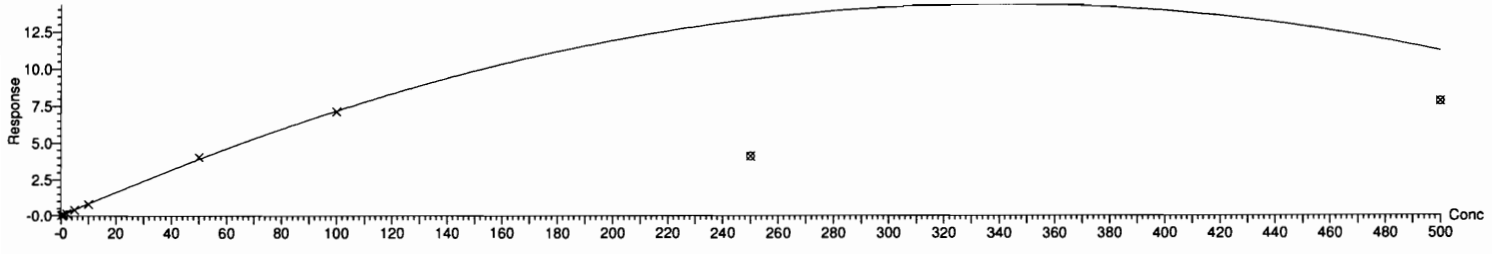


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 2 of 13
Vista Analytical Laboratory Q1

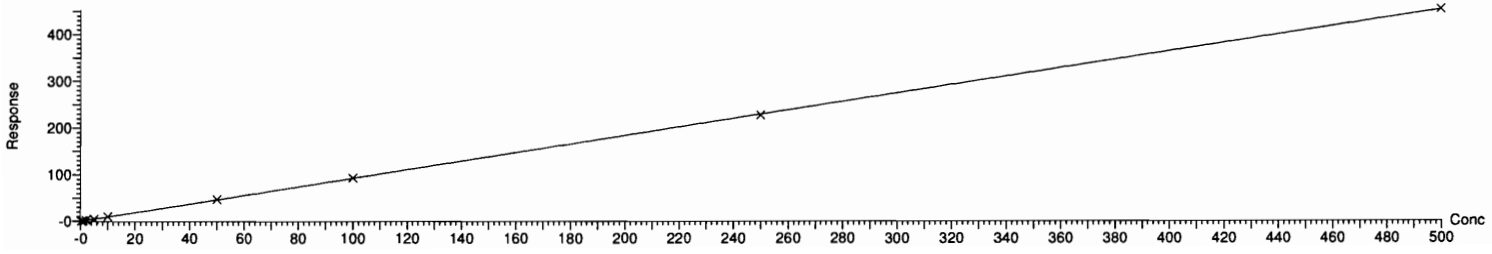
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: 3:3 FTCA
Coefficient of Determination: R^2 = 0.999100
Calibration curve: -0.000123651 * x^2 + 0.0842724 * x + -0.00450239
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 = 0.999942
Calibration curve: -4.09095e-005 * x^2 + 0.926116 * x + 0.00438806
Response type: Internal Std (Ref 49), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

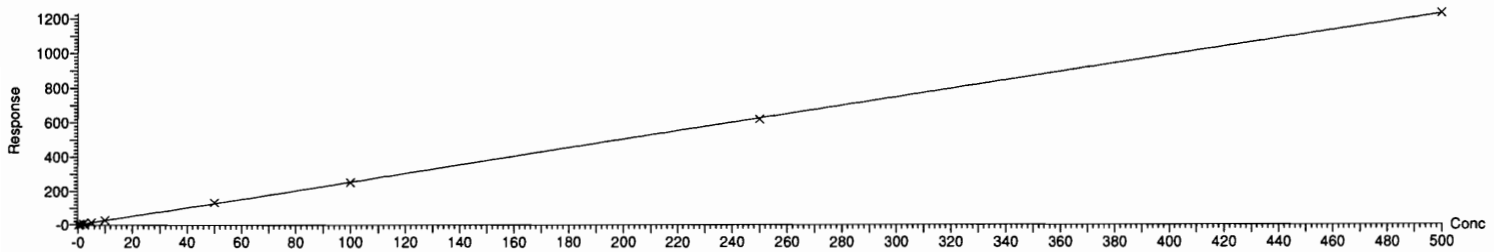


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 3 of 13
Vista Analytical Laboratory Q1

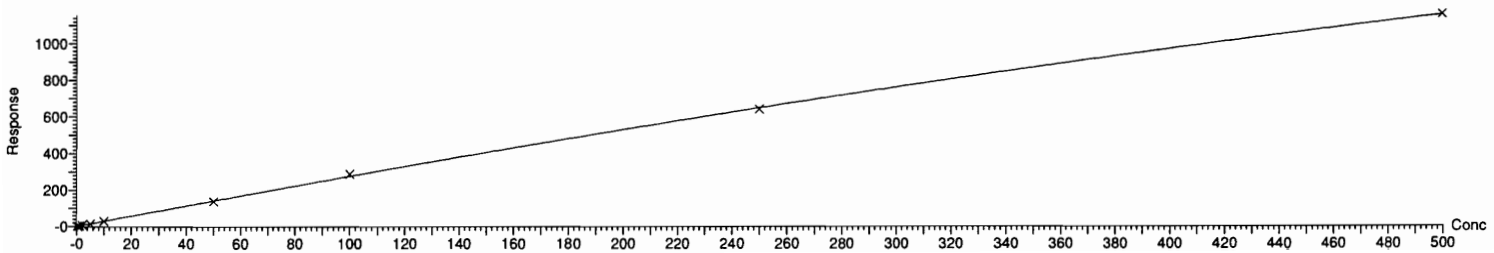
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: PFBS
Coefficient of Determination: R^2 = 0.999832
Calibration curve: -0.000209368 * x^2 + 2.56013 * x + 0.0091719
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: 4:2 FTS
Coefficient of Determination: R^2 = 0.999612
Calibration curve: -0.00110944 * x^2 + 2.87043 * x + -0.114307
Response type: Internal Std (Ref 55), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

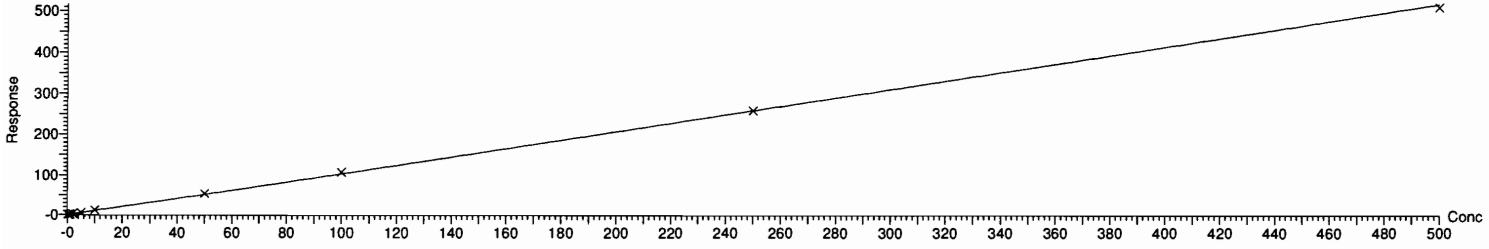


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 4 of 13
Vista Analytical Laboratory Q1

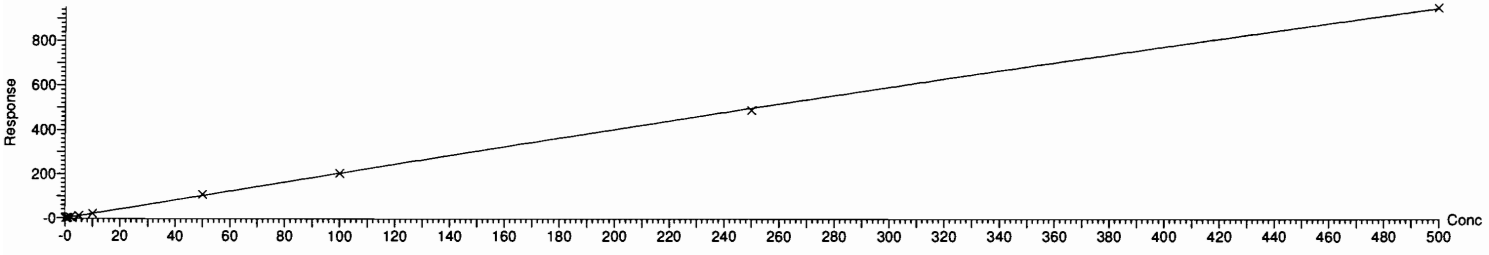
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: PFHxA
Correlation coefficient: r = 0.999727, r^2 = 0.999454
Calibration curve: 1.03548 * x + 0.0754497
Response type: Internal Std (Ref 57), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFPeS
Coefficient of Determination: R^2 = 0.999616
Calibration curve: -0.000388732 * x^2 + 2.09219 * x + -0.0212532
Response type: Internal Std (Ref 51), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

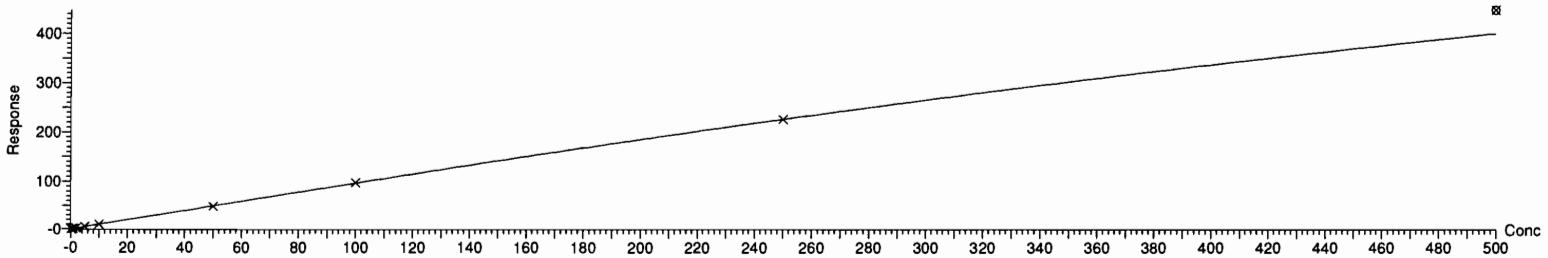


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 5 of 13
Vista Analytical Laboratory Q1

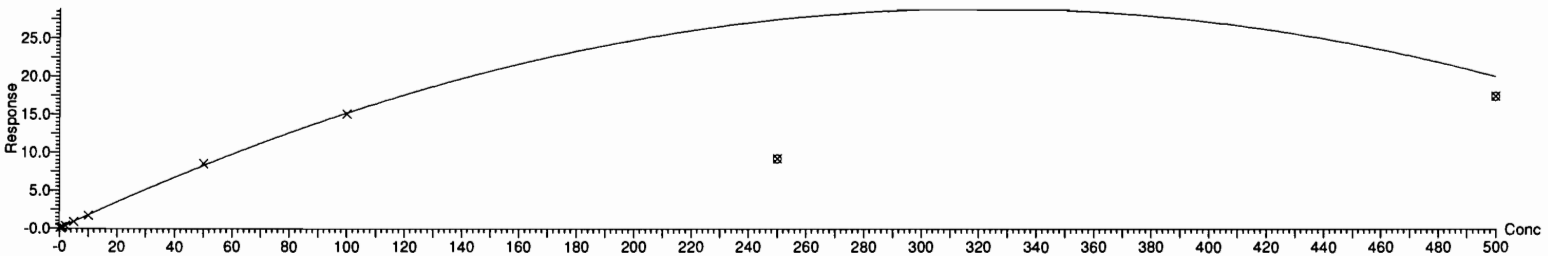
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: HFPO-DA
Coefficient of Determination: R^2 = 0.999787
Calibration curve: -0.00042067 * x^2 + 1.01205 * x + -0.0211231
Response type: Internal Std (Ref 53), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: 5:3 FTCA
Coefficient of Determination: R^2 = 0.999294
Calibration curve: -0.000279748 * x^2 + 0.179933 * x + -0.0070197
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

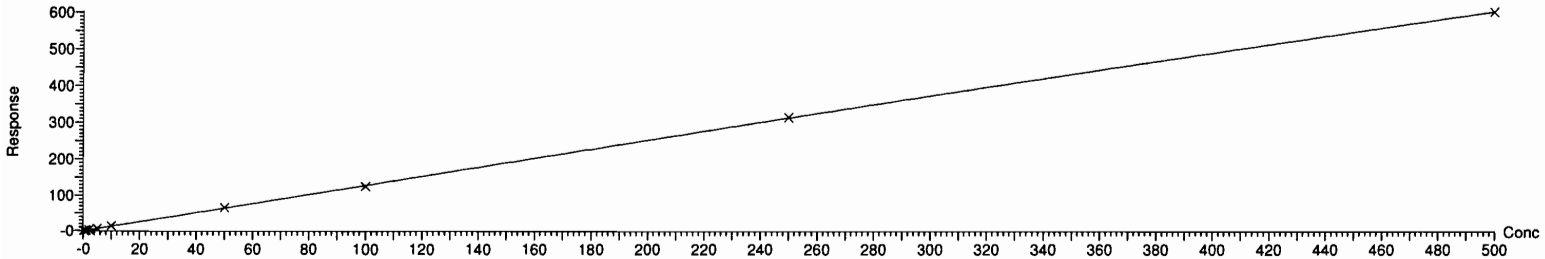


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 6 of 13
Vista Analytical Laboratory Q1

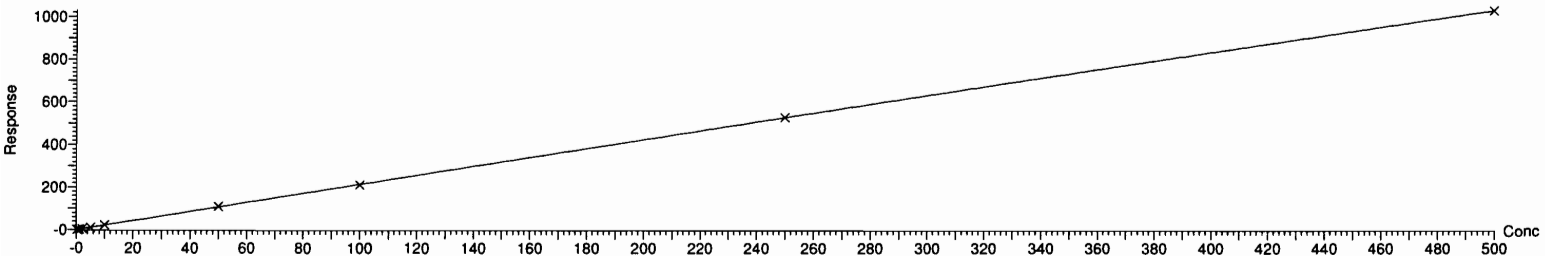
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: PFHpA
Coefficient of Determination: R^2 = 0.999869
Calibration curve: -0.000182594 * x^2 + 1.3002 * x + 0.0362384
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: ADONA
Coefficient of Determination: R^2 = 0.999933
Calibration curve: -0.000211186 * x^2 + 2.1692 * x + 0.077206
Response type: Internal Std (Ref 59), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

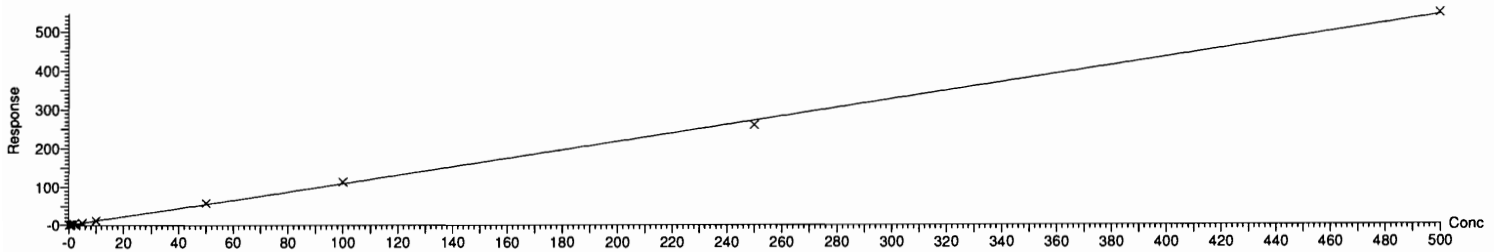


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 7 of 13
Vista Analytical Laboratory Q1

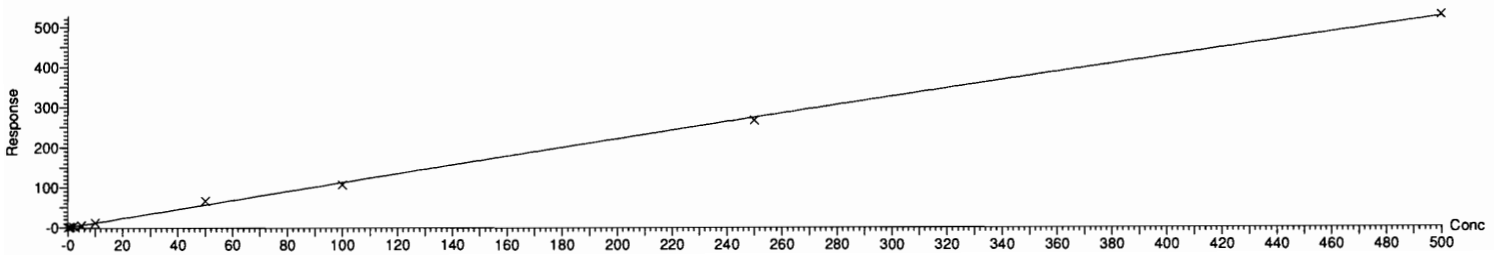
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: L-PFHxS
Coefficient of Determination: R^2 = 0.998975
Calibration curve: -1.6968e-005 * x^2 + 1.09268 * x + 0.0771315
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 = 0.997712
Calibration curve: -0.000191359 * x^2 + 1.14566 * x + 0.00198468
Response type: Internal Std (Ref 63), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

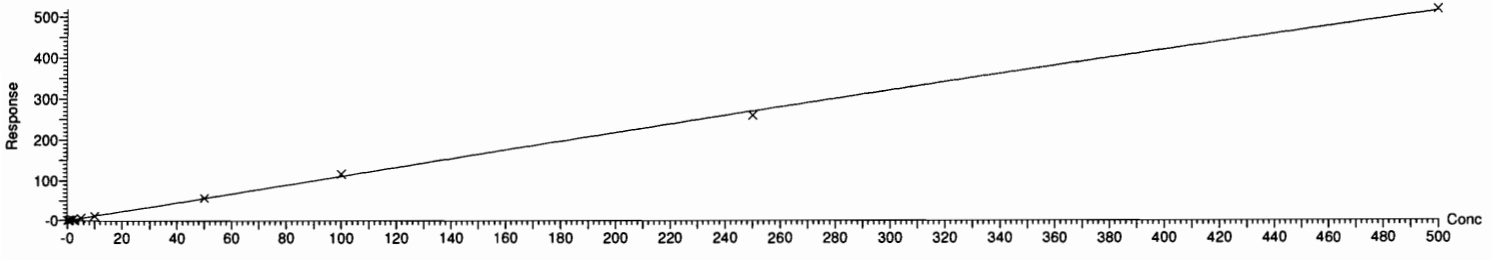


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 8 of 13
Vista Analytical Laboratory Q1

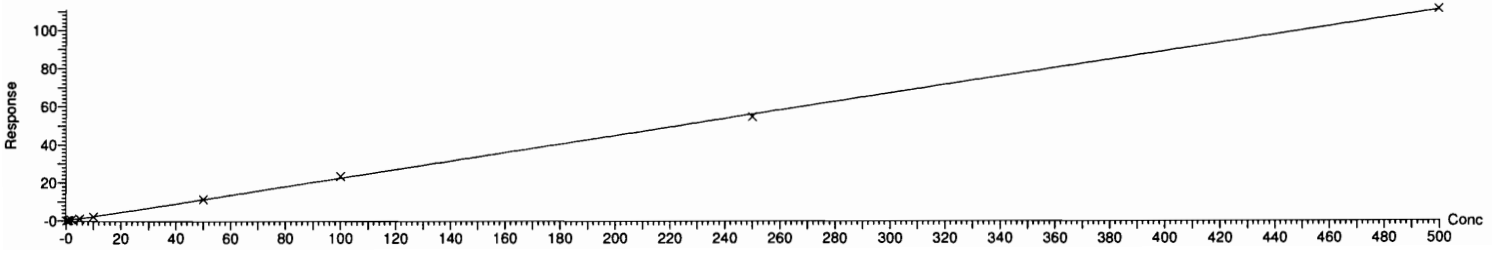
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: L-PFOA
Coefficient of Determination: R^2 = 0.999173
Calibration curve: -0.000202972 * x^2 + 1.13013 * x + 0.0543225
Response type: Internal Std (Ref 69), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFecHS
Coefficient of Determination: R^2 = 0.999583
Calibration curve: -1.03658e-005 * x^2 + 0.226457 * x + -0.0088356
Response type: Internal Std (Ref 69), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

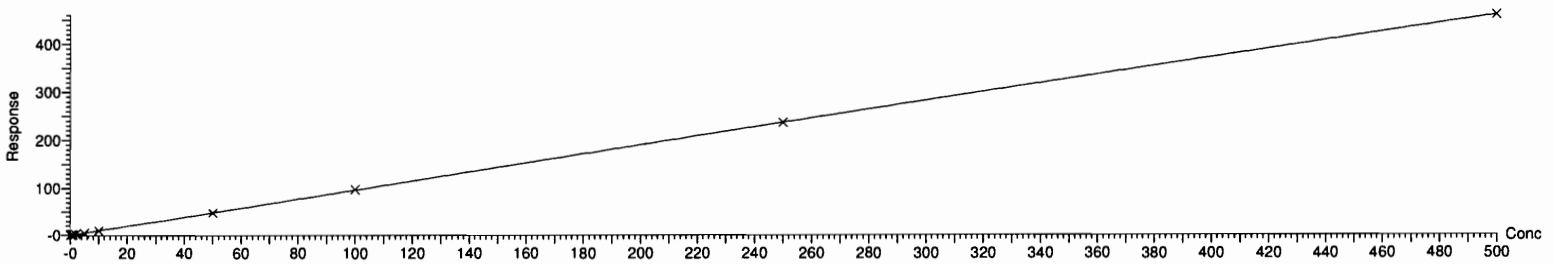


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 9 of 13
Vista Analytical Laboratory Q1

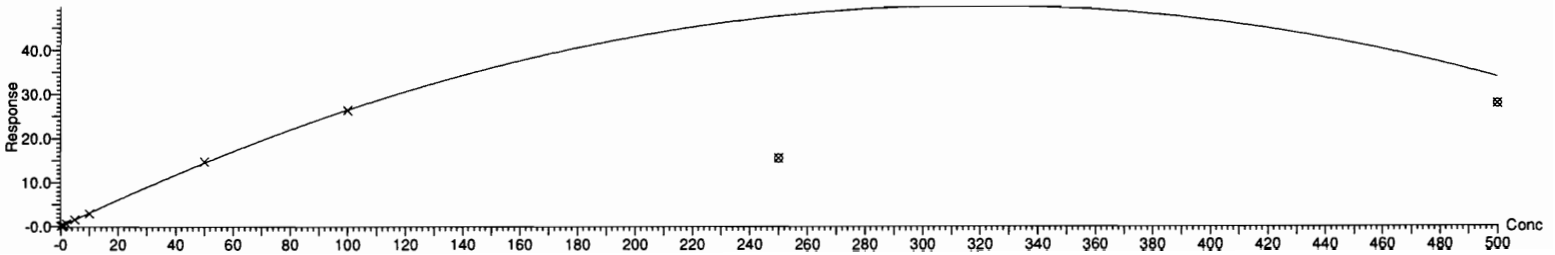
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: PFHpS
Coefficient of Determination: R^2 = 0.999887
Calibration curve: -0.000106932 * x^2 + 0.973986 * x + 0.00516936
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 = 0.999371
Calibration curve: -0.000492227 * x^2 + 0.313584 * x + 0.000408564
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

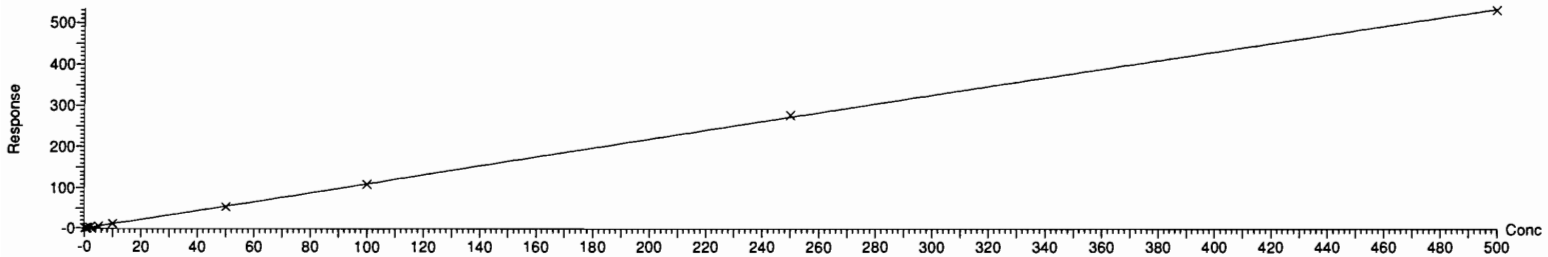


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 10 of 13
Vista Analytical Laboratory Q1

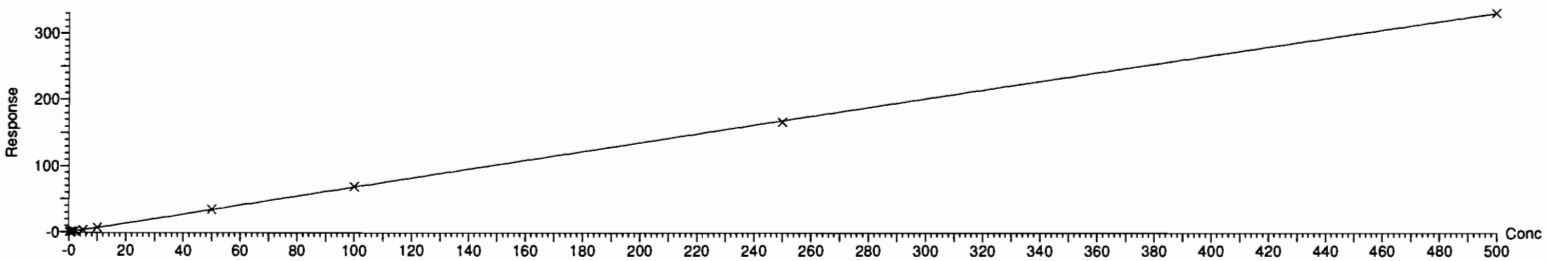
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: PFNA
Coefficient of Determination: R^2 = 0.999826
Calibration curve: -9.83022e-005 * x^2 + 1.11707 * x + 0.0195168
Response type: Internal Std (Ref 65), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: PFOSA
Coefficient of Determination: R^2 = 0.999934
Calibration curve: -5.74782e-005 * x^2 + 0.690246 * x + 0.00511601
Response type: Internal Std (Ref 67), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

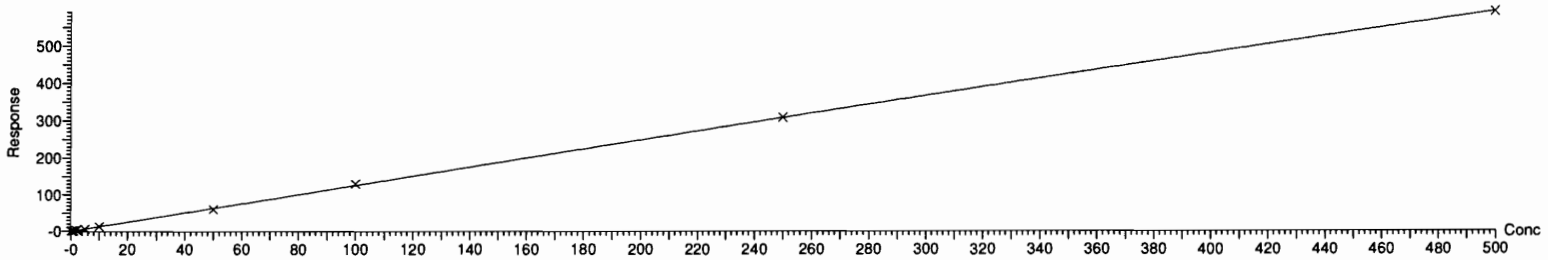


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 11 of 13
Vista Analytical Laboratory Q1

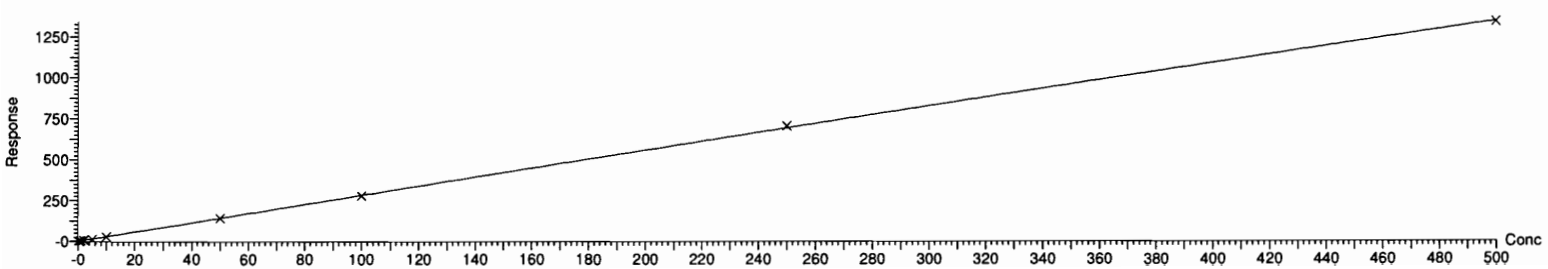
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: L-PFOS
Coefficient of Determination: R^2 = 0.999703
Calibration curve: -0.000187013 * x^2 + 1.27905 * x + -0.0944633
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: 9Cl-PF30NS
Coefficient of Determination: R^2 = 0.999799
Calibration curve: -0.000316616 * x^2 + 2.84896 * x + 0.0165096
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

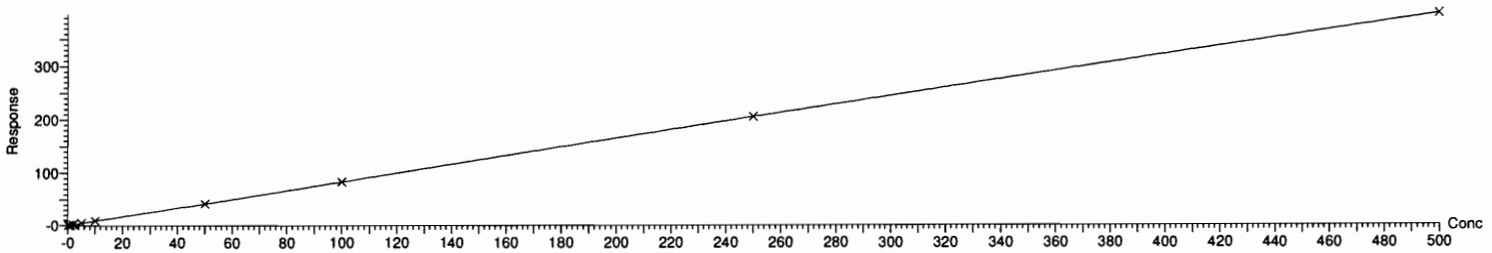


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 12 of 13
Vista Analytical Laboratory Q1

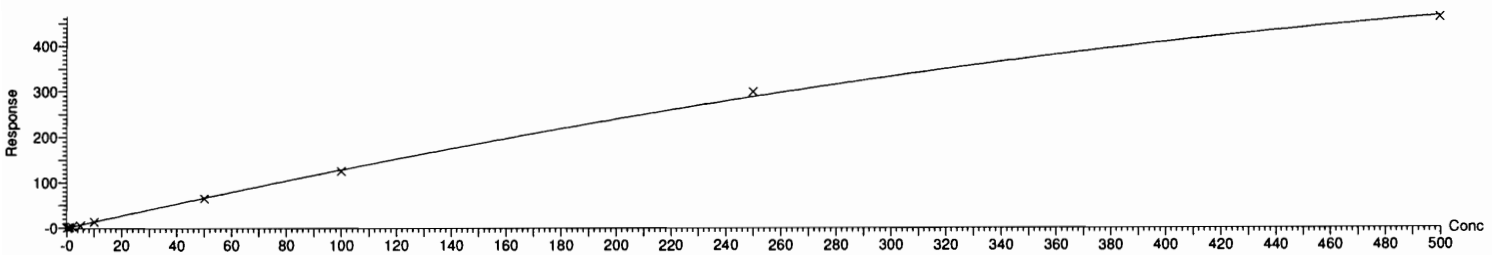
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: PFDA
Coefficient of Determination: R^2 = 0.999933
Calibration curve: -0.000101556 * x^2 + 0.846184 * x + 0.0441258
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 = 0.998921
Calibration curve: -0.000876709 * x^2 + 1.37036 * x + -0.084038
Response type: Internal Std (Ref 75), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

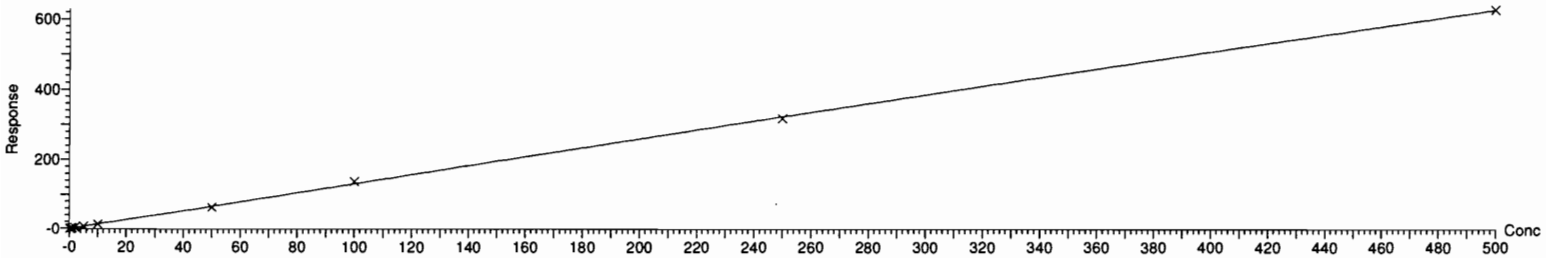


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 13 of 13
Vista Analytical Laboratory Q1

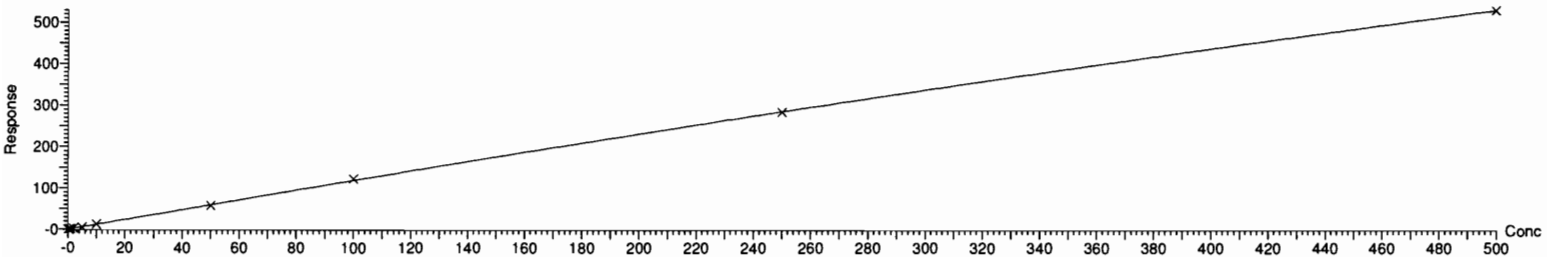
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:21 Pacific Daylight Time

Compound name: PFNS
Coefficient of Determination: R^2 = 0.999393
Calibration curve: -0.000161375 * x^2 + 1.33537 * x + -0.0984438
Response type: Internal Std (Ref 71), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: L-MeFOSAA
Coefficient of Determination: R^2 = 0.999777
Calibration curve: -0.000326513 * x^2 + 1.22499 * x + -0.0565243
Response type: Internal Std (Ref 77), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None



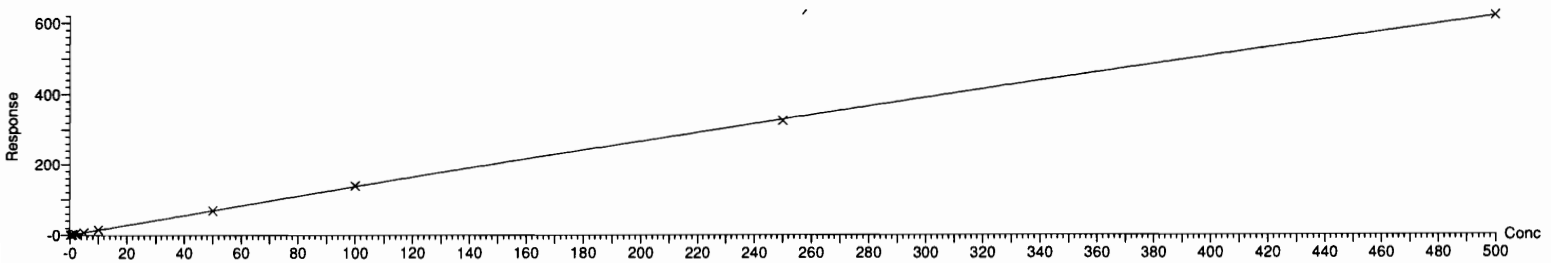
Quantify Calibration Report **MassLynx V4.2 SCN977** Page 1 of 8
Vista Analytical Laboratory Q1

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

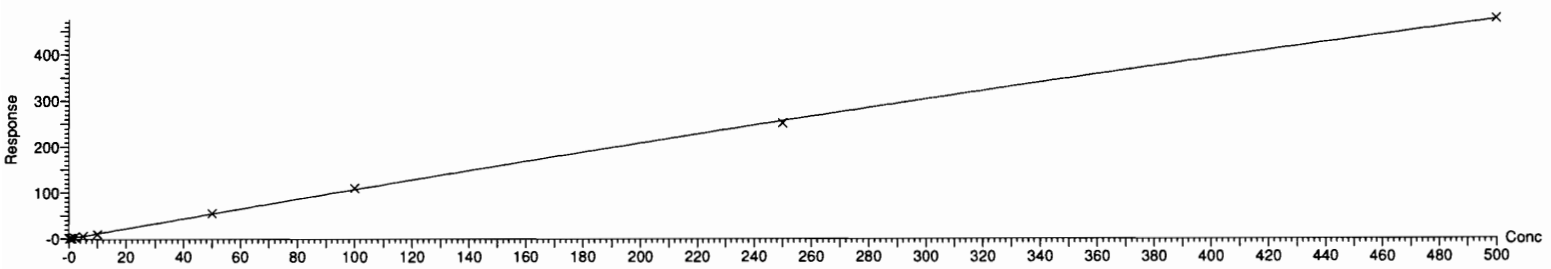
Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Compound name: L-EtFOSAA
Coefficient of Determination: R^2 = 0.999878
Calibration curve: -0.000317928 * x^2 + 1.39659 * x + -0.0635925
Response type: Internal Std (Ref 81), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: PFUdA
Coefficient of Determination: R^2 = 0.999582
Calibration curve: -0.000302944 * x^2 + 1.10094 * x + 0.0188328
Response type: Internal Std (Ref 79), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

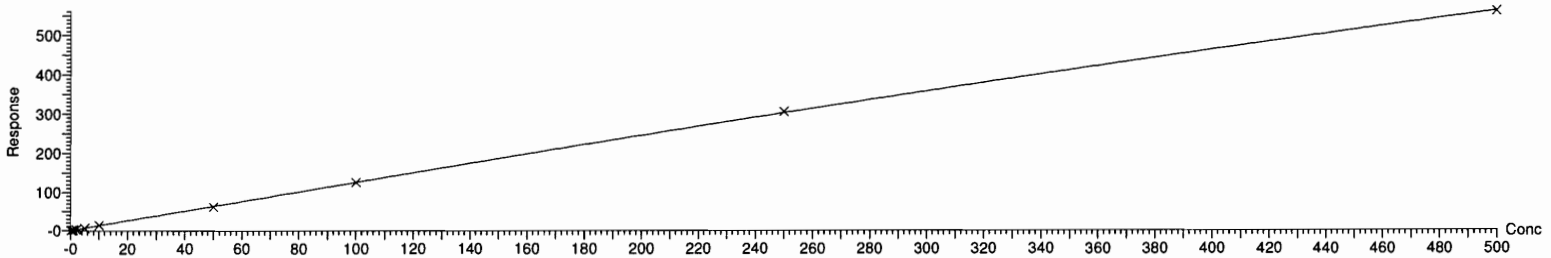


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 2 of 8
Vista Analytical Laboratory Q1

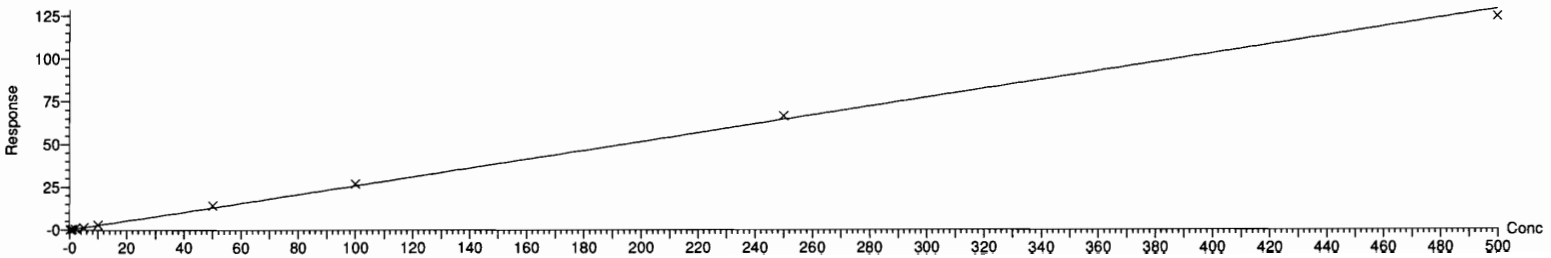
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Compound name: PFDS
Coefficient of Determination: R^2 = 0.999869
Calibration curve: -0.000337564 * x^2 + 1.29291 * x + -0.129711
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
Correlation coefficient: r = 0.999153, r^2 = 0.998308
Calibration curve: 0.257476 * x + 0.00892294
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

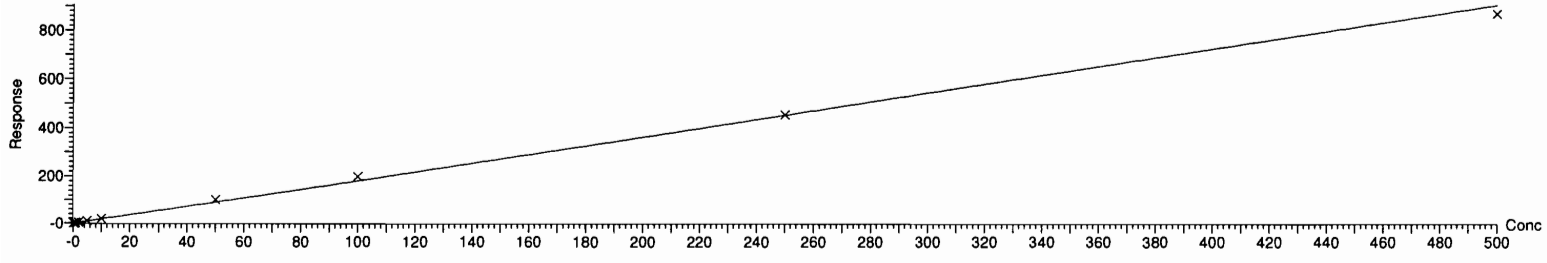


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 3 of 8
Vista Analytical Laboratory Q1

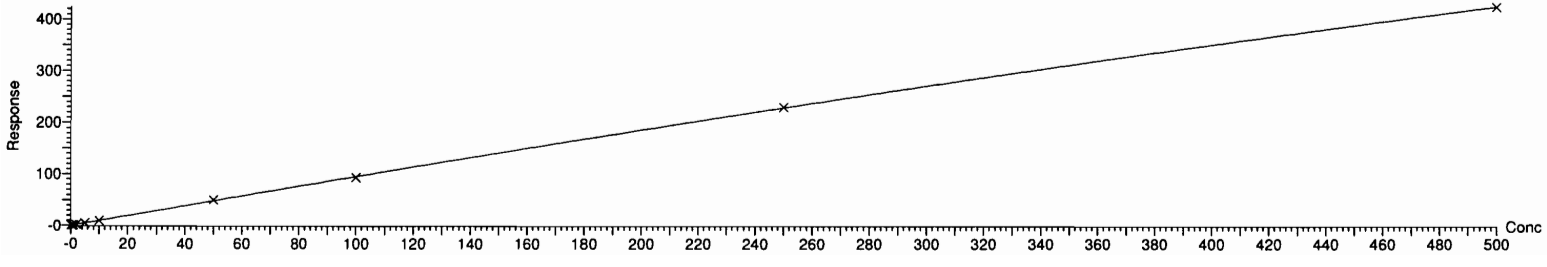
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Compound name: 10:2 FTS
Correlation coefficient: r = 0.998475, r^2 = 0.996952
Calibration curve: 1.81347 * x + 0.168501
Response type: Internal Std (Ref 85), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Compound name: PFDoA
Coefficient of Determination: R^2 = 0.999844
Calibration curve: -0.000264449 * x^2 + 0.982944 * x + 0.00539633
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Include, Weighting: 1/x, Axis trans: None

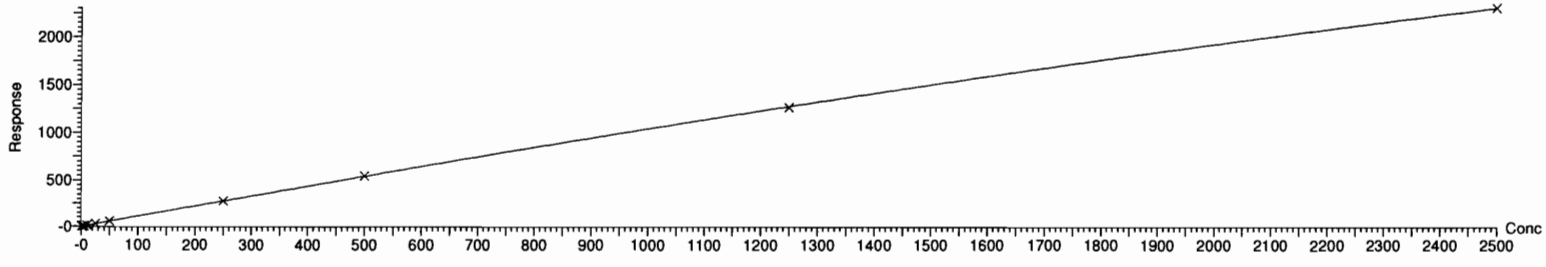


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 4 of 8
Vista Analytical Laboratory Q1

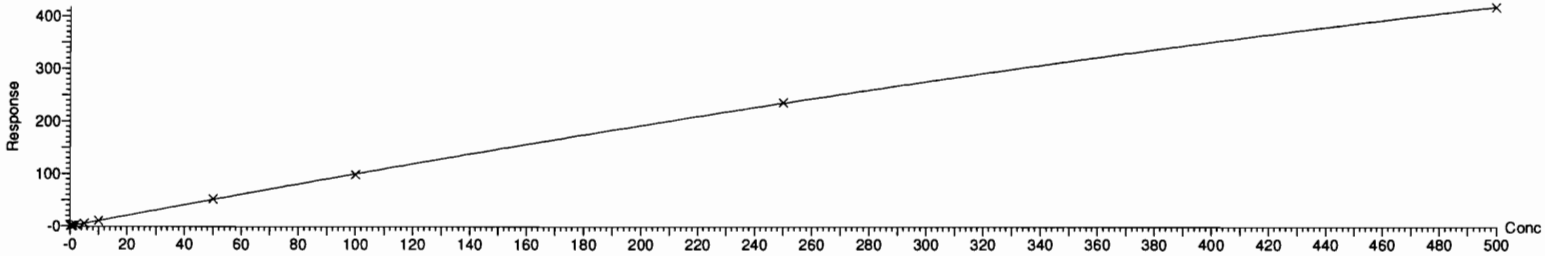
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Compound name: N-MeFOSA
Coefficient of Determination: R^2 = 0.999940
Calibration curve: -7.96999e-005 * x^2 + 1.12175 * x + 0.0605427
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 = 0.999936
Calibration curve: -0.000414303 * x^2 + 1.04415 * x + 0.00171537
Response type: Internal Std (Ref 83), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

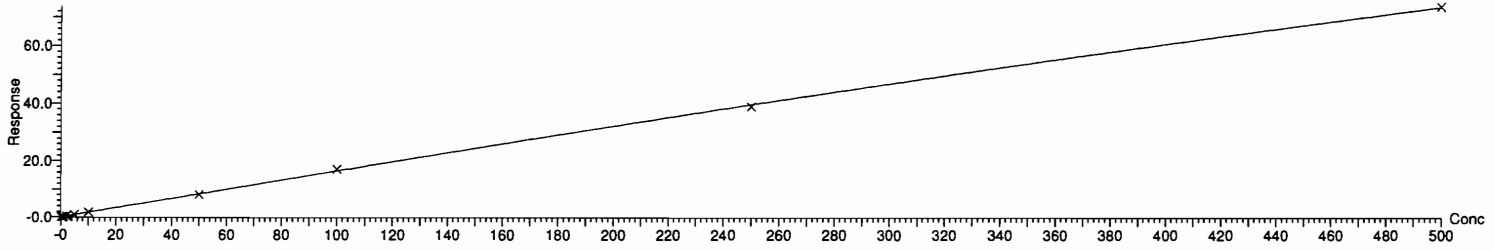


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 5 of 8
Vista Analytical Laboratory Q1

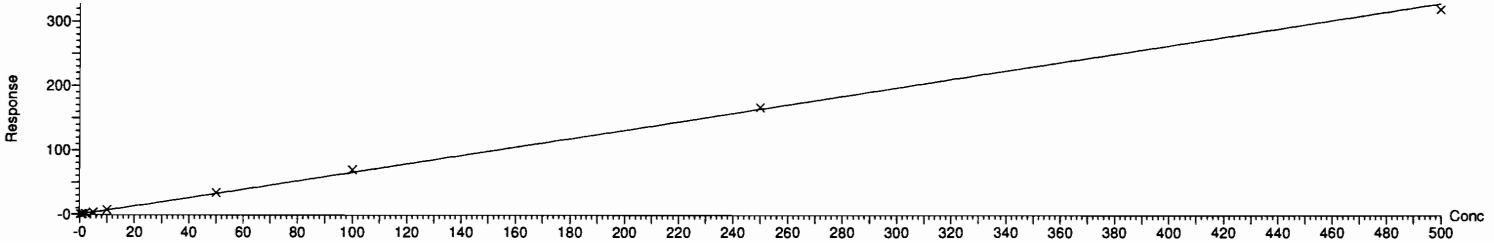
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Compound name: PFDoS
Coefficient of Determination: R^2 = 0.999610
Calibration curve: -4.68396e-005 * x^2 + 0.17052 * x + -0.00392295
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
Correlation coefficient: r = 0.999411, r^2 = 0.998822
Calibration curve: 0.656798 * x + 0.0803604
Response type: Internal Std (Ref 89), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

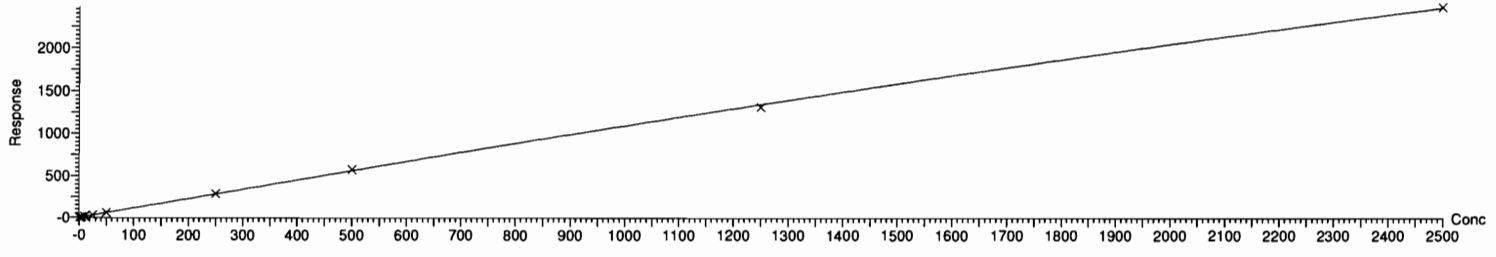


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 6 of 8
Vista Analytical Laboratory Q1

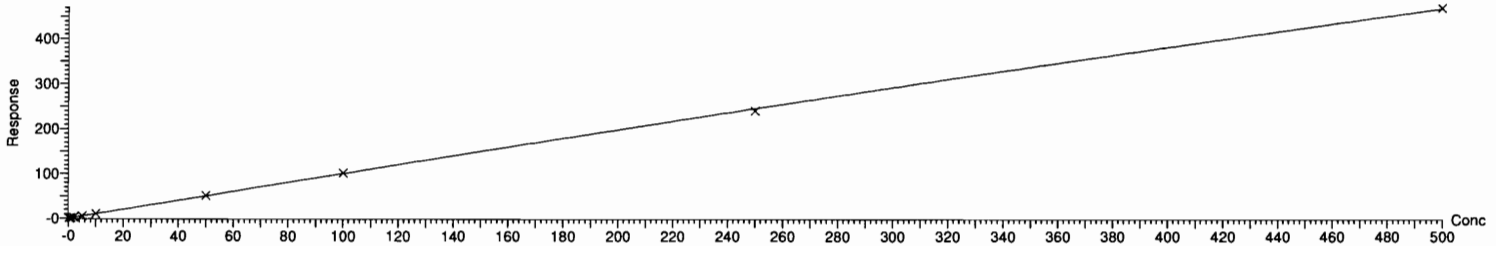
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Compound name: N-EtFOSA
Coefficient of Determination: R^2 = 0.999747
Calibration curve: -6.96201e-005 * x^2 + 1.16259 * x + -0.107454
Response type: Internal Std (Ref 91), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None



Compound name: PFHxDA
Coefficient of Determination: R^2 = 0.999789
Calibration curve: -0.000190466 * x^2 + 1.03254 * x + 0.163583
Response type: Internal Std (Ref 93), Area * (IS Conc. / IS Area)
Curve type: 2nd Order, Origin: Exclude, Weighting: 1/x, Axis trans: None

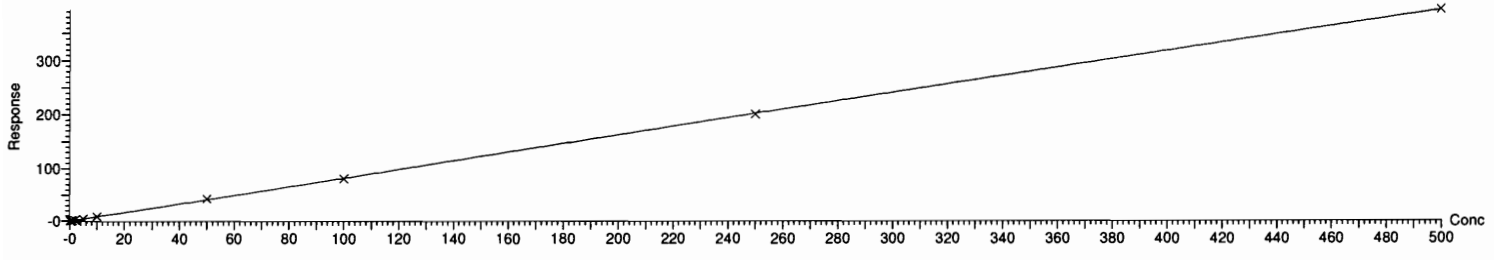


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 7 of 8
Vista Analytical Laboratory Q1

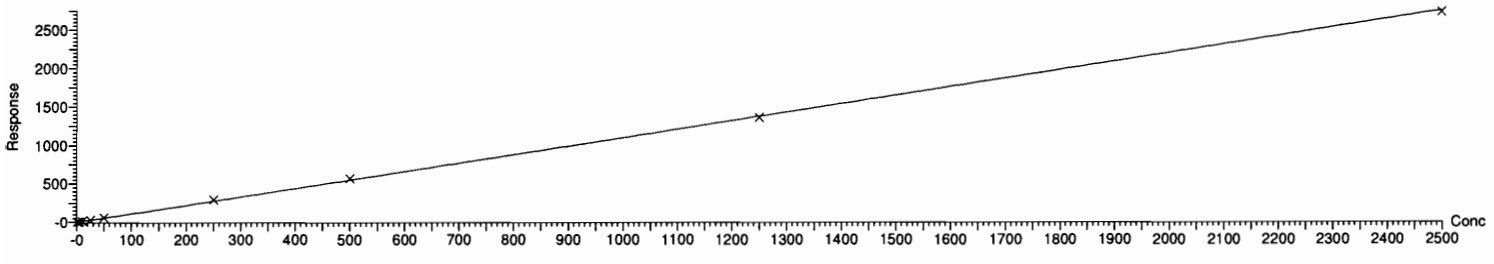
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Compound name: PFODA
Coefficient of Determination: R^2 = 0.999877
Calibration curve: -8.33174e-005 * x^2 + 0.828517 * x + 0.0120589
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
Correlation coefficient: r = 0.999753, r^2 = 0.999506
Calibration curve: 1.10054 * x + 0.364944
Response type: Internal Std (Ref 95), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Exclude, Weighting: 1/x, Axis trans: None

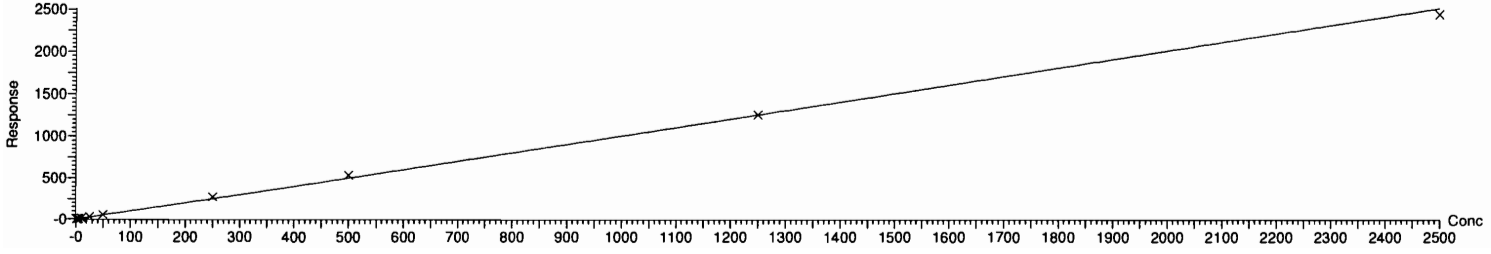


Quantify Calibration Report **MassLynx V4.2 SCN977** Page 8 of 8
Vista Analytical Laboratory Q1

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:13:54 Pacific Daylight Time

Compound name: N-EtFOSE
Correlation coefficient: r = 0.999137, r^2 = 0.998274
Calibration curve: 1.00495 * x + 0.335204
Response type: Internal Std (Ref 97), Area * (IS Conc. / IS Area)
Curve type: Linear, Origin: Include, Weighting: 1/x, Axis trans: None



Quantify Sample Report **MassLynx V4.2 SCN977** Page 1 of 100
Vista Analytical Laboratory

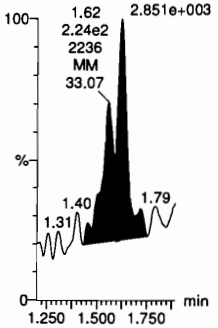
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

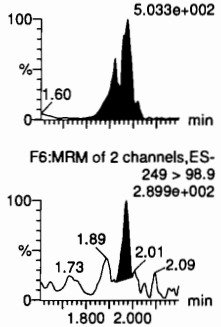
Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: 07 Jul 2020 08:33:21

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

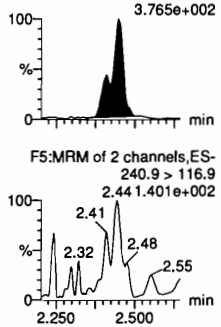
PFBA



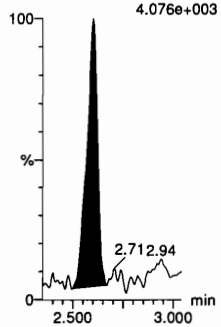
PFPrS



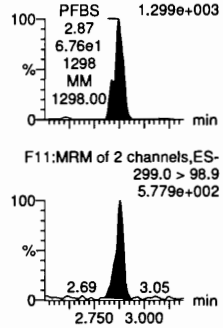
3:3 FTCA



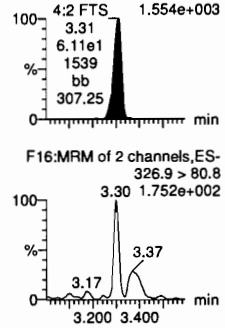
PFPeA



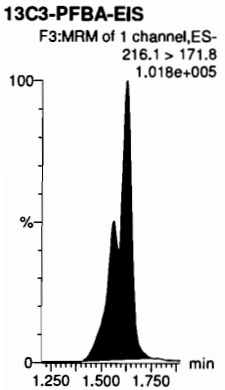
PFBS



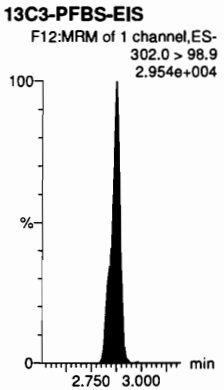
4:2 FTS



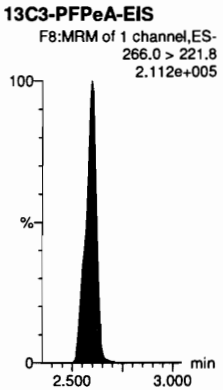
13C3-PFBA-EIS



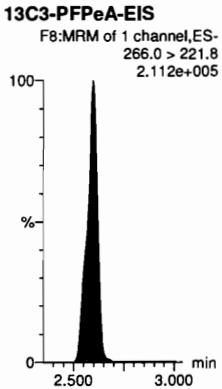
13C3-PFBS-EIS



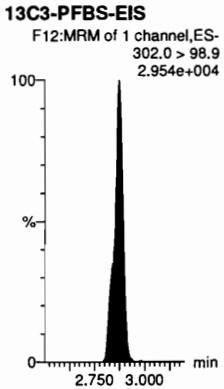
13C3-PFPeA-EIS



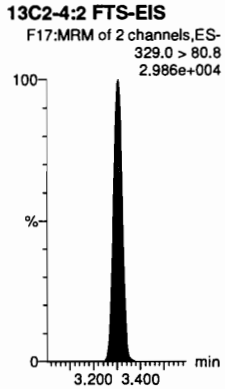
13C3-PFPeA-EIS



13C3-PFBS-EIS



13C2-4:2 FTS-EIS

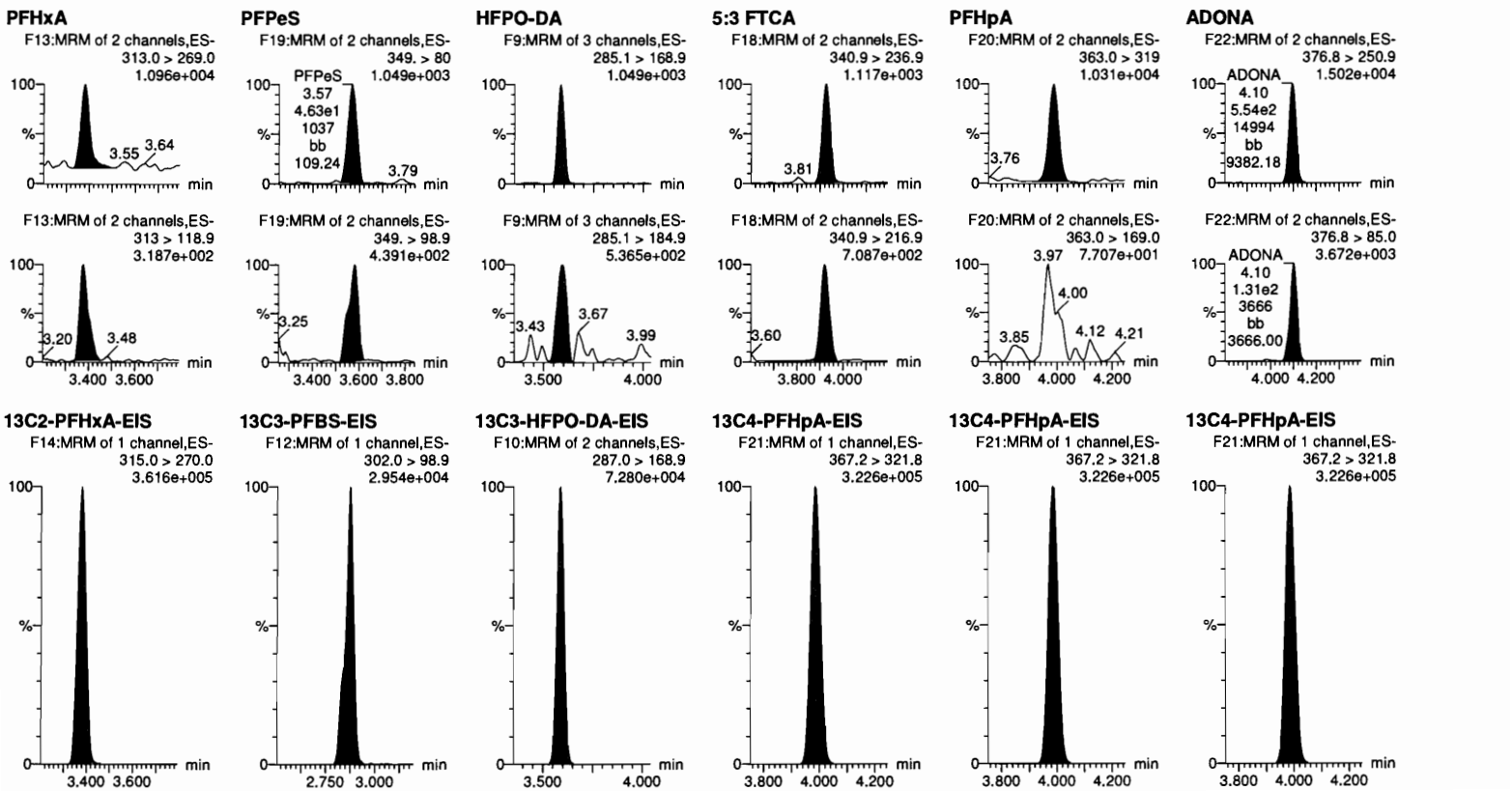


Quantify Sample Report **MassLynx V4.2 SCN977** Page 2 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

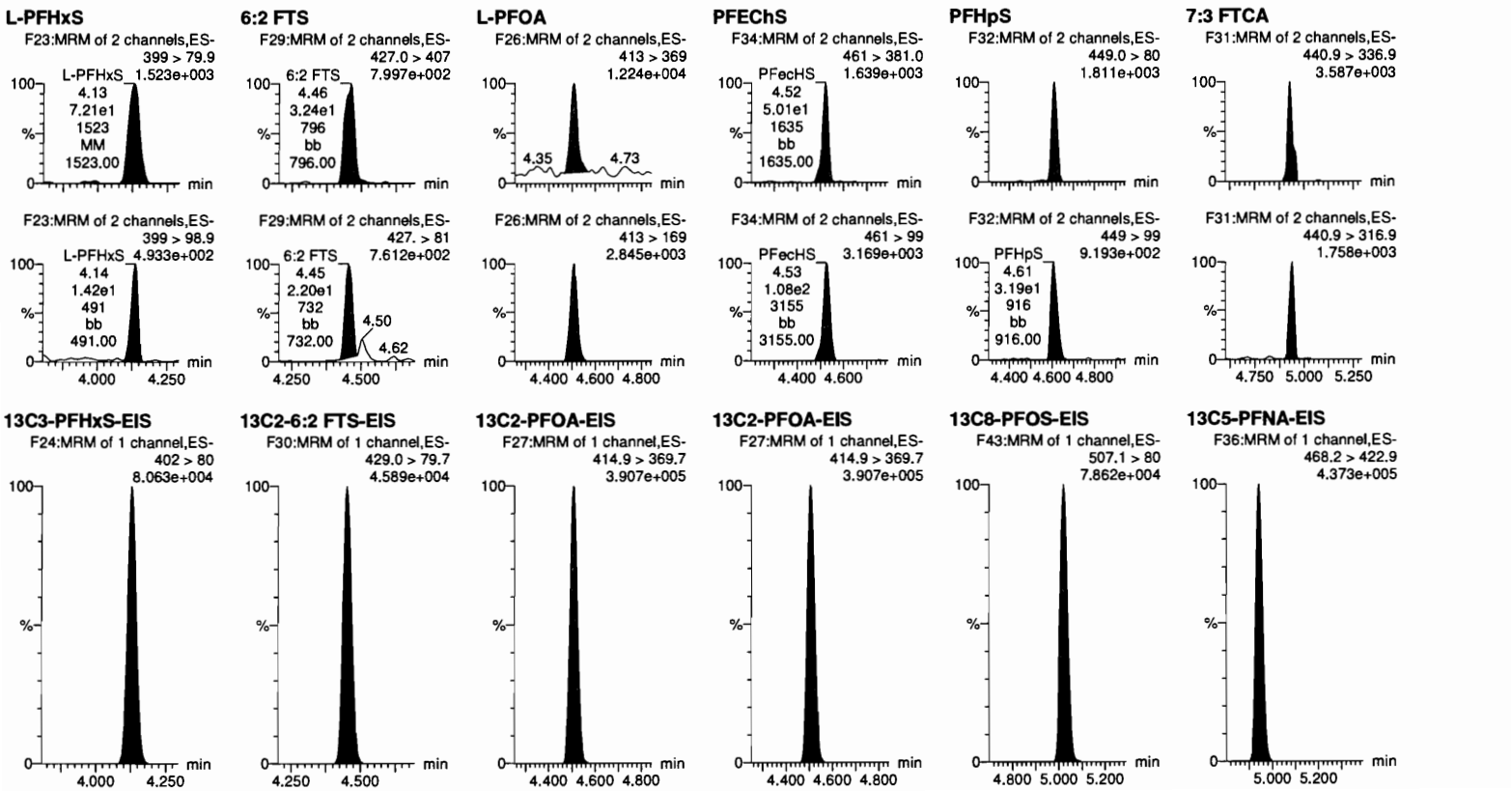


Quantify Sample Report **MassLynx V4.2 SCN977** Page 3 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

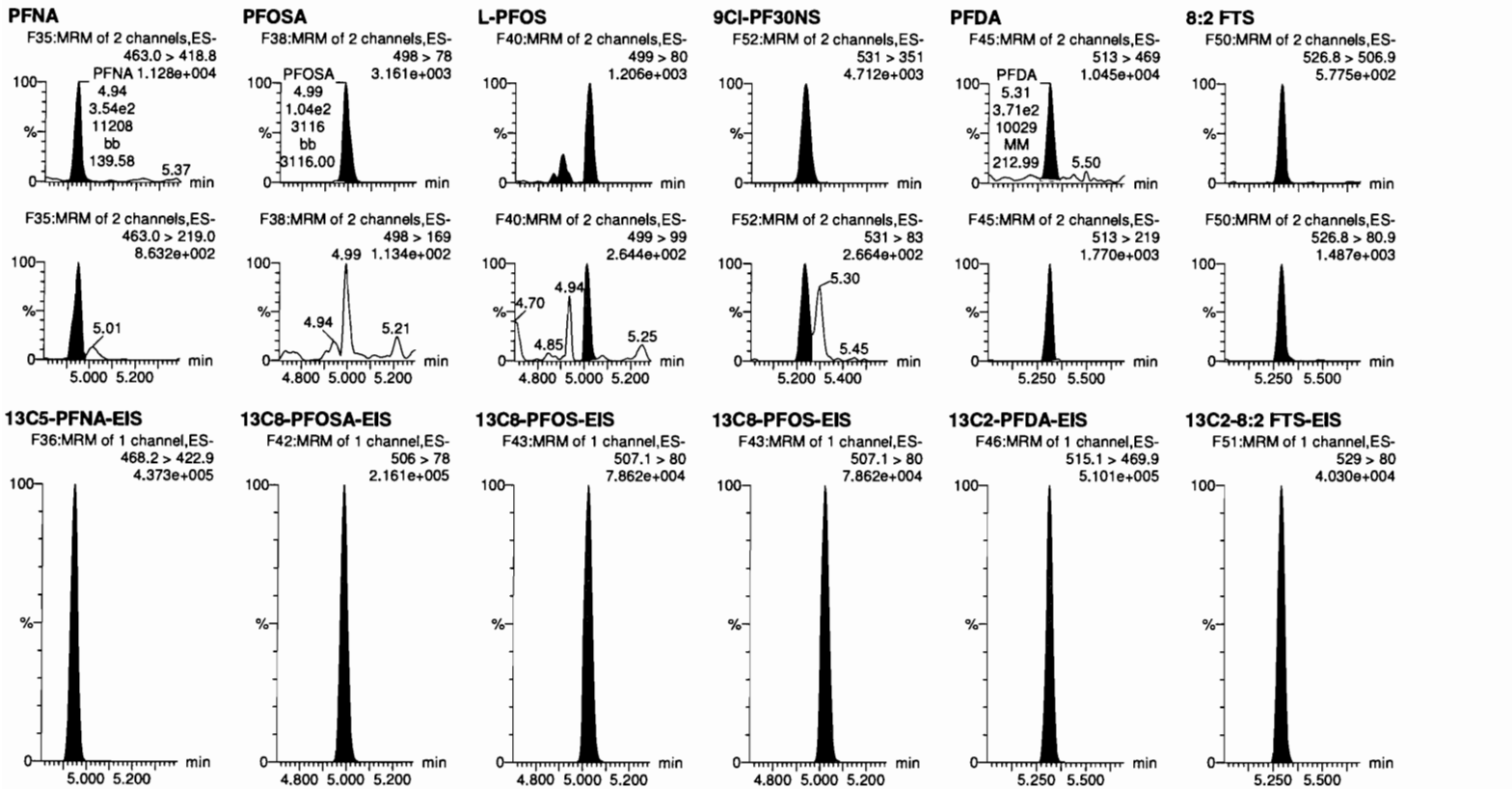


Quantify Sample Report **MassLynx V4.2 SCN977** Page 4 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

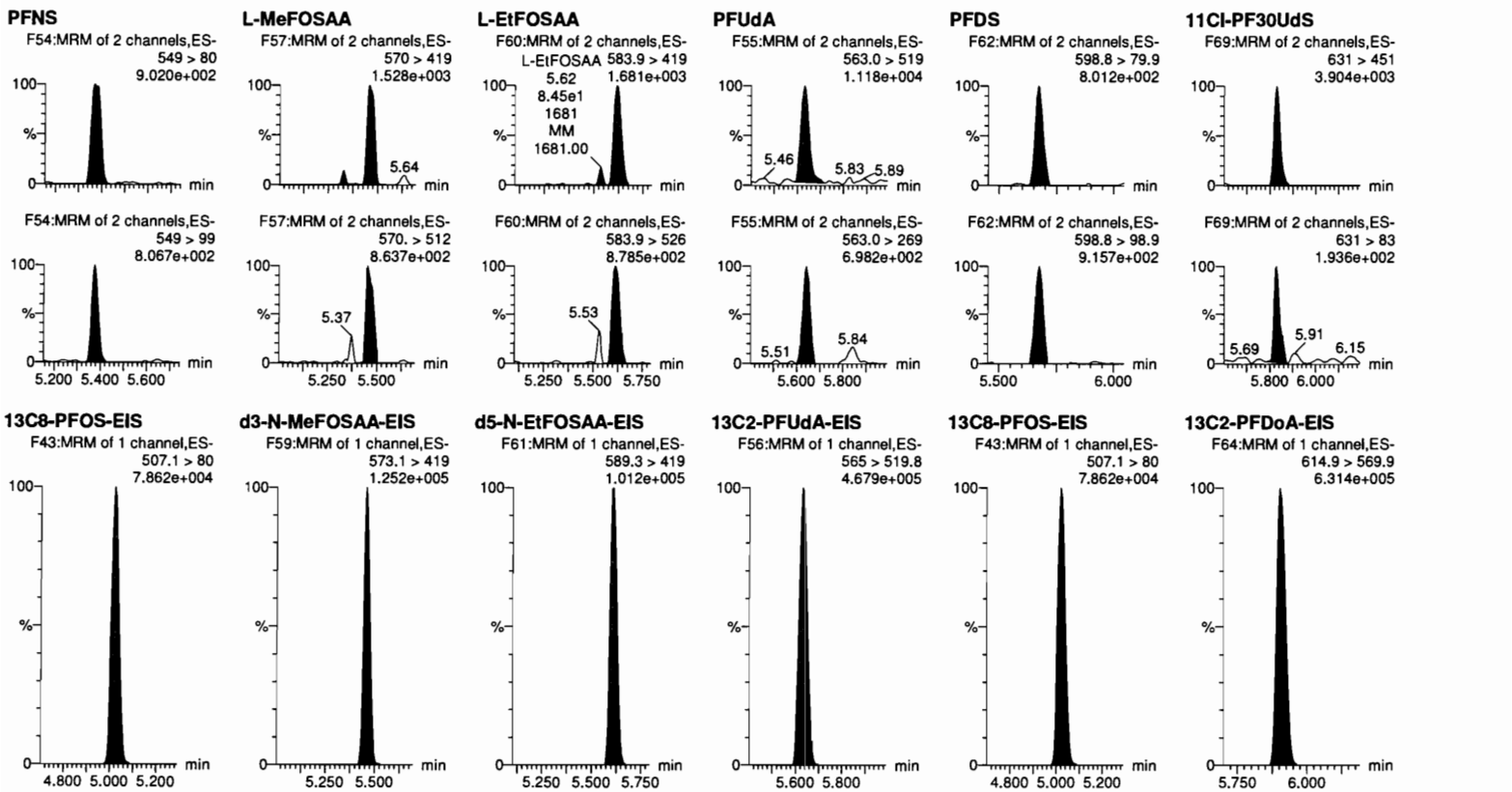


Quantify Sample Report **MassLynx V4.2 SCN977** Page 5 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

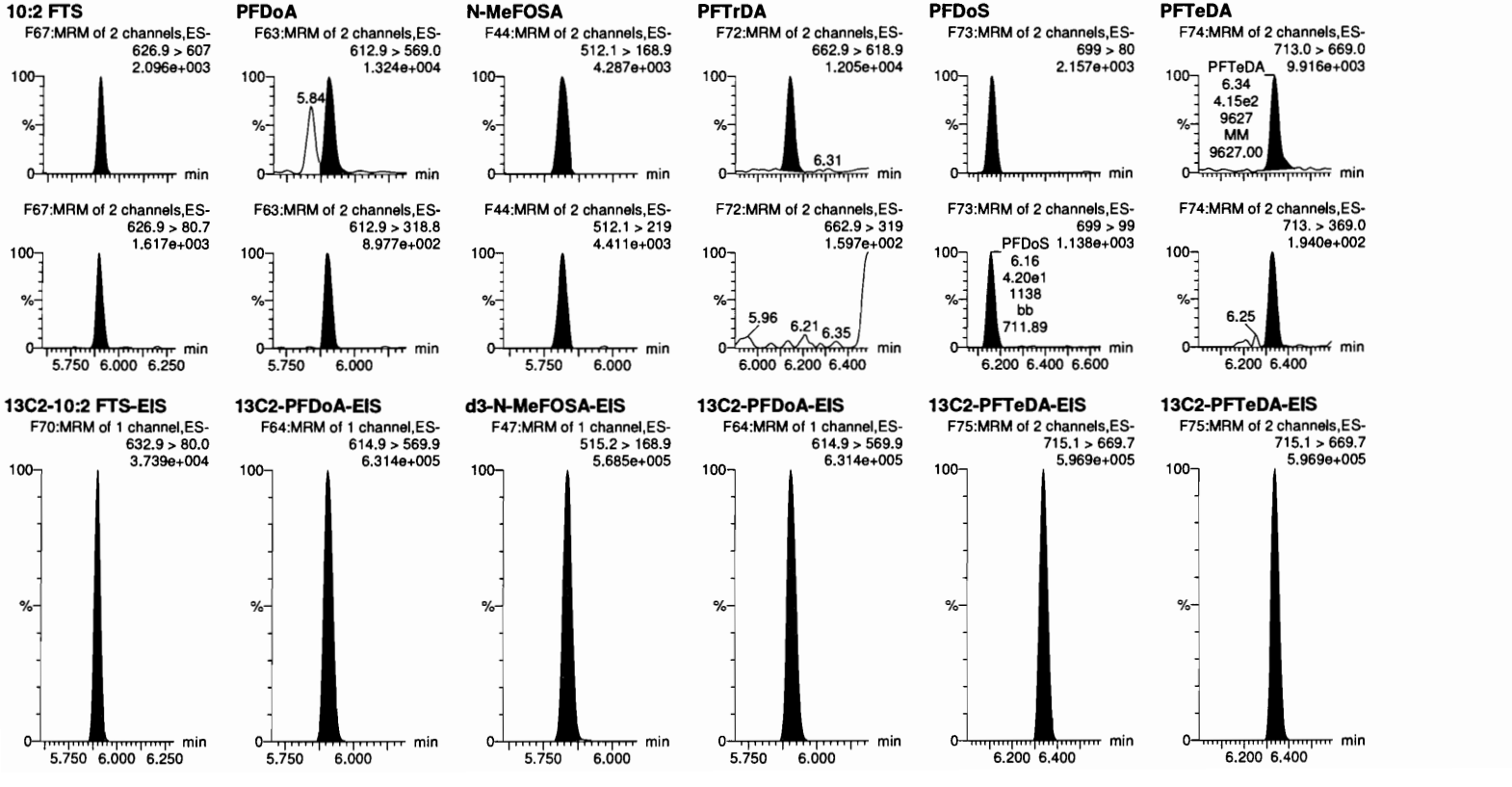


Quantify Sample Report **MassLynx V4.2 SCN977** Page 6 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901



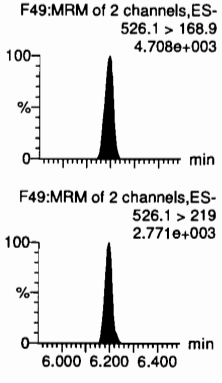
Quantify Sample Report **MassLynx V4.2 SCN977** Page 7 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

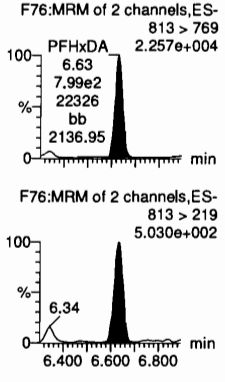
Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:00:57 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

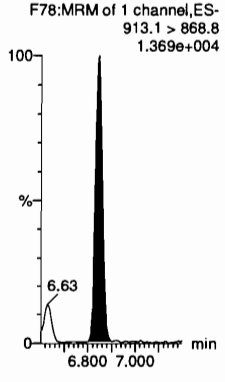
N-EtFOSA



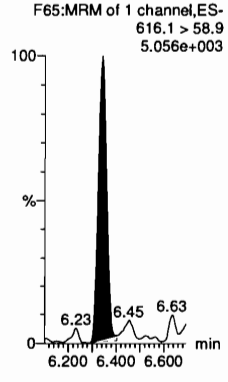
PFHxDA



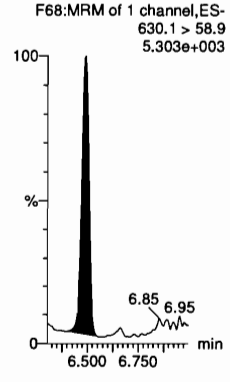
PFODA



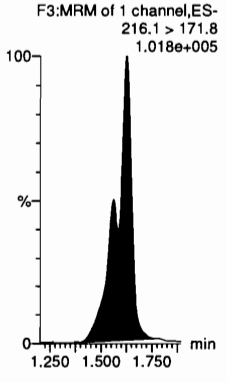
N-MeFOSE



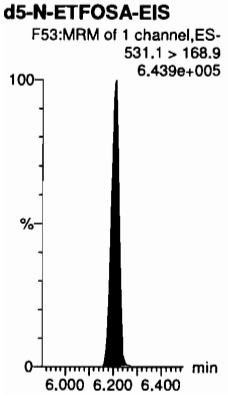
N-EtFOSE



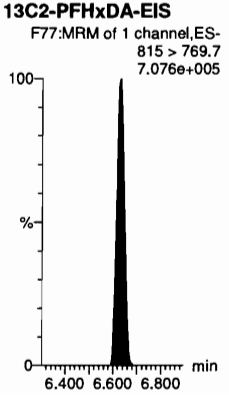
13C3-PFBA-RSD



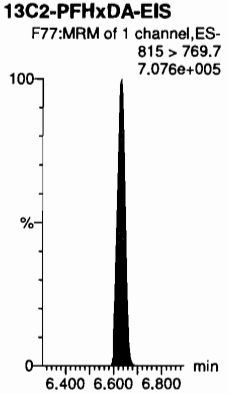
d5-N-ETFOSA-EIS



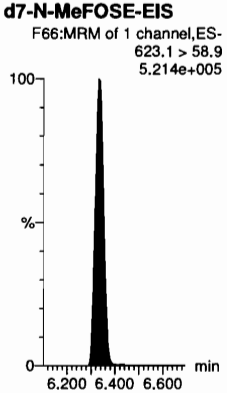
13C2-PFHxDA-EIS



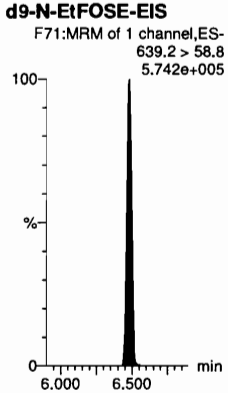
13C2-PFHxDA-EIS



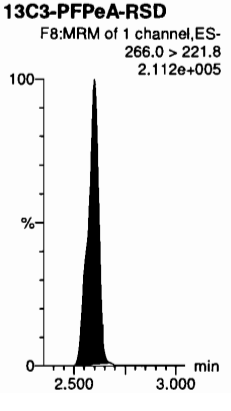
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD

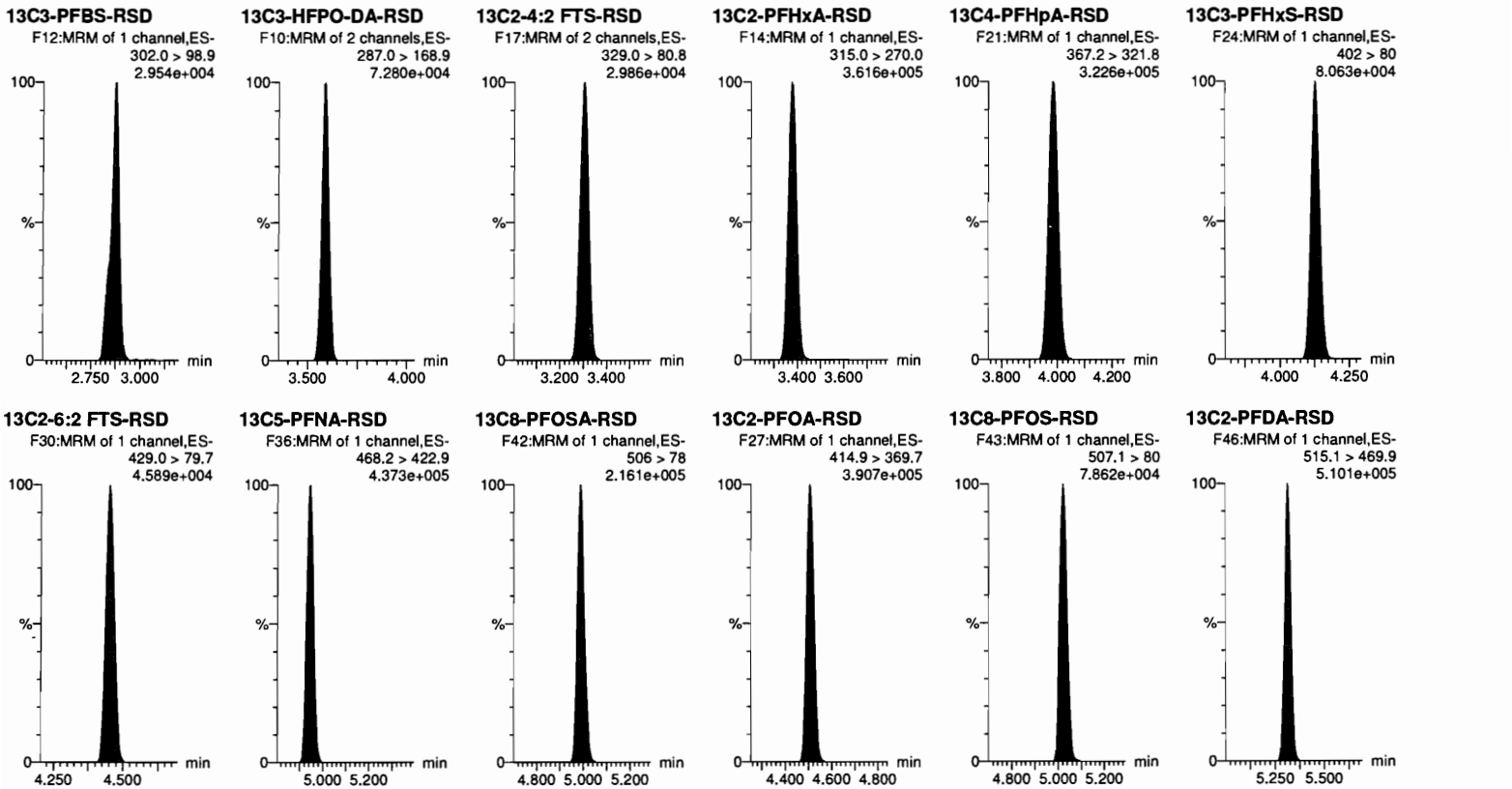


Quantify Sample Report **MassLynx V4.2 SCN977** Page 8 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

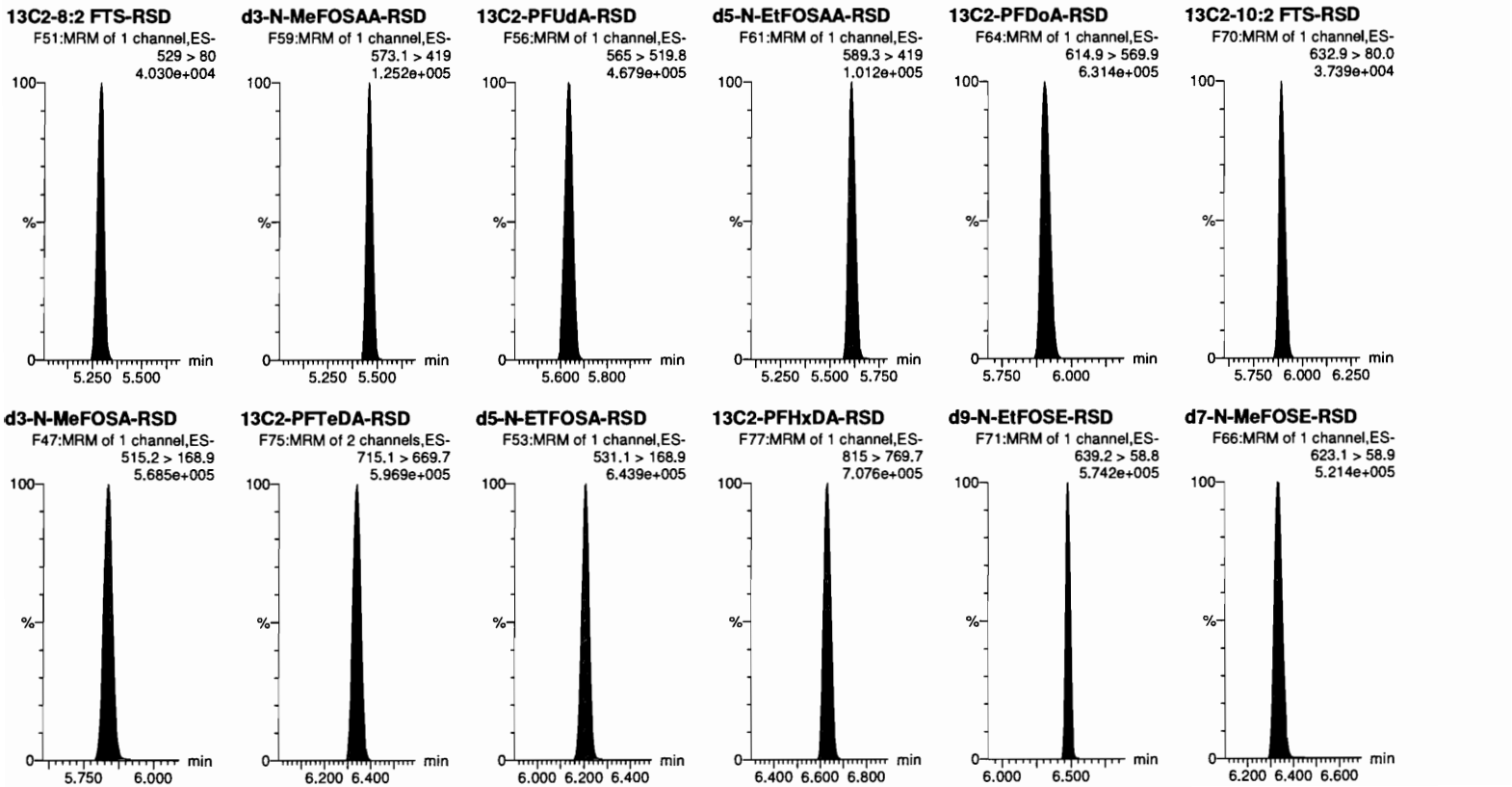


Quantify Sample Report **MassLynx V4.2 SCN977** Page 9 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901



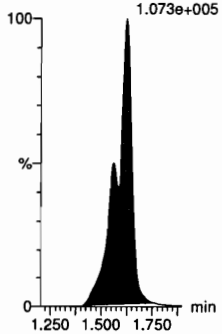
Quantify Sample Report **MassLynx V4.2 SCN977** Page 10 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

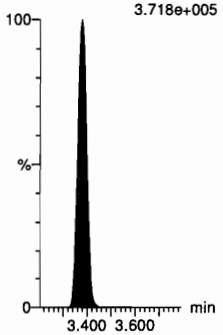
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-19, Date: 06-Jul-2020, Time: 13:13:57, ID: ST200706P1-1 PFC CS-2 20F1901, Description: PFC CS-2 20F1901

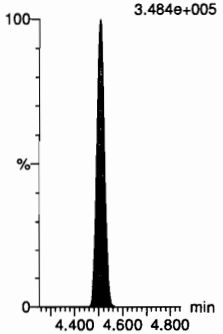
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.073e+005



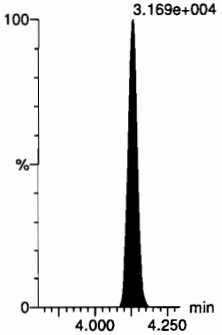
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
3.718e+005



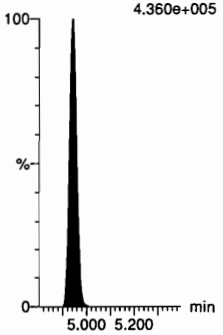
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
3.484e+005



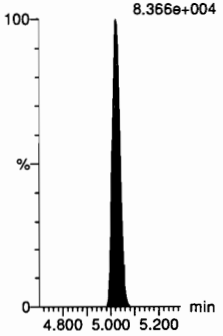
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
3.169e+004



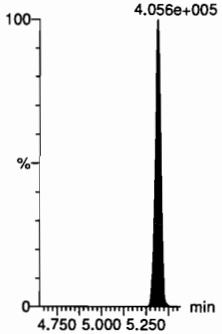
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
4.360e+005



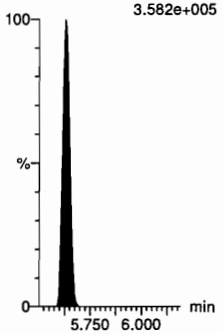
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
8.366e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
4.056e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
3.582e+005

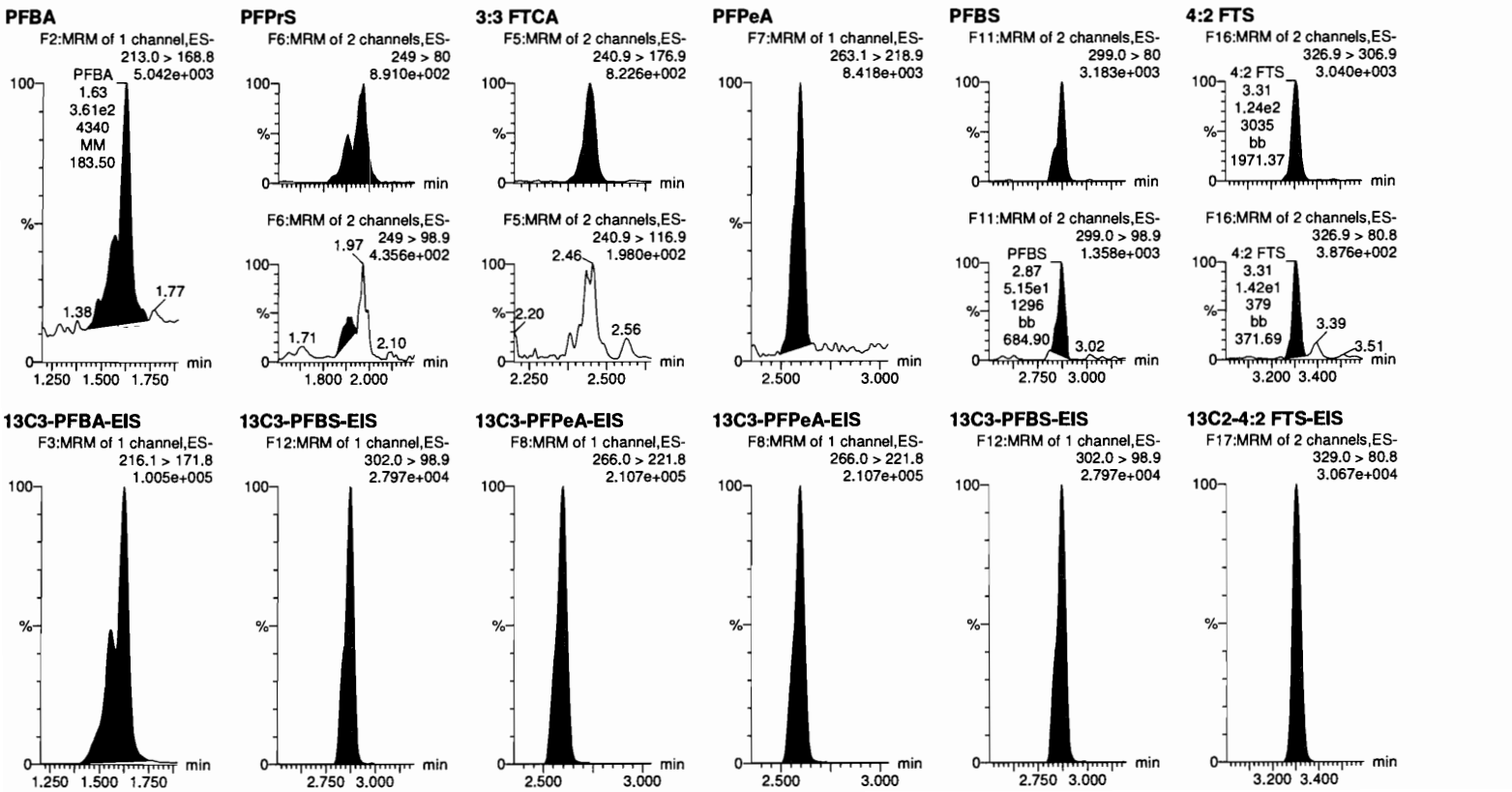


Quantify Sample Report **MassLynx V4.2 SCN977** Page 11 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

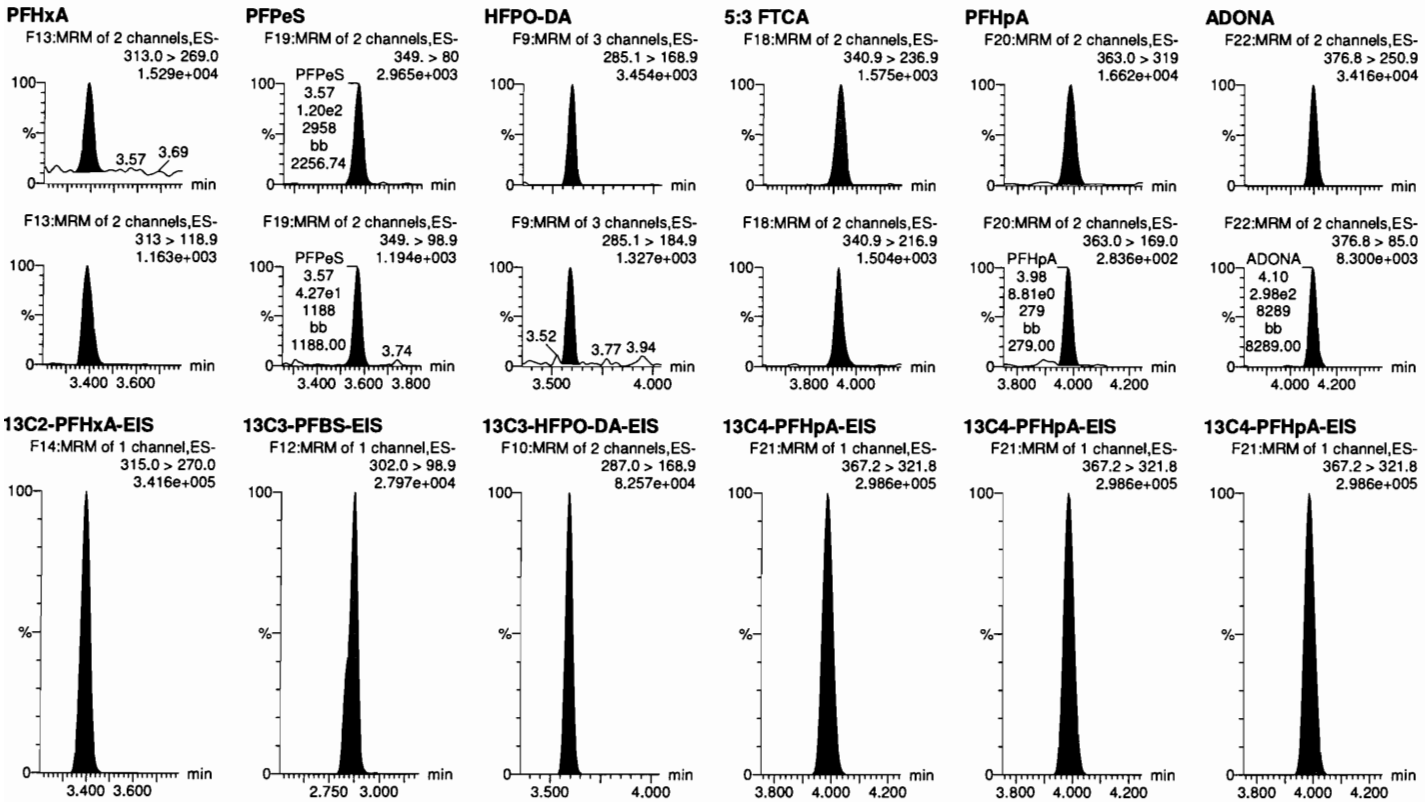


Quantify Sample Report **MassLynx V4.2 SCN977** Page 12 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

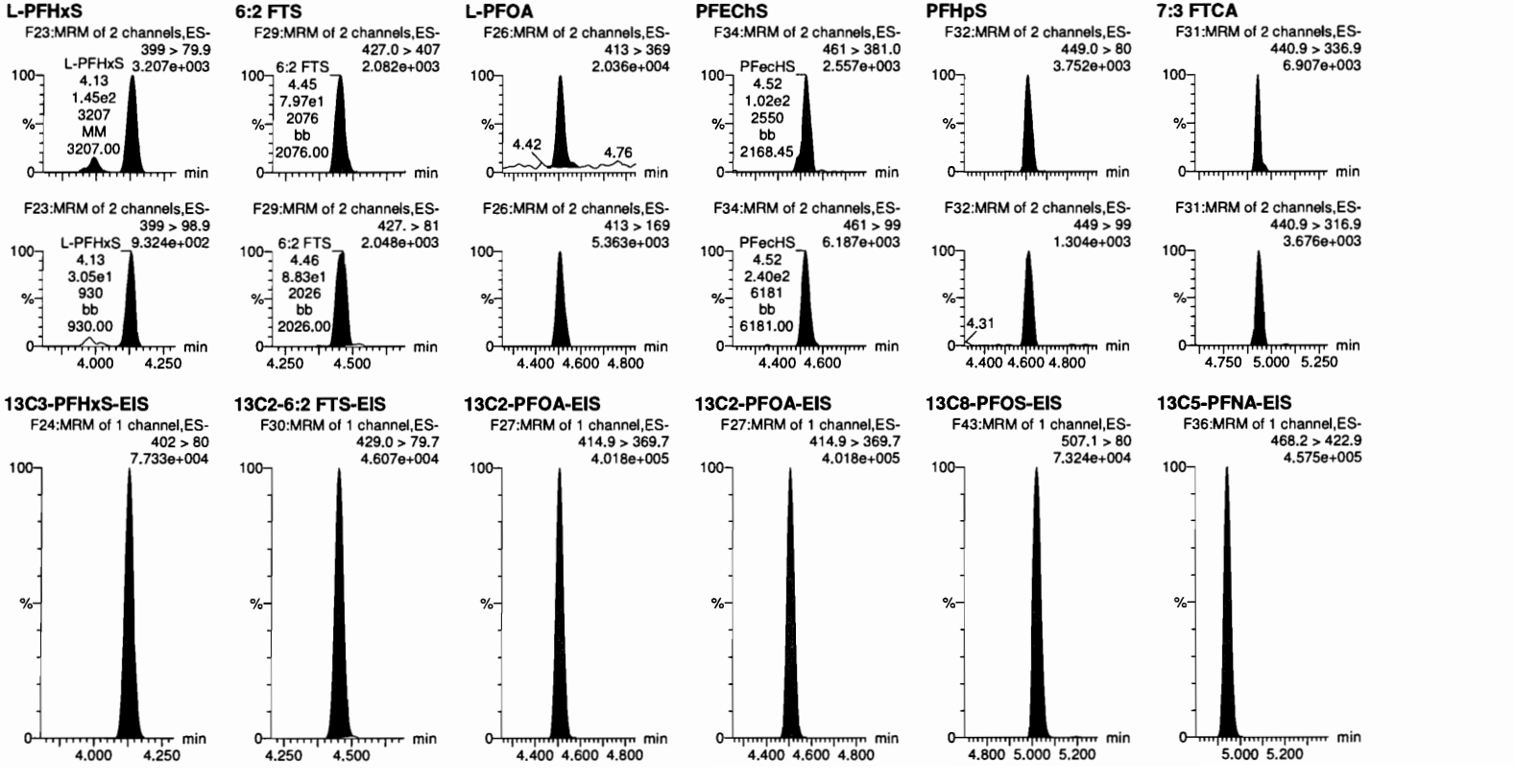


Quantify Sample Report **MassLynx V4.2 SCN977** Page 13 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

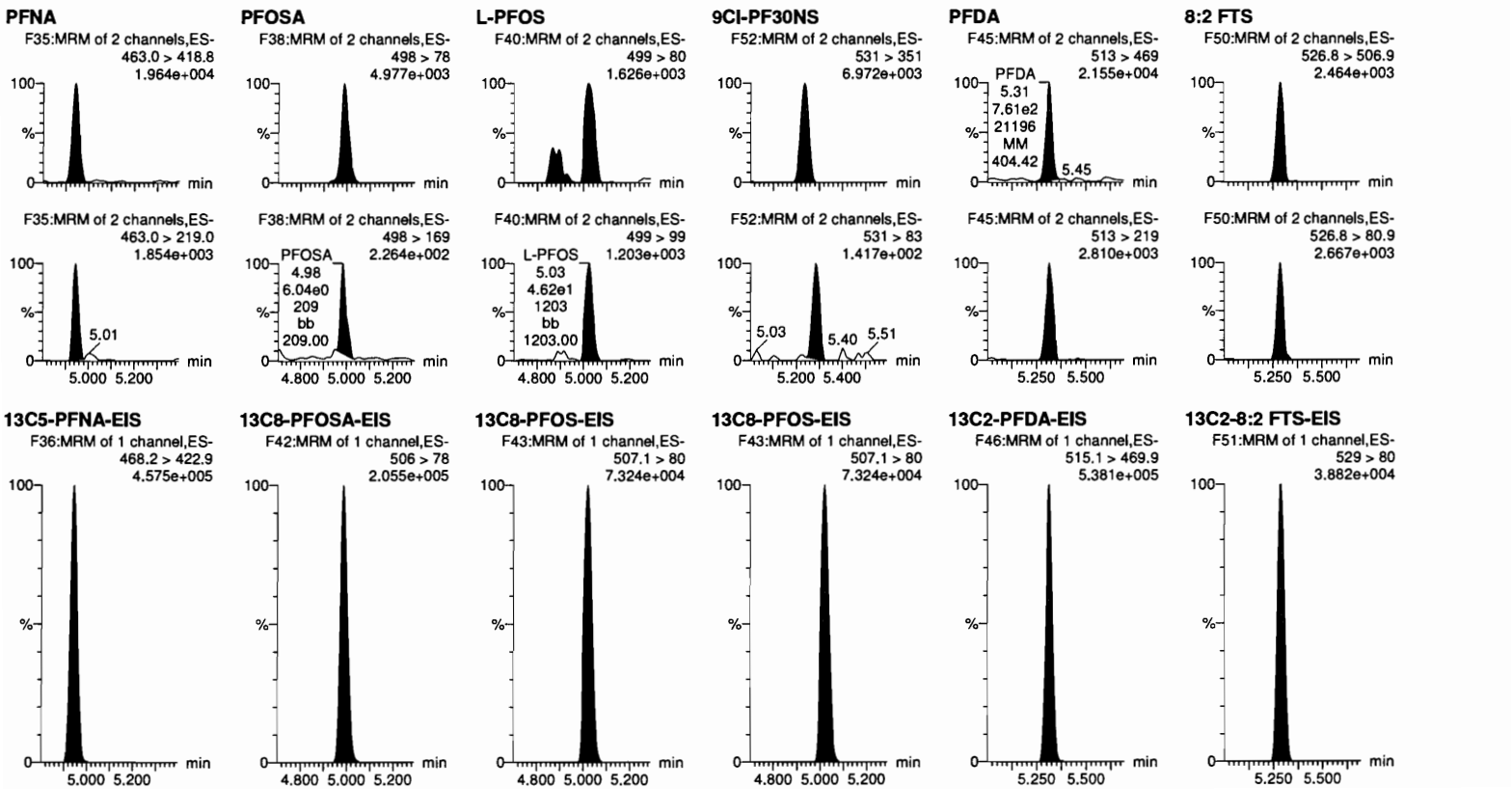


Quantify Sample Report **MassLynx V4.2 SCN977** Page 14 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

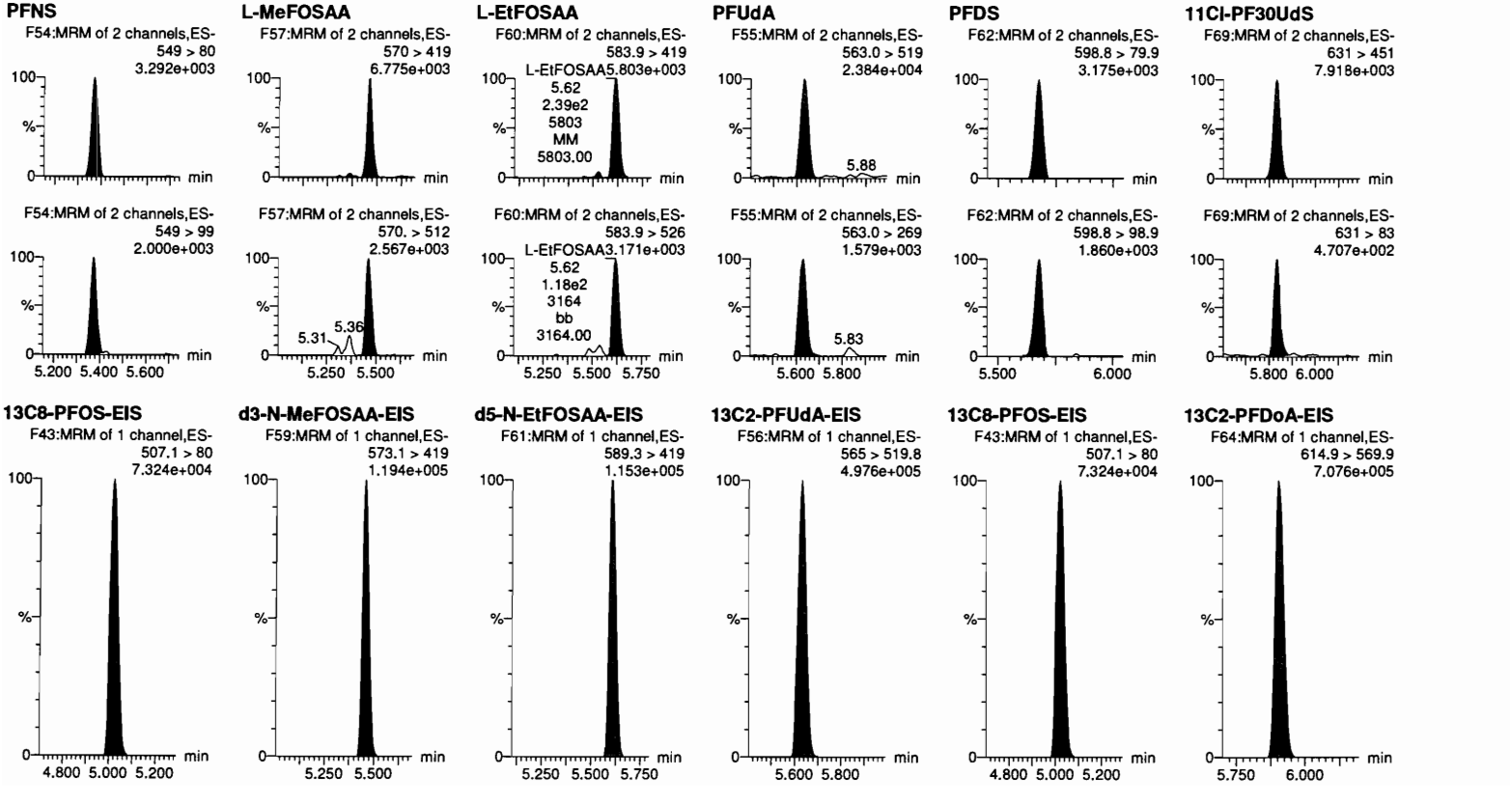


Quantify Sample Report **MassLynx V4.2 SCN977** Page 15 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

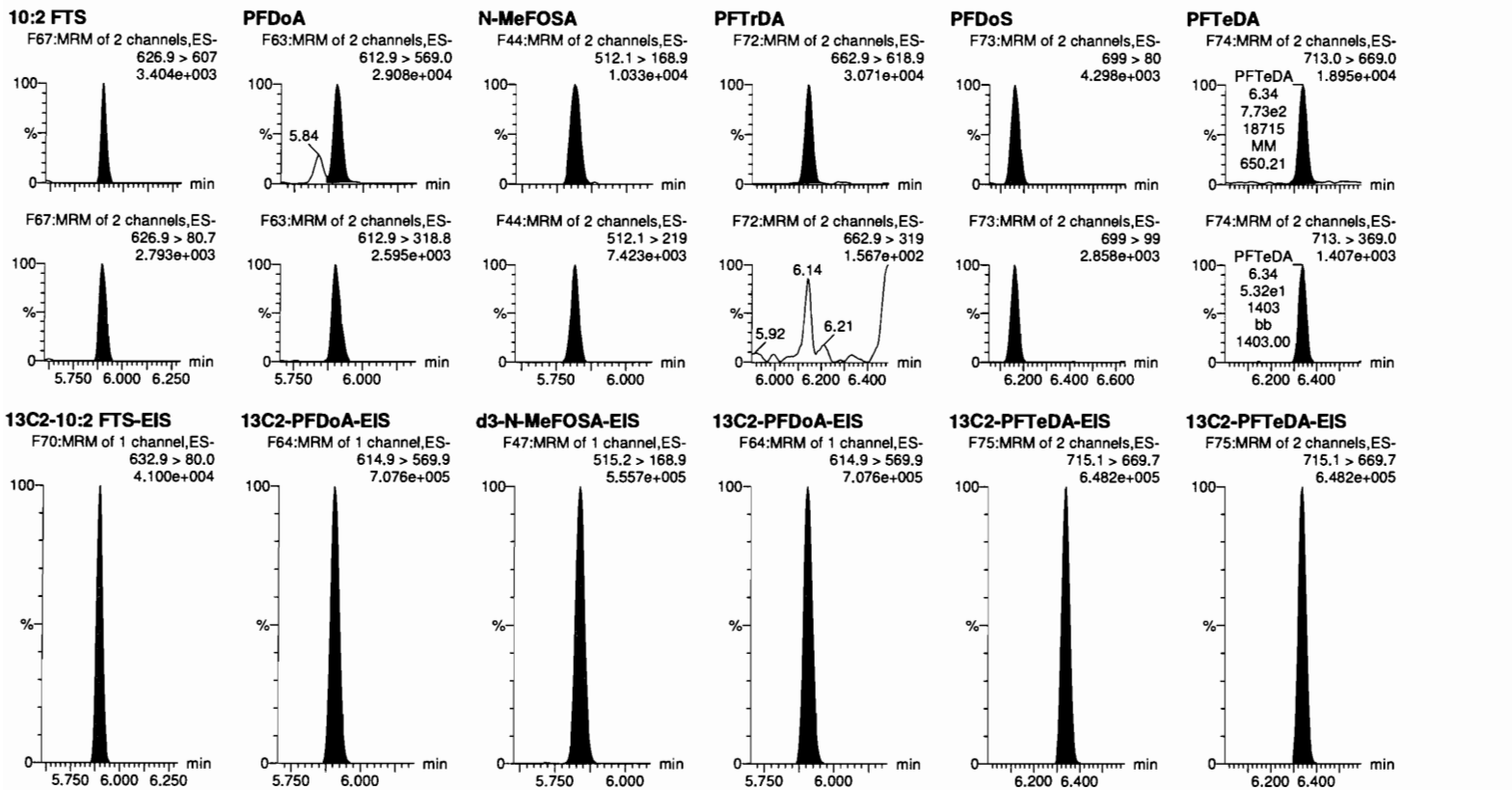


Quantify Sample Report **MassLynx V4.2 SCN977** Page 16 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

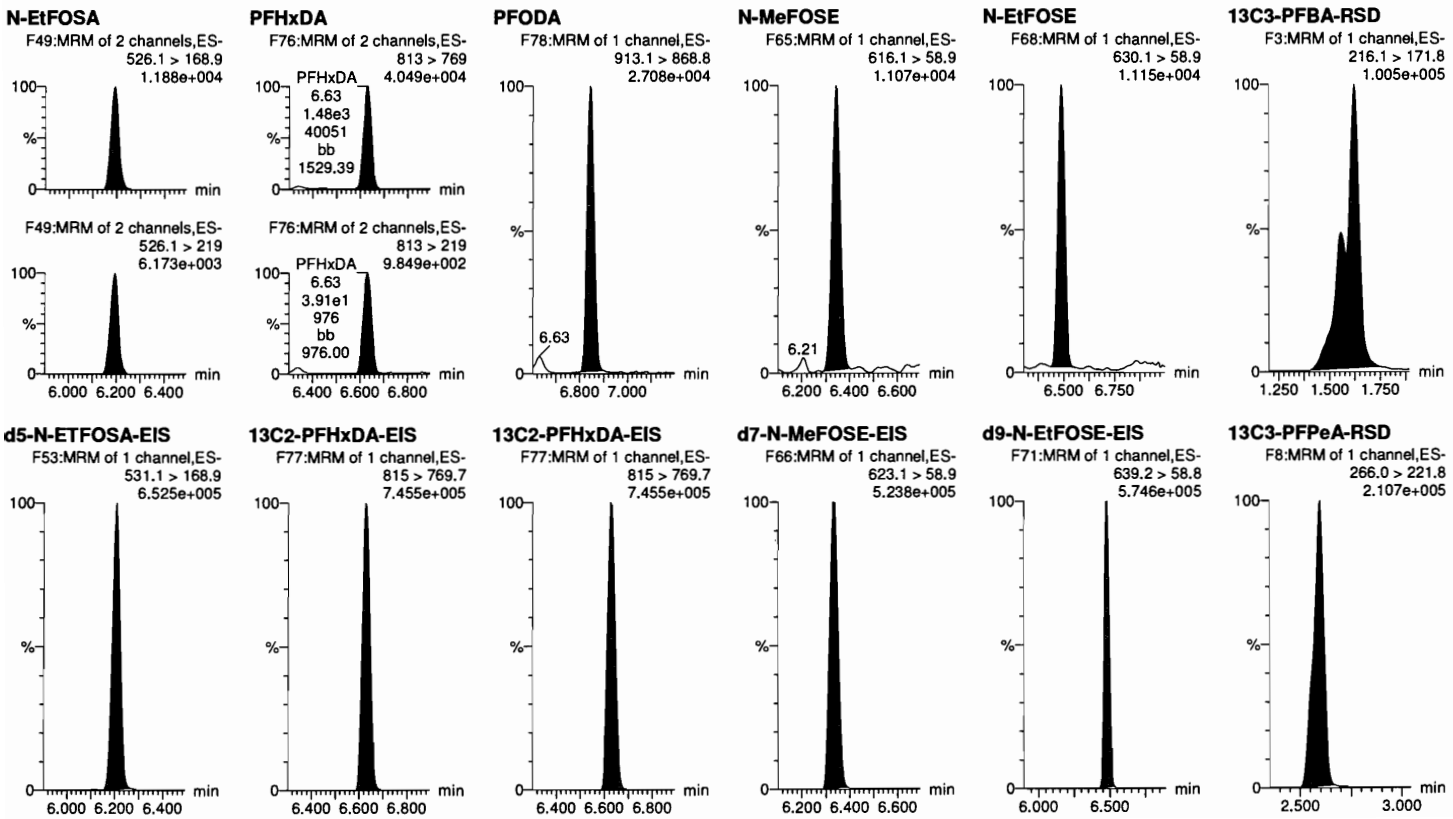


Quantify Sample Report **MassLynx V4.2 SCN977** Page 17 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

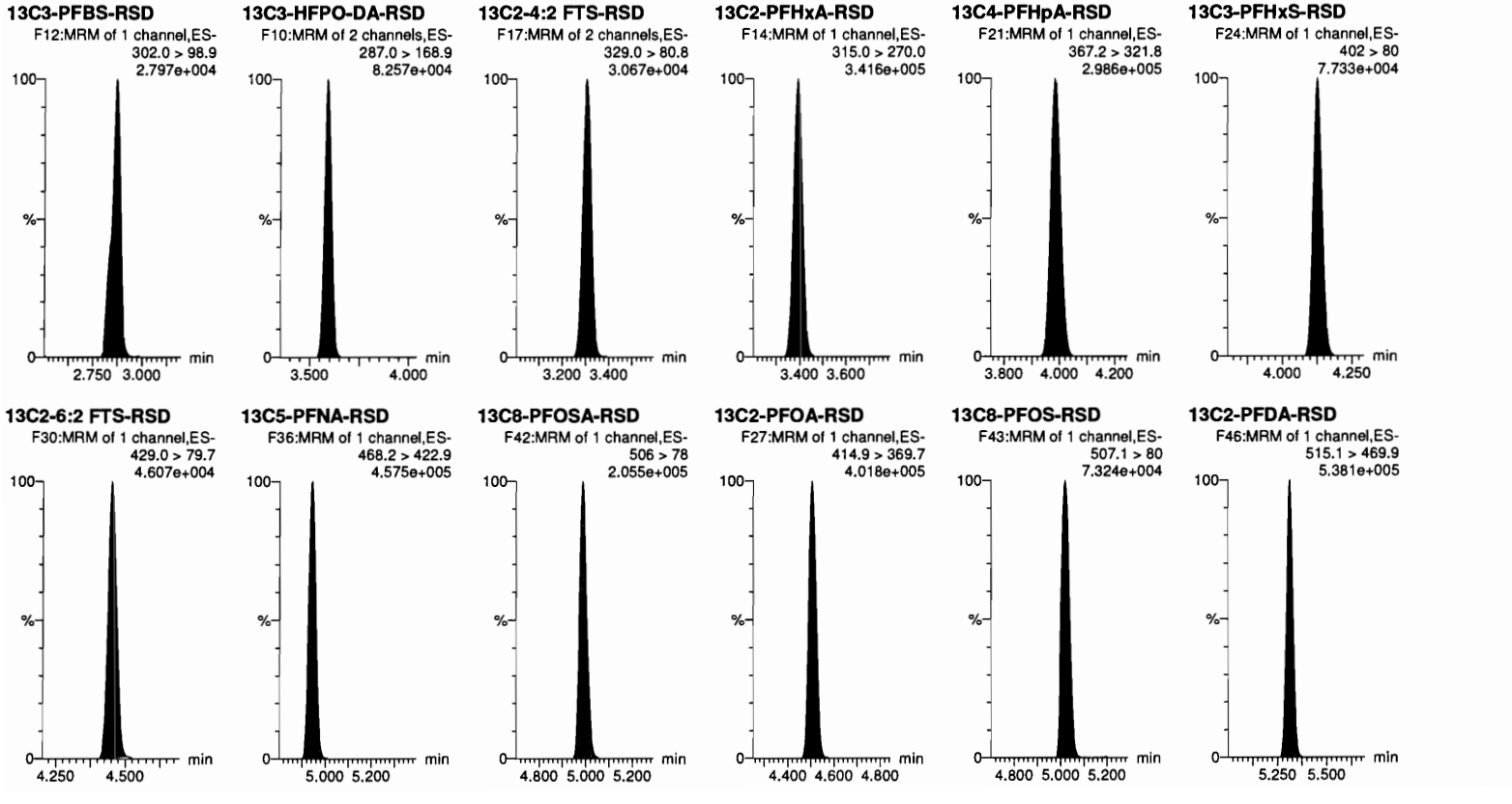


Quantify Sample Report **MassLynx V4.2 SCN977** Page 18 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902



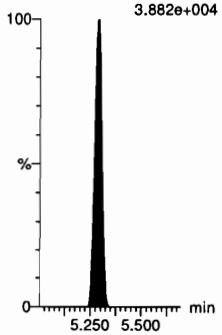
Quantify Sample Report **MassLynx V4.2 SCN977** Page 19 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

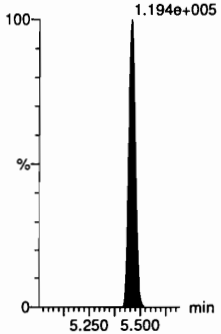
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

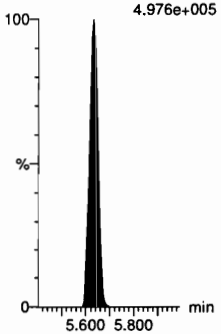
13C2-8:2 FTS-RSD
F51:MRM of 1 channel,ES-
529 > 80
3.882e+004



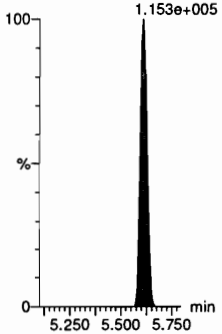
d3-N-MeFOSAA-RSD
F59:MRM of 1 channel,ES-
573.1 > 419
1.194e+005



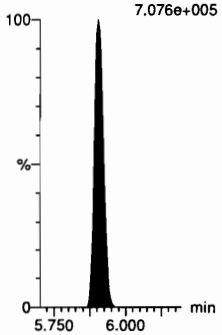
13C2-PFUdA-RSD
F56:MRM of 1 channel,ES-
565 > 519.8
4.976e+005



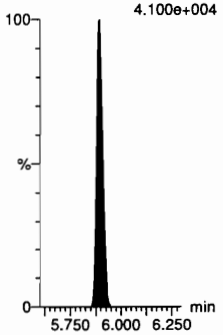
d5-N-EtFOSAA-RSD
F61:MRM of 1 channel,ES-
589.3 > 419
1.153e+005



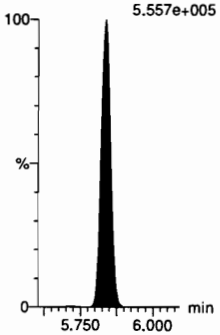
13C2-PFDoA-RSD
F64:MRM of 1 channel,ES-
614.9 > 569.9
7.076e+005



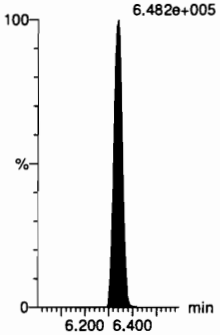
13C2-10:2 FTS-RSD
F70:MRM of 1 channel,ES-
632.9 > 80.0
4.100e+004



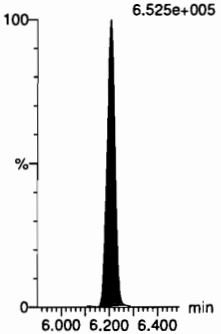
d3-N-MeFOSA-RSD
F47:MRM of 1 channel,ES-
515.2 > 168.9
5.557e+005



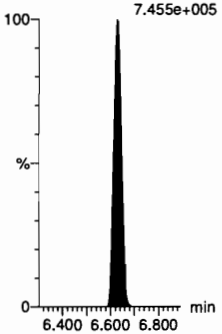
13C2-PFTeDA-RSD
F75:MRM of 2 channels,ES-
715.1 > 669.7
6.482e+005



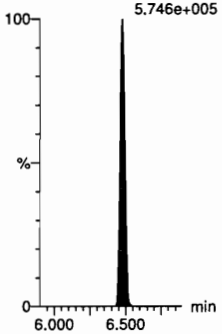
d5-N-ETFOSA-RSD
F53:MRM of 1 channel,ES-
531.1 > 168.9
6.525e+005



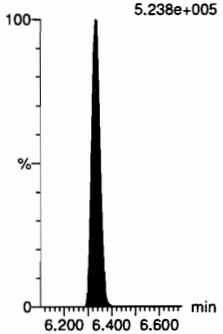
13C2-PFHxDA-RSD
F77:MRM of 1 channel,ES-
815 > 769.7
7.455e+005



d9-N-EtFOSE-RSD
F71:MRM of 1 channel,ES-
639.2 > 58.8
5.746e+005



d7-N-MeFOSE-RSD
F66:MRM of 1 channel,ES-
623.1 > 58.9
5.238e+005



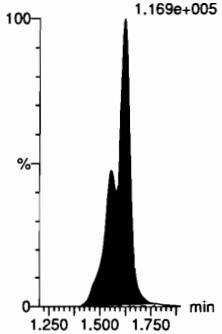
Quantify Sample Report **MassLynx V4.2 SCN977** Page 20 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

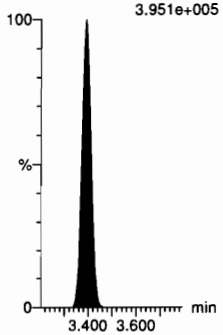
Last Altered: Tuesday, July 07, 2020 09:00:31 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:00:57 Pacific Daylight Time

Name: 200706P1-20, Date: 06-Jul-2020, Time: 13:24:27, ID: ST200706P1-2 PFC CS-1 20F1902, Description: PFC CS-1 20F1902

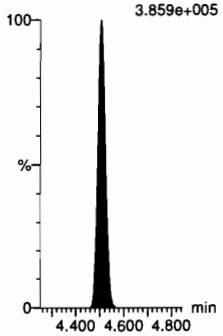
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.169e+005



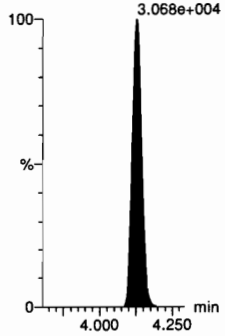
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
3.951e+005



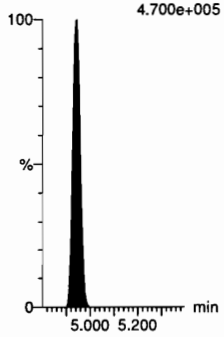
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
3.859e+005



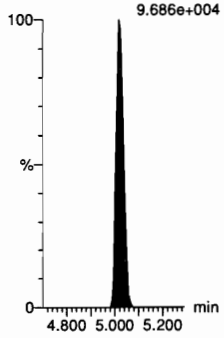
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
3.068e+004



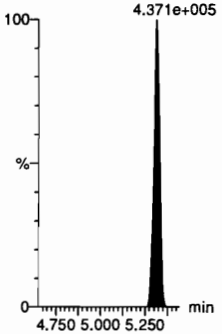
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
4.700e+005



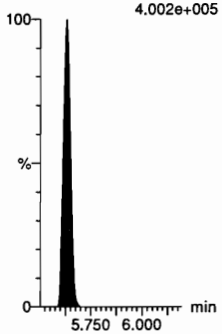
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
9.686e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
4.371e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
4.002e+005

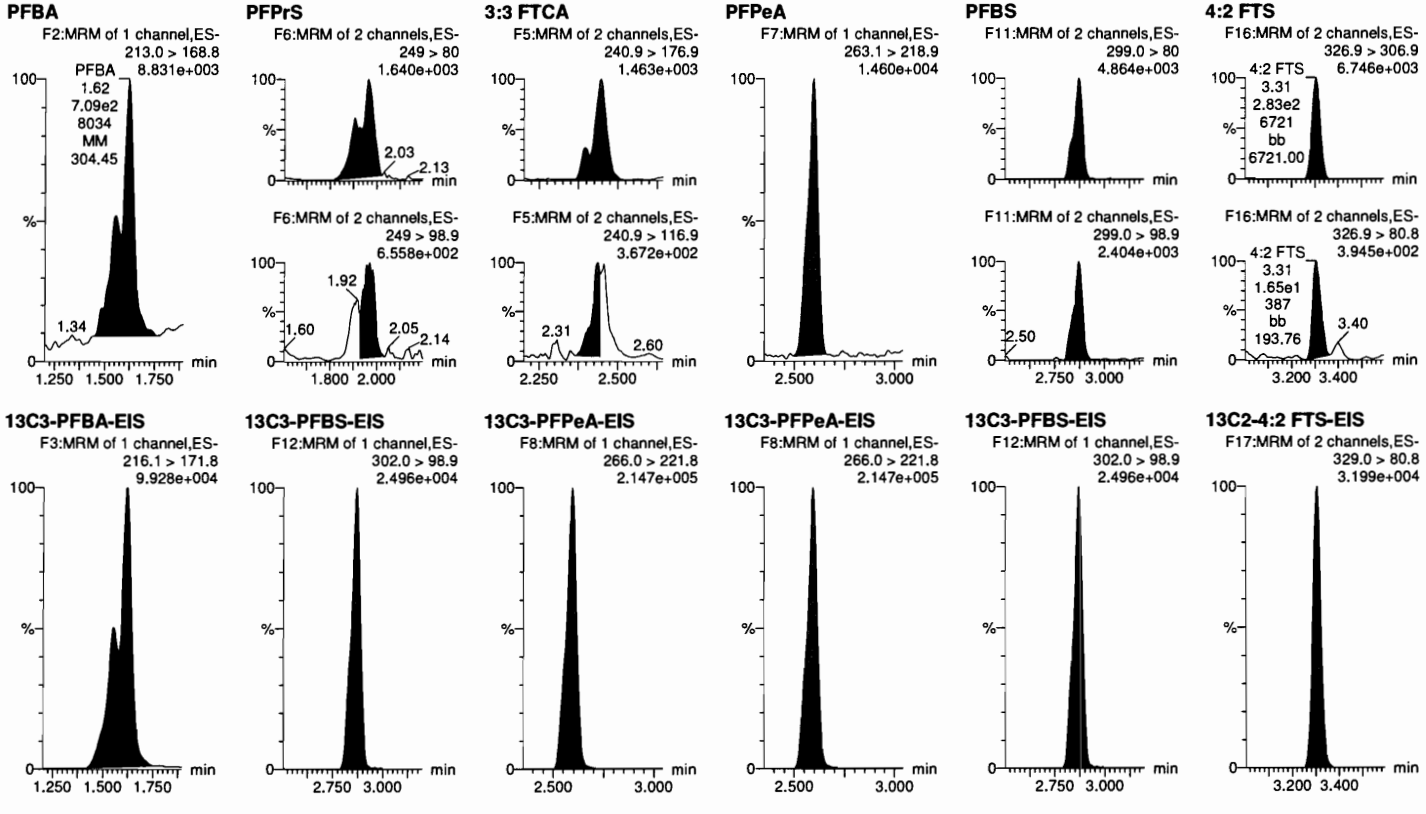


Quantify Sample Report **MassLynx V4.2 SCN977** Page 21 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

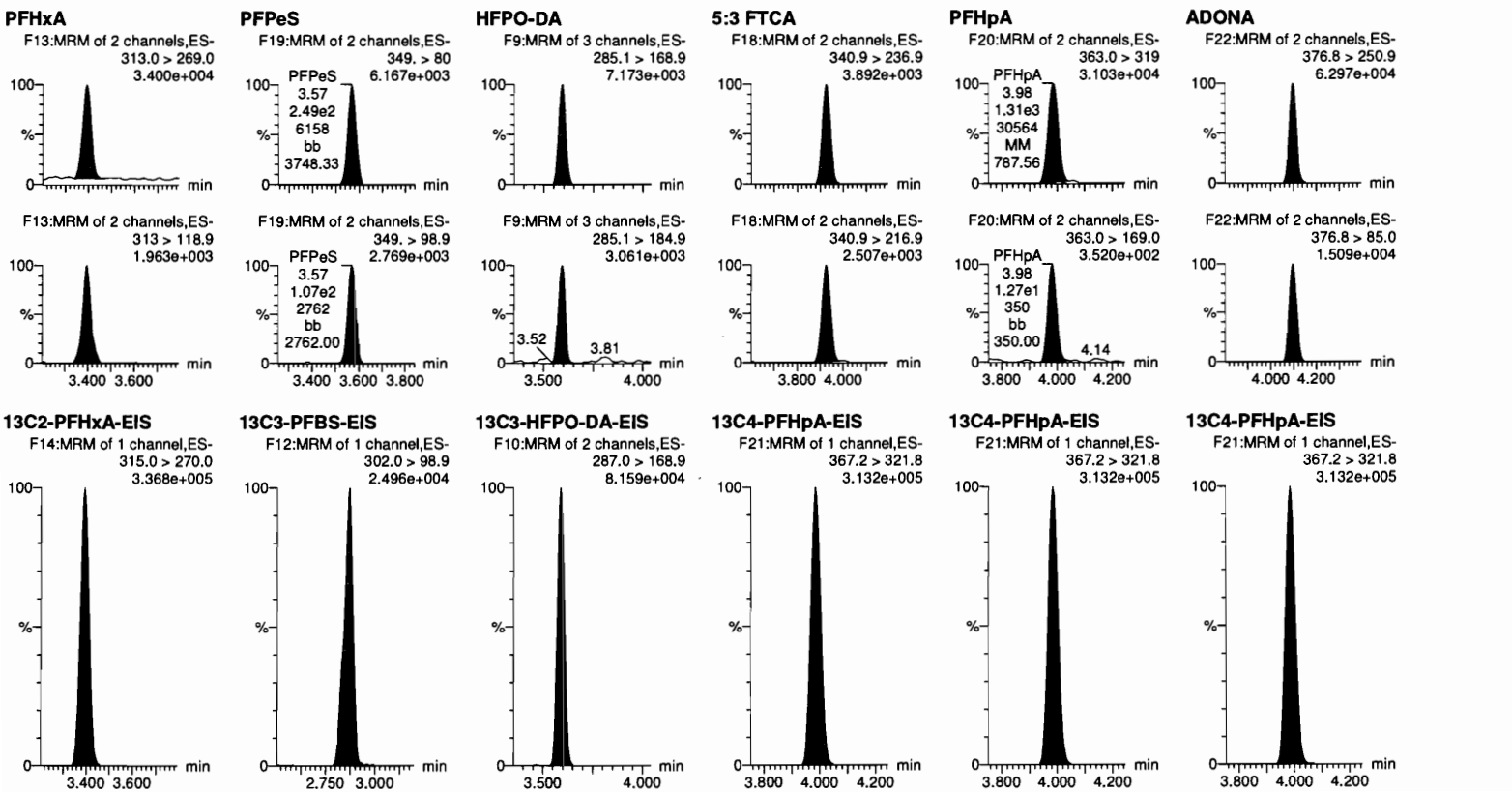


Quantify Sample Report **MassLynx V4.2 SCN977** Page 22 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

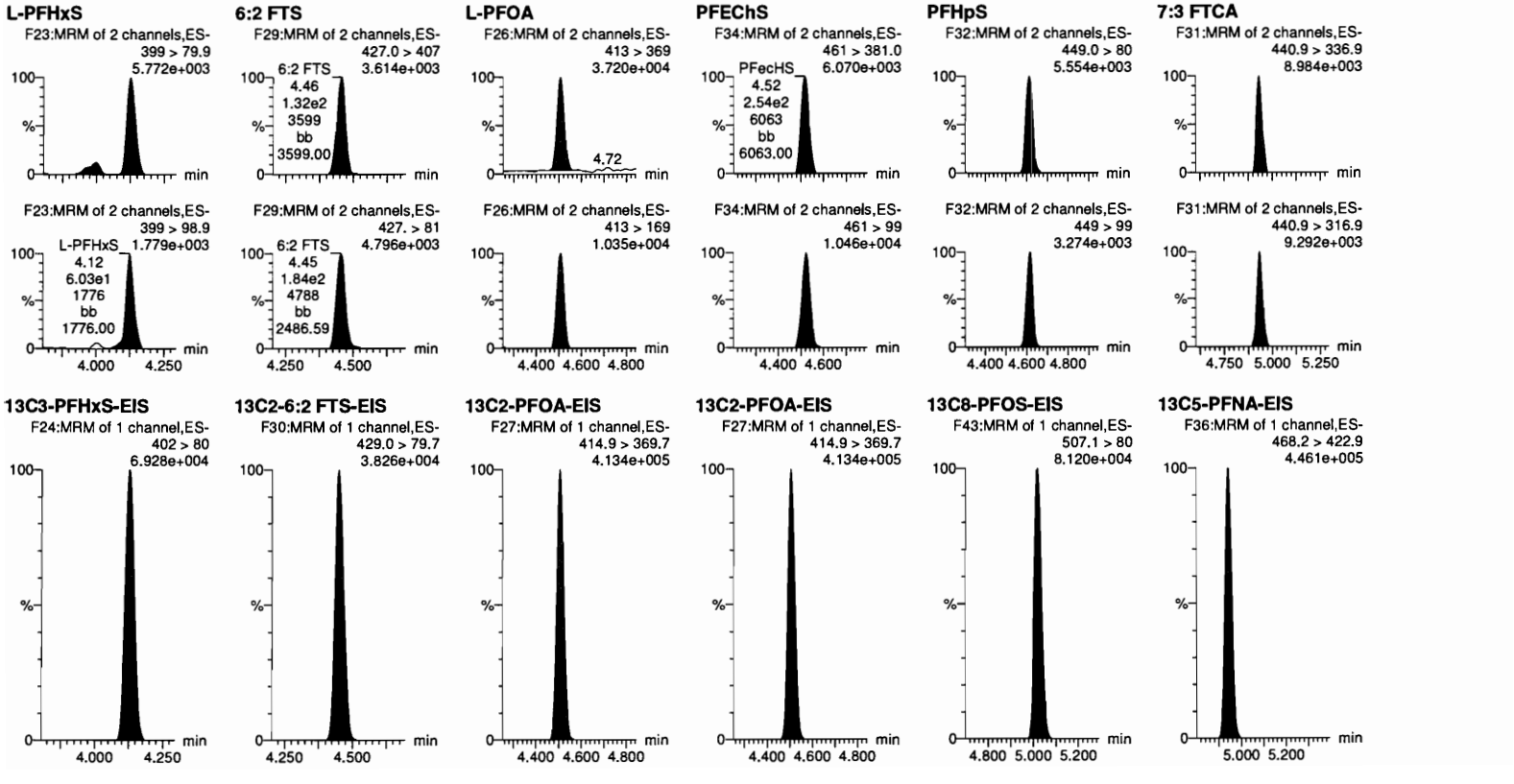


Quantify Sample Report **MassLynx V4.2 SCN977** Page 23 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

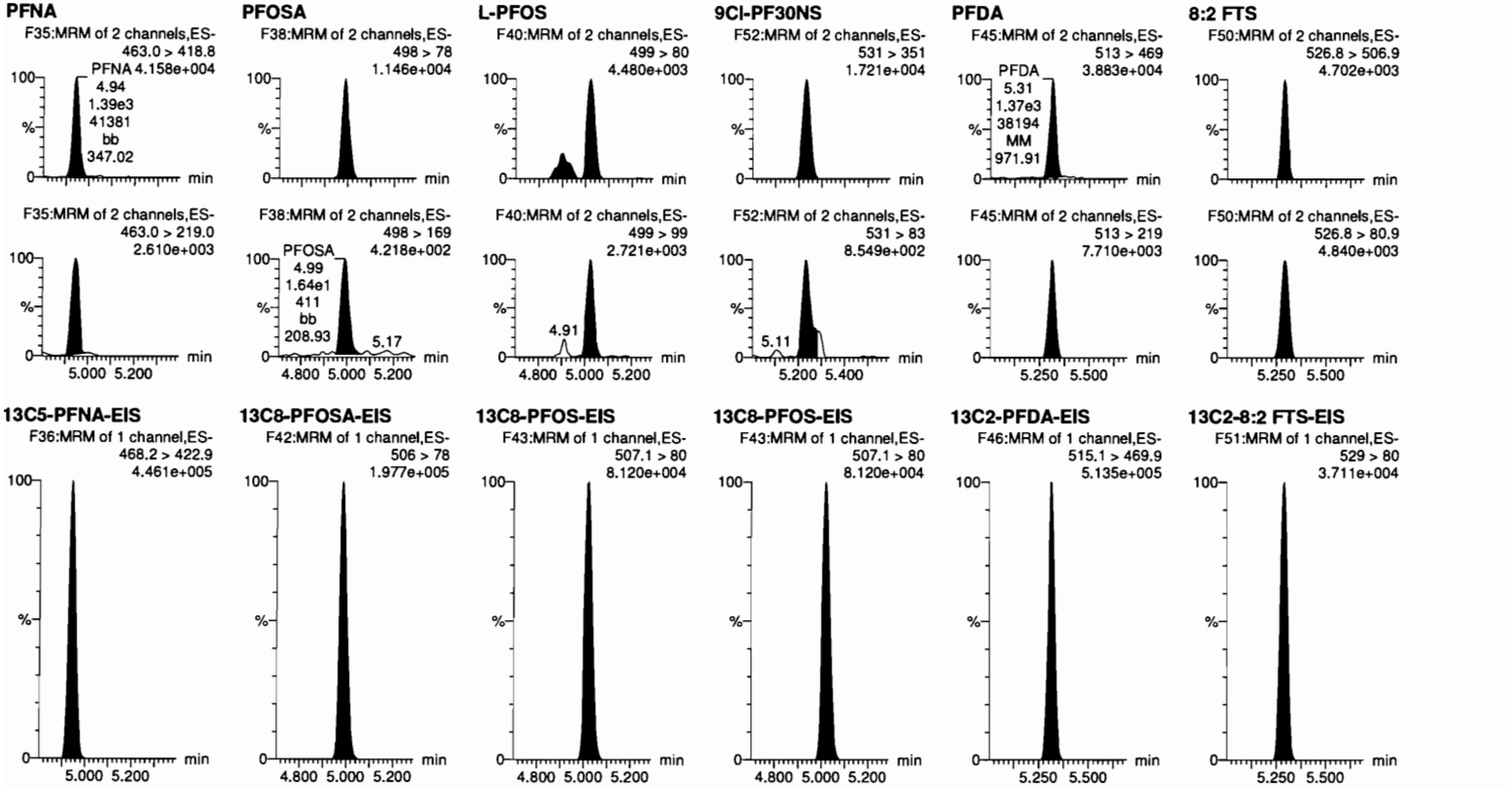


Quantify Sample Report **MassLynx V4.2 SCN977** Page 24 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

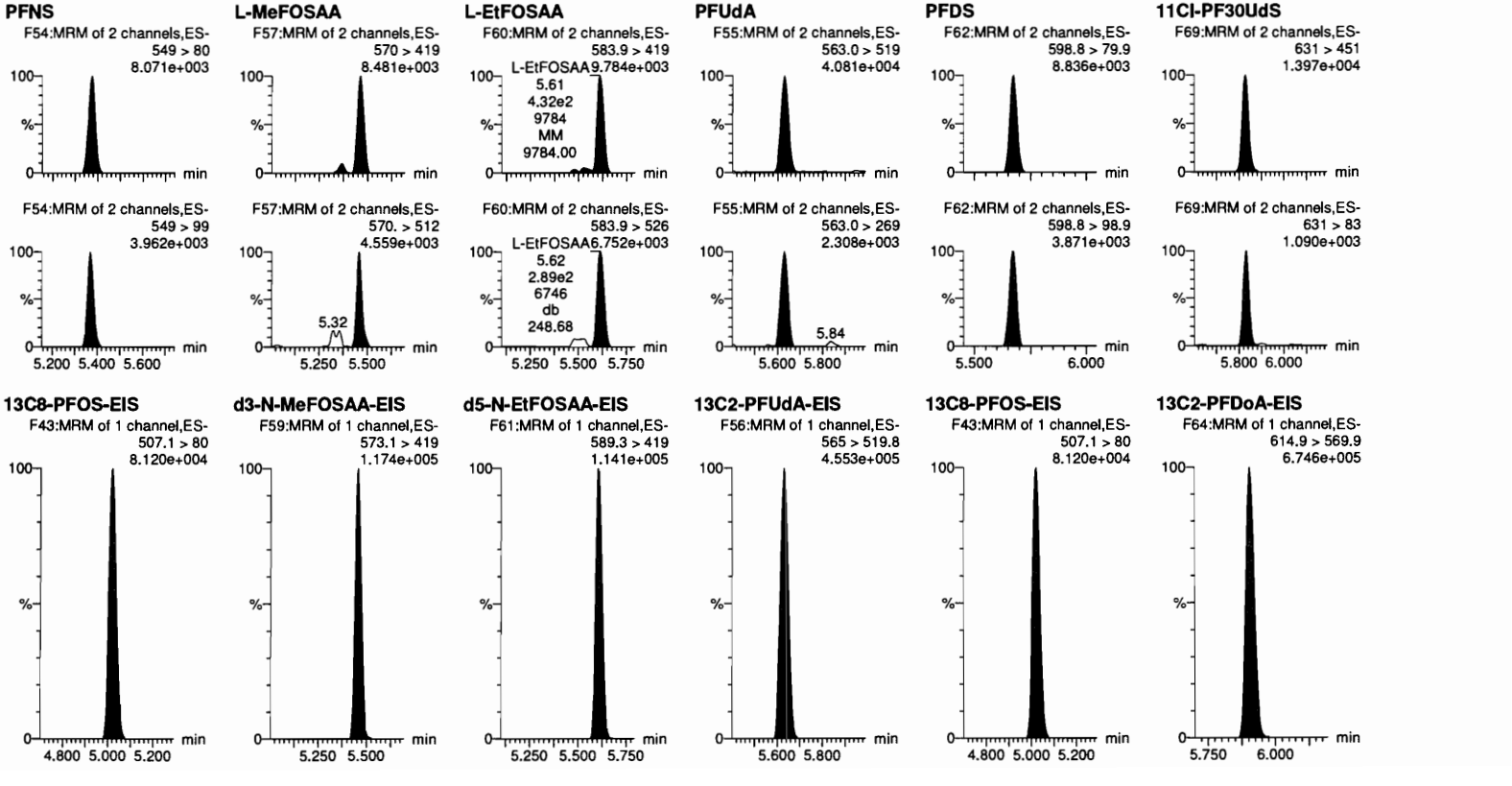


Quantify Sample Report **MassLynx V4.2 SCN977** Page 25 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

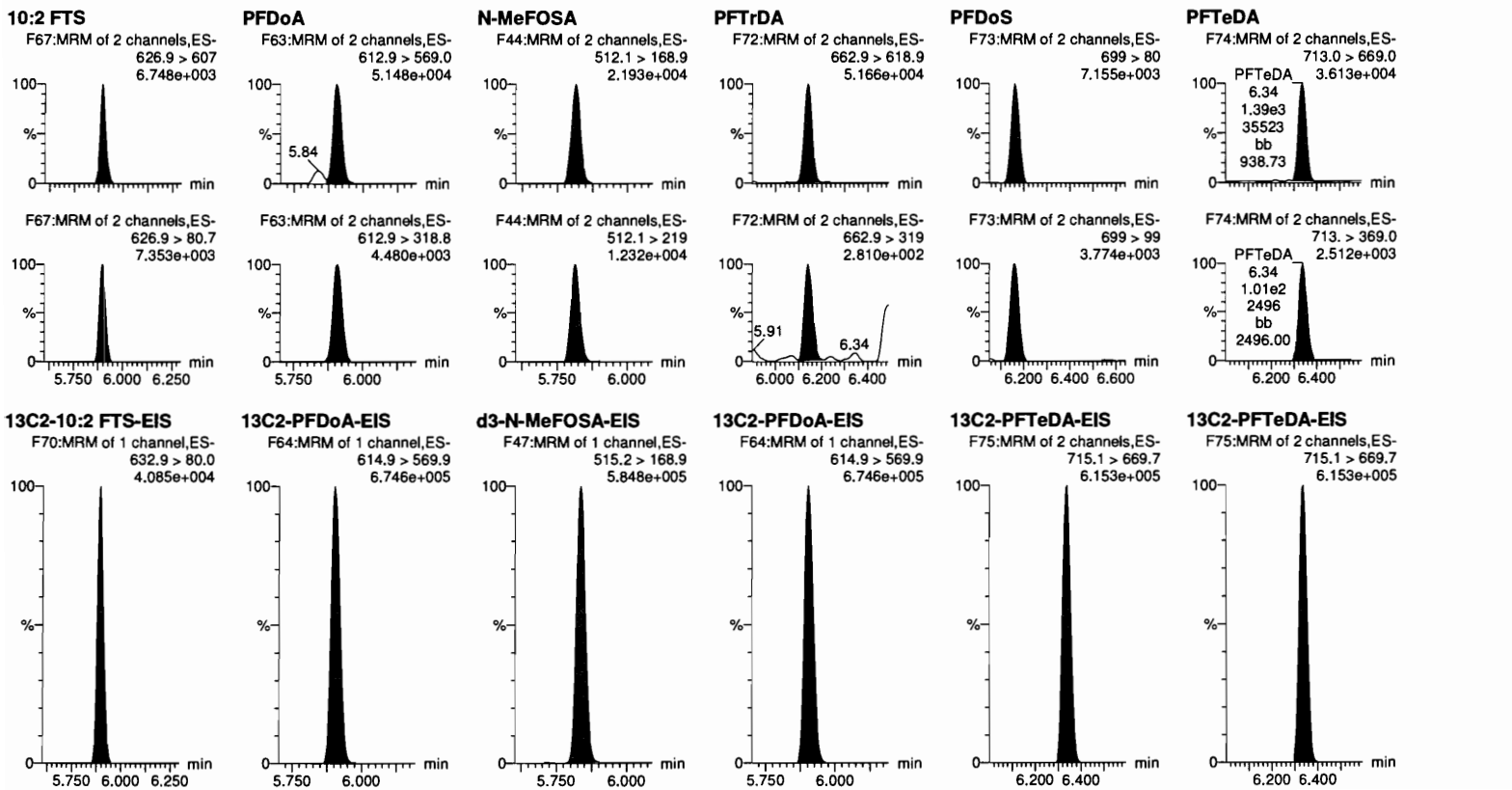


Quantify Sample Report **MassLynx V4.2 SCN977** Page 26 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

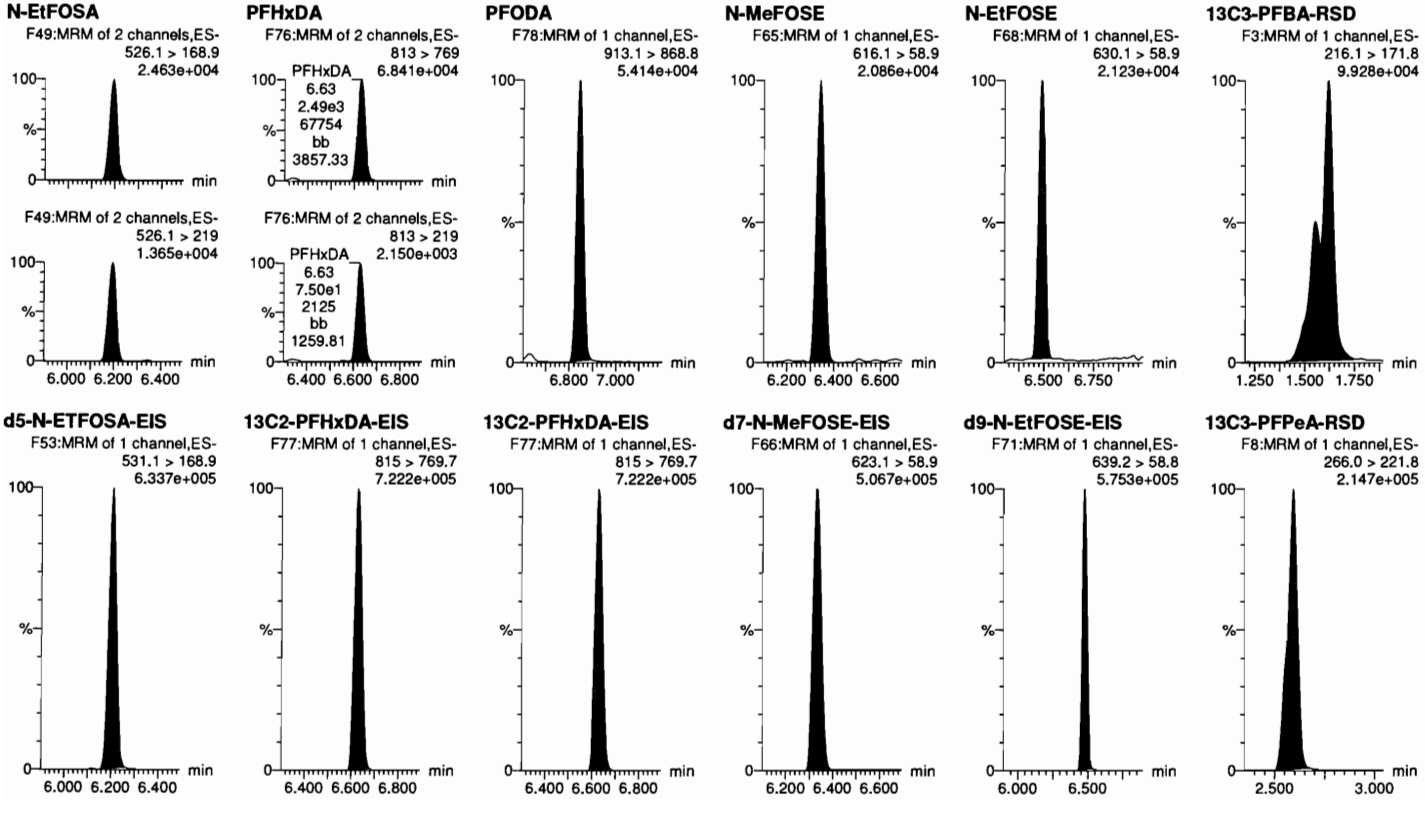


Quantify Sample Report **MassLynx V4.2 SCN977** Page 27 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903



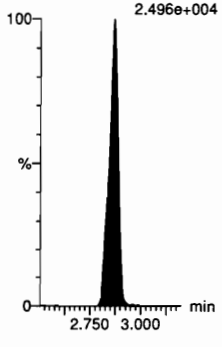
Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

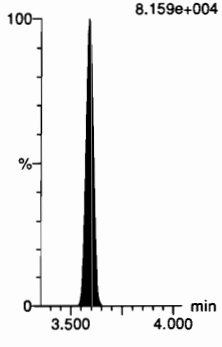
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

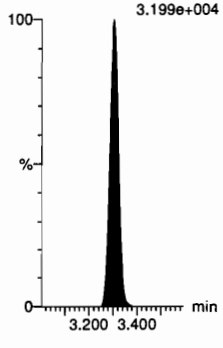
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 98.9
2.496e+004



13C3-HFPO-DA-RSD
F10:MRM of 2 channels,ES-
287.0 > 168.9
8.159e+004



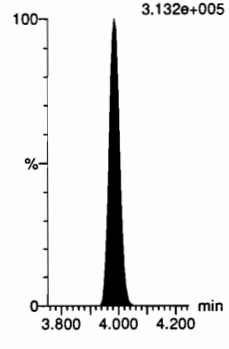
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 80.8
3.199e+004



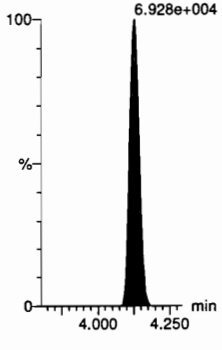
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
3.368e+005



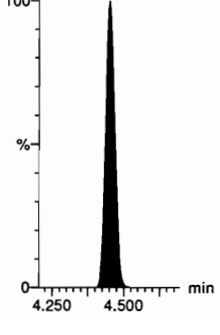
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.132e+005



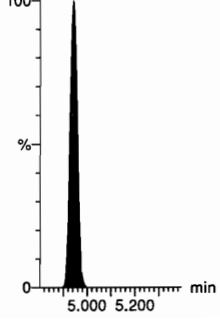
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
402 > 80
6.928e+004



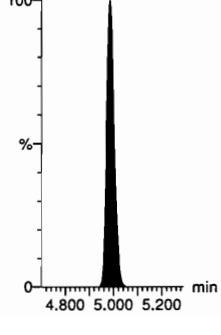
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 79.7
3.826e+004



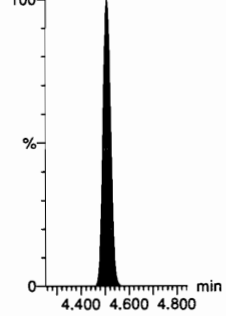
13C5-PFNA-RSD
F36:MRM of 1 channel,ES-
468.2 > 422.9
4.461e+005



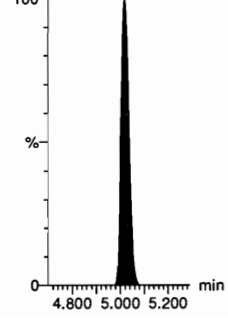
13C8-PFOSA-RSD
F42:MRM of 1 channel,ES-
506 > 78
1.977e+005



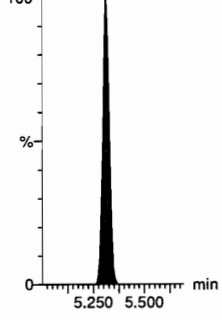
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
4.134e+005



13C8-PFOS-RSD
F43:MRM of 1 channel,ES-
507.1 > 80
8.120e+004



13C2-PFDA-RSD
F46:MRM of 1 channel,ES-
515.1 > 469.9
5.135e+005



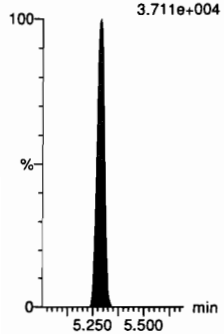
Quantify Sample Report **MassLynx V4.2 SCN977** Page 29 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

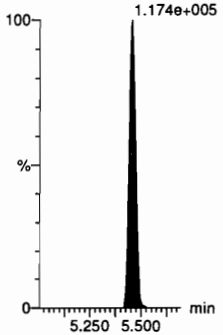
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

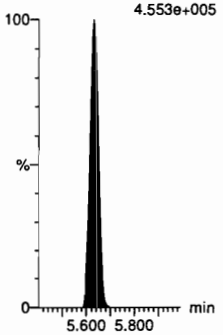
13C2-8:2 FTS-RSD
F51:MRM of 1 channel,ES-
529 > 80
3.711e+004



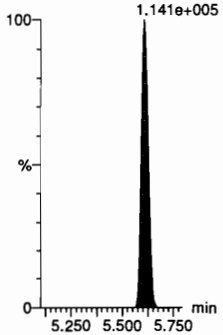
d3-N-MeFOSAA-RSD
F59:MRM of 1 channel,ES-
573.1 > 419
1.174e+005



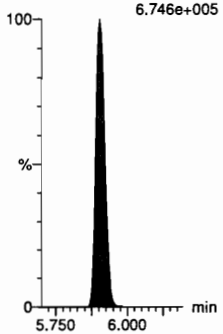
13C2-PFUdA-RSD
F56:MRM of 1 channel,ES-
565 > 519.8
4.553e+005



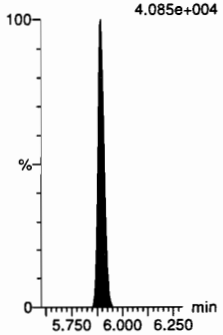
d5-N-EtFOSAA-RSD
F61:MRM of 1 channel,ES-
589.3 > 419
1.141e+005



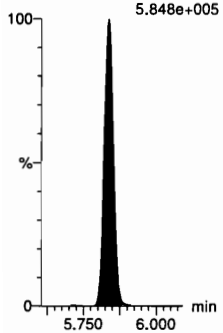
13C2-PFDoA-RSD
F64:MRM of 1 channel,ES-
614.9 > 569.9
6.746e+005



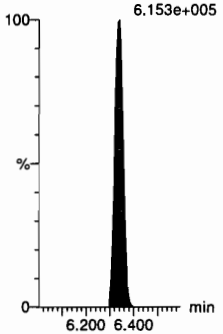
13C2-10:2 FTS-RSD
F70:MRM of 1 channel,ES-
632.9 > 80.0
4.085e+004



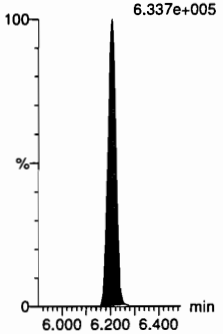
d3-N-MeFOSA-RSD
F47:MRM of 1 channel,ES-
515.2 > 168.9
5.848e+005



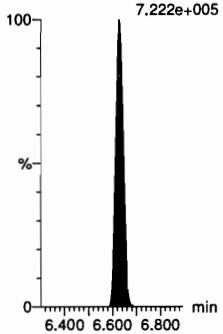
13C2-PFTeDA-RSD
F75:MRM of 2 channels,ES-
715.1 > 669.7
6.153e+005



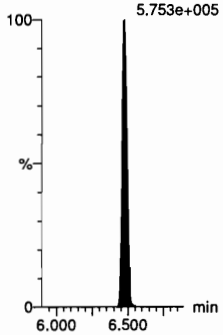
d5-N-ETFOSA-RSD
F53:MRM of 1 channel,ES-
531.1 > 168.9
6.337e+005



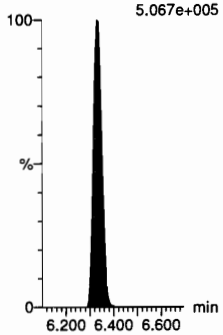
13C2-PFHxDA-RSD
F77:MRM of 1 channel,ES-
815 > 769.7
7.222e+005



d9-N-EtFOSE-RSD
F71:MRM of 1 channel,ES-
639.2 > 58.8
5.753e+005



d7-N-MeFOSE-RSD
F66:MRM of 1 channel,ES-
623.1 > 58.9
5.067e+005



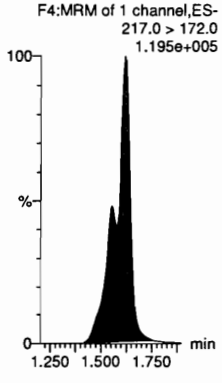
Quantify Sample Report **MassLynx V4.2 SCN977** Page 30 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

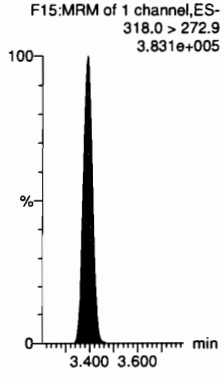
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-21, Date: 06-Jul-2020, Time: 13:34:57, ID: ST200706P1-3 PFC CS0 20F1903, Description: PFC CS0 20F1903

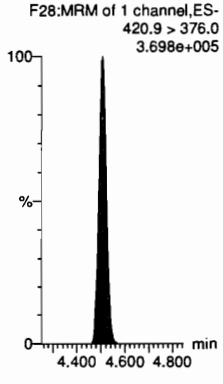
13C4-PFBA



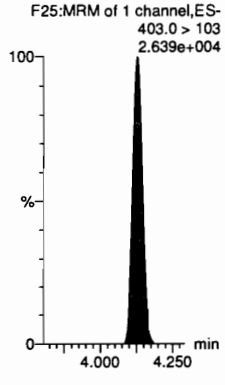
13C5-PFHxA



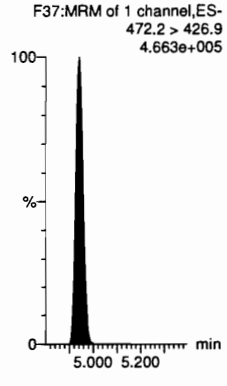
13C8-PFOA



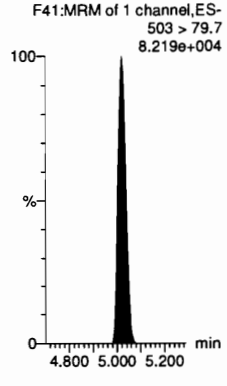
18O2-PFHxS



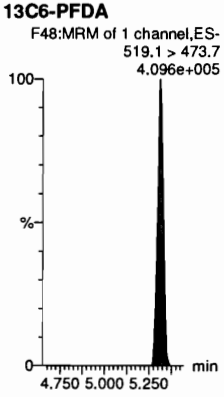
13C9-PFNA



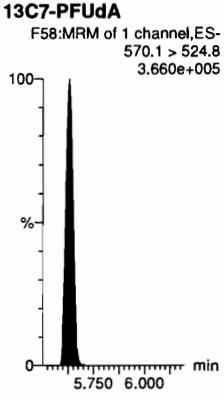
13C4-PFOS



13C6-PFDA



13C7-PFUdA

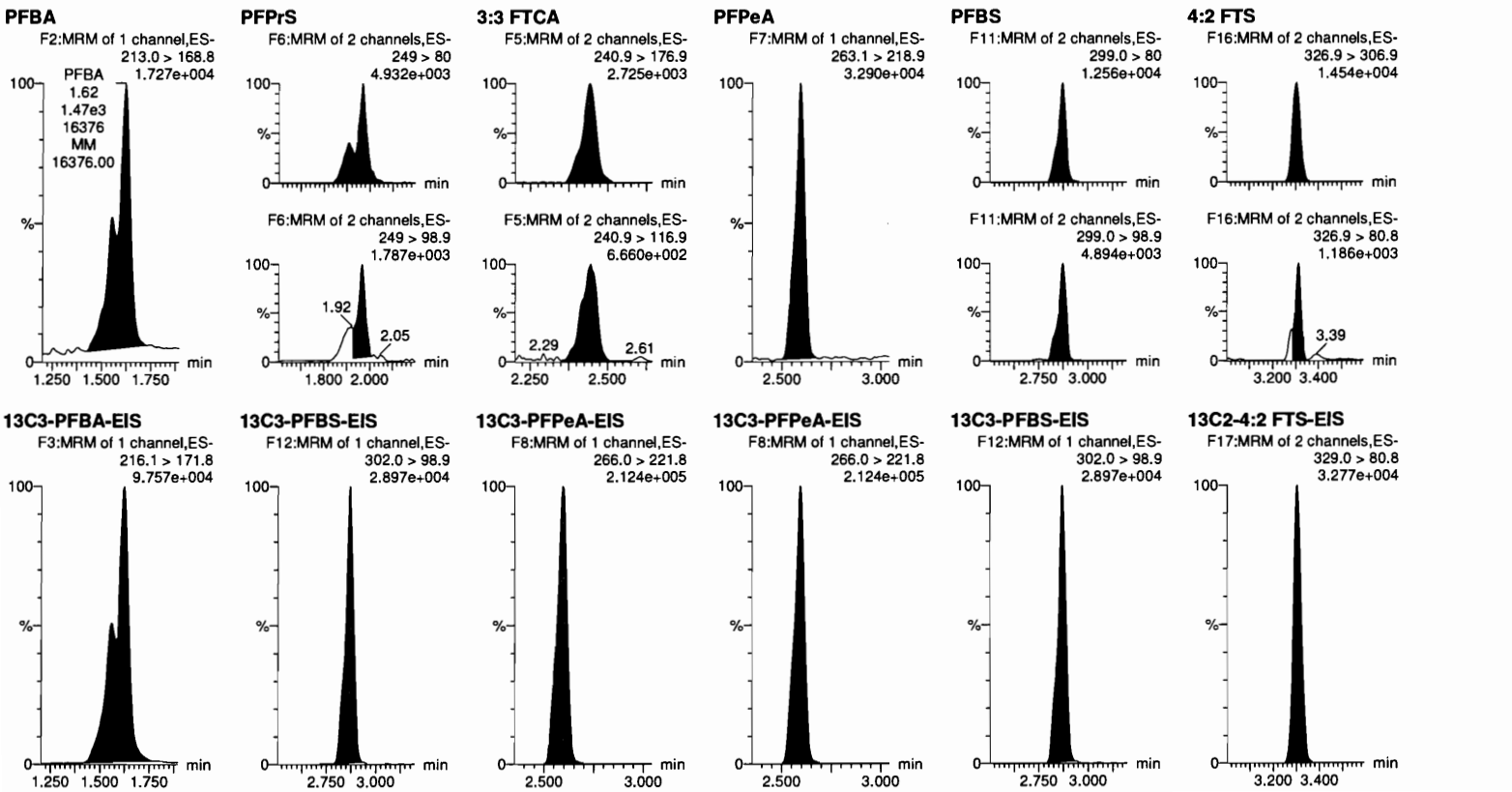


Quantify Sample Report **MassLynx V4.2 SCN977** Page 31 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

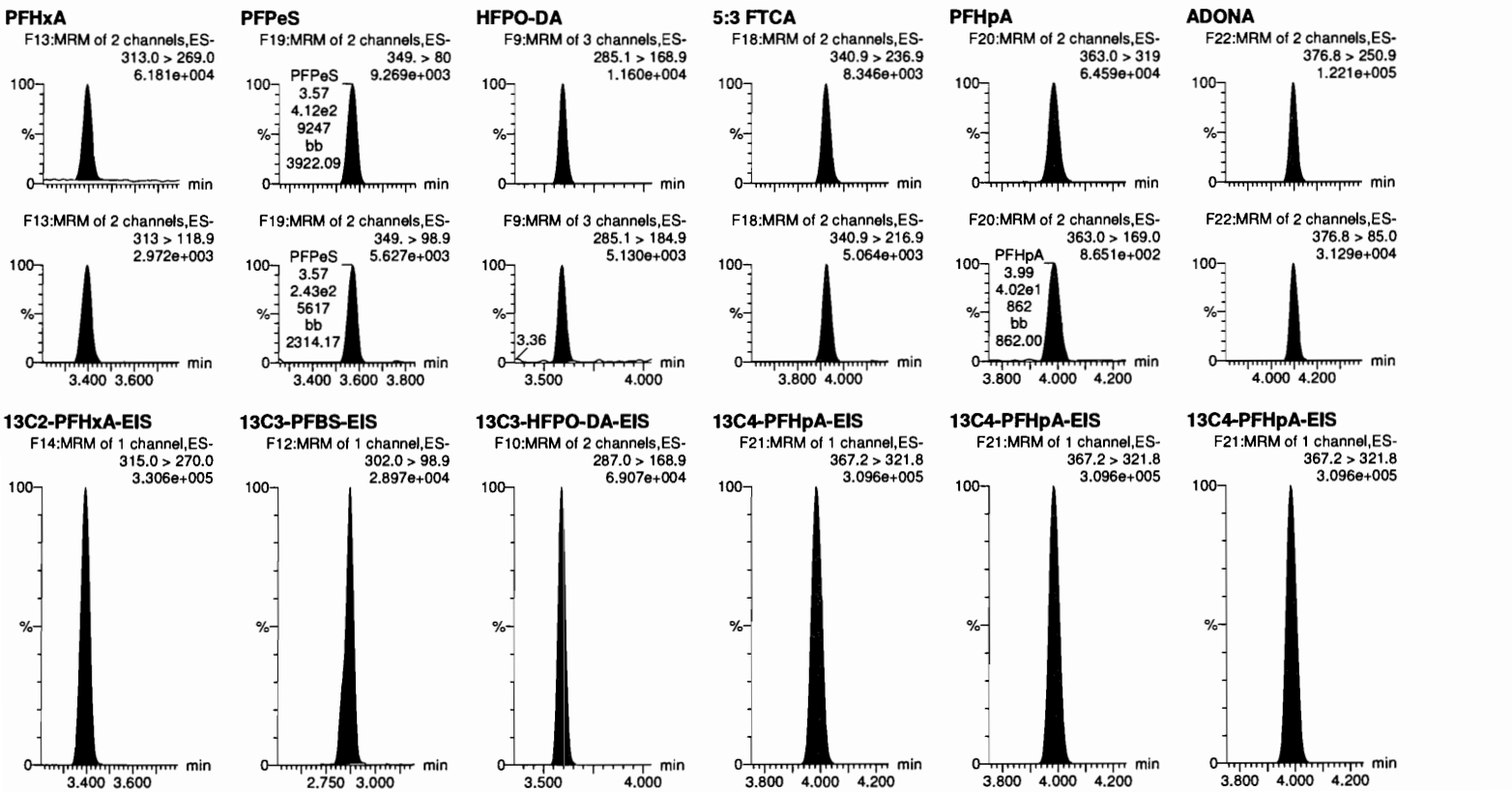


Quantify Sample Report **MassLynx V4.2 SCN977** Page 32 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

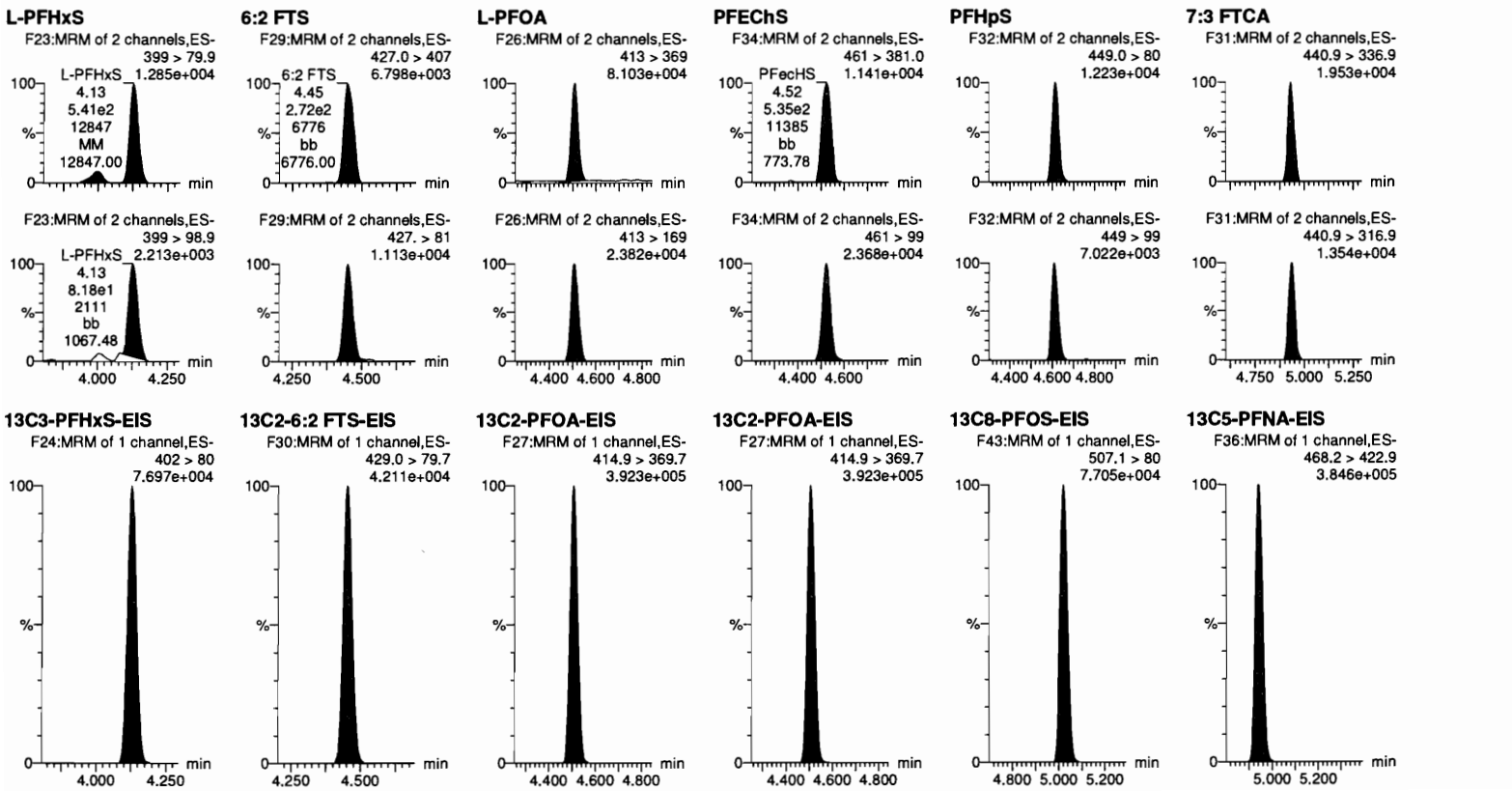


Quantify Sample Report **MassLynx V4.2 SCN977** Page 33 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

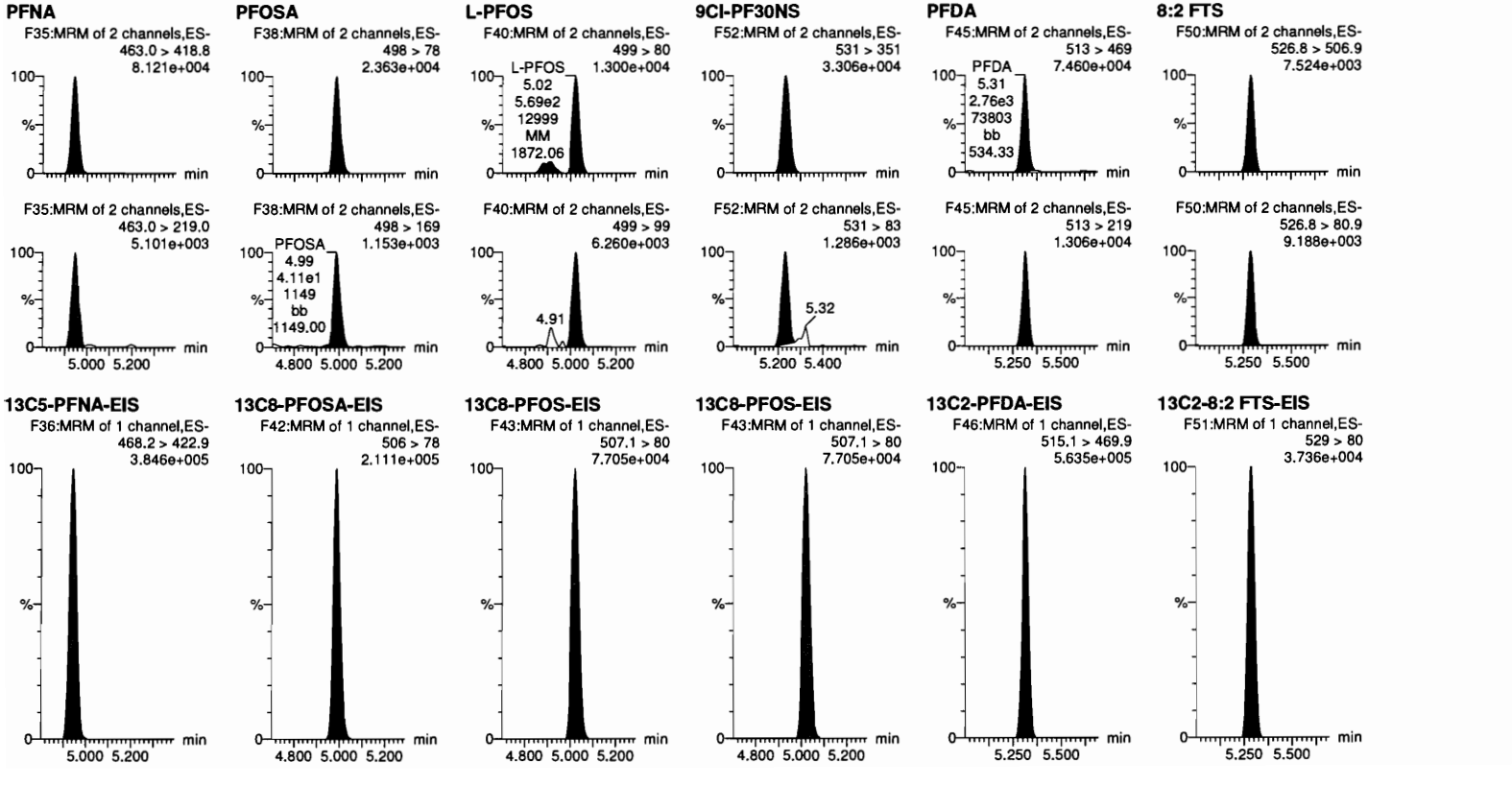


Quantify Sample Report **MassLynx V4.2 SCN977** Page 34 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

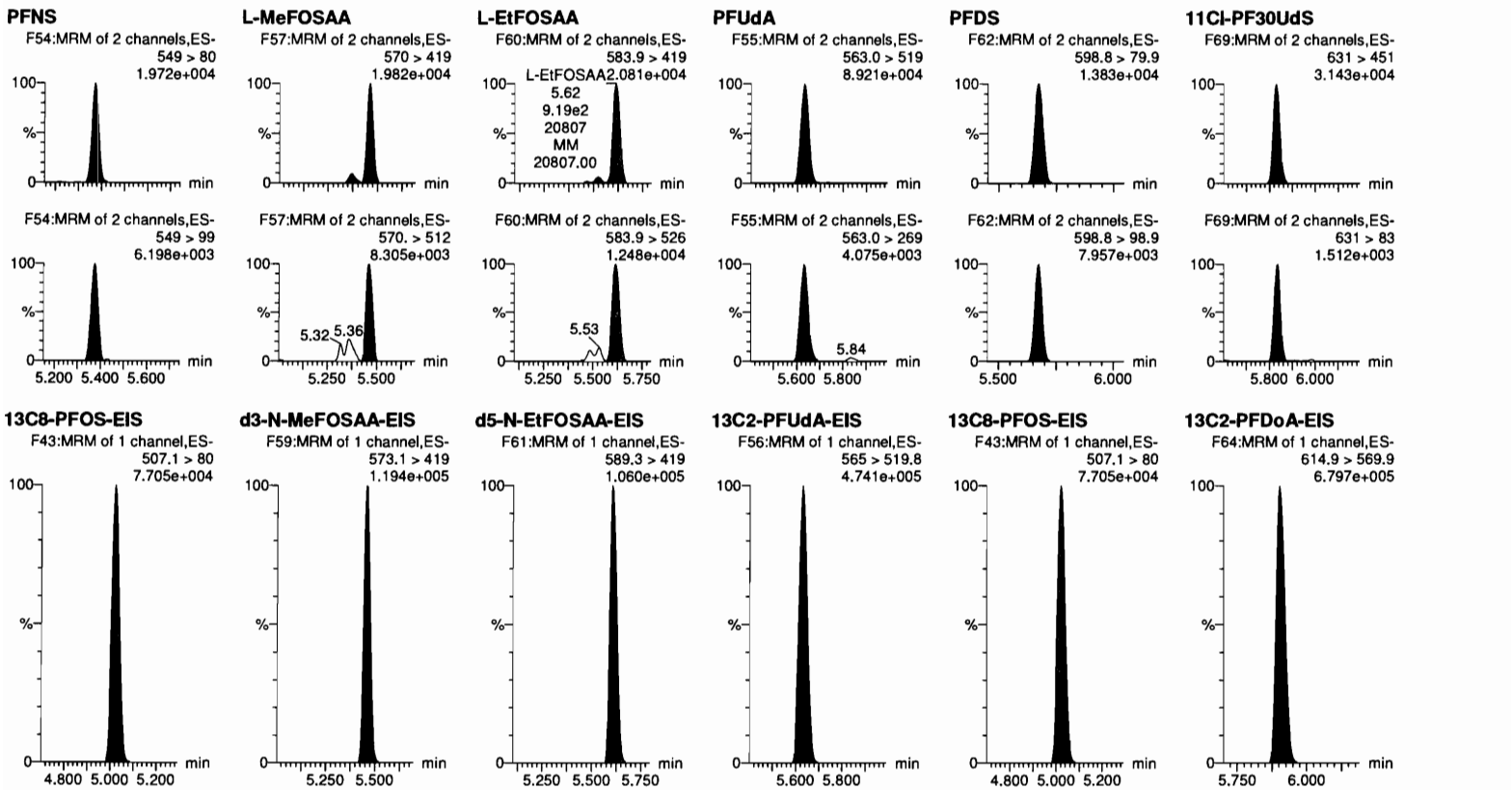


Quantify Sample Report **MassLynx V4.2 SCN977** Page 35 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

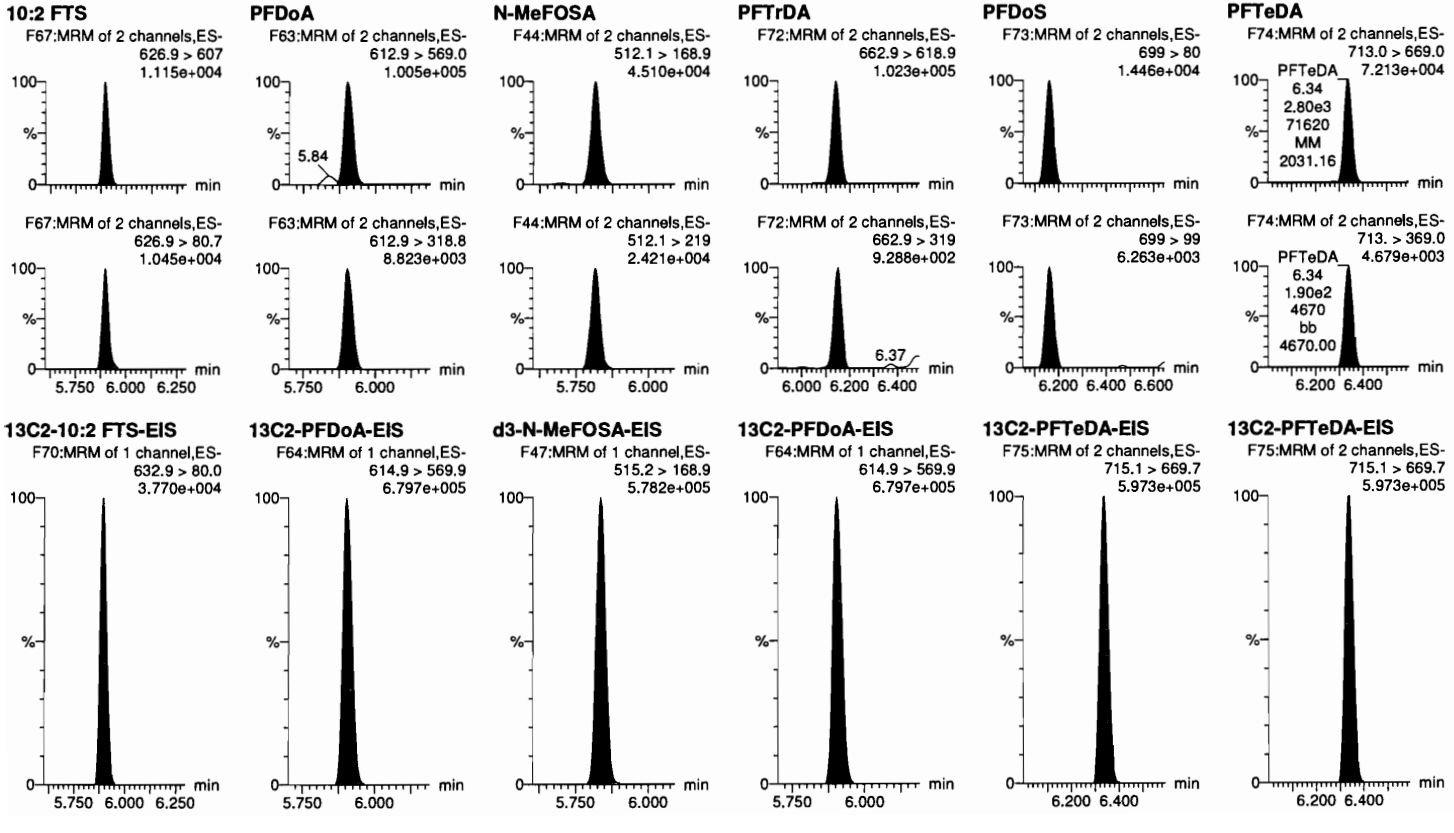


Quantify Sample Report **MassLynx V4.2 SCN977** Page 36 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

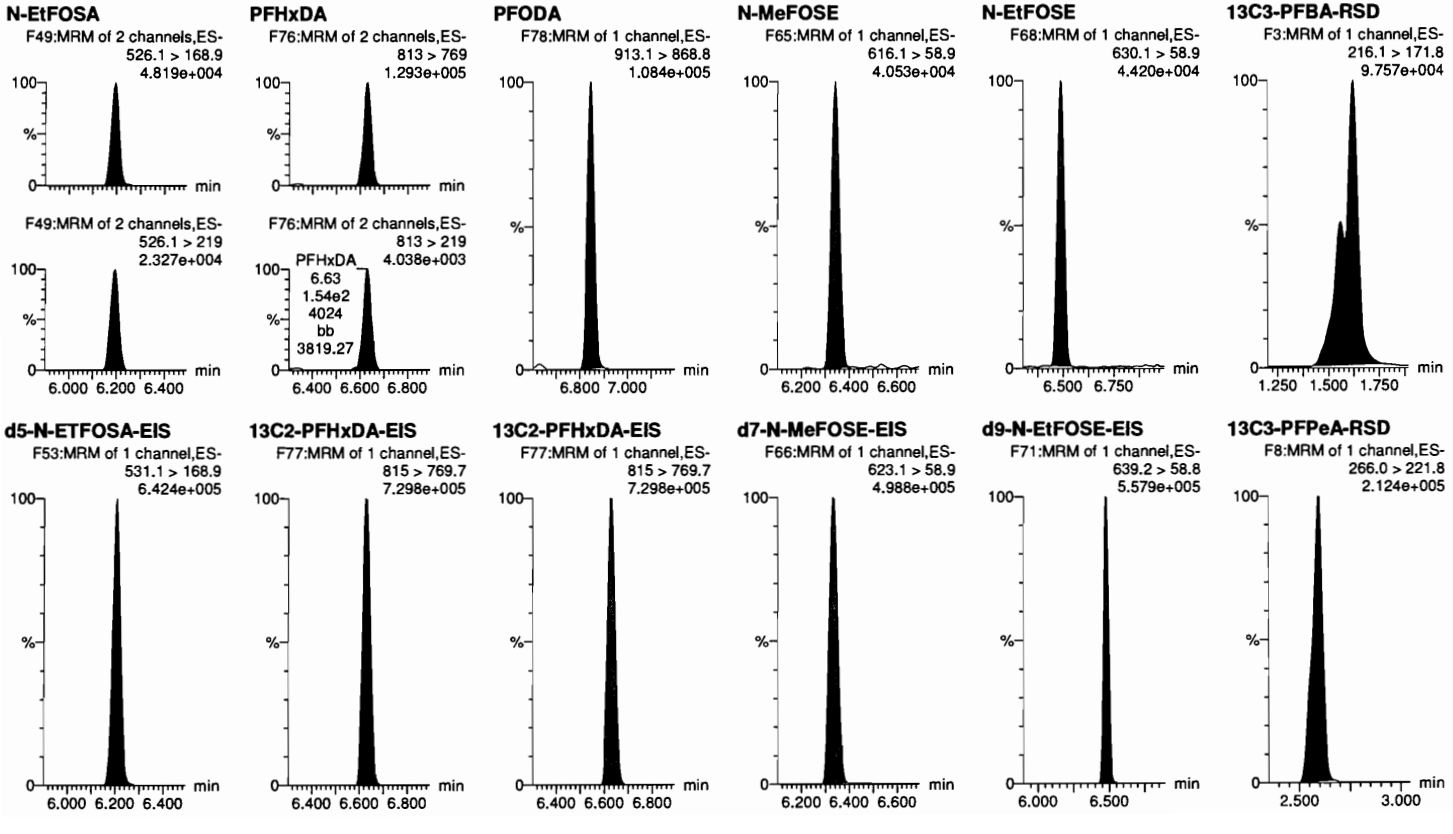


Quantify Sample Report **MassLynx V4.2 SCN977** Page 37 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

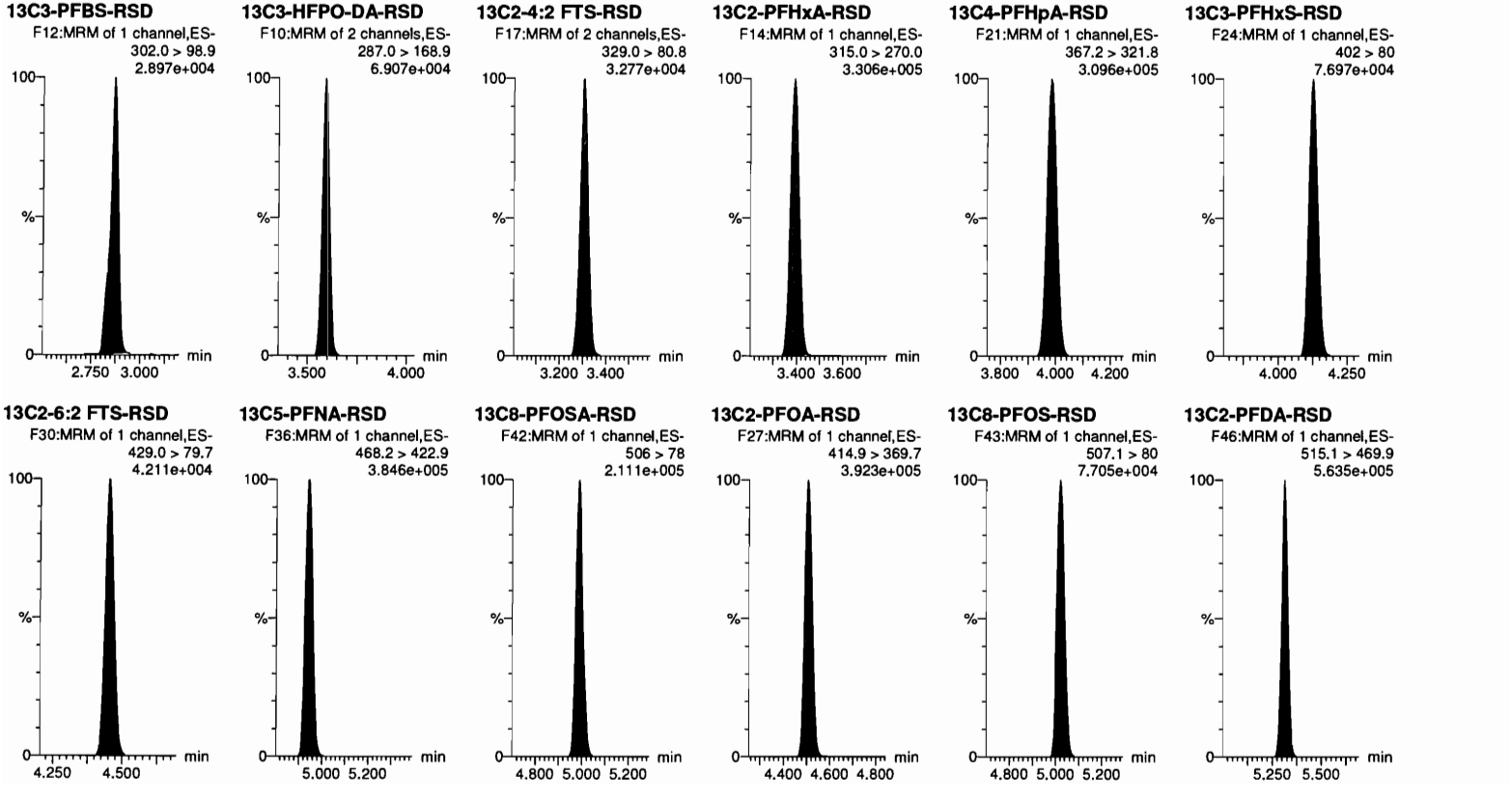


Quantify Sample Report **MassLynx V4.2 SCN977** Page 38 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

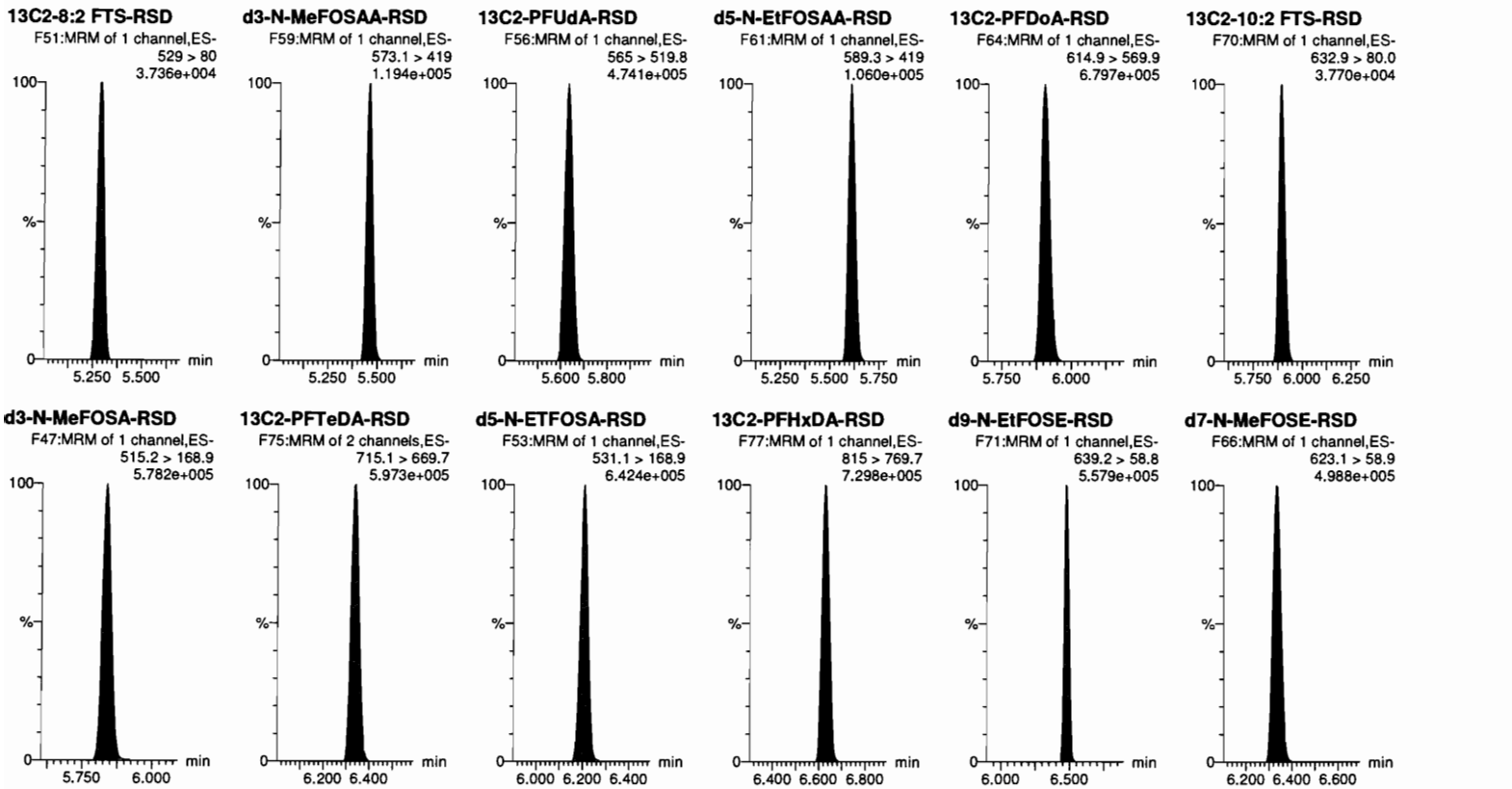


Quantify Sample Report **MassLynx V4.2 SCN977** Page 39 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904



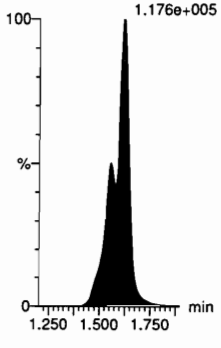
Quantify Sample Report **MassLynx V4.2 SCN977** Page 40 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

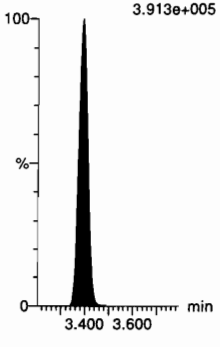
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-22, Date: 06-Jul-2020, Time: 13:45:26, ID: ST200706P1-4 PFC CS1 20F1904, Description: PFC CS1 20F1904

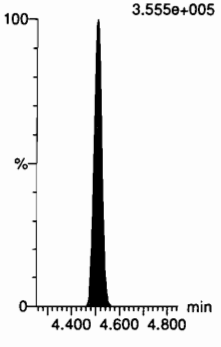
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.176e+005



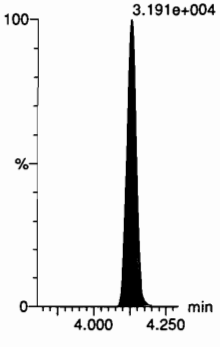
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
3.913e+005



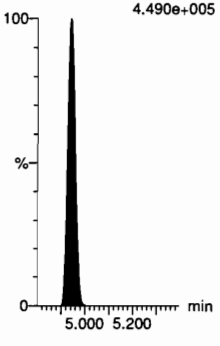
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
3.555e+005



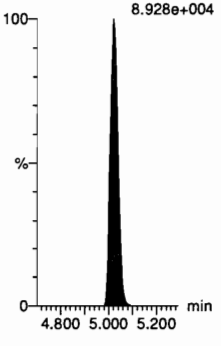
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
3.191e+004



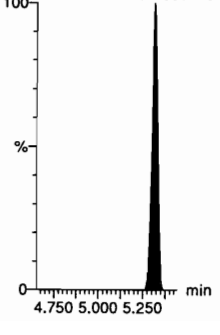
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
4.490e+005



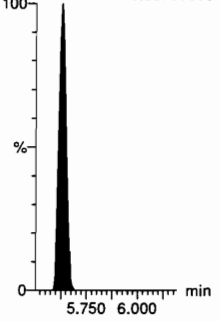
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
8.928e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
4.405e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
3.687e+005

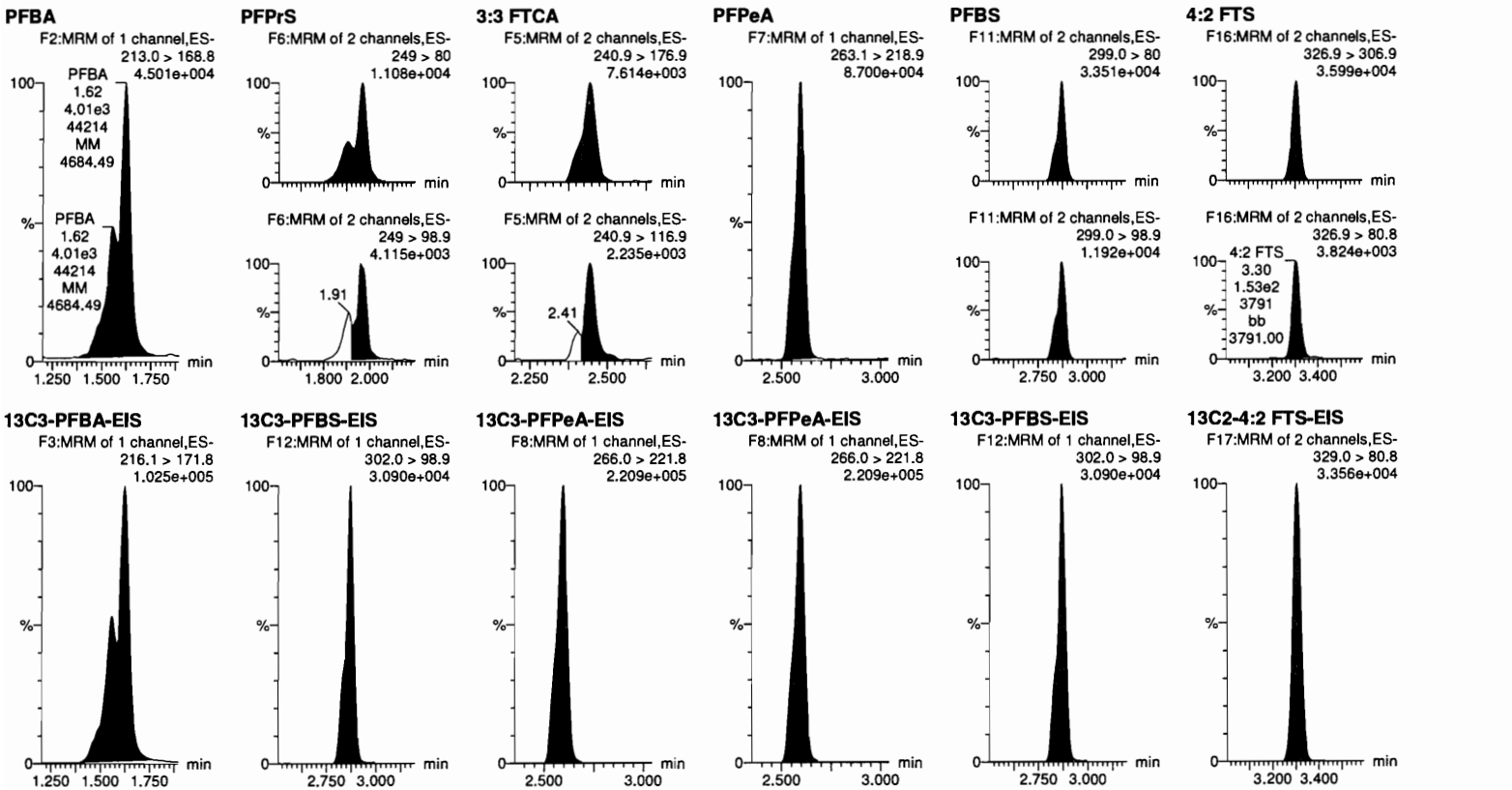


Quantify Sample Report **MassLynx V4.2 SCN977** Page 41 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

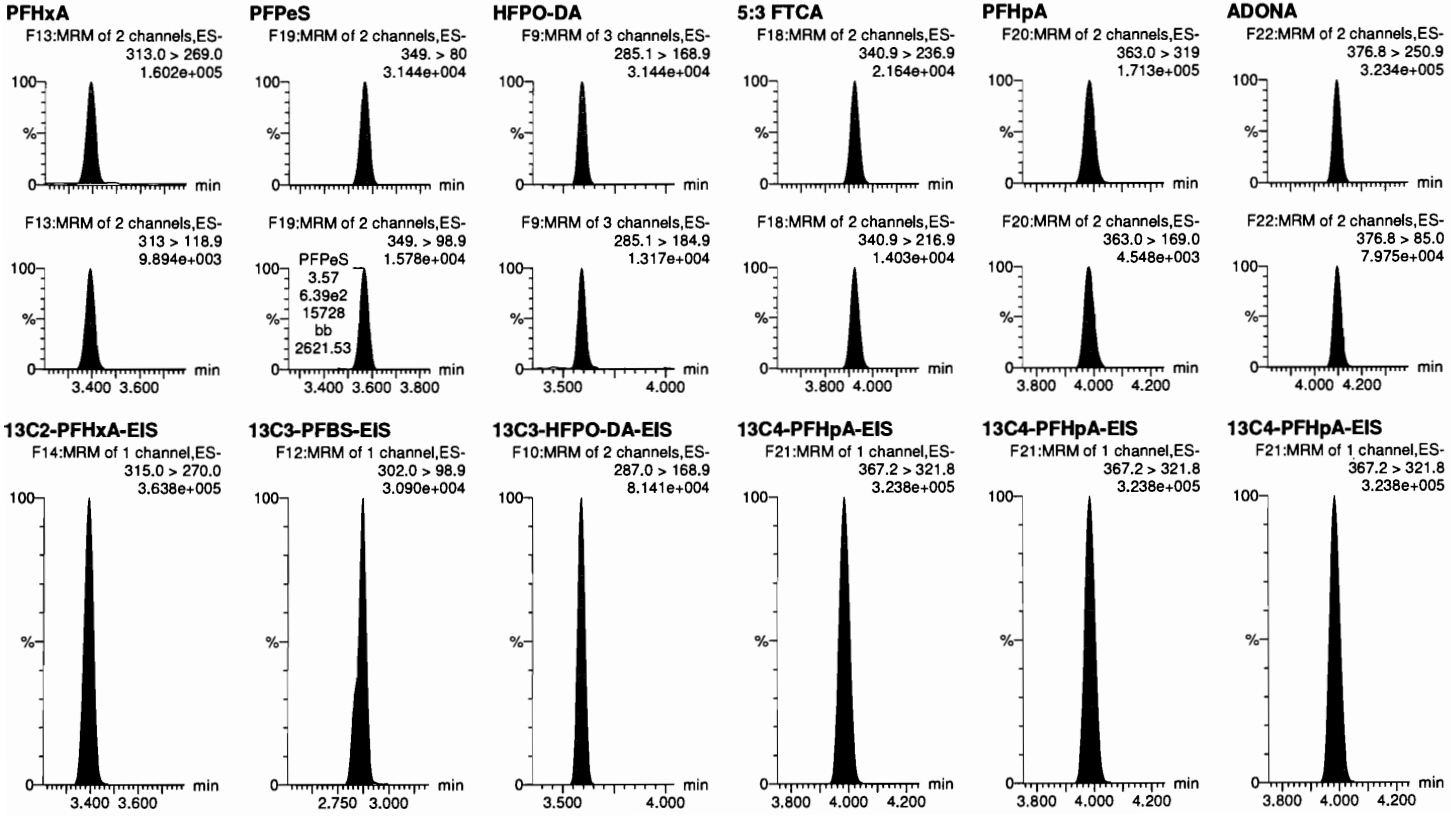


Quantify Sample Report **MassLynx V4.2 SCN977** Page 42 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

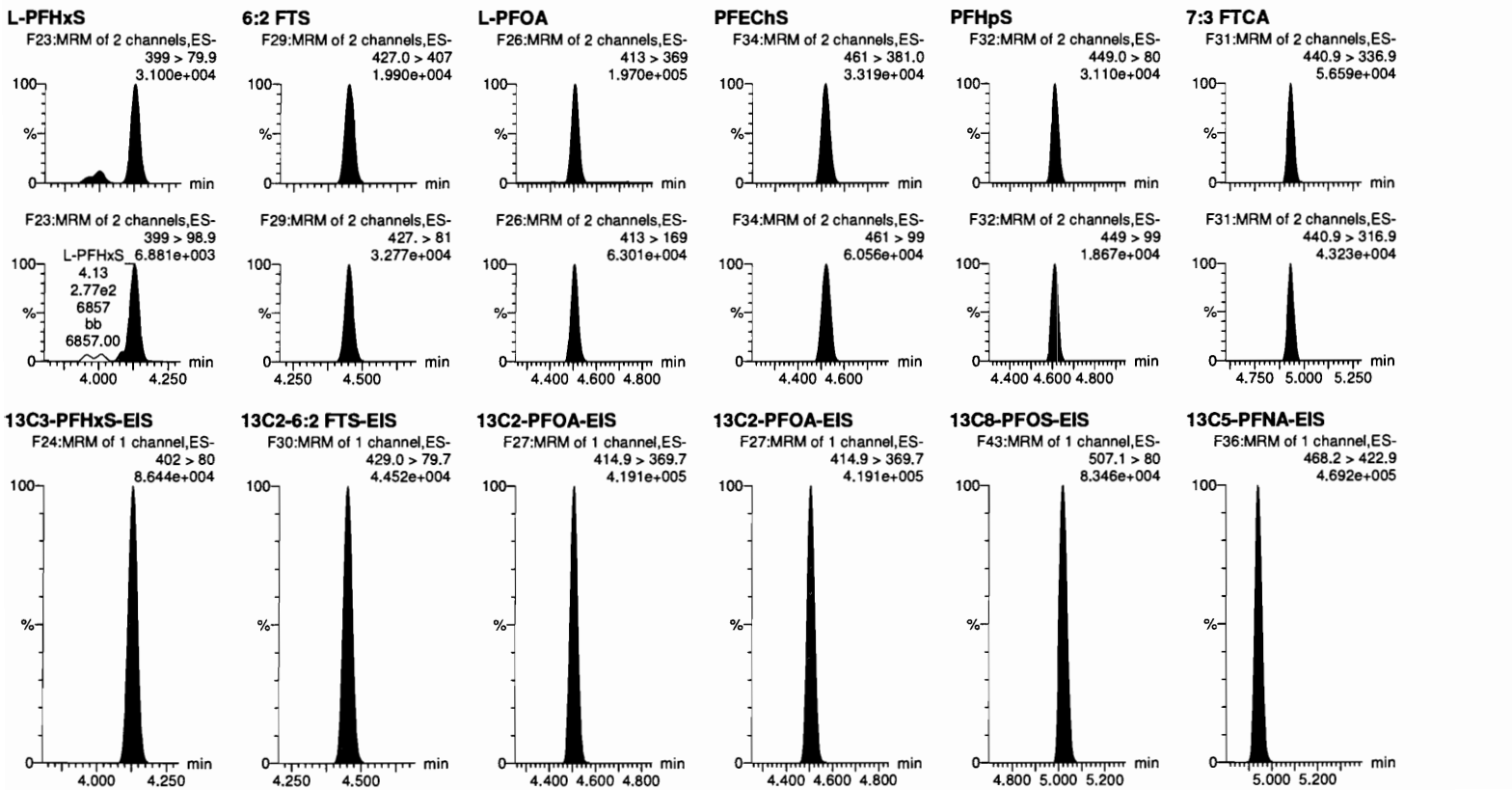


Quantify Sample Report **MassLynx V4.2 SCN977** Page 43 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

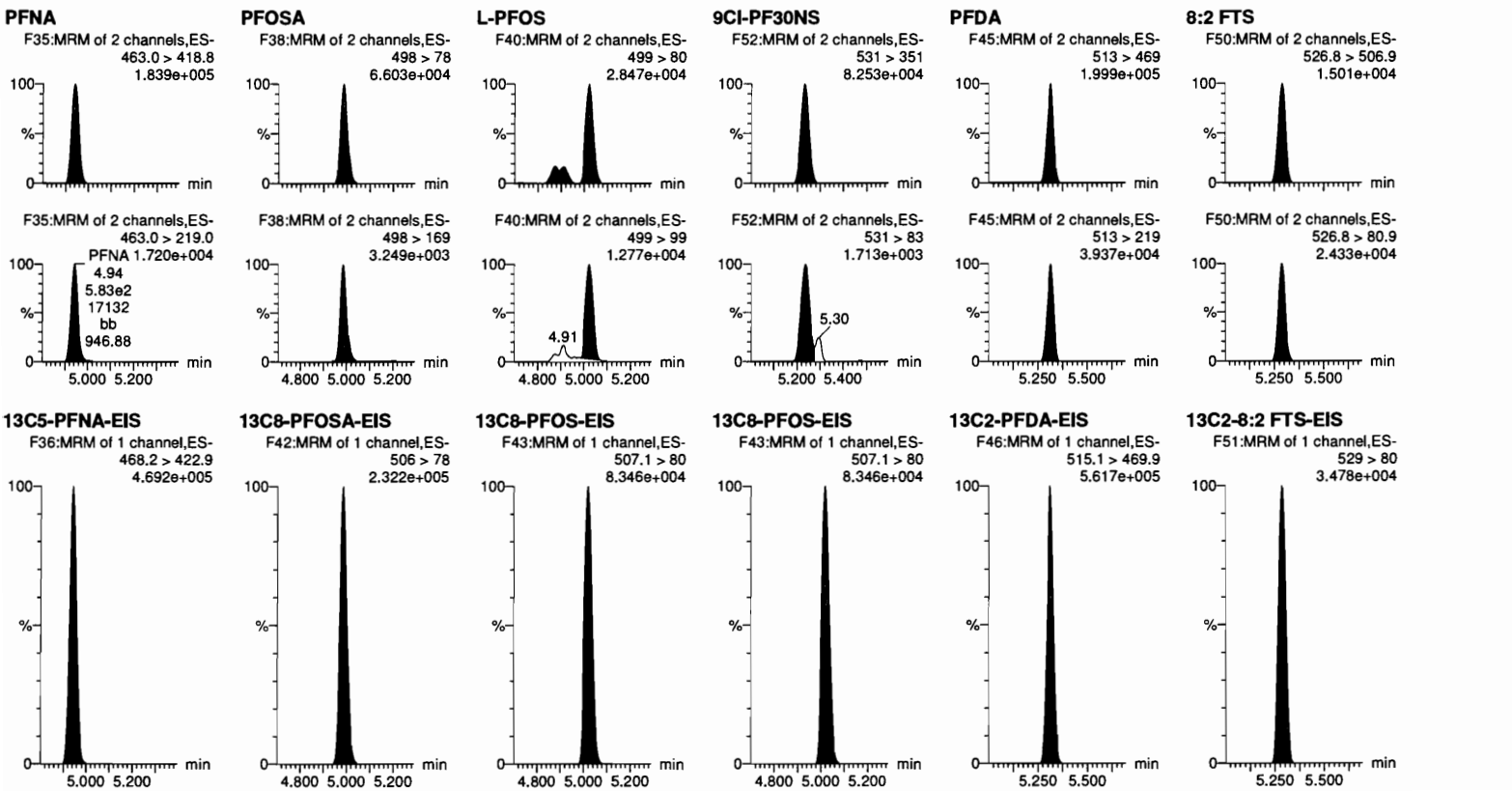


Quantify Sample Report **MassLynx V4.2 SCN977** Page 44 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

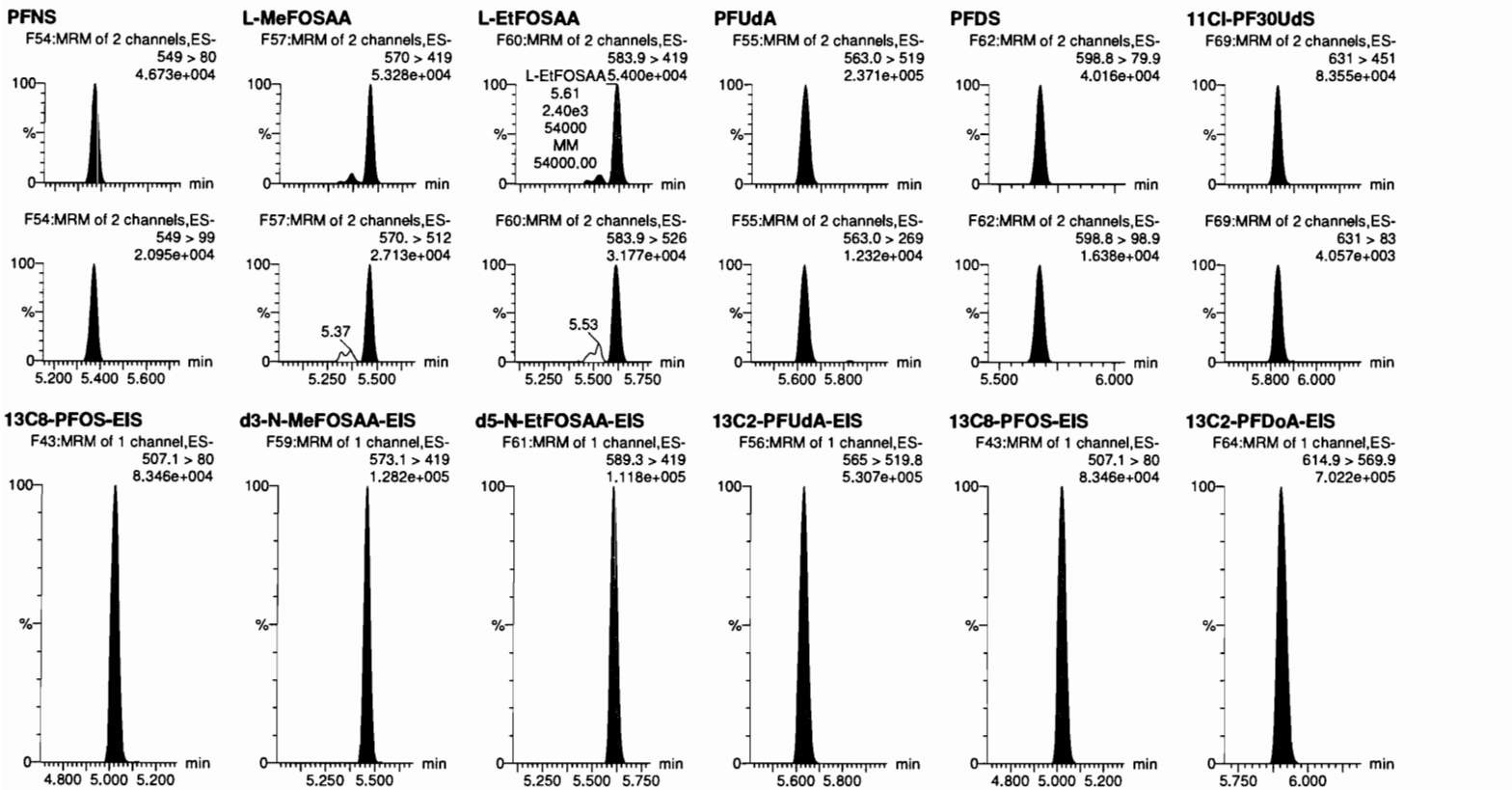


Quantify Sample Report **MassLynx V4.2 SCN977** Page 45 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

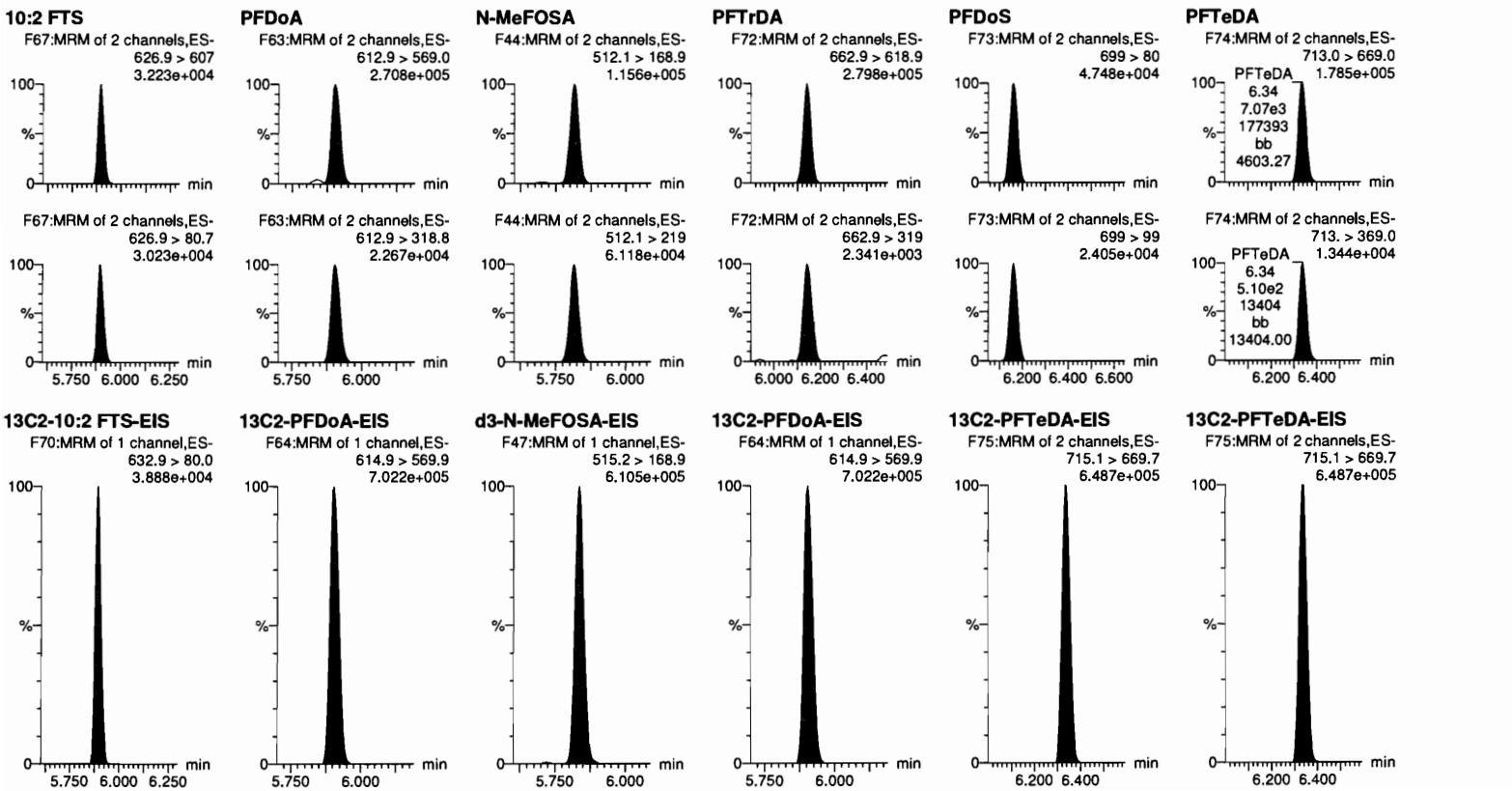


Quantify Sample Report **MassLynx V4.2 SCN977** Page 46 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

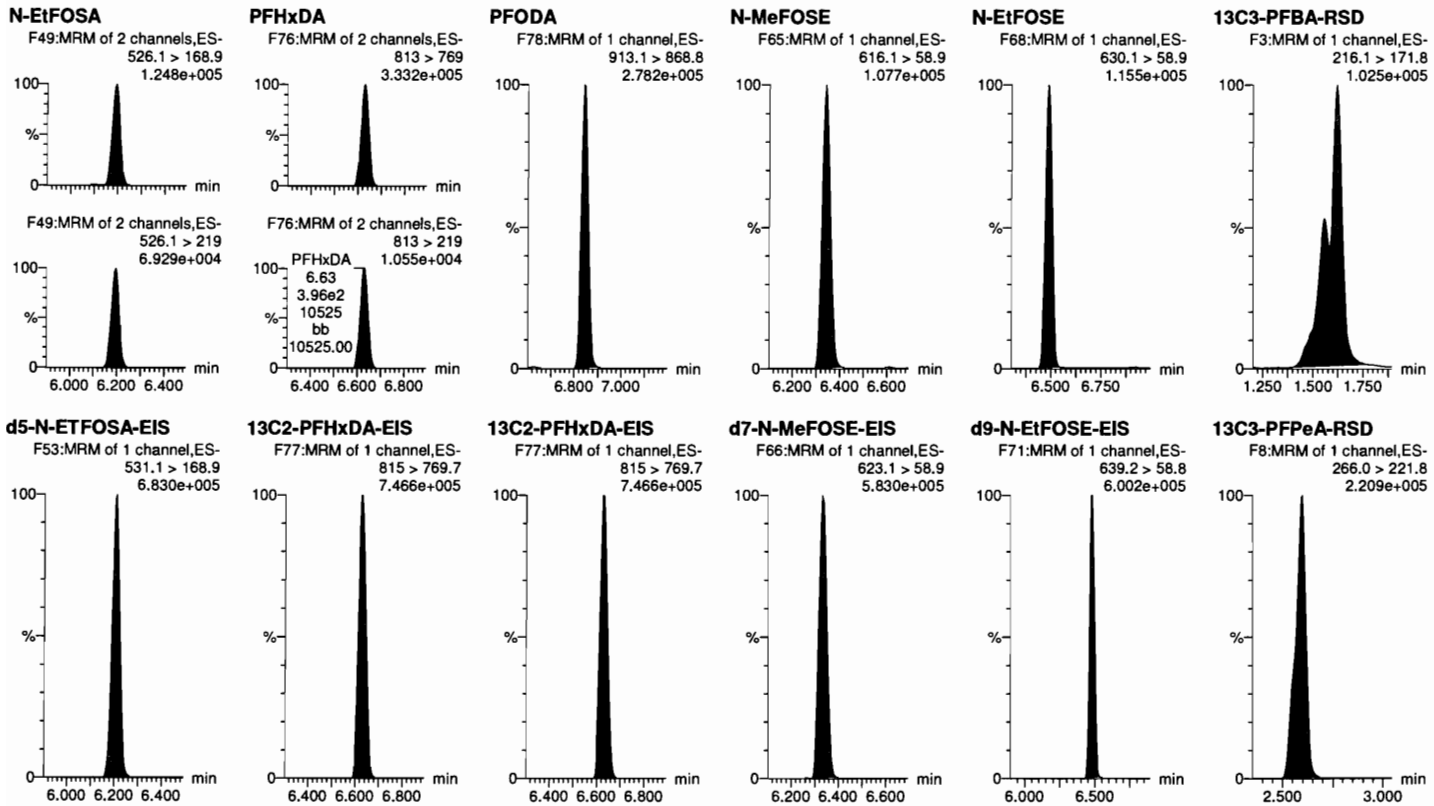


Quantify Sample Report **MassLynx V4.2 SCN977** Page 47 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

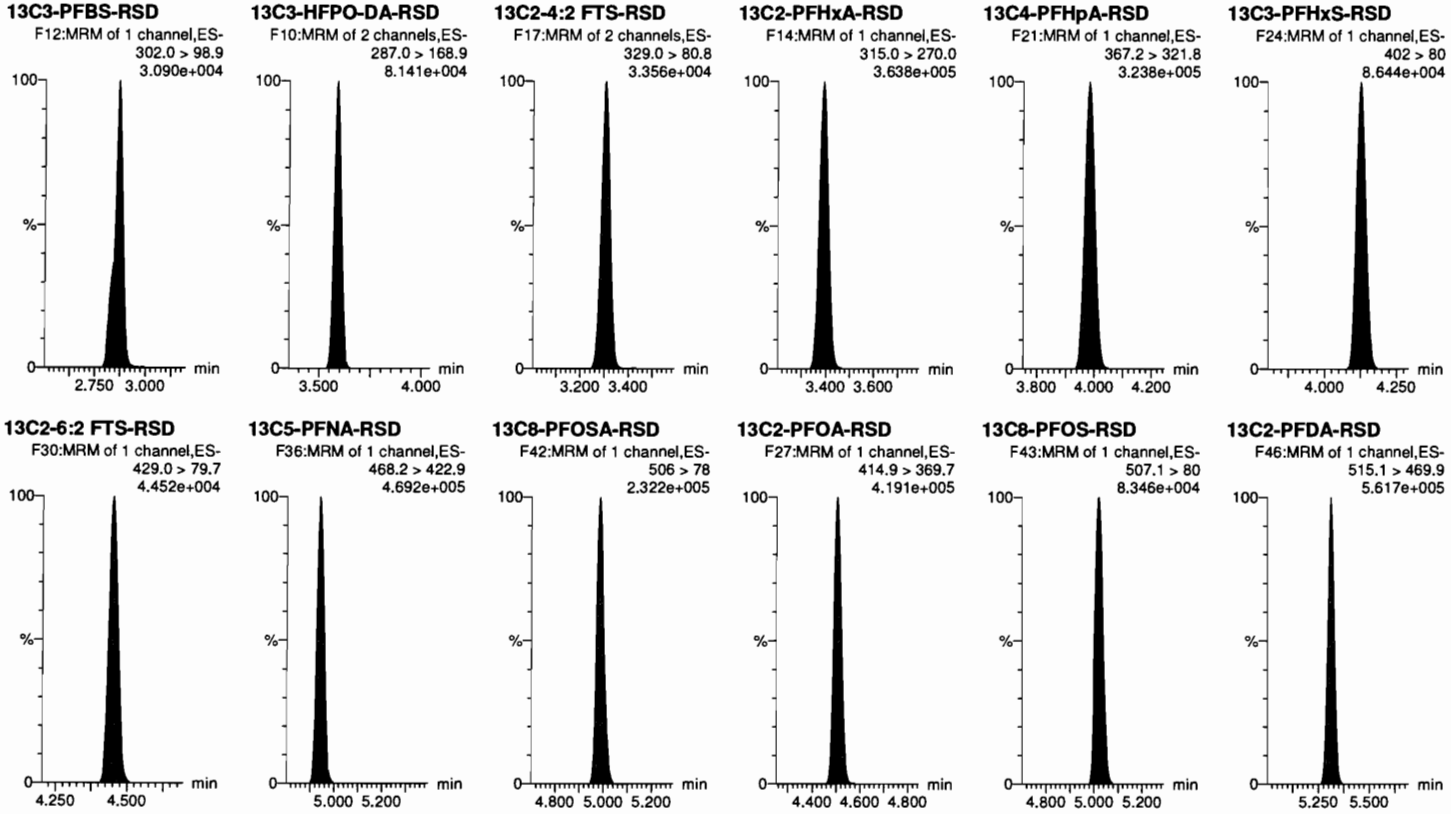


Quantify Sample Report **MassLynx V4.2 SCN977** Page 48 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

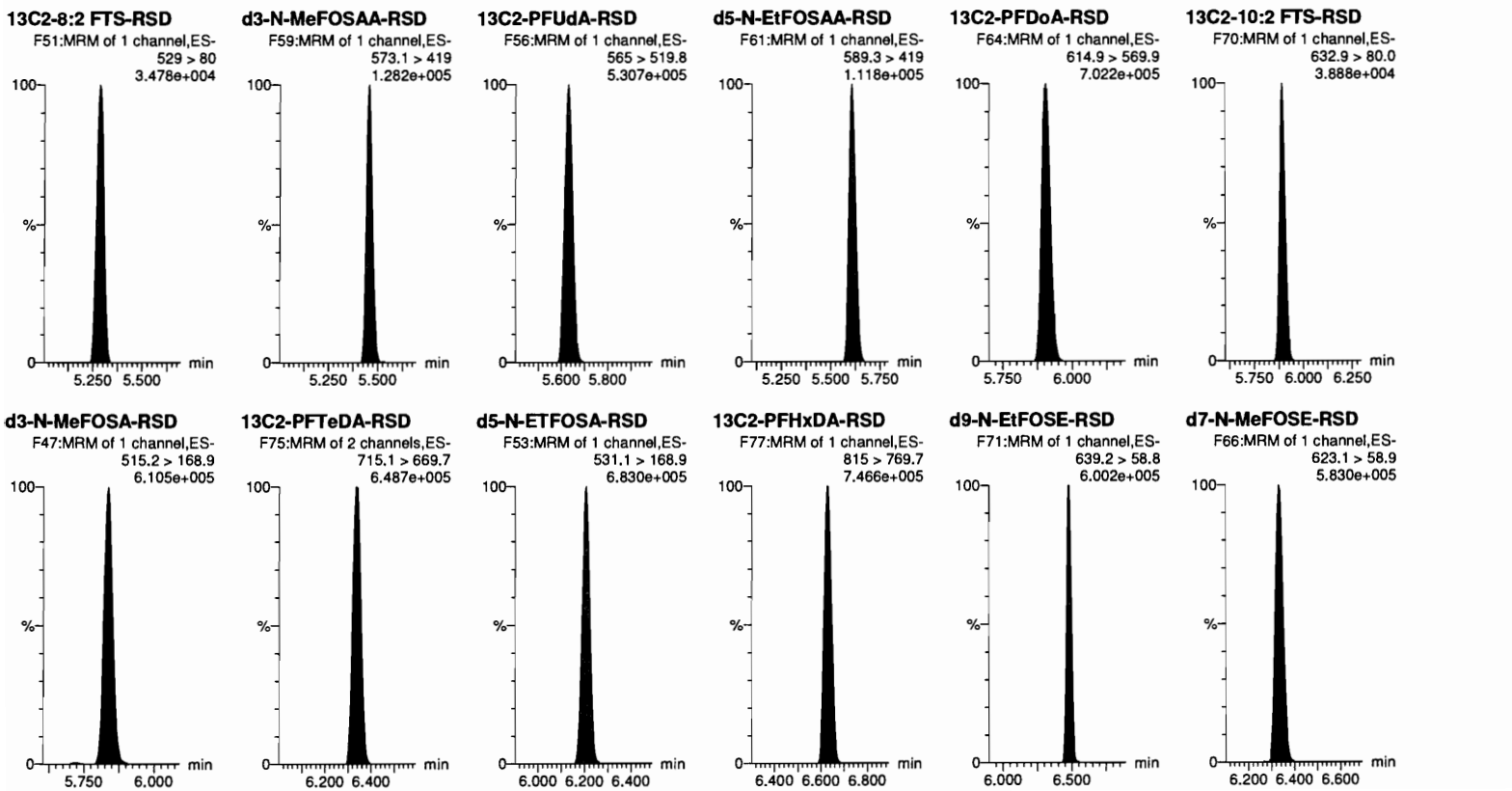


Quantify Sample Report **MassLynx V4.2 SCN977** Page 49 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905



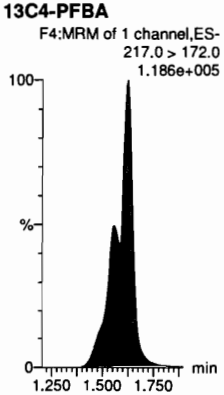
Quantify Sample Report **MassLynx V4.2 SCN977** Page 50 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

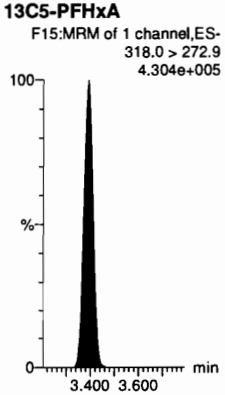
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-23, Date: 06-Jul-2020, Time: 13:55:58, ID: ST200706P1-5 PFC CS2 20F1905, Description: PFC CS2 20F1905

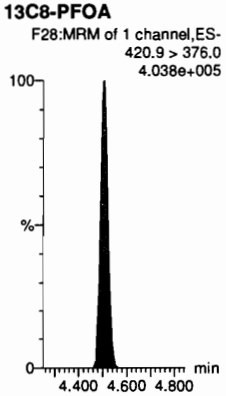
13C4-PFBA



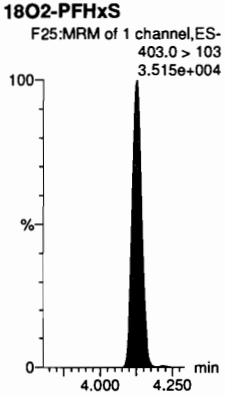
13C5-PFHxA



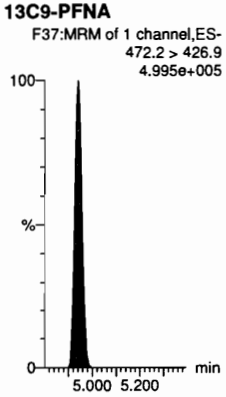
13C8-PFOA



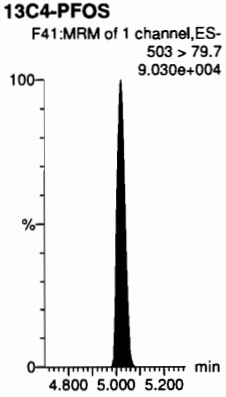
18O2-PFHxS



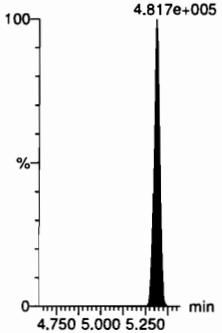
13C9-PFNA



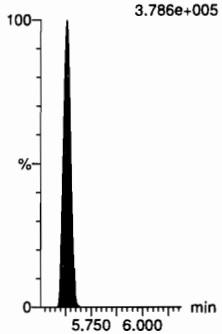
13C4-PFOS



13C6-PFDA



13C7-PFUdA

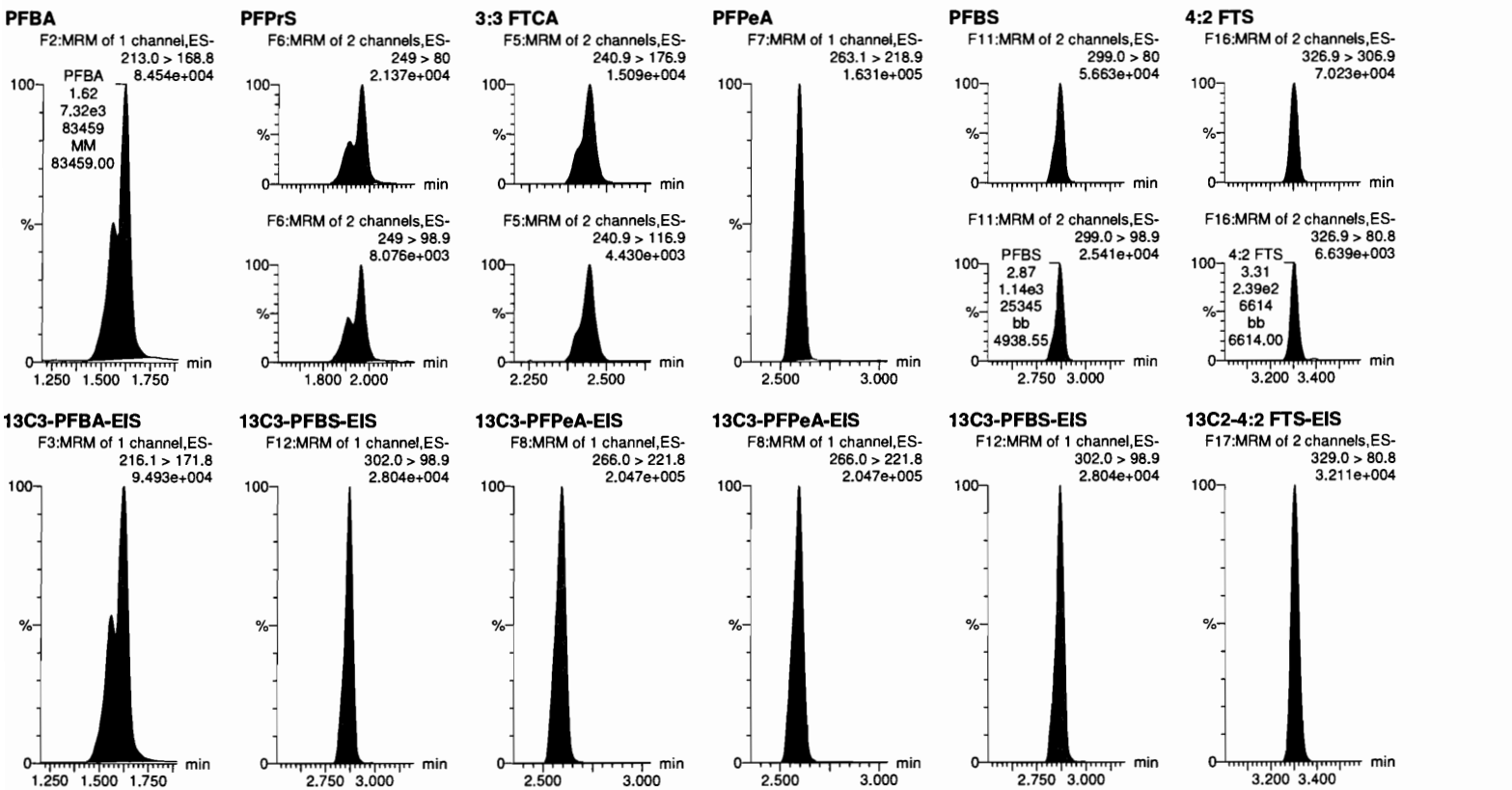


Quantify Sample Report **MassLynx V4.2 SCN977** Page 51 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

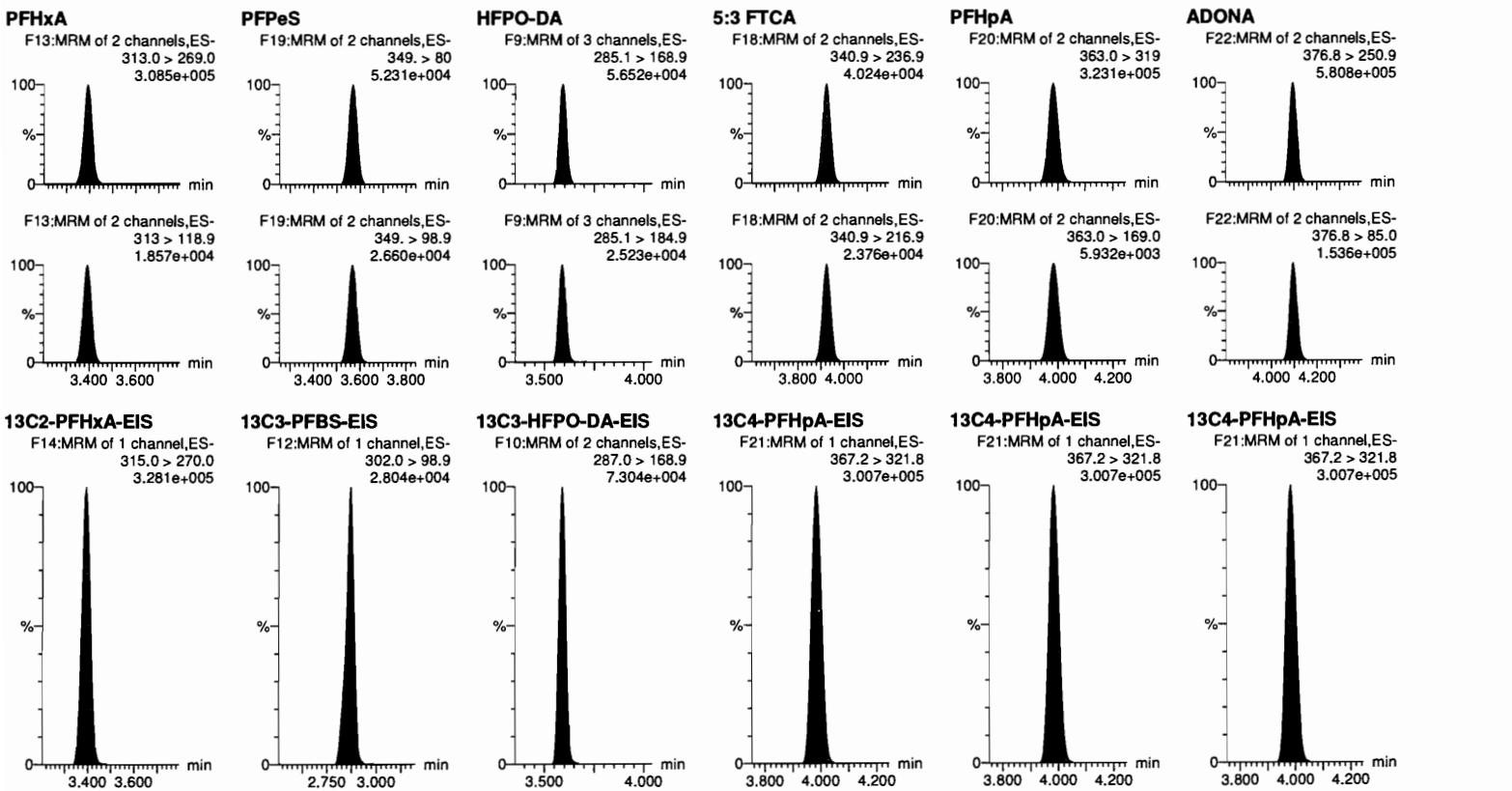


Quantify Sample Report **MassLynx V4.2 SCN977** Page 52 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

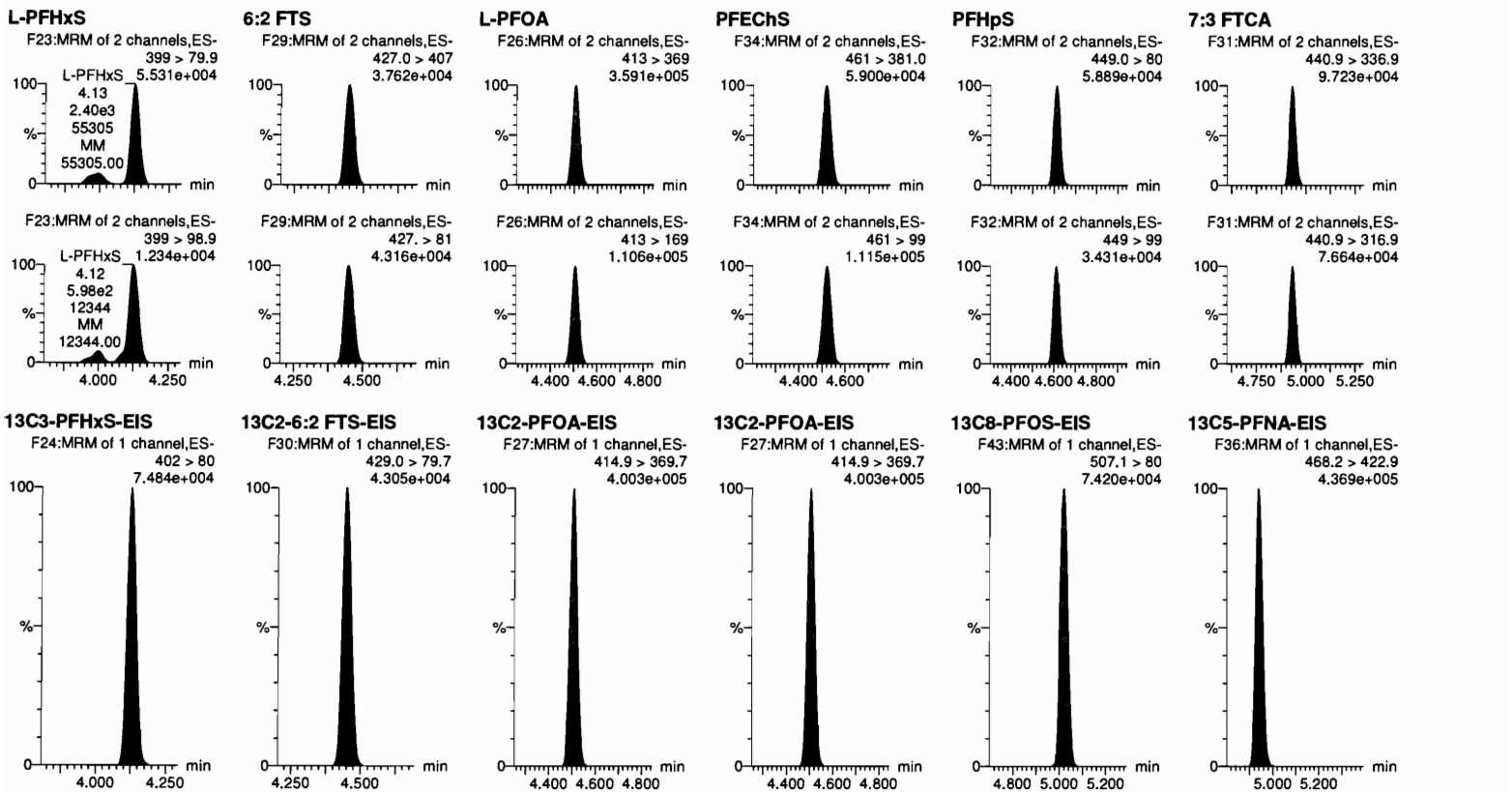


Quantify Sample Report **MassLynx V4.2 SCN977** Page 53 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

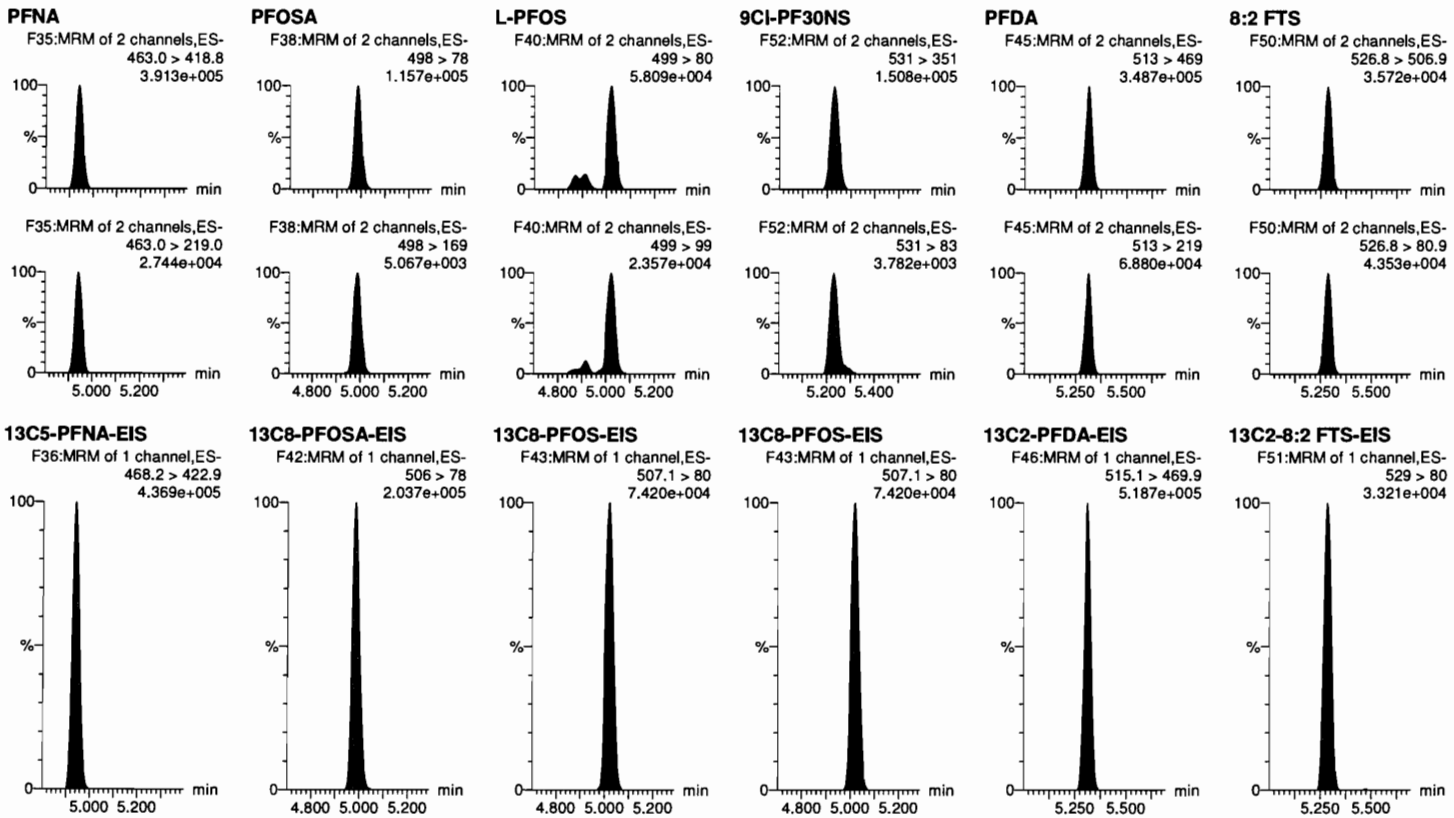


Quantify Sample Report **MassLynx V4.2 SCN977** Page 54 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

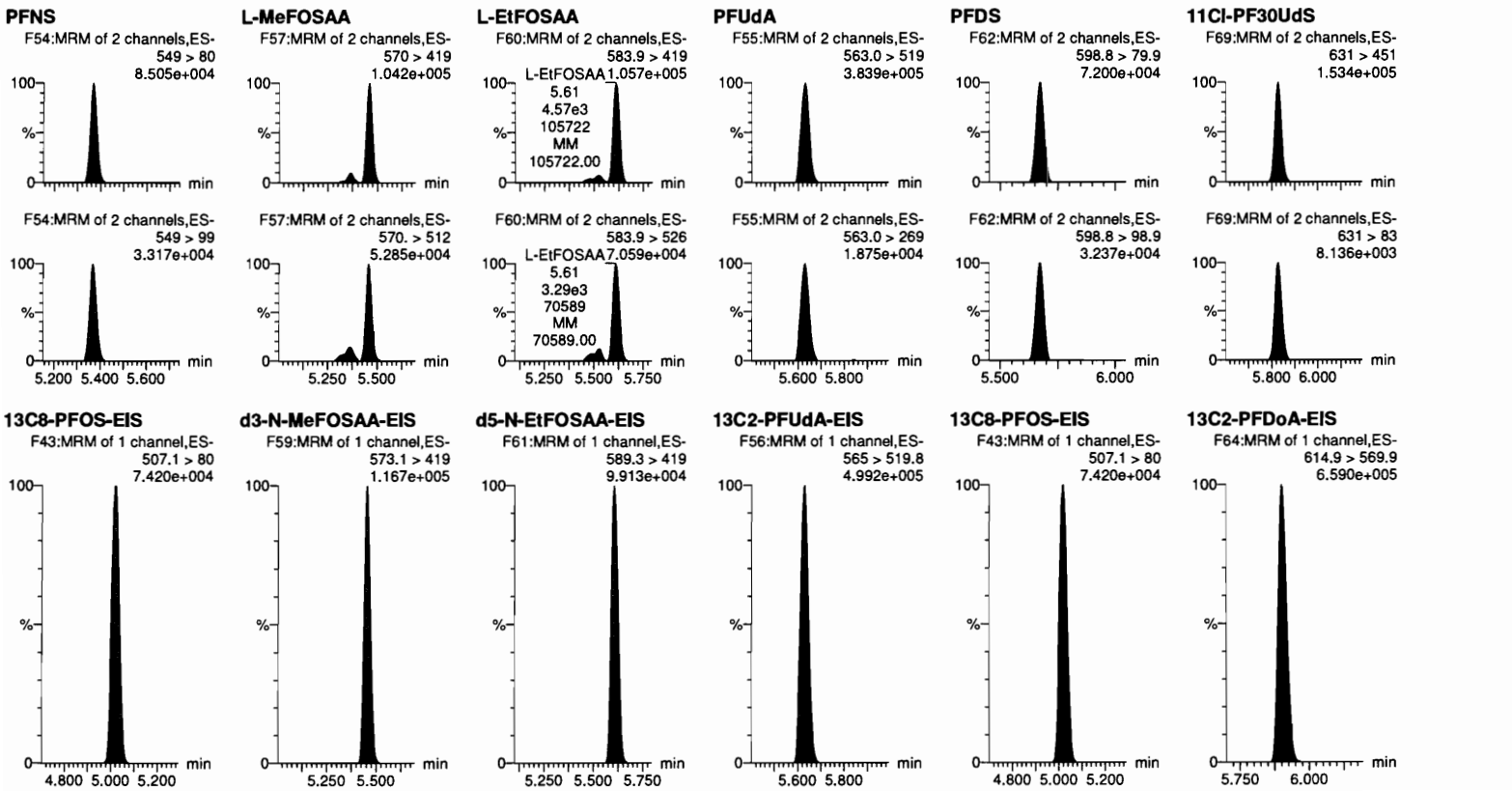


Quantify Sample Report **MassLynx V4.2 SCN977** Page 55 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

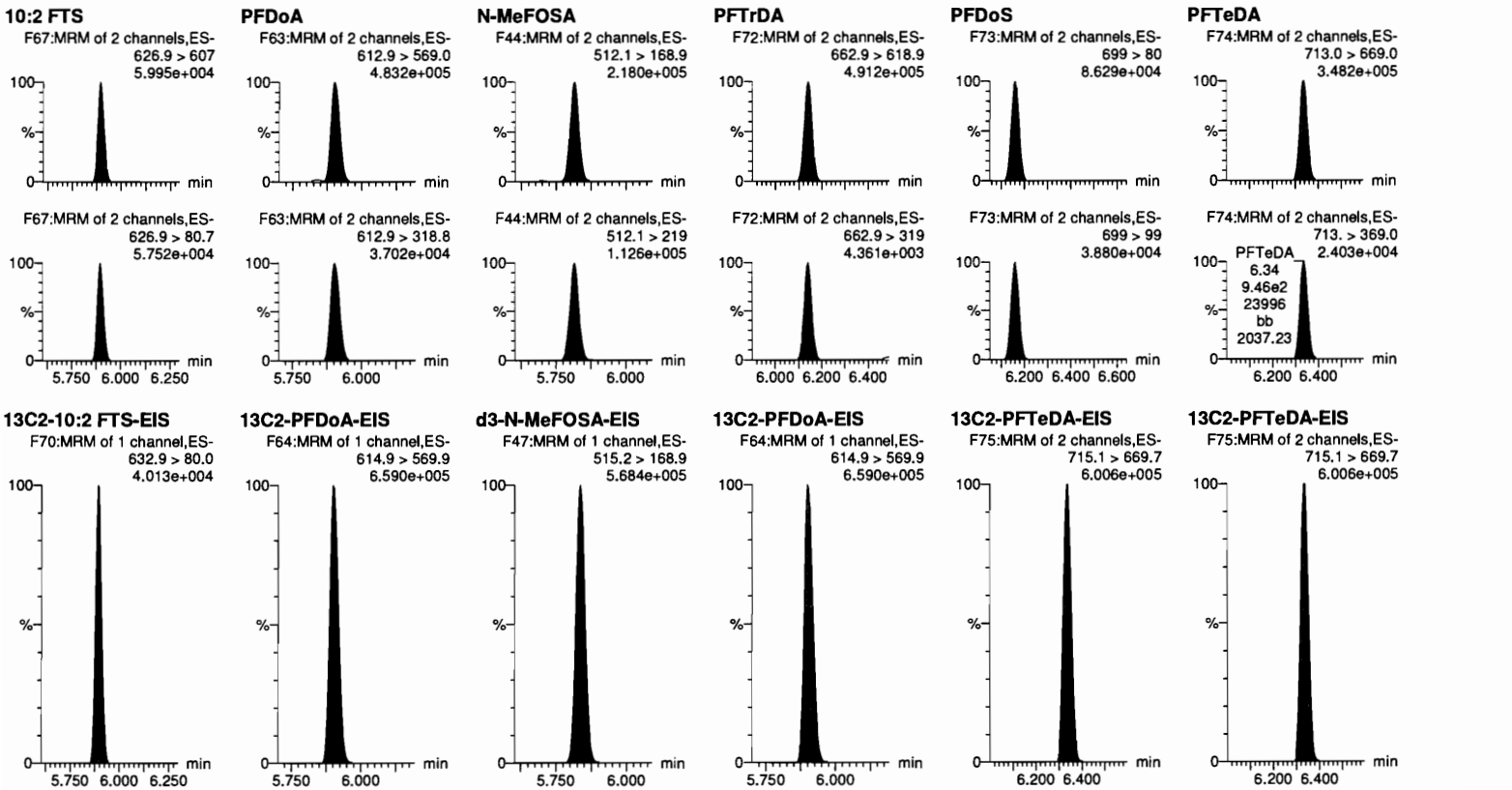


Quantify Sample Report **MassLynx V4.2 SCN977** Page 56 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906



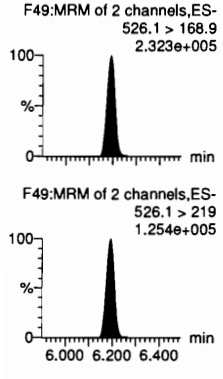
Quantify Sample Report **MassLynx V4.2 SCN977** Page 57 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

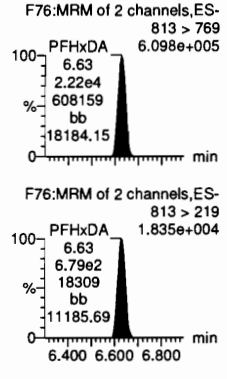
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

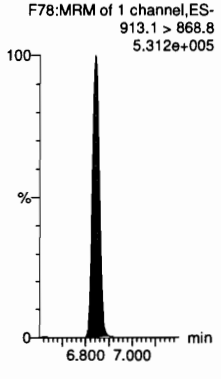
N-EtFOSA



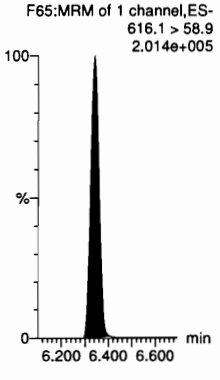
PFHxDA



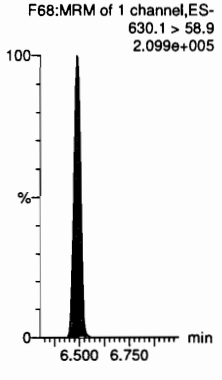
PFODA



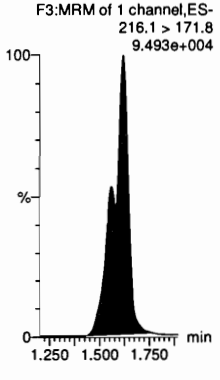
N-MeFOSE



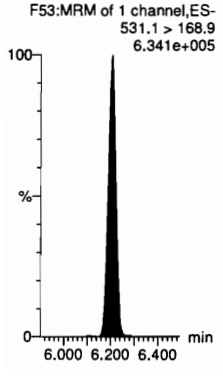
N-EtFOSE



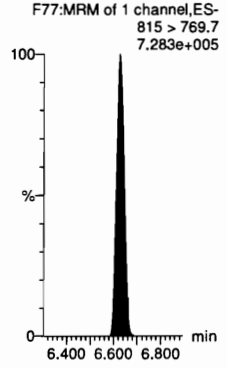
13C3-PFBA-RSD



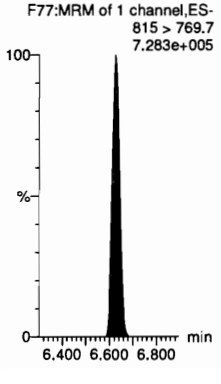
d5-N-ETFOSA-EIS



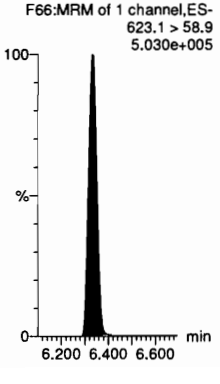
13C2-PFHxDA-EIS



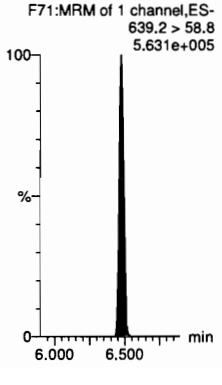
13C2-PFHxDA-EIS



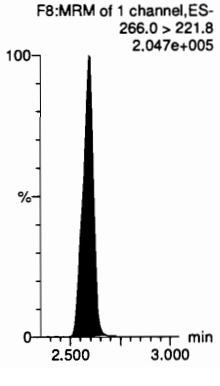
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD

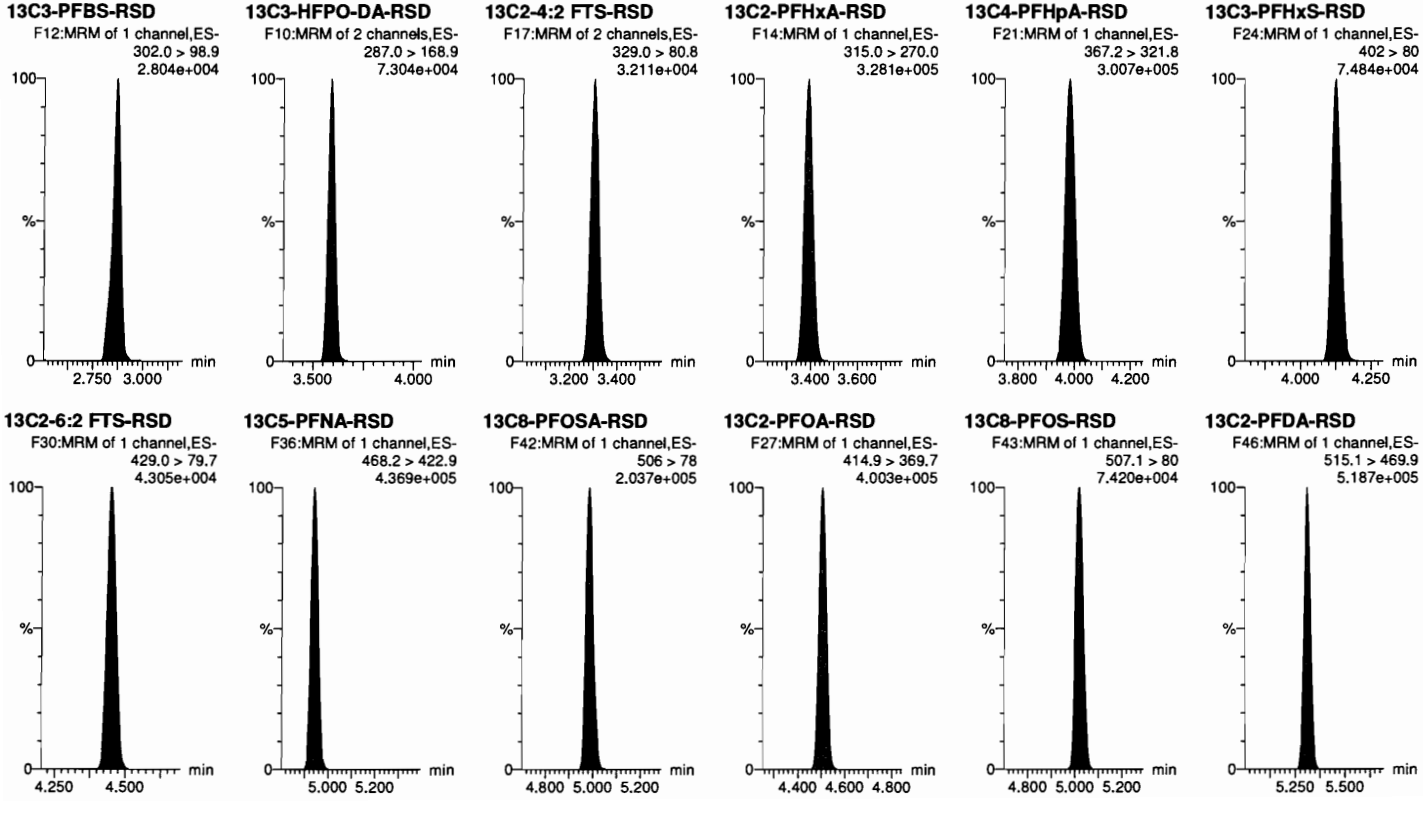


Quantify Sample Report **MassLynx V4.2 SCN977** Page 58 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

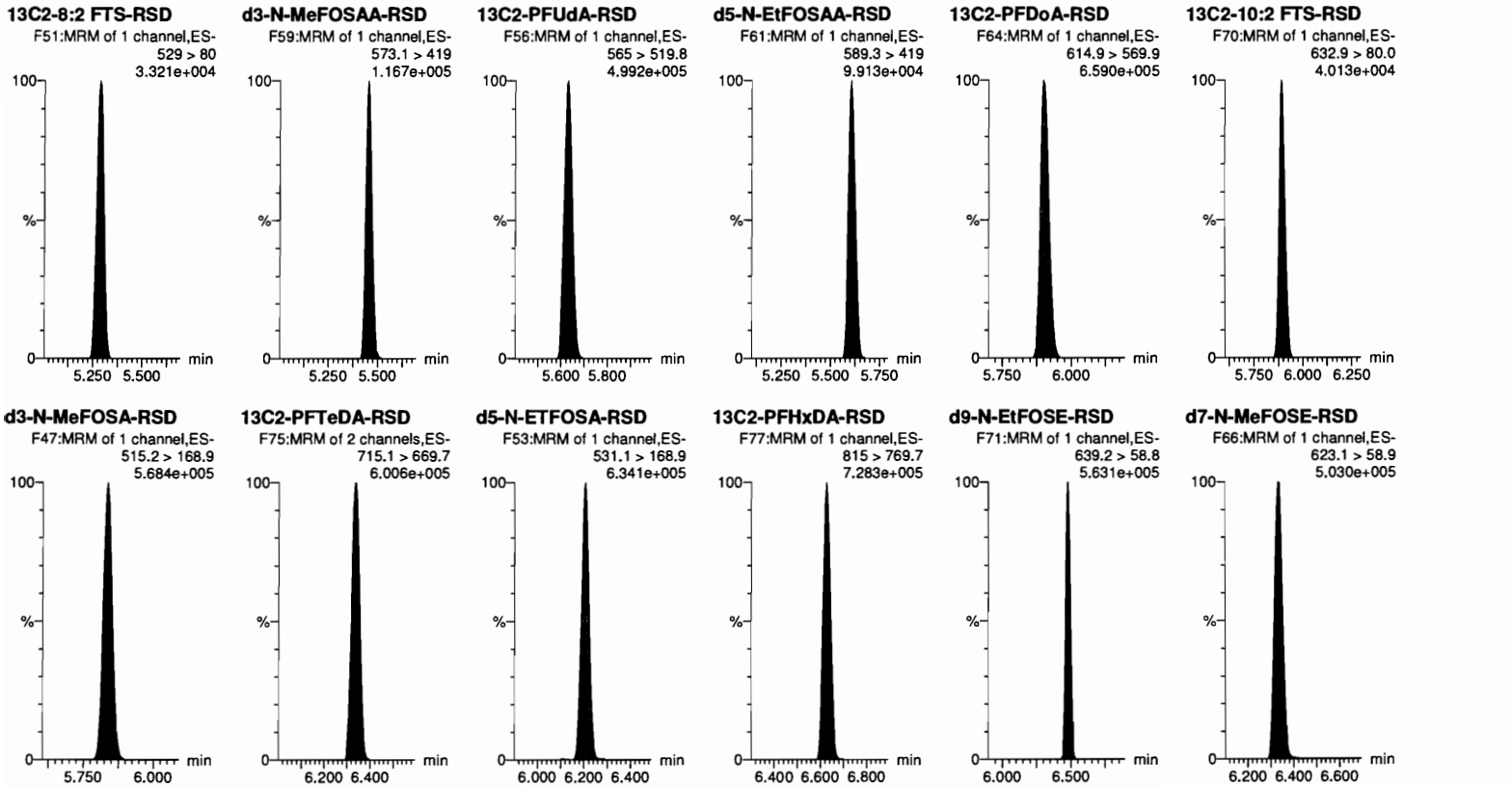


Quantify Sample Report **MassLynx V4.2 SCN977** Page 59 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906



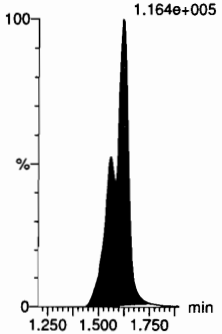
Quantify Sample Report **MassLynx V4.2 SCN977** Page 60 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

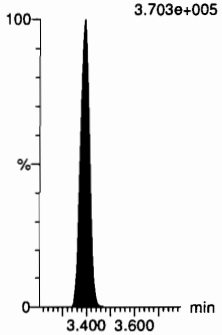
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-24, Date: 06-Jul-2020, Time: 14:06:27, ID: ST200706P1-6 PFC CS3 20F1906, Description: PFC CS3 20F1906

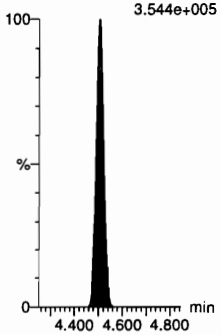
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.164e+005



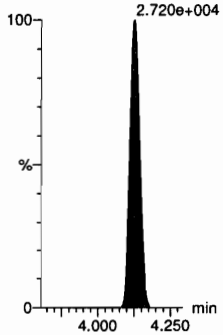
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
3.703e+005



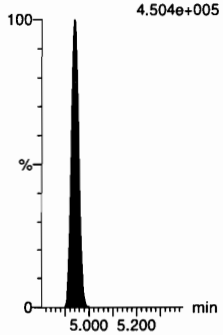
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
3.544e+005



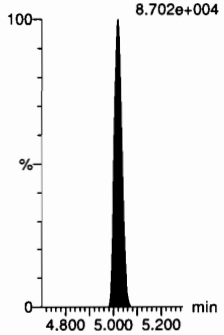
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
2.720e+004



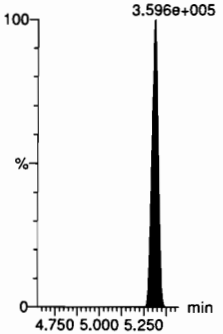
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
4.504e+005



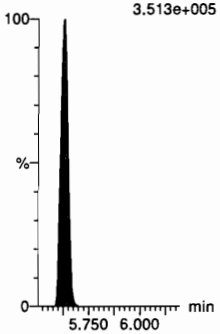
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
8.702e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
3.596e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
3.513e+005

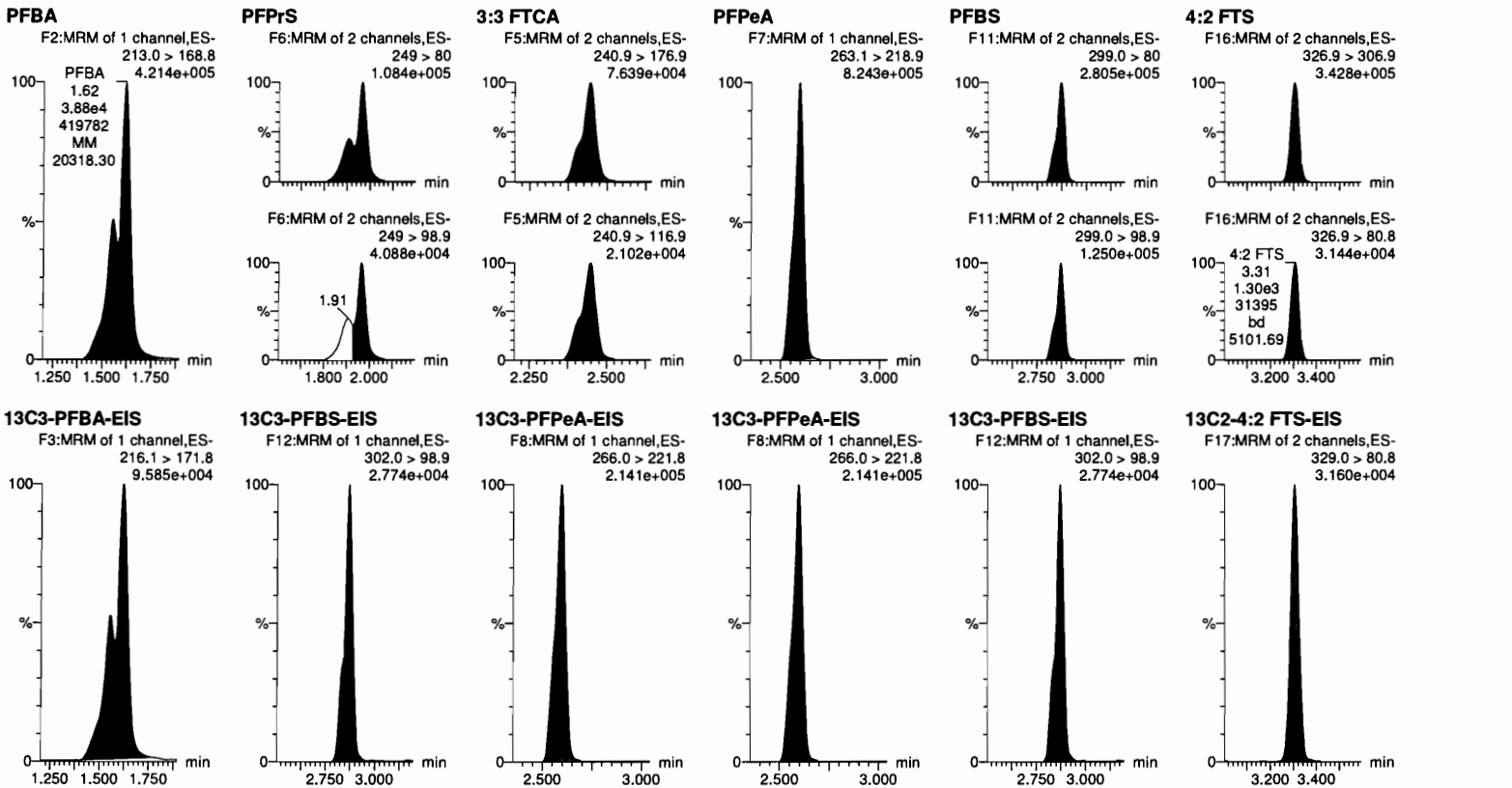


Quantify Sample Report **MassLynx V4.2 SCN977** Page 61 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

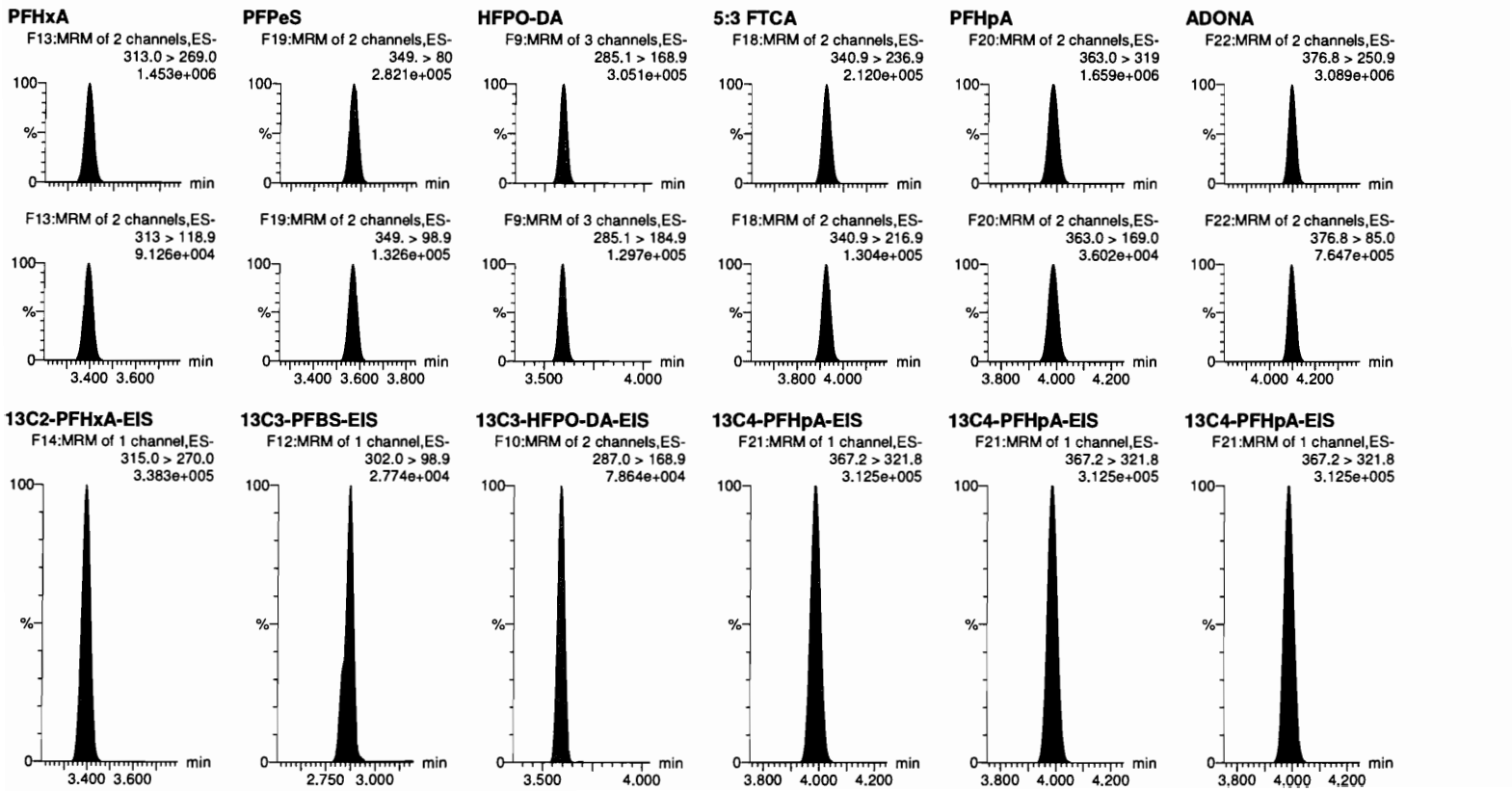


Quantify Sample Report **MassLynx V4.2 SCN977** Page 62 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

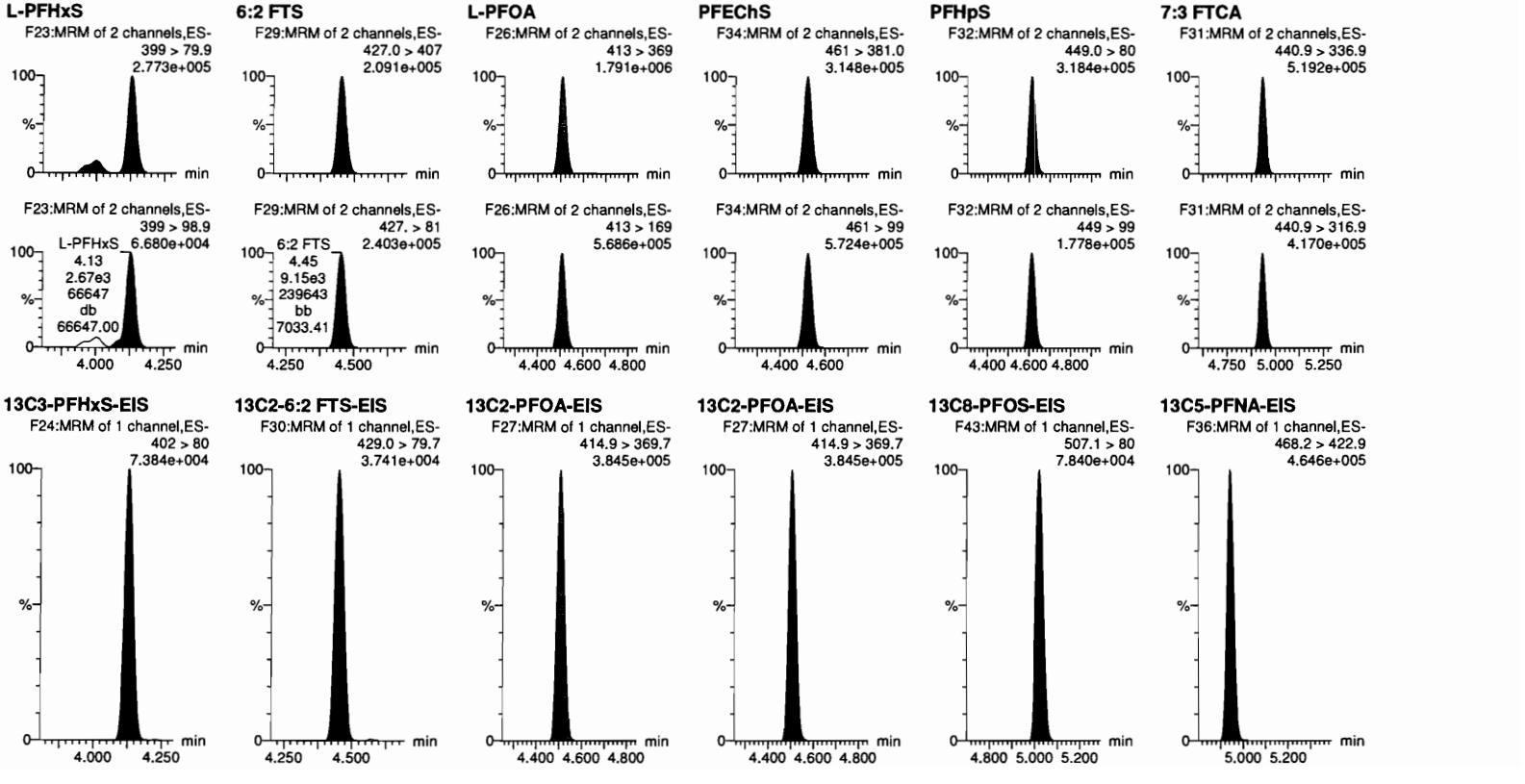


Quantify Sample Report **MassLynx V4.2 SCN977** Page 63 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

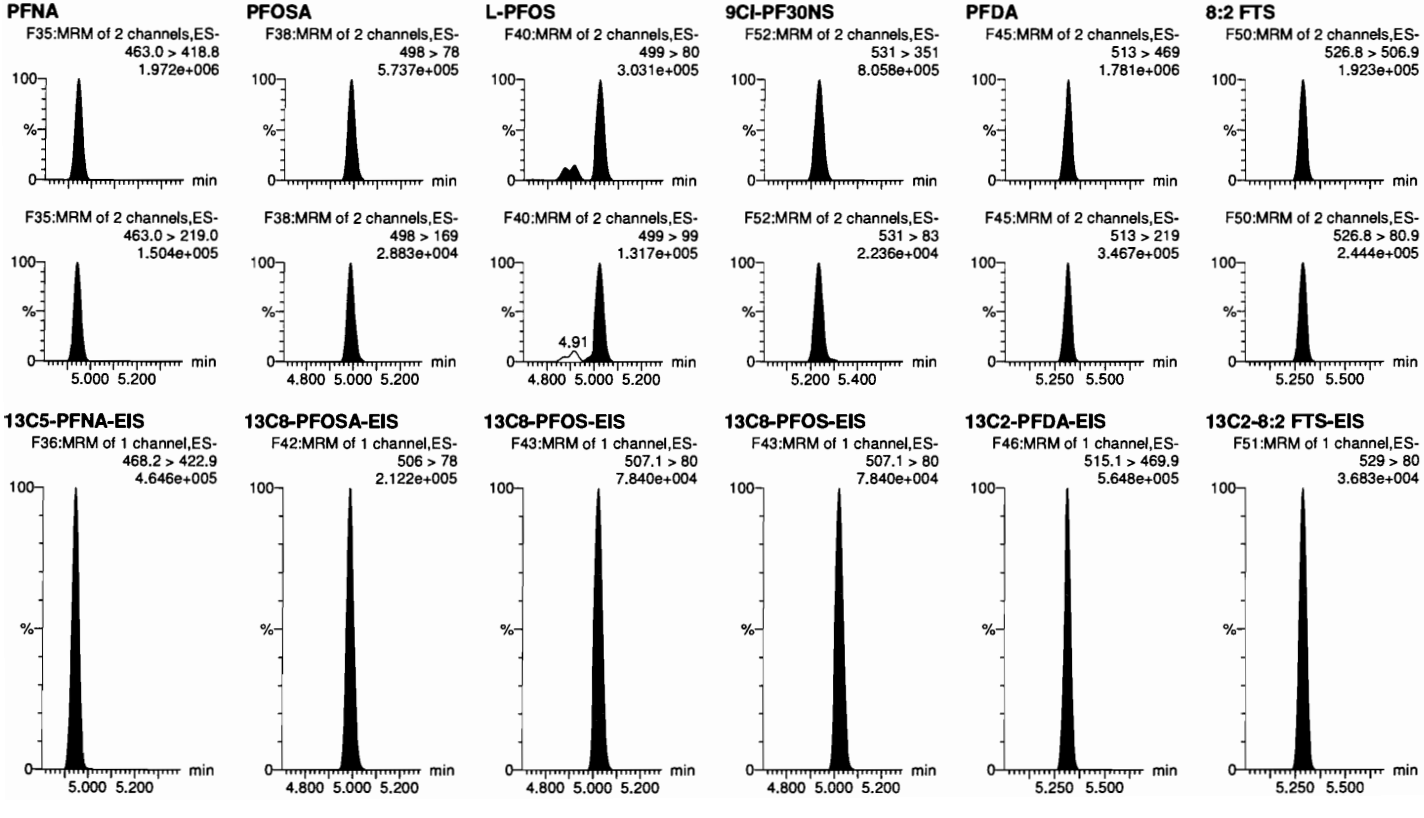


Quantify Sample Report **MassLynx V4.2 SCN977** Page 64 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

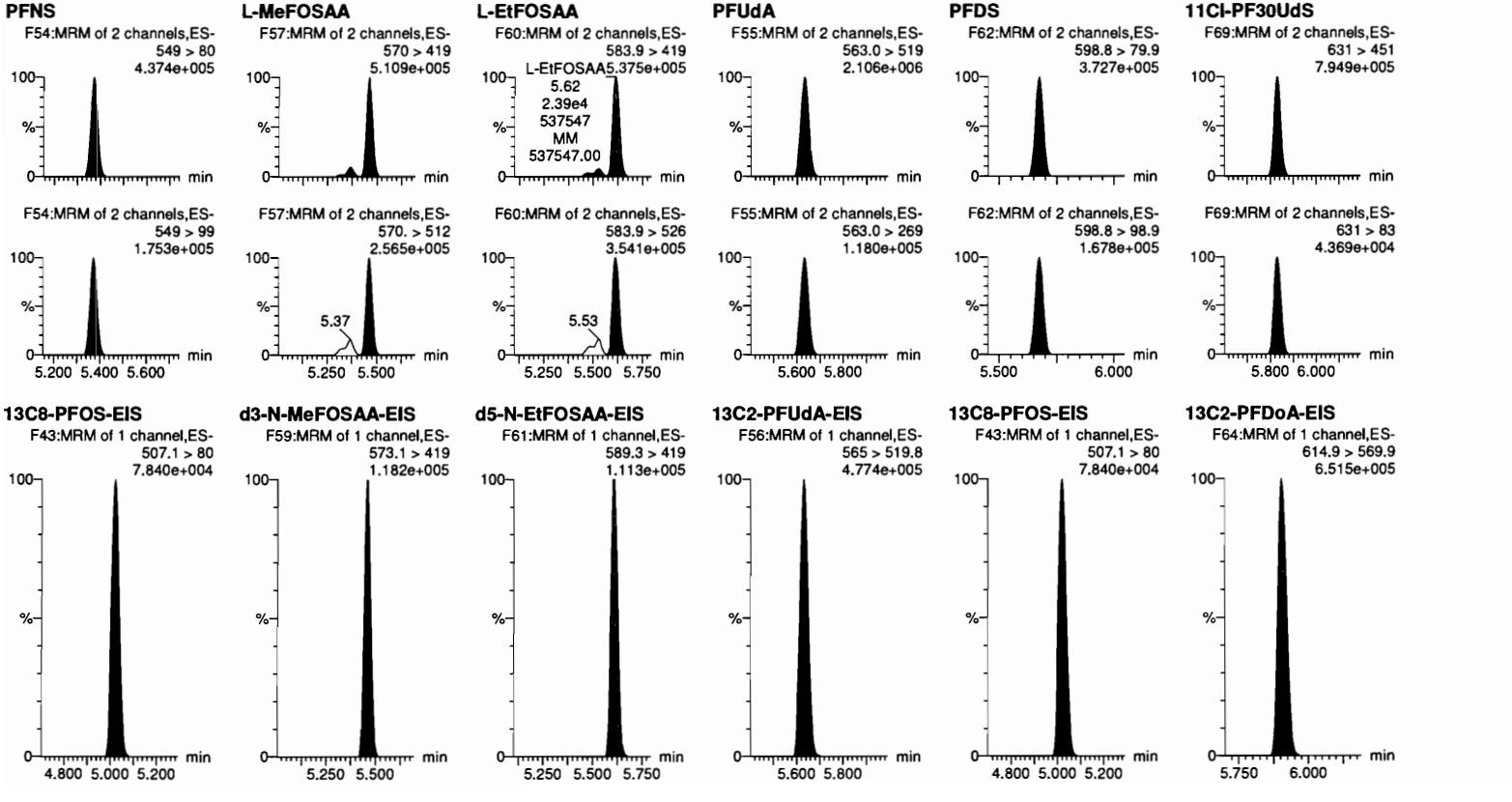


Quantify Sample Report **MassLynx V4.2 SCN977** Page 65 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

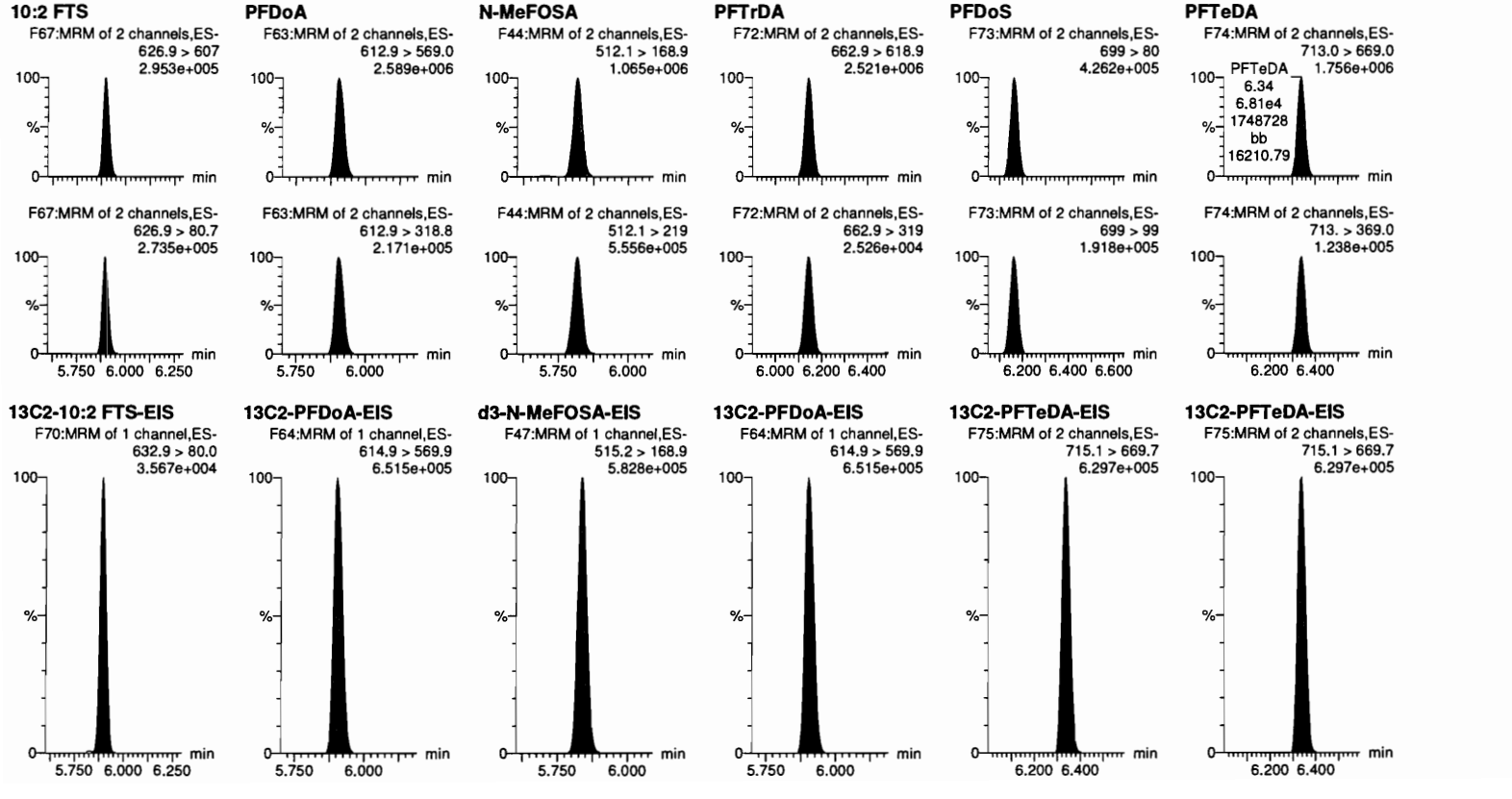


Quantify Sample Report **MassLynx V4.2 SCN977** Page 66 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907



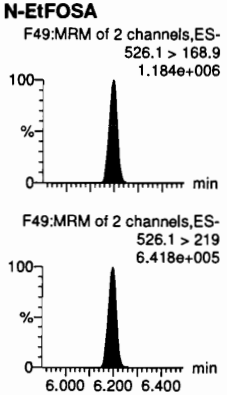
Quantify Sample Report **MassLynx V4.2 SCN977** Page 67 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

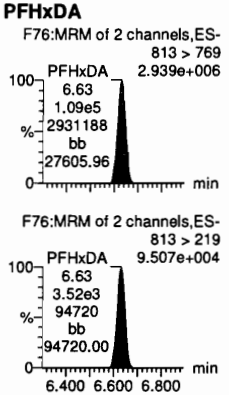
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

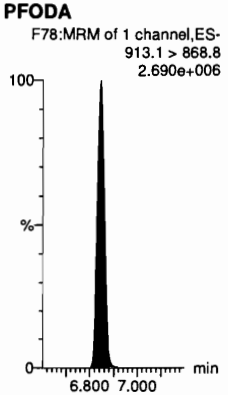
N-EtFOSA



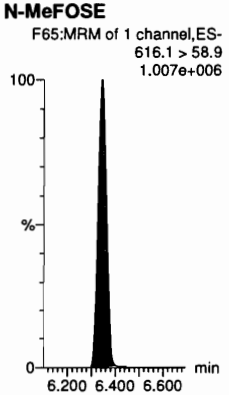
PFHxDA



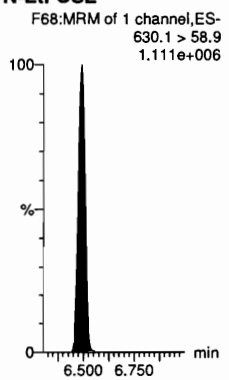
PFODA



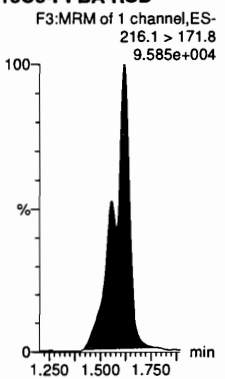
N-MeFOSE



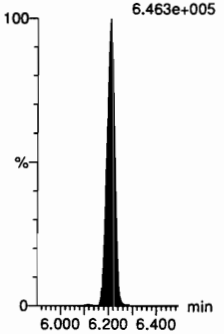
N-EtFOSE



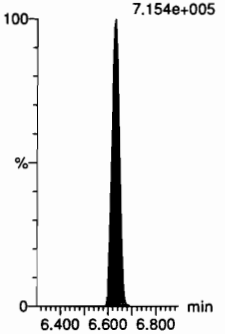
13C3-PFBA-RSD



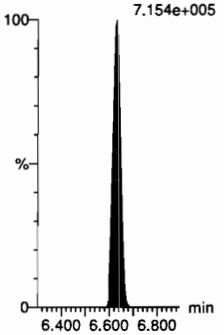
d5-N-ETFOSA-EIS



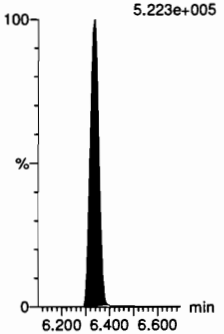
13C2-PFHxDA-EIS



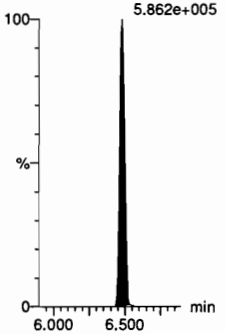
13C2-PFHxDA-EIS



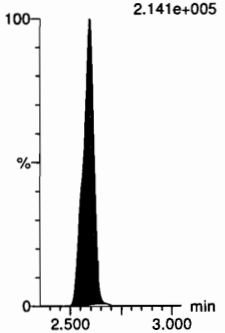
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD

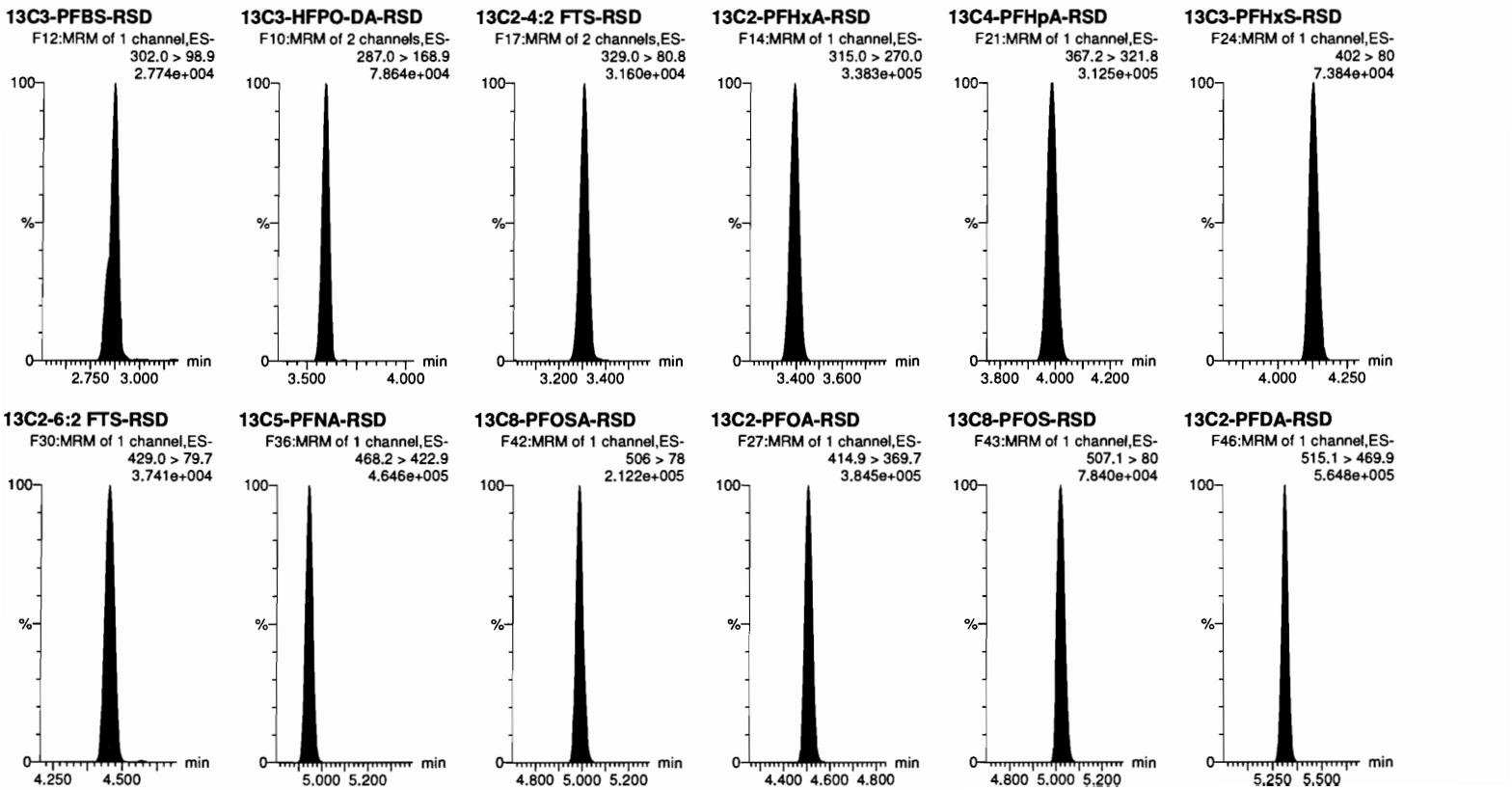


Quantify Sample Report **MassLynx V4.2 SCN977** Page 68 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

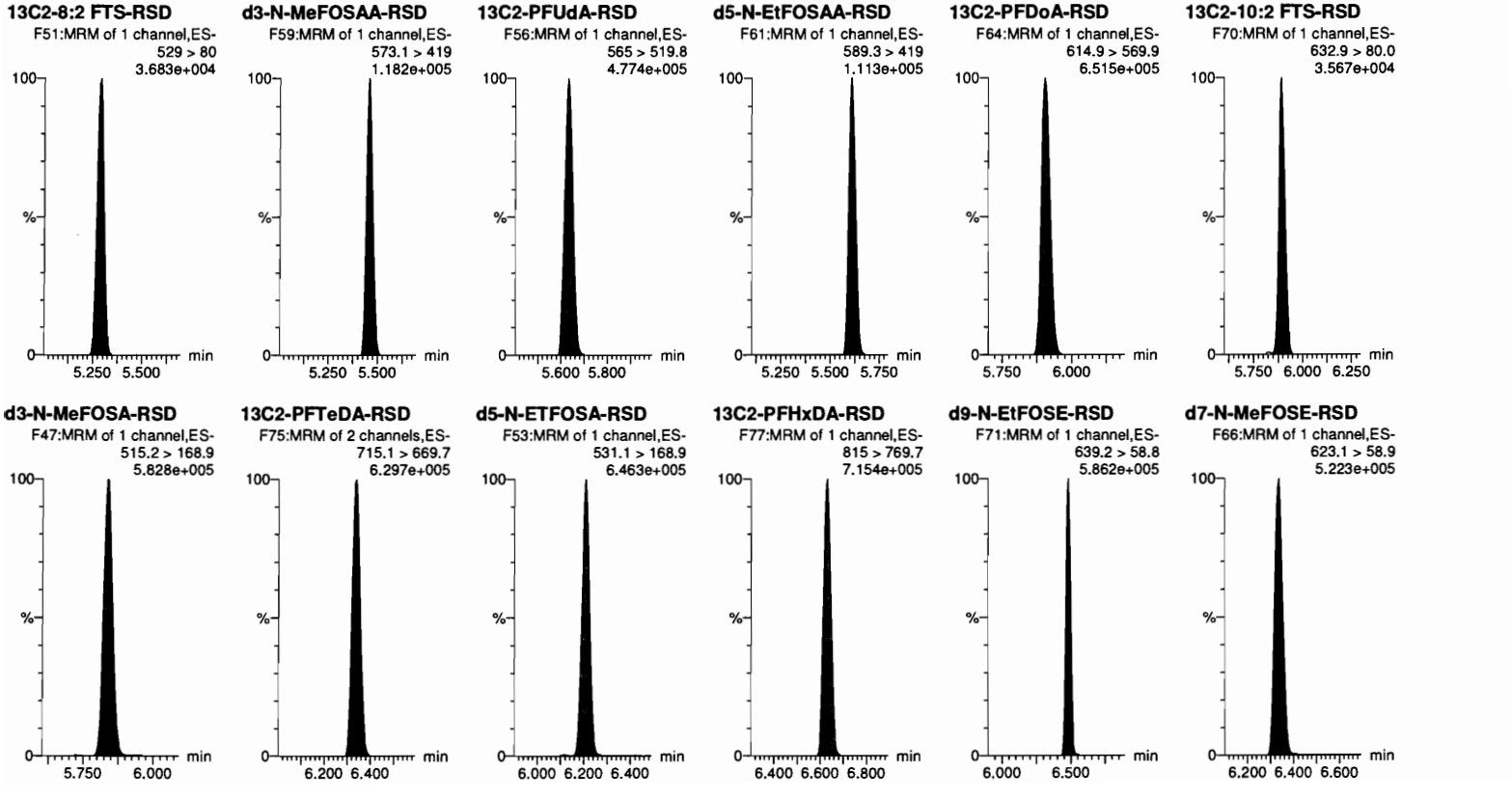


Quantify Sample Report **MassLynx V4.2 SCN977** Page 69 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907



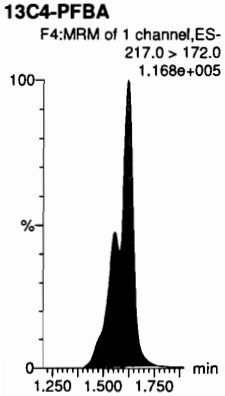
Quantify Sample Report **MassLynx V4.2 SCN977** Page 70 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

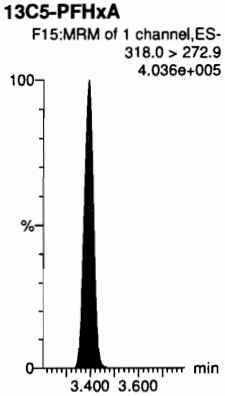
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-25, Date: 06-Jul-2020, Time: 14:16:59, ID: ST200706P1-7 PFC CS4 20F1907, Description: PFC CS4 20F1907

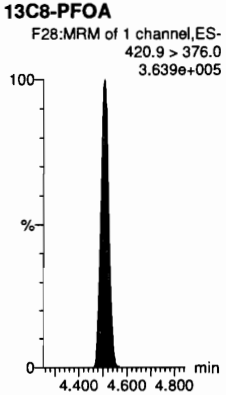
13C4-PFBA



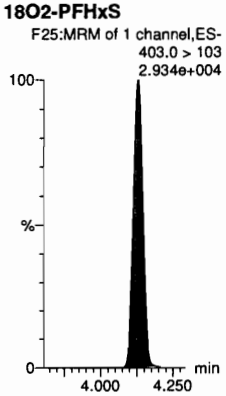
13C5-PFHxA



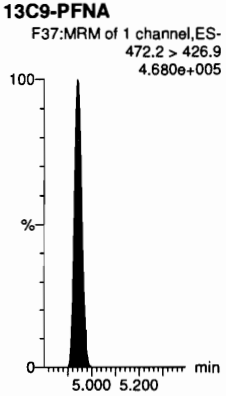
13C8-PFOA



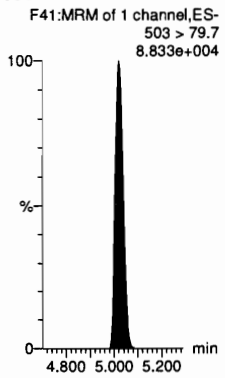
18O2-PFHxS



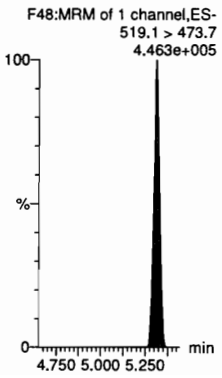
13C9-PFNA



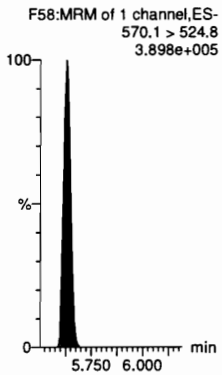
13C4-PFOS



13C6-PFDA



13C7-PFUdA

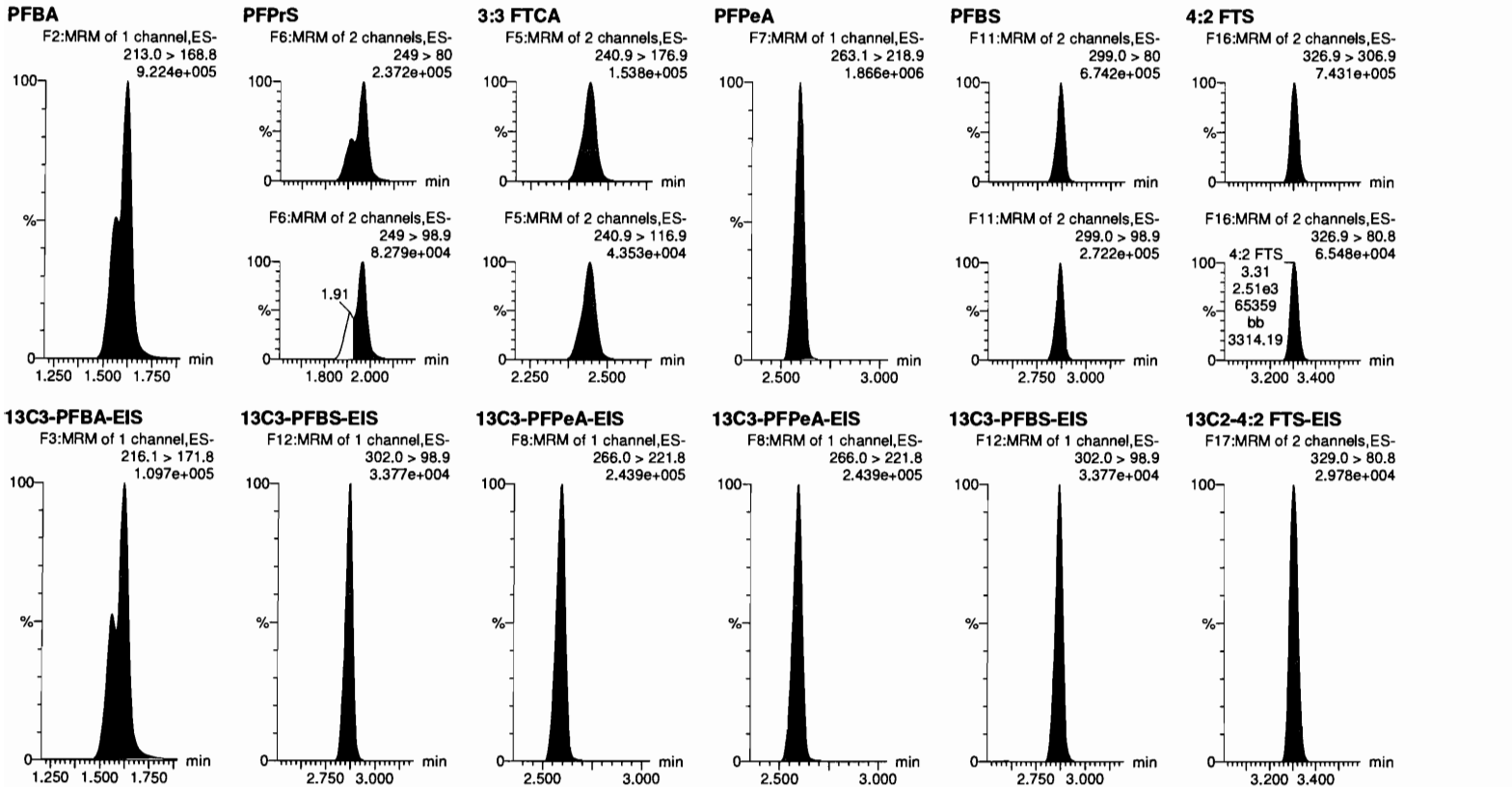


Quantify Sample Report **MassLynx V4.2 SCN977** Page 71 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

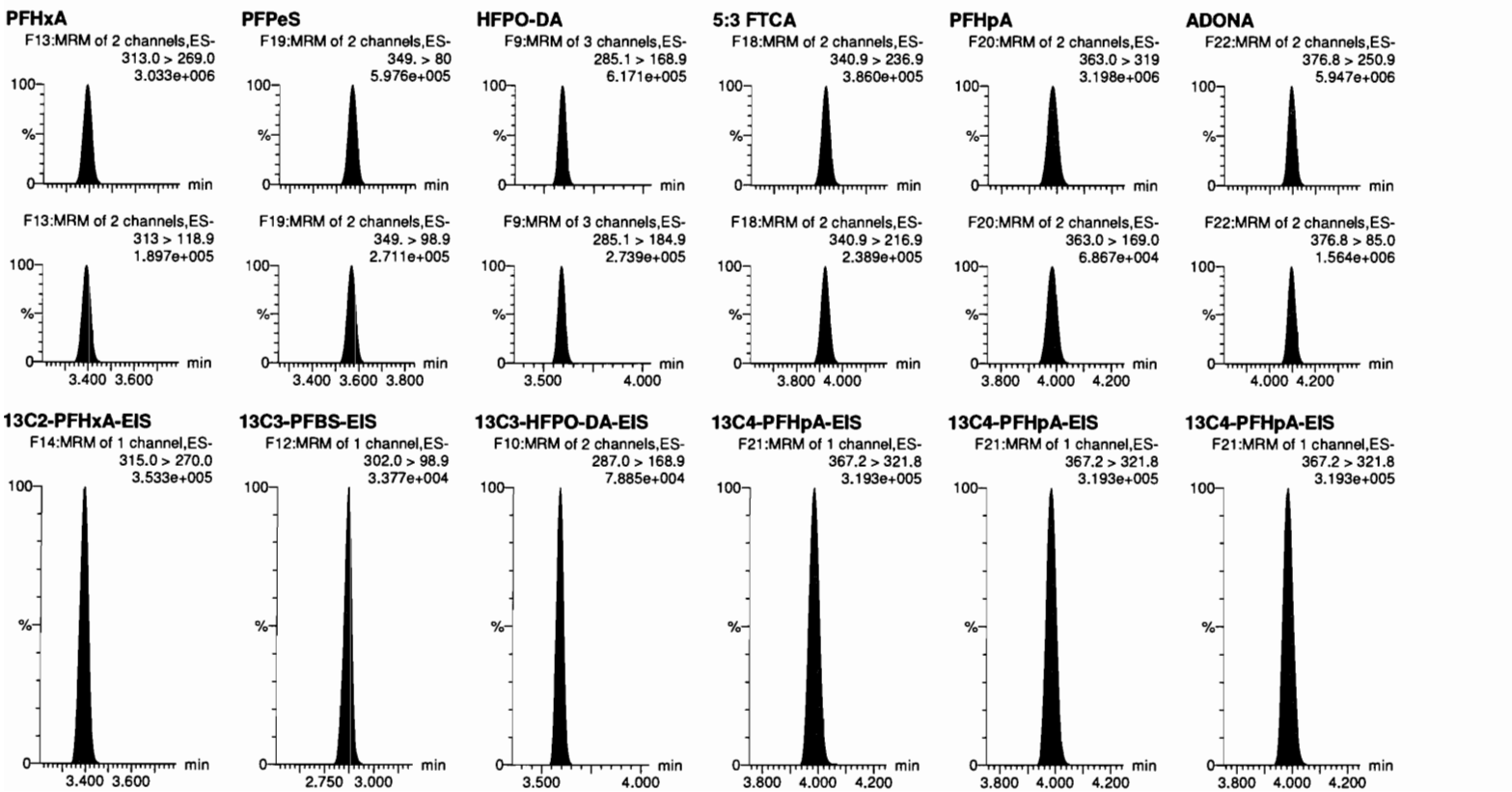


Quantify Sample Report **MassLynx V4.2 SCN977** Page 72 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

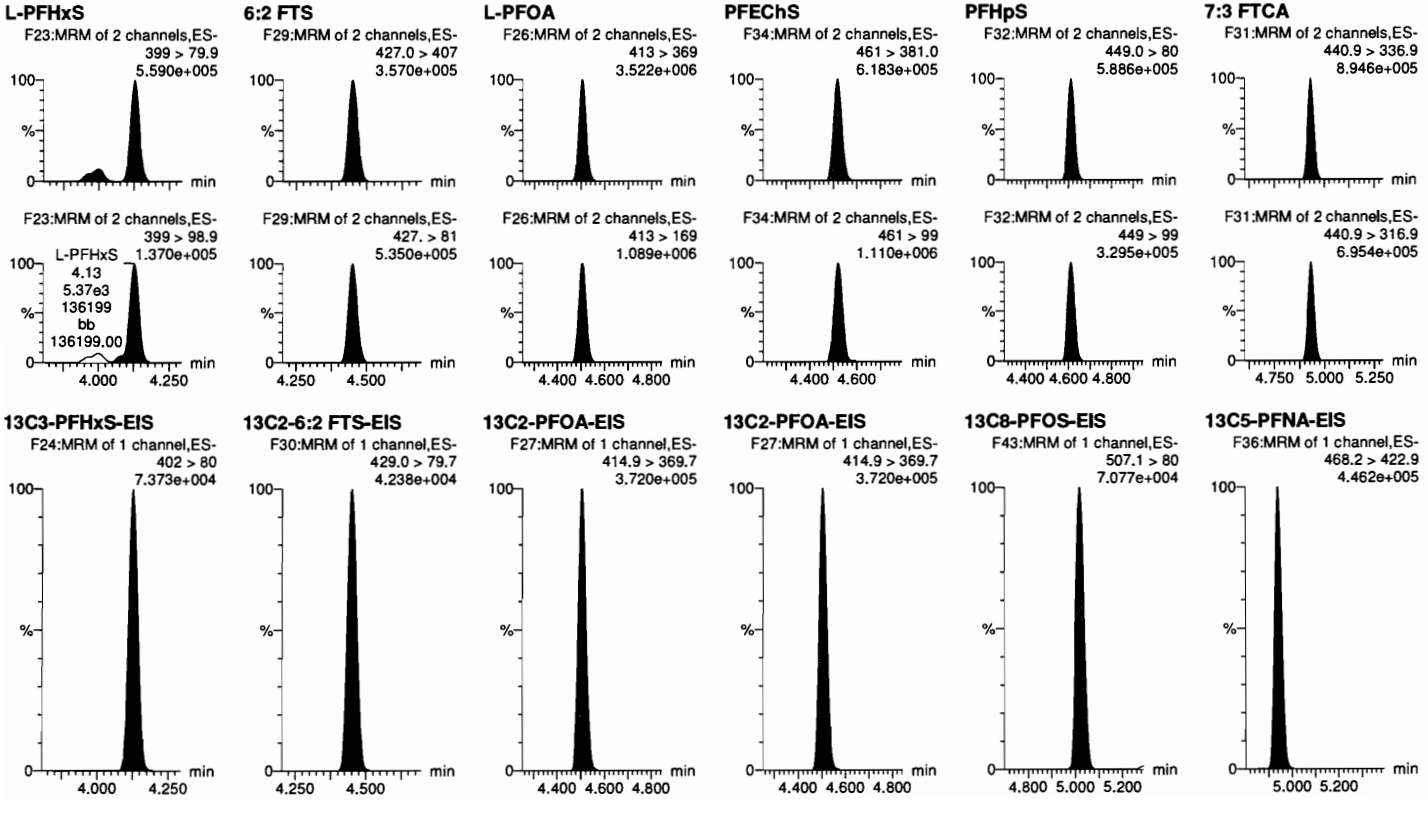


Quantify Sample Report **MassLynx V4.2 SCN977** Page 73 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

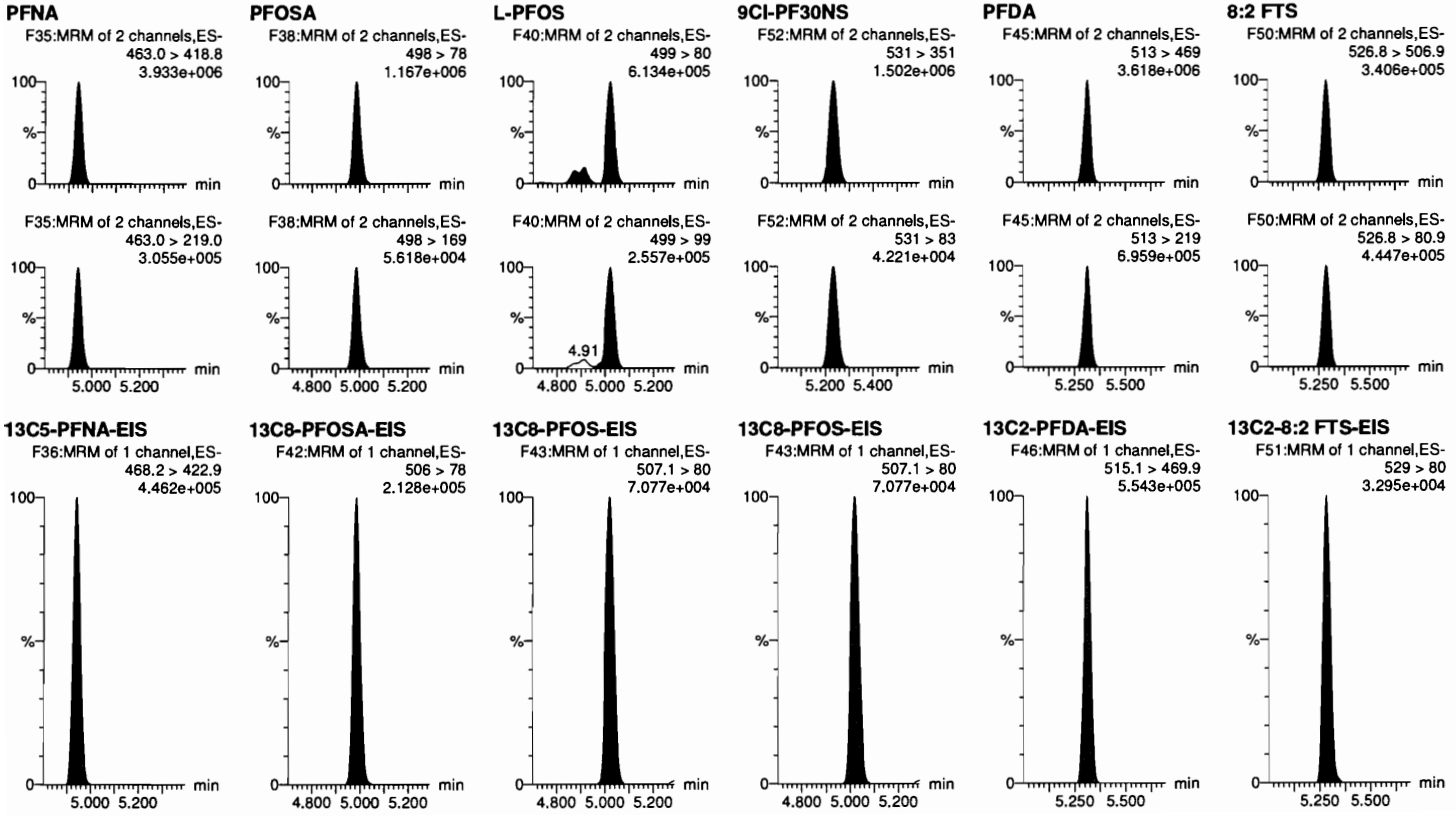


Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

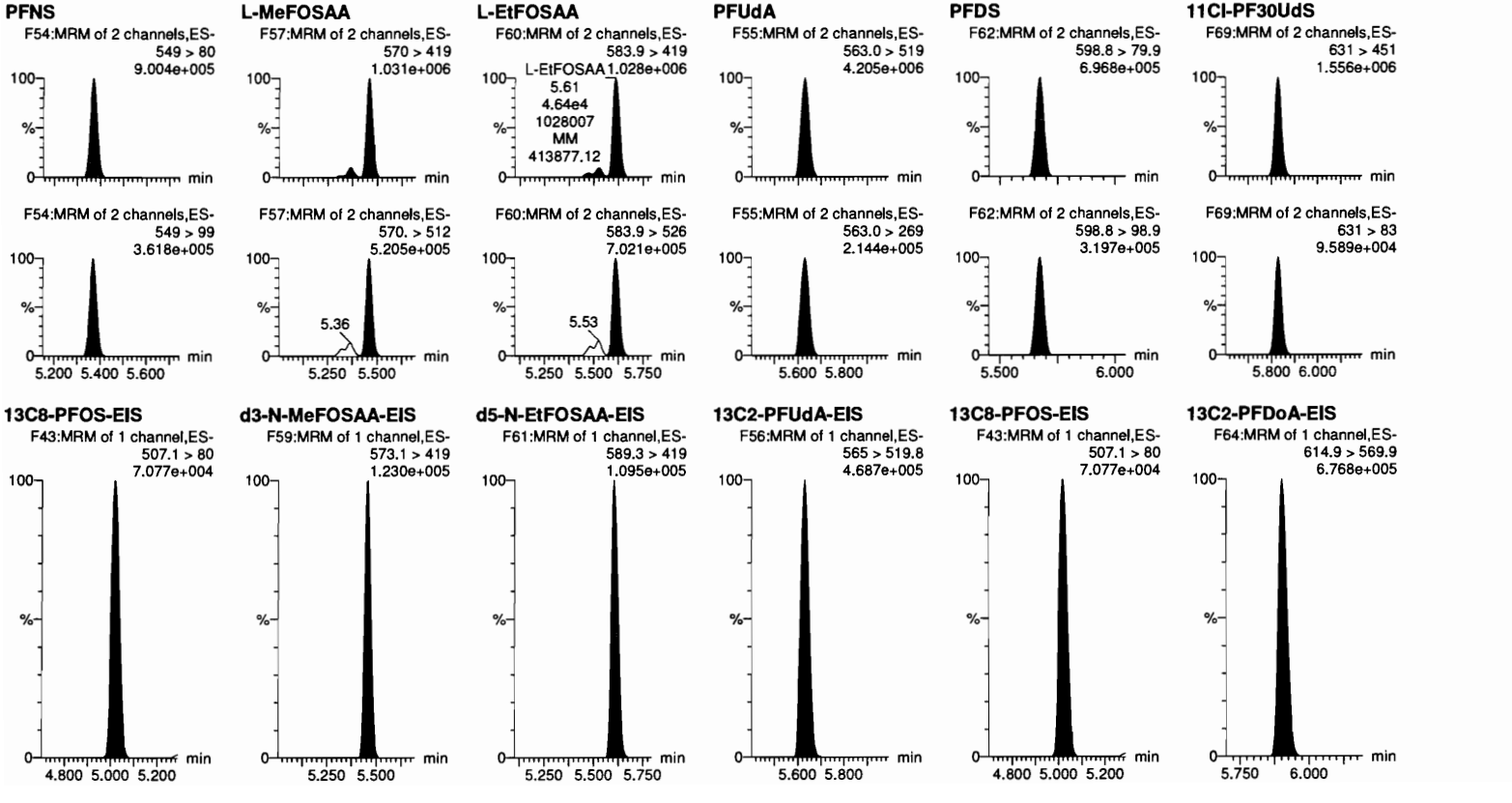


Quantify Sample Report **MassLynx V4.2 SCN977** Page 75 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908



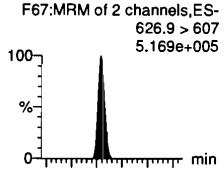
Quantify Sample Report **MassLynx V4.2 SCN977** Page 76 of 100
Vista Analytical Laboratory

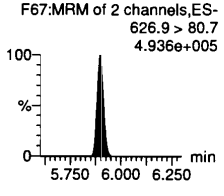
Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

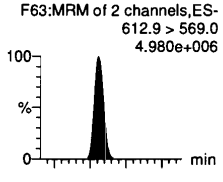
Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

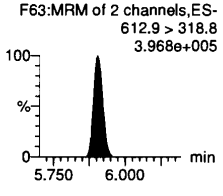
10:2 FTS



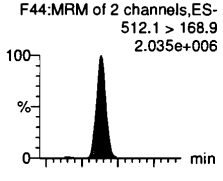


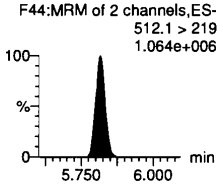
PFDoA



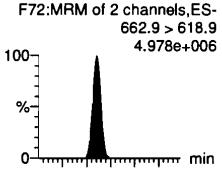


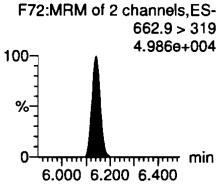
N-MeFOSA



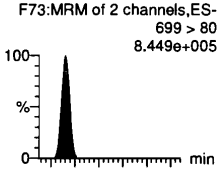


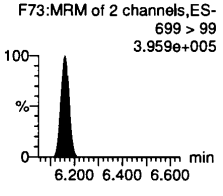
PFTrDA



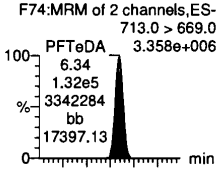


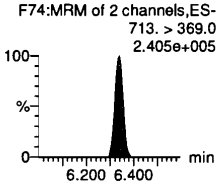
PFDoS



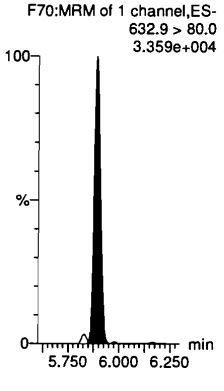


PFTeDA

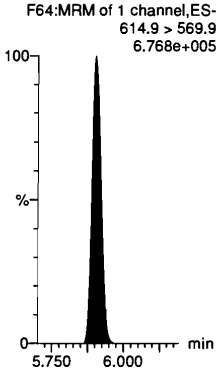




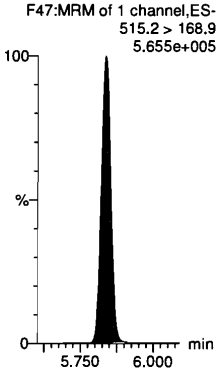
13C2-10:2 FTS-EIS



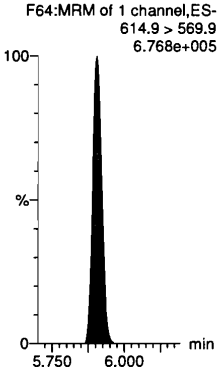
13C2-PFDoA-EIS



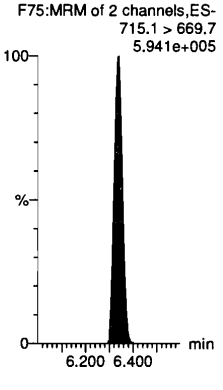
d3-N-MeFOSA-EIS



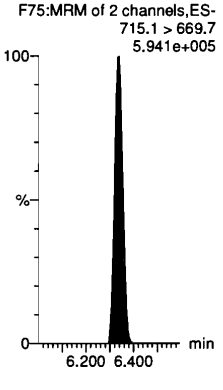
13C2-PFDoA-EIS



13C2-PFTeDA-EIS



13C2-PFTeDA-EIS

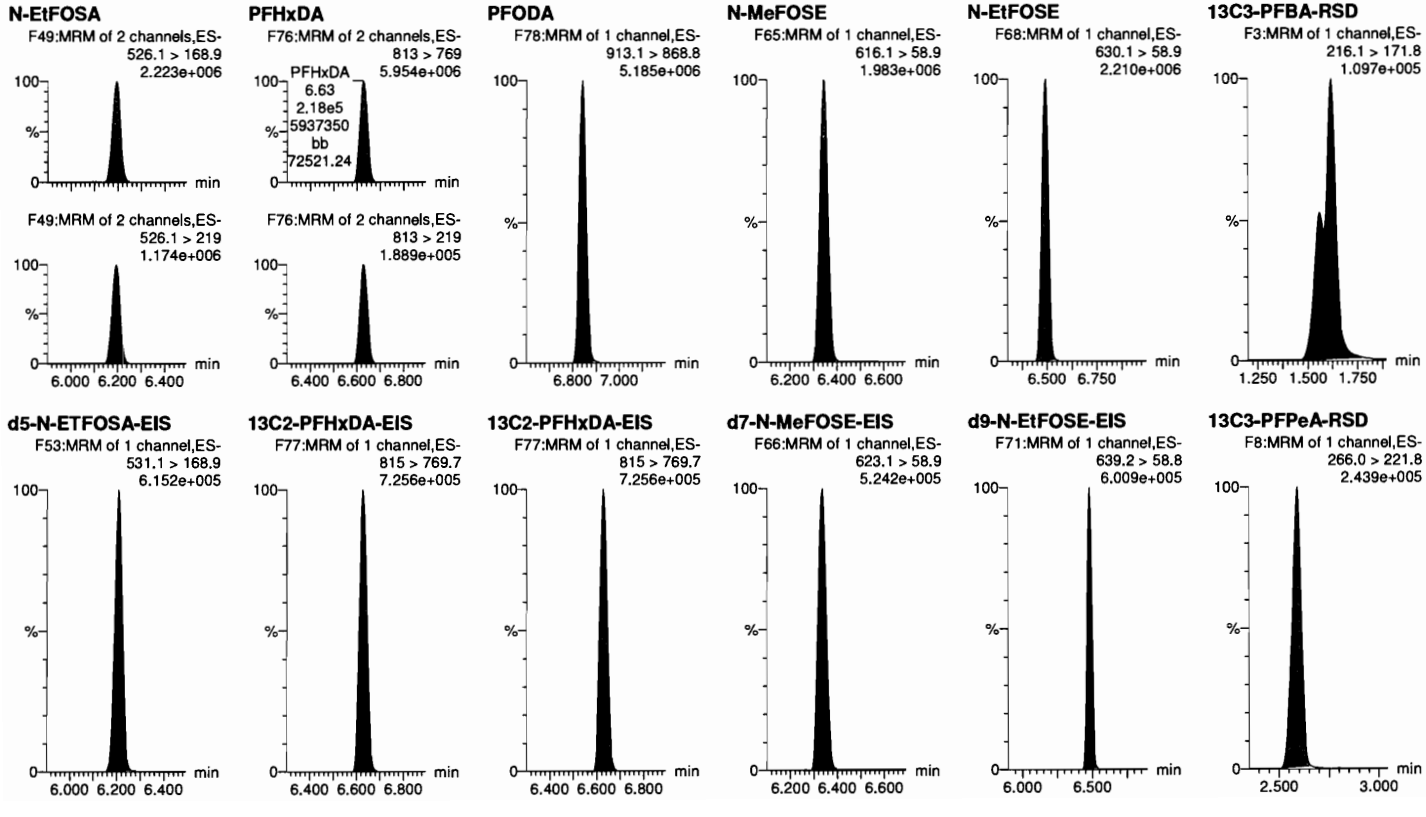


Quantify Sample Report **MassLynx V4.2 SCN977** Page 77 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

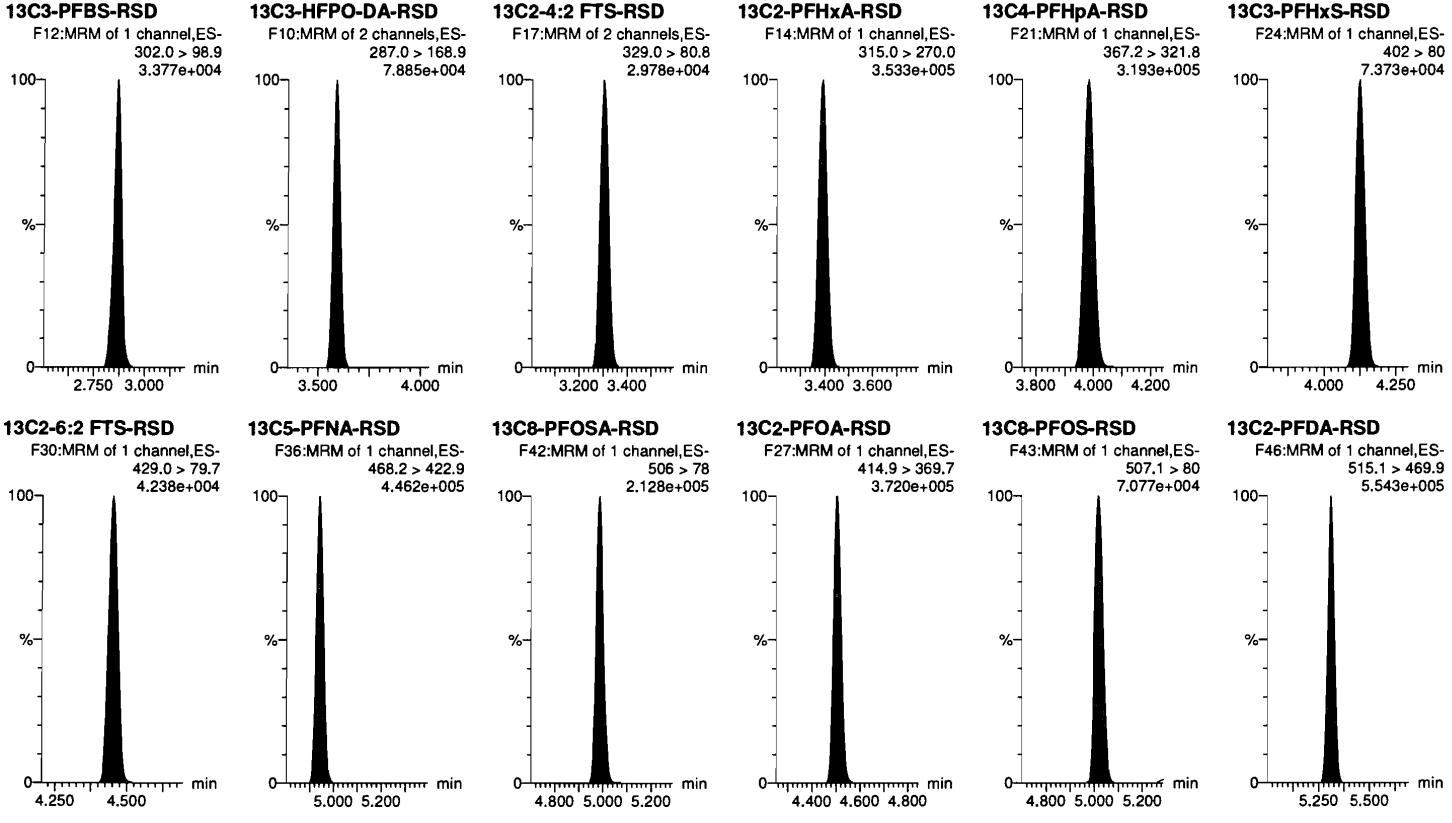


Quantify Sample Report **MassLynx V4.2 SCN977** Page 78 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

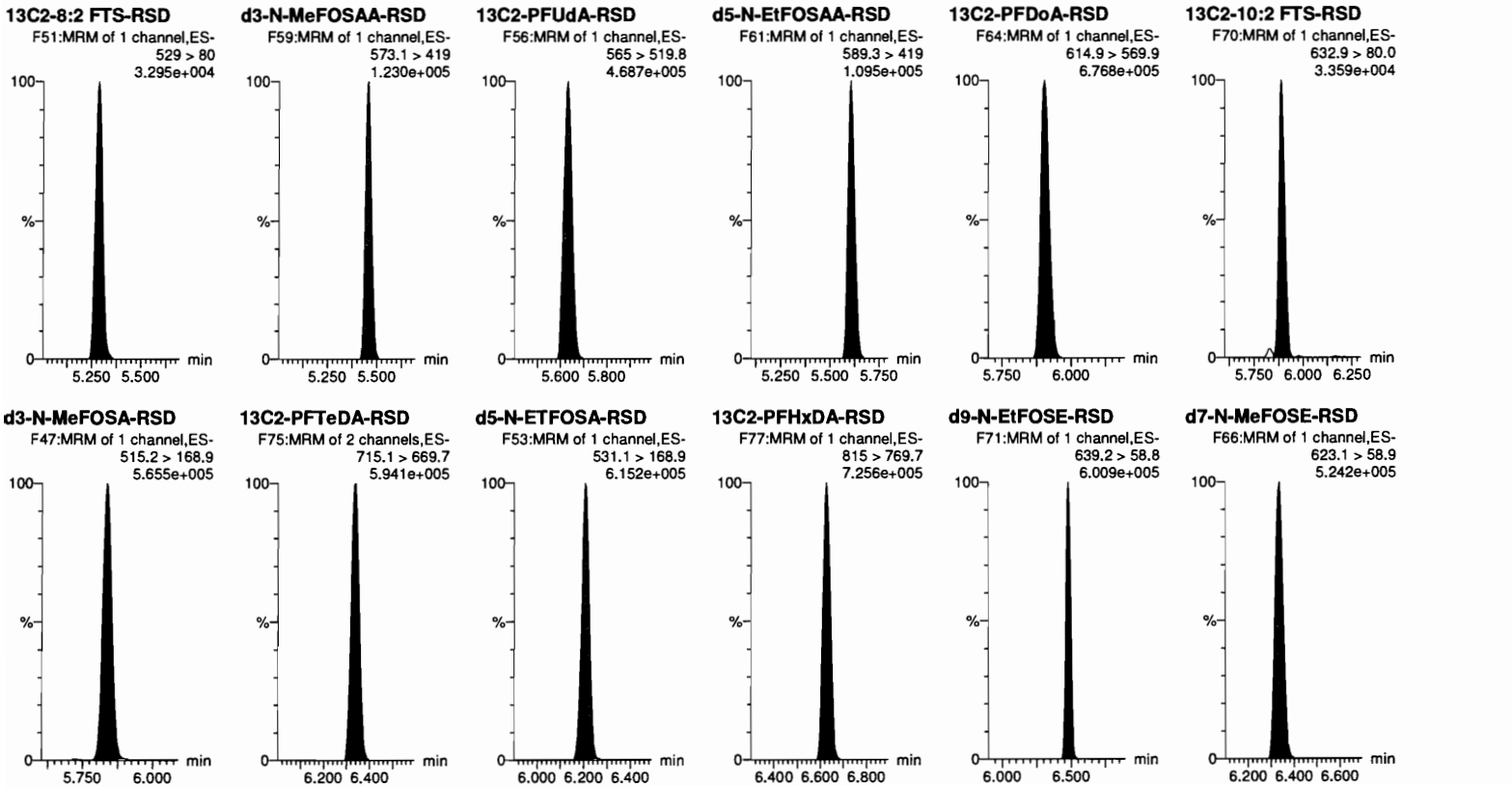


Quantify Sample Report **MassLynx V4.2 SCN977** Page 79 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908



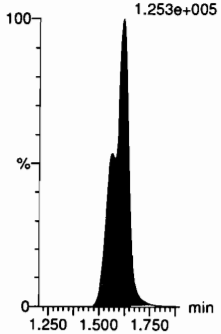
Quantify Sample Report **MassLynx V4.2 SCN977** Page 80 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

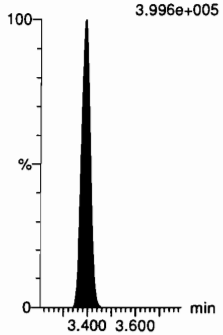
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-26, Date: 06-Jul-2020, Time: 14:27:27, ID: ST200706P1-8 PFC CS5 20F1908, Description: PFC CS5 20F1908

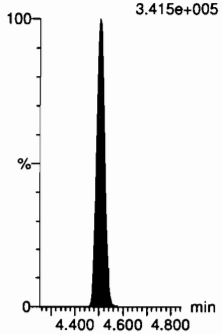
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.253e+005



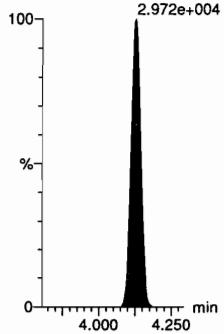
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
3.996e+005



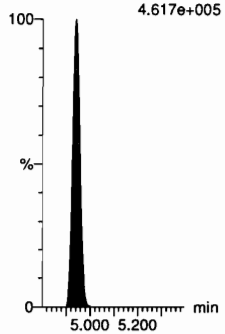
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
3.415e+005



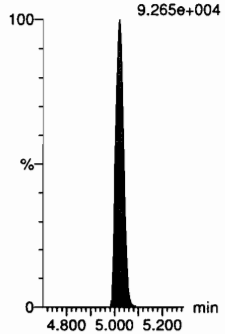
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
2.972e+004



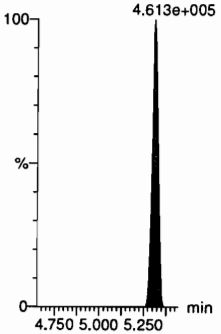
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
4.617e+005



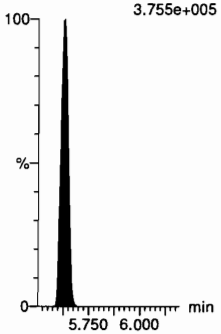
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
9.265e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
4.613e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
3.755e+005

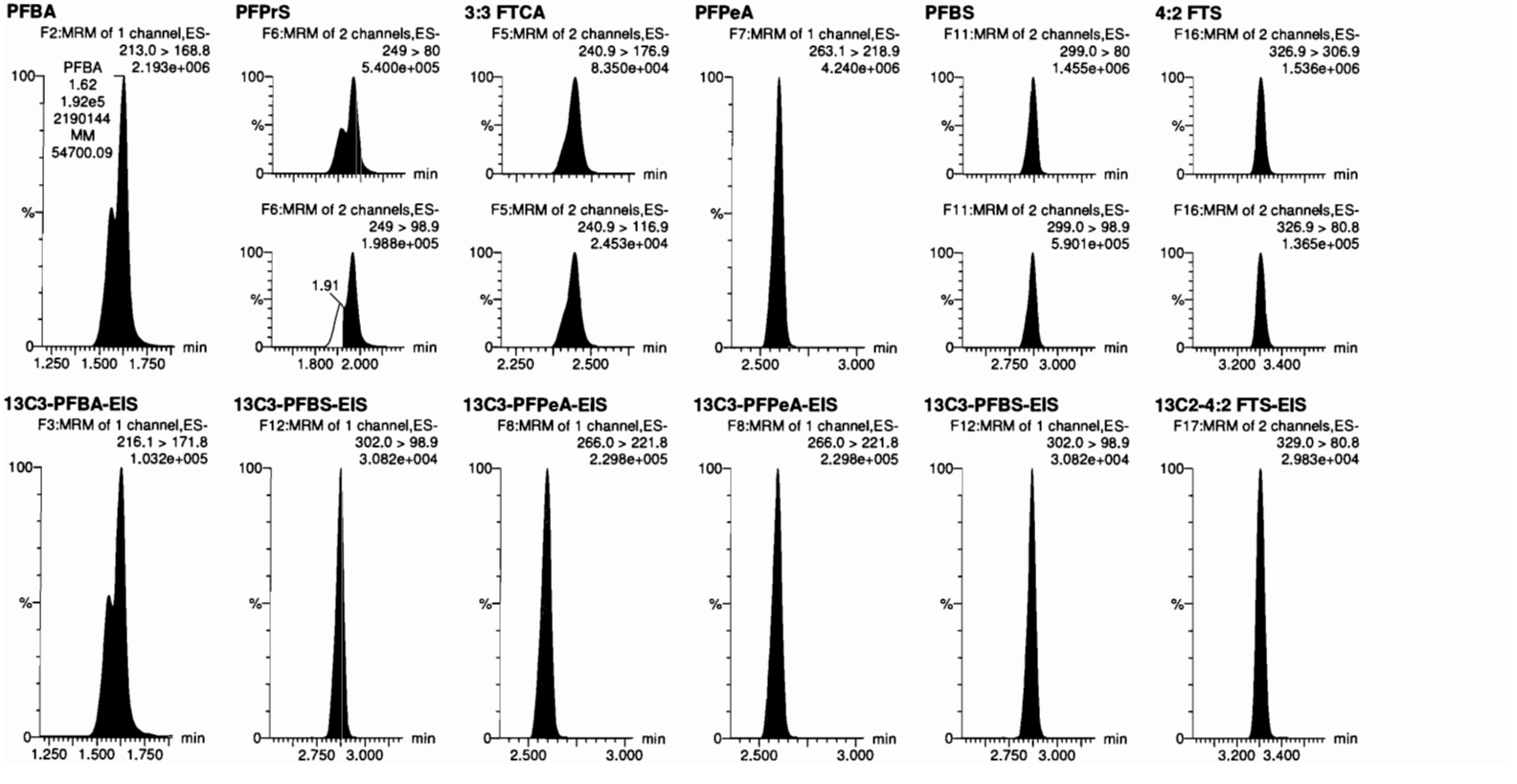


Quantify Sample Report **MassLynx V4.2 SCN977** Page 81 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

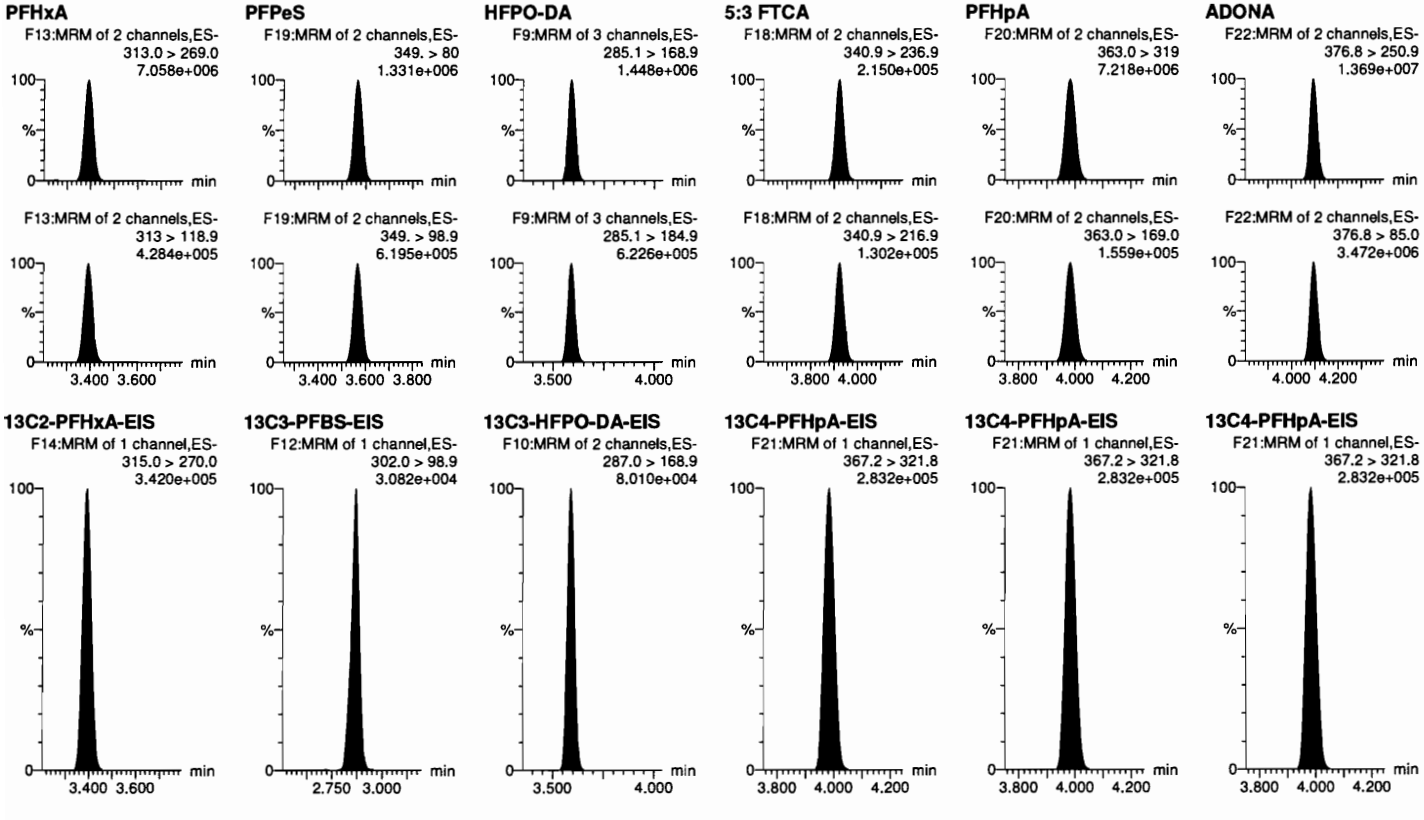


Quantify Sample Report **MassLynx V4.2 SCN977** Page 82 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

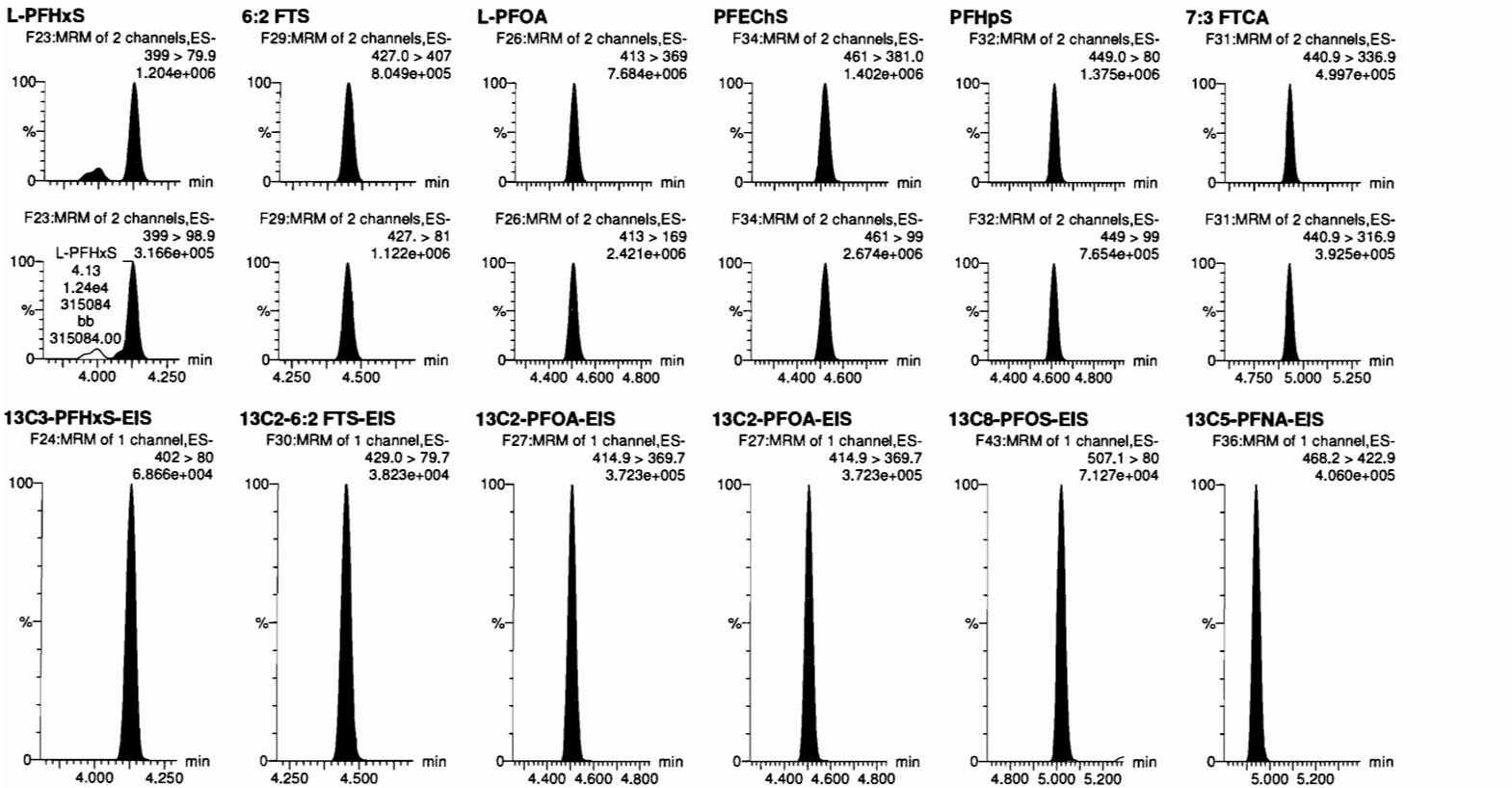


Quantify Sample Report **MassLynx V4.2 SCN977** Page 83 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

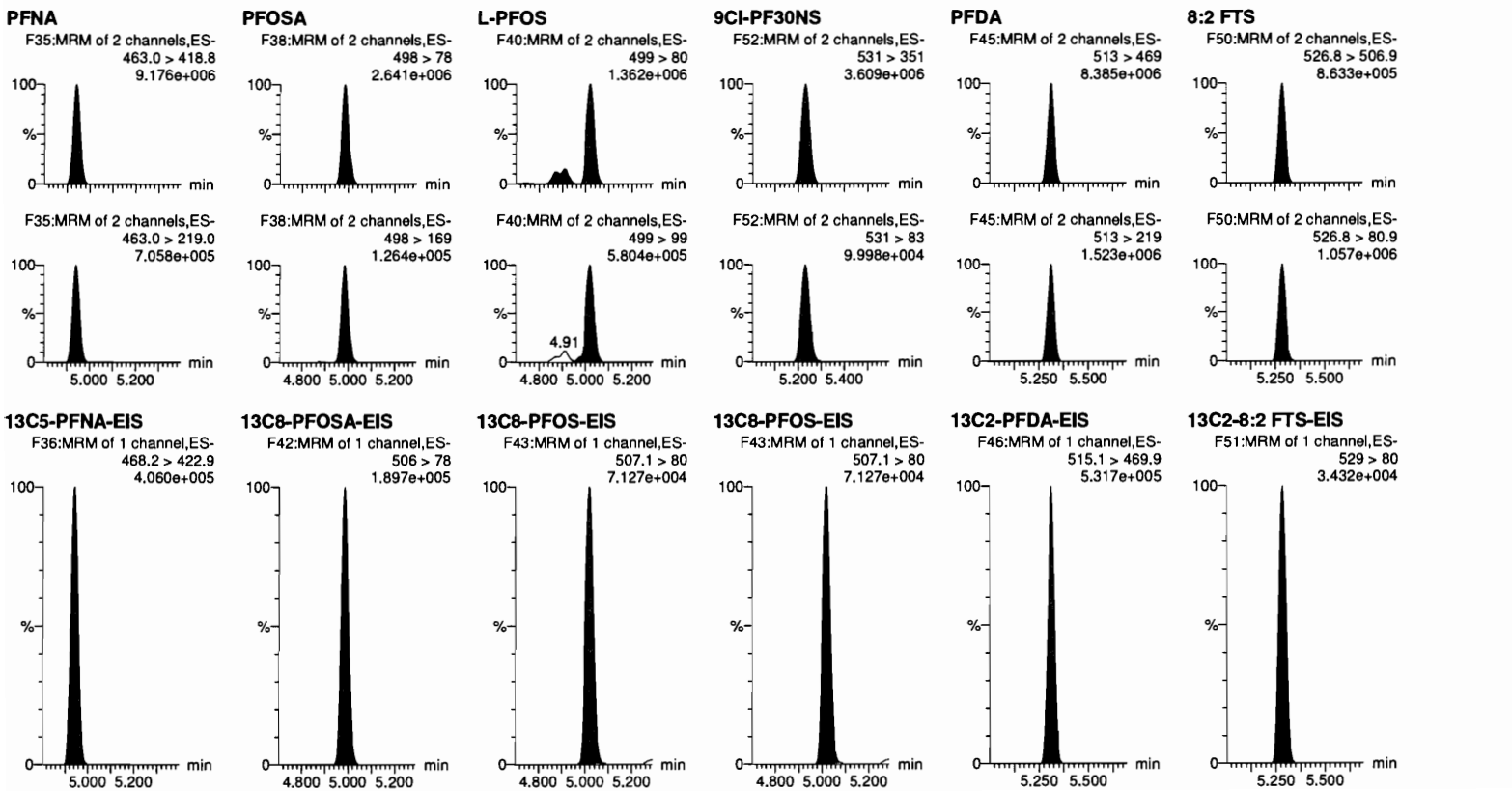


Quantify Sample Report **MassLynx V4.2 SCN977** Page 84 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

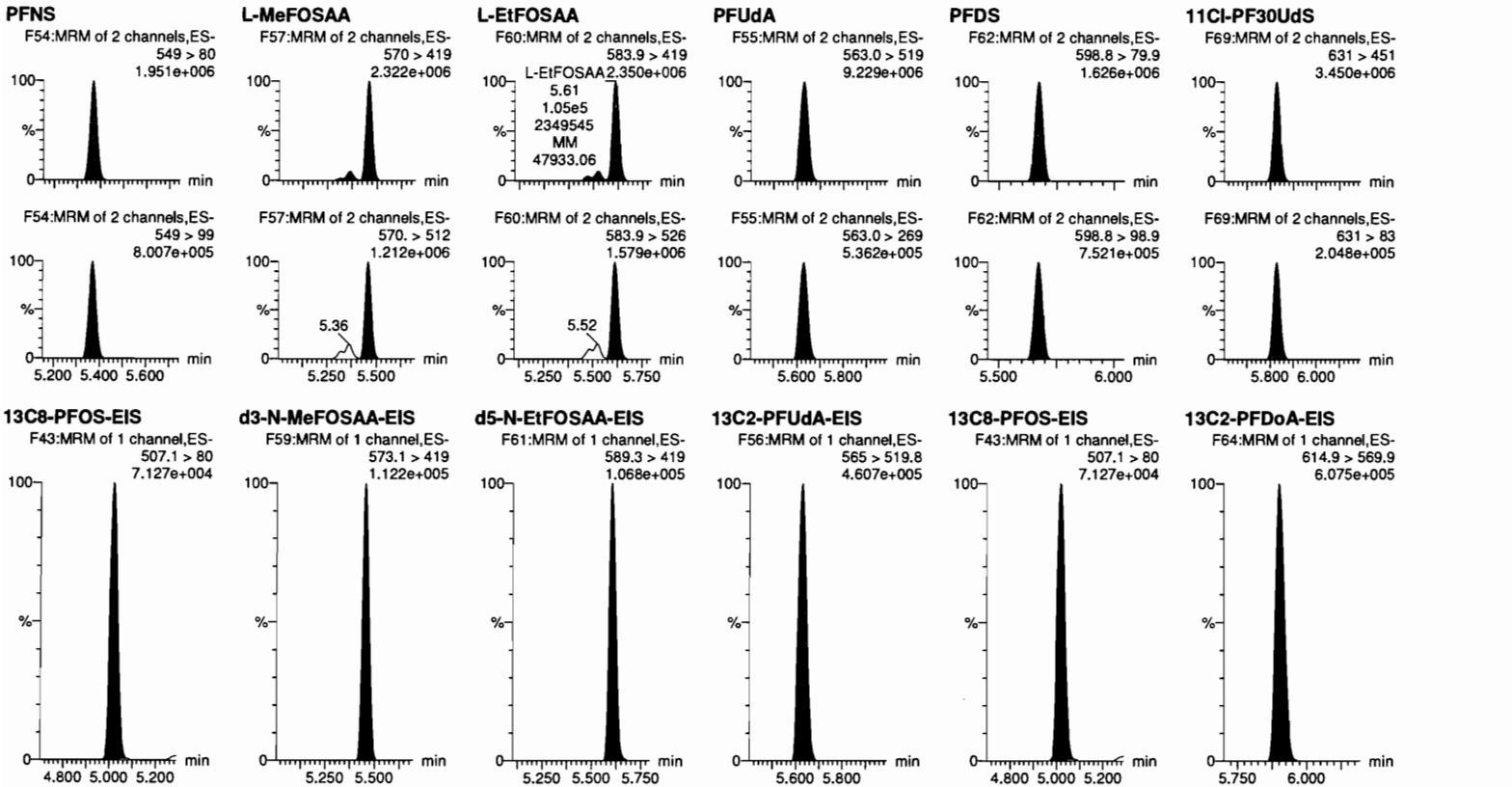


Quantify Sample Report **MassLynx V4.2 SCN977** Page 85 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

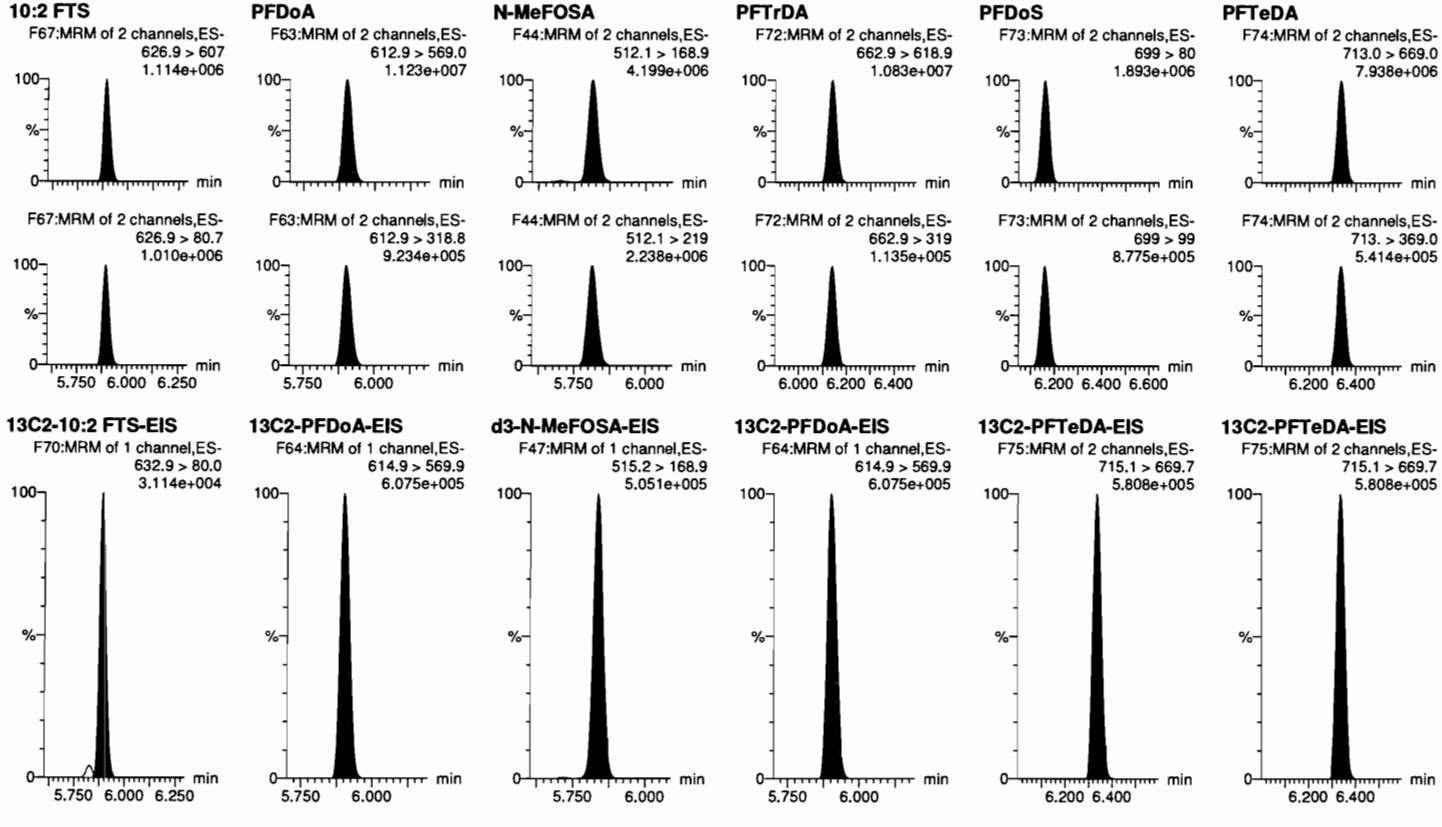


Quantify Sample Report **MassLynx V4.2 SCN977** Page 86 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

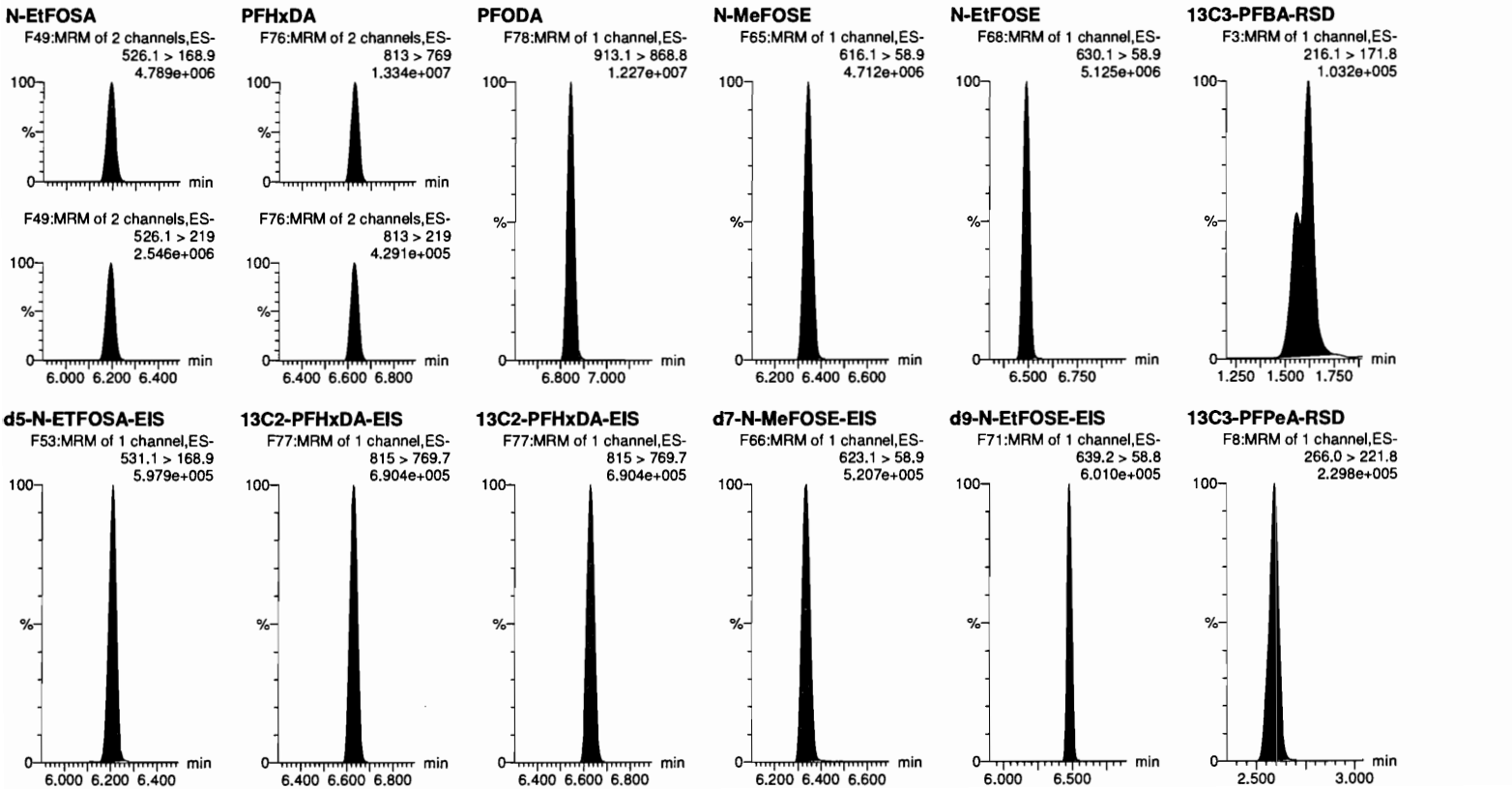


Quantify Sample Report **MassLynx V4.2 SCN977** Page 87 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909



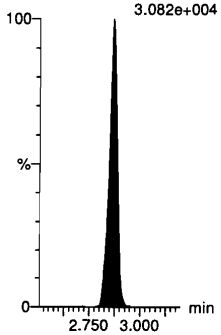
Quantify Sample Report **MassLynx V4.2 SCN977** Page 88 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

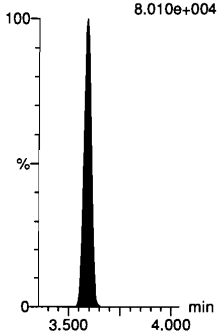
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

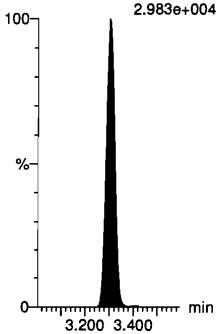
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 98.9
3.082e+004



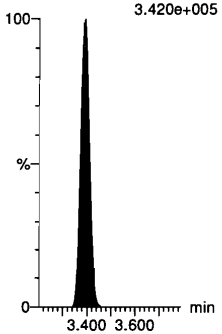
13C3-HFPO-DA-RSD
F10:MRM of 2 channels,ES-
287.0 > 168.9
8.010e+004



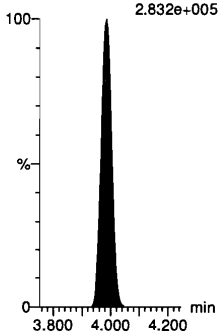
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 80.8
2.983e+004



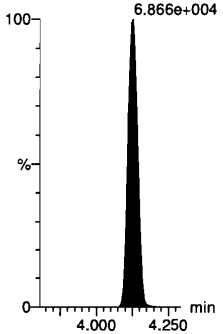
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
3.420e+005



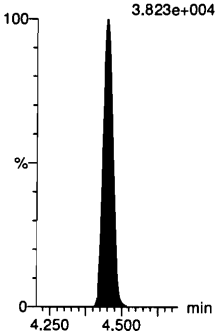
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
2.832e+005



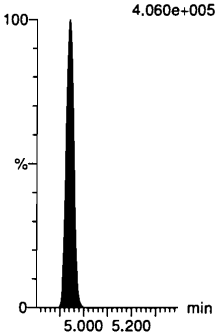
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
402 > 80
6.866e+004



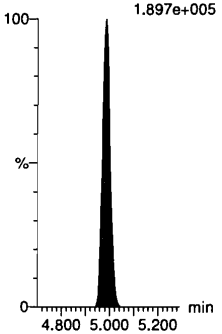
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 79.7
3.823e+004



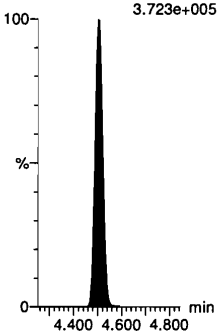
13C5-PFNA-RSD
F36:MRM of 1 channel,ES-
468.2 > 422.9
4.060e+005



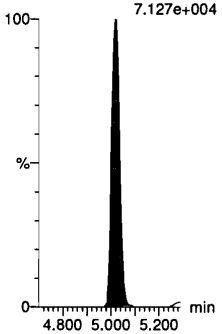
13C8-PFOSA-RSD
F42:MRM of 1 channel,ES-
506 > 78
1.897e+005



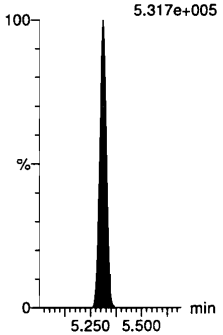
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
3.723e+005



13C8-PFOS-RSD
F43:MRM of 1 channel,ES-
507.1 > 80
7.127e+004



13C2-PFDA-RSD
F46:MRM of 1 channel,ES-
515.1 > 469.9
5.317e+005

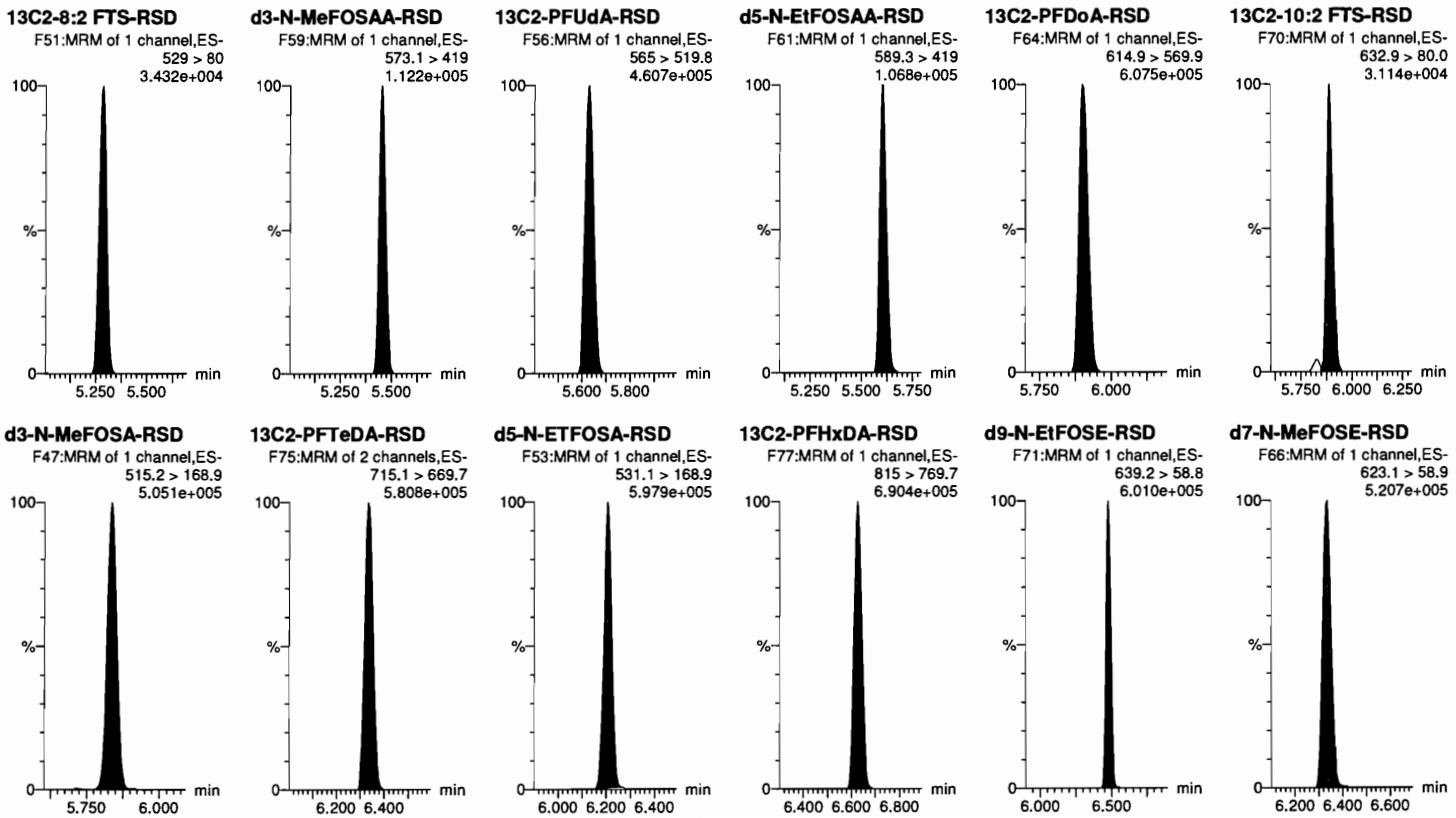


Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909



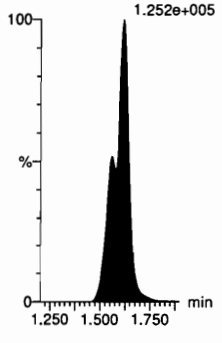
Quantify Sample Report **MassLynx V4.2 SCN977** Page 90 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

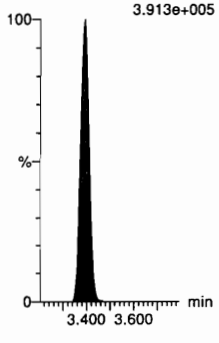
Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-27, Date: 06-Jul-2020, Time: 14:37:59, ID: ST200706P1-9 PFC CS6 20F1909, Description: PFC CS6 20F1909

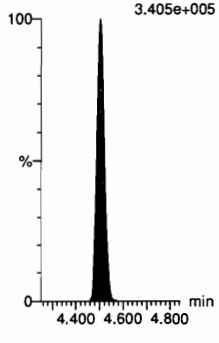
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.252e+005



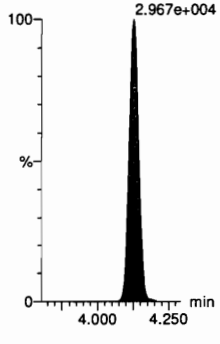
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
3.913e+005



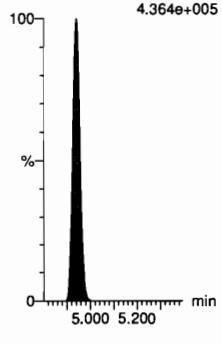
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
3.405e+005



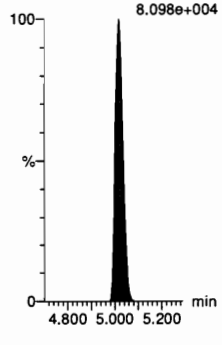
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
2.967e+004



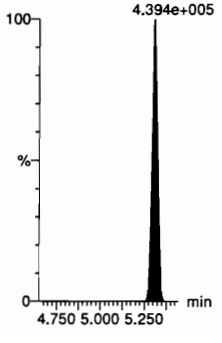
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
4.364e+005



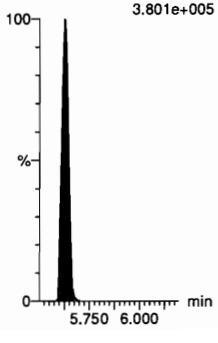
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
8.098e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
4.394e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
3.801e+005

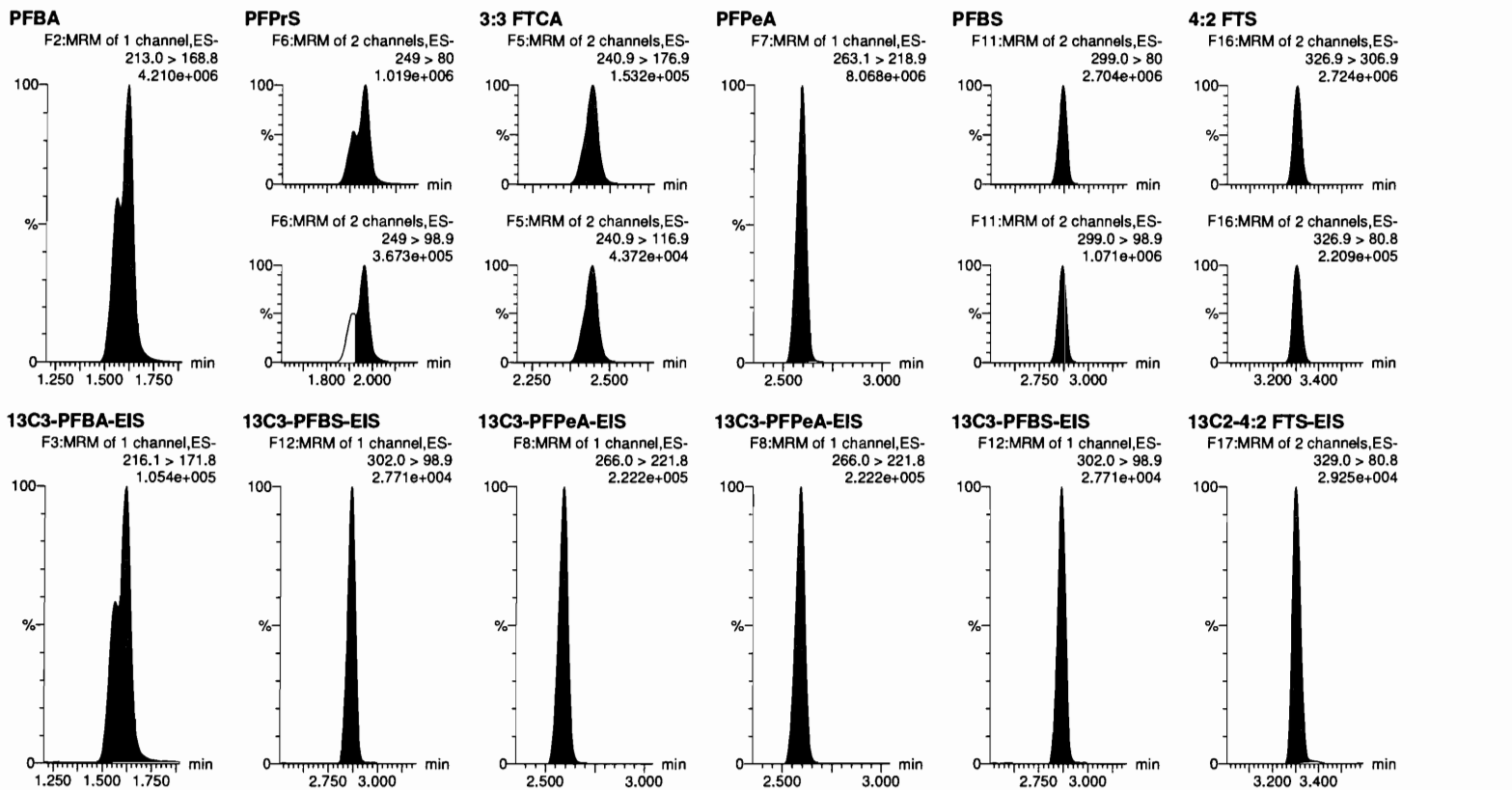


Quantify Sample Report **MassLynx V4.2 SCN977** Page 91 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

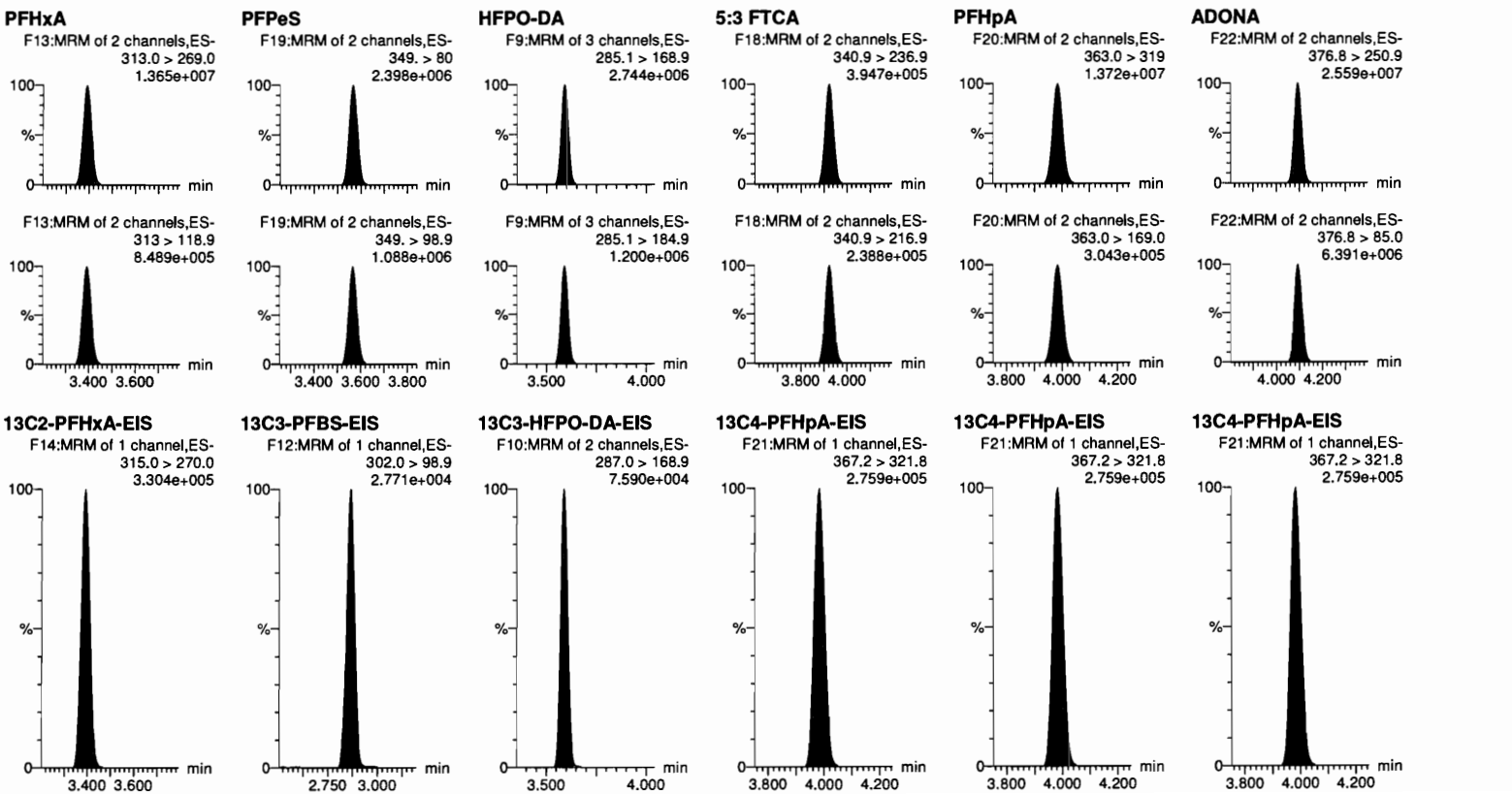


Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

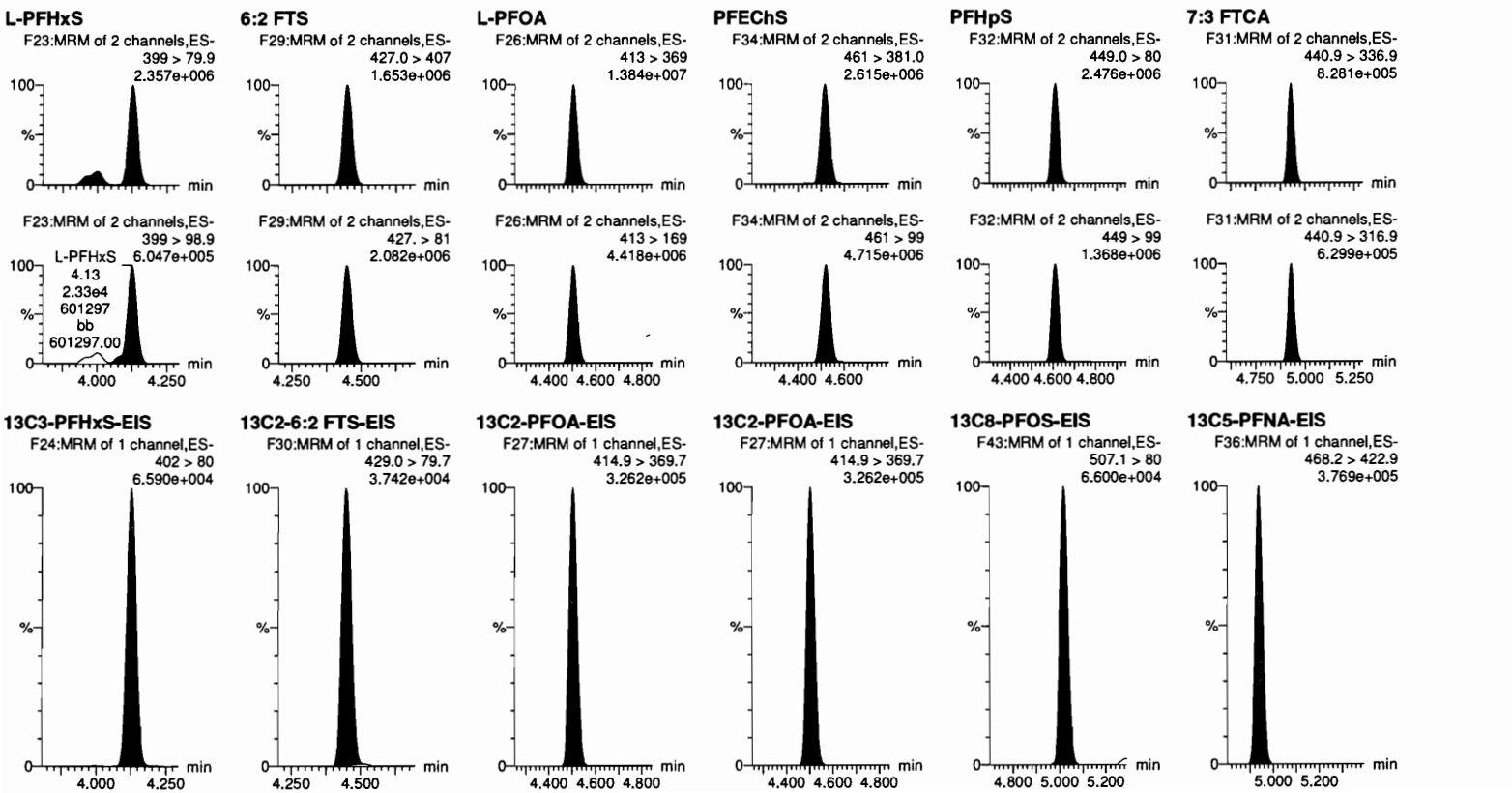


Quantify Sample Report **MassLynx V4.2 SCN977**
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

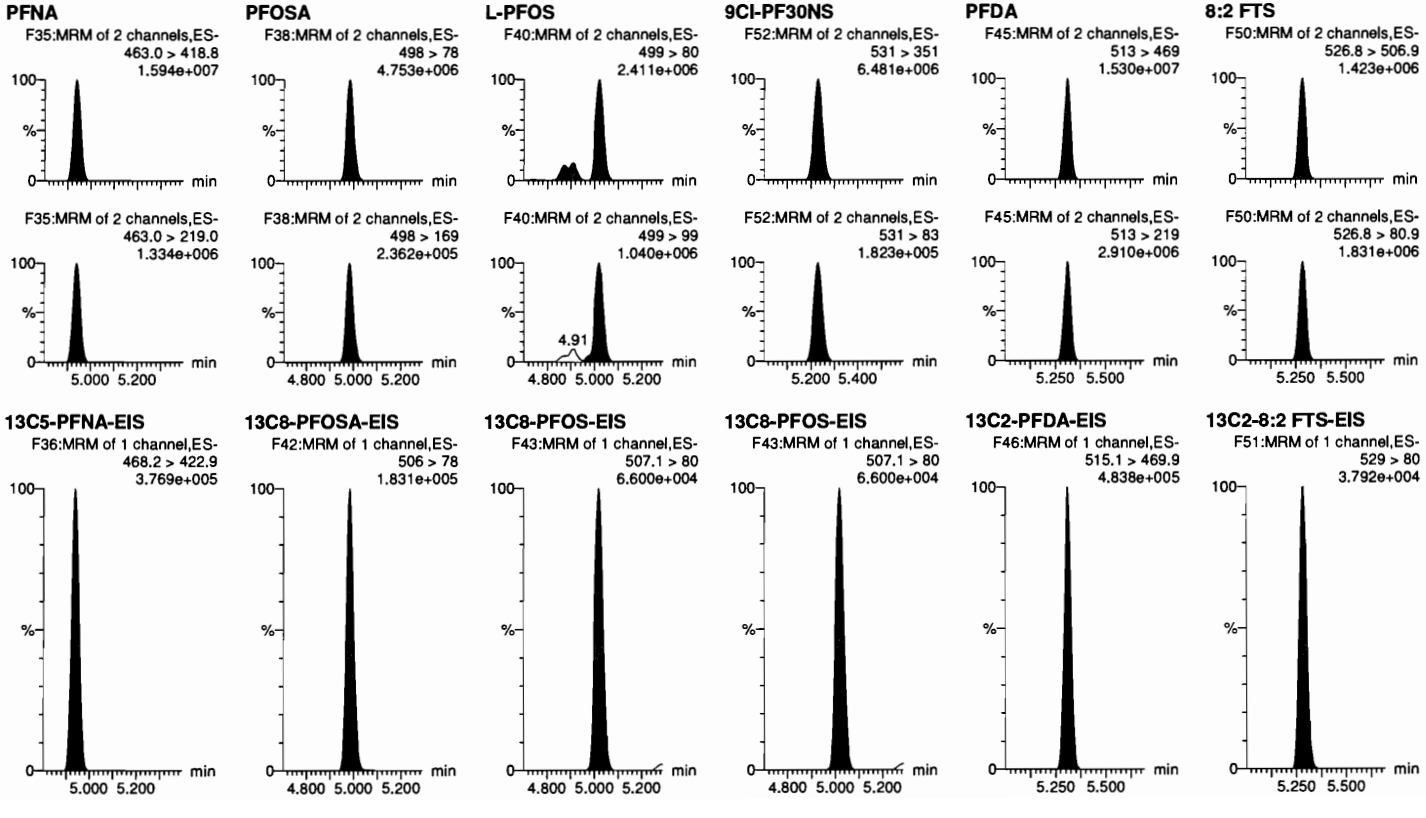


Quantify Sample Report **MassLynx V4.2 SCN977** Page 94 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

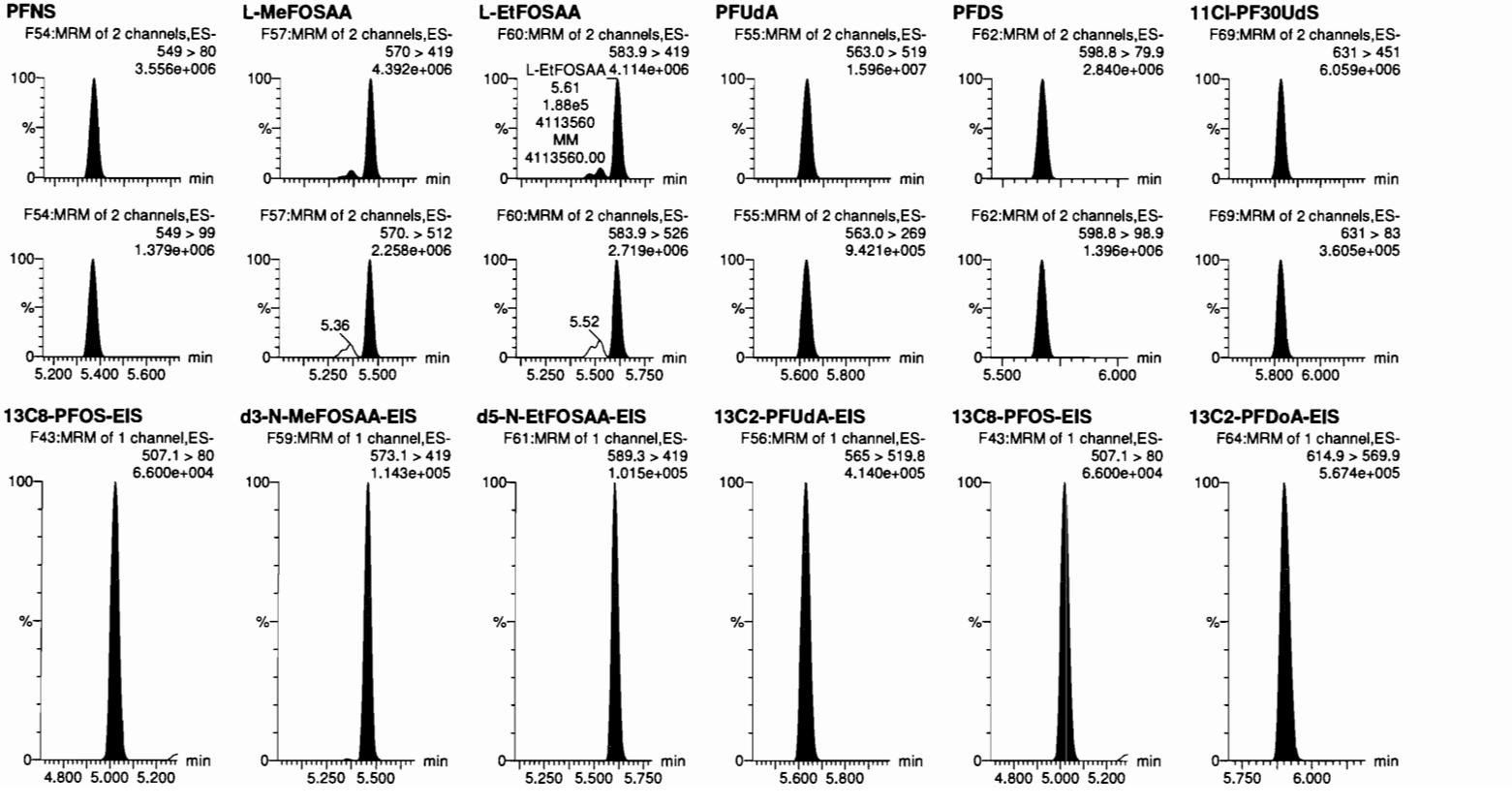


Quantify Sample Report **MassLynx V4.2 SCN977** Page 95 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

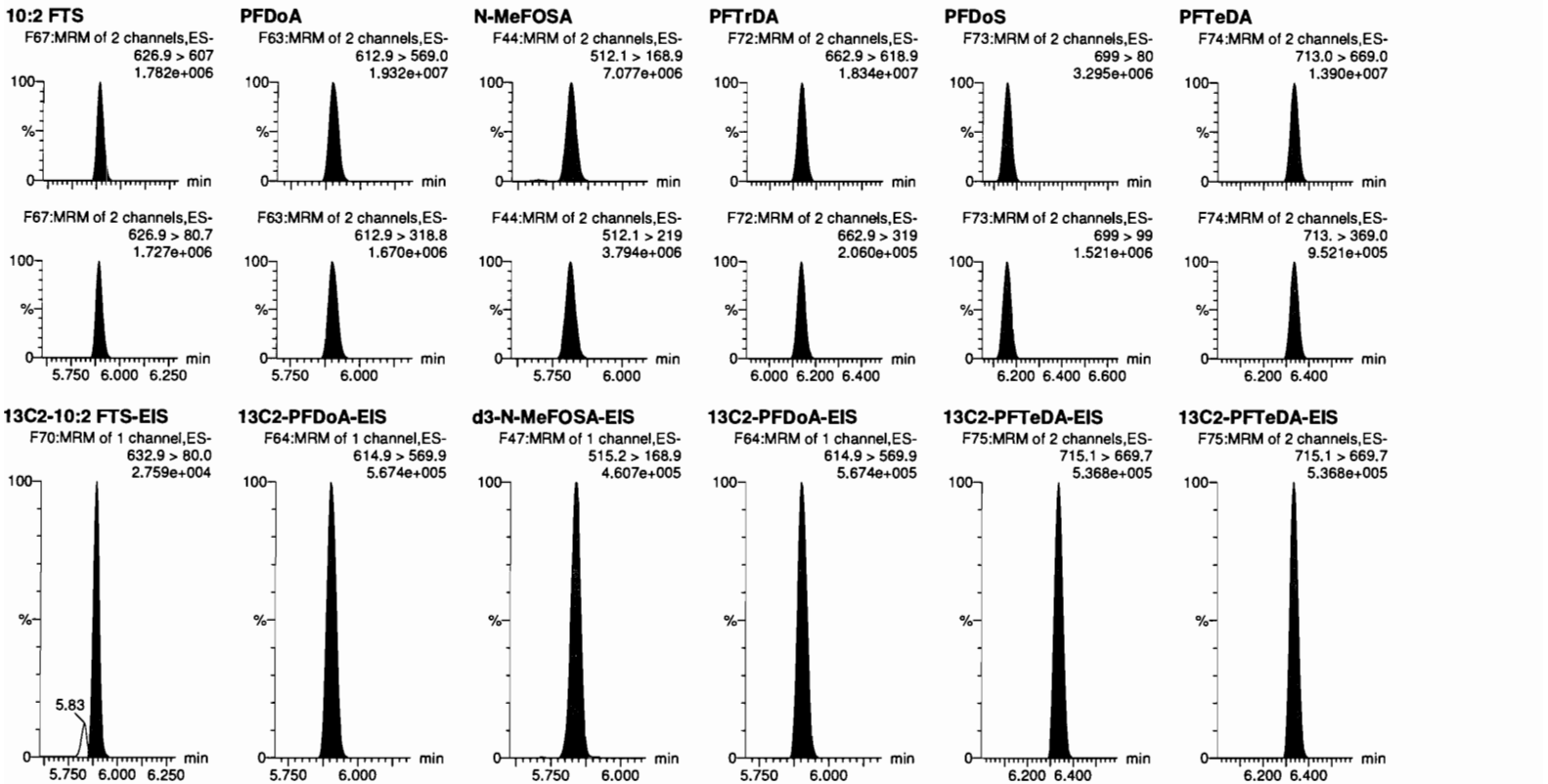


Quantify Sample Report **MassLynx V4.2 SCN977** Page 96 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

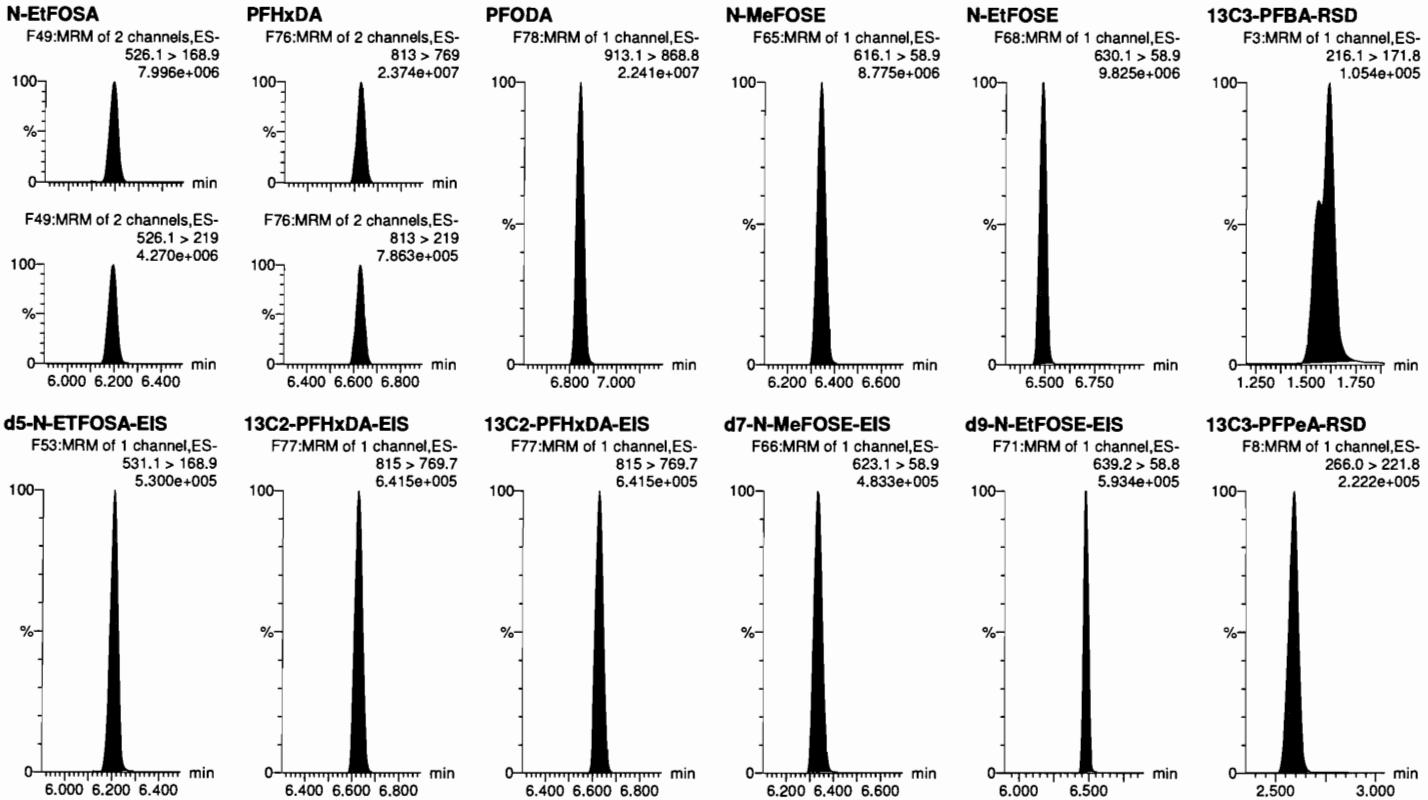


Quantify Sample Report **MassLynx V4.2 SCN977** Page 97 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

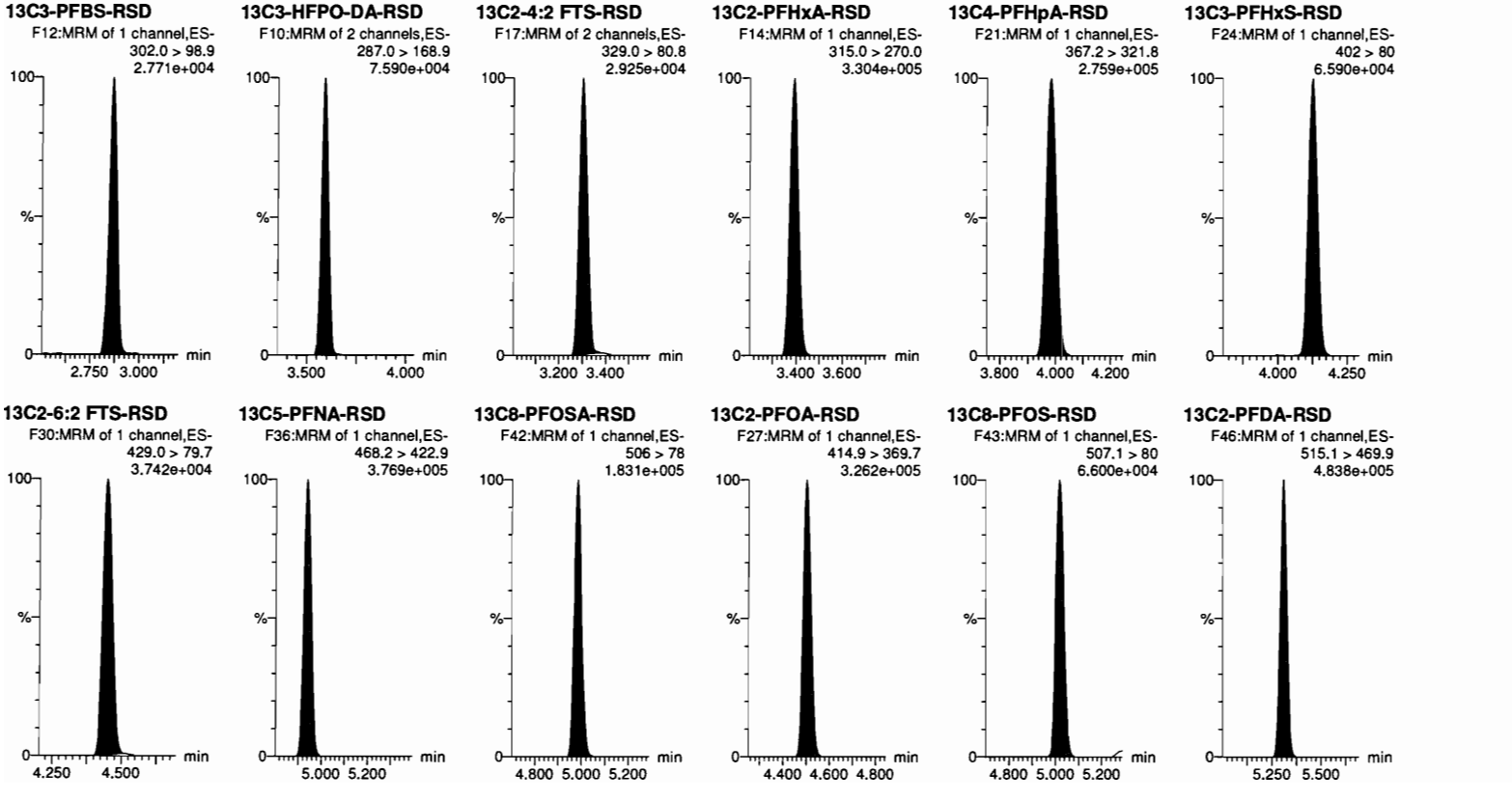


Quantify Sample Report **MassLynx V4.2 SCN977** Page 98 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

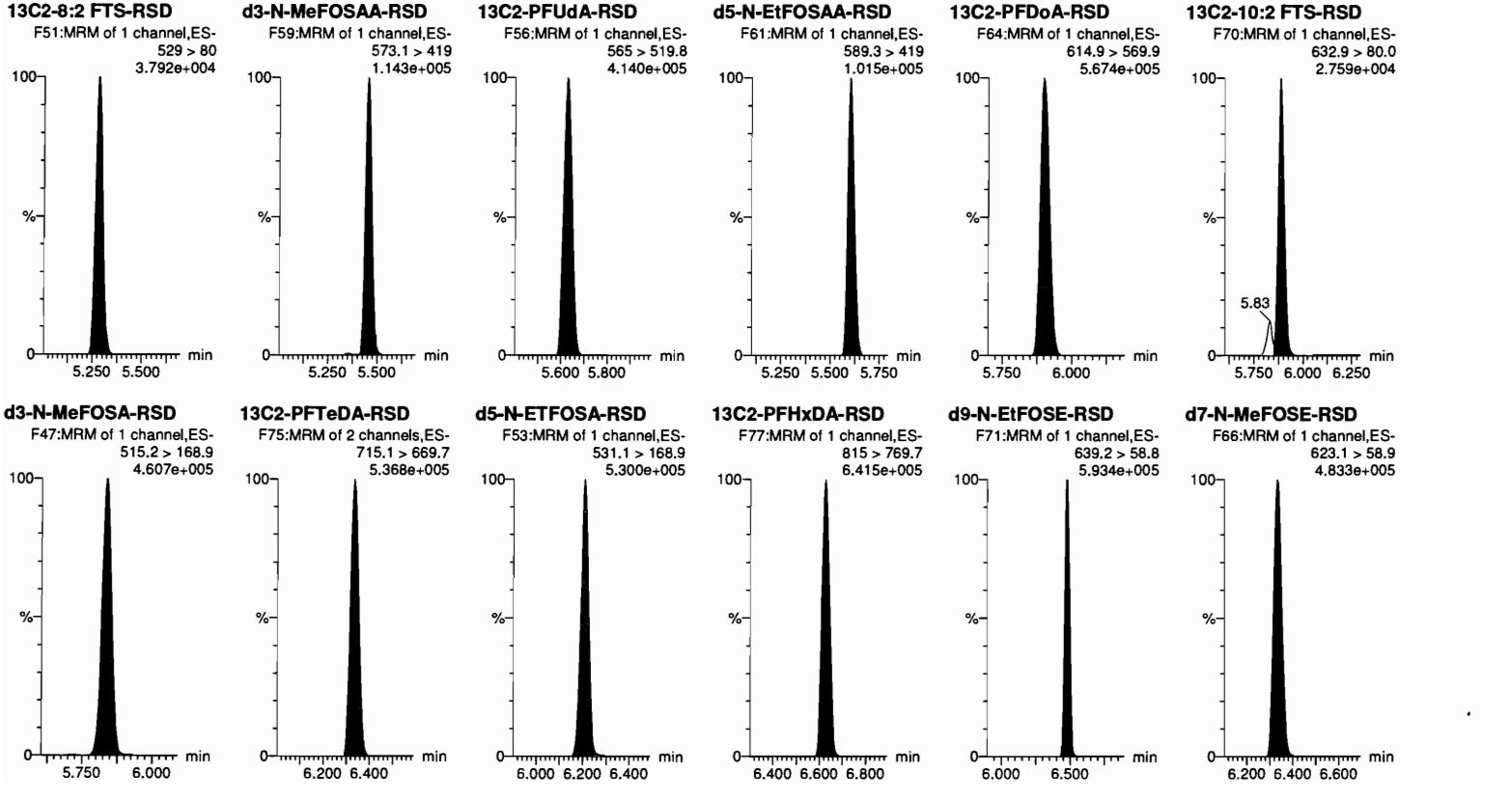


Quantify Sample Report **MassLynx V4.2 SCN977** Page 99 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910

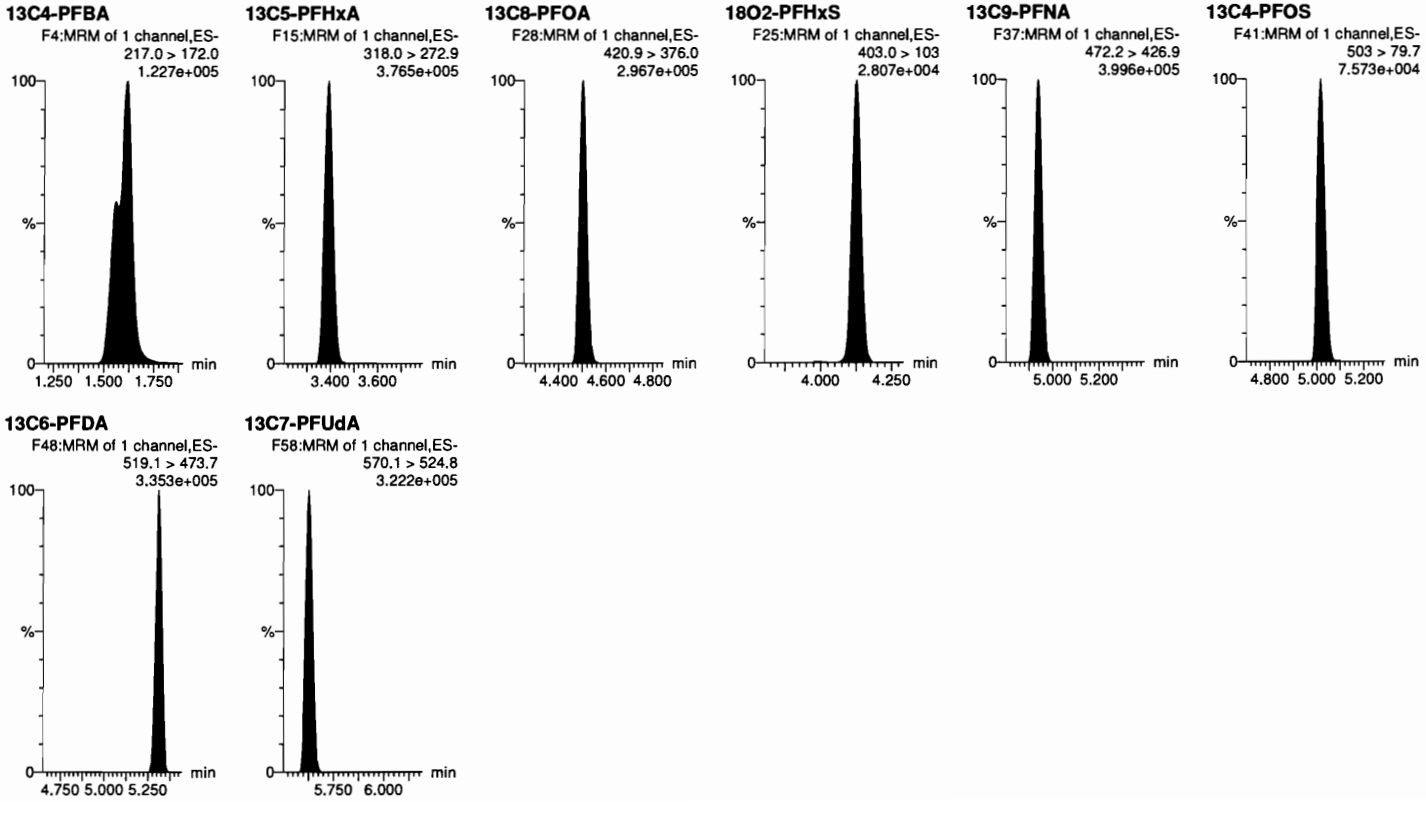


Quantify Sample Report **MassLynx V4.2 SCN977** Page 100 of 100
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-CRV.qld

Last Altered: Tuesday, July 07, 2020 08:33:52 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 08:34:06 Pacific Daylight Time

Name: 200706P1-28, Date: 06-Jul-2020, Time: 14:48:28, ID: ST200706P1-10 PFC CS7 20F1910, Description: PFC CS7 20F1910



Quantify Sample Report **MassLynx V4.2 SCN977** Page 11 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

(A) Not in ICV

✓ FR 07/07/2020

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

1	PFBA	213.0 > 168.8	7637.761	9273.287	1.00	1.62	10.295	10.000	9.94	99.4	NO		
2	PFPrS	249 > 80		1400.722	1.00			10.000		(A)	NO		YES
3	3:3 FTCA	240.9 > 176.9		12917.687	1.00			10.000		↓	NO		YES
4	PFPeA	263.1 > 218.9	9448.687	12917.687	1.00	2.59	9.143	10.000	9.87	98.7	NO		
5	PFBS	299.0 > 80	2542.181	1400.722	1.00	2.87	22.686	8.840	8.86	100.3	NO	2.562	NO
6	4:2 FTS	326.9 > 306.9	2732.158	1249.773	1.00	3.30	27.327	9.360	9.60	102.5	NO	12.644	YES
47	13C3-PFBA-EIS	216.1 > 171.8	9273.287		1.00	1.62	9273.287	12.500	13.4	107.6	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1400.722		1.00	2.87	1400.722	12.500	13.5	107.7	NO		
49	13C3-PFPeA-EIS	266.0 > 221.8	12917.687		1.00	2.59	12917.687	12.500	13.4	107.5	NO		
49	13C3-PFPeA-EIS	266.0 > 221.8	12917.687		1.00	2.59	12917.687	12.500	13.4	107.5	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1400.722		1.00	2.87	1400.722	12.500	13.5	107.7	NO		
55	13C2-4:2 FTS-EIS	329.0 >80.8	1249.773		1.00	3.30	1249.773	12.500	12.4	99.1	NO		
-1													
7	PFHxA	313.0 > 269.0	13120.925	15191.044	1.00	3.39	10.797	10.000	10.4	103.5	NO	16.937	NO
8	PFPeS	349.>80	2075.482	1400.722	1.00	3.57	18.522	9.360	8.88	94.8	NO	2.131	NO
9	HFPO-DA	285.1 > 168.9	2366.653	3122.345	1.00	3.59	9.475	10.000	9.42	94.2	NO	2.344	NO
10	5:3 FTCA	340.9 > 236.9		13511.702	1.00			10.000		(A)	NO		YES
11	PFHpA	363.0 > 319	12932.703	13511.702	1.00	3.98	11.964	10.000	9.19	91.9	NO	49.714	YES
12	ADONA	376.8 > 250.9	21905.752	13511.702	1.00	4.09	20.266	9.440	9.32	98.7	NO	3.932	NO
57	13C2-PFHxA-EIS	315.0 > 270.0	15191.044		1.00	3.39	15191.044	12.500	13.9	111.5	NO		
51	13C3-PFBS-EIS	302.0 > 98.9	1400.722		1.00	2.87	1400.722	12.500	13.5	107.7	NO		
53	13C3-HFPO-DA-EIS	287.0 > 168.9	3122.345		1.00	3.59	3122.345	12.500	13.7	109.4	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	13511.702		1.00	3.98	13511.702	12.500	13.7	109.9	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	13511.702		1.00	3.98	13511.702	12.500	13.7	109.9	NO		
59	13C4-PFHpA-EIS	367.2 > 321.8	13511.702		1.00	3.98	13511.702	12.500	13.7	109.9	NO		
-1													
13	L-PFHxS	399 > 79.9	2123.308	2940.244	1.00	4.13	9.027	9.120	8.19	89.8	NO	4.427	YES
15	6:2 FTS	427.0 > 407	1446.478	1628.024	1.00	4.45	11.106	9.480	9.71	102.4	NO	0.797	NO
16	L-PFOA	413 > 369	13363.650	14523.533	1.00	4.50	11.502	10.000	10.1	101.5	NO	3.241	NO
18	PFecHS	461 > 381.0		14523.533	1.00			10.000		(A)	NO		YES
19	PFHpS	449.0 > 80	2116.452	2891.132	1.00	4.61	9.151	9.520	9.40	98.7	NO	1.727	NO
20	7:3 FTCA	440.9 > 336.9		15540.856	1.00			10.000		(A)	NO		YES
61	13C3-PFHxS-EIS	402 >80	2940.244		1.00	4.13	2940.244	12.500	13.4	106.9	NO		
63	13C2-6:2 FTS-EIS	429.0 >79.7	1628.024		1.00	4.45	1628.024	12.500	12.6	101.2	NO		
69	13C2-PFOA-EIS	414.9 > 369.7	14523.533		1.00	4.50	14523.533	12.500	12.6	100.6	NO		
69	13C2-PFOA-EIS	414.9 > 369.7	14523.533		1.00	4.50	14523.533	12.500	12.6	100.6	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 12 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

71 13C8-PFOS-EIS	507.1 > 80	2891.132		1.00	5.02	2891.132	12.500	12.8	102.6	NO		
65 13C5-PFNA-EIS	468.2 > 422.9	15540.856		1.00	4.94	15540.856	12.500	12.8	102.5	NO		
-1												
21 PFNA	463.0 > 418.8	14000.723	15540.856	1.00	4.94	11.261	10.000	10.1	100.7	NO	12.466	YES
22 PFOSA	498 > 78	4099.178	7420.505	1.00	4.99	6.905	10.000	10.0	100.0	NO	21.394	NO
23 L-PFOS	499 > 80	2687.035	2891.132	1.00	5.02	11.618	9.280	9.17	98.8	NO	2.714	NO
25 9Cl-PF30NS	531 > 351	6303.713	2891.132	1.00	5.23	27.255	9.320	9.57	102.7	NO	48.336	YES
26 PFDA	513 > 469	14017.704	19932.547	1.00	5.31	8.791	10.000	10.3	103.5	NO	5.237	NO
27 8:2 FTS	526.8> 506.9	1555.169	1598.607	1.00	5.29	12.160	9.600	8.99	93.6	NO	0.874	NO
65 13C5-PFNA-EIS	468.2 > 422.9	15540.856		1.00	4.94	15540.856	12.500	12.8	102.5	NO		
67 13C8-PFOSA-EIS	506 > 78	7420.505		1.00	4.98	7420.505	12.500	13.0	103.9	NO		
71 13C8-PFOS-EIS	507.1 > 80	2891.132		1.00	5.02	2891.132	12.500	12.8	102.6	NO		
71 13C8-PFOS-EIS	507.1 > 80	2891.132		1.00	5.02	2891.132	12.500	12.8	102.6	NO		
73 13C2-PFDA-EIS	515.1 > 469.9	19932.547		1.00	5.31	19932.547	12.500	13.4	106.9	NO		
75 13C2-8:2 FTS-EIS	529 > 80	1598.607		1.00	5.29	1598.607	12.500	14.5	115.9	NO		
-1												
28 PFNS	549 > 80	2828.414	2891.132	1.00	5.36	12.229	9.600	9.24	96.3	NO	2.459	NO
29 L-MeFOSAA	570 > 419	4003.342	4460.954	1.00	5.46	11.218	10.000	9.23	92.3	NO	1.898	NO
31 L-EtFOSAA	583.9 > 419	4751.072	4230.890	1.00	5.61	14.037	10.000	10.1	101.2	NO	1.276	NO
33 PFUdA	563.0 > 519	17390.951	19378.582	1.00	5.63	11.218	10.000	10.2	102.0	NO	19.374	NO
34 PFDS	598.8 > 79.9	2700.801	2891.132	1.00	5.67	11.677	9.640	9.15	95.0	NO	2.404	NO
35 11Cl-PF30UdS	631 > 451	4975.652	23715.557	1.00	5.82	2.623	9.440	10.2	107.5	NO	15.431	NO
71 13C8-PFOS-EIS	507.1 > 80	2891.132		1.00	5.02	2891.132	12.500	12.8	102.6	NO		
77 d3-N-MeFOSAA-EIS	573.1 > 419	4460.954		1.00	5.45	4460.954	12.500	13.5	107.8	NO		
81 d5-N-EtFOSAA-EIS	589.3 > 419	4230.890		1.00	5.60	4230.890	12.500	13.5	107.8	NO		
79 13C2-PFUdA-EIS	565 > 519.8	19378.582		1.00	5.63	19378.582	12.500	12.3	98.0	NO		
71 13C8-PFOS-EIS	507.1 > 80	2891.132		1.00	5.02	2891.132	12.500	12.8	102.6	NO		
83 13C2-PFDoA-EIS	614.9 > 569.9	23715.557		1.00	5.90	23715.557	12.500	12.7	101.5	NO		
-1												
36 10:2 FTS	626.9 > 607		1332.675	1.00			10.000		(K)	NO		YES
37 PFDoA	612.9 > 569.0	17418.283	23715.557	1.00	5.90	9.181	10.000	9.36	93.6	NO	11.504	NO
38 N-MeFOSA	512.1 > 168.9		21351.840	1.00			9.600		(K)	NO		YES
39 PFTrDA	662.9 > 618.9	19418.045	23715.557	1.00	6.13	10.235	10.000	9.84	98.4	NO	108.370	YES
40 PFDoS	699 > 80		24306.963	1.00			10.000		(K)	NO		YES
41 PFTeDA	713.0 > 669.0	13569.787	24306.963	1.00	6.33	6.978	10.000	10.5	105.0	NO	14.243	NO
85 13C2-10:2 FTS-EIS	632.9 > 80.0	1332.675		1.00	5.89	1332.675	12.500	12.3	98.1	NO		

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 13 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

83 13C2-PFDoA-EIS	614.9 > 569.9	23715.557		1.00	5.90	23715.557	12.500	12.7	101.5	NO	
87 d3-N-MeFOSA-EIS	515.2 > 168.9	21351.840		1.00	5.84	21351.840	149.200	154	103.4	NO	
83 13C2-PFDoA-EIS	614.9 > 569.9	23715.557		1.00	5.90	23715.557	12.500	12.7	101.5	NO	
89 13C2-PFTeDA-EIS	715.1 > 669.7	24306.963		1.00	6.33	24306.963	12.500	12.8	102.0	NO	
89 13C2-PFTeDA-EIS -1	715.1 > 669.7	24306.963		1.00	6.33	24306.963	12.500	12.8	102.0	NO	
42 N-EtFOSA	526.1 > 168.9		23592.137	1.00			9.600			NO	YES
43 PFHxDA	813 > 769		26509.676	1.00			10.000			NO	YES
44 PFODA	913.1 > 868.8		26509.676	1.00			10.000			NO	
45 N-MeFOSE	616.1 > 58.9		21004.094	1.00			9.600			NO	
46 N-EtFOSE	630.1 > 58.9		24464.982	1.00			9.600			NO	
48 13C3-PFBA-RSD	216.1 > 171.8	9272.683	10752.734	1.00	1.62	10.779	12.500	12.6	100.9	NO	
91 d5-N-ETFOSA-EIS	531.1 > 168.9	23592.137		1.00	6.21	23592.137	149.200	152	101.9	NO	
93 13C2-PFHxDA-EIS	815 > 769.7	26509.676		1.00	6.63	26509.676	12.500	12.6	100.5	NO	
93 13C2-PFHxDA-EIS	815 > 769.7	26509.676		1.00	6.63	26509.676	12.500	12.6	100.5	NO	
95 d7-N-MeFOSE-EIS	623.1 > 58.9	21004.094		1.00	6.34	21004.094	149.200	156	104.5	NO	
97 d9-N-EtFOSE-EIS	639.2 > 58.8	24464.982		1.00	6.48	24464.982	149.200	165	110.3	NO	
50 13C3-PFPeA-RSD -1	266.0 > 221.8	13089.568	15683.965	1.00	2.59	10.432	12.500	13.9	111.0	NO	
52 13C3-PFBS-RSD	302.0 > 98.9	1400.722	1063.464	1.00	2.87	16.464	12.500	13.4	107.4	NO	
54 13C3-HFPO-DA-RSD	287.0 > 168.9	3122.345	15683.965	1.00	3.59	2.488	12.500	13.2	105.2	NO	
56 13C2-4:2 FTS-RSD	329.0 >80.8	1249.773	1063.464	1.00	3.30	14.690	12.500	13.0	103.8	NO	
58 13C2-PFHxA-RSD	315.0 > 270.0	15191.044	15683.965	1.00	3.39	12.107	12.500	13.8	110.2	NO	
60 13C4-PFHpA-RSD	367.2 > 321.8	13511.702	15683.965	1.00	3.98	10.769	12.500	14.2	113.4	NO	
62 13C3-PFHxS-RSD	402 > 80	2940.244	1063.464	1.00	4.13	34.560	12.500	14.0	112.3	NO	
64 13C2-6:2 FTS-RSD	429.0 >79.7	1628.024	3325.066	1.00	4.45	6.120	12.500	12.9	103.6	NO	
66 13C5-PFNA-RSD	468.2 > 422.9	15540.856	16546.383	1.00	4.94	11.740	12.500	12.5	99.8	NO	
68 13C8-PFOSA-RSD	506 > 78	7420.505	15619.884	1.00	4.98	5.938	12.500	12.2	97.7	NO	
70 13C2-PFOA-RSD	414.9 > 369.7	14523.533	13675.684	1.00	4.50	13.275	12.500	12.1	97.1	NO	
72 13C8-PFOS-RSD	507.1 > 80	2884.835	3325.066	1.00	5.02	10.845	12.500	12.4	99.2	NO	
74 13C2-PFDA-RSD -1	515.1 > 469.9	19932.547	16557.969	1.00	5.31	15.048	12.500	12.0	96.0	NO	
76 13C2-8:2 FTS-RSD	529 > 80	1598.607	3325.066	1.00	5.29	6.010	12.500	13.2	105.3	NO	
78 d3-N-MeFOSAA-RSD	573.1 > 419	4460.954	15619.884	1.00	5.45	3.570	12.500	12.2	97.4	NO	
80 13C2-PFUdA-RSD	565 > 519.8	19378.582	15619.884	1.00	5.63	15.508	12.500	12.0	95.8	NO	
82 d5-N-EtFOSAA-RSD	589.3 > 419	4230.890	15619.884	1.00	5.60	3.386	12.500	12.0	95.7	NO	

OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 14 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

84	13C2-PFDoA-RSD	614.9 > 569.9	23715.557	16557.969	1.00	5.90	17.903	12.500	11.6	92.4	NO
86	13C2-10:2 FTS-RSD	632.9 > 80.0	1332.675	3325.066	1.00	5.89	5.010	12.500	13.0	104.4	NO
88	d3-N-MeFOSA-RSD	515.2 > 168.9	21351.840	15619.884	1.00	5.84	17.087	149.200	148	98.9	NO
90	13C2-PFTeDA-RSD	715.1 > 669.7	24306.963	15619.884	1.00	6.33	19.452	12.500	11.9	95.3	NO
92	d5-N-ETFOSA-RSD	531.1 > 168.9	23592.137	15619.884	1.00	6.21	18.880	149.200	145	97.1	NO
94	13C2-PFHxDA-RSD	815 > 769.7	26509.676	15619.884	1.00	6.63	21.215	12.500	11.9	95.5	NO
96	d7-N-MeFOSE-RSD	623.1 > 58.9	21004.094	15619.884	1.00	6.34	16.809	149.200	141	94.7	NO
98	d9-N-EtFOSE-RSD	639.2 > 58.8	24464.982	15619.884	1.00	6.48	19.578	149.200	149	99.6	NO
-1											
99	13C4-PFBA	217.0 > 172.0	10752.734	10752.734	1.00	1.62	12.500	12.500	12.5	100.0	NO
1...	13C5-PFHxA	318.0 > 272.9	15683.965	15683.965	1.00	3.39	12.500	12.500	12.5	100.0	NO
1...	13C8-PFOA	420.9 > 376.0	13675.684	13675.684	1.00	4.50	12.500	12.500	12.5	100.0	NO
1...	18O2-PFHxS	403.0 > 103	1063.464	1063.464	1.00	4.12	12.500	12.500	12.5	100.0	NO
1...	13C9-PFNA	472.2 > 426.9	16546.383	16546.383	1.00	4.94	12.500	12.500	12.5	100.0	NO
1...	13C4-PFOS	503 > 79.7	3325.066	3325.066	1.00	5.02	12.500	12.500	12.5	100.0	NO
1...	13C6-PFDA	519.1 > 473.7	16557.969	16557.969	1.00	5.31	12.500	12.500	12.5	100.0	NO
1...	13C7-PFUdA	570.1 > 524.8	15619.884	15619.884	1.00	5.63	12.500	12.500	12.5	100.0	NO

OPV 7/7/2020

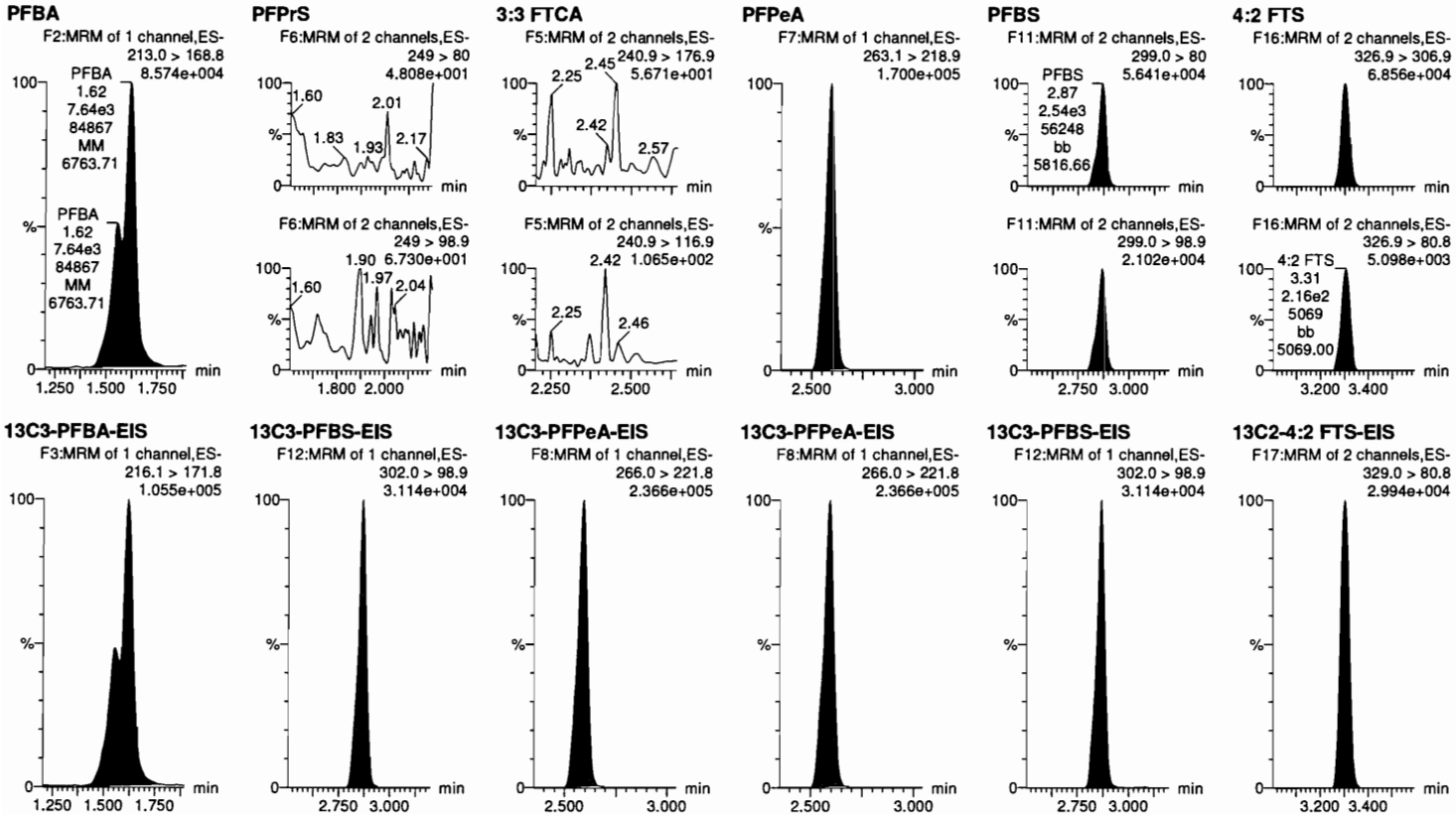
Quantify Sample Report **MassLynx V4.2 SCN977** Page 1 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620_ICV.mdb 07 Jul 2020 09:38:15
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911



OPV 7/7/2020

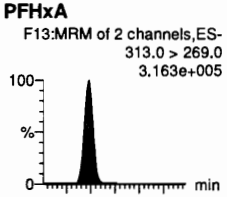
Quantify Sample Report **MassLynx V4.2 SCN977** Page 2 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

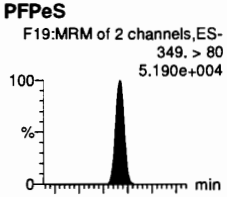
Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

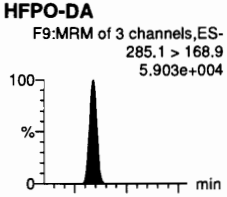
PFHxA



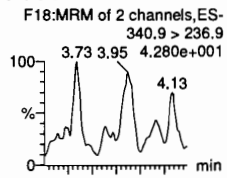
PFPeS



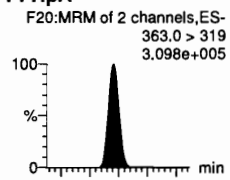
HFPO-DA



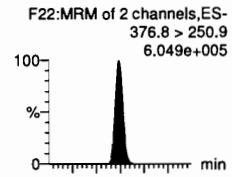
5:3 FTCA



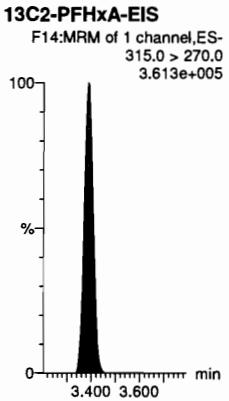
PFHpA



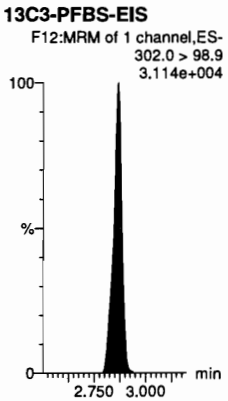
ADONA



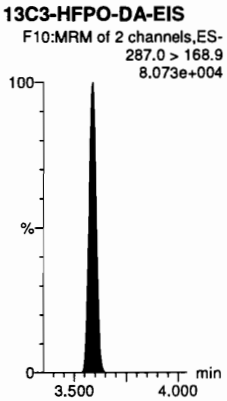
13C2-PFHxA-EIS



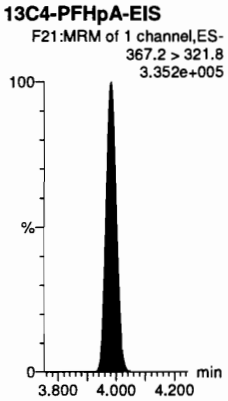
13C3-PFBS-EIS



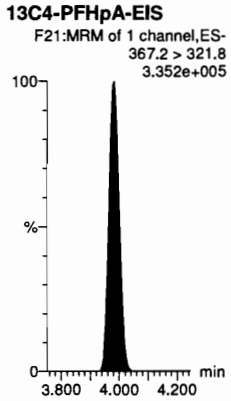
13C3-HFPO-DA-EIS



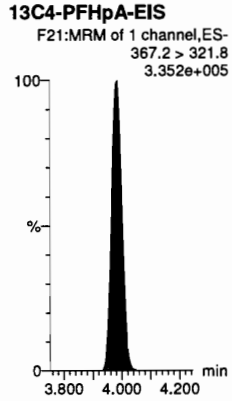
13C4-PFHpA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



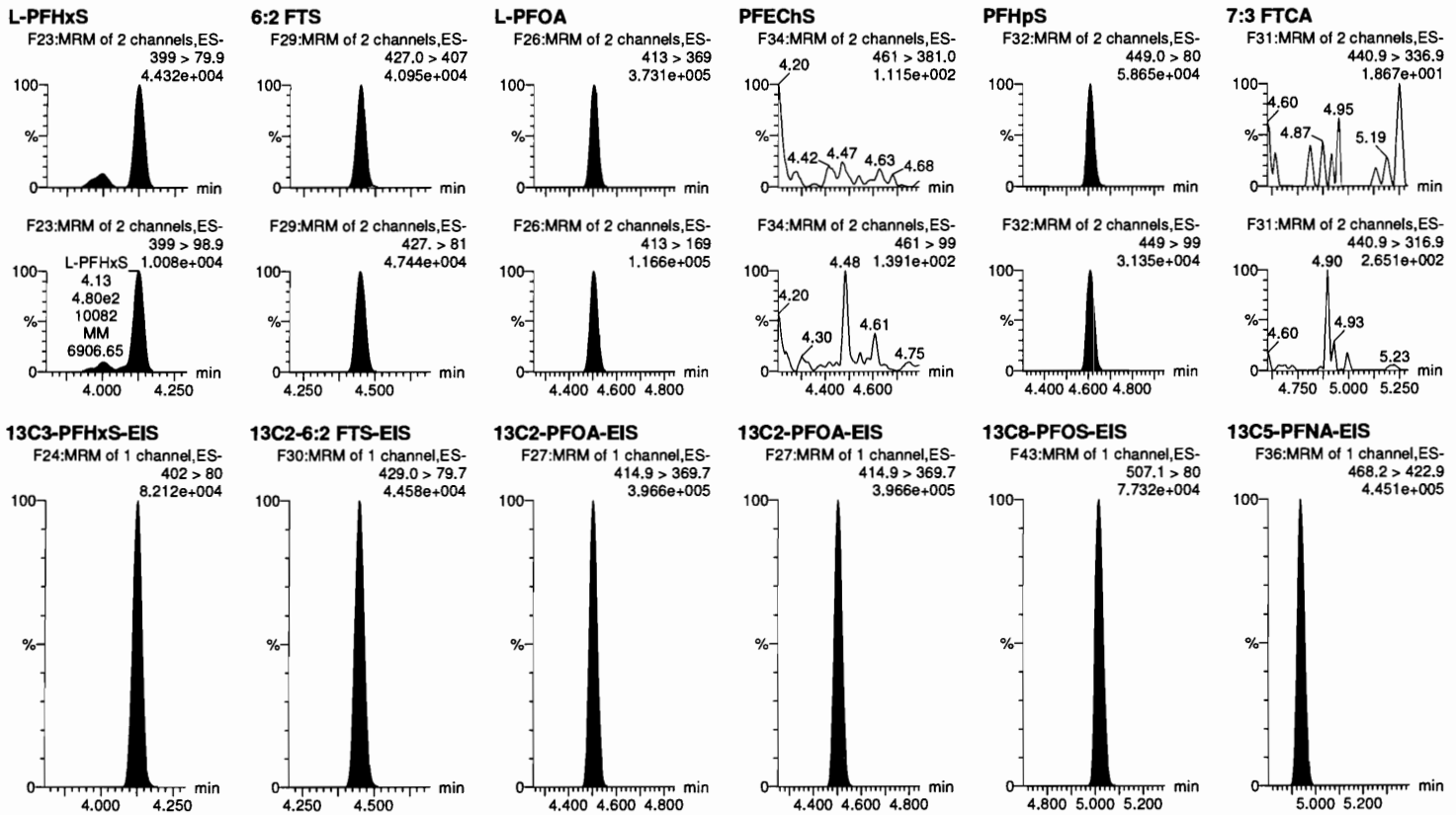
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 3 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911



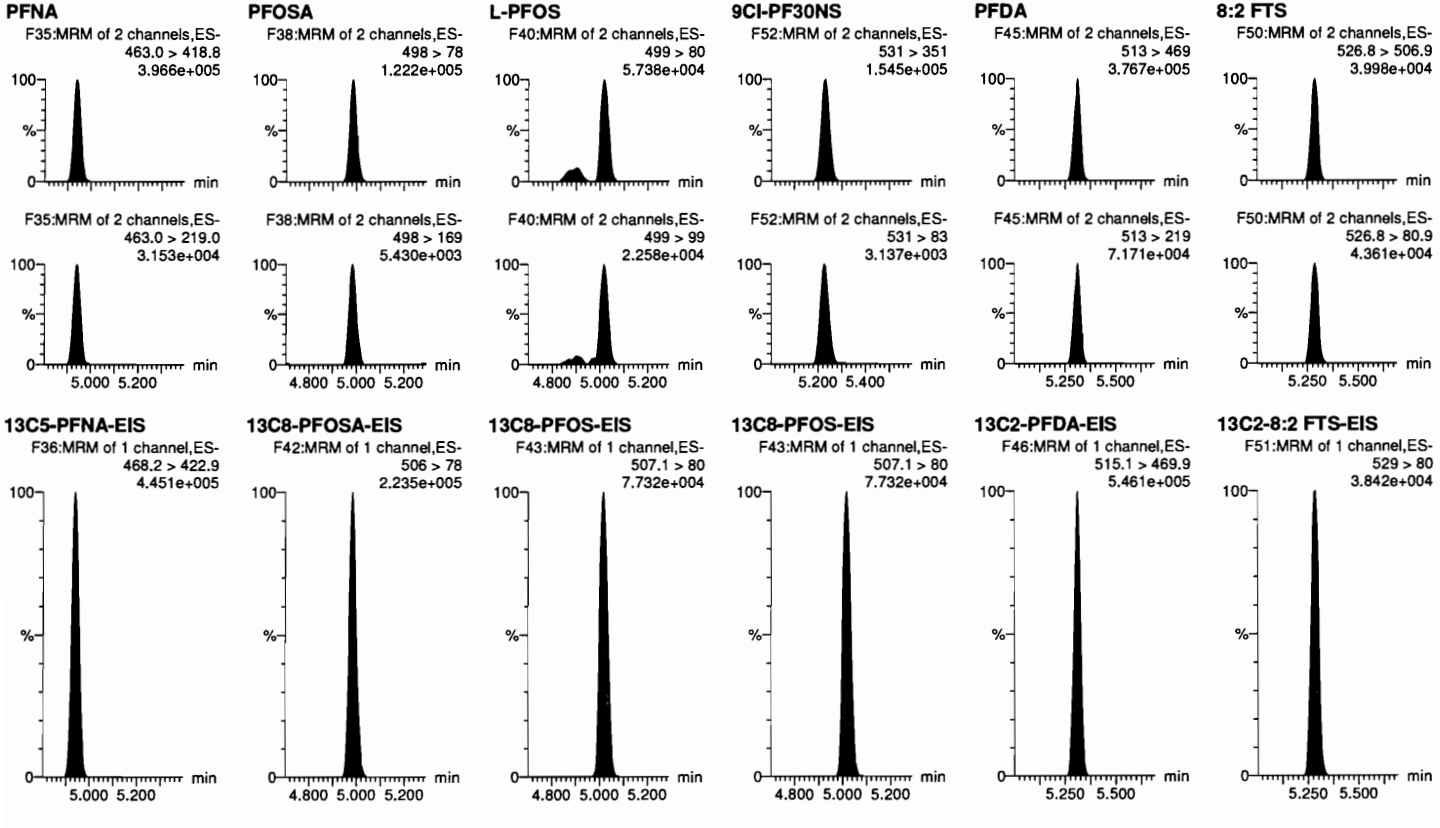
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 4 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911



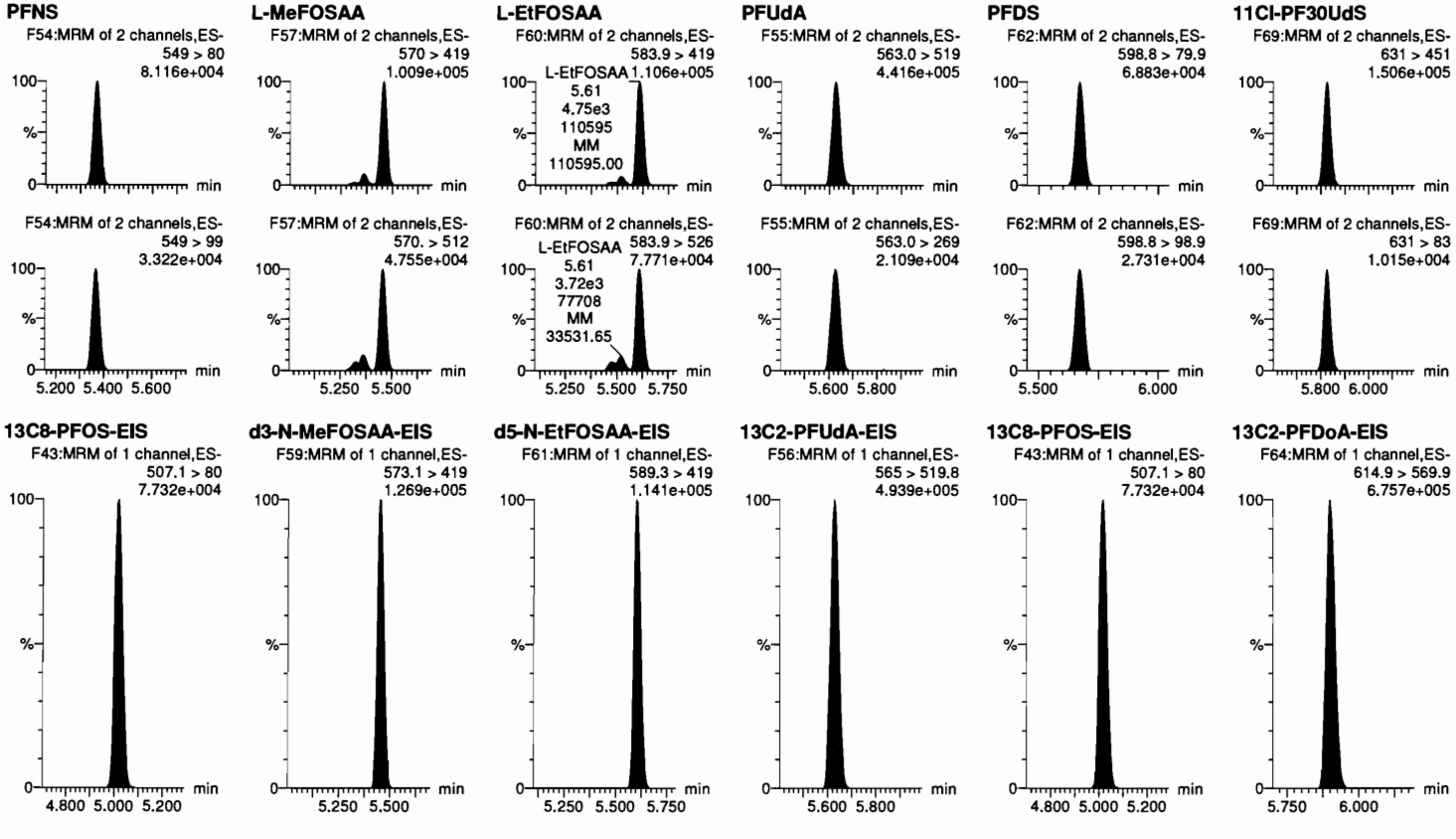
OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 5 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911



OPV 7/7/2020

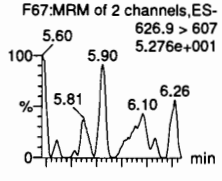
Quantify Sample Report **MassLynx V4.2 SCN977** Page 6 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

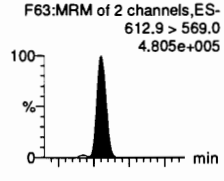
Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

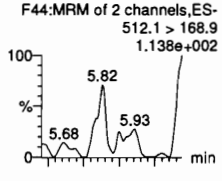
10:2 FTS



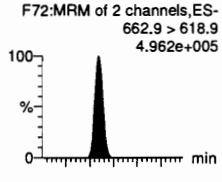
PFDoA



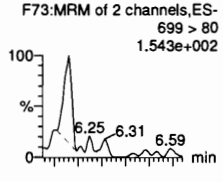
N-MeFOSA



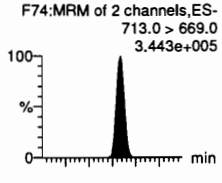
PFTrDA



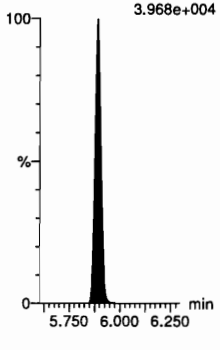
PFDoS



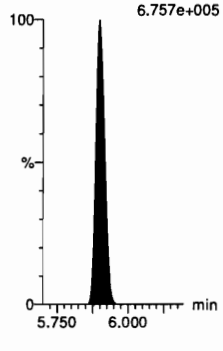
PFTeDA



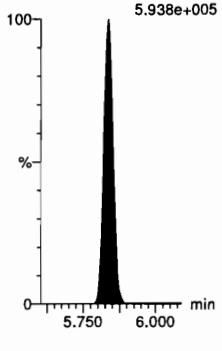
13C2-10:2 FTS-EIS



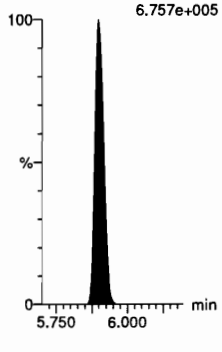
13C2-PFDoA-EIS



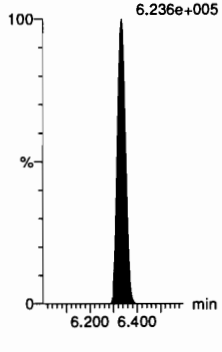
d3-N-MeFOSA-EIS



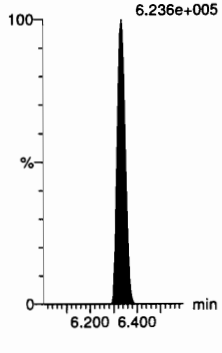
13C2-PFDoA-EIS



13C2-PFTeDA-EIS



13C2-PFTeDA-EIS



OPV 7/7/2020

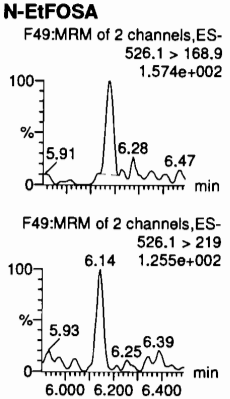
Quantify Sample Report **MassLynx V4.2 SCN977** Page 7 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

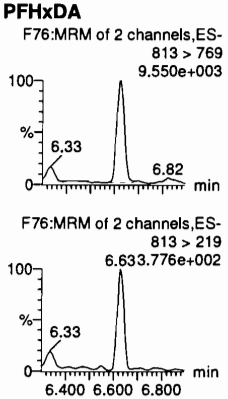
Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

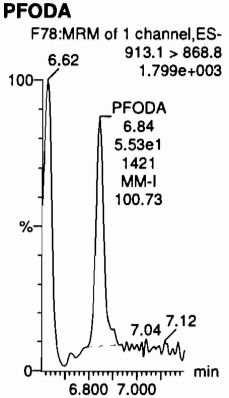
N-EtFOSA



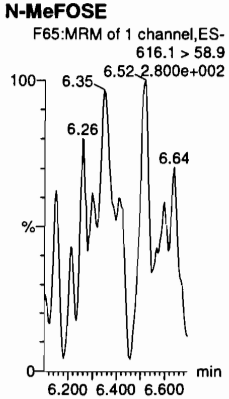
PFHxDA



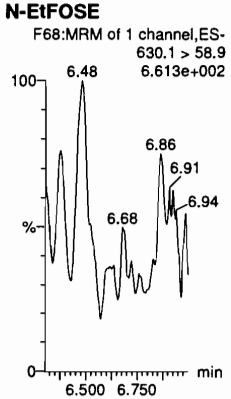
PFODA



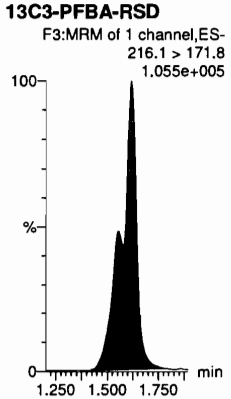
N-MeFOSE



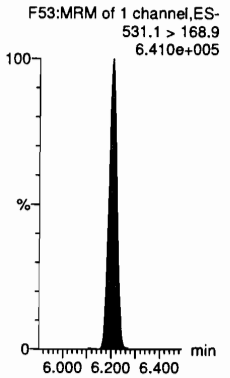
N-EtFOSE



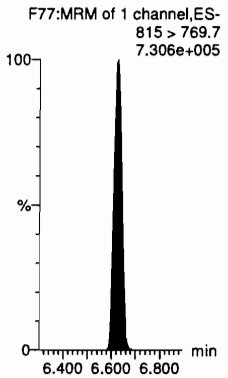
13C3-PFBA-RSD



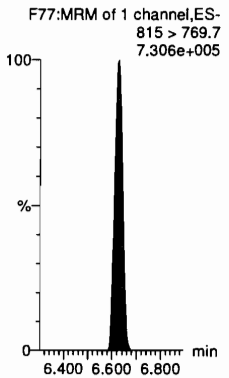
d5-N-ETFOSA-EIS



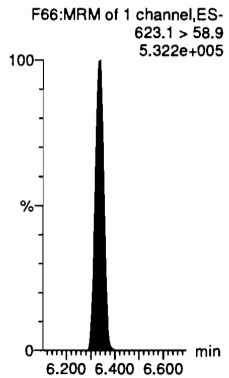
13C2-PFHxDA-EIS



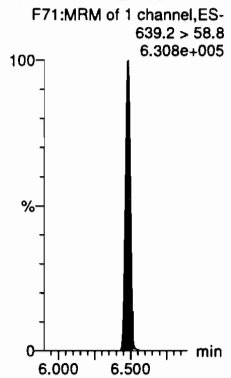
13C2-PFHxDA-EIS



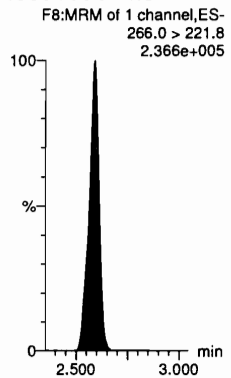
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



OPV 7/7/2020

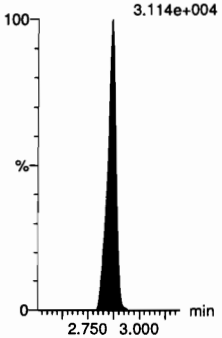
Quantify Sample Report **MassLynx V4.2 SCN977** Page 8 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

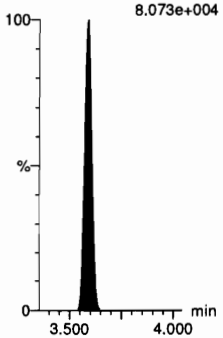
Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

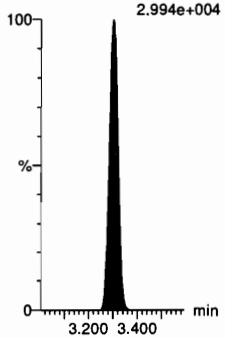
13C3-PFBS-RSD
F12:MRM of 1 channel,ES-
302.0 > 98.9
3.114e+004



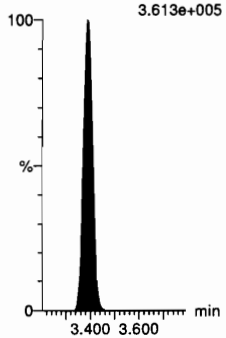
13C3-HFPO-DA-RSD
F10:MRM of 2 channels,ES-
287.0 > 168.9
8.073e+004



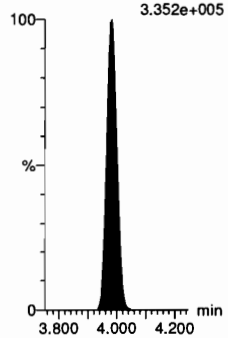
13C2-4:2 FTS-RSD
F17:MRM of 2 channels,ES-
329.0 > 80.8
2.994e+004



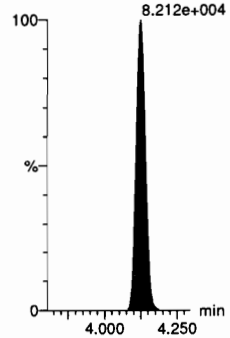
13C2-PFHxA-RSD
F14:MRM of 1 channel,ES-
315.0 > 270.0
3.613e+005



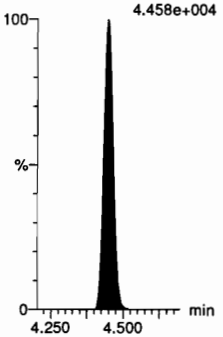
13C4-PFHpA-RSD
F21:MRM of 1 channel,ES-
367.2 > 321.8
3.352e+005



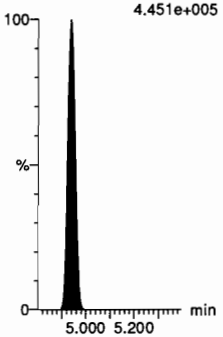
13C3-PFHxS-RSD
F24:MRM of 1 channel,ES-
402 > 80
8.212e+004



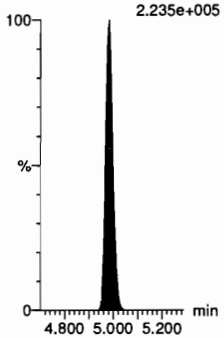
13C2-6:2 FTS-RSD
F30:MRM of 1 channel,ES-
429.0 > 79.7
4.458e+004



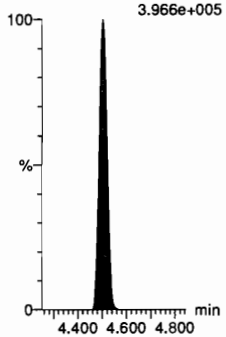
13C5-PFNA-RSD
F36:MRM of 1 channel,ES-
468.2 > 422.9
4.451e+005



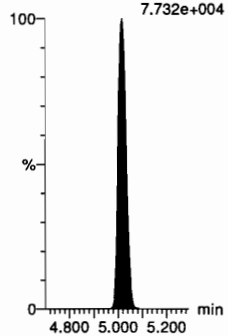
13C8-PFOSA-RSD
F42:MRM of 1 channel,ES-
506 > 78
2.235e+005



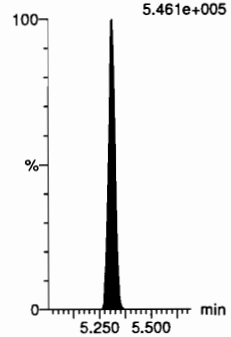
13C2-PFOA-RSD
F27:MRM of 1 channel,ES-
414.9 > 369.7
3.966e+005



13C8-PFOS-RSD
F43:MRM of 1 channel,ES-
507.1 > 80
7.732e+004



13C2-PFDA-RSD
F46:MRM of 1 channel,ES-
515.1 > 469.9
5.461e+005



OPV 7/7/2020

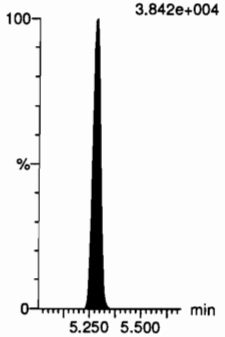
Quantify Sample Report **MassLynx V4.2 SCN977** Page 9 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

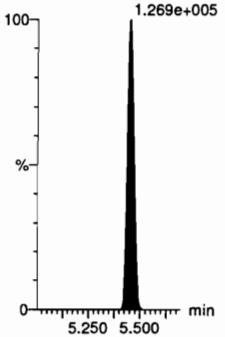
Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

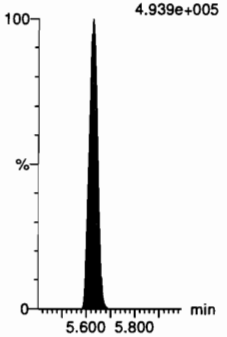
13C2-8:2 FTS-RSD
F51:MRM of 1 channel,ES-
529 > 80
3.842e+004



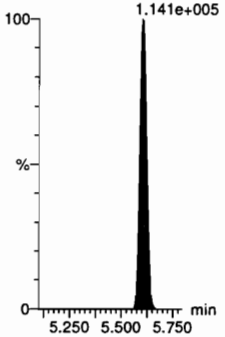
d3-N-MeFOSAA-RSD
F59:MRM of 1 channel,ES-
573.1 > 419
1.269e+005



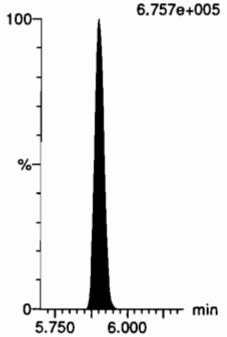
13C2-PFUdA-RSD
F56:MRM of 1 channel,ES-
565 > 519.8
4.939e+005



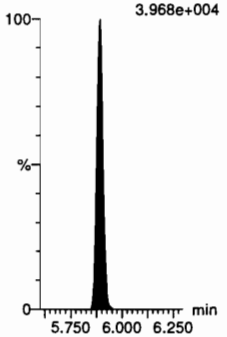
d5-N-EtFOSAA-RSD
F61:MRM of 1 channel,ES-
589.3 > 419
1.141e+005



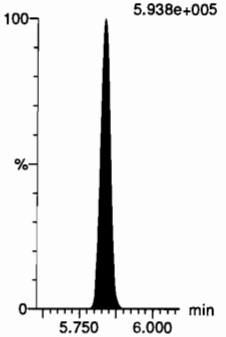
13C2-PFDoA-RSD
F64:MRM of 1 channel,ES-
614.9 > 569.9
6.757e+005



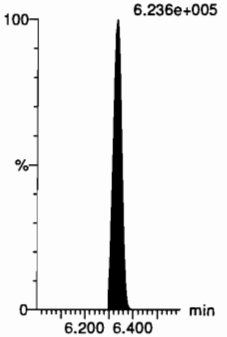
13C2-10:2 FTS-RSD
F70:MRM of 1 channel,ES-
632.9 > 80.0
3.968e+004



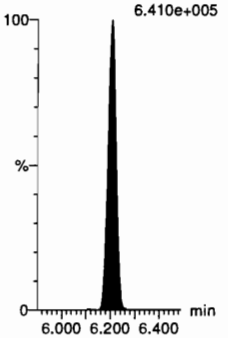
d3-N-MeFOSA-RSD
F47:MRM of 1 channel,ES-
515.2 > 168.9
5.938e+005



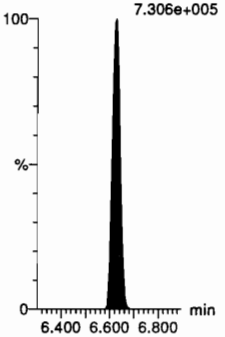
13C2-PFTeDA-RSD
F75:MRM of 2 channels,ES-
715.1 > 669.7
6.236e+005



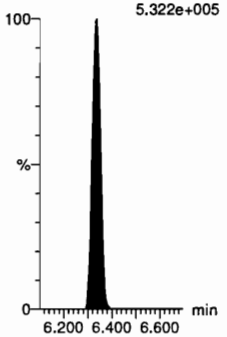
d5-N-ETFOSA-RSD
F53:MRM of 1 channel,ES-
531.1 > 168.9
6.410e+005



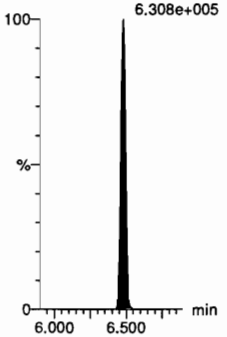
13C2-PFHxDA-RSD
F77:MRM of 1 channel,ES-
815 > 769.7
7.306e+005



d7-N-MeFOSE-RSD
F66:MRM of 1 channel,ES-
623.1 > 58.9
5.322e+005



d9-N-EtFOSE-RSD
F71:MRM of 1 channel,ES-
639.2 > 58.8
6.308e+005



OPV 7/7/2020

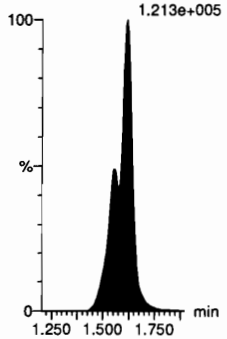
Quantify Sample Report **MassLynx V4.2 SCN977** Page 10 of 14
Vista Analytical Laboratory

Dataset: D:\PFAS5.PRO\RESULTS\200706P1\200706P1-ICV.qld

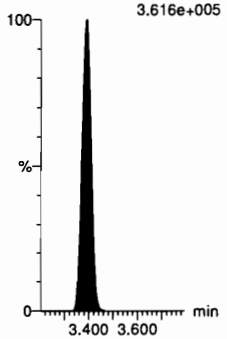
Last Altered: Tuesday, July 07, 2020 09:39:03 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 09:42:05 Pacific Daylight Time

Name: 200706P1-30, Date: 06-Jul-2020, Time: 15:09:30, ID: ICV200706P1-1 PFC ICV 20F1911, Description: PFC ICV 20F1911

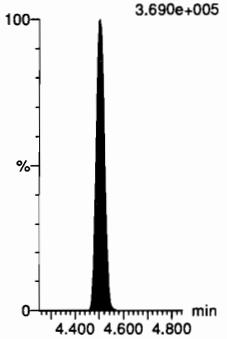
13C4-PFBA
F4:MRM of 1 channel,ES-
217.0 > 172.0
1.213e+005



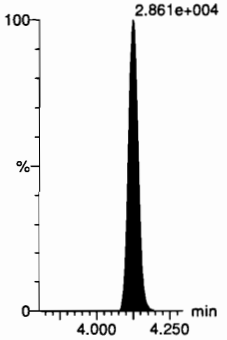
13C5-PFHxA
F15:MRM of 1 channel,ES-
318.0 > 272.9
3.616e+005



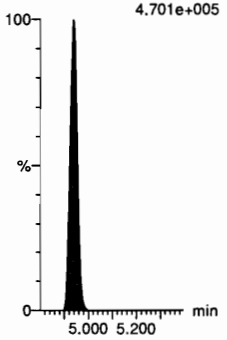
13C8-PFOA
F28:MRM of 1 channel,ES-
420.9 > 376.0
3.690e+005



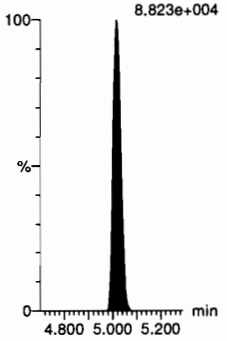
18O2-PFHxS
F25:MRM of 1 channel,ES-
403.0 > 103
2.861e+004



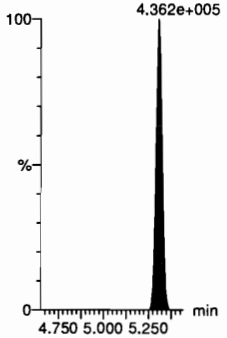
13C9-PFNA
F37:MRM of 1 channel,ES-
472.2 > 426.9
4.701e+005



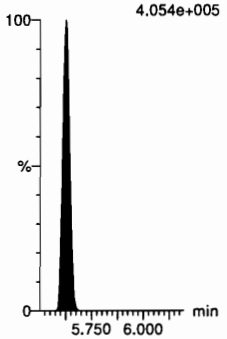
13C4-PFOS
F41:MRM of 1 channel,ES-
503 > 79.7
8.823e+004



13C6-PFDA
F48:MRM of 1 channel,ES-
519.1 > 473.7
4.362e+005



13C7-PFUdA
F58:MRM of 1 channel,ES-
570.1 > 524.8
4.054e+005



OPV 7/7/2020

Quantify Sample Report **MassLynx V4.2 SCN977** Page 1 of 14
Vista Analytical Laboratory

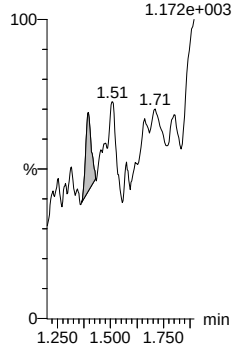
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

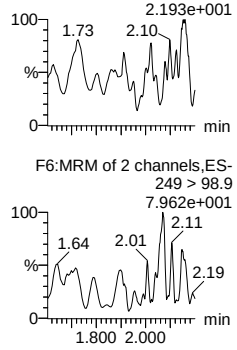
Method: D:\PFAS5.PRO\MethDB\NEW_PFAS_80C_070620.mdb 07 Jul 2020 08:33:50
Calibration: D:\PFAS5.PRO\CurveDB\C18_VAL-PFAS_Q5_07-06-20.cdb 07 Jul 2020 09:00:31

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

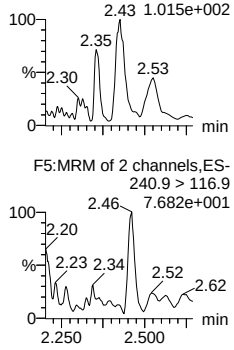
PFBA



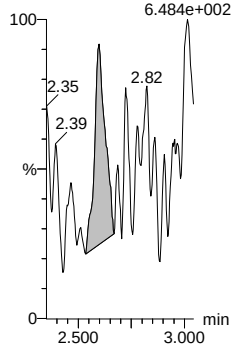
PFPrS



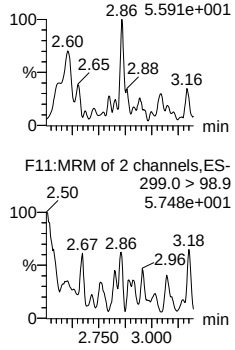
3:3 FTCA



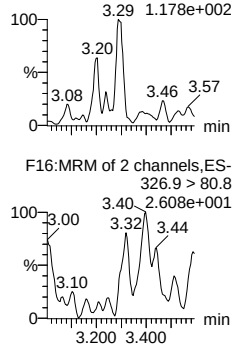
PFPeA



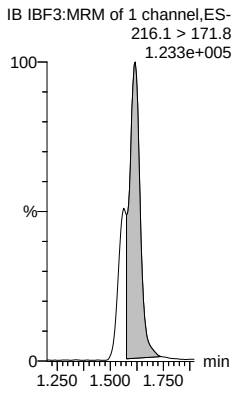
PFBS



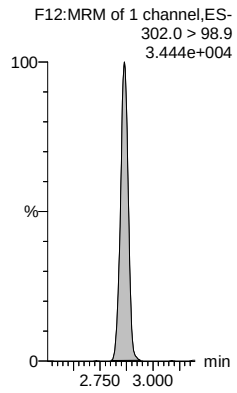
4:2 FTS



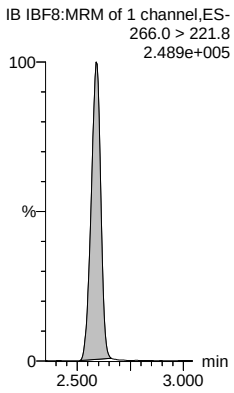
13C3-PFBA-EIS



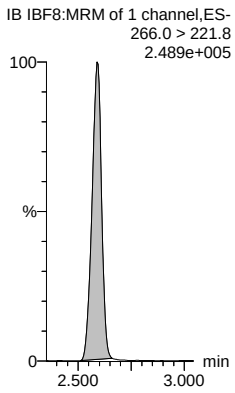
13C3-PFBS-EIS



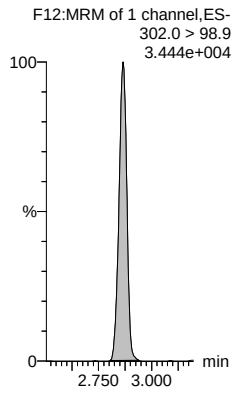
13C3-PFPeA-EIS



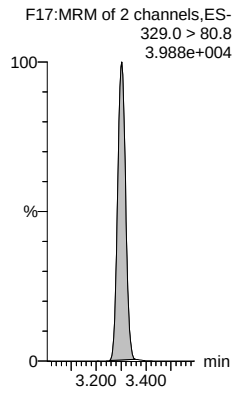
13C3-PFPeA-EIS



13C3-PFBS-EIS



13C2-4:2 FTS-EIS



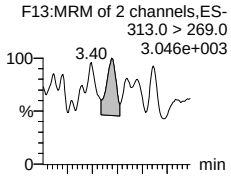
Quantify Sample Report **MassLynx V4.2 SCN977** Page 2 of 14
Vista Analytical Laboratory

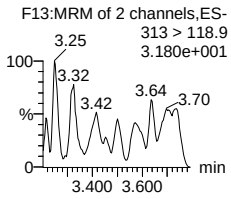
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

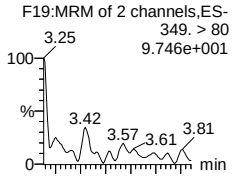
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

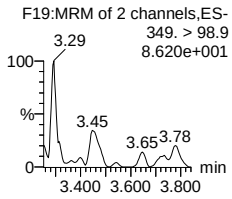
PFHxA



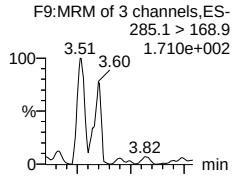


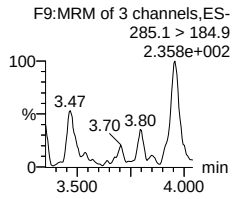
PFPeS



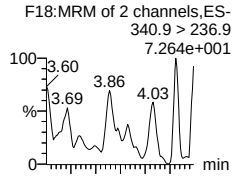


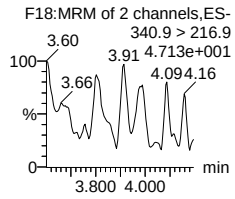
HFPO-DA



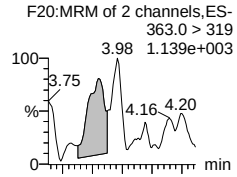


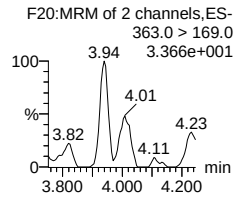
5:3 FTCA



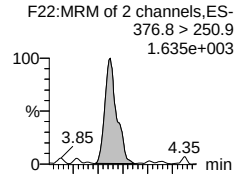


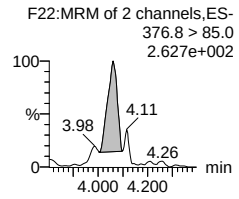
PFHpA



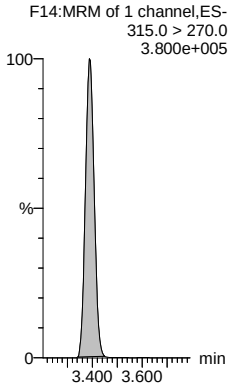


ADONA

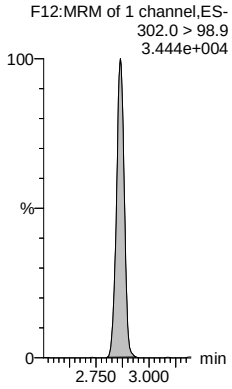




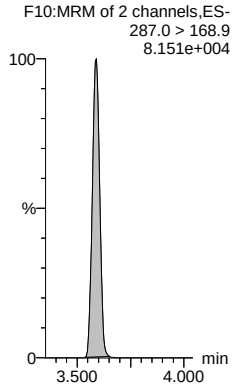
13C2-PFHxA-EIS



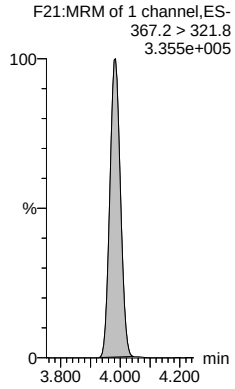
13C3-PFBS-EIS



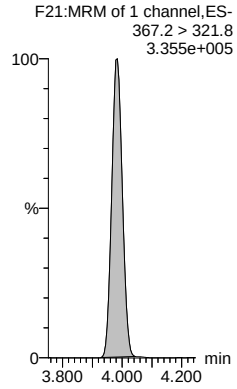
13C3-HFPO-DA-EIS



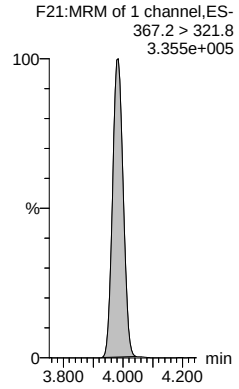
13C4-PFHpA-EIS



13C4-PFHpA-EIS



13C4-PFHpA-EIS



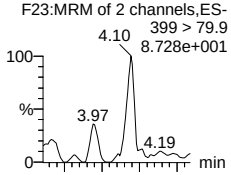
Quantify Sample Report **MassLynx V4.2 SCN977** Page 3 of 14
Vista Analytical Laboratory

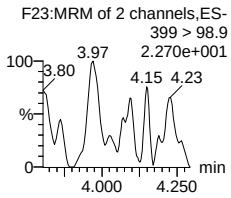
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

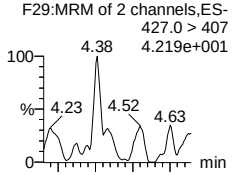
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

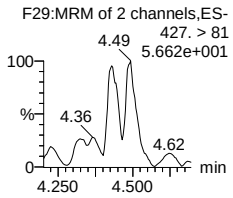
L-PFHxS



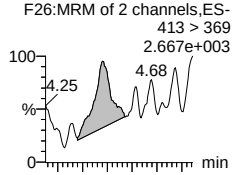


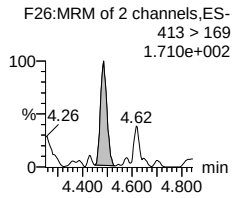
6:2 FTS



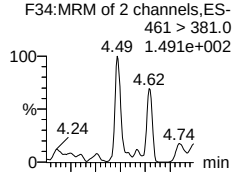


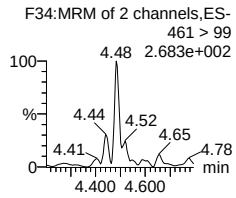
L-PFOA



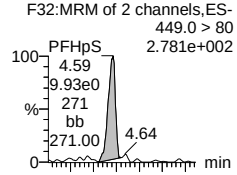


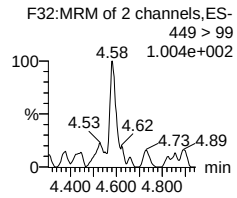
PFEChS



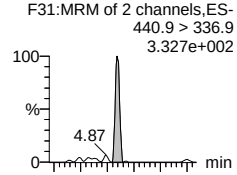


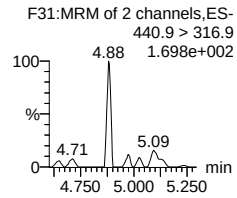
PFHpS



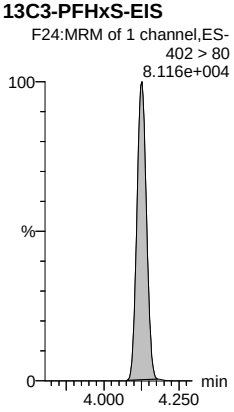


7:3 FTCA

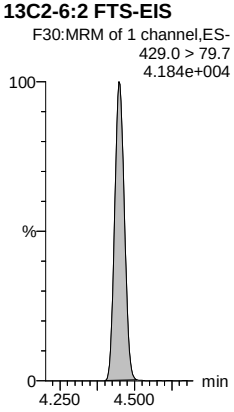




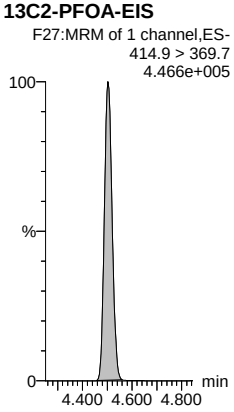
13C3-PFHxS-EIS



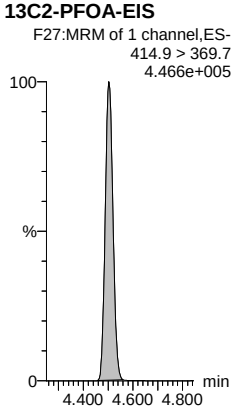
13C2-6:2 FTS-EIS



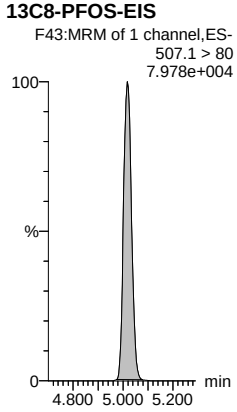
13C2-PFOA-EIS



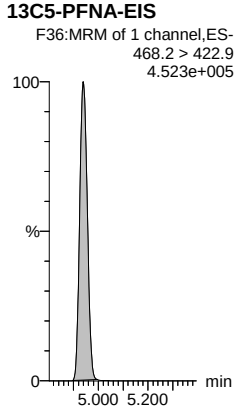
13C2-PFOA-EIS



13C8-PFOS-EIS



13C5-PFNA-EIS



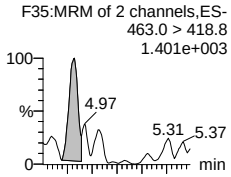
Quantify Sample Report **MassLynx V4.2 SCN977** Page 4 of 14
Vista Analytical Laboratory

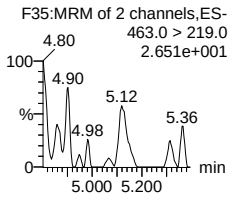
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

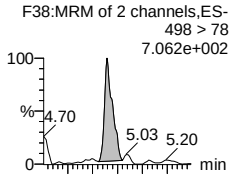
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

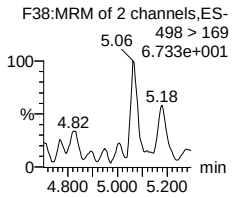
PFNA



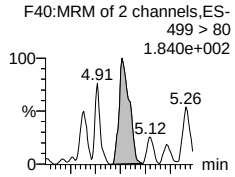


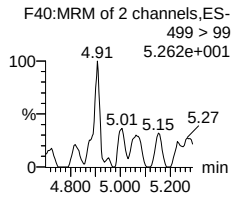
PFOSA



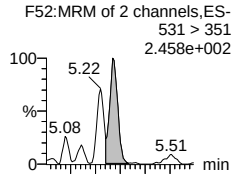


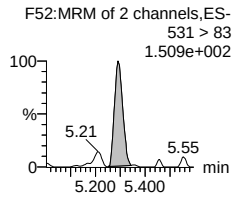
L-PFOS



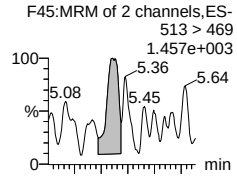


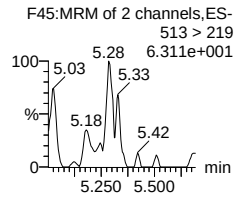
9Cl-PF30NS



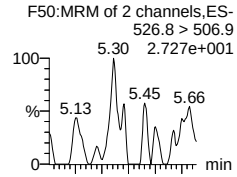


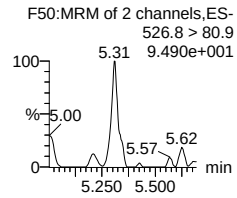
PFDA



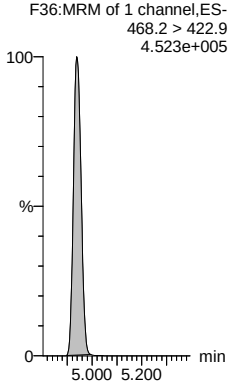


8:2 FTS

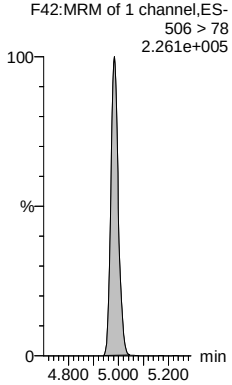




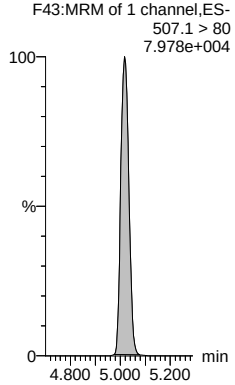
13C5-PFNA-EIS



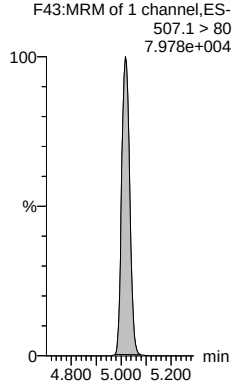
13C8-PFOSA-EIS



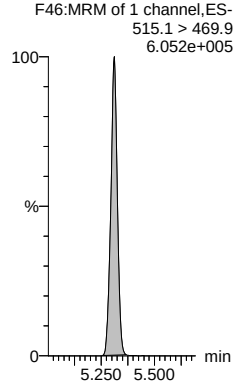
13C8-PFOS-EIS



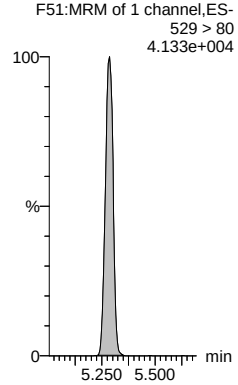
13C8-PFOS-EIS



13C2-PFDA-EIS



13C2-8:2 FTS-EIS



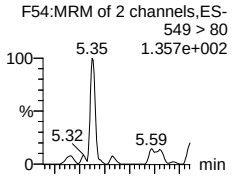
Quantify Sample Report **MassLynx V4.2 SCN977** Page 5 of 14
Vista Analytical Laboratory

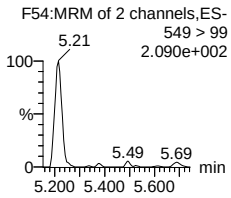
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

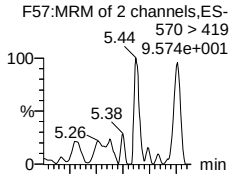
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

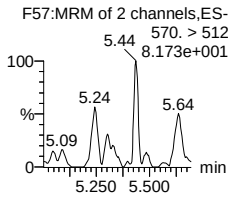
PFNS



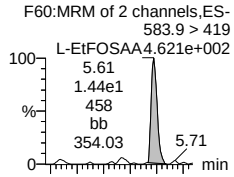


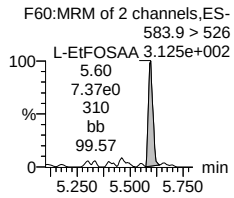
L-MeFOSAA



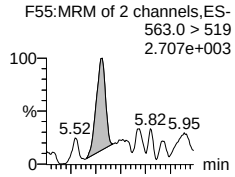


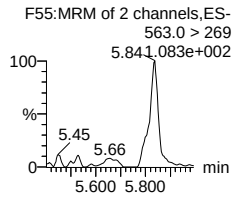
L-EtFOSAA



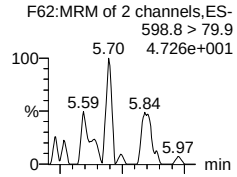


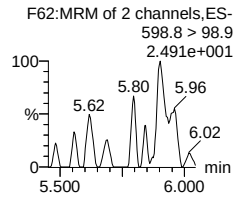
PFUdA



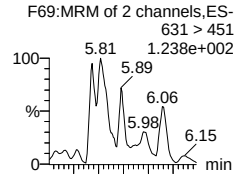


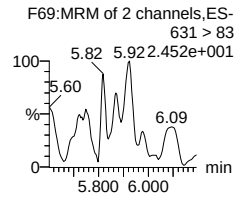
PFDS



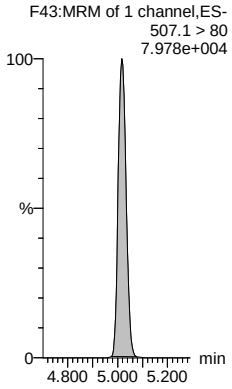


11Cl-PF30UdS

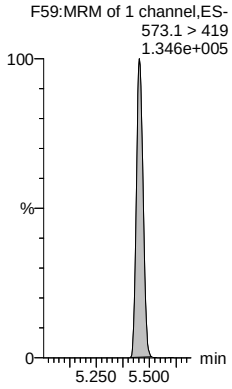




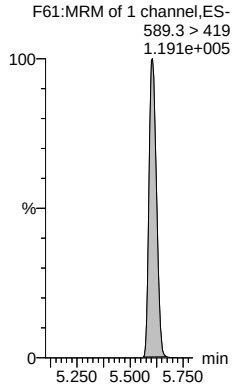
13C8-PFOS-EIS



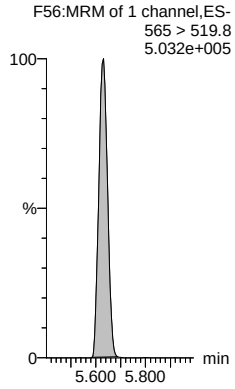
d3-N-MeFOSAA-EIS



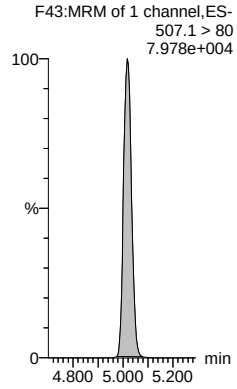
d5-N-EtFOSAA-EIS



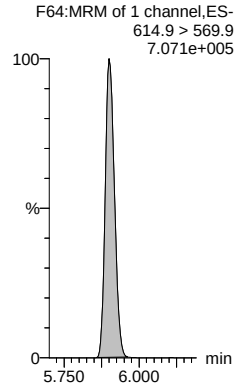
13C2-PFUdA-EIS



13C8-PFOS-EIS



13C2-PFDoA-EIS



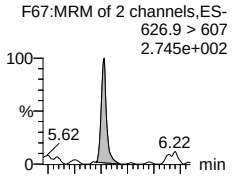
Quantify Sample Report **MassLynx V4.2 SCN977** Page 6 of 14
Vista Analytical Laboratory

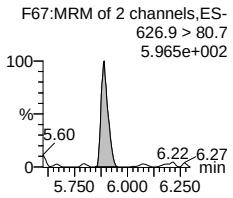
Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

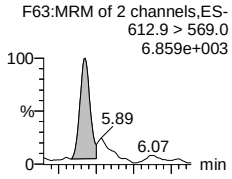
Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

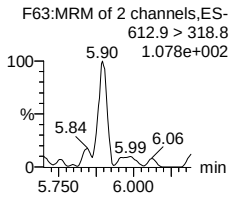
10:2 FTS



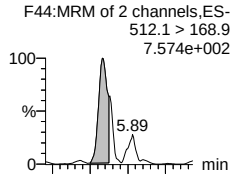


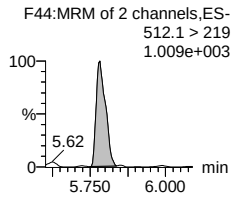
PFDoA



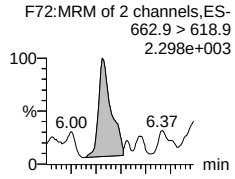


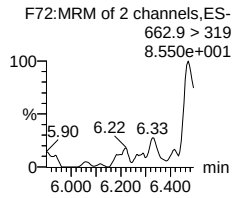
N-MeFOSA



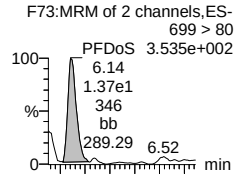


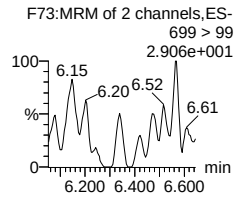
PFTrDA



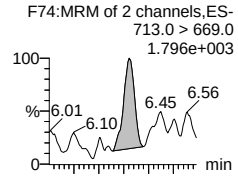


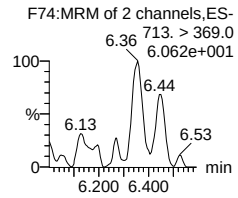
PFDoS



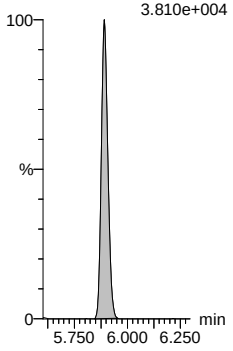


PFTeDA

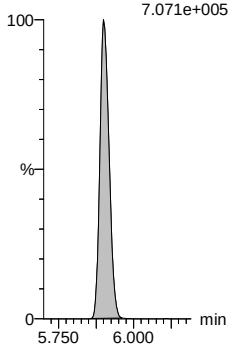




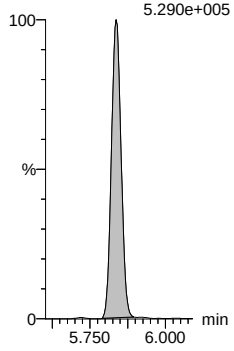
13C2-10:2 FTS-EIS



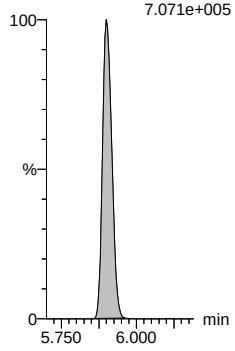
13C2-PFDoA-EIS



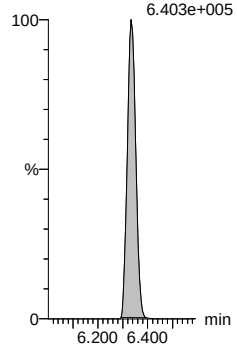
d3-N-MeFOSA-EIS



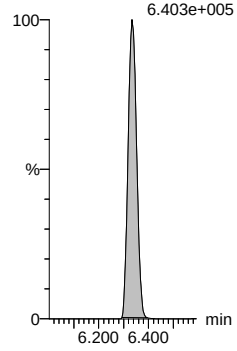
13C2-PFDoA-EIS



13C2-PFTeDA-EIS



13C2-PFTeDA-EIS



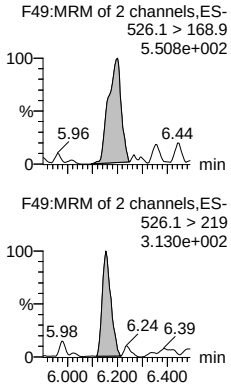
Quantify Sample Report **MassLynx V4.2 SCN977** Page 7 of 14
Vista Analytical Laboratory

Dataset: Untitled

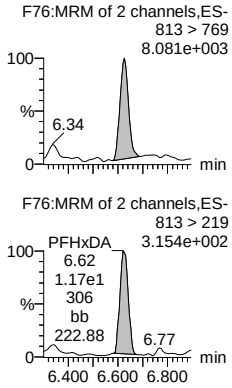
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

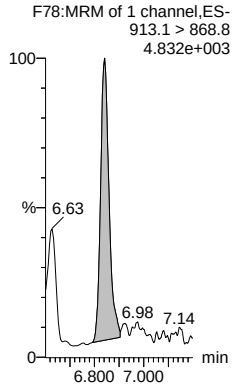
N-EtFOSA



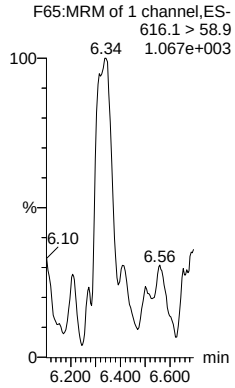
PFHxDA



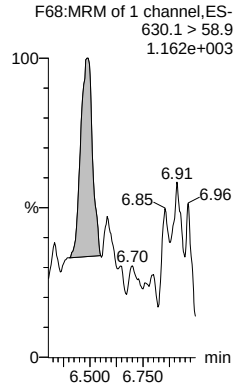
PFODA



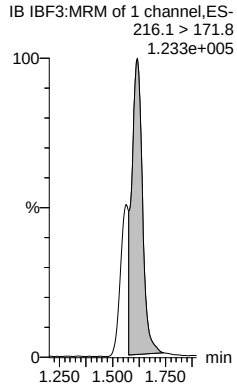
N-MeFOSE



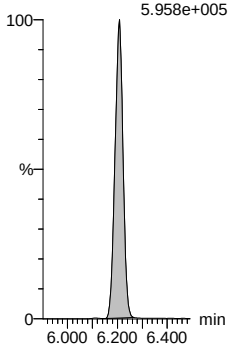
N-EtFOSE



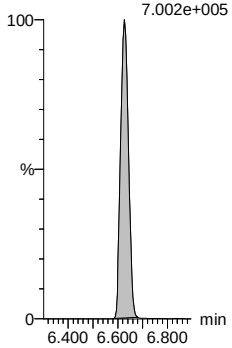
13C3-PFBA-RSD



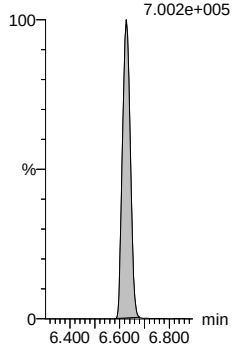
d5-N-ETFOSA-EIS



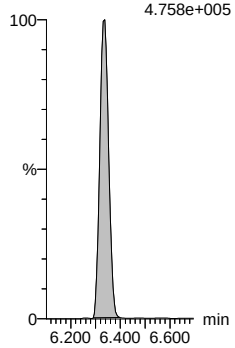
13C2-PFHxDA-EIS



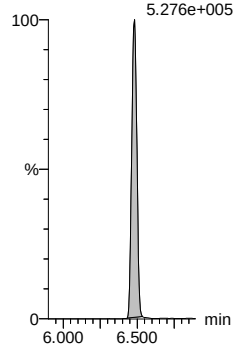
13C2-PFHxDA-EIS



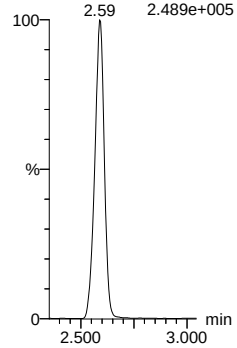
d7-N-MeFOSE-EIS



d9-N-EtFOSE-EIS



13C3-PFPeA-RSD



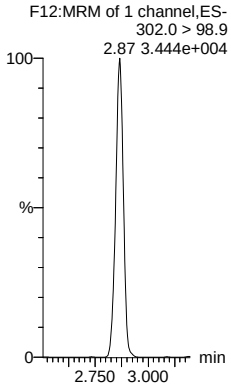
Quantify Sample Report **MassLynx V4.2 SCN977** Page 8 of 14
Vista Analytical Laboratory

Dataset: Untitled

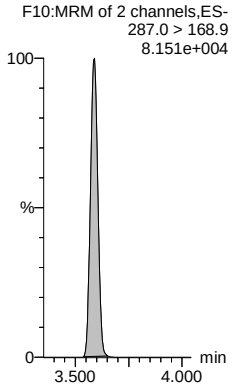
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

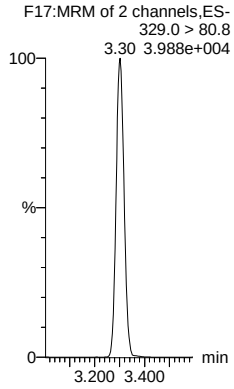
13C3-PFBS-RSD



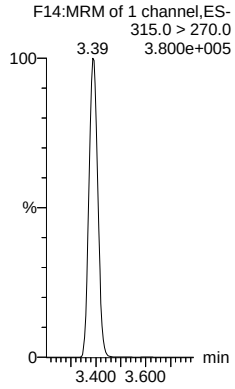
13C3-HFPO-DA-RSD



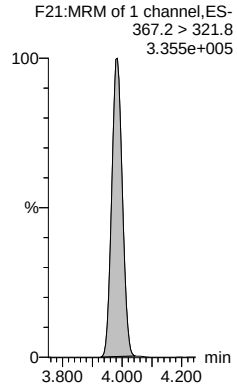
13C2-4:2 FTS-RSD



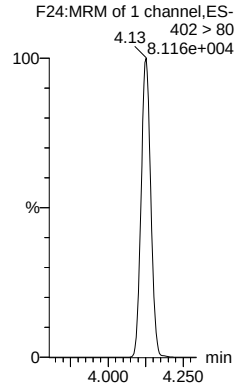
13C2-PFHxA-RSD



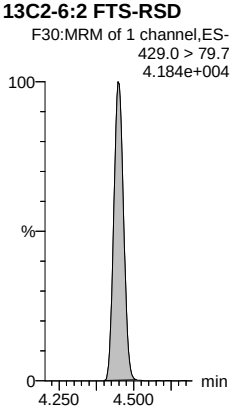
13C4-PFHpA-RSD



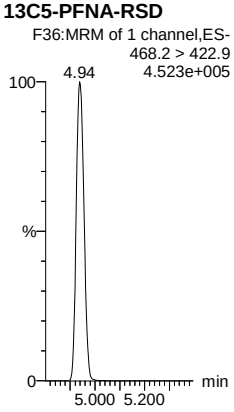
13C3-PFHxS-RSD



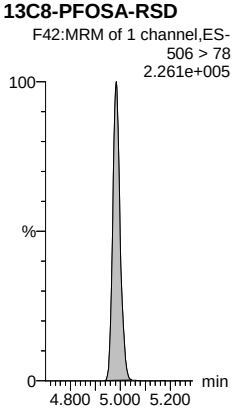
13C2-6:2 FTS-RSD



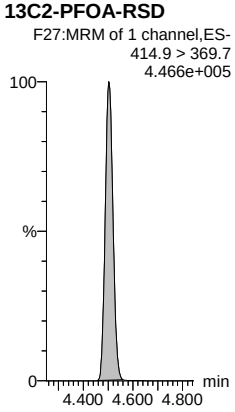
13C5-PFNA-RSD



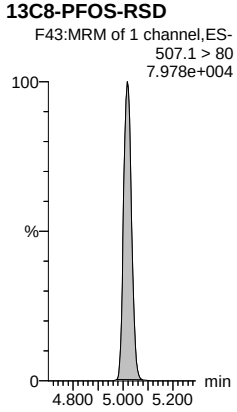
13C8-PFOSA-RSD



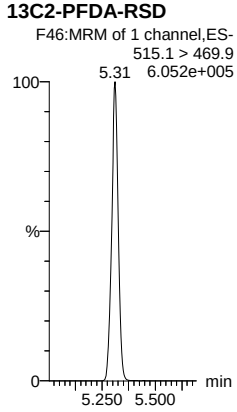
13C2-PFOA-RSD



13C8-PFOS-RSD



13C2-PFDA-RSD



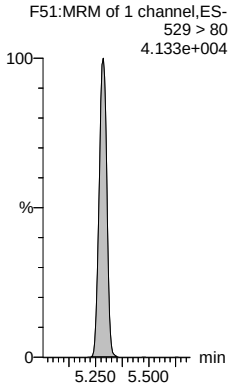
Quantify Sample Report **MassLynx V4.2 SCN977** Page 9 of 14
Vista Analytical Laboratory

Dataset: Untitled

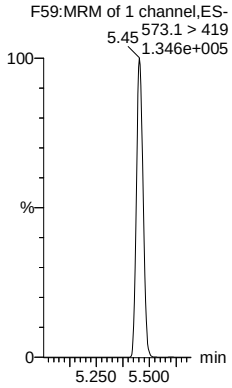
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

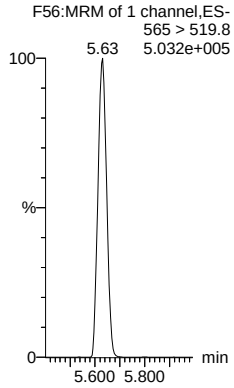
13C2-8:2 FTS-RSD



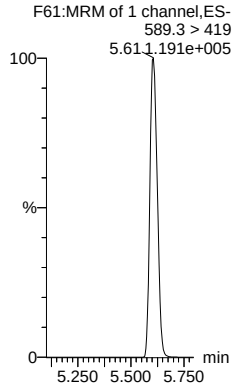
d3-N-MeFOSAA-RSD



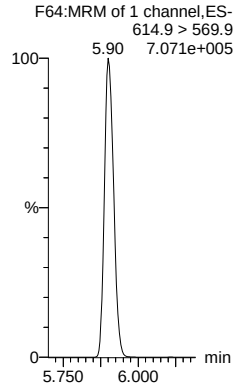
13C2-PFUdA-RSD



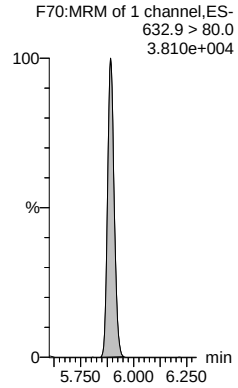
d5-N-EtFOSAA-RSD



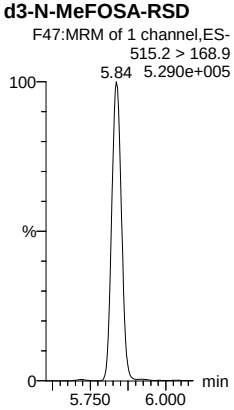
13C2-PFDoA-RSD



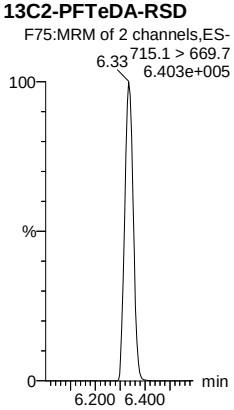
13C2-10:2 FTS-RSD



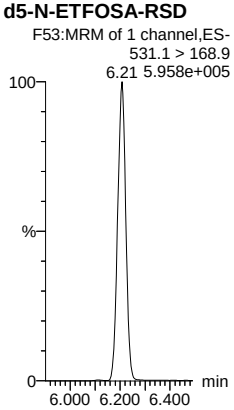
d3-N-MeFOSA-RSD



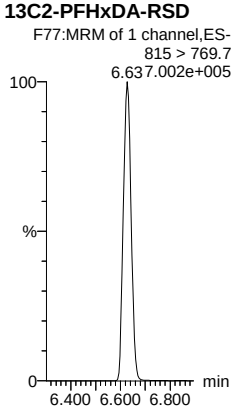
13C2-PFTeDA-RSD



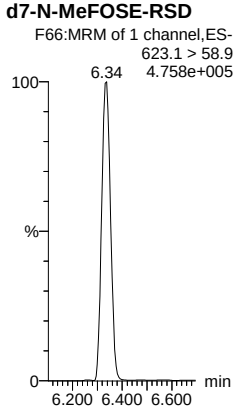
d5-N-ETFOSA-RSD



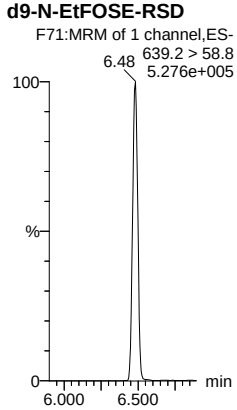
13C2-PFHxDA-RSD



d7-N-MeFOSE-RSD



d9-N-EtFOSE-RSD



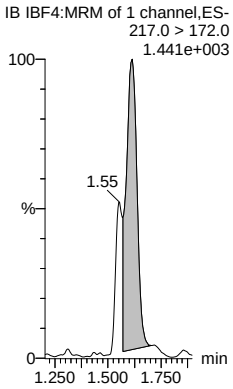
Quantify Sample Report **MassLynx V4.2 SCN977** Page 10 of 14
Vista Analytical Laboratory

Dataset: Untitled

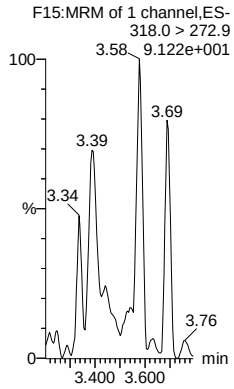
Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

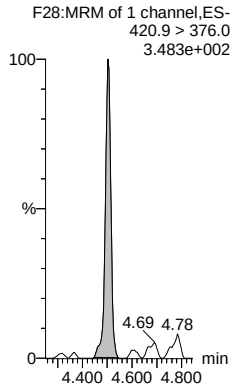
13C4-PFBA



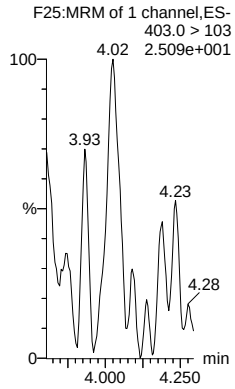
13C5-PFHxA



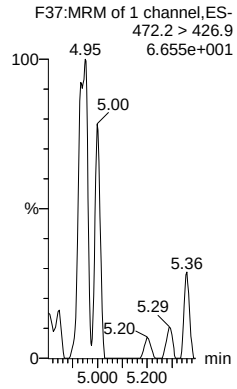
13C8-PFOA



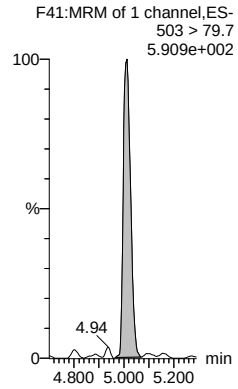
18O2-PFHxS



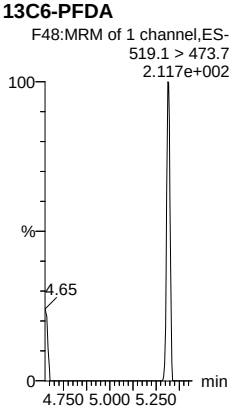
13C9-PFNA



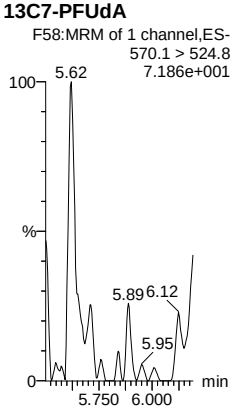
13C4-PFOS



13C6-PFDA



13C7-PFUdA



Quantify Sample Report **MassLynx V4.2 SCN977** Page 11 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, 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	213.0 > 168.8	9.237	7031.754	1.00	1.40	0.016				NO		
2	2	PFPrS	249 > 80		1445.272	1.00						NO		YES
3	3	3:3 FTCA	240.9 > 176.9		12721.932	1.00						NO		YES
4	4	PFPeA	263.1 > 218.9	25.230	12721.932	1.00	2.60	0.025		0.0220		NO		
5	5	PFBS	299.0 > 80		1445.272	1.00						NO		YES
6	6	4:2 FTS	326.9 > 306.9		1446.075	1.00						NO		YES
7	47	13C3-PFBA-EIS	216.1 > 171.8	7031.754		1.00	1.62	7031.754	12.500	10.2	81.6	NO		
8	51	13C3-PFBS-EIS	302.0 > 98.9	1445.272		1.00	2.87	1445.272	12.500	13.9	111.2	NO		
9	49	13C3-PFPeA-EIS	266.0 > 221.8	12721.932		1.00	2.59	12721.932	12.500	13.2	105.8	NO		
10	49	13C3-PFPeA-EIS	266.0 > 221.8	12721.932		1.00	2.59	12721.932	12.500	13.2	105.8	NO		
11	51	13C3-PFBS-EIS	302.0 > 98.9	1445.272		1.00	2.87	1445.272	12.500	13.9	111.2	NO		
12	55	13C2-4:2 FTS-EIS	329.0 >80.8	1446.075		1.00	3.30	1446.075	12.500	14.3	114.6	NO		
13	-1													
14	7	PFHxA	313.0 > 269.0	72.555	15300.678	1.00	3.48	0.059				NO		YES
15	8	PFPeS	349.>80		1445.272	1.00						NO		YES
16	9	HFPO-DA	285.1 > 168.9		3189.258	1.00						NO		YES
17	10	5:3 FTCA	340.9 > 236.9		13649.274	1.00						NO		YES
18	11	PFHpA	363.0 > 319	52.108	13649.274	1.00	3.92	0.048		0.00883		NO		YES
19	12	ADONA	376.8 > 250.9	88.752	13649.274	1.00	4.05	0.081		0.00188		NO	8.841	YES
20	57	13C2-PFHxA-EIS	315.0 > 270.0	15300.678		1.00	3.39	15300.678	12.500	14.0	112.3	NO		
21	51	13C3-PFBS-EIS	302.0 > 98.9	1445.272		1.00	2.87	1445.272	12.500	13.9	111.2	NO		
22	53	13C3-HFPO-DA-EIS	287.0 > 168.9	3189.258		1.00	3.59	3189.258	12.500	14.0	111.8	NO		
23	59	13C4-PFHpA-EIS	367.2 > 321.8	13649.274		1.00	3.98	13649.274	12.500	13.9	111.1	NO		
24	59	13C4-PFHpA-EIS	367.2 > 321.8	13649.274		1.00	3.98	13649.274	12.500	13.9	111.1	NO		
25	59	13C4-PFHpA-EIS	367.2 > 321.8	13649.274		1.00	3.98	13649.274	12.500	13.9	111.1	NO		
26	-1													
27	13	L-PFHxS	399 > 79.9		2956.690	1.00						NO		YES
28	15	6:2 FTS	427.0 > 407		1567.986	1.00						NO		YES
29	16	L-PFOA	413 > 369	129.786	15770.835	1.00	4.48	0.103		0.0430		NO	25.854	YES
30	18	PFecHS	461 > 381.0		15770.835	1.00						NO		YES
31	19	PFHpS	449.0 > 80	9.934	2919.588	1.00	4.59	0.043		0.0384		NO		YES
32	20	7:3 FTCA	440.9 > 336.9	7.772	16049.925	1.00	4.92	0.006		0.0180		NO		YES
33	61	13C3-PFHxS-EIS	402 > 80	2956.690		1.00	4.13	2956.690	12.500	13.4	107.5	NO		
34	63	13C2-6:2 FTS-EIS	429.0 >79.7	1567.986		1.00	4.45	1567.986	12.500	12.2	97.4	NO		
35	69	13C2-PFOA-EIS	414.9 > 369.7	15770.835		1.00	4.50	15770.835	12.500	13.7	109.3	NO		
36	69	13C2-PFOA-EIS	414.9 > 369.7	15770.835		1.00	4.50	15770.835	12.500	13.7	109.3	NO		

Quantify Sample Report **MassLynx V4.2 SCN977** Page 12 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, 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	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
38	65	13C5-PFNA-EIS	468.2 > 422.9	16049.925		1.00	4.94	16049.925	12.500	13.2	105.8	NO		
39	-1													
40	21	PFNA	463.0 > 418.8	57.165	16049.925	1.00	4.93	0.045		0.0224		NO		YES
41	22	PFOSA	498 > 78	25.110	7728.135	1.00	4.96	0.041		0.0514		NO		YES
42	23	L-PFOS	499 > 80	8.560	2919.588	1.00	5.01	0.037		0.103		NO		YES
43	25	9Cl-PF30NS	531 > 351	9.123	2919.588	1.00	5.27	0.039		0.00792		NO	1.599	YES
44	26	PFDA	513 > 469	85.108	21328.793	1.00	5.30	0.050		0.00680		NO		YES
45	27	8:2 FTS	526.8 > 506.9		1698.056	1.00						NO		YES
46	65	13C5-PFNA-EIS	468.2 > 422.9	16049.925		1.00	4.94	16049.925	12.500	13.2	105.8	NO		
47	67	13C8-PFOSA-EIS	506 > 78	7728.135		1.00	4.98	7728.135	12.500	13.5	108.2	NO		
48	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
49	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
50	73	13C2-PFDA-EIS	515.1 > 469.9	21328.793		1.00	5.31	21328.793	12.500	14.3	114.4	NO		
51	75	13C2-8:2 FTS-EIS	529 > 80	1698.056		1.00	5.29	1698.056	12.500	15.4	123.1	NO		
52	-1													
53	28	PFNS	549 > 80		2919.588	1.00						NO		YES
54	29	L-MeFOSAA	570 > 419		4765.928	1.00						NO		YES
55	31	L-EtFOSAA	583.9 > 419	14.370	4706.535	1.00	5.61	0.038		0.0729		NO	1.950	NO
56	33	PFUdA	563.0 > 519	100.840	20308.568	1.00	5.63	0.062		0.0393		NO		YES
57	34	PFDS	598.8 >79.9		2919.588	1.00						NO		YES
58	35	11Cl-PF30UdS	631 > 451		24925.619	1.00						NO		YES
59	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
60	77	d3-N-MeFOSAA-EIS	573.1 > 419	4765.928		1.00	5.45	4765.928	12.500	14.4	115.1	NO		
61	81	d5-N-EtFOSAA-EIS	589.3 > 419	4706.535		1.00	5.61	4706.535	12.500	15.0	119.9	NO		
62	79	13C2-PFUdA-EIS	565 > 519.8	20308.568		1.00	5.63	20308.568	12.500	12.8	102.7	NO		
63	71	13C8-PFOS-EIS	507.1 > 80	2919.588		1.00	5.02	2919.588	12.500	12.9	103.6	NO		
64	83	13C2-PFDoA-EIS	614.9 > 569.9	24925.619		1.00	5.90	24925.619	12.500	13.3	106.7	NO		
65	-1													
66	36	10:2 FTS	626.9 > 607	7.920	1352.273	1.00	5.89	0.073				NO	0.352	NO
67	37	PFDoA	612.9 > 569.0	251.215	24925.619	1.00	5.84	0.126		0.123		NO		YES
68	38	N-MeFOSA	512.1 > 168.9	24.563	19283.832	1.00	5.79	0.190		0.115		NO	0.693	YES
69	39	PFTrDA	662.9 > 618.9	124.413	24925.619	1.00	6.13	0.062		0.0581		NO		YES
70	40	PFDoS	699 > 80	13.725	24932.619	1.00	6.14	0.007		0.0634		NO		YES
71	41	PFTeDA	713.0 > 669.0	77.320	24932.619	1.00	6.32	0.039				NO		YES
72	85	13C2-10:2 FTS-EIS	632.9 > 80.0	1352.273		1.00	5.89	1352.273	12.500	12.4	99.6	NO		

Quantify Sample Report **MassLynx V4.2 SCN977** Page 13 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, 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	614.9 > 569.9	24925.619		1.00	5.90	24925.619	12.500	13.3	106.7	NO		
74	87	d3-N-MeFOSA-EIS	515.2 > 168.9	19283.832		1.00	5.84	19283.832	149.200	139	93.4	NO		
75	83	13C2-PFDoA-EIS	614.9 > 569.9	24925.619		1.00	5.90	24925.619	12.500	13.3	106.7	NO		
76	89	13C2-PFTeDA-EIS	715.1 > 669.7	24932.619		1.00	6.33	24932.619	12.500	13.1	104.7	NO		
77	89	13C2-PFTeDA-EIS	715.1 > 669.7	24932.619		1.00	6.33	24932.619	12.500	13.1	104.7	NO		
78	-1													
79	42	N-EtFOSA	526.1 > 168.9	32.074	22029.455	1.00	6.20	0.217		0.279		NO	2.593	NO
80	43	PFHxDA	813 > 769	298.843	25212.395	1.00	6.63	0.148				NO	25.568	NO
81	44	PFODA	913.1 > 868.8	179.740	25212.395	1.00	6.84	0.089		0.0930		NO		
82	45	N-MeFOSE	616.1 > 58.9		19306.602	1.00						NO		
83	46	N-EtFOSE	630.1 > 58.9	49.654	20422.244	1.00	6.49	0.363		0.0274		NO		
84	48	13C3-PFBA-RSD	216.1 > 171.8	7031.754	81.232	1.00	1.62	1082.048	12.500	1270	10132.7	YES		
85	91	d5-N-ETFOSA-EIS	531.1 > 168.9	22029.455		1.00	6.21	22029.455	149.200	142	95.1	NO		
86	93	13C2-PFHxDA-EIS	815 > 769.7	25212.395		1.00	6.63	25212.395	12.500	12.0	95.6	NO		
87	93	13C2-PFHxDA-EIS	815 > 769.7	25212.395		1.00	6.63	25212.395	12.500	12.0	95.6	NO		
88	95	d7-N-MeFOSE-EIS	623.1 > 58.9	19306.602		1.00	6.34	19306.602	149.200	143	96.0	NO		
89	97	d9-N-EtFOSE-EIS	639.2 > 58.8	20422.244		1.00	6.48	20422.244	149.200	137	92.0	NO		
90	50	13C3-PFPeA-RSD	266.0 > 221.8			1.00			12.500			NO		
91	-1													
92	52	13C3-PFBS-RSD	302.0 > 98.9			1.00			12.500			NO		
93	54	13C3-HFPO-DA-RSD	287.0 > 168.9	3189.258		1.00	3.59		12.500			NO		
94	56	13C2-4:2 FTS-RSD	329.0 >80.8			1.00			12.500			NO		
95	58	13C2-PFHxA-RSD	315.0 > 270.0			1.00			12.500			NO		
96	60	13C4-PFHpA-RSD	367.2 > 321.8	13649.274		1.00	3.98		12.500			NO		
97	62	13C3-PFHxS-RSD	402 > 80			1.00			12.500			NO		
98	64	13C2-6:2 FTS-RSD	429.0 >79.7	1567.986	19.889	1.00	4.45	985.461	12.500	2080	16676.0	YES		
99	66	13C5-PFNA-RSD	468.2 > 422.9			1.00			12.500			NO		
100	68	13C8-PFOSA-RSD	506 > 78	7728.135		1.00	4.98		12.500			NO		
101	70	13C2-PFOA-RSD	414.9 > 369.7	15770.835	8.783	1.00	4.50	22445.114	12.500	20500	16418...	YES		
102	72	13C8-PFOS-RSD	507.1 > 80	2919.588	19.889	1.00	5.02	1834.926	12.500	2100	16783.2	YES		
103	74	13C2-PFDA-RSD	515.1 > 469.9			1.00			12.500			NO		
104	-1													
105	76	13C2-8:2 FTS-RSD	529 > 80	1698.056	19.889	1.00	5.29	1067.208	12.500	2340	18699.8	YES		
106	78	d3-N-MeFOSAA-RSD	573.1 > 419			1.00			12.500			NO		
107	80	13C2-PFUdA-RSD	565 > 519.8			1.00			12.500			NO		
108	82	d5-N-EtFOSAA-RSD	589.3 > 419			1.00			12.500			NO		

Quantify Sample Report **MassLynx V4.2 SCN977** Page 14 of 14
Vista Analytical Laboratory

Dataset: Untitled

Last Altered: Tuesday, July 07, 2020 10:17:16 Pacific Daylight Time
Printed: Tuesday, July 07, 2020 10:17:38 Pacific Daylight Time

Name: 200706P1-29, Date: 06-Jul-2020, Time: 14:58:58, ID: IB, Description: IB

	#	Name	Trace	Area	IS Area	wt/vol	RT	Response	Std. Conc	Conc.	%Rec	Recovery ...	Ion Ratio	Ratio Out?
109	84	13C2-PFDoA-RSD	614.9 > 569.9			1.00			12.500			NO		
110	86	13C2-10:2 FTS-RSD	632.9 > 80.0	1352.273	19.889	1.00	5.89	849.888	12.500	2210	17709.6	YES		
111	88	d3-N-MeFOSA-RSD	515.2 > 168.9			1.00			149.200			NO		
112	90	13C2-PFTeDA-RSD	715.1 > 669.7			1.00			12.500			NO		
113	92	d5-N-ETFOSA-RSD	531.1 > 168.9			1.00			149.200			NO		
114	94	13C2-PFHxDA-RSD	815 > 769.7			1.00			12.500			NO		
115	96	d7-N-MeFOSE-RSD	623.1 > 58.9			1.00			149.200			NO		
116	98	d9-N-EtFOSE-RSD	639.2 > 58.8			1.00			149.200			NO		
117	-1													
118	99	13C4-PFBA	217.0 > 172.0	81.232	81.232	1.00	1.61	12.500	12.500	12.5	100.0	NO		
119	1...	13C5-PFHxA	318.0 > 272.9			1.00			12.500			NO		
120	1...	13C8-PFOA	420.9 > 376.0	8.783	8.783	1.00	4.50	12.500	12.500	12.5	100.0	NO		
121	1...	18O2-PFHxS	403.0 > 103			1.00			12.500			NO		
122	1...	13C9-PFNA	472.2 > 426.9			1.00			12.500			NO		
123	1...	13C4-PFOS	503 > 79.7	19.889	19.889	1.00	5.01	12.500	12.500	12.5	100.0	NO		
124	1...	13C6-PFDA	519.1 > 473.7			1.00			12.500			NO		
125	1...	13C7-PFUdA	570.1 > 524.8			1.00			12.500			NO		

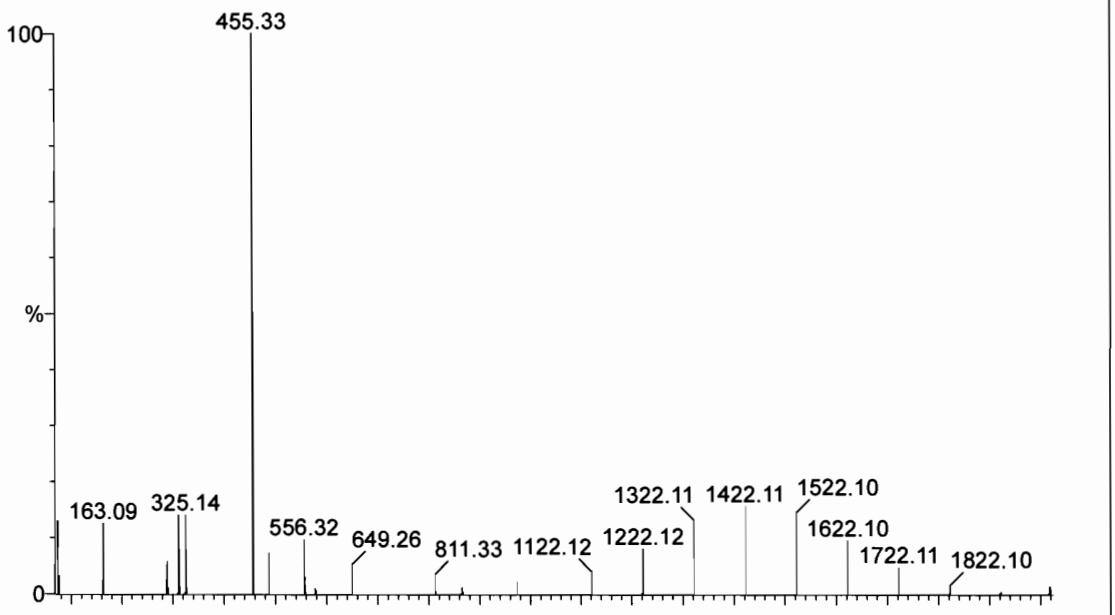
TUNE CHECKS

QS(P) Tune check 07/06/20 06-22-20

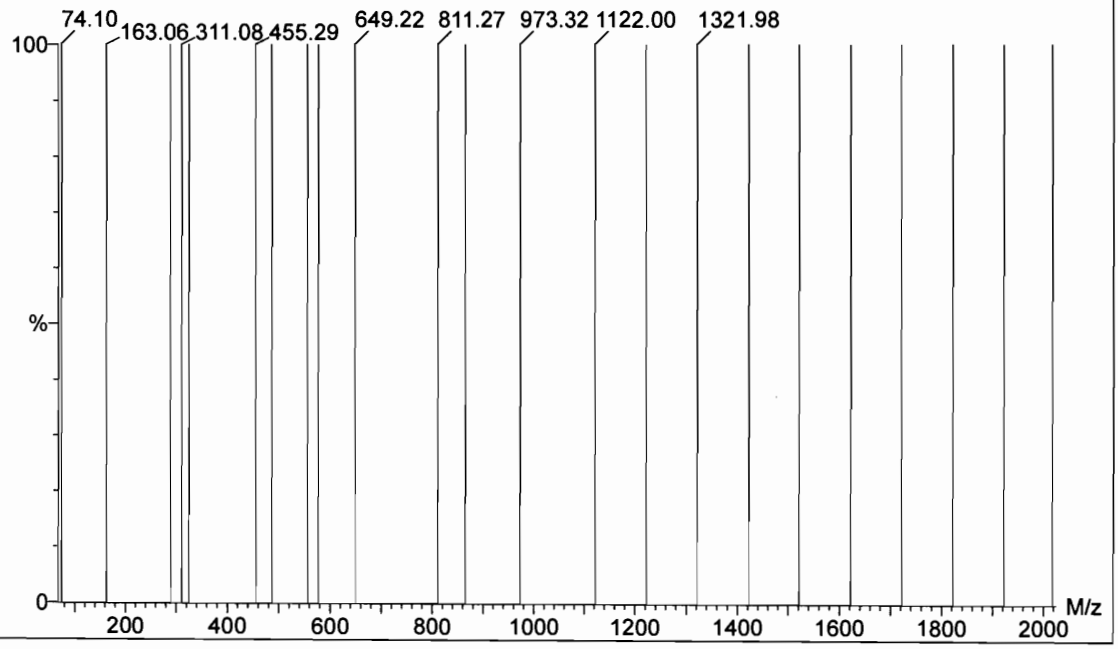
Calibration Verification Report - MS1 Static **Page 1 of 6**

Printed: **Mon Jul 06 07:56:25 2020**

Data file: STATMS1V - Calibrated 23 matches of 23 tested references

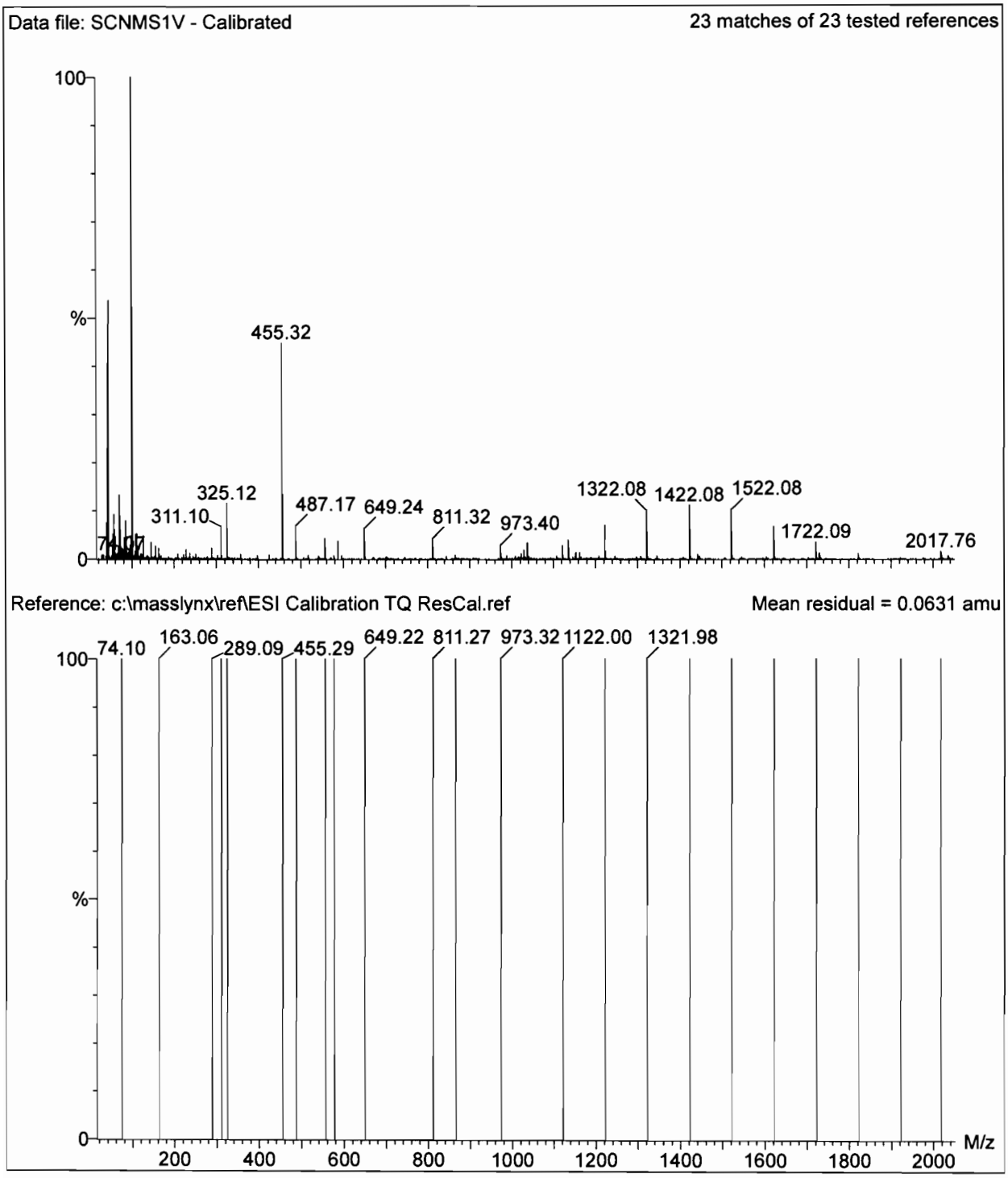


Reference: c:\masslynx\ref\ESI Calibration TQ ResCal.ref Mean residual = 0.0848 amu



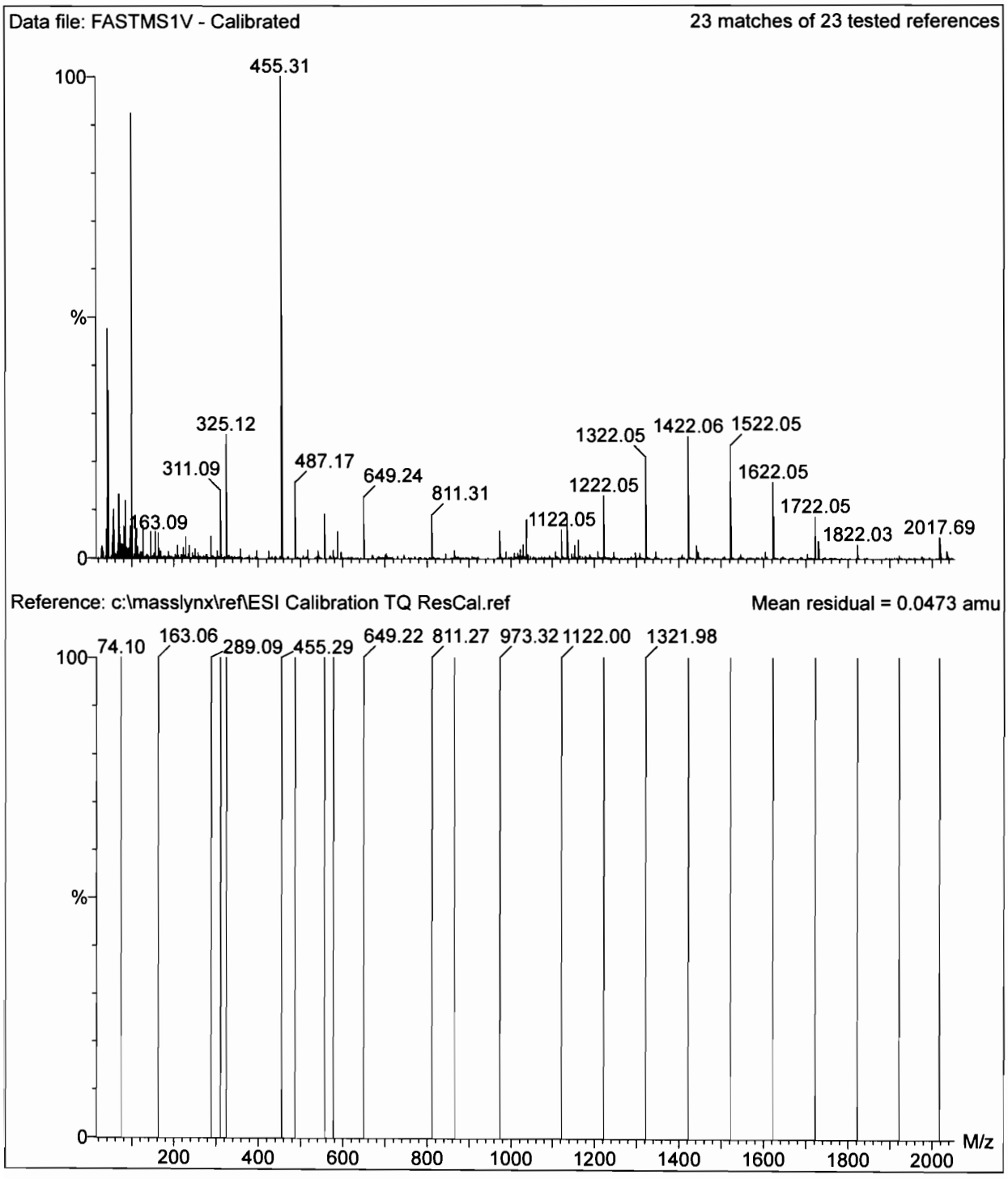
Calibration Verification Report - MS1 Scanning **Page 2 of 6**

Printed: **Mon Jul 06 07:57:34 2020**



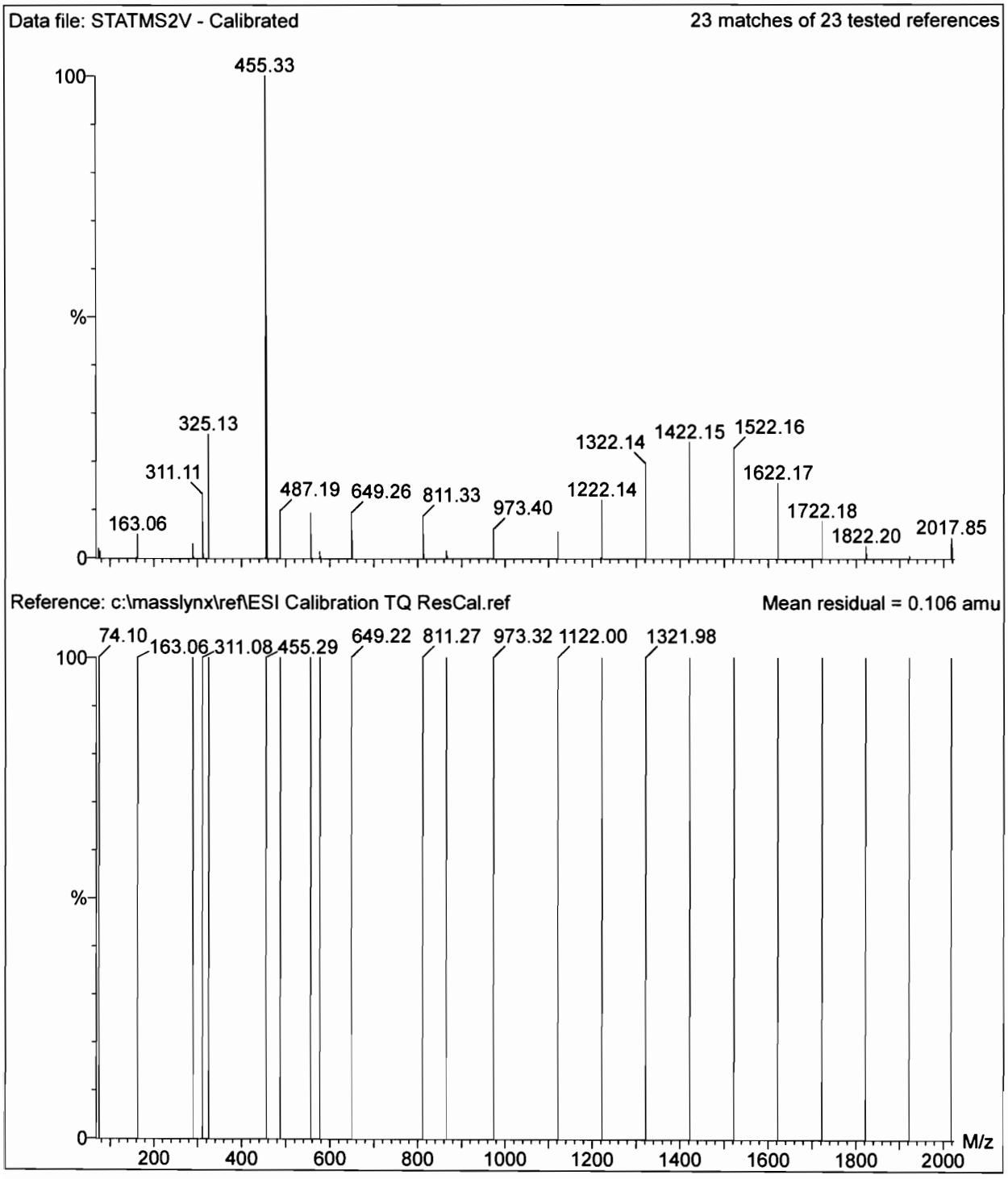
Calibration Verification Report - MS1 Scan Speed Compensation **Page 3 of 6**

Printed: **Mon Jul 06 07:58:45 2020**



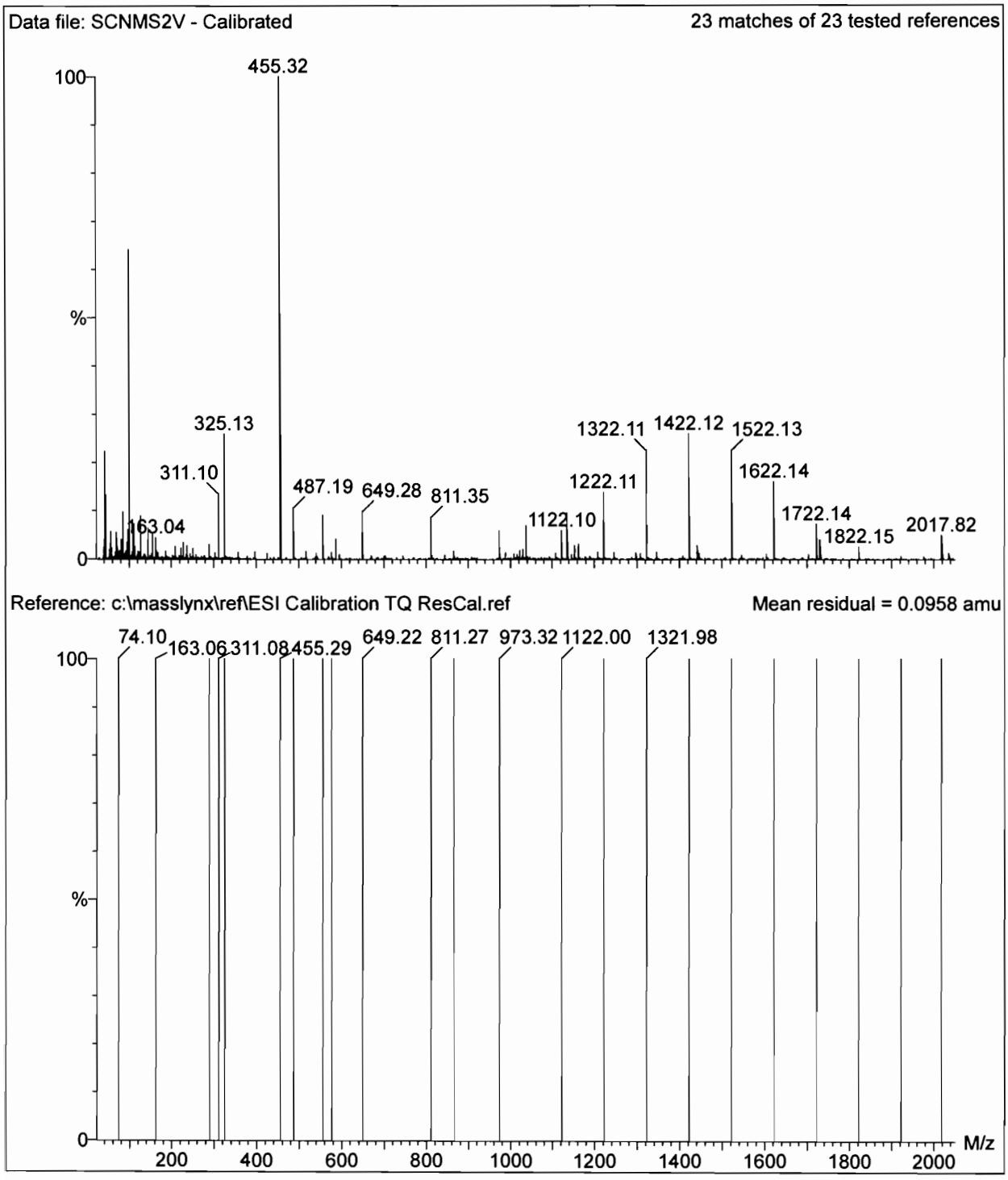
Calibration Verification Report - MS2 Static **Page 4 of 6**

Printed: **Mon Jul 06 07:59:54 2020**



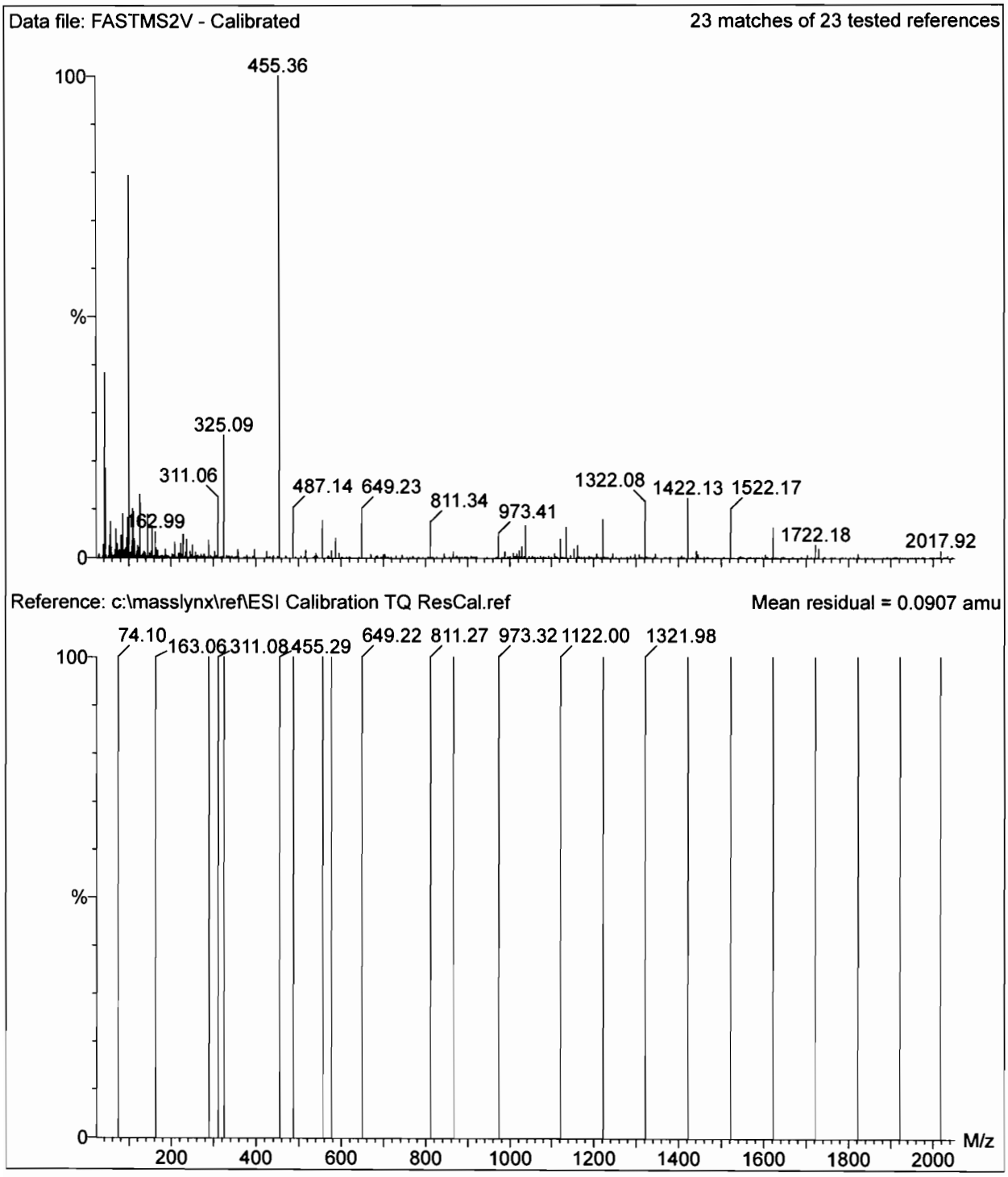
Calibration Verification Report - MS2 Scanning **Page 5 of 6**

Printed: **Mon Jul 06 08:01:03 2020**



Calibration Verification Report - MS2 Scan Speed Compensation **Page 6 of 6**

Printed: **Mon Jul 06 08:02:28 2020**



STANDARDS

Analytical Standard Record

Vista Analytical Laboratory

20E1201

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:	12-May-21
Standard Type:	Reagent	Prepared:	12-May-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	12-May-20 10:53 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

20E1201

Description:	PFC - IS	Expires:	12-May-21
Standard Type:	Reagent	Prepared:	12-May-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	40	Department:	LCMS
Vials:	1	Last Edit:	12-May-20 10:53 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

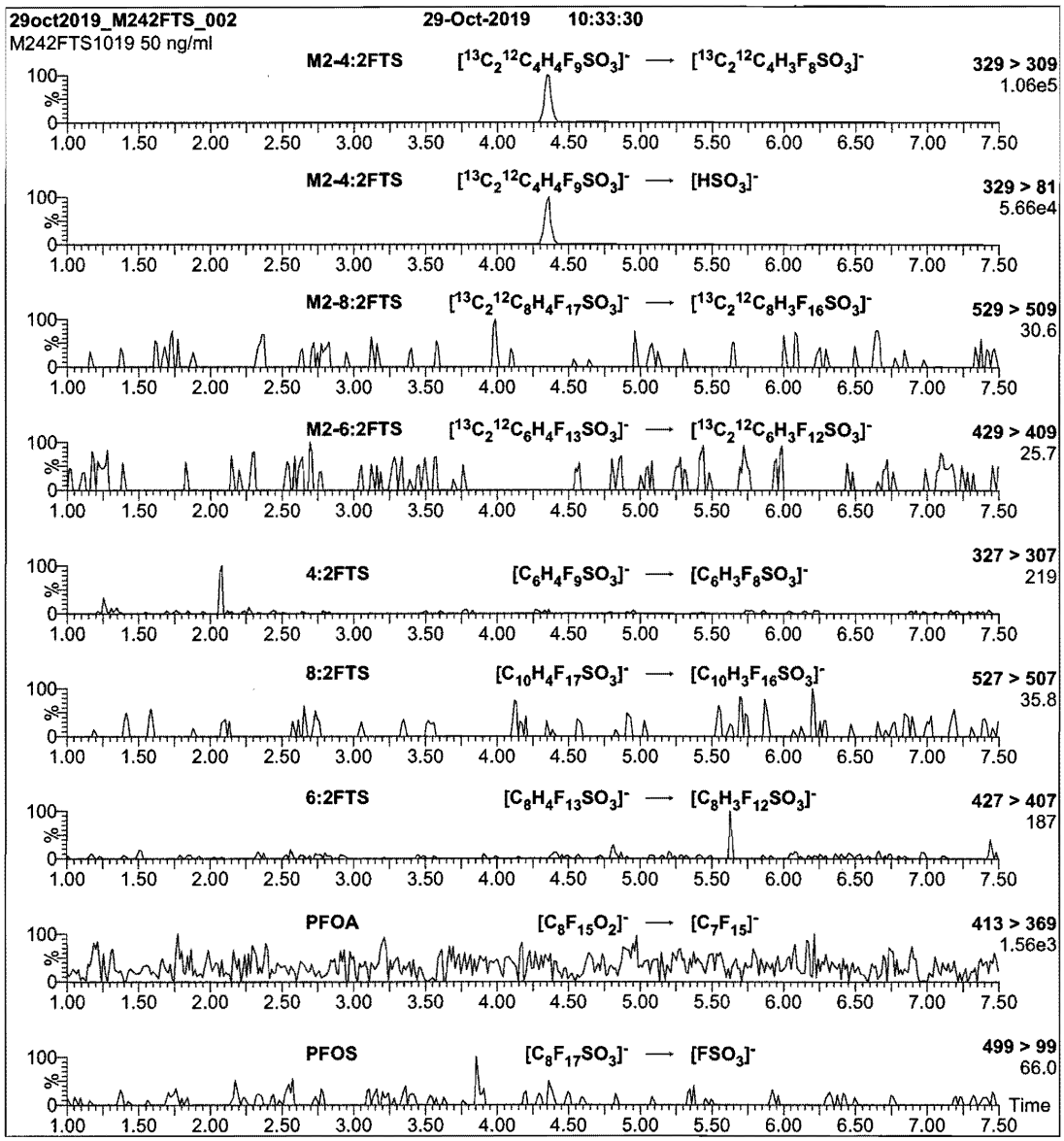
QC Release Date	8/21/2019
Expiration Date	8/21/2024
Concentration Based on Gravimetry	50.0 ± 0.5 µg/mL (k=2)
Chemical Purity of Neat Material(s)	100.0%

CIL subscribes to the following standards for different products: ISO Guide 34, ISO/IEC 17025, ISO 13485 and cGMP as appropriate.

50 Frontage Road, Andover, MA 01810-5413 USA • 1.800.322.1174 (North America) • +1.978.749.8000 (International) • isotope.com

1910601

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

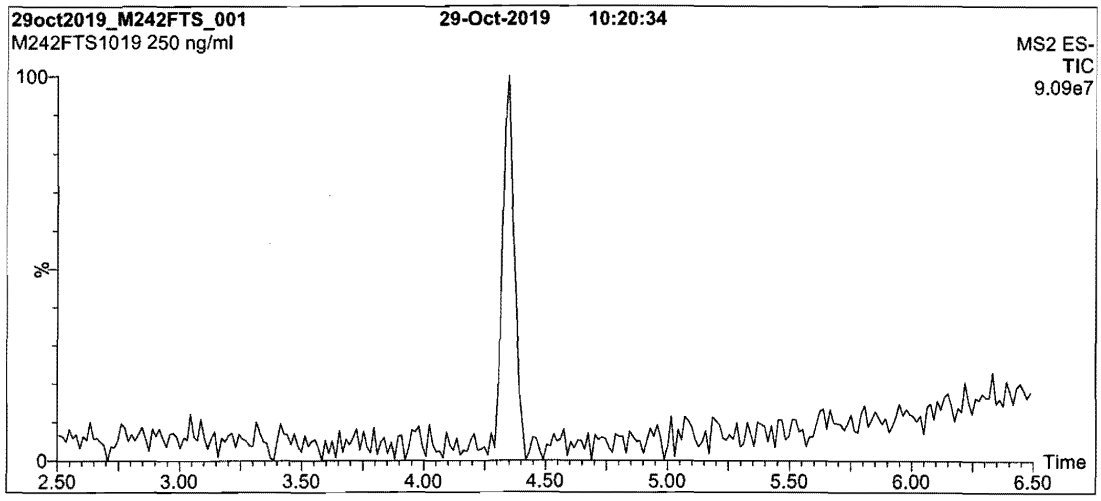
Collision Gas (mbar) = 3.51e-3
Collision Energy (eV) = 18

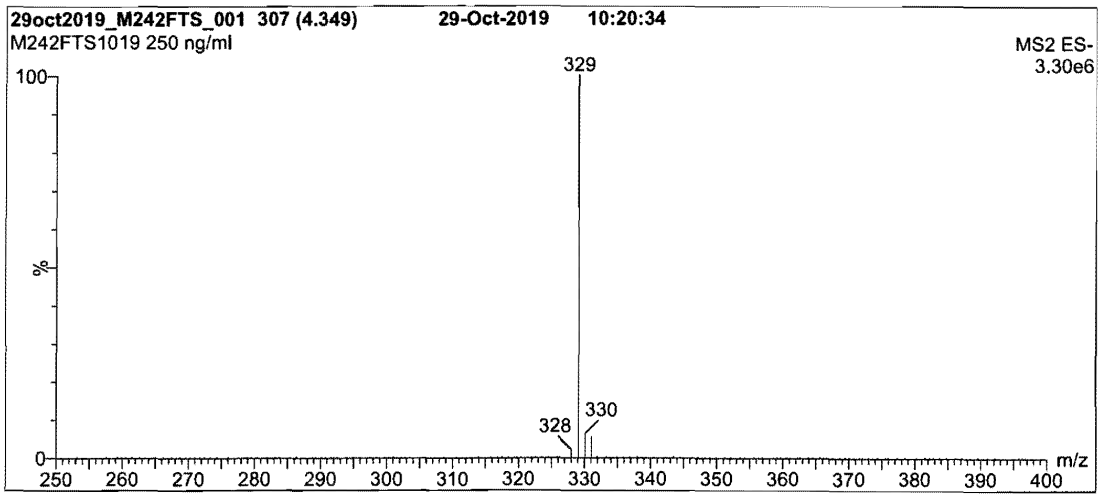
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

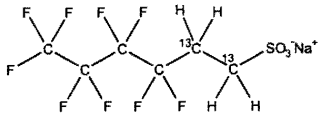
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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) 46.7 ± 2.3 µg/ml (M2-4:2FTS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/29/2019		
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).

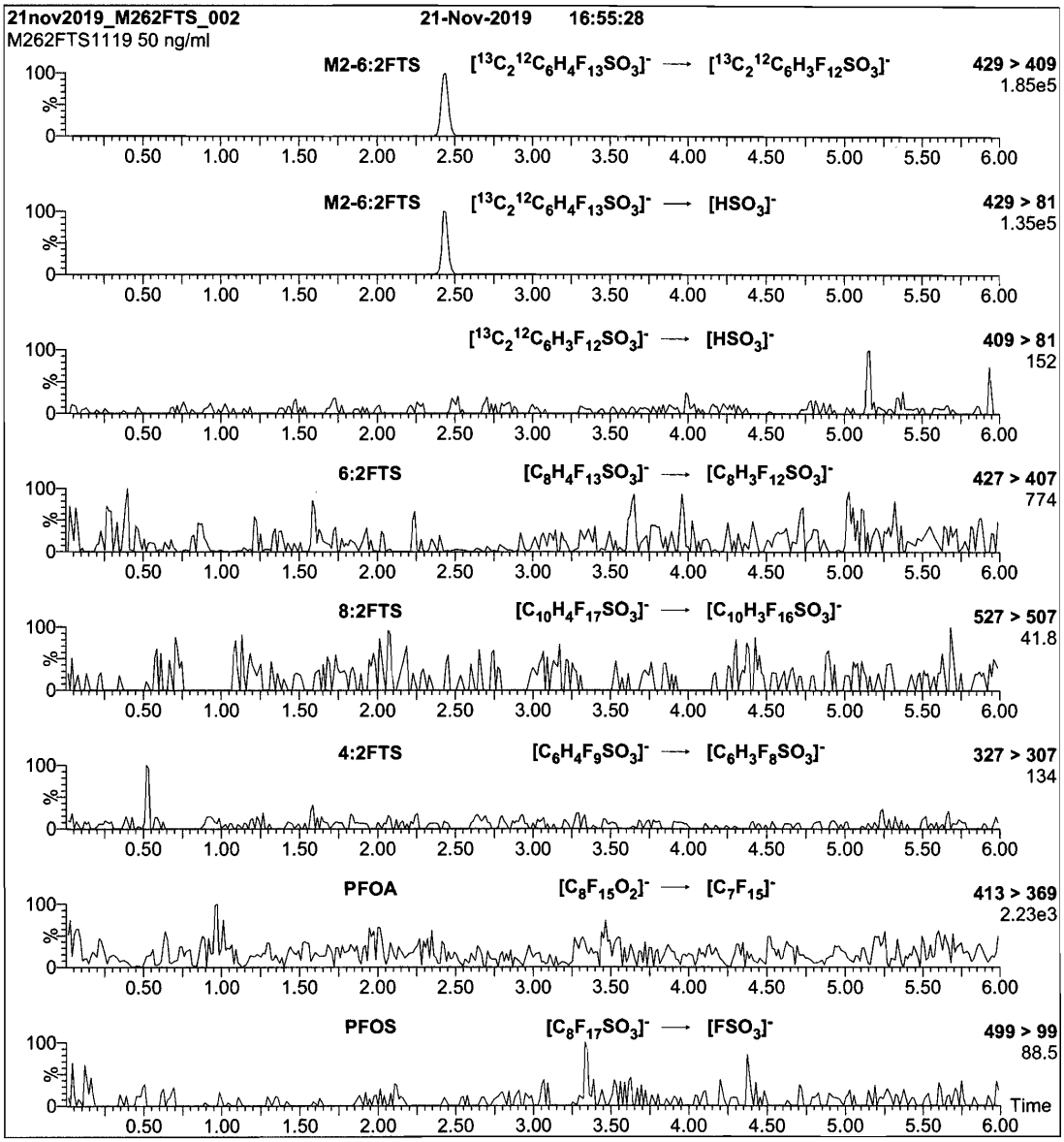
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

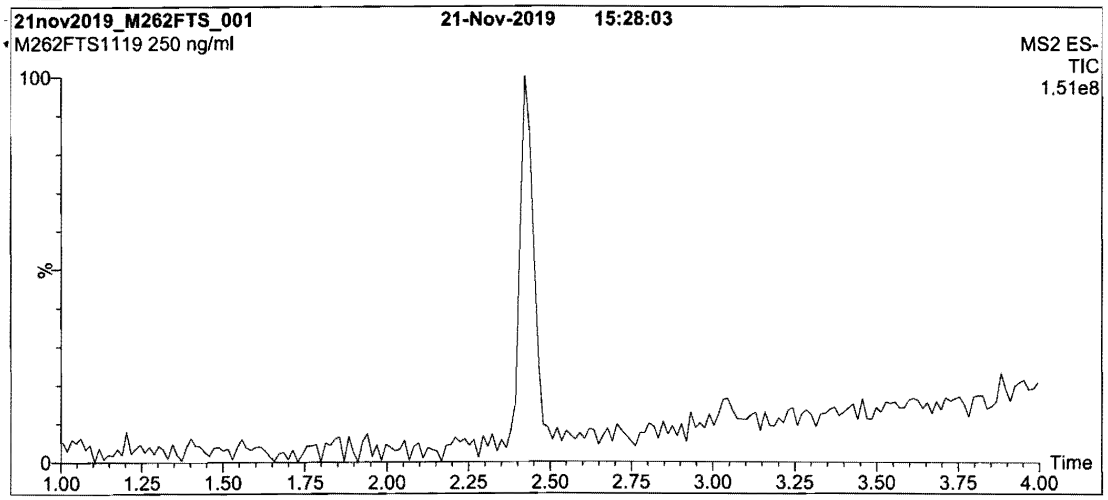
Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 20

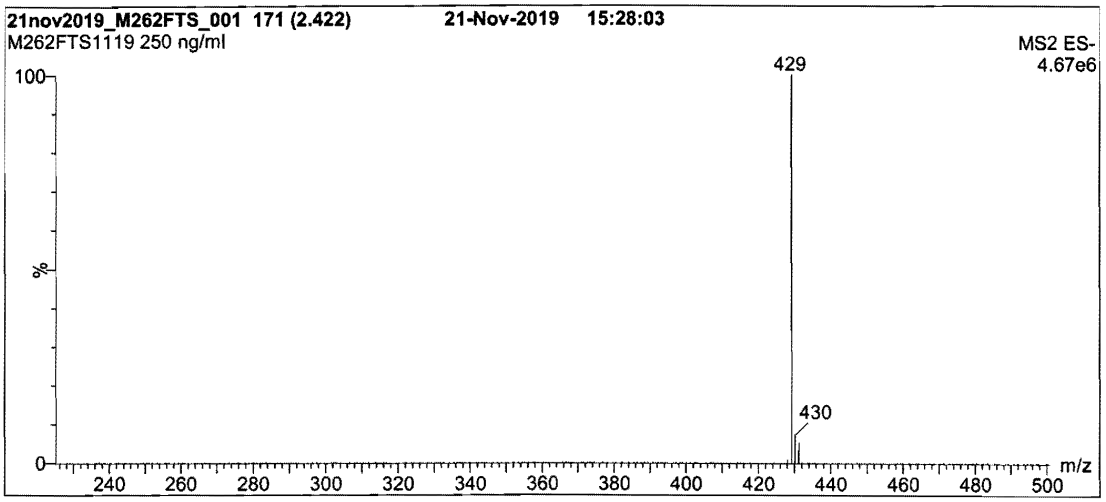
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M262FTS1119 (4 of 4)
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 $x_1, x_2, \ldots x_n$ 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

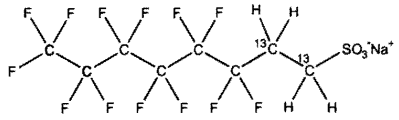
19L0602

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

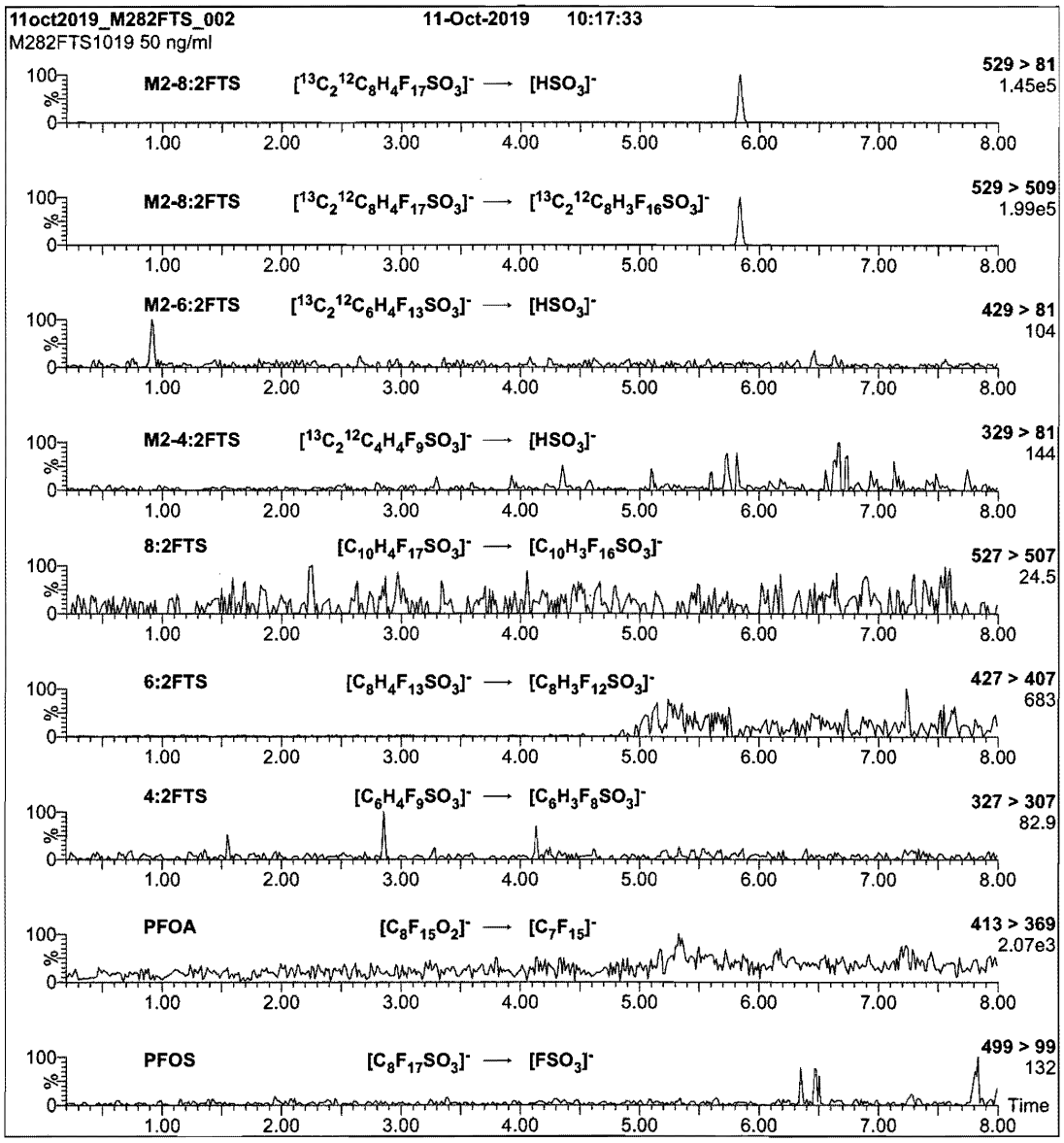
Certified By: _____ **Date:** 11/25/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0603

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

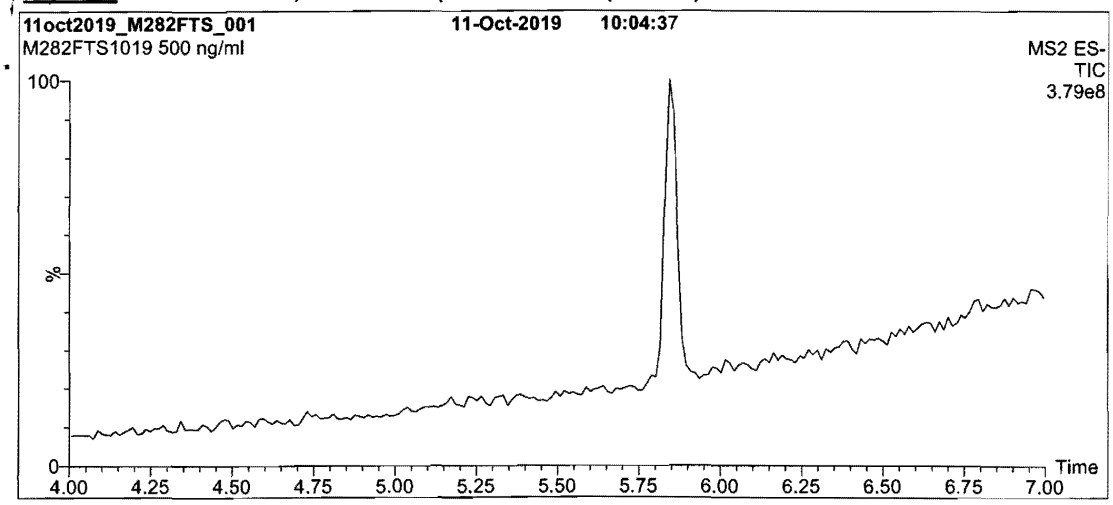
Collision Gas (mbar) = 3.87e-3
Collision Energy (eV) = 26

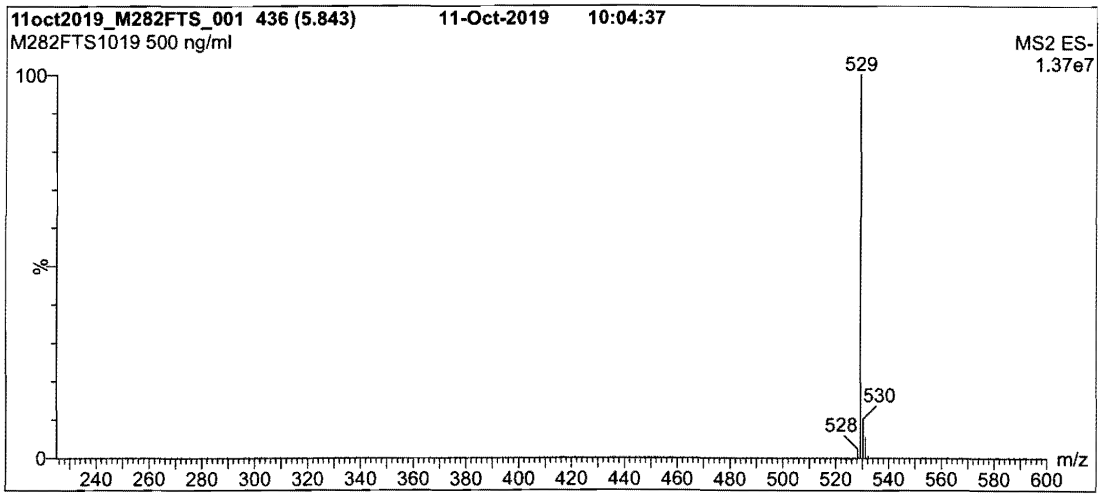
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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:

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. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

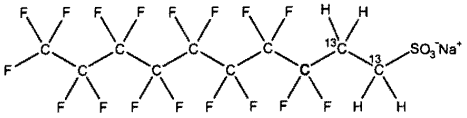
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	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

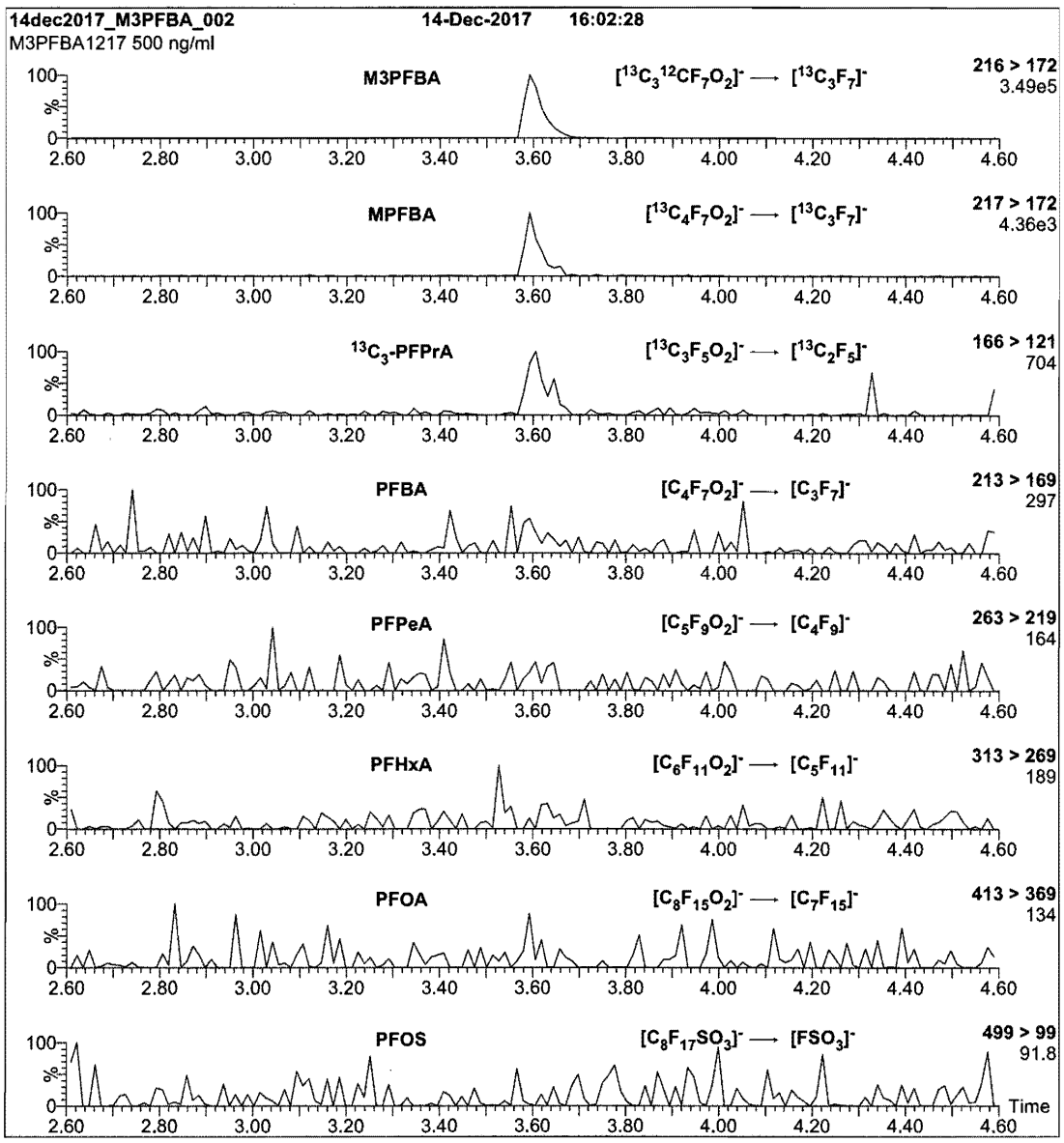
Certified By: _____ **Date:** 10/15/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

1910604

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

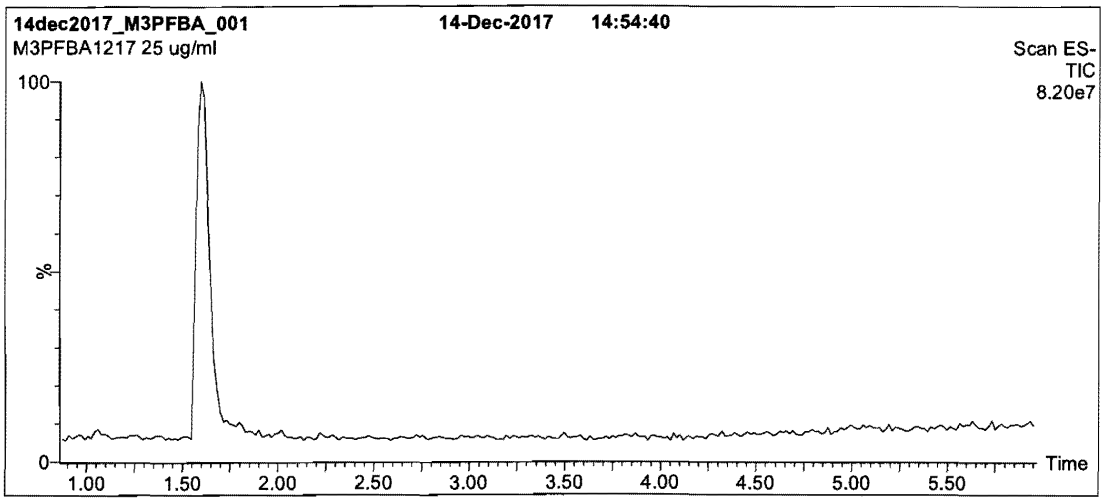
Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

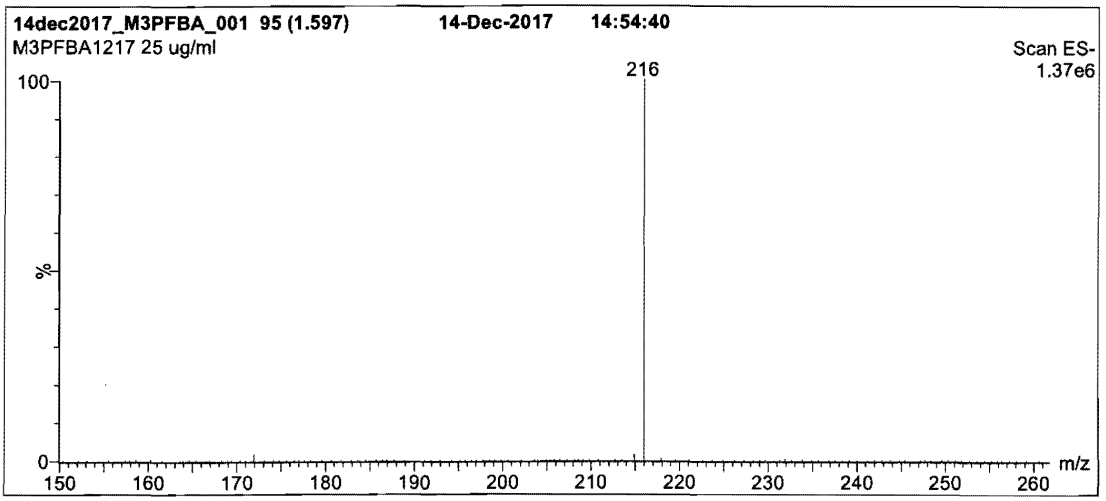
Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-06

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

Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-06

M3PFBA1217 (3 of 4)
rev0

19L0604

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

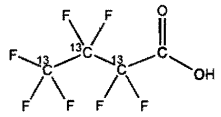
ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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

19L0604

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M3PFBA	**LOT NUMBER:**	M3PFBA1217
COMPOUND:	Perfluoro-n-[2,3,4-$^{13}C_3$]butanoic acid		
STRUCTURE:		**CAS #:**	Not available
MOLECULAR FORMULA:	$^{13}C_3{}^{12}CHF_7O_2$	**MOLECULAR WEIGHT:**	217.02
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($2,3,4$-$^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	12/14/2017		
EXPIRY DATE: (mm/dd/yyyy)	12/14/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-[$^{13}C_3$]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.

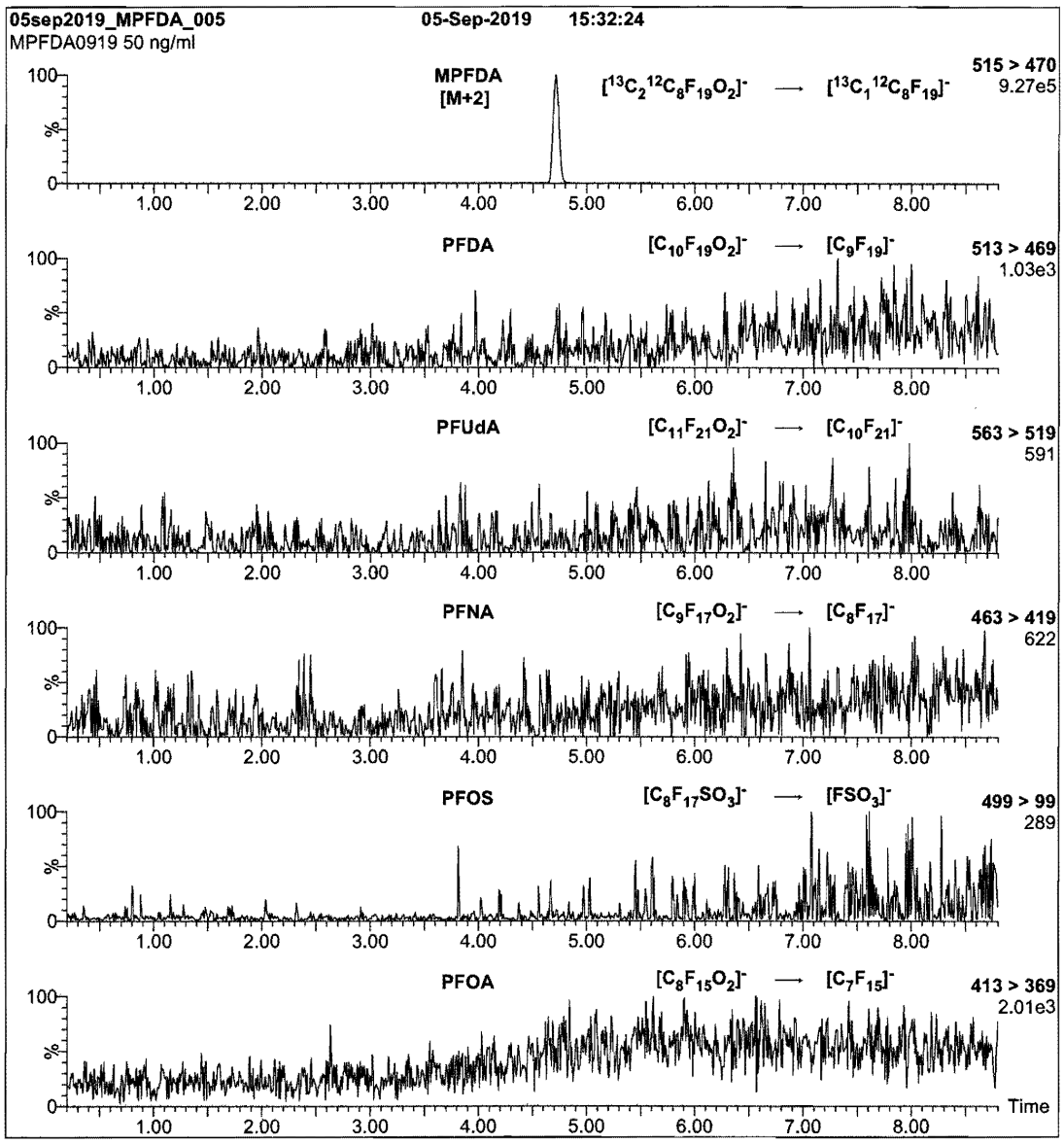
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/22/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

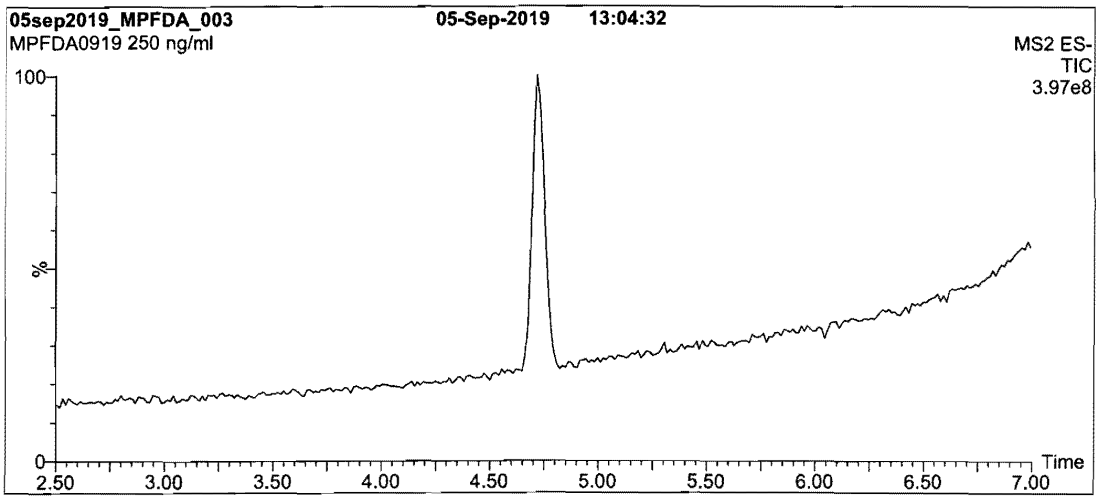
Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 10

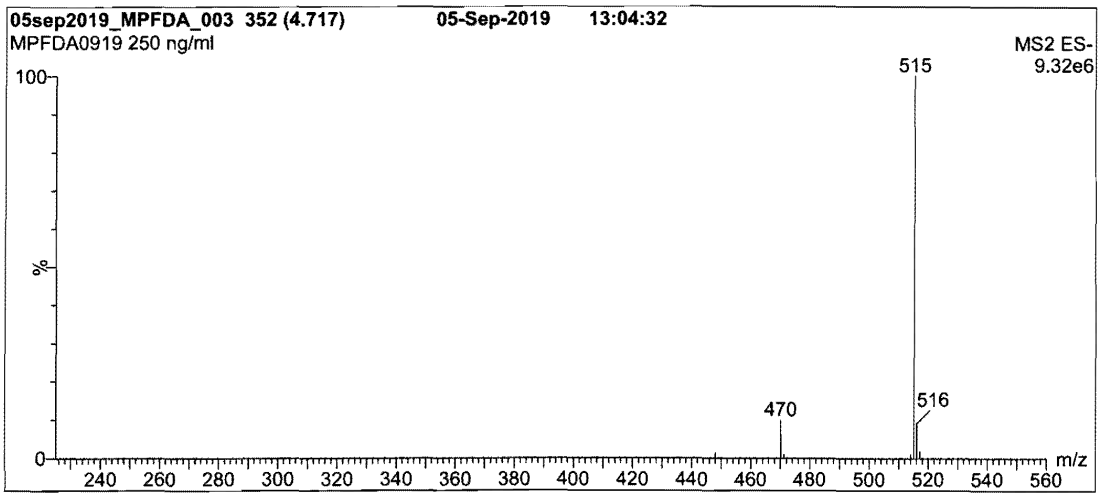
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFDA0919 (4 of 4)
rev0

19L0605

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)
rev0

19L0605

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. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

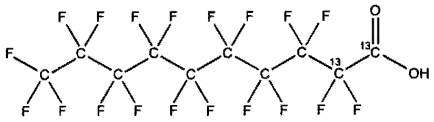
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0605

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0919
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid		
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

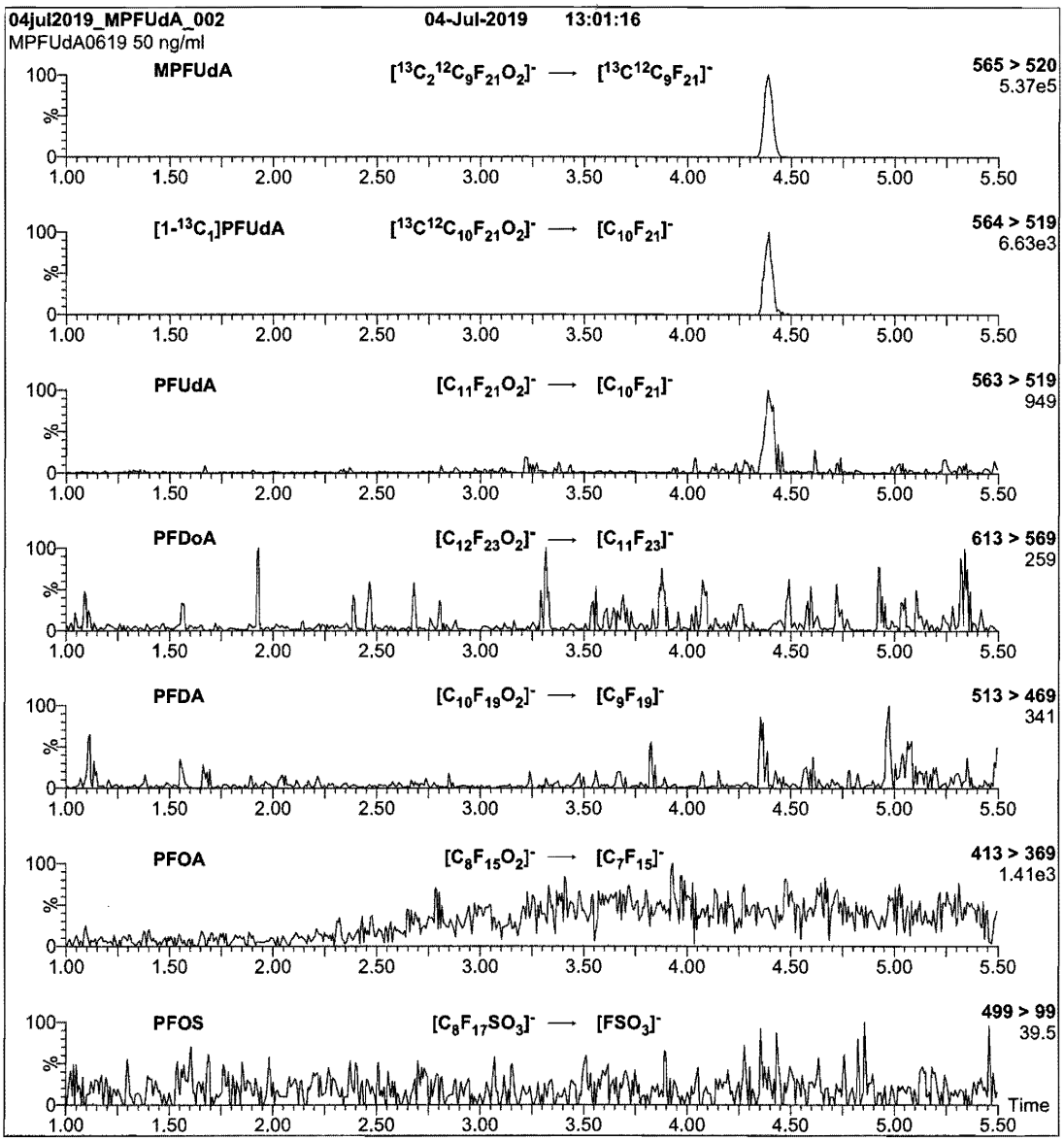
Certified By: _____ **Date:** 09/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L06006

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

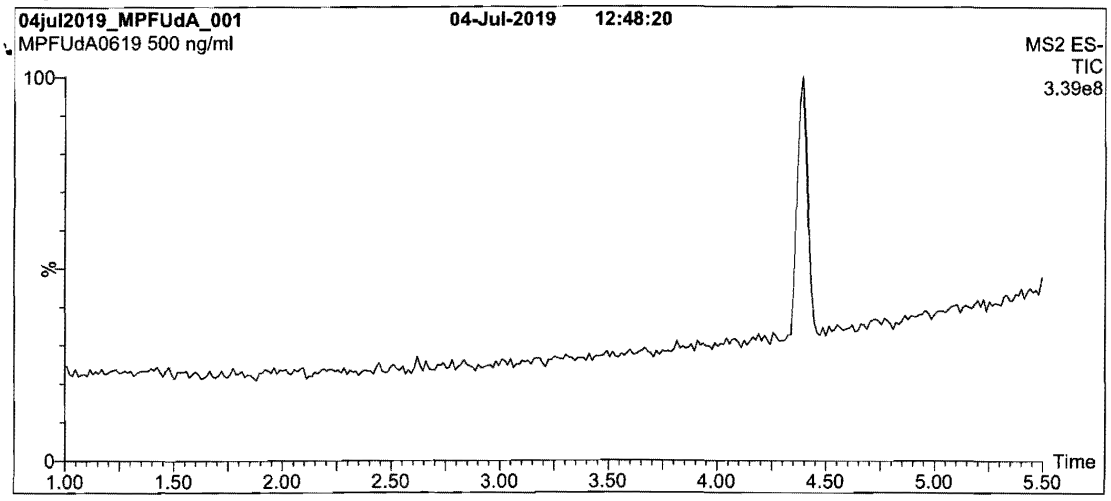
Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 12

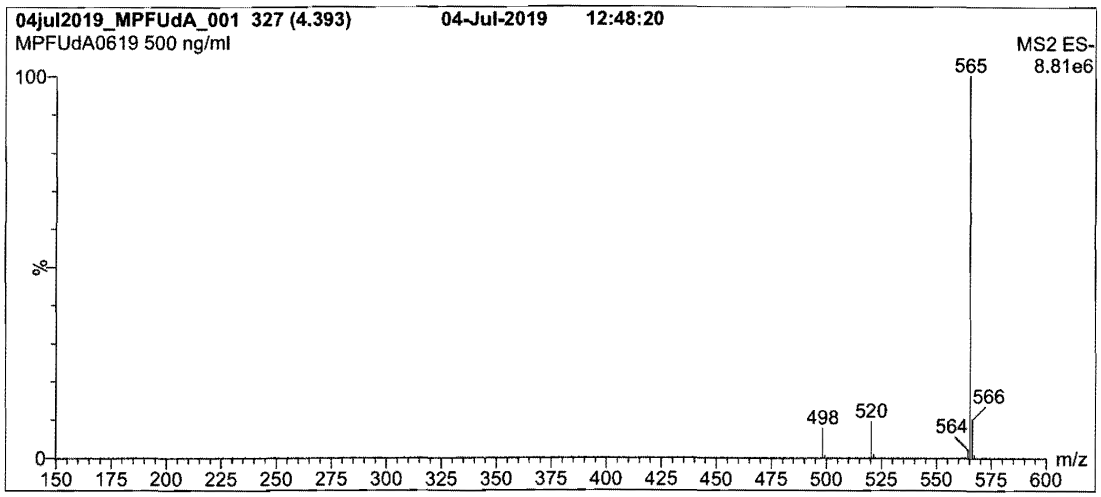
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

19L0606

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

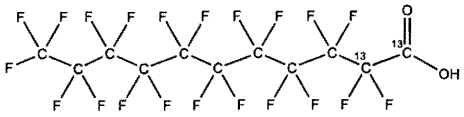
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

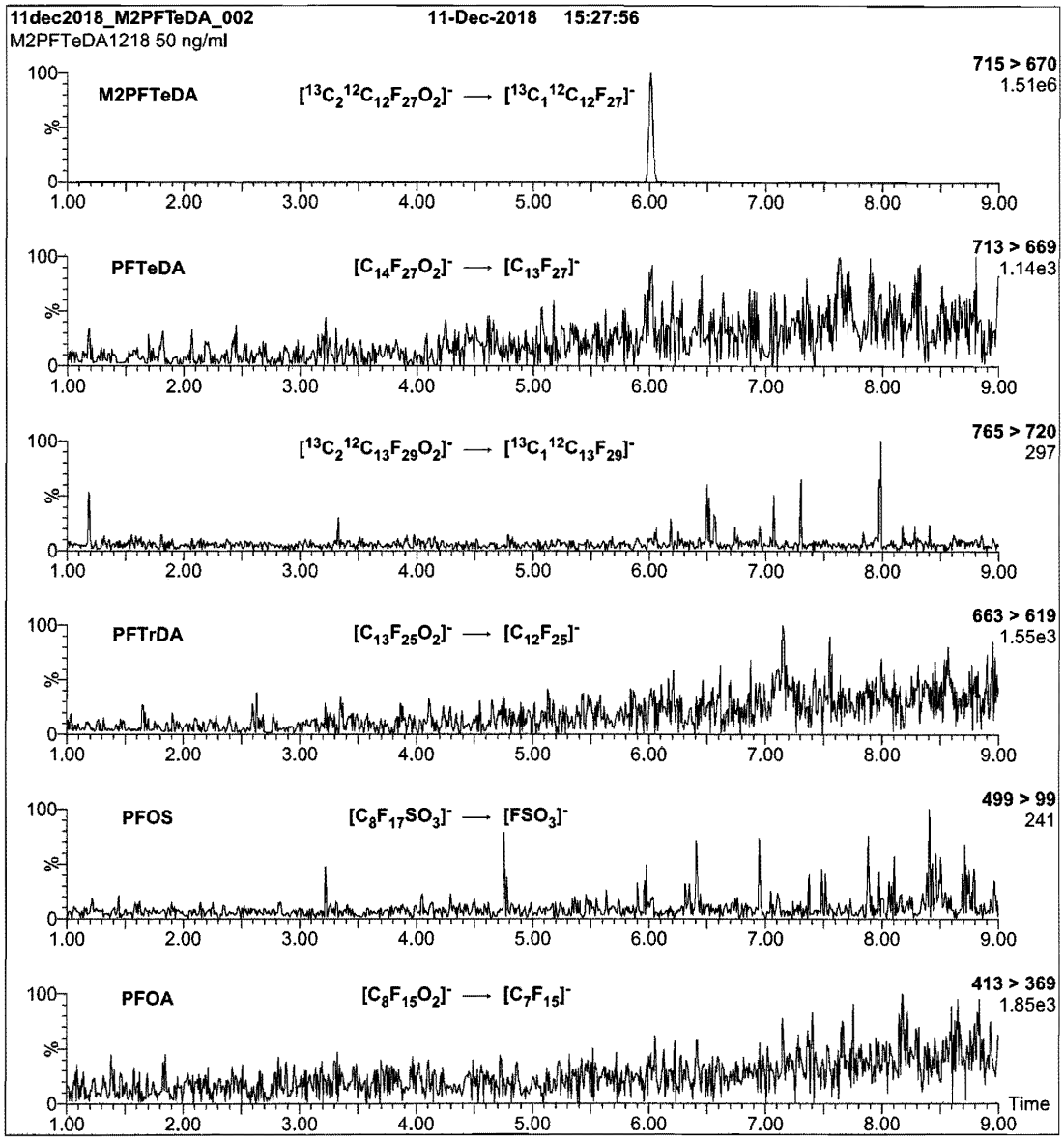
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

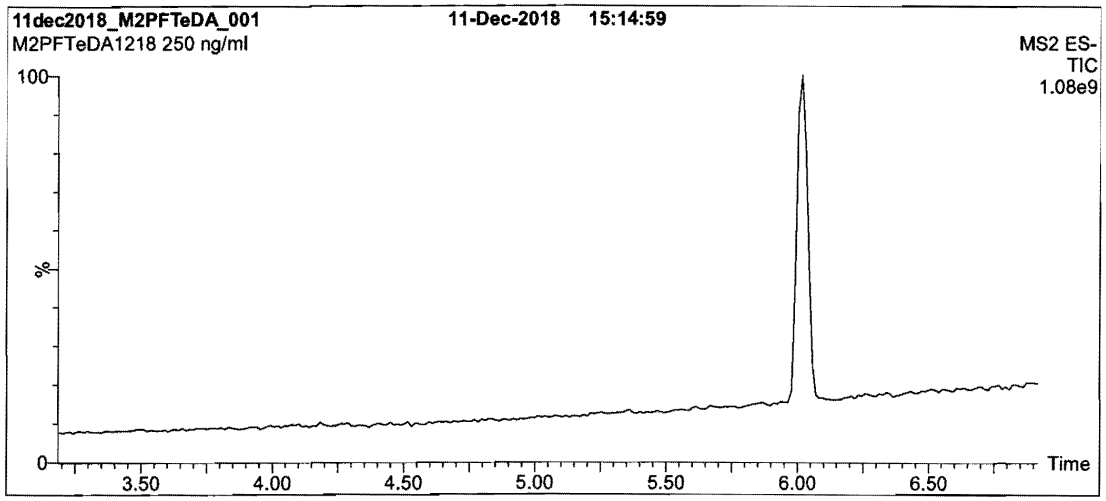
Collision Gas (mbar) = 3.16e-3
Collision Energy (eV) = 14

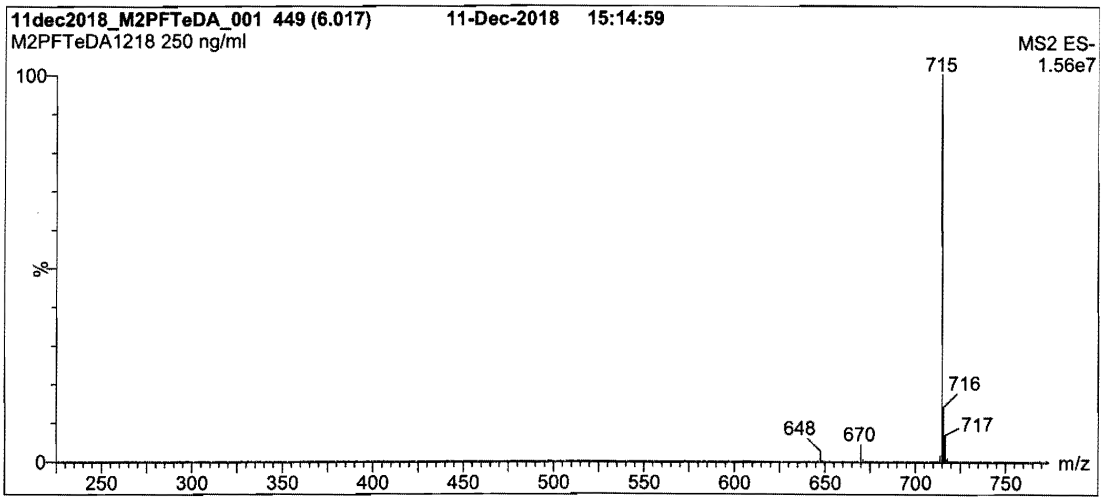
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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#:6, Revised 2018-08-14

M2PFTeDA1218 (3 of 4)
rev0

19L0607

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

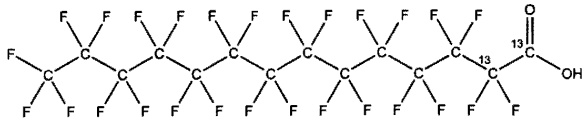
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0007

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFTeDA	**LOT NUMBER:**	M2PFTeDA1218
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	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

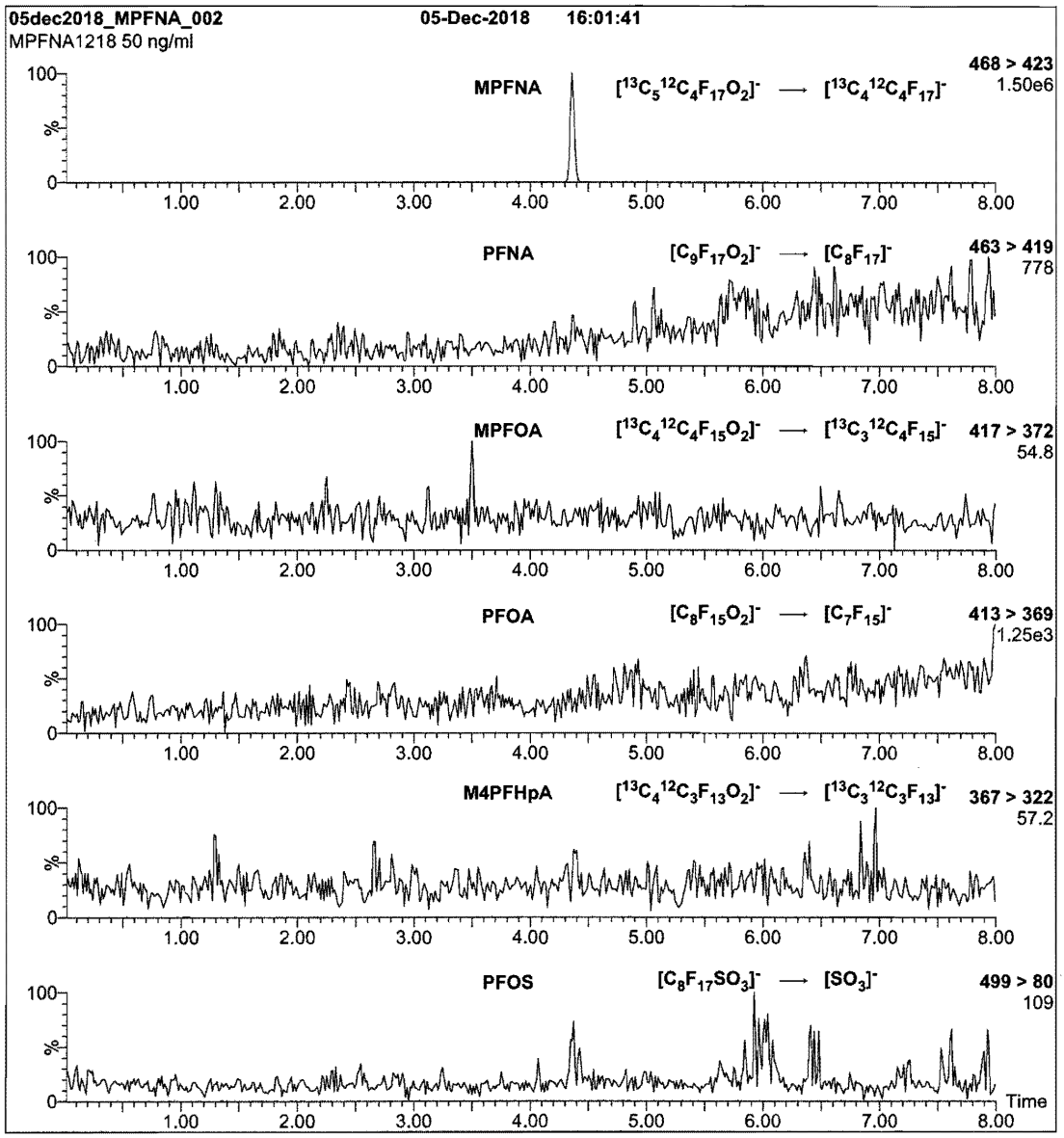
Certified By: _____ **Date:** 12/20/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

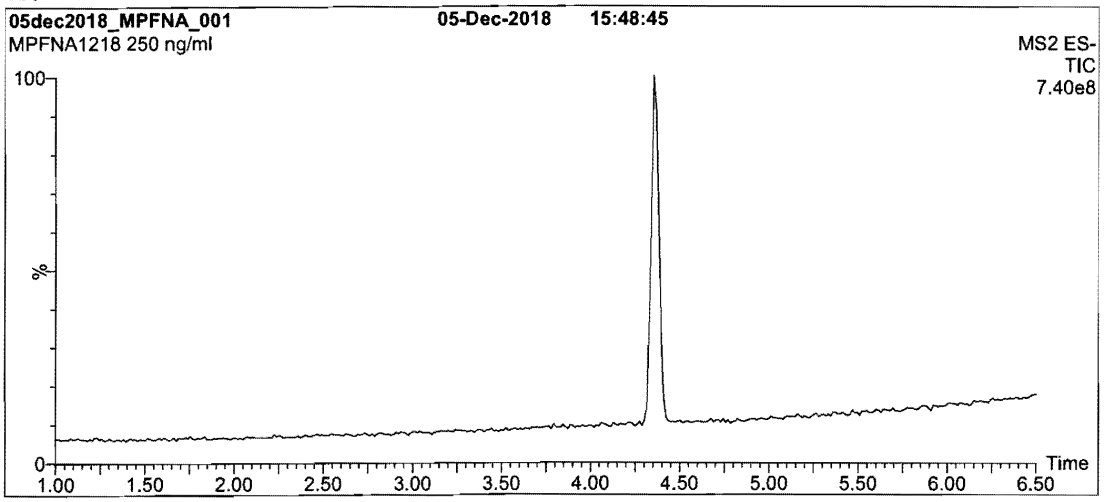
Collision Gas (mbar) = 2.88e-3
Collision Energy (eV) = 10

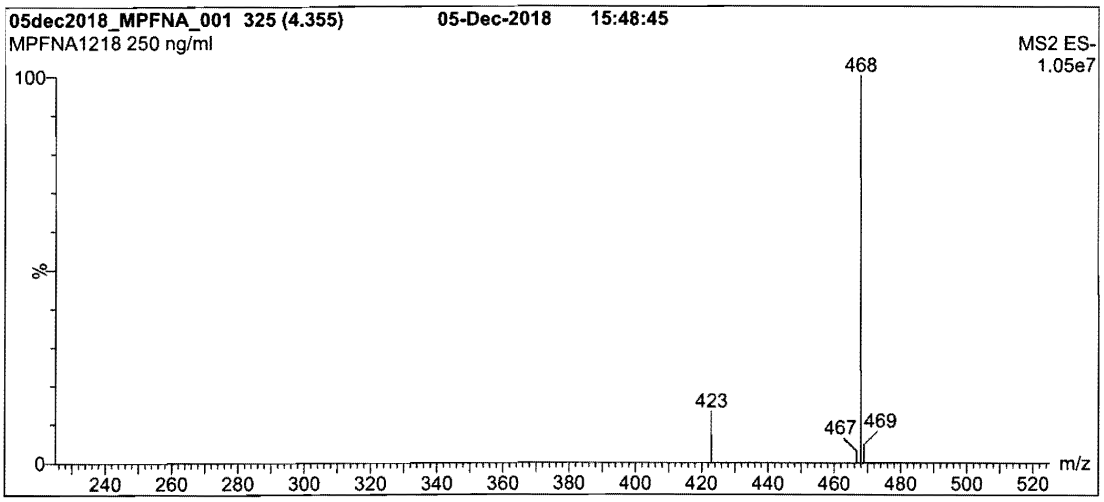
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

MPFNA1218 (4 of 4)
rev0

19L0608

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

MPFNA1218 (3 of 4)
rev0

19L06008

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

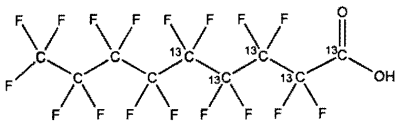
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

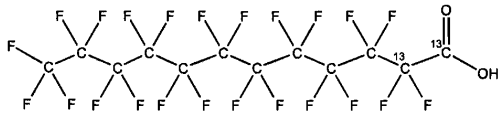
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

19L0609

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFDoA	**LOT NUMBER:**	MPFDoA1218
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
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:** 12/18/2018 (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

19L0609

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).

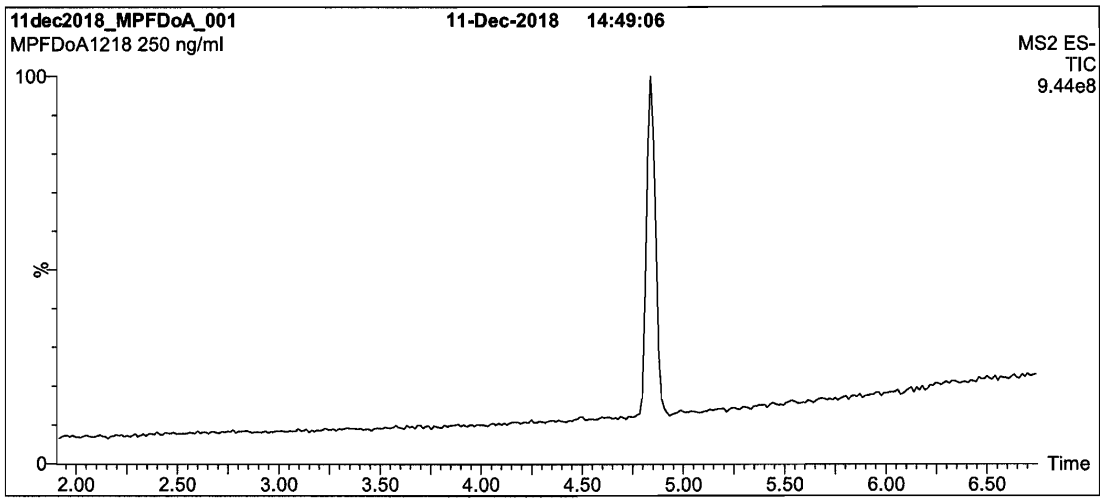
CALA Testing Accreditation No. A1226

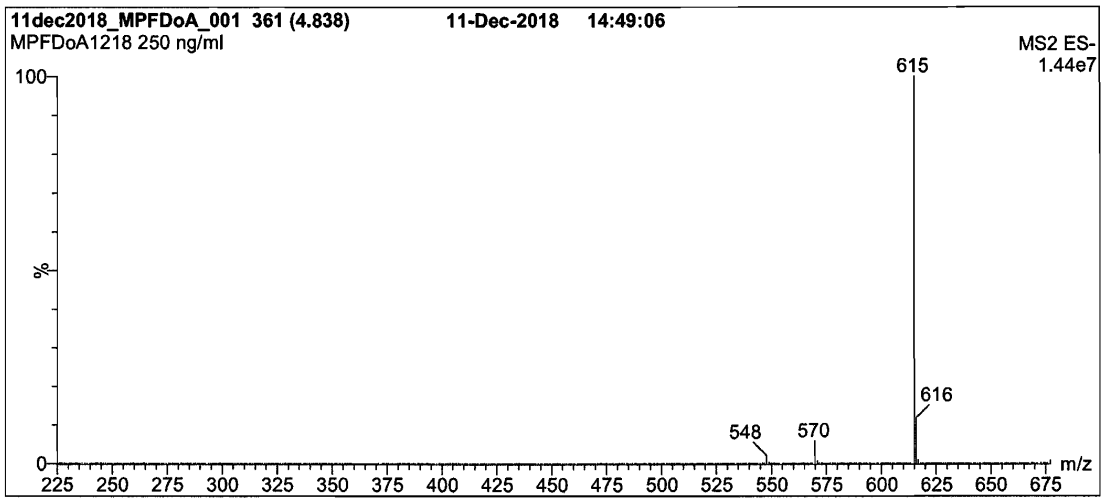
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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)

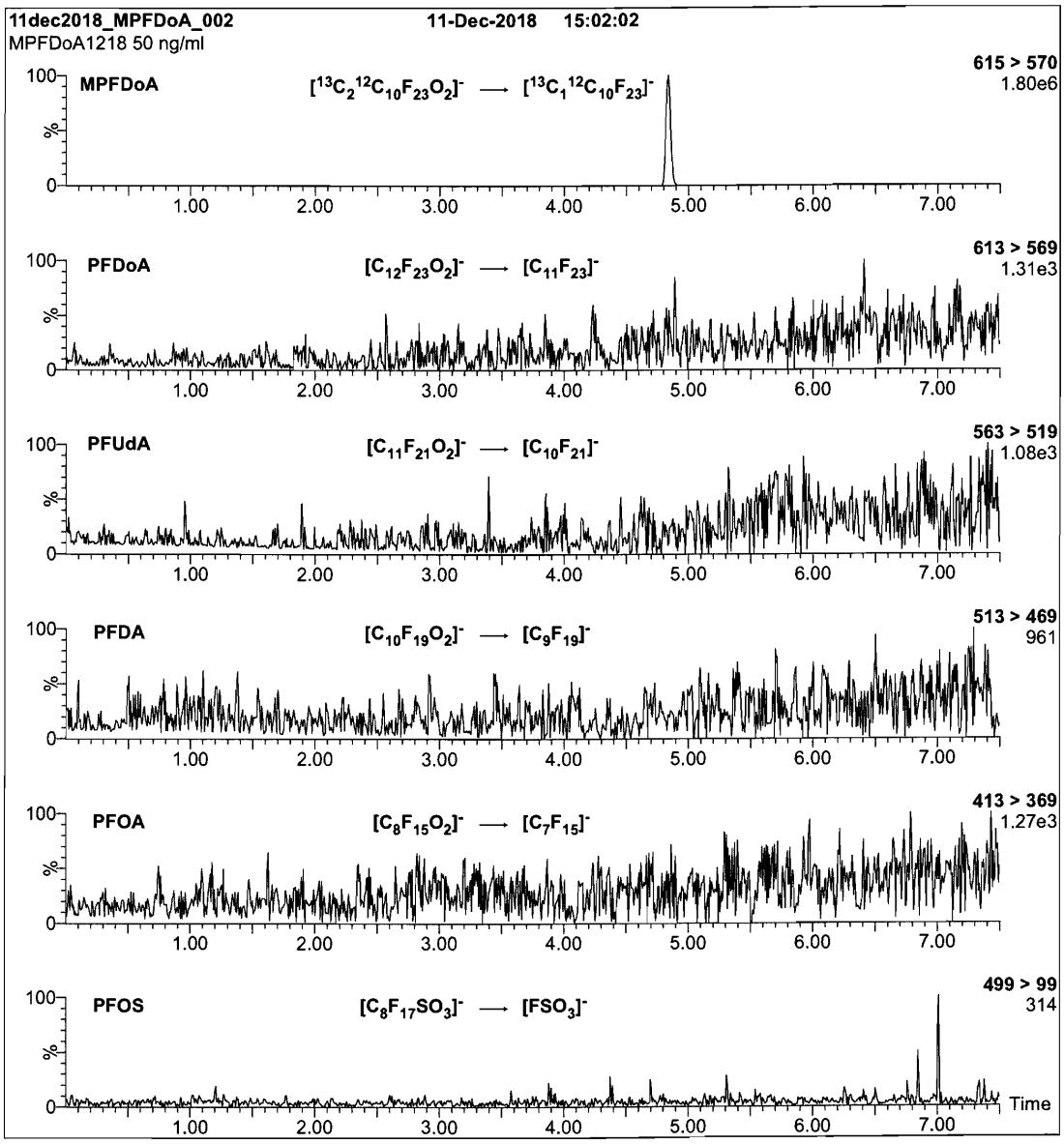
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
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

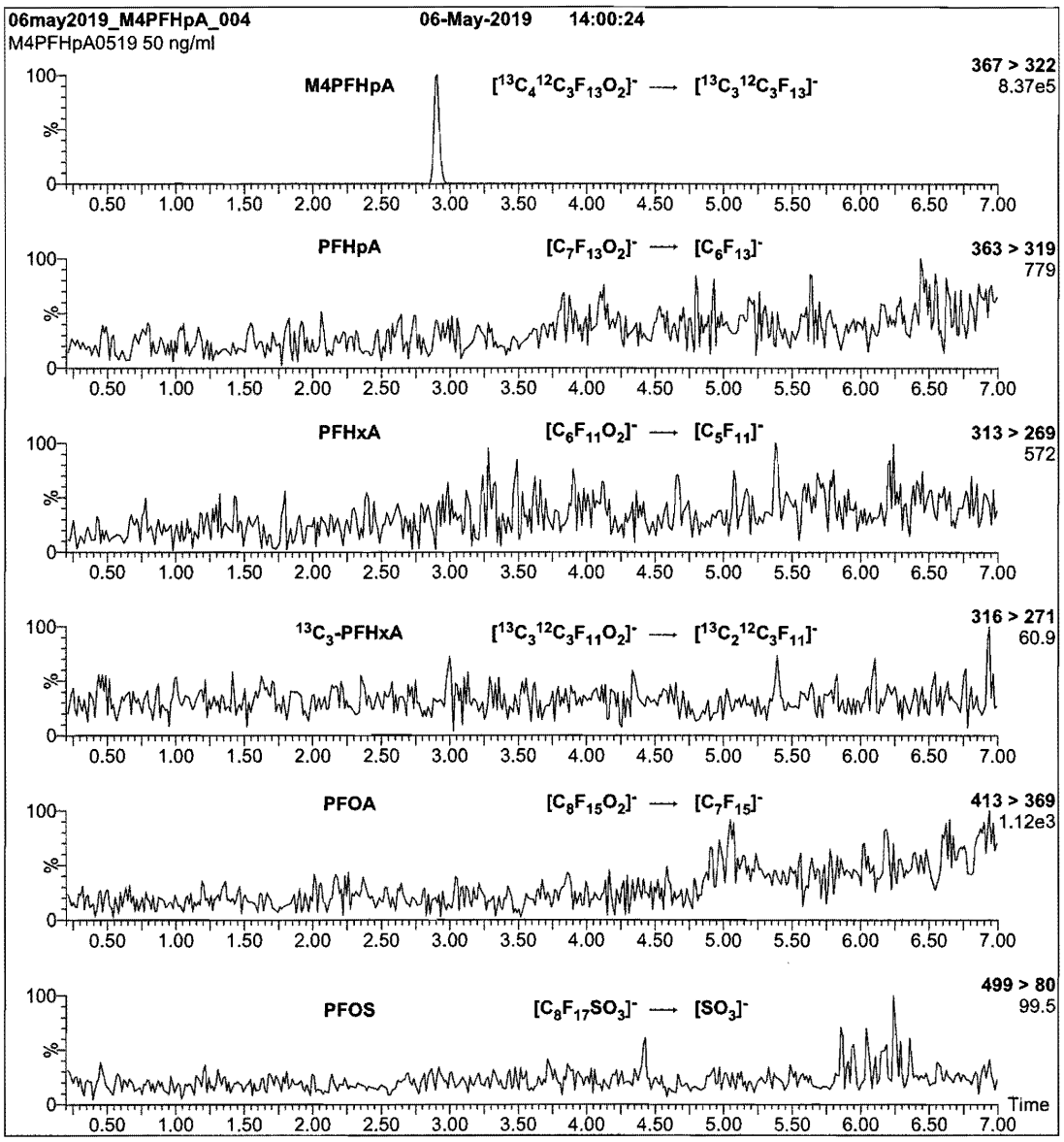
Collision Gas (mbar) = 3.16e-3
Collision Energy (eV) = 12

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

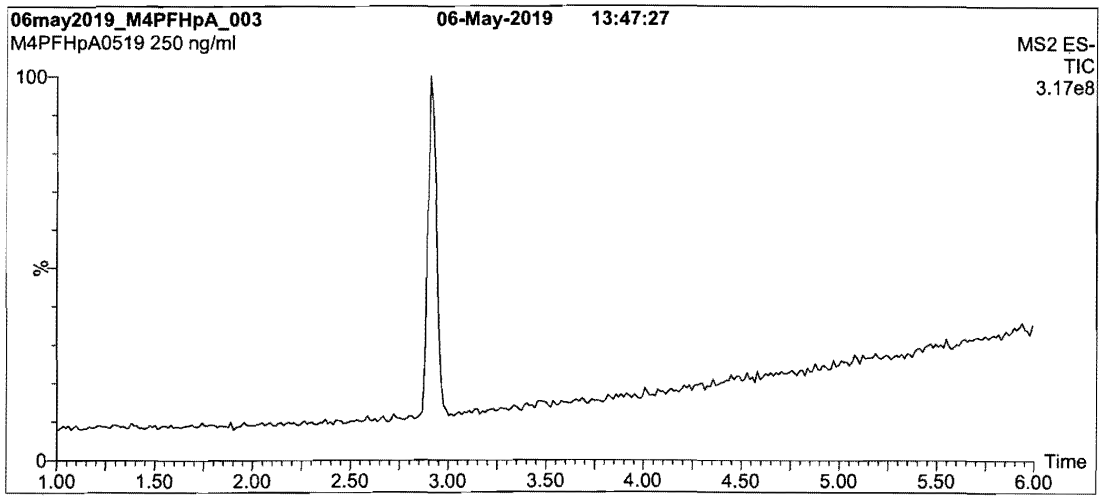
Collision Gas (mbar) = 2.87e-3
Collision Energy (eV) = 8

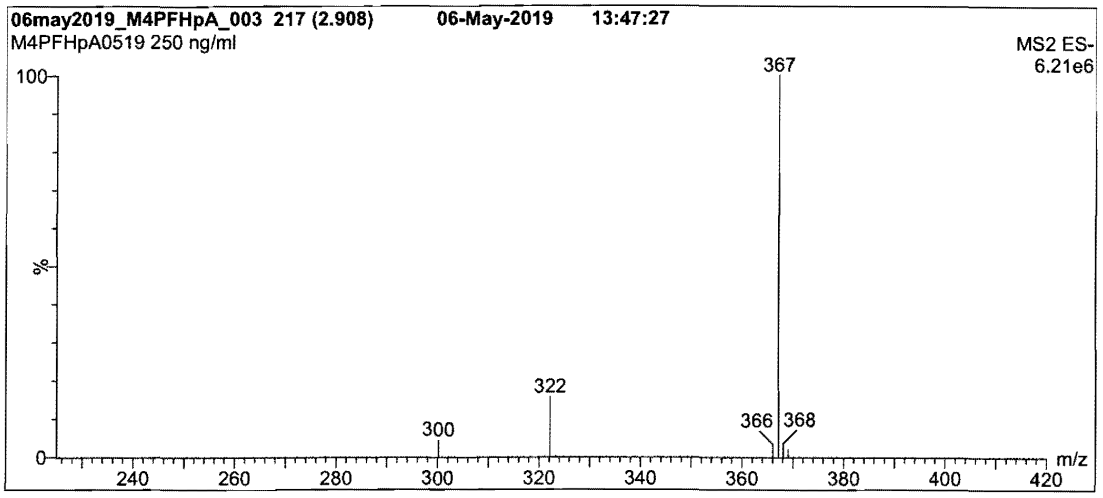
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M4PFHpA0519 (4 of 4)
rev0

19L0610

Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





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

M4PFHpA0519 (3 of 4)
rev0

19L0010

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. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

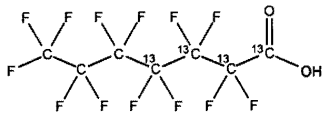
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

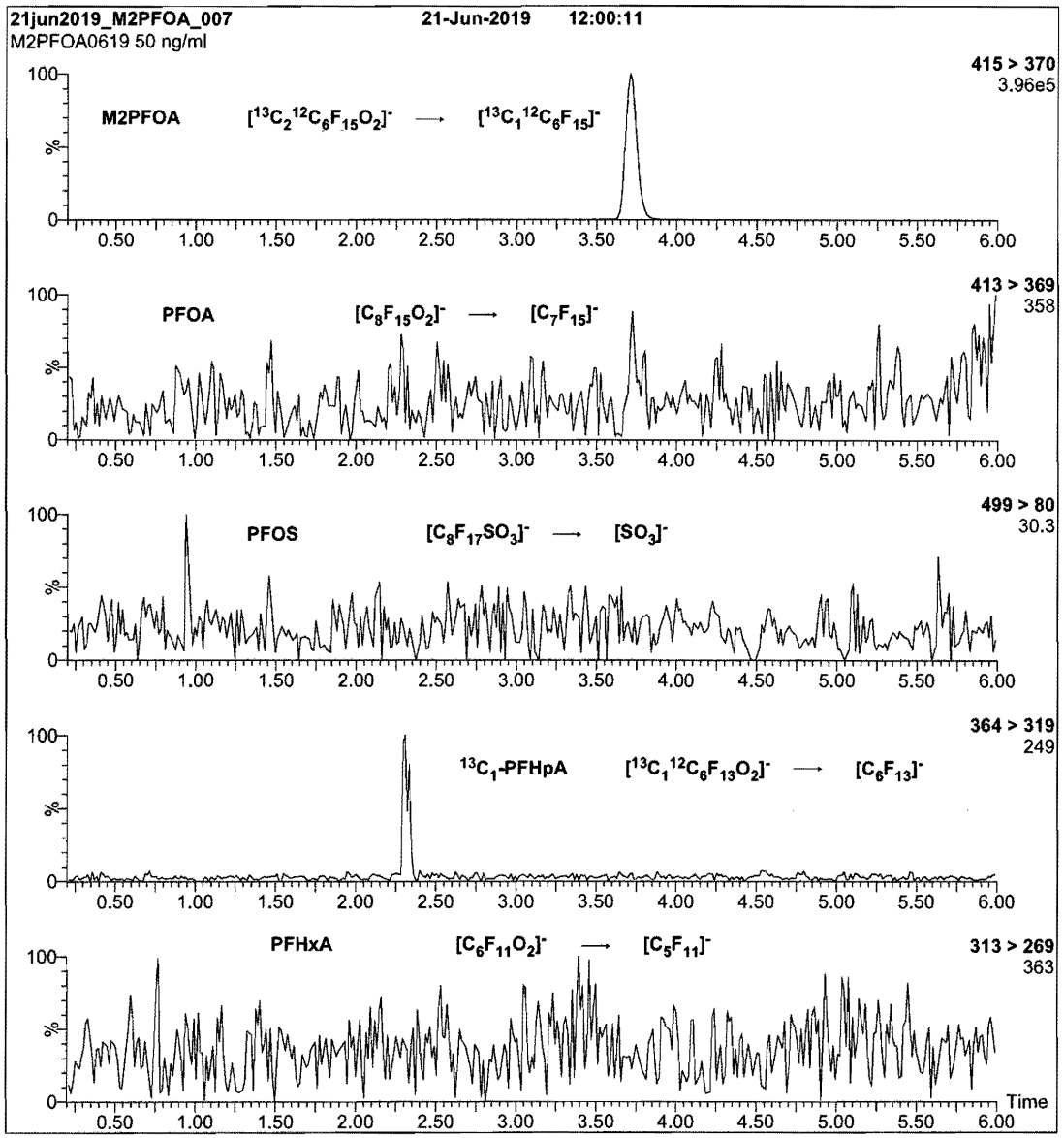
Certified By: _____ **Date:** 05/17/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

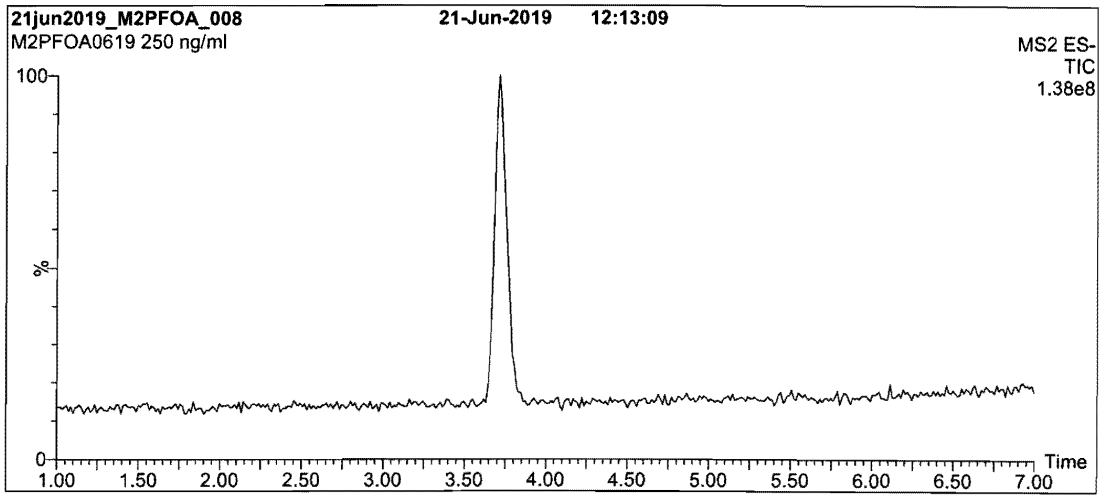
Collision Gas (mbar) = 2.88e-3
Collision Energy (eV) = 8

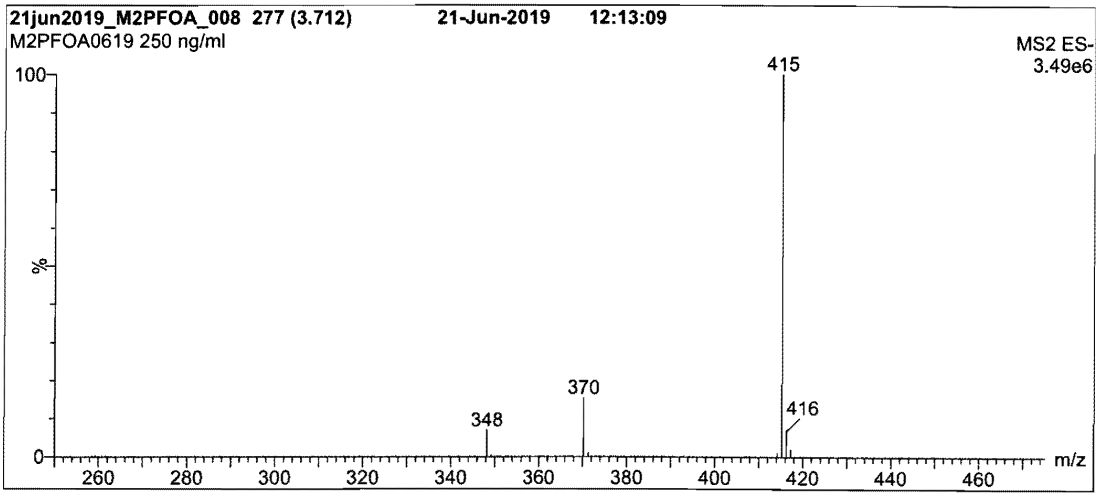
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

1910611

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 ACCREDITATION REFERENCE MATERIAL PRODUCER

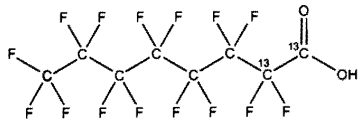
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L 0611

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFOA	**LOT NUMBER:**	M2PFOA0619
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6HF_{15}O_2$	**MOLECULAR WEIGHT:**	416.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	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

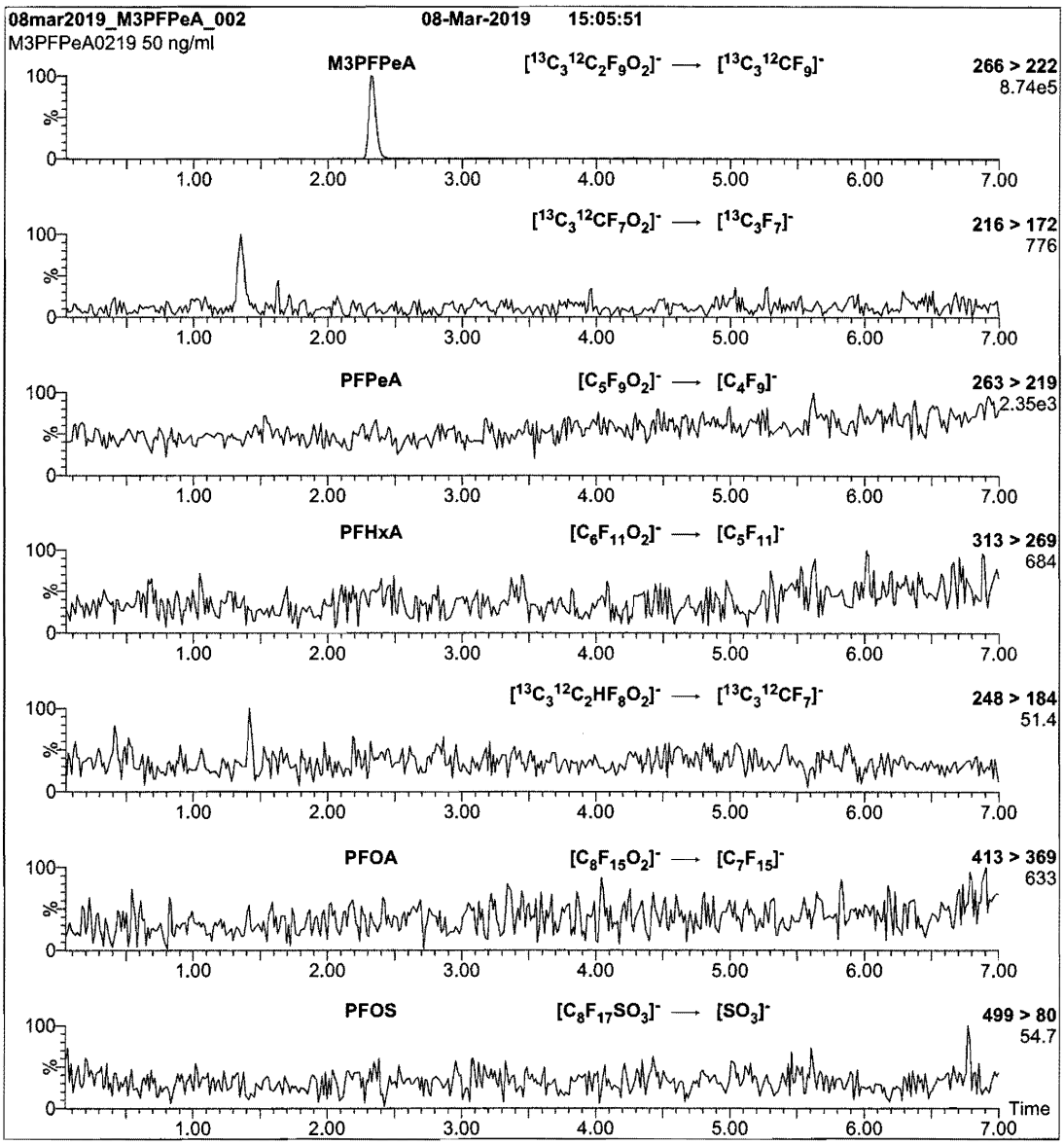
Certified By: _____ **Date:** 06/21/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

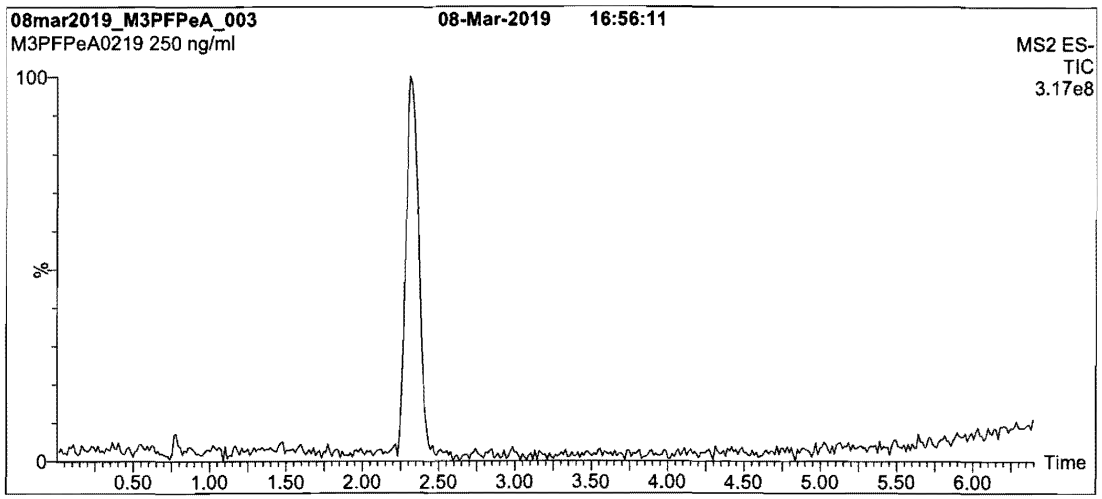
Collision Gas (mbar) = 2.84e-3
Collision Energy (eV) = 8

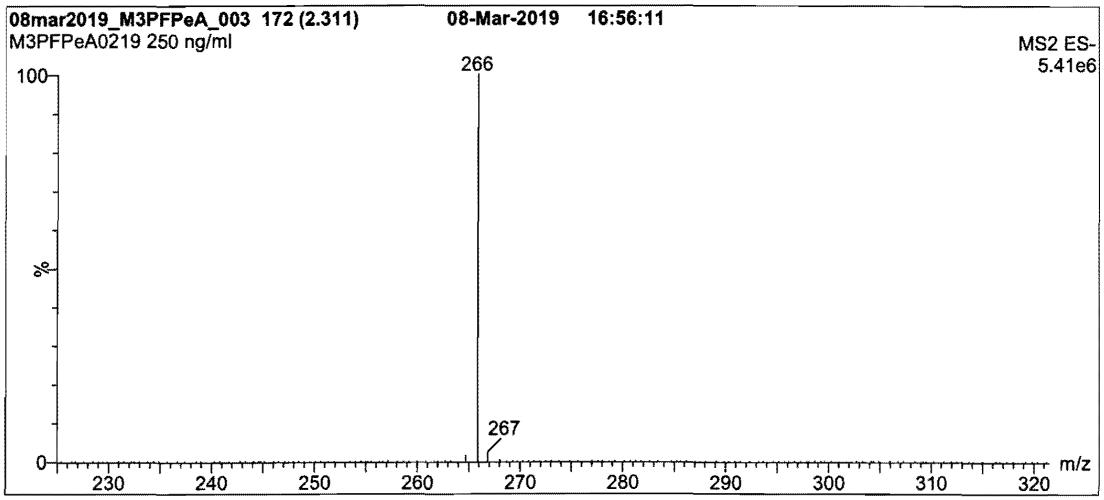
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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:

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

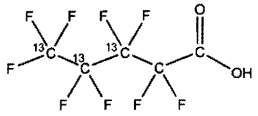
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

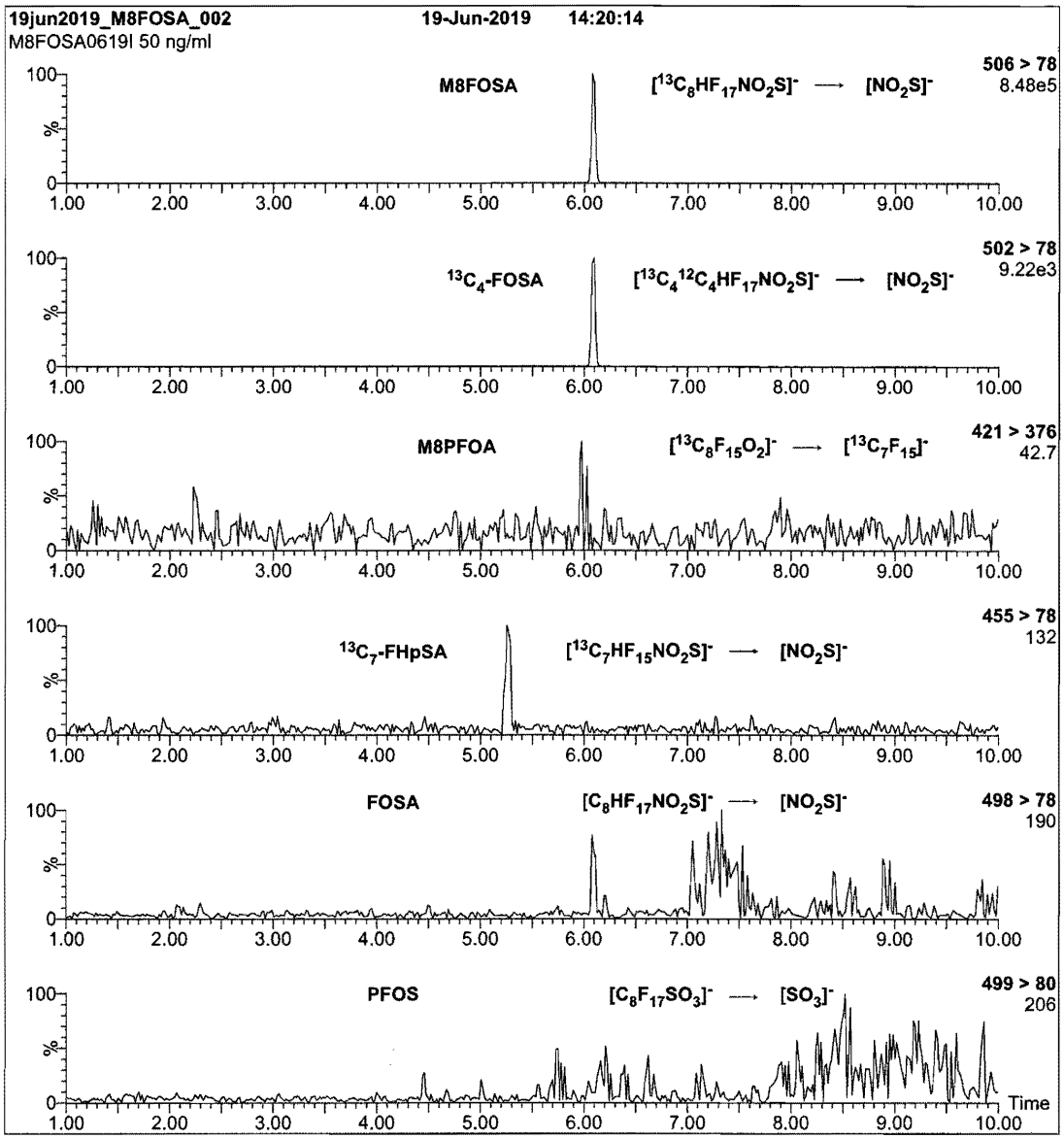
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

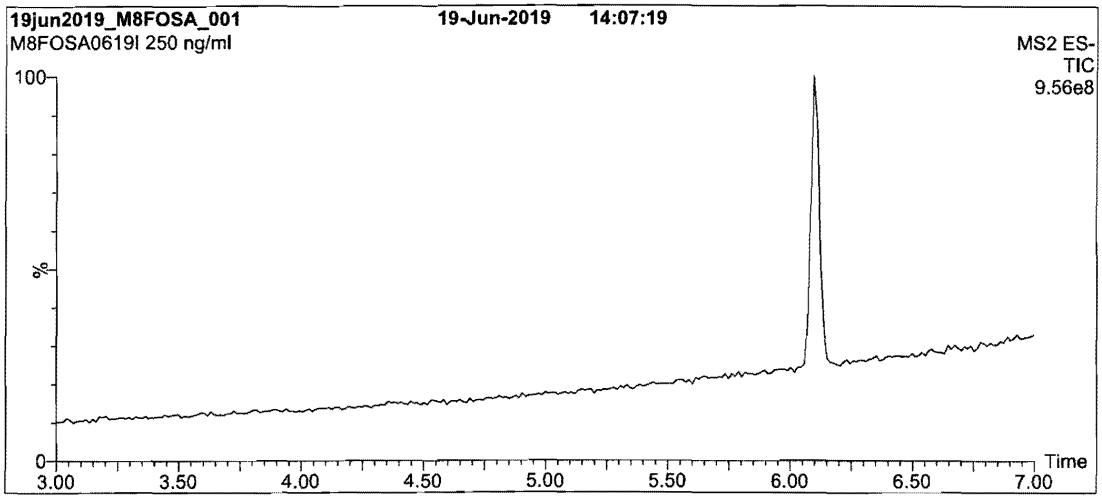
Collision Gas (mbar) = 2.94e-3
Collision Energy (eV) = 30

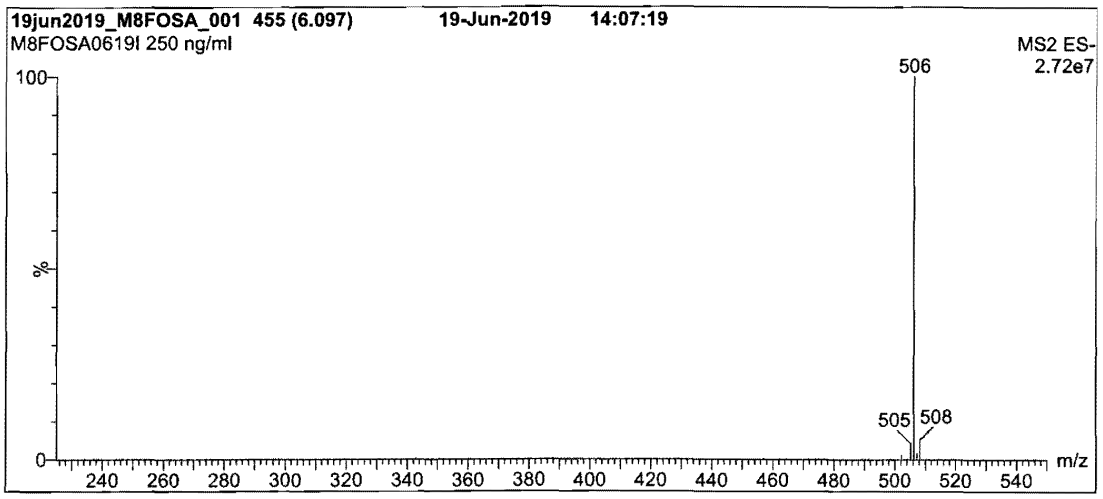
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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:

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. A1226

ANAB ACCREDITED 2017/08/25 REFERENCE MATERIAL PRODUCER

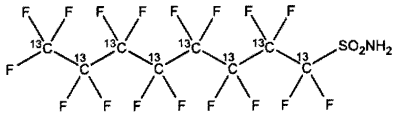
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L063

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

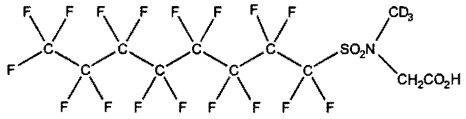
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

1910614

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: _____ **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

19LC06H

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).

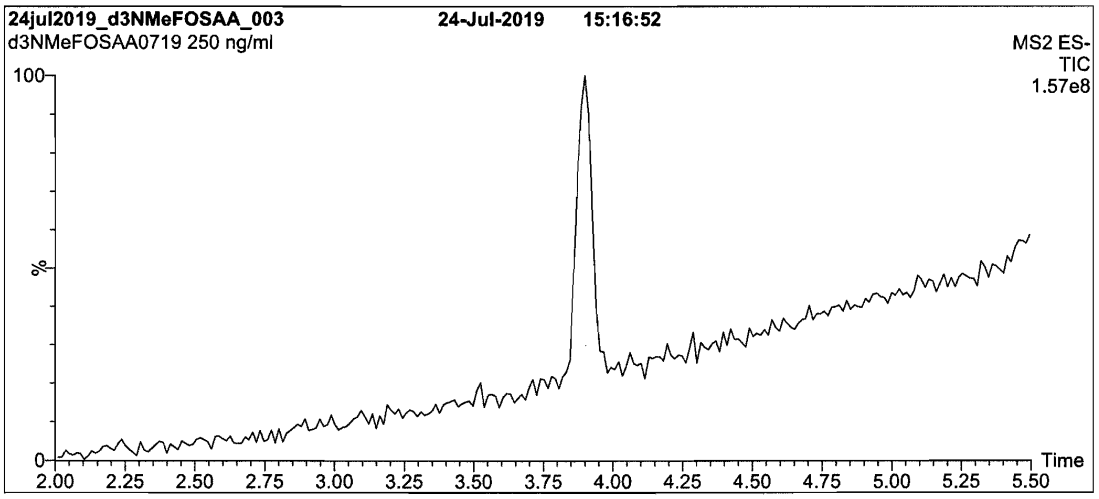
CALA Testing Accreditation No. A 1226

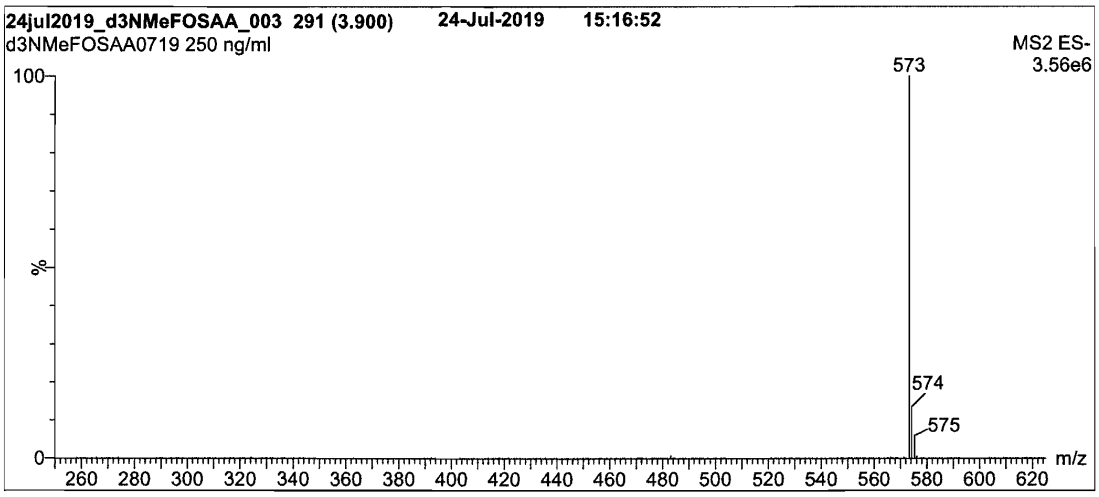
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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)

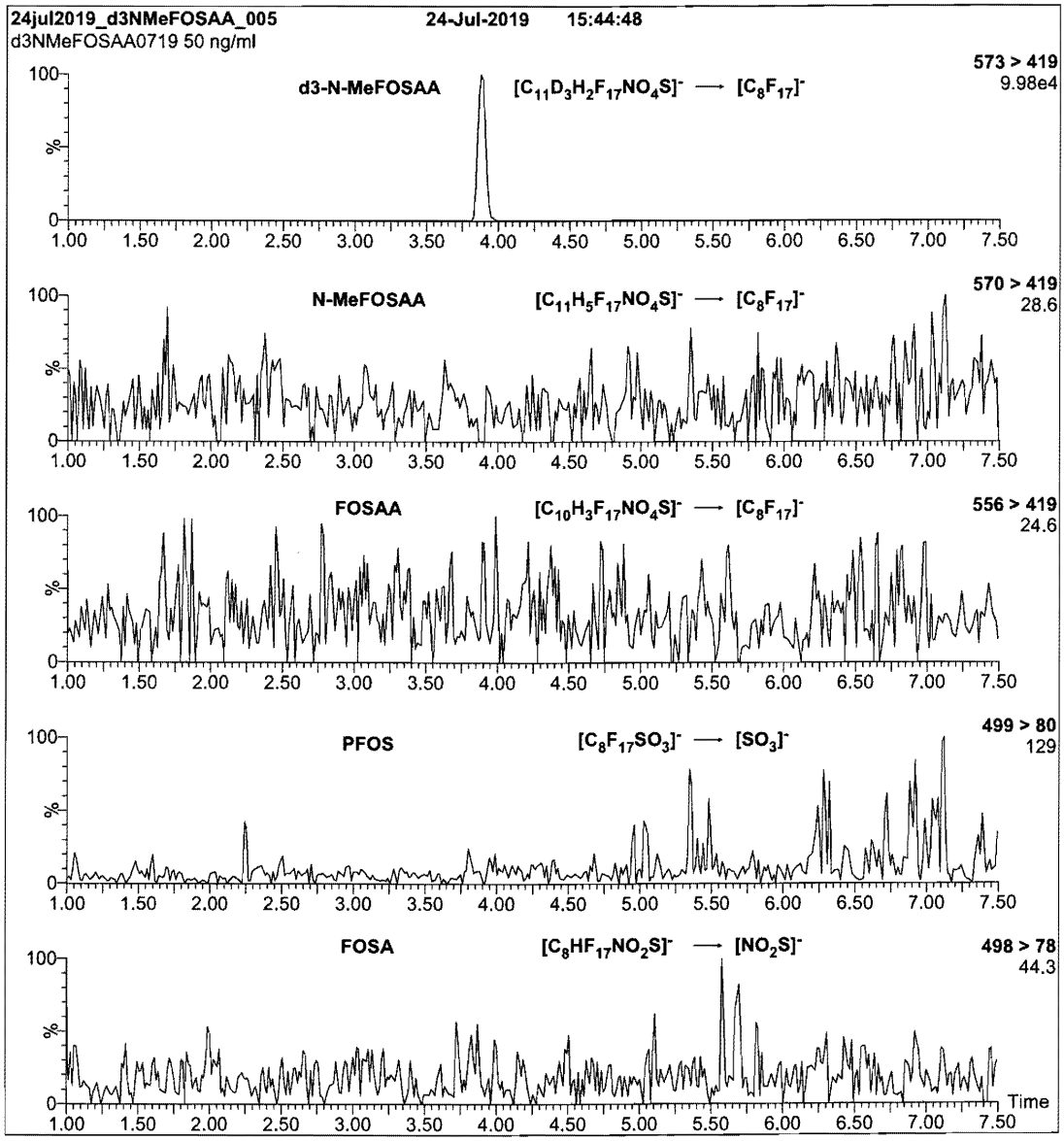
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

d3NMeFOSAA0719 (3 of 4)
rev0

19L0614

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

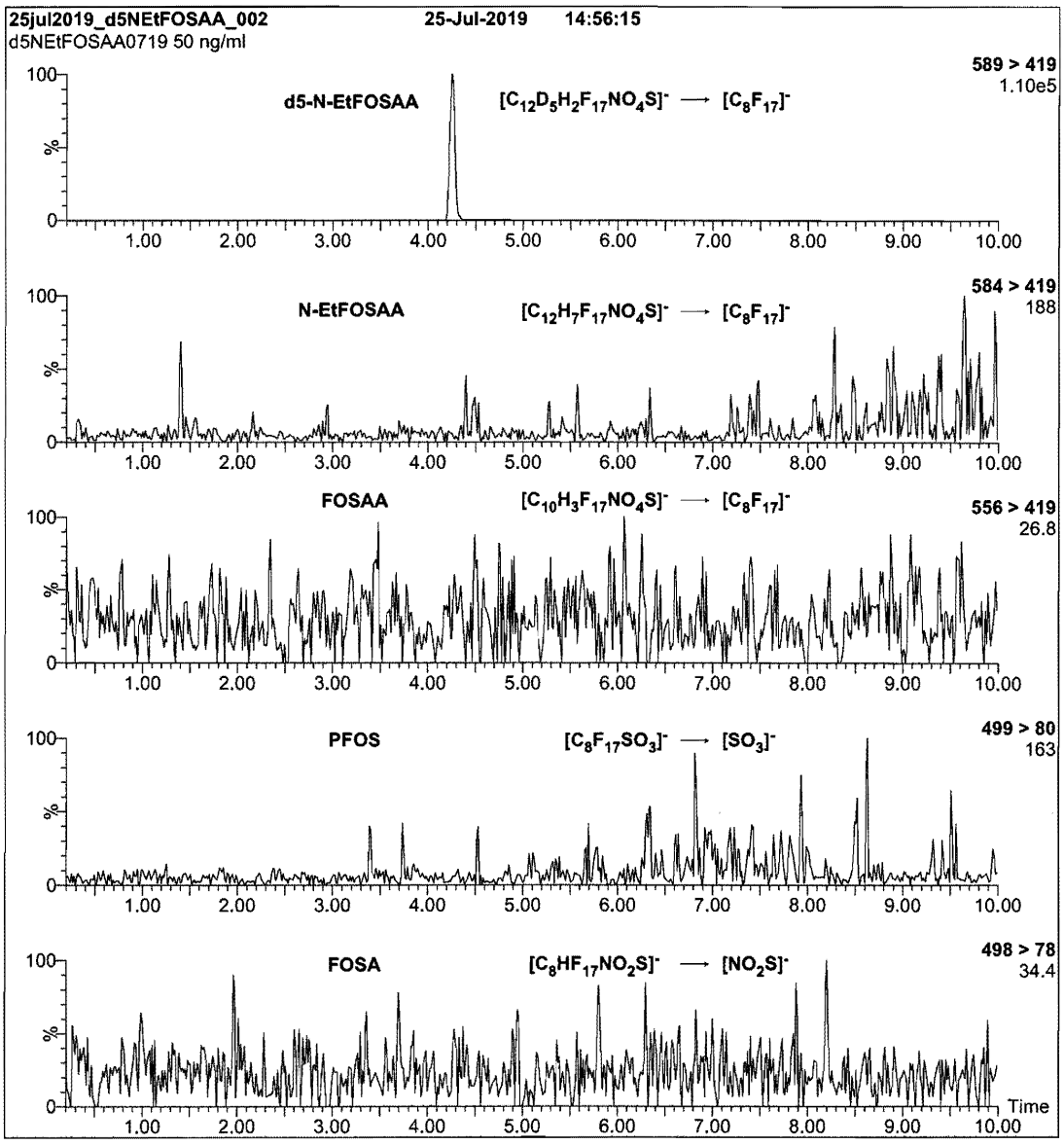
Collision Gas (mbar) = 3.33e-3
Collision Energy (eV) = 18

Form#:27, Issued 2004-11-10
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

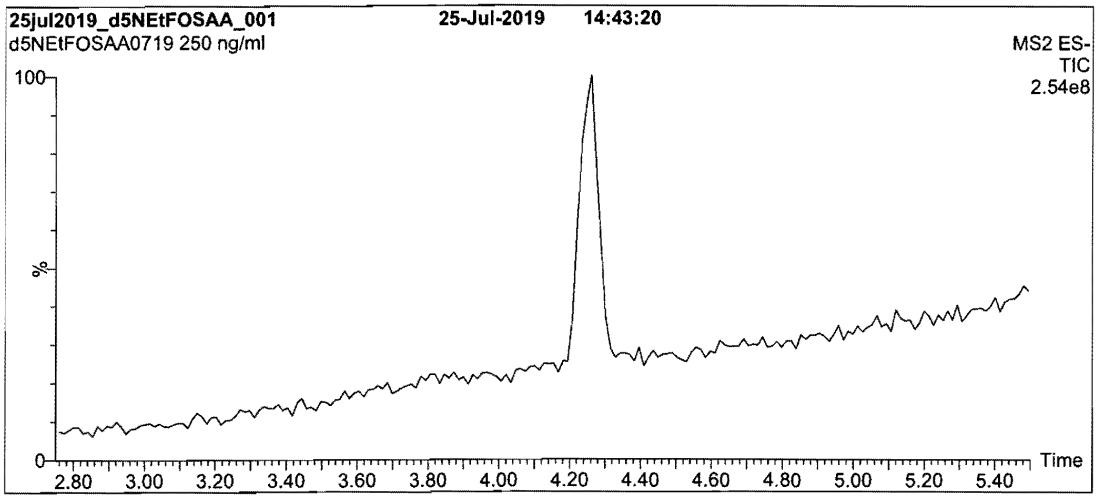
Collision Gas (mbar) = 3.29e-3
Collision Energy (eV) = 18

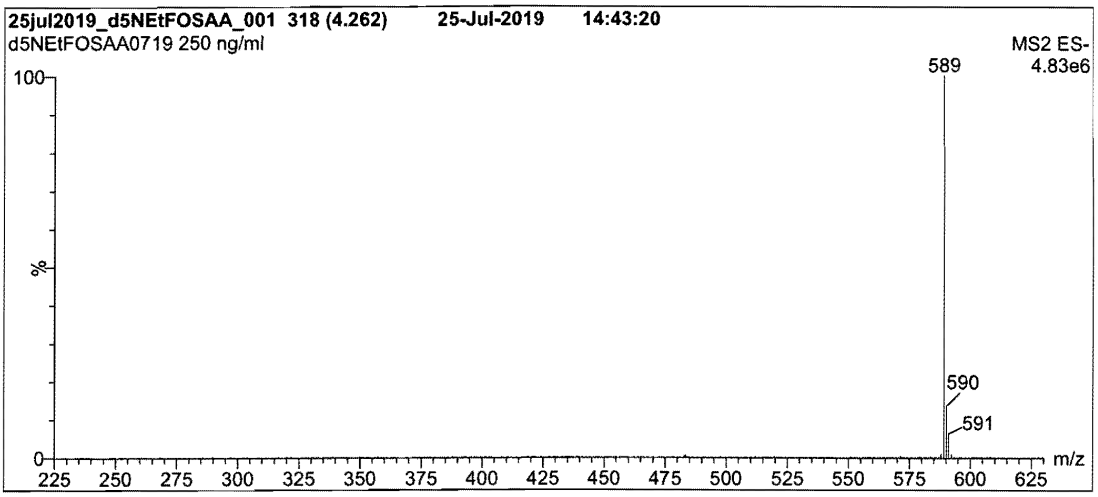
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2016-08-14

d5NEtFOSAA0719 (4 of 4)
rev0

19L0615

Figure 1: **d5-N-EtFOSAA; 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) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

d5NEtFOSAA0719 (3 of 4)
rev0

19L0615

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:

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

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 3205 REFERENCE MATERIAL PRODUCER

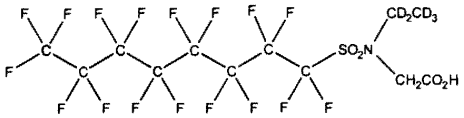
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

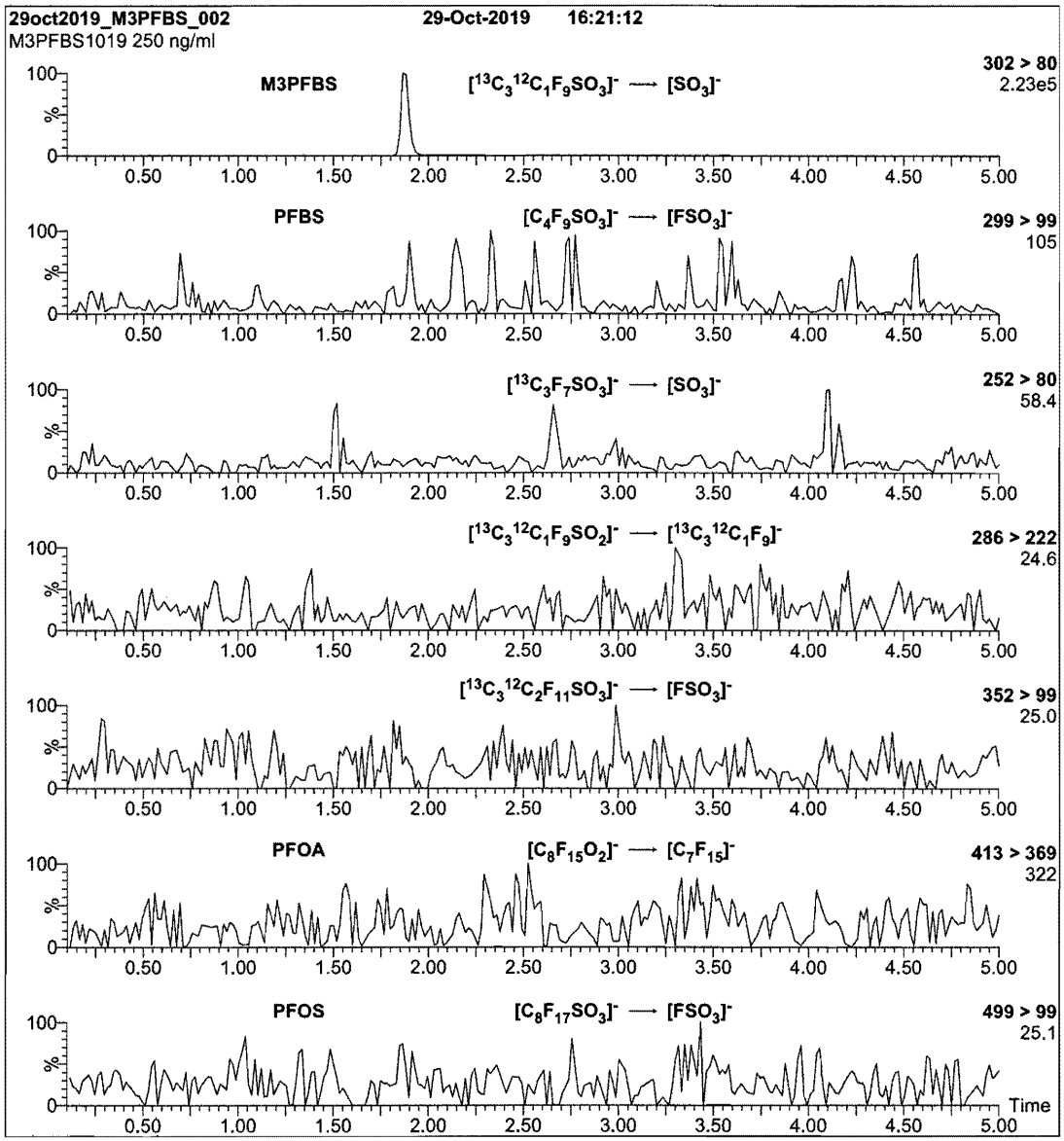
Certified By: _____ **Date:** 07/26/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

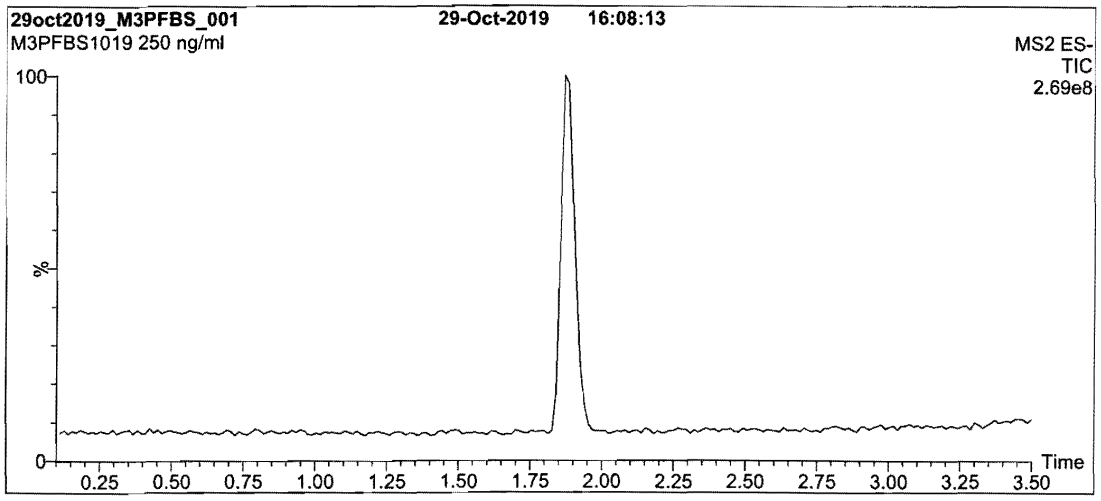
Collision Gas (mbar) = 3.57e-3
Collision Energy (eV) = 30

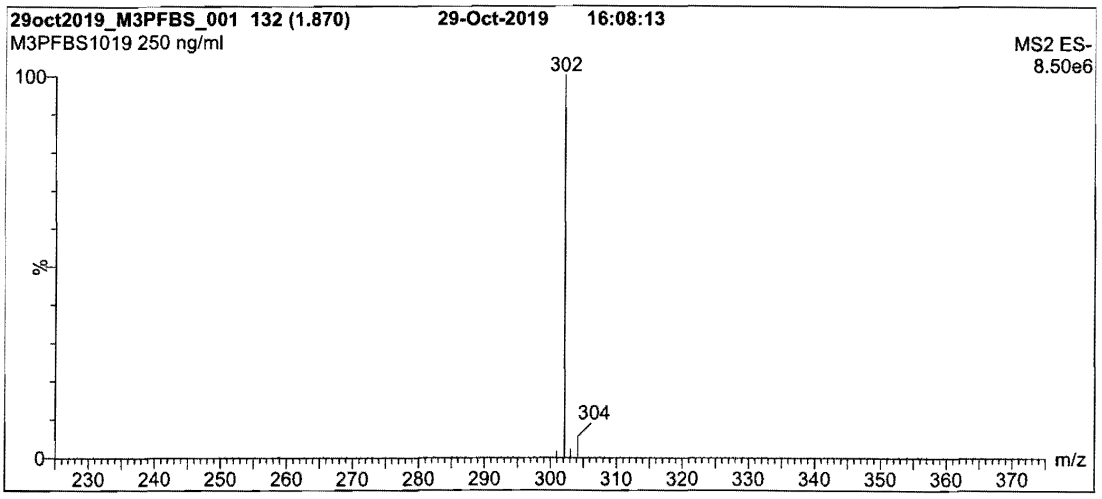
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFBS1019 (4 of 4)
rev0

19L0616

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
(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

M3PFBS1019 (3 of 4)
rev0

19L0616

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:

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

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

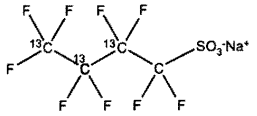
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

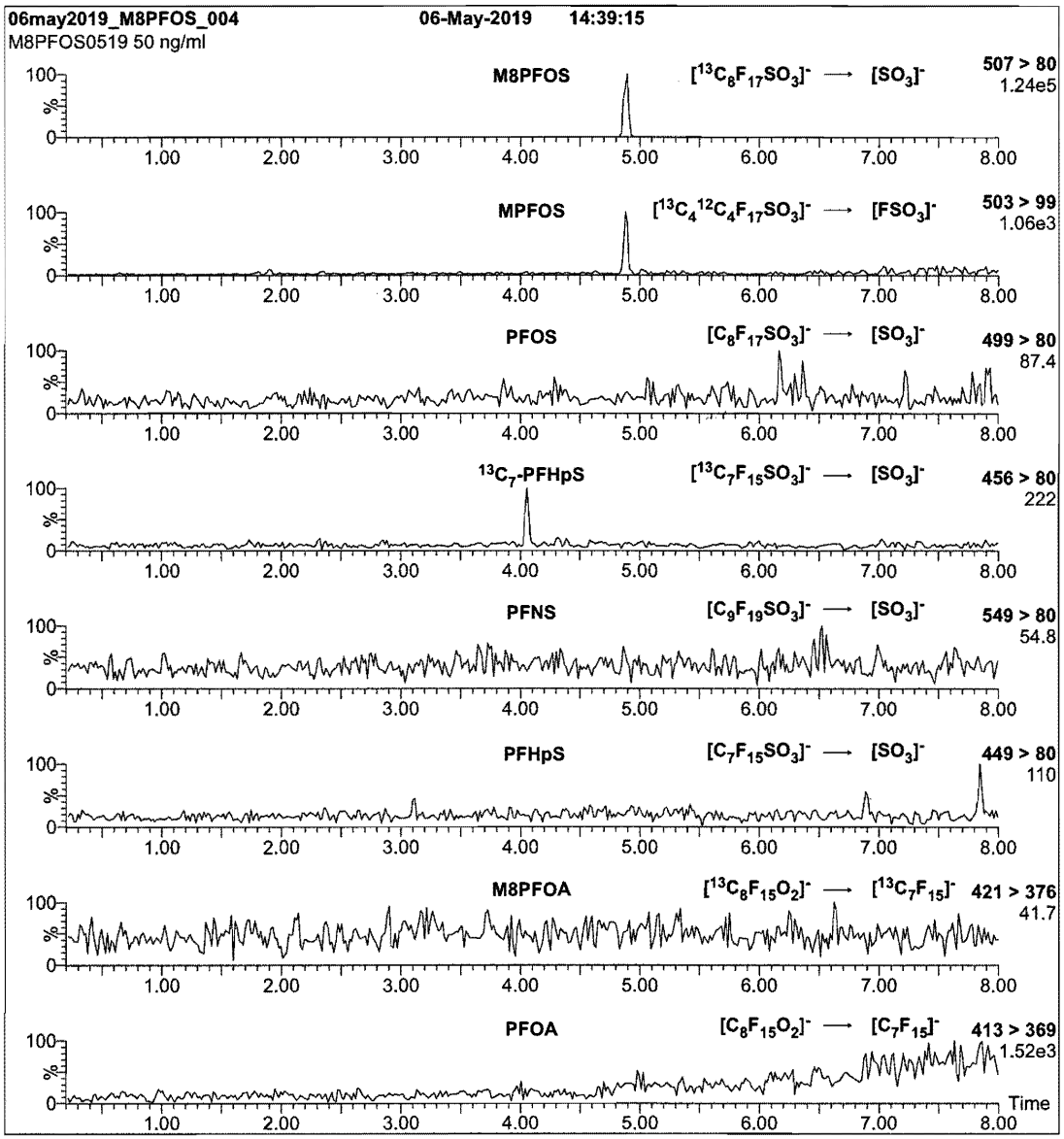
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

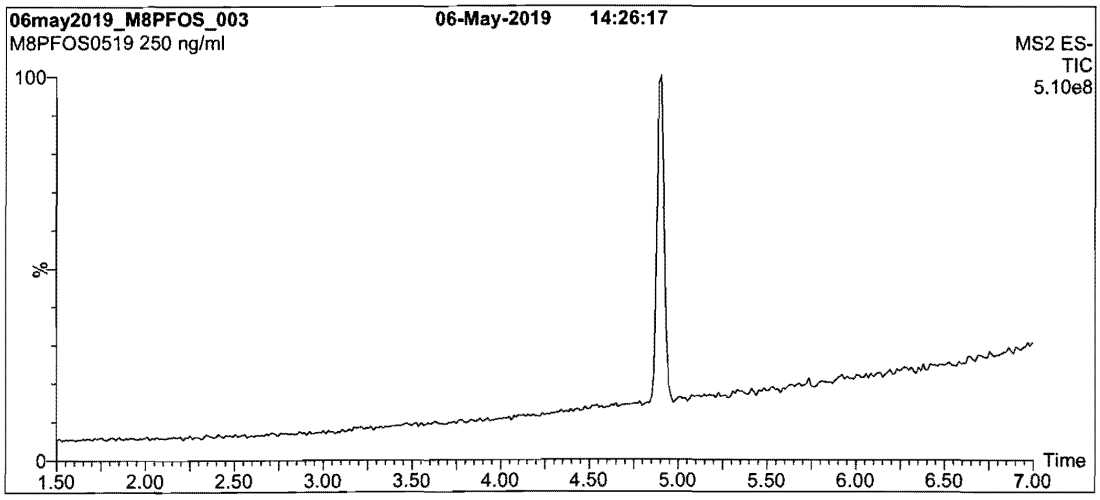
Collision Gas (mbar) = 2.85e-3
Collision Energy (eV) = 42

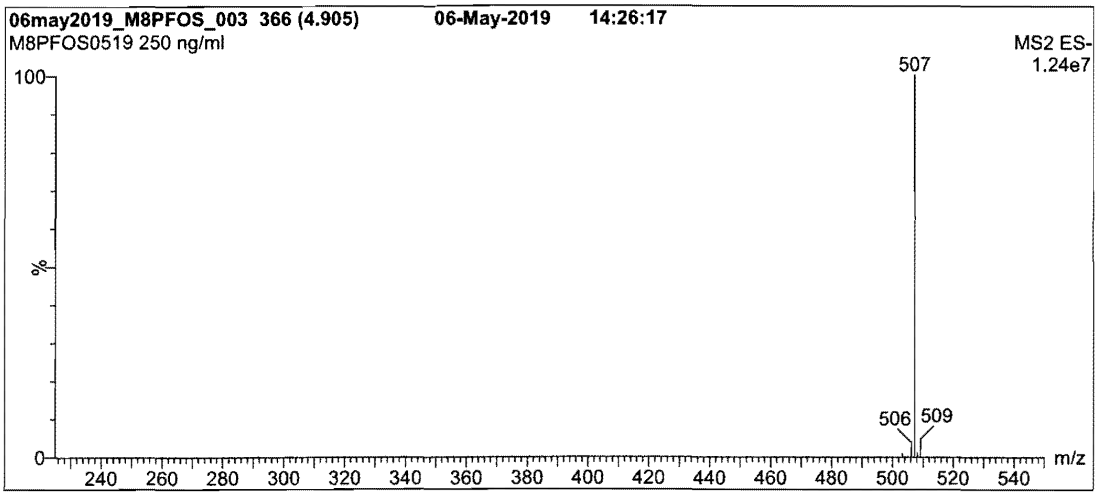
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

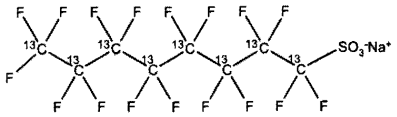
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0617

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:	$^{13}C_8F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	530.05
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (M8PFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	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

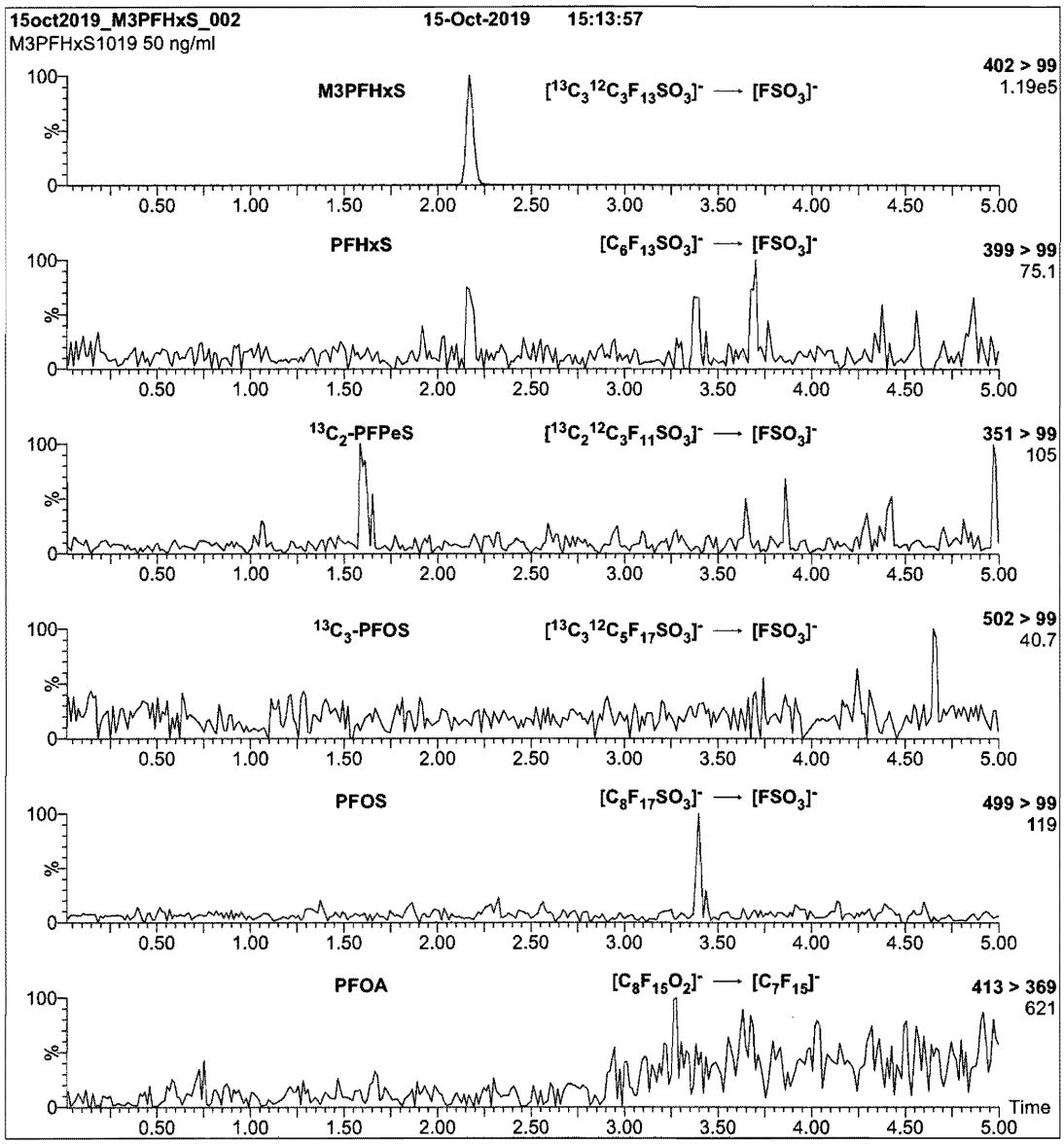
Certified By: _____ **Date:** 05/23/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

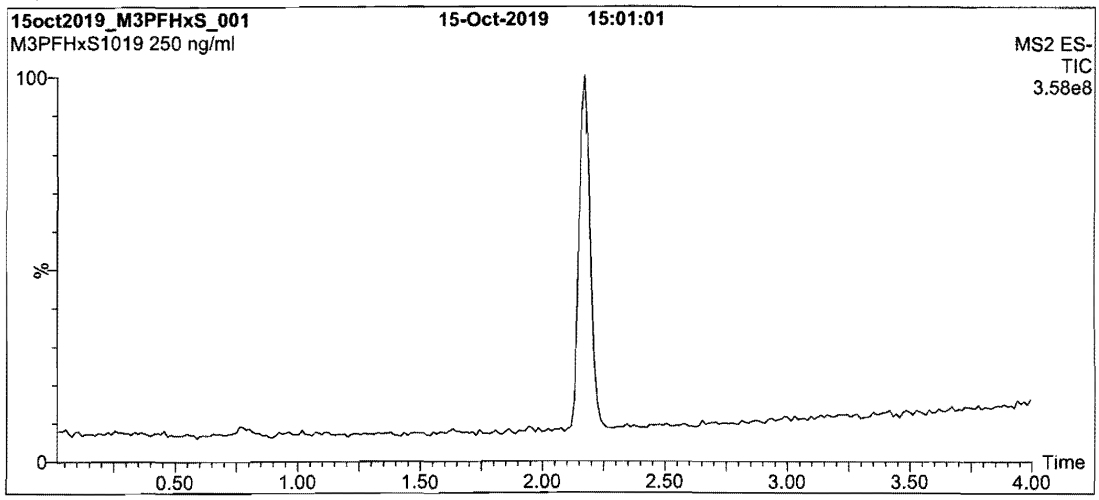
Collision Gas (mbar) = 3.91e-3
Collision Energy (eV) = 32

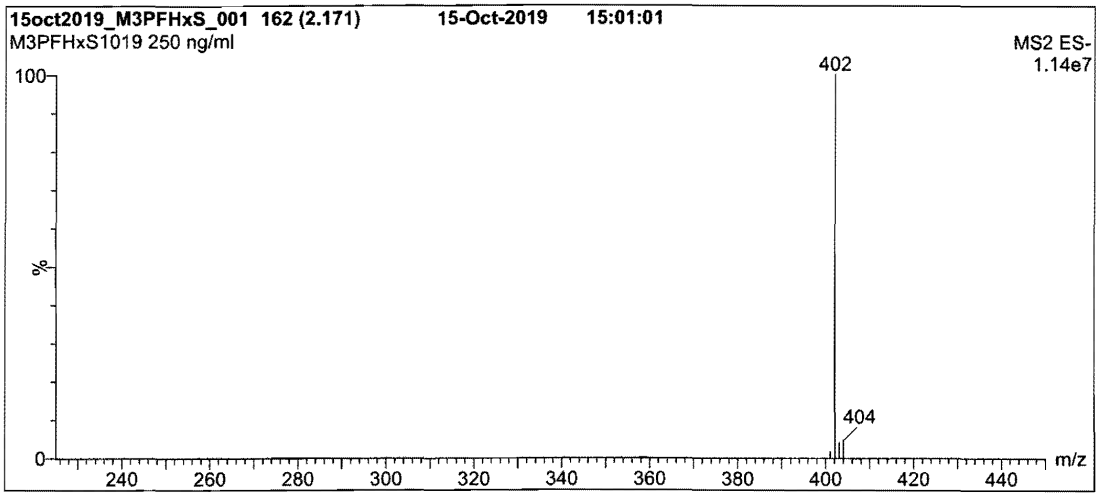
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3PFHxS1019 (4 of 4)
rev0

19L0618

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:

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

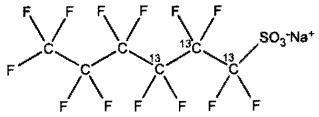
19L0618

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

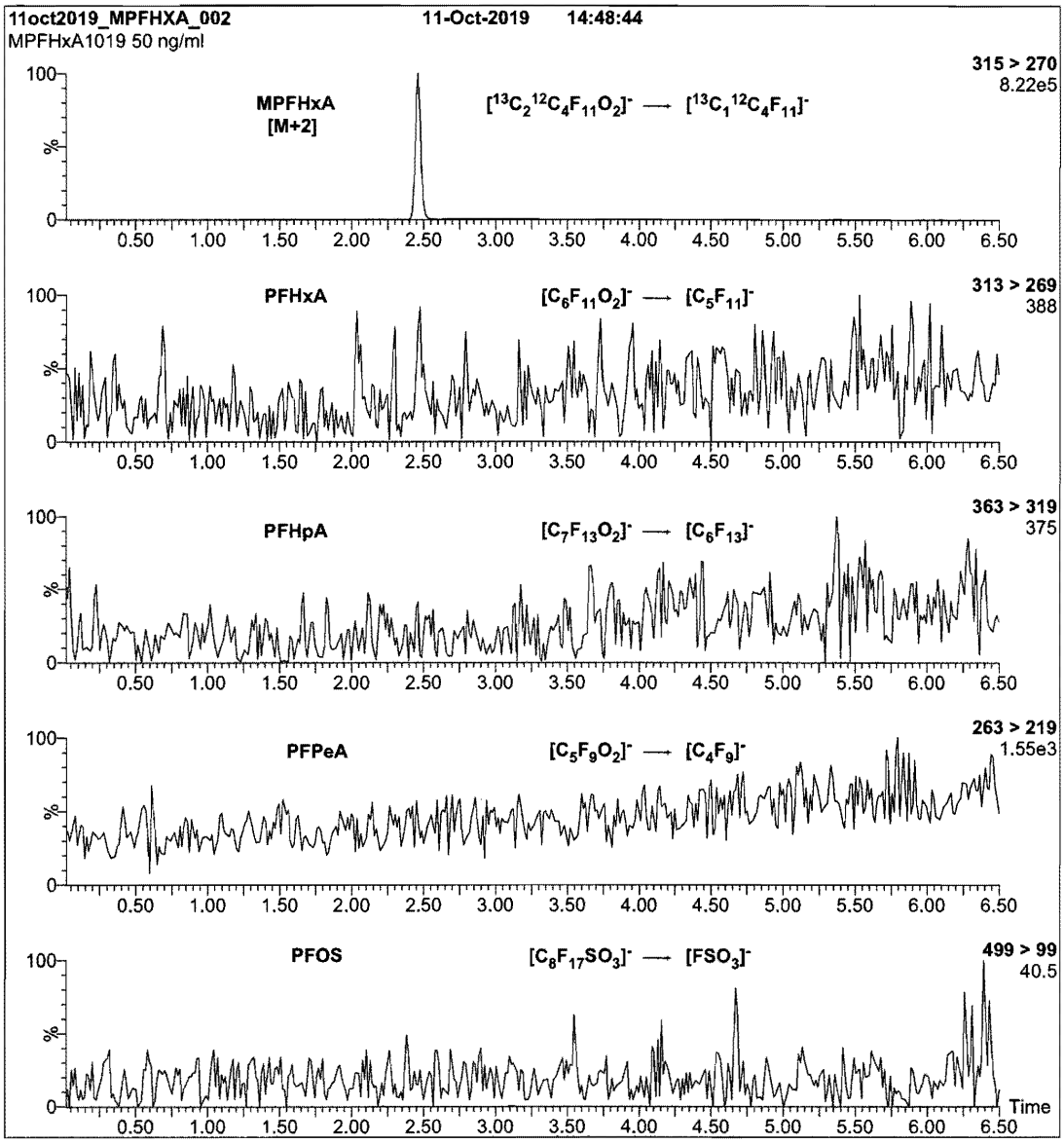
Certified By: _____ **Date:** 10/16/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
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

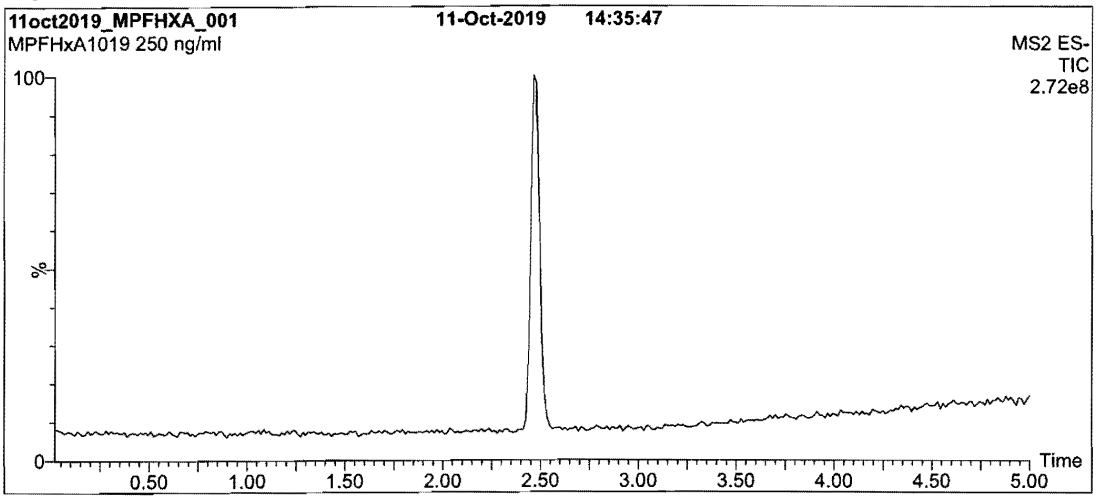
Collision Gas (mbar) = 3.80e-3
Collision Energy (eV) = 8

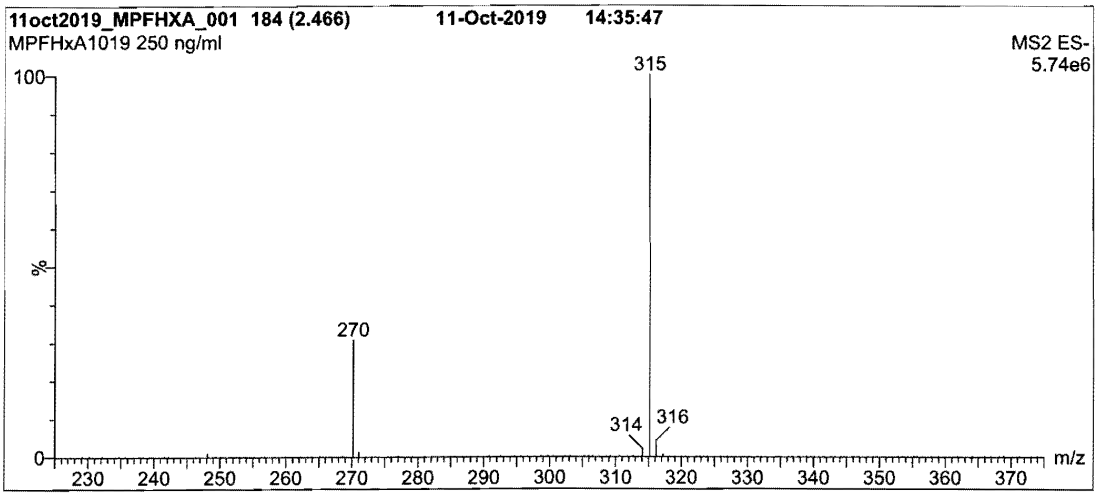
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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:

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. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

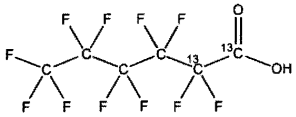
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0619

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA1019
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	10/11/2019		
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

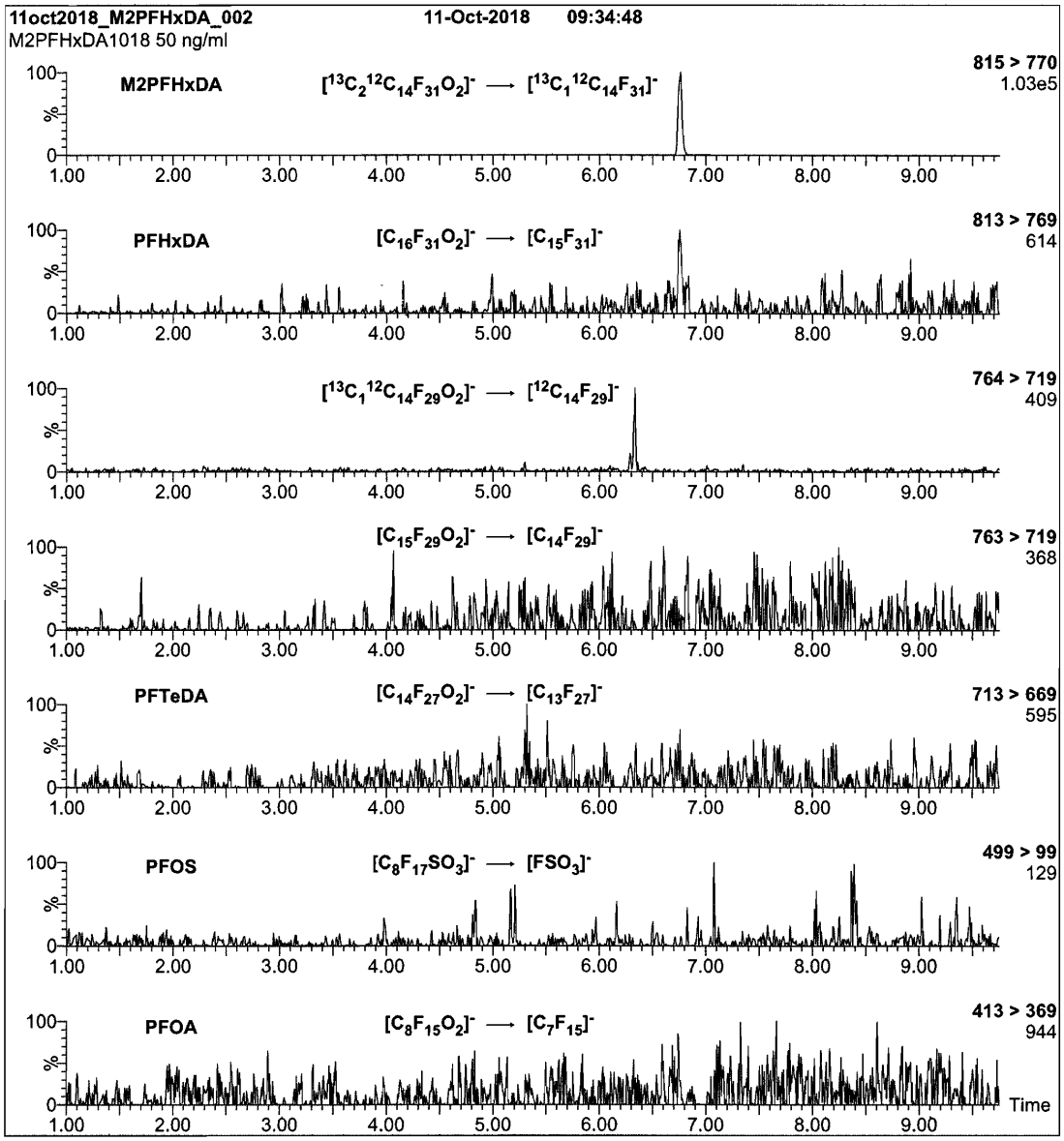
Certified By: _____ **Date:** 10/22/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

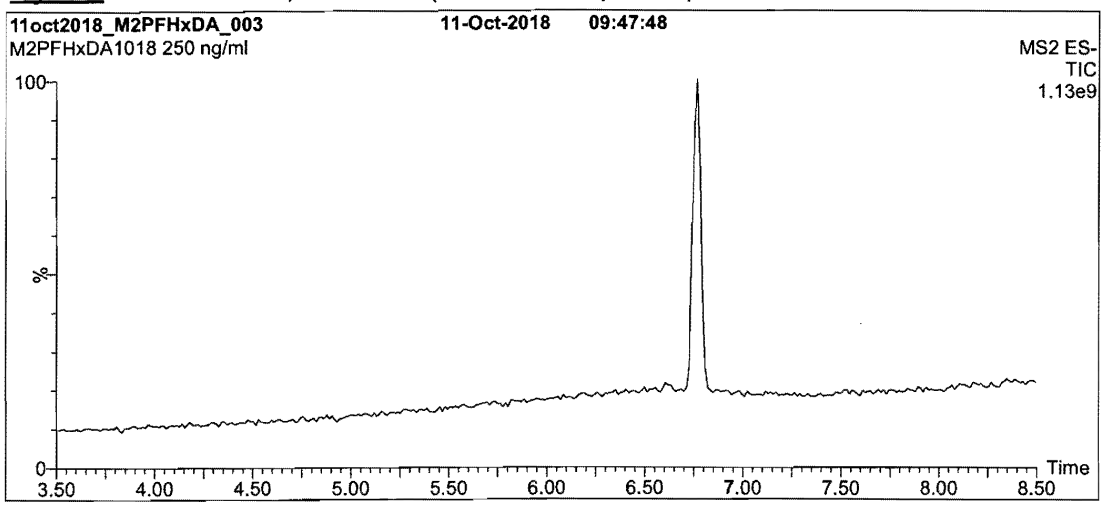
Collision Gas (mbar) = 2.97e-3
Collision Energy (eV) = 15

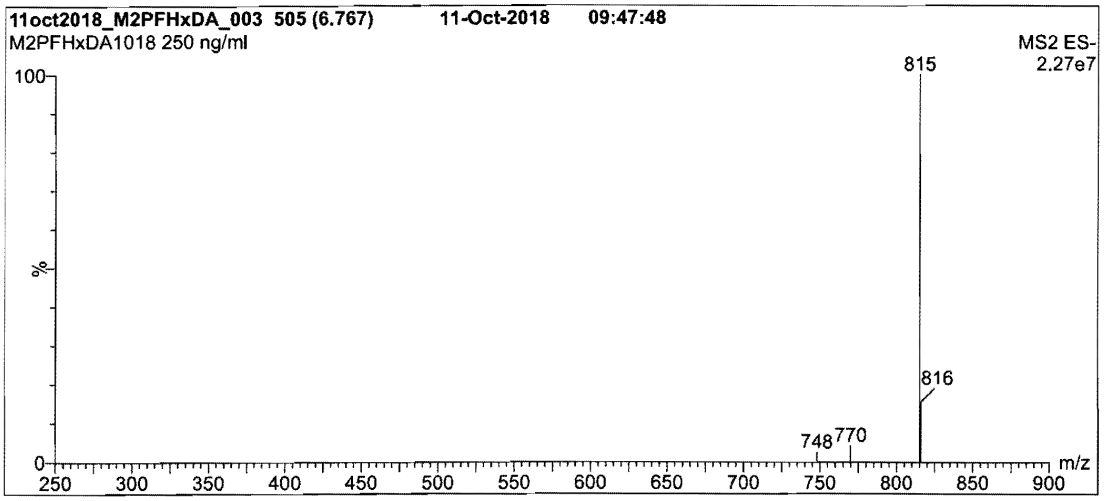
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

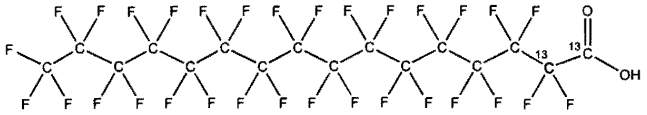
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0620

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFHxDA	**LOT NUMBER:**	M2PFHxDA1018
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
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

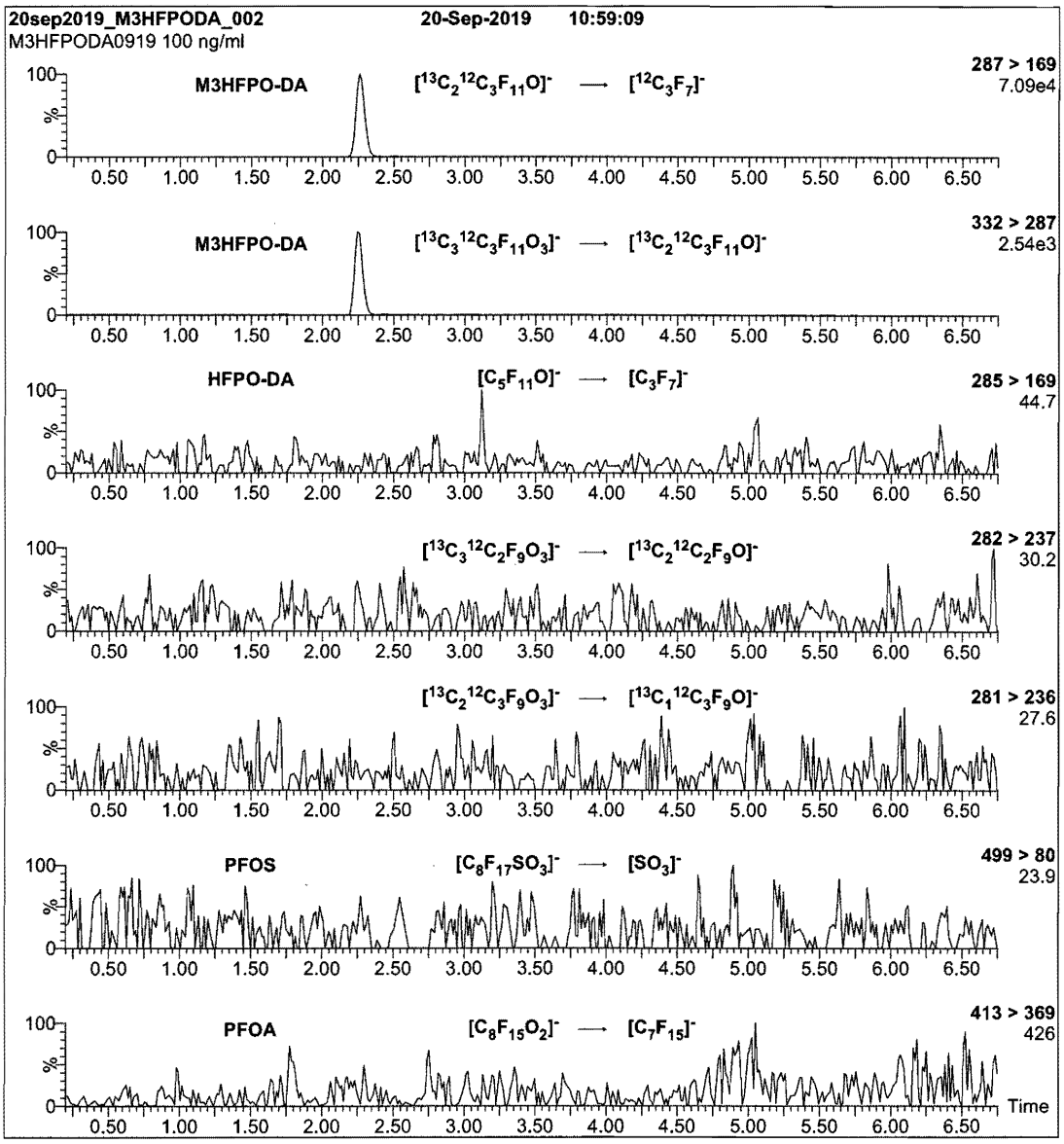
Certified By: _____ **Date:** 10/19/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

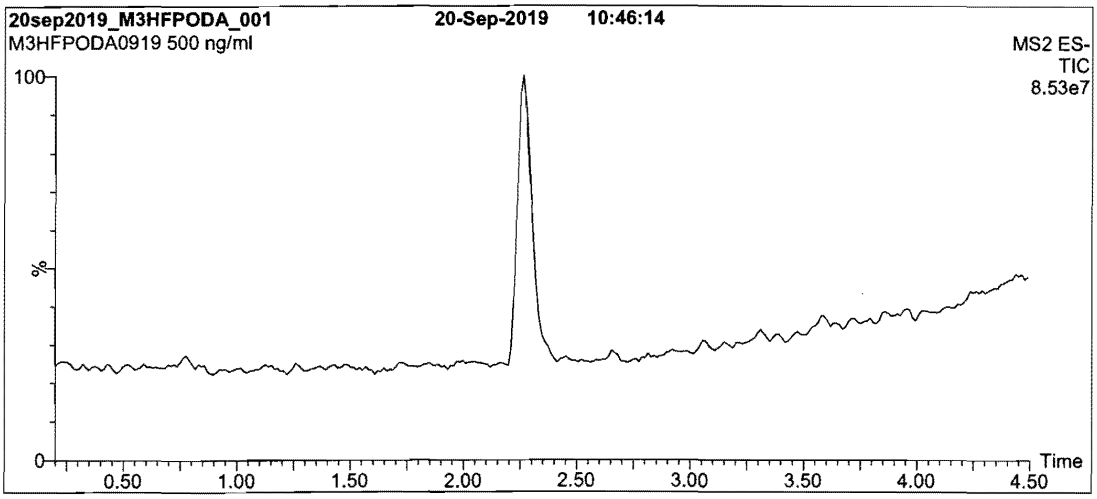
Collision Gas (mbar) = 3.60e-3
Collision Energy (eV) = 8

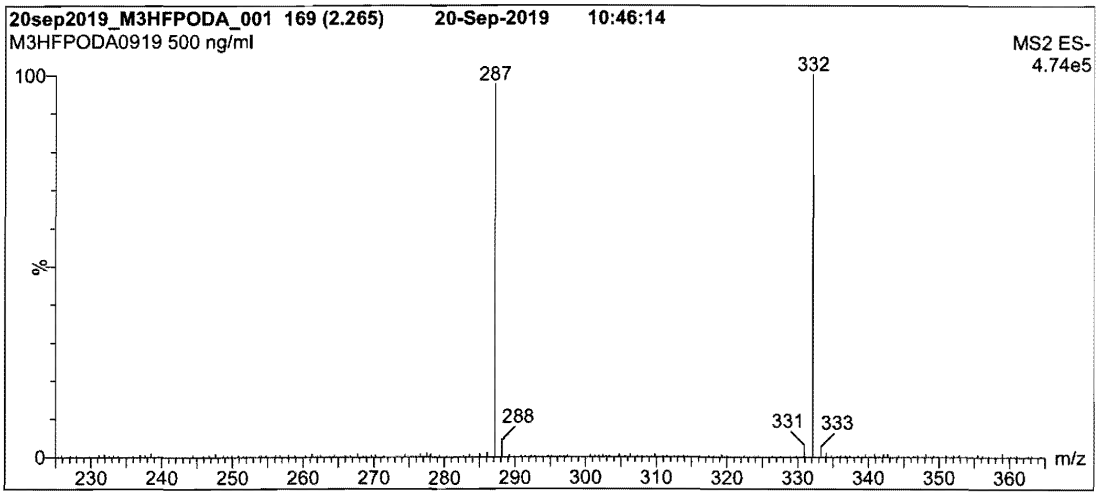
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3HFPODA0919 (4 of 4)
rev0

19L0621

Figure 1: **M3HFPO-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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

M3HFPODA0919 (3 of 4)
rev0

19L0621

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

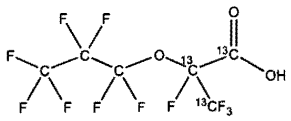
19L0621

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

Analytical Standard Record

Vista Analytical Laboratory

20E1202

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

20E1202

Description:	PFC NS Stock	Expires:	12-May-21
Standard Type:	Analyte Spike	Prepared:	12-May-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-May-20 10:53 by BML

Analyte	CAS Number	Concentration	Units
L-PFHpA		1	ug/mL
10:2 FTS	120226-60-0	1	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
L-PFODA		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-PFPeA		1	ug/mL
EtFOSA	4151-50-2	5	ug/mL

Analytical Standard Record

Vista Analytical Laboratory

20E1202

Description:	PFC NS Stock	Expires:	12-May-21
Standard Type:	Analyte Spike	Prepared:	12-May-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-May-20 10:53 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
PFOA	335-67-1	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
L-PFOS		0.789	ug/mL
PFUnA	2058-94-8	1	ug/mL
PFHxS	355-46-4	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
trans-PFECHS		0.335	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

20E1202

Description:	PFC NS Stock	Expires:	12-May-21
Standard Type:	Analyte Spike	Prepared:	12-May-20
Solvent:	MeOH	Prepared By:	Brittany M. Lamb
Final Volume (mls):	20	Department:	LCMS
Vials:	1	Last Edit:	12-May-20 10:53 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
PFNS	68259-12-1	1	ug/mL
PFBS	375-73-5	1	ug/mL
PFNA	375-95-1	1	ug/mL
PFDoA	307-55-1	1	ug/mL
PFDoS	79780-39-5	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
L-PFOSA		1	ug/mL
PFBA	375-22-4	1	ug/mL

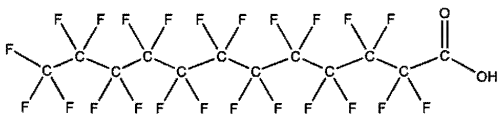
19L0635

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDoA
LOT NUMBER: PFDoA0119
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE:
CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
MOLECULAR WEIGHT: 614.10
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 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).

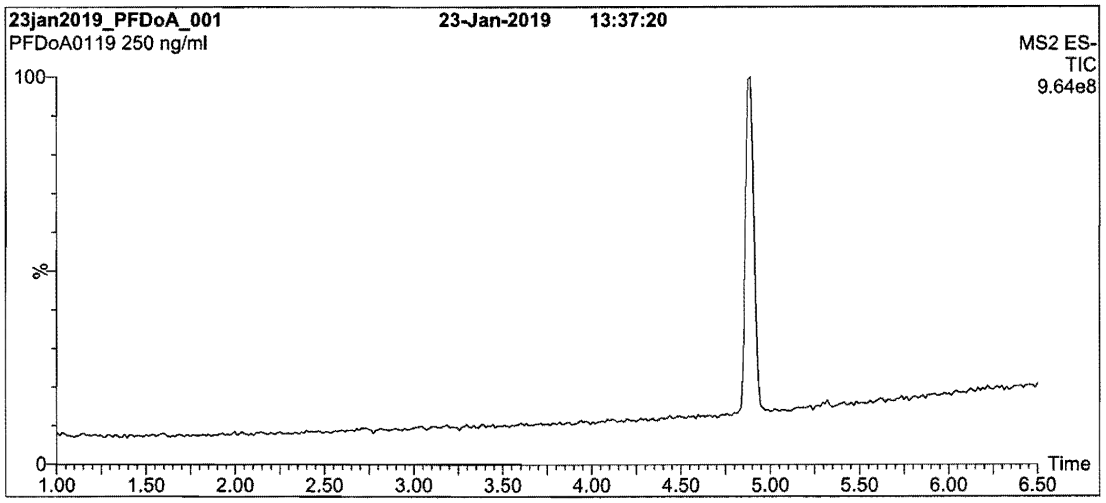
CALA Testing Accreditation No. A 1326

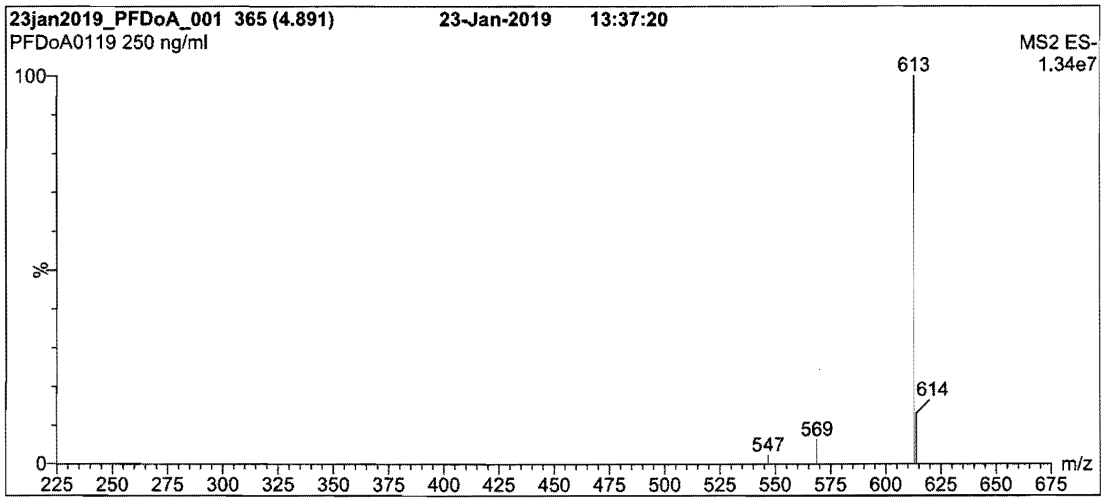
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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)

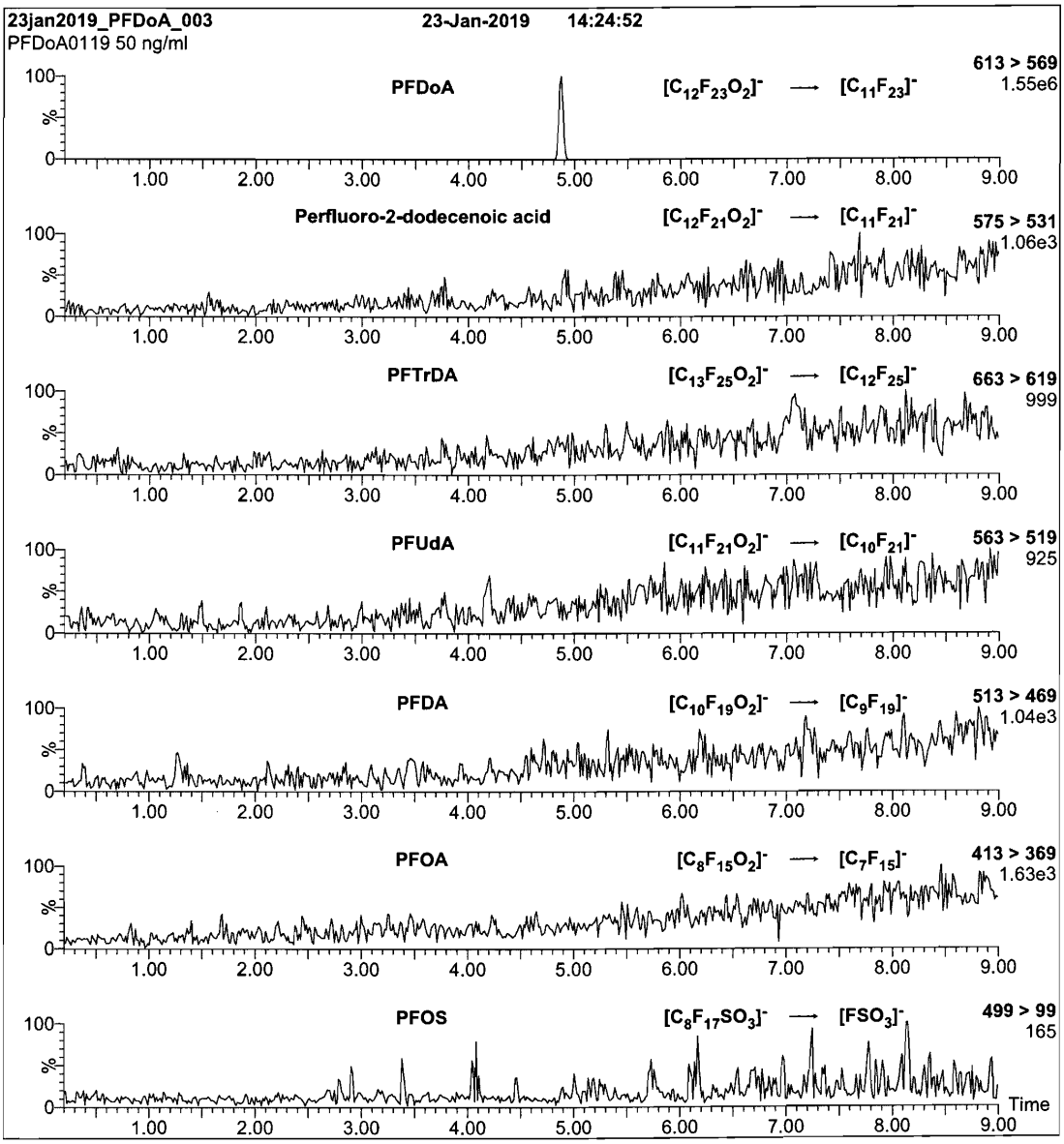
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFDoA0119 (3 of 4)
rev0

19L0635

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

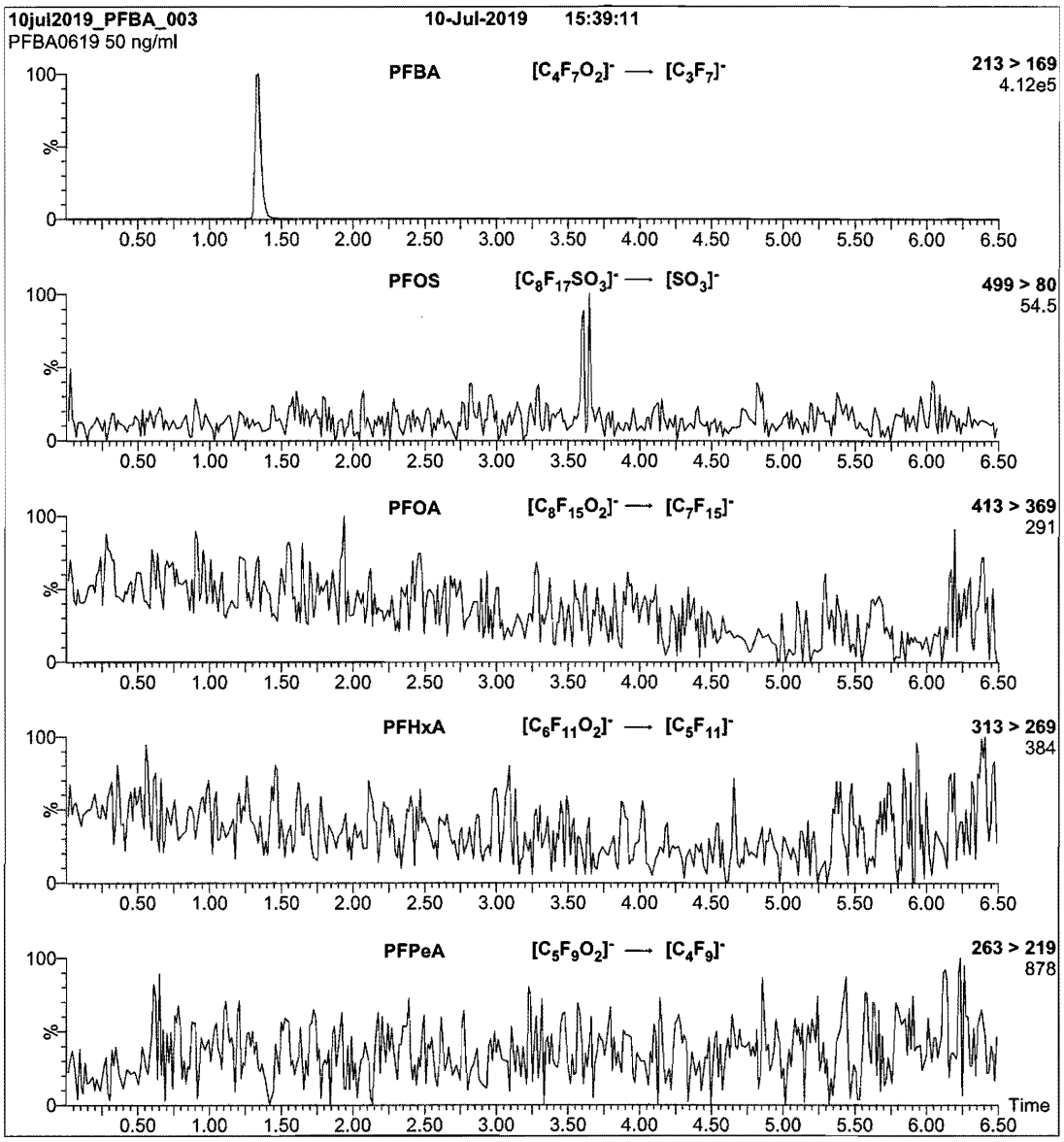
Collision Gas (mbar) = 2.72e-3
Collision Energy (eV) = 12

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFDoA0119 (4 of 4)
rev0

19L0636

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

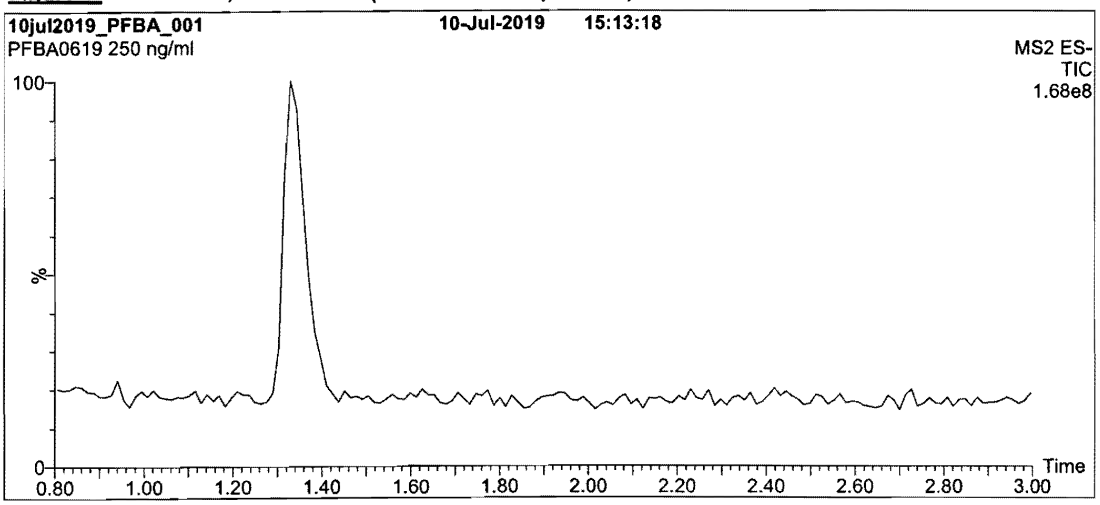
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 8

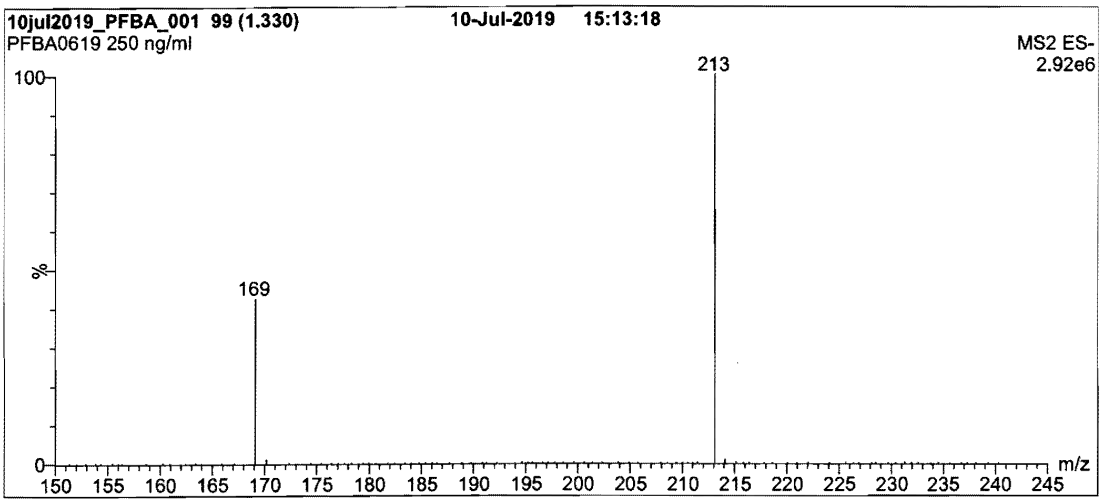
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFBA0619 (4 of 4)
rev0

191636

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFBA0619 (3 of 4)
rev0

19L0636

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. A1226

ANAB ACCREDITED 9001:2015 REFERENCE MATERIAL PRODUCER

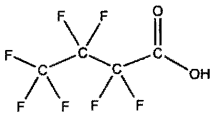
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0636

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFBA	**LOT NUMBER:**	PFBA0619
COMPOUND:	Perfluoro-n-butanoic acid		
STRUCTURE:		**CAS #:**	375-22-4



MOLECULAR FORMULA:	$C_4HF_7O_2$	**MOLECULAR WEIGHT:**	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	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.

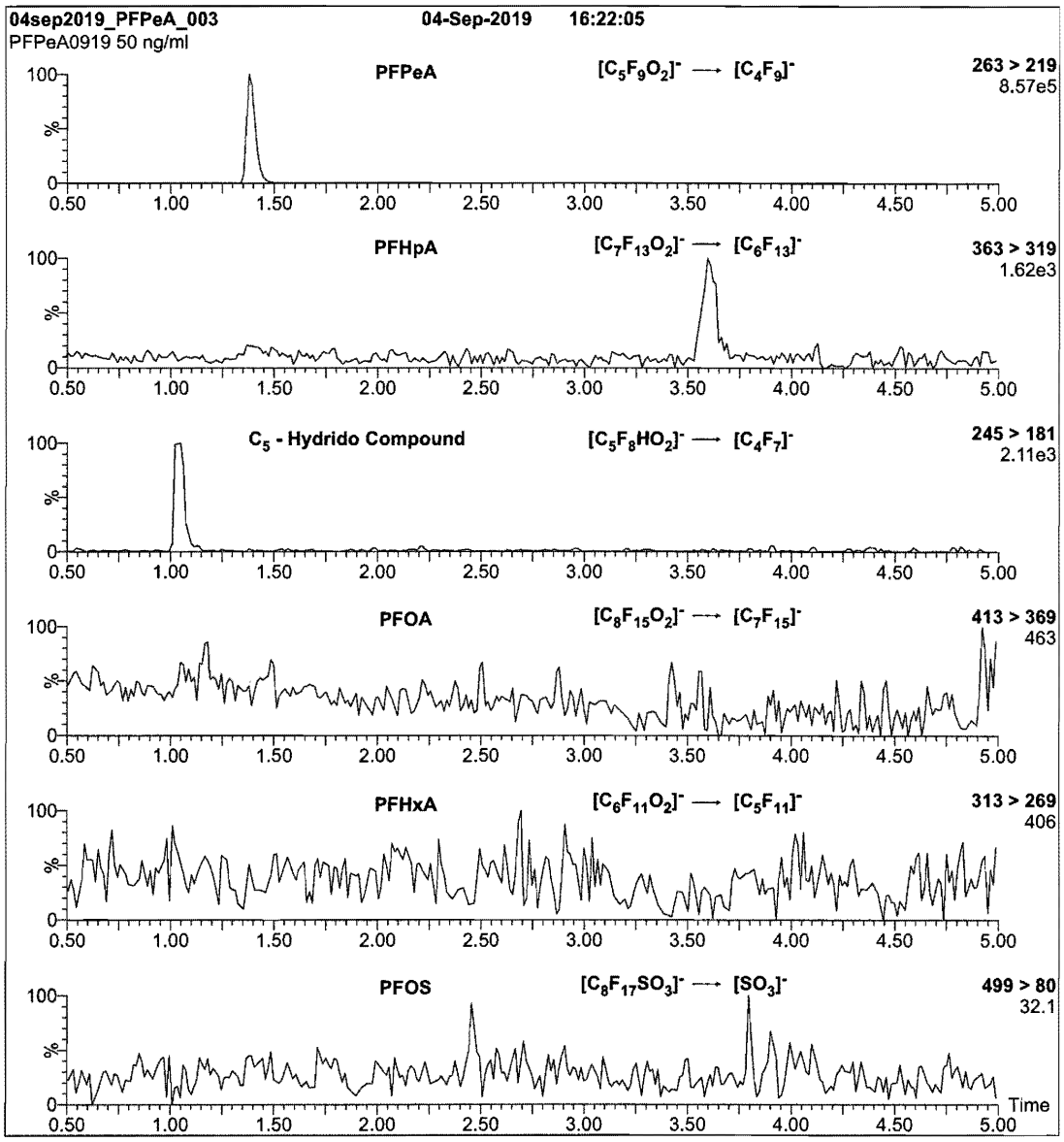
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

1910637

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

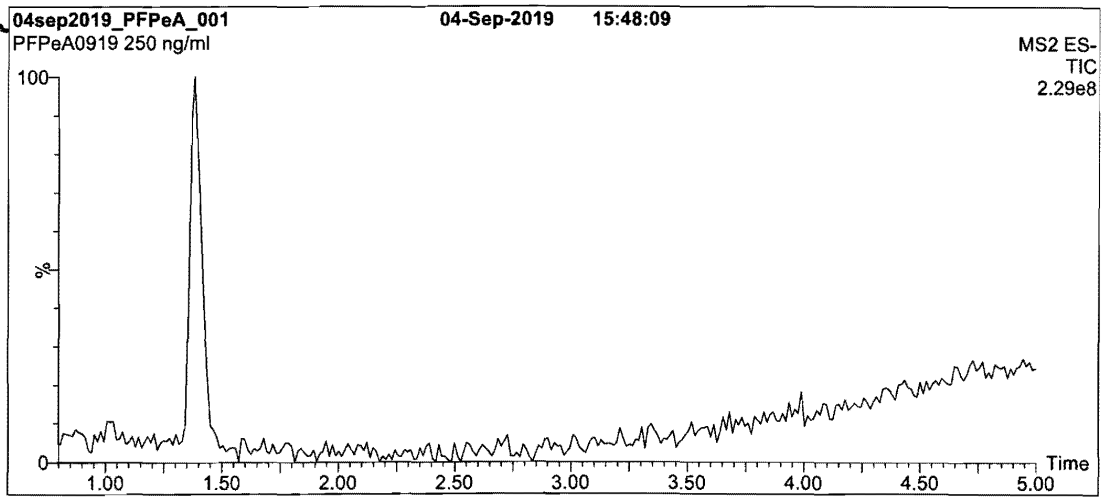
Collision Gas (mbar) = 3.51e-3
Collision Energy (eV) = 8

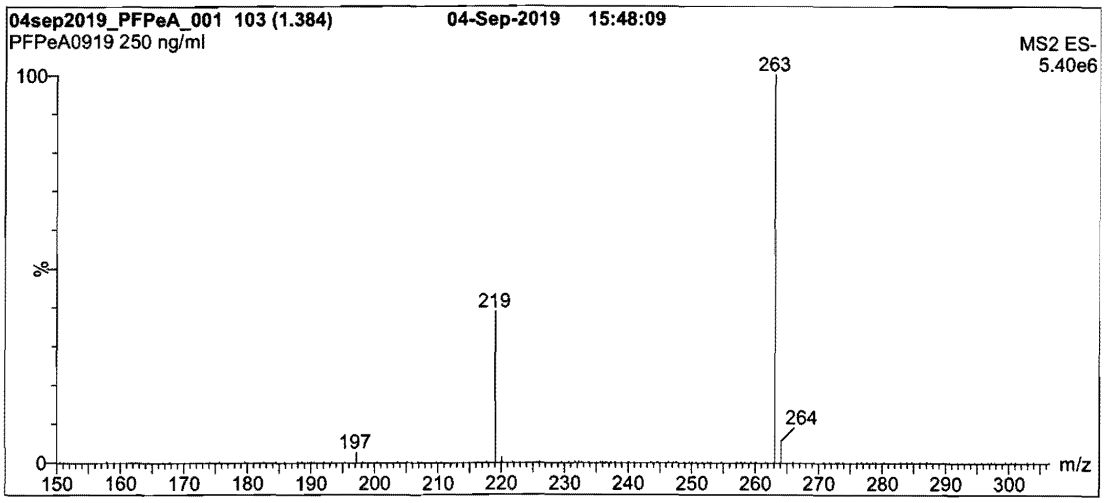
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFPeA0919 (4 of 4)
rev0

1910637

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#:6, Revised 2018-08-14

PFPeA0919 (3 of 4)
rev0

19L0637

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

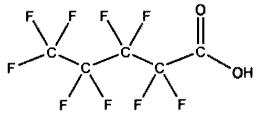
19L0637

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid
LOT NUMBER: PFPeA0919

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

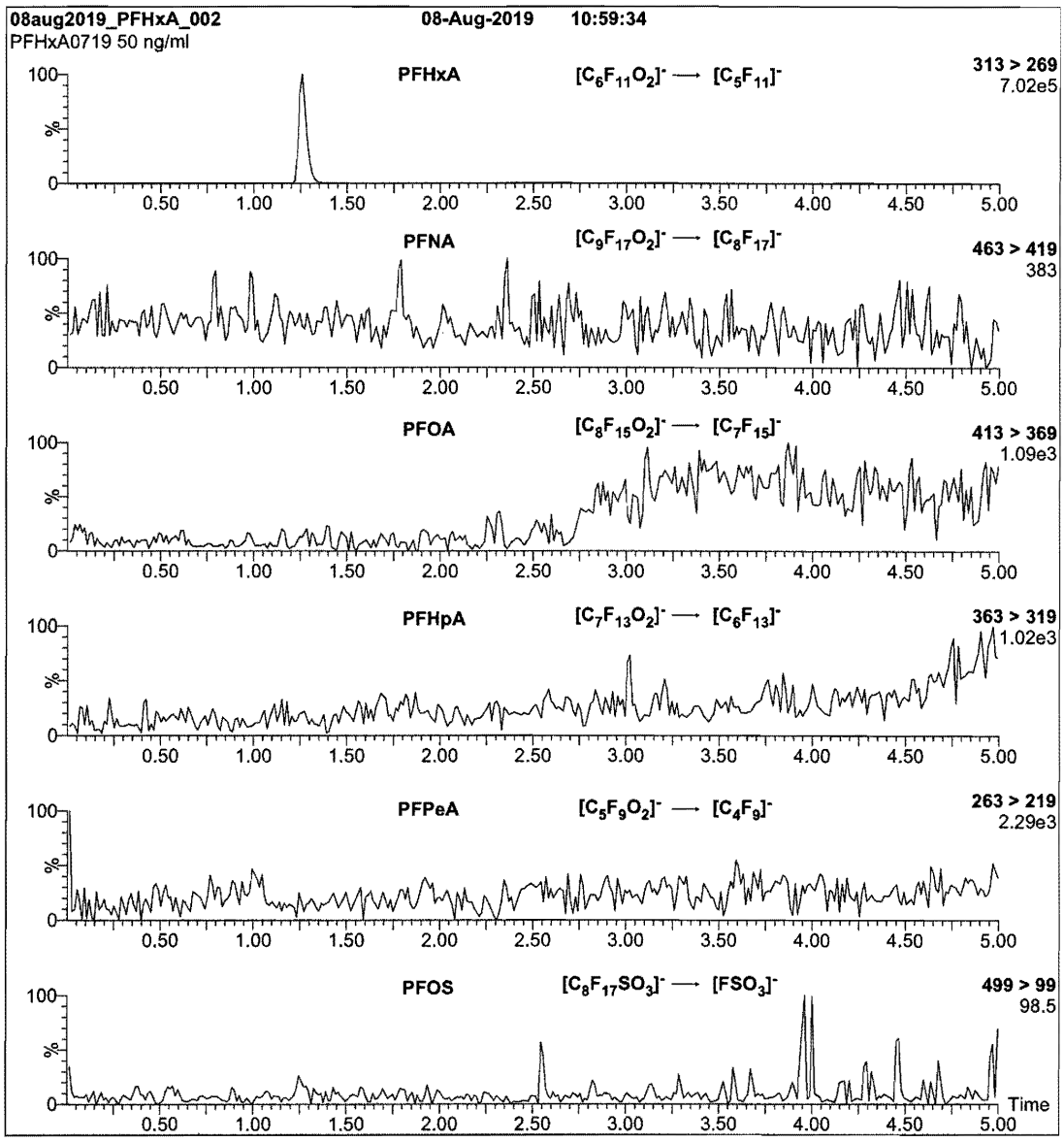
Certified By: _____ **Date:** 09/05/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

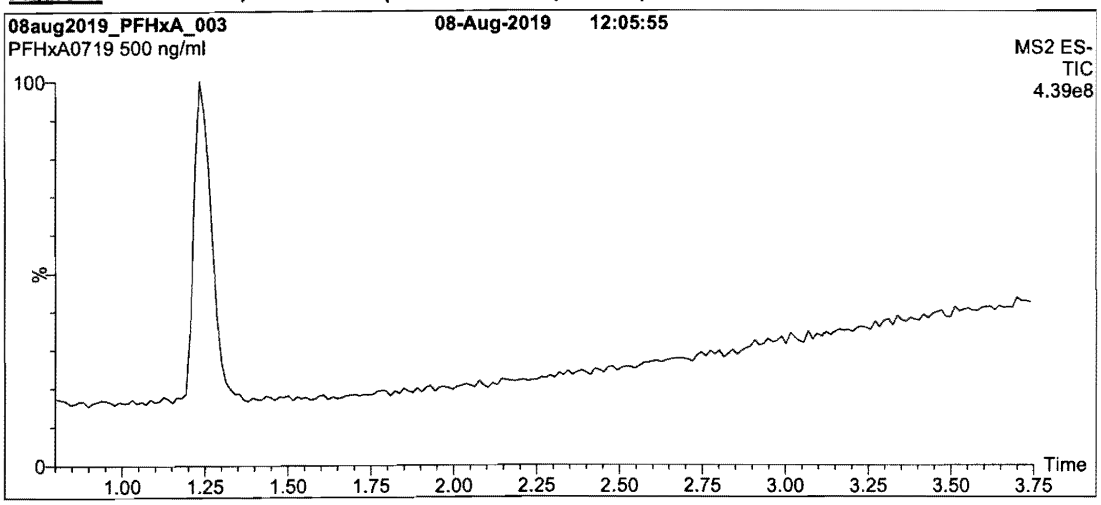
Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 8

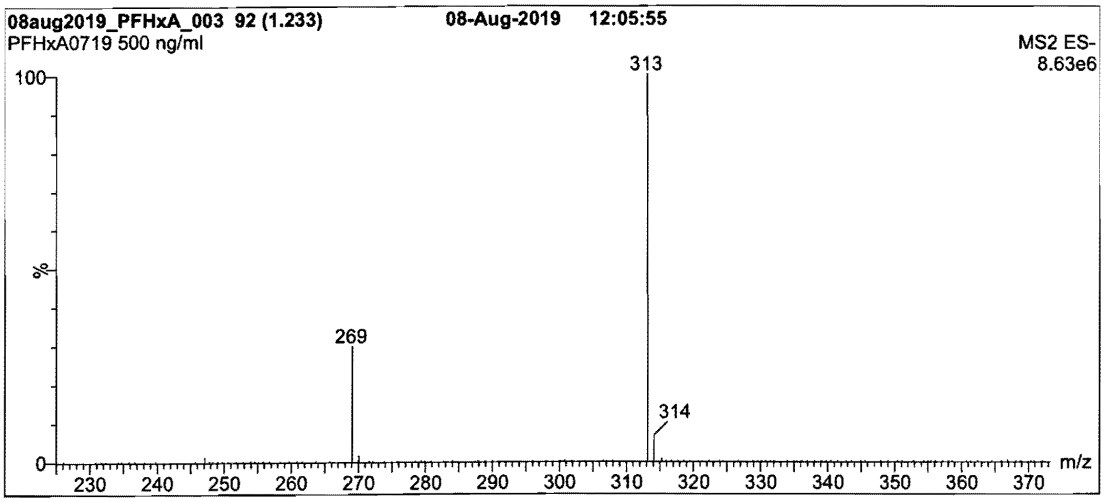
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFHxA0719 (4 of 4)
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:

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

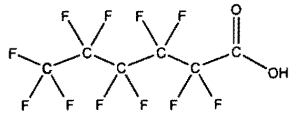
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0638

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHxA	**LOT NUMBER:**	PFHxA0719
COMPOUND:	Perfluoro-n-hexanoic acid		
STRUCTURE:		**CAS #:**	307-24-4



MOLECULAR FORMULA:	$C_6HF_{11}O_2$	**MOLECULAR WEIGHT:**	314.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	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

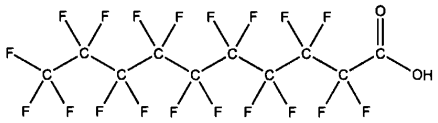
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L0639

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDA	**LOT NUMBER:**	PFDA0419
COMPOUND:	Perfluoro-n-decanoic acid		
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:

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).

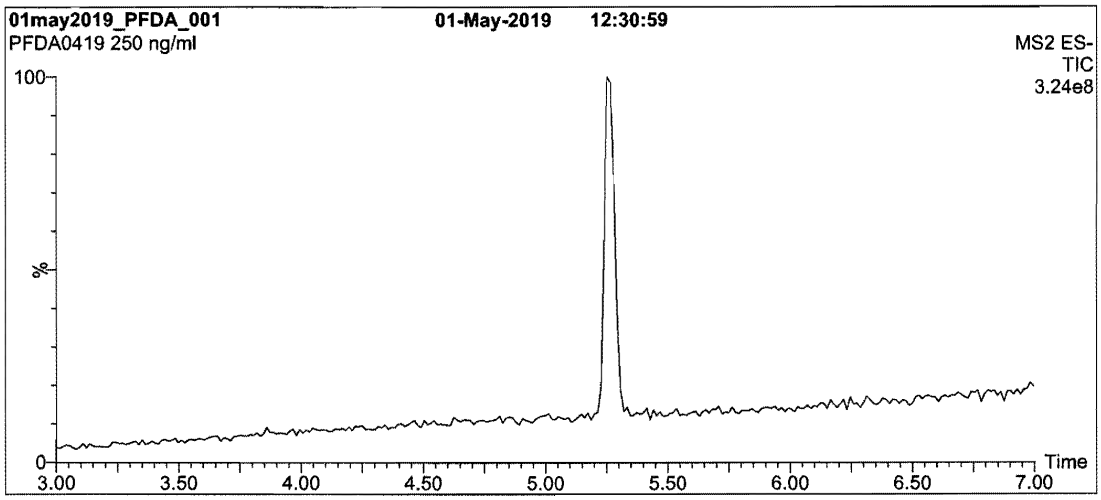
CALA Testing Accreditation No. A1226

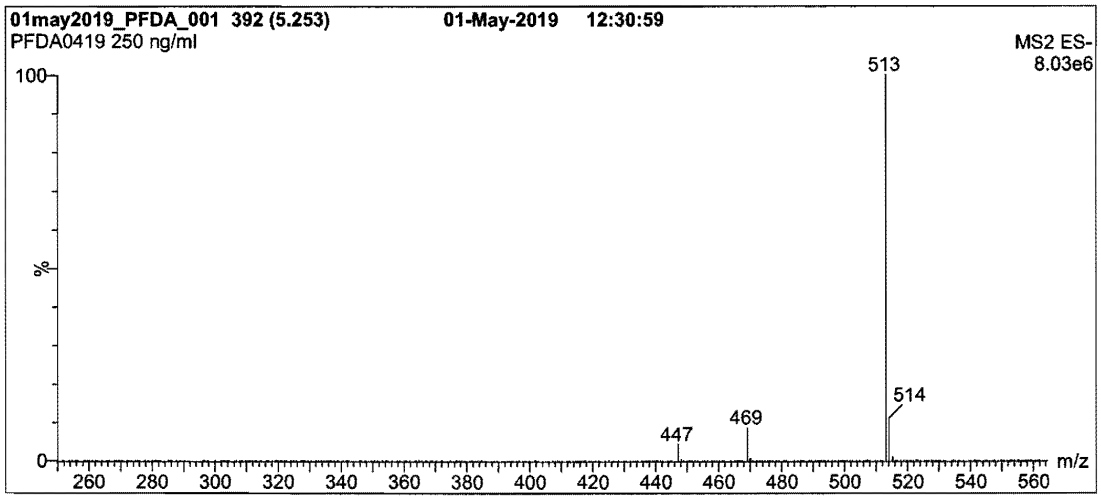
ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

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)

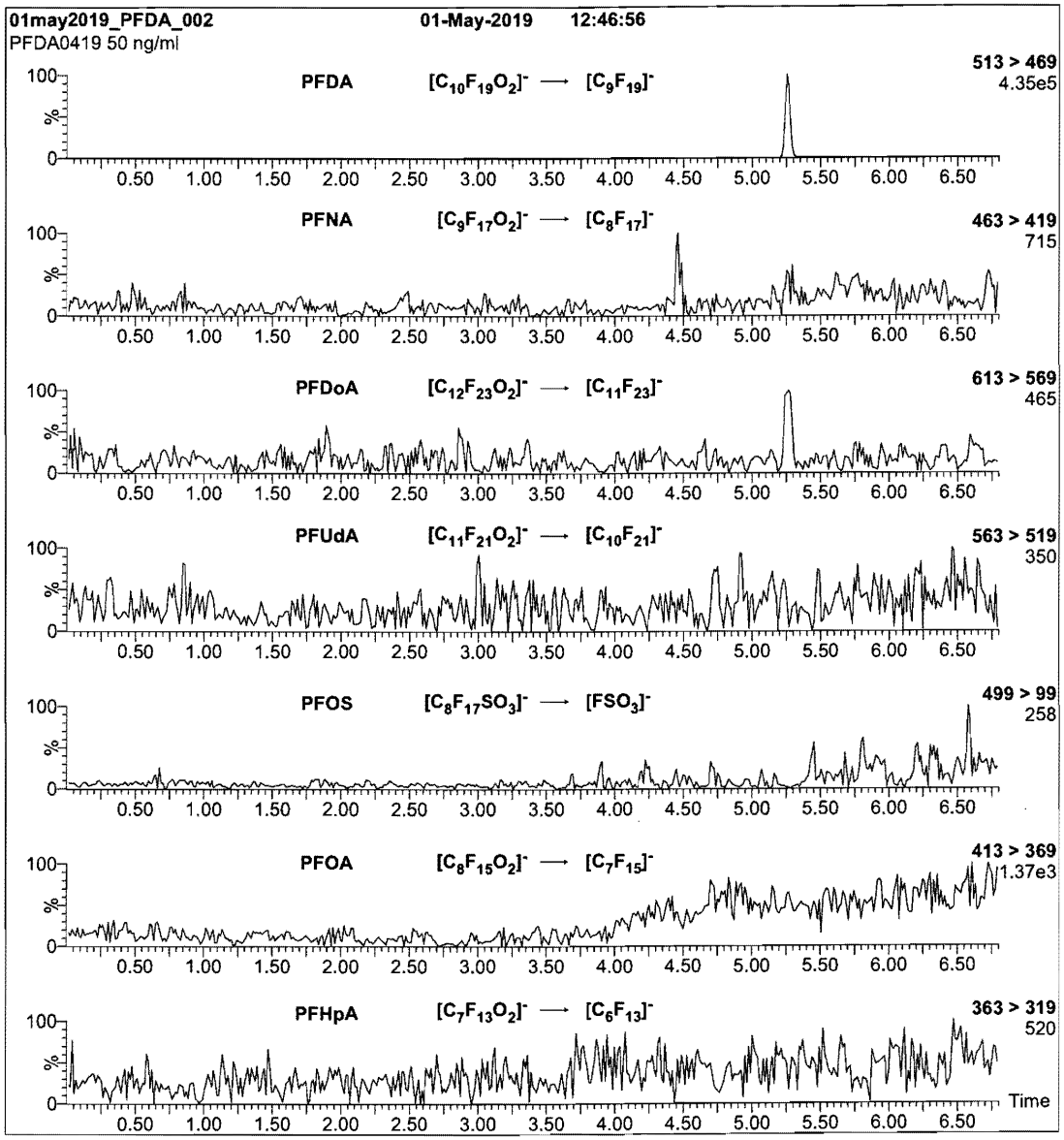
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFDA0419 (3 of 4)
rev0

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

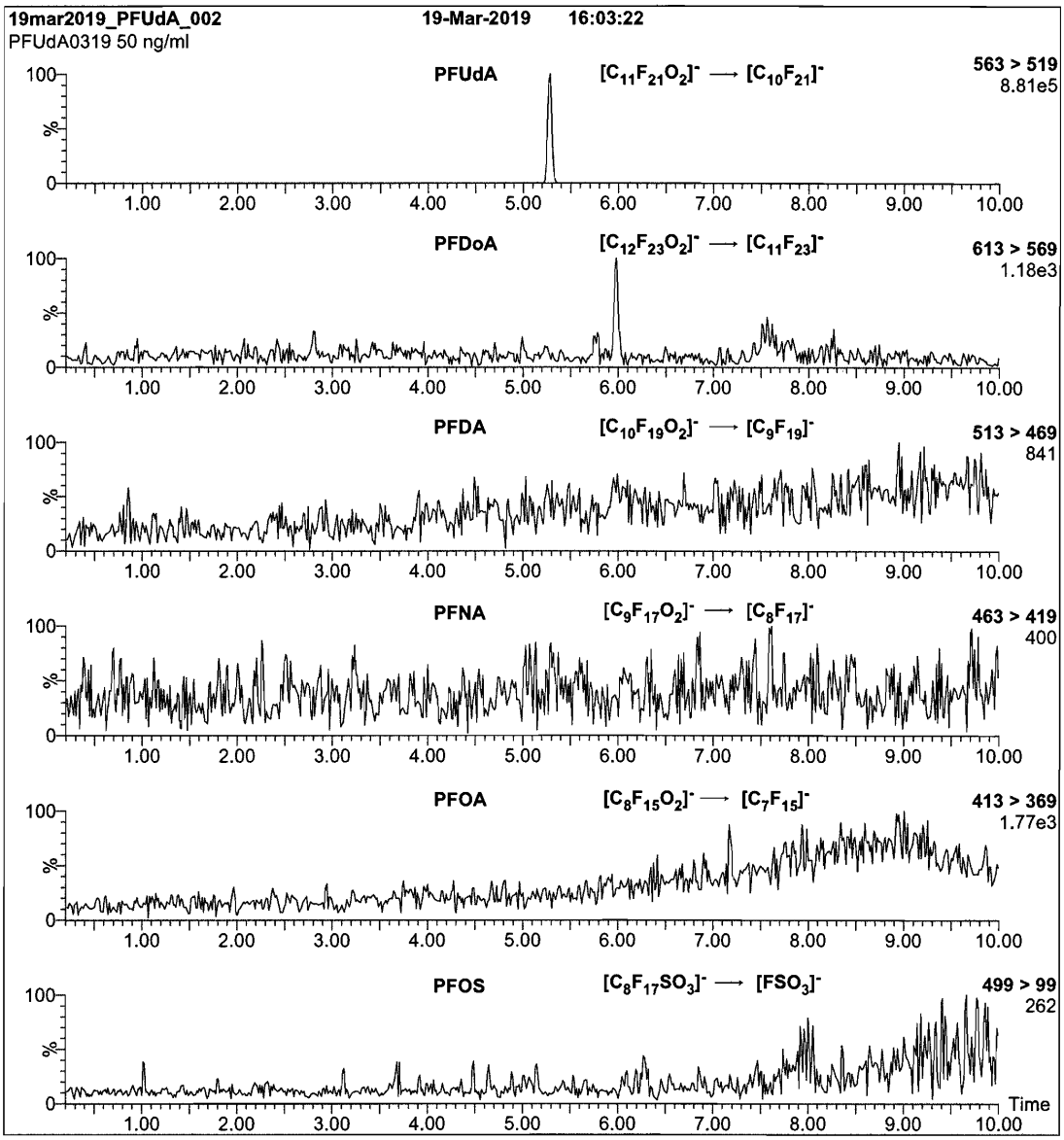
Collision Gas (mbar) = 2.88e-3
Collision Energy (eV) = 10

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFDA0419 (4 of 4)
rev0

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

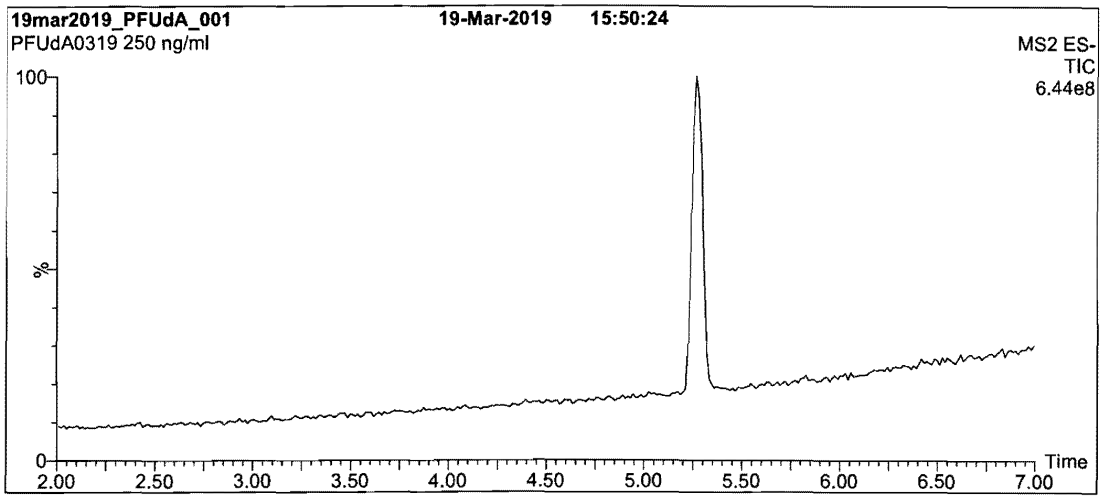
Collision Gas (mbar) = 3.04e-3
Collision Energy (eV) = 12

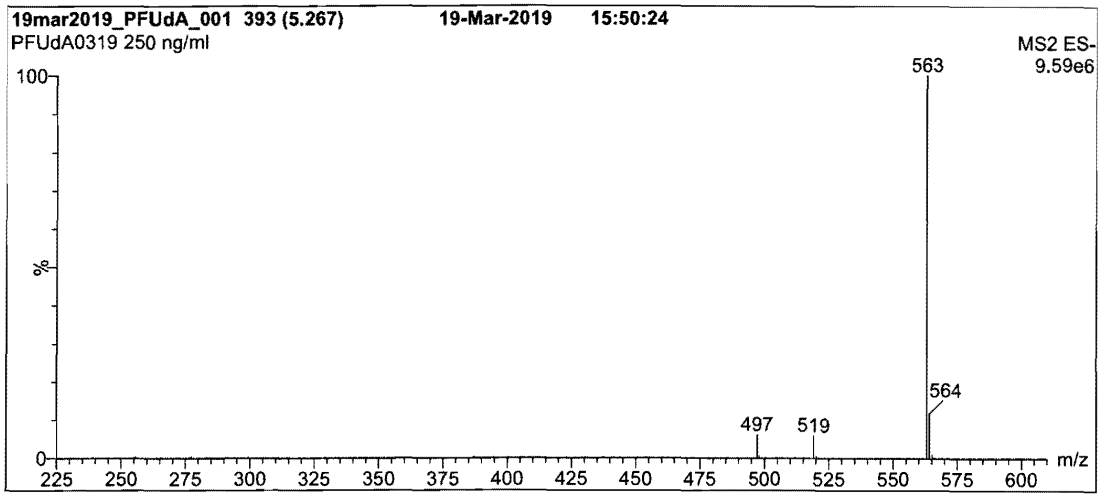
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFUdA0319 (4 of 4)
rev0

19L0690

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

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:

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

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

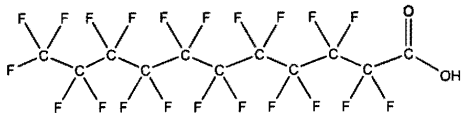
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0640

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFUdA	**LOT NUMBER:**	PFUdA0319
COMPOUND:	Perfluoro-n-undecanoic acid		
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).

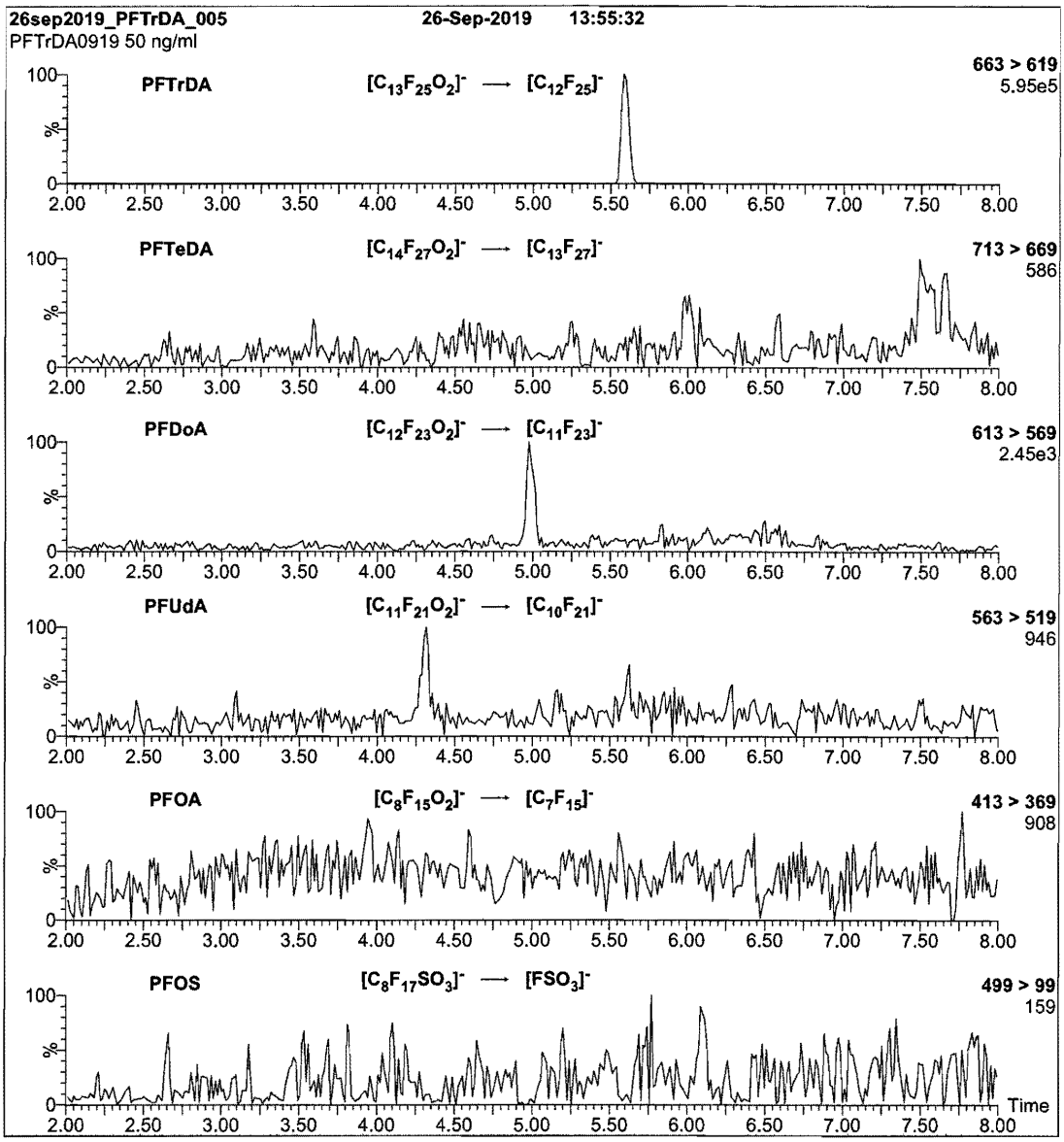
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/21/2019 (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

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

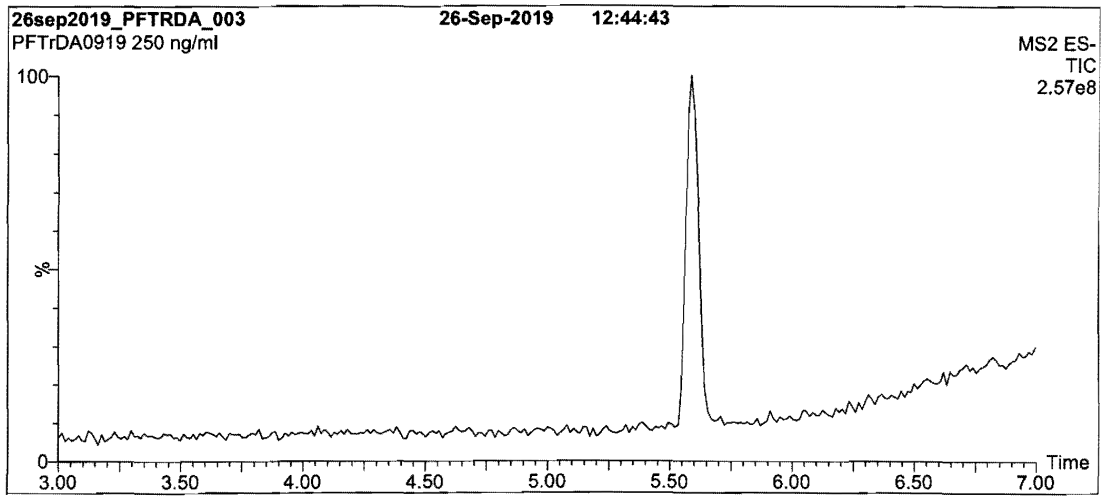
Collision Gas (mbar) = 3.73e-3
Collision Energy (eV) = 12

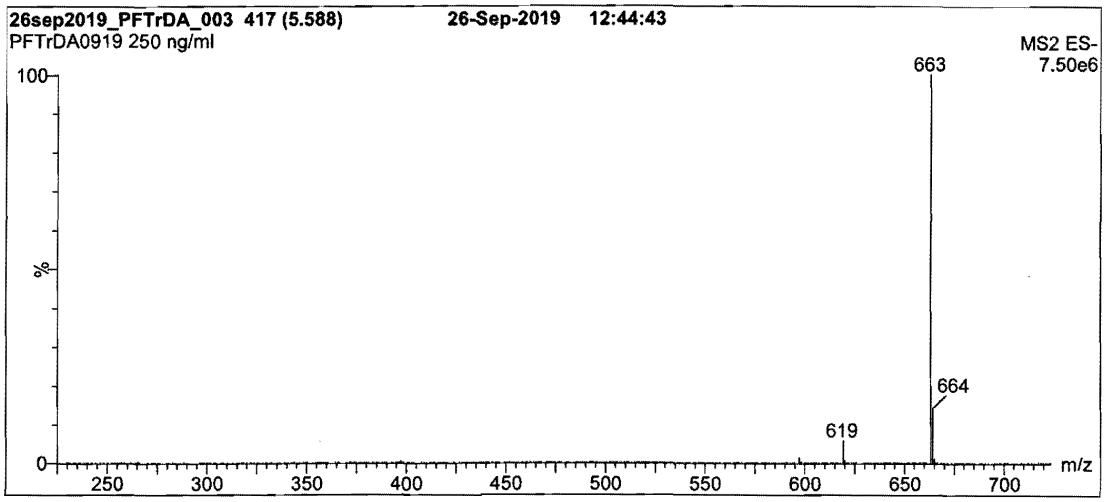
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFTrDA0919 (4 of 4)
rev0

1912641

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:

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

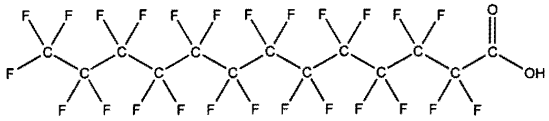
19L0691

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 ($C_{14}HF_{27}O_2$).

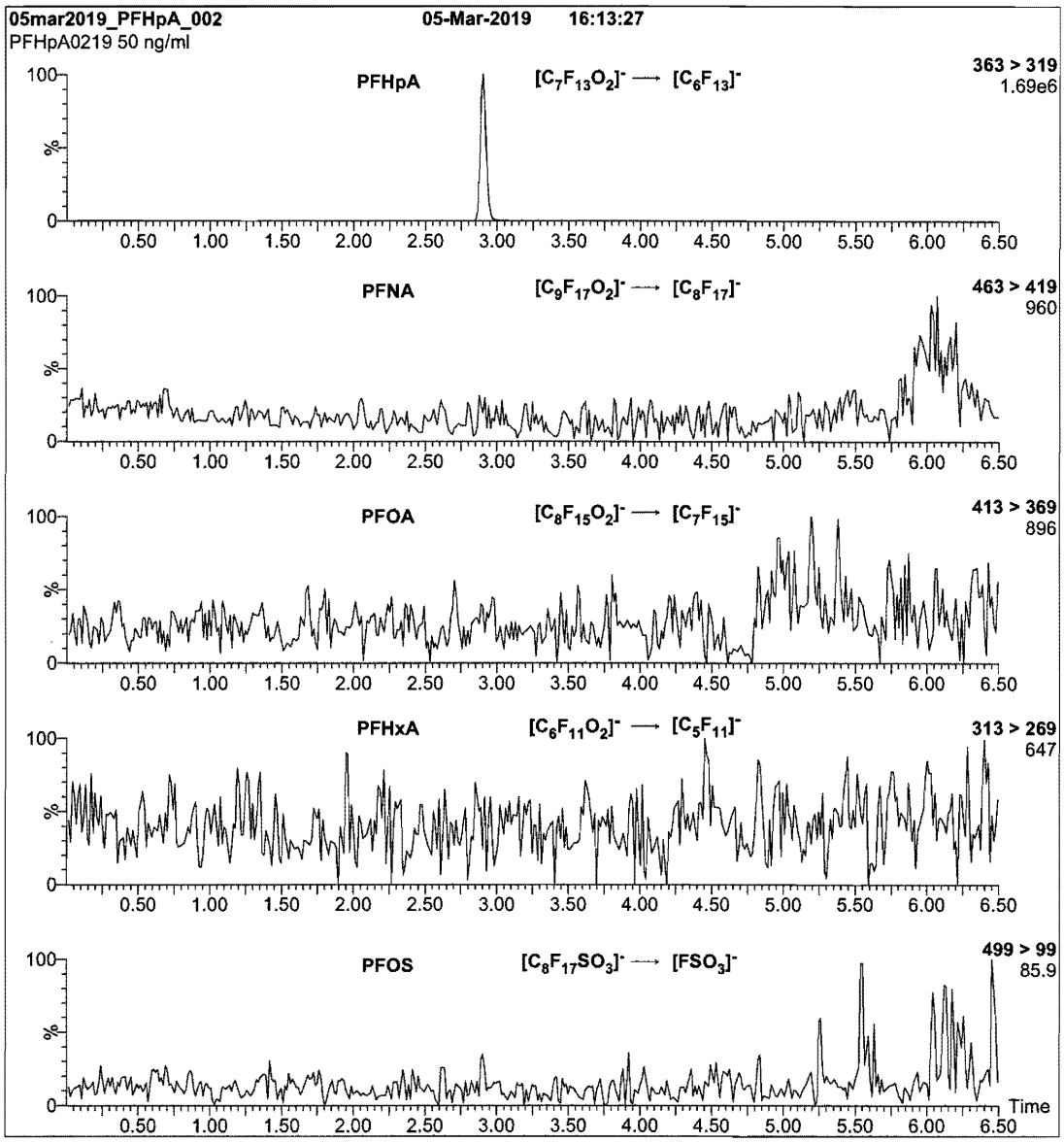
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/03/2019 (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

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

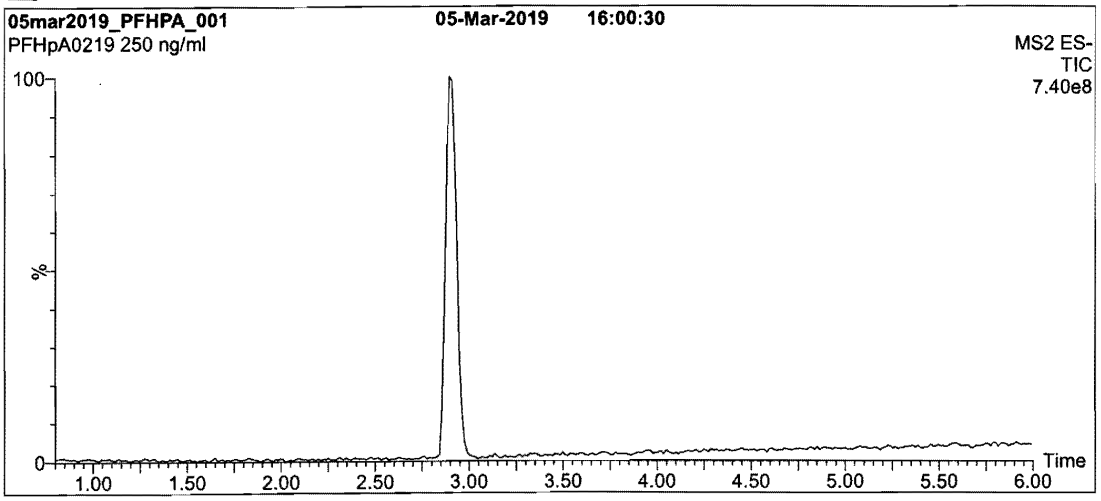
Collision Gas (mbar) = 2.74e-3
Collision Energy (eV) = 8

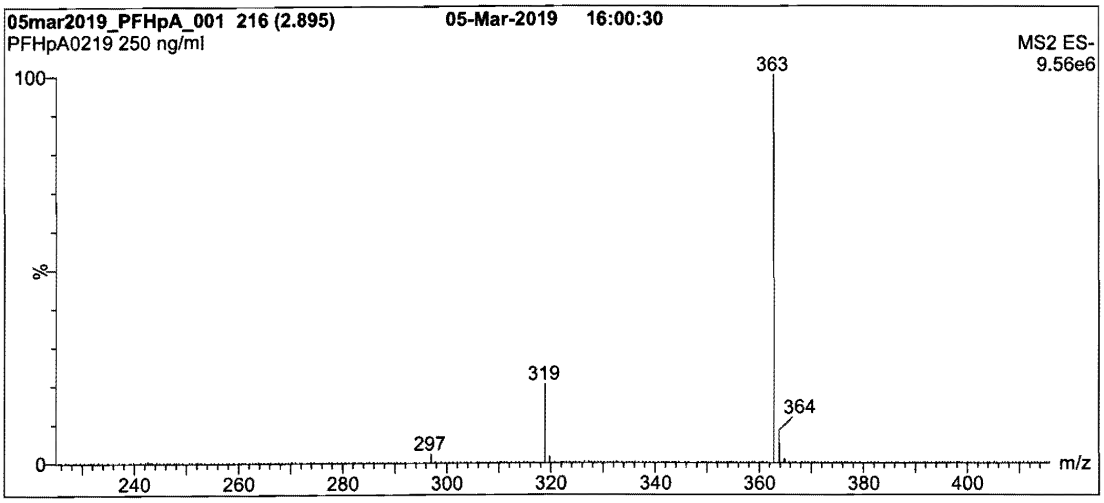
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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 2018-08-14

PFHpA0219 (3 of 4)
rev0

19L0642

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

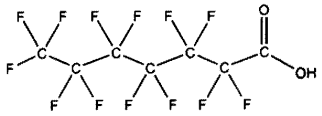
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

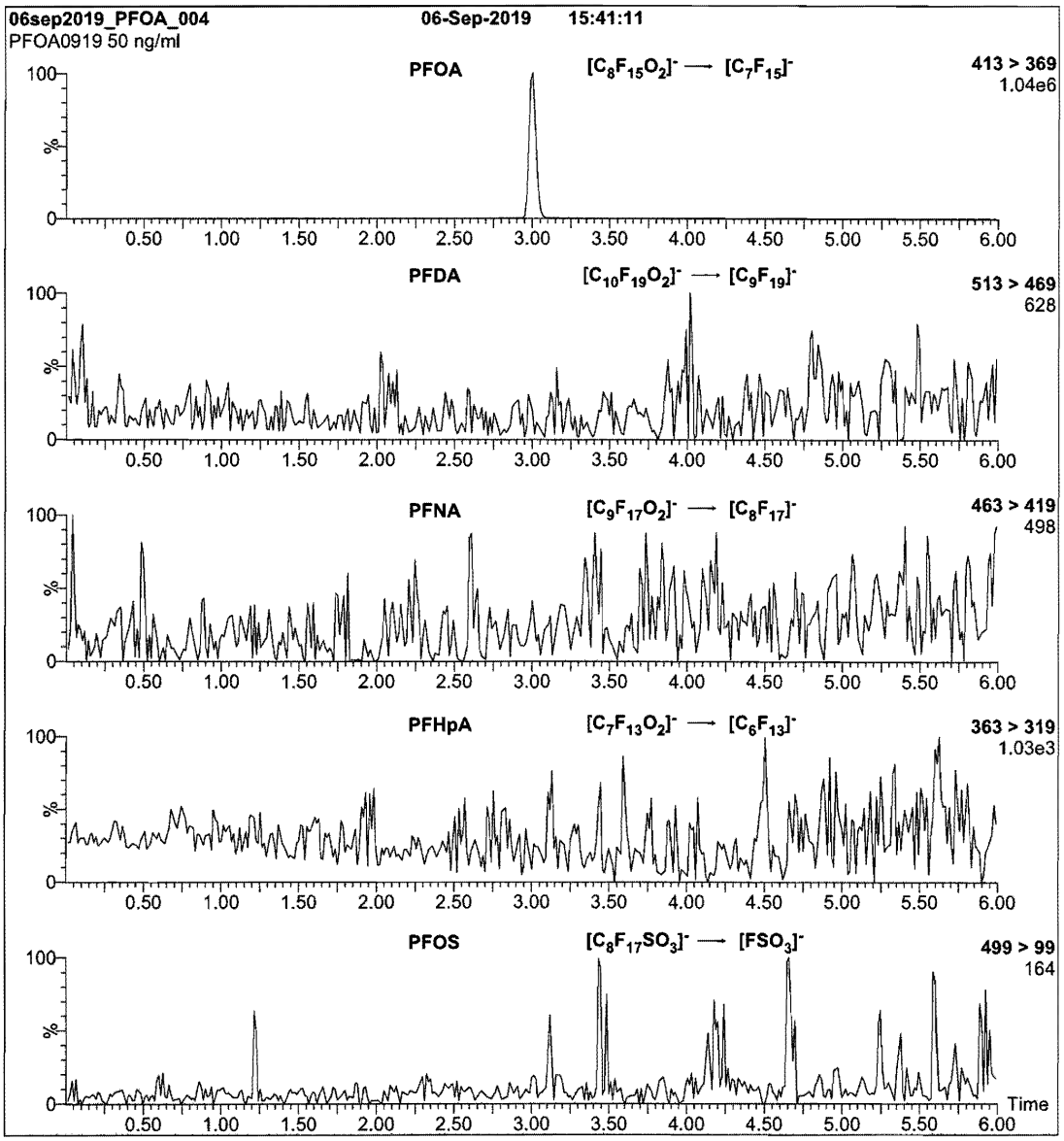
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

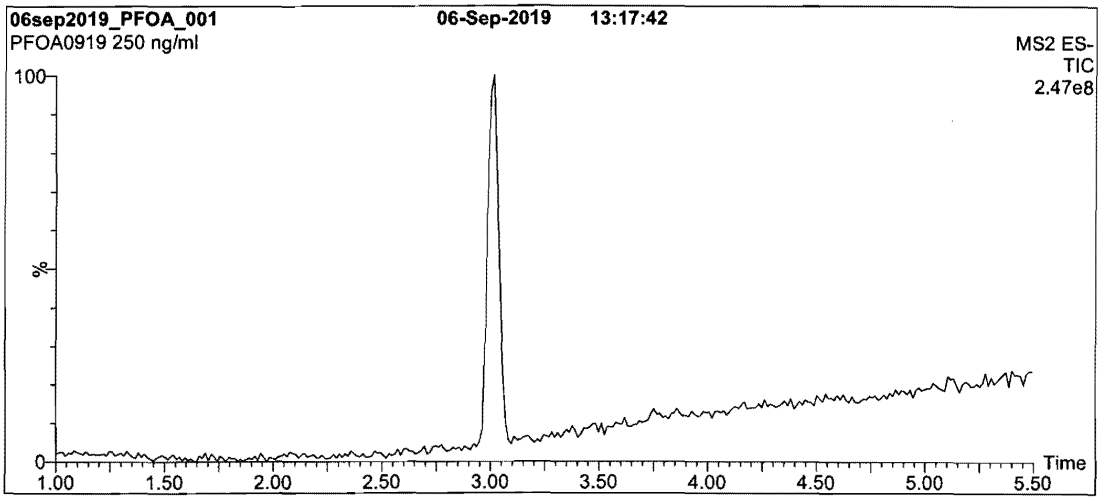
Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 8

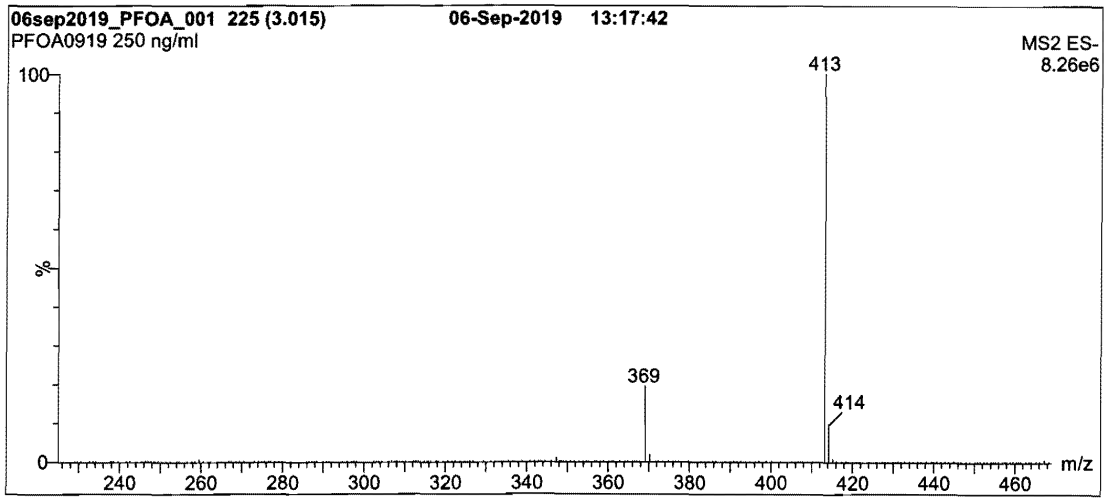
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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:

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

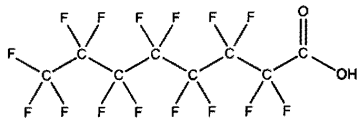
PFOA0919 (2 of 4)
rev0

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

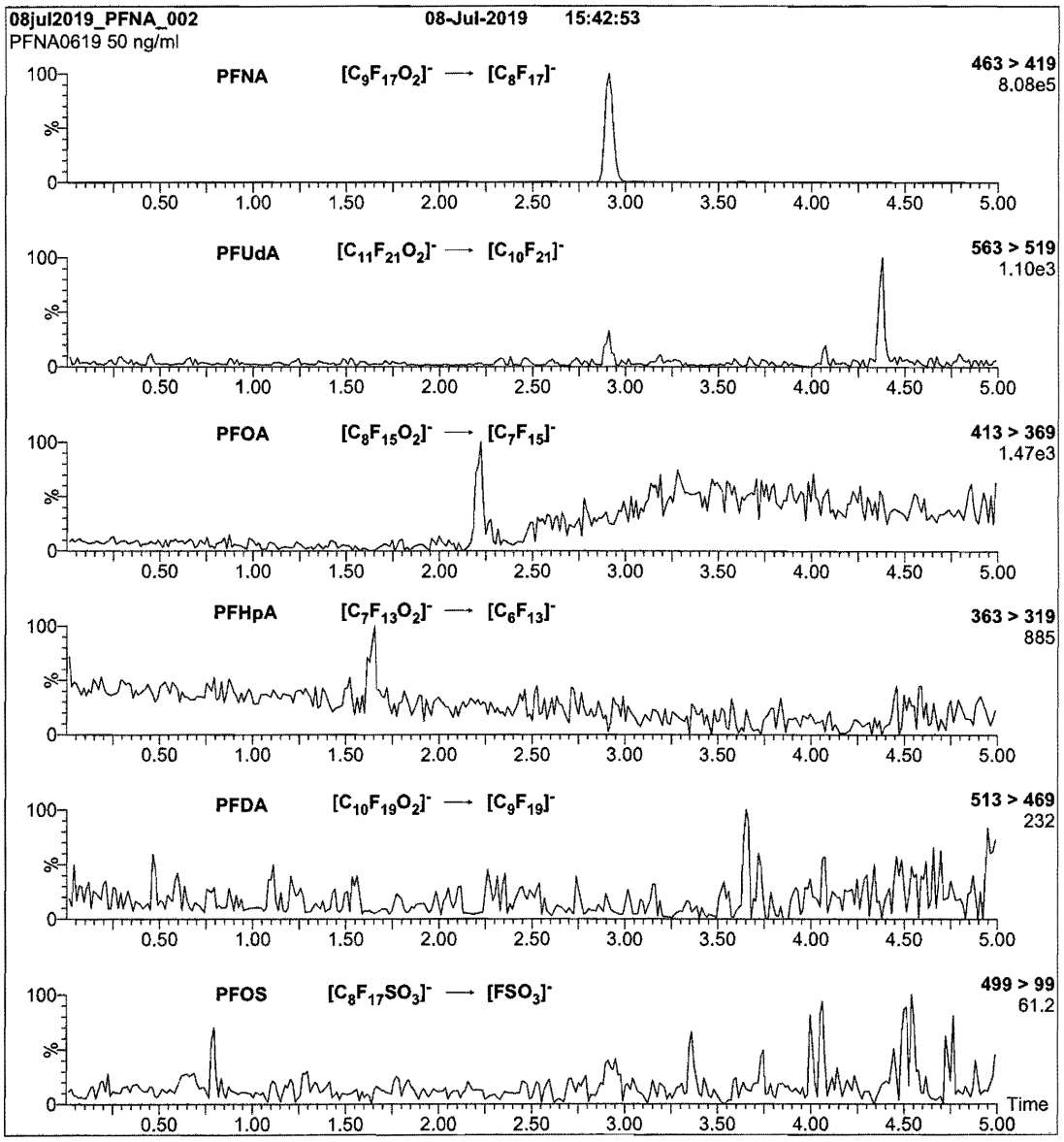
Certified By: _____ **Date:** 09/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

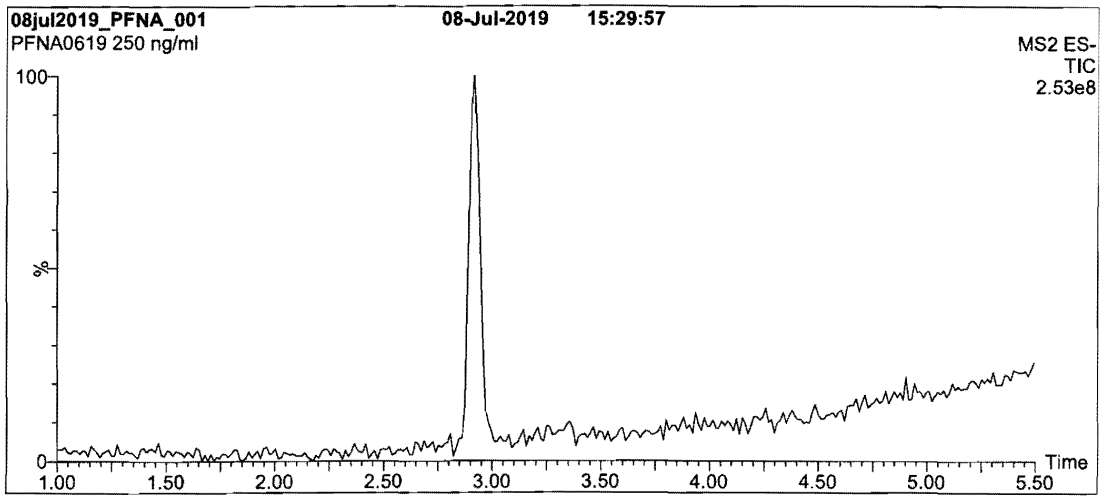
Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

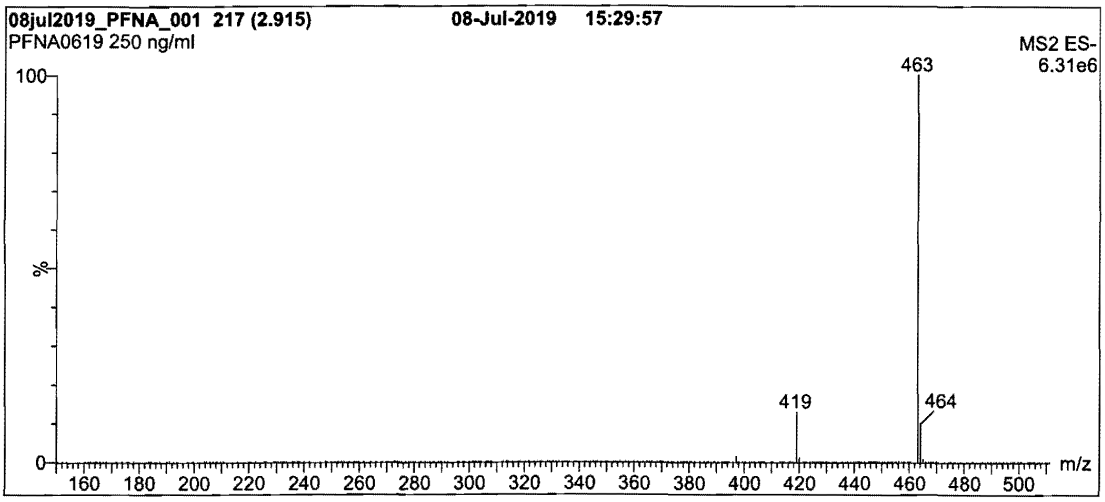
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFNA0619 (4 of 4)
rev0

19L0644

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





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) = 2.50
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

PFNA0619 (3 of 4)
rev0

19L0644

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. 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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

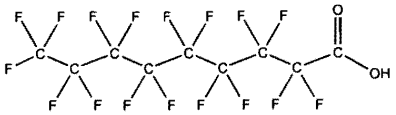
PFNA0619 (2 of 4)
rev0

19L0644

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFNA	**LOT NUMBER:**	PFNA0619
COMPOUND:	Perfluoro-n-nonanoic acid		
STRUCTURE:		**CAS #:**	375-95-1



MOLECULAR FORMULA:	$C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	464.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/08/2019		
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

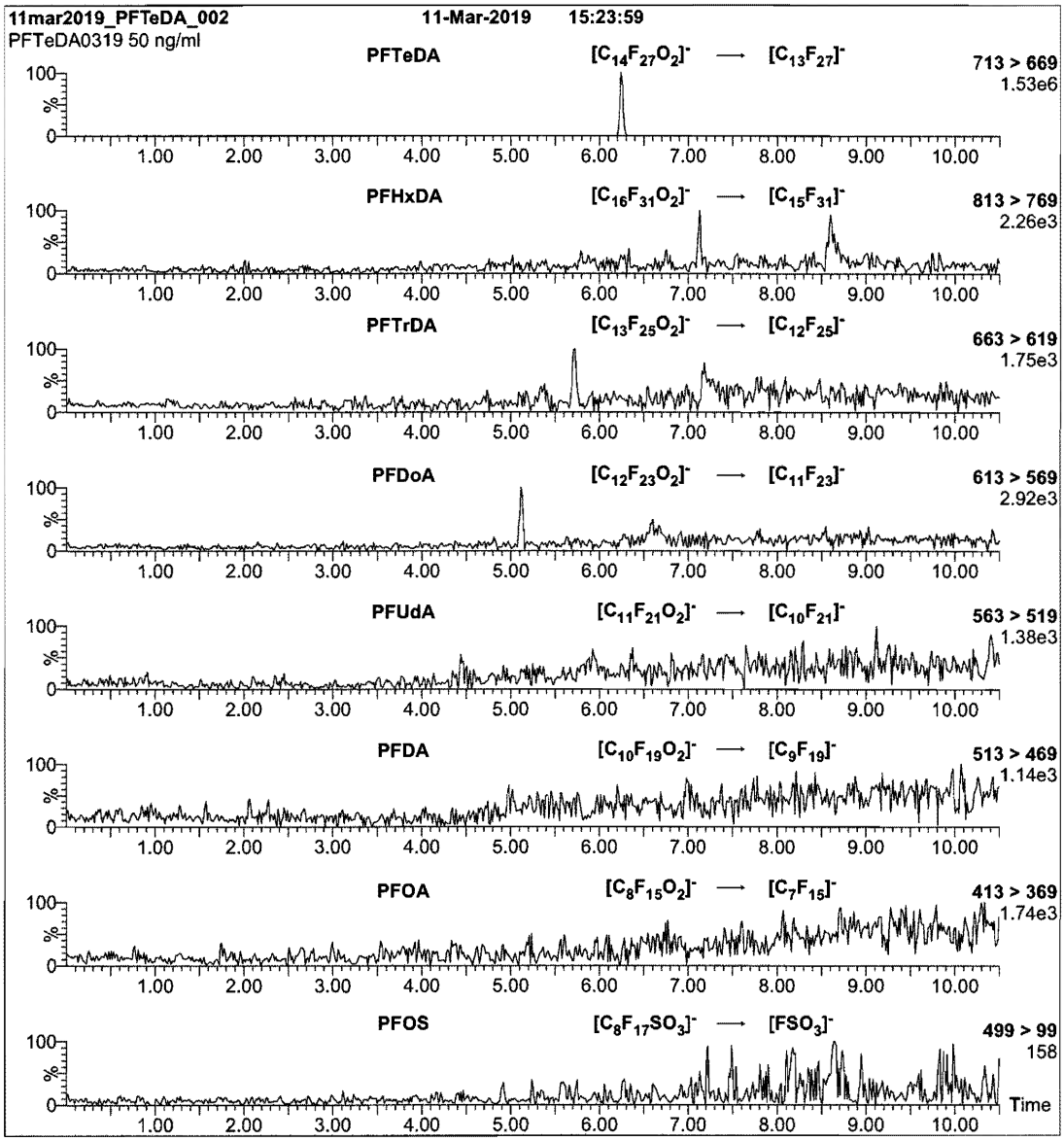
Certified By: _____ **Date:** 07/11/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

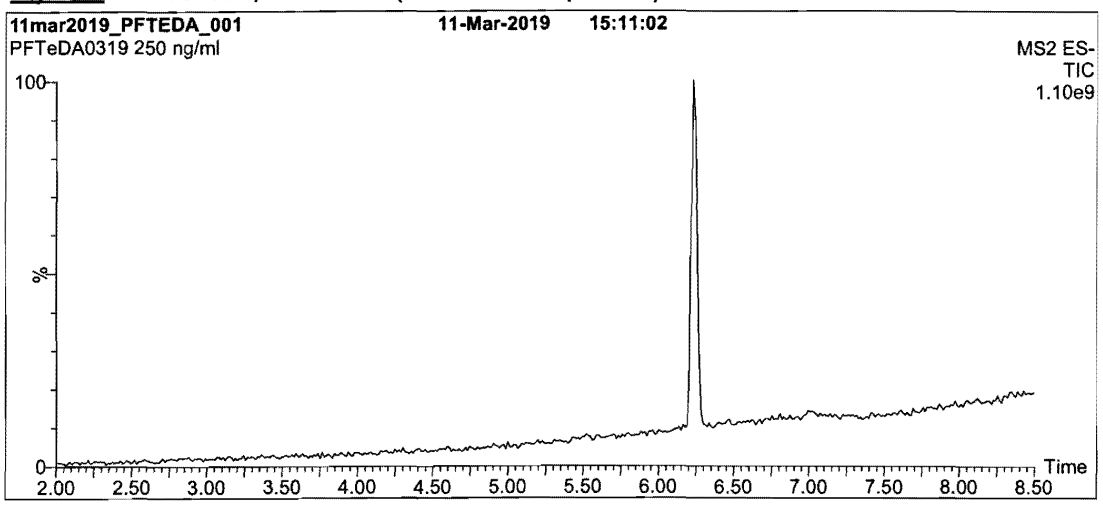
Collision Gas (mbar) = 3.03e-3
Collision Energy (eV) = 14

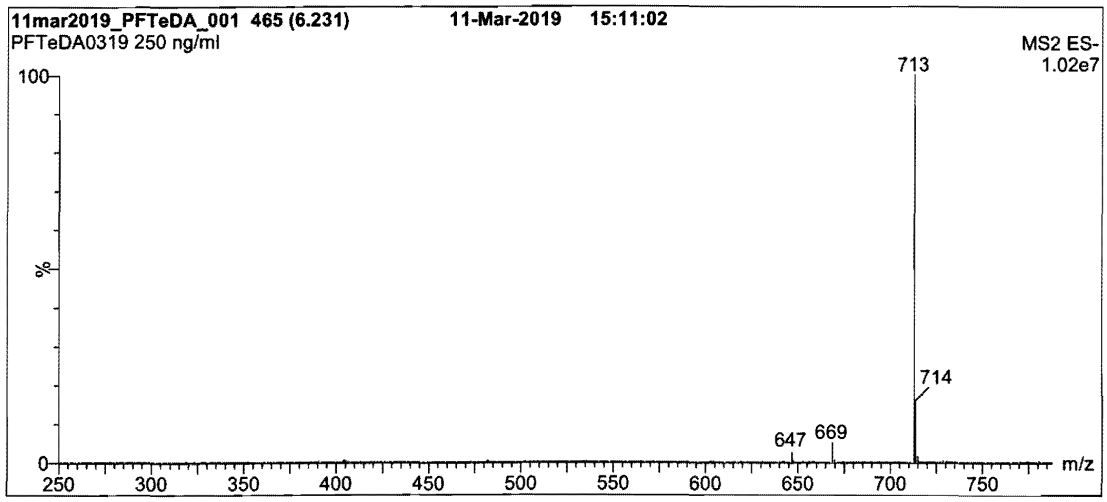
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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)
rev0

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,...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

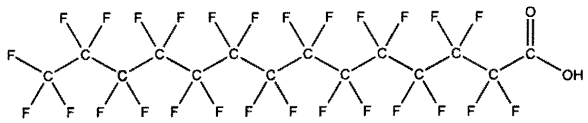
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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 ($C_{16}HF_{31}O_2$).

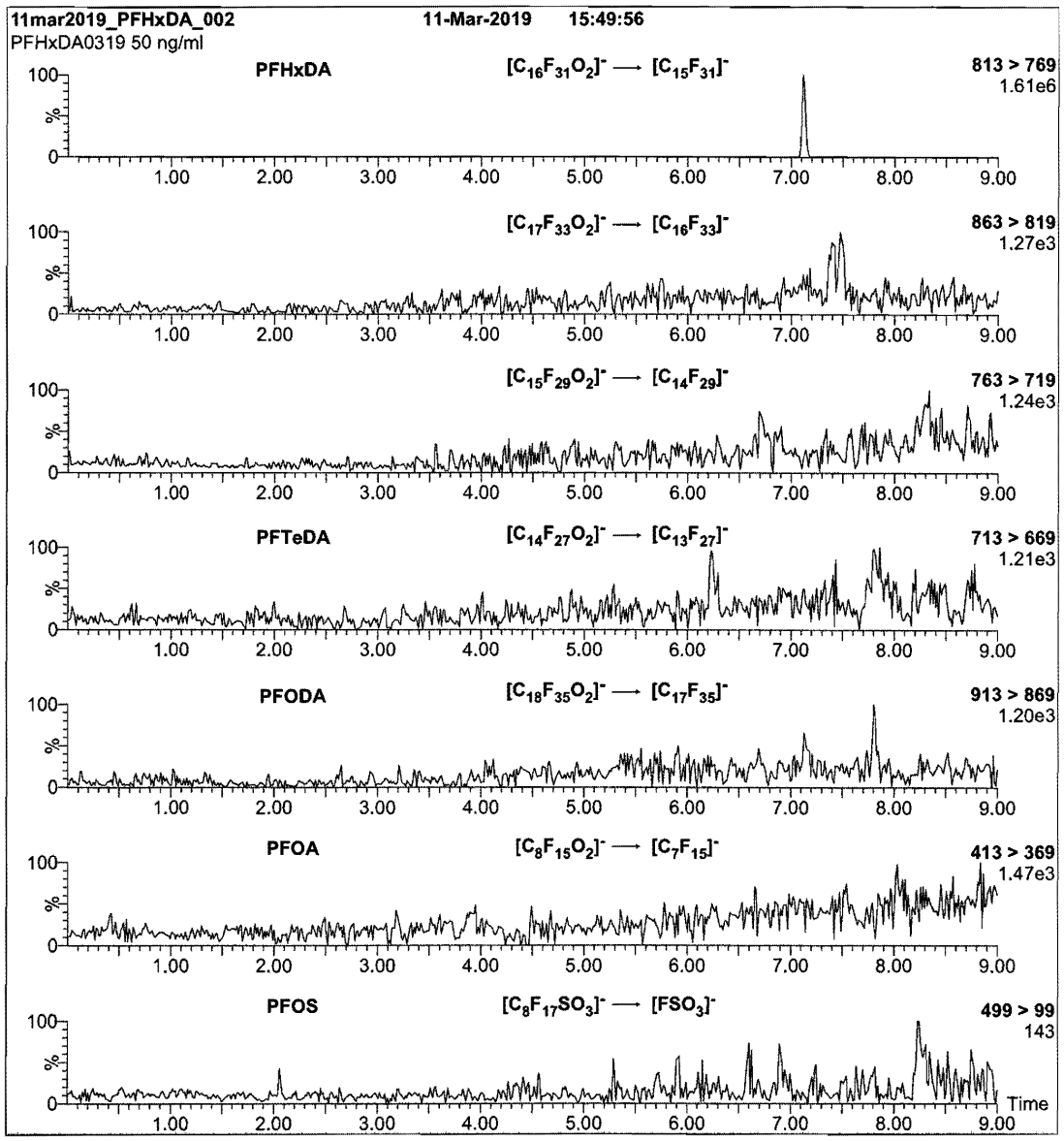
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/28/2019 (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

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

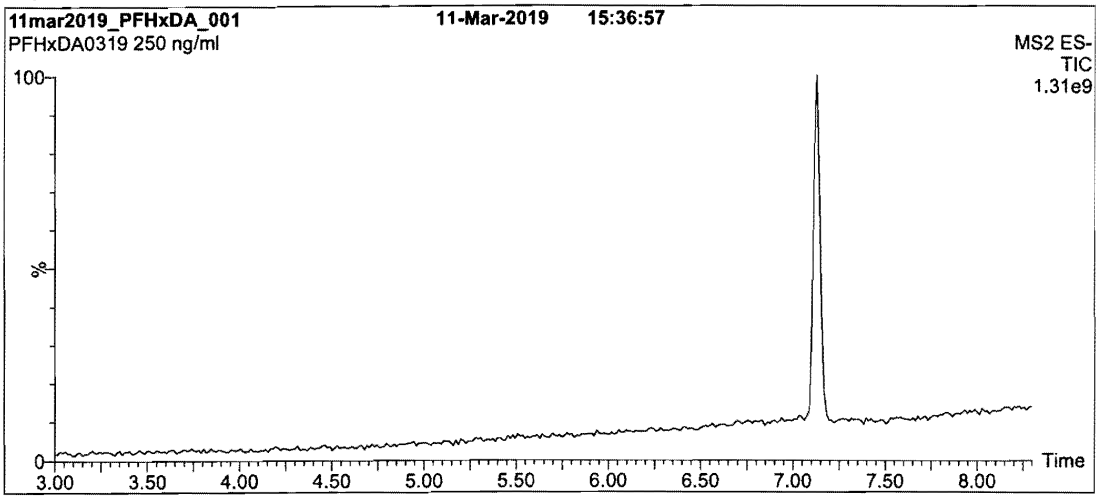
Collision Gas (mbar) = 3.03e-3
Collision Energy (eV) = 15

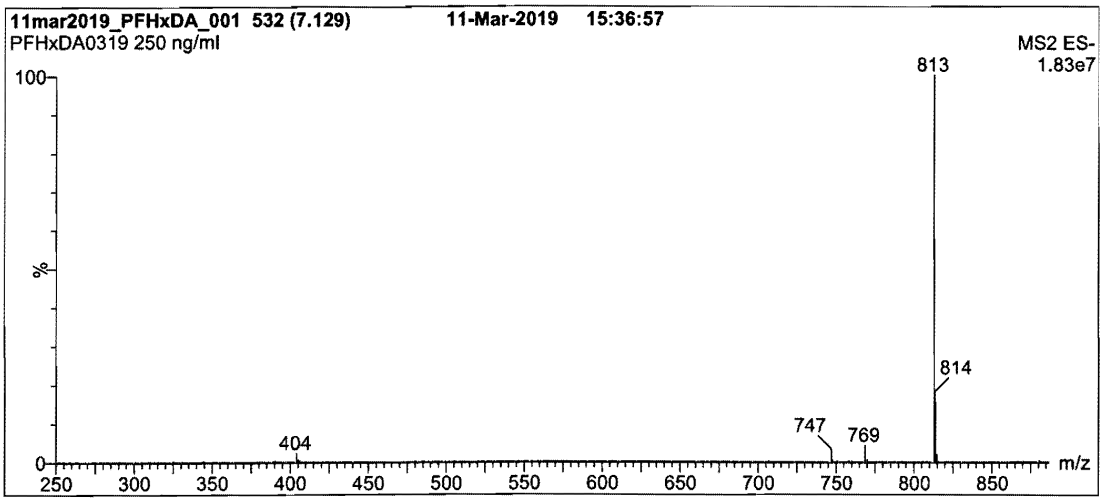
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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:

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. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

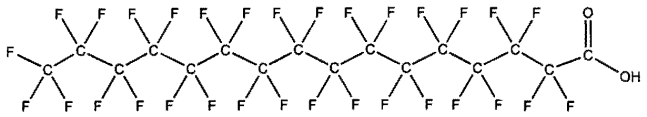
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0646

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFHxDA	**LOT NUMBER:**	PFHxDA0319
COMPOUND:	Perfluoro-n-hexadecanoic acid		
STRUCTURE:		**CAS #:**	67905-19-5



MOLECULAR FORMULA:	$C_{16}HF_{31}O_2$	**MOLECULAR WEIGHT:**	814.13
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	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

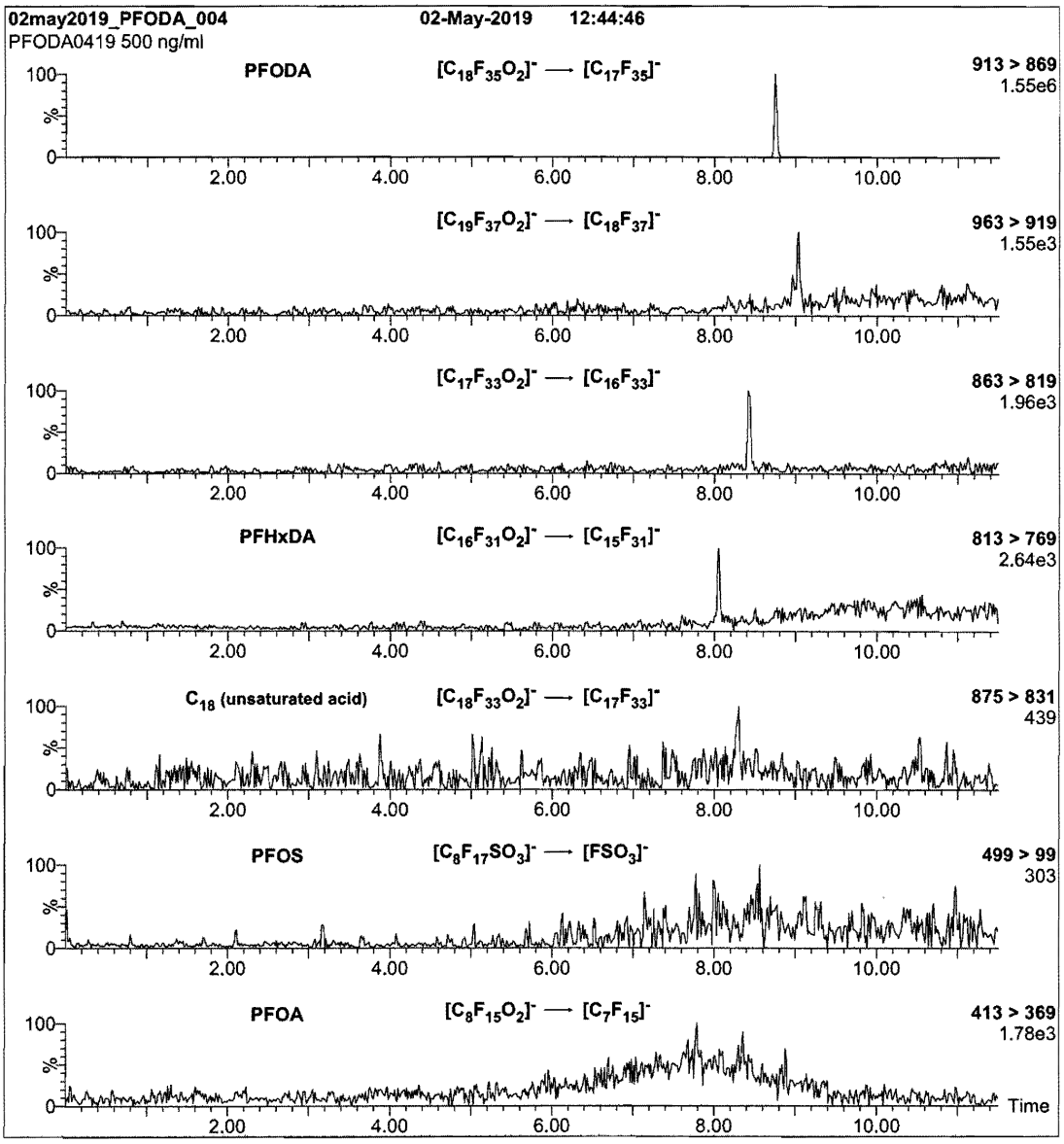
Certified By: _____ **Date:** 03/28/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

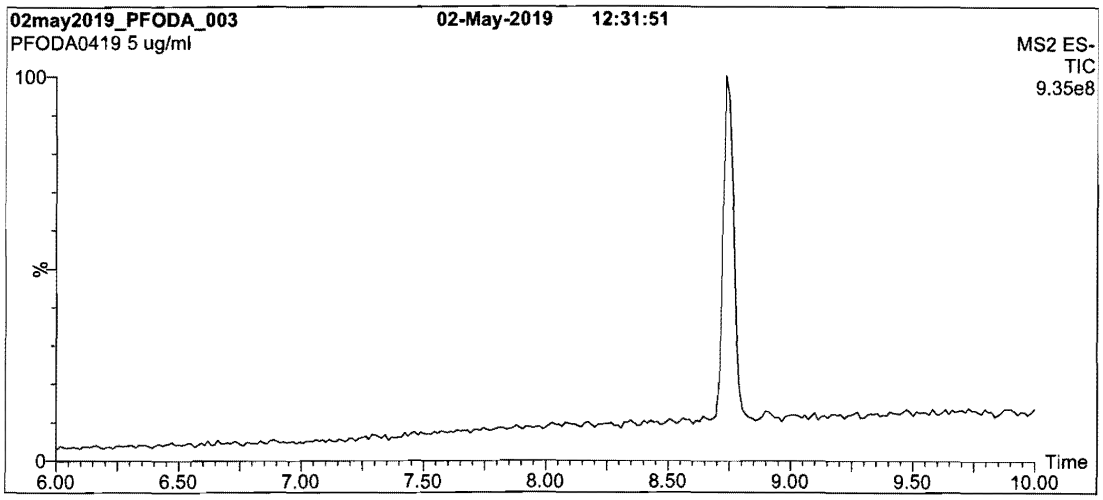
Collision Gas (mbar) = 2.92e-3
Collision Energy (eV) = 15

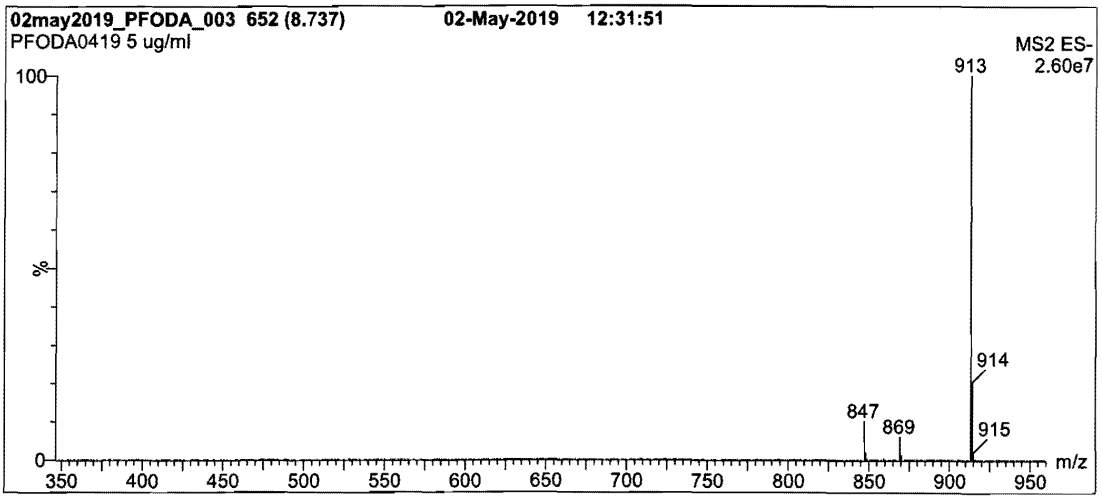
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

PFODA0419 (4 of 4)
rev0

191647

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

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. 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

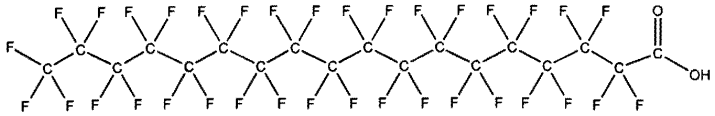
19L0647

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

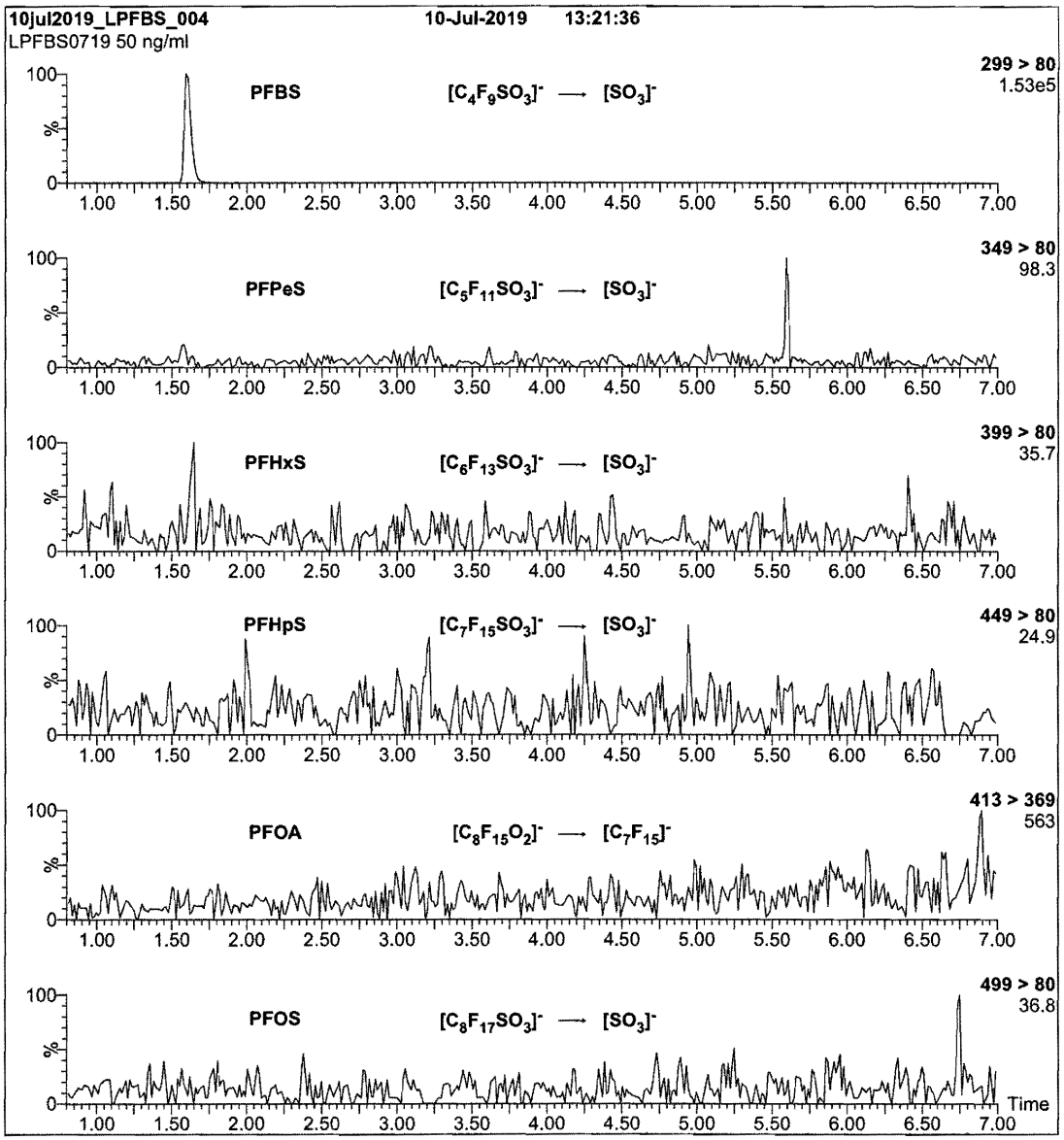
Certified By: _____ **Date:** 05/16/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

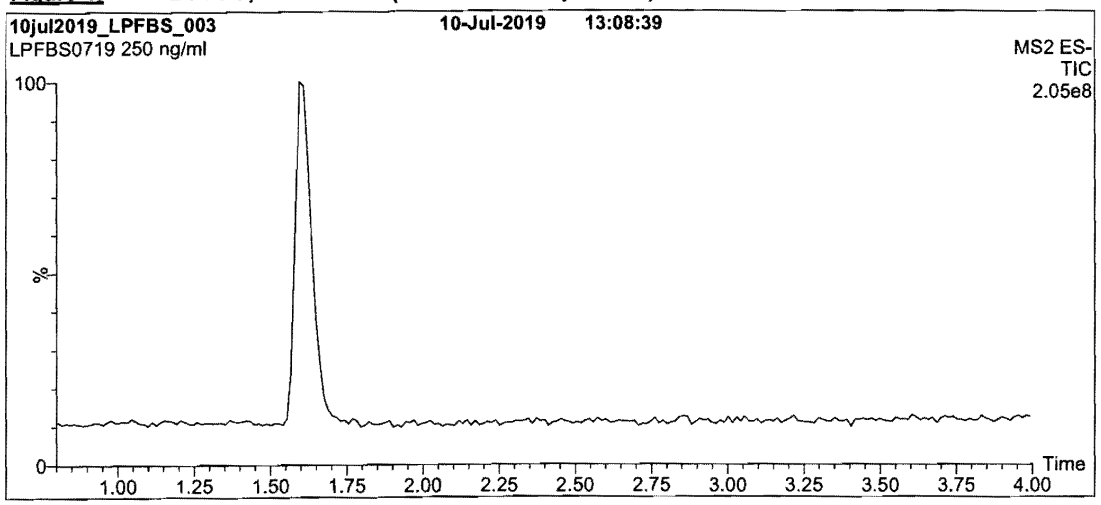
Collision Gas (mbar) = 3.25e-3
Collision Energy (eV) = 30

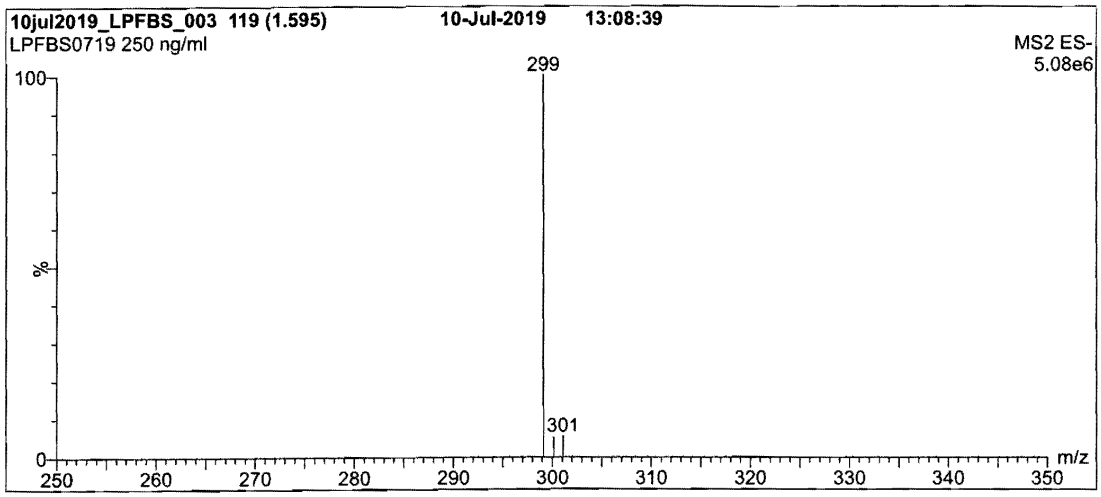
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFBS0719 (4 of 4)
rev0

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

LPFBS0719 (3 of 4)
rev0

19L0648

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

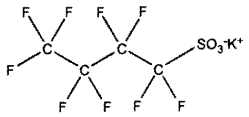
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

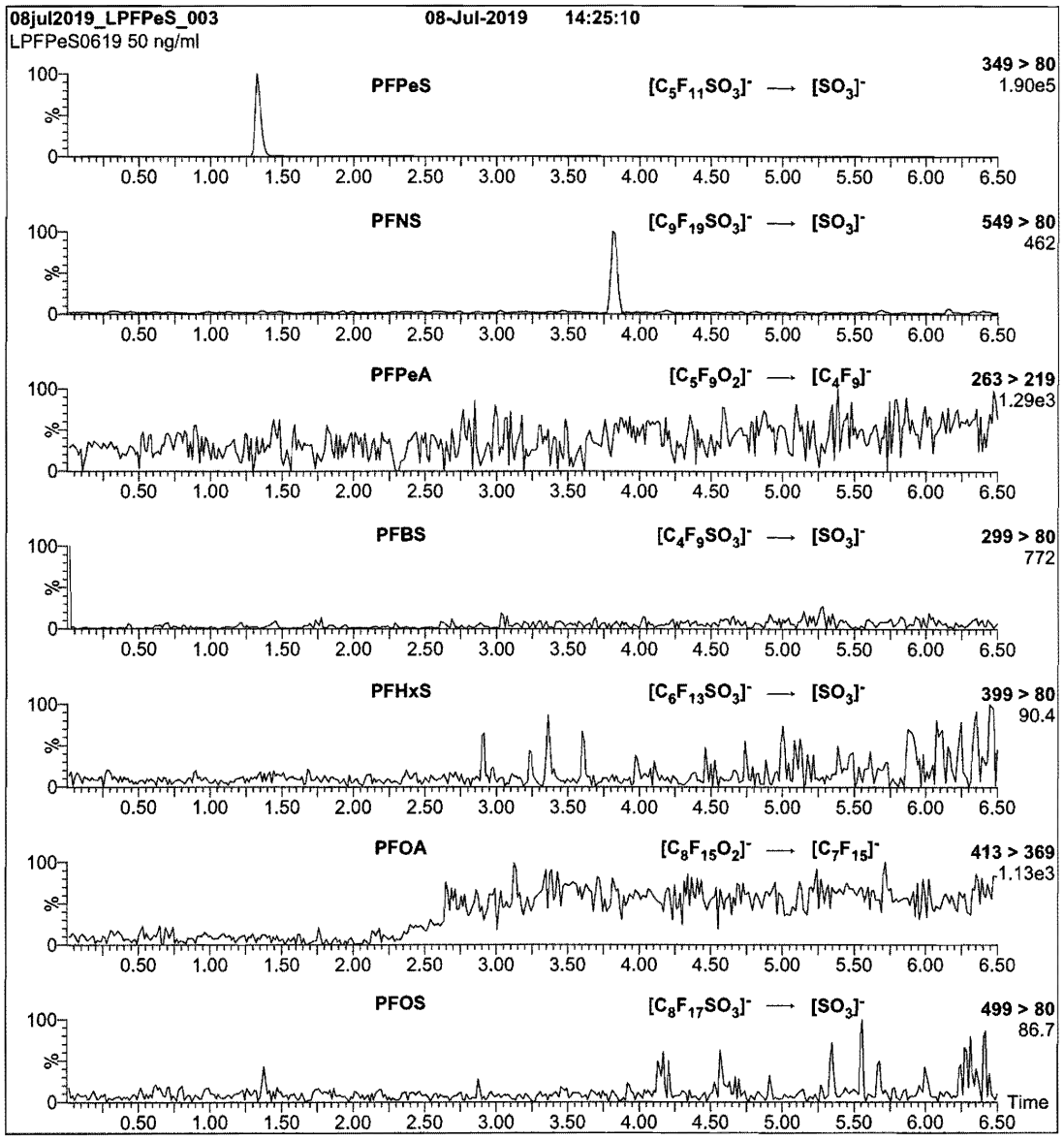
Certified By: _____ **Date:** 08/06/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

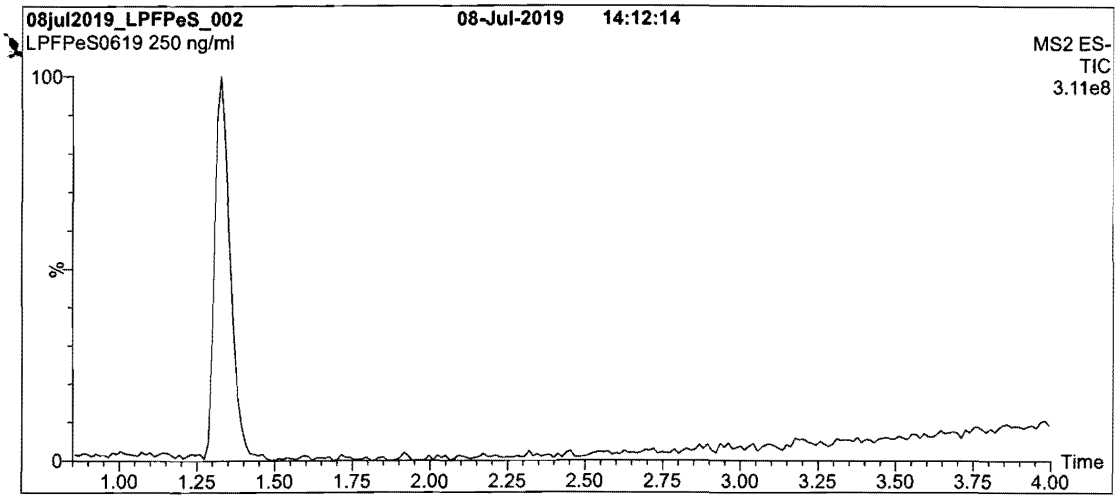
Collision Gas (mbar) = 3.37e-3
Collision Energy (eV) = 32

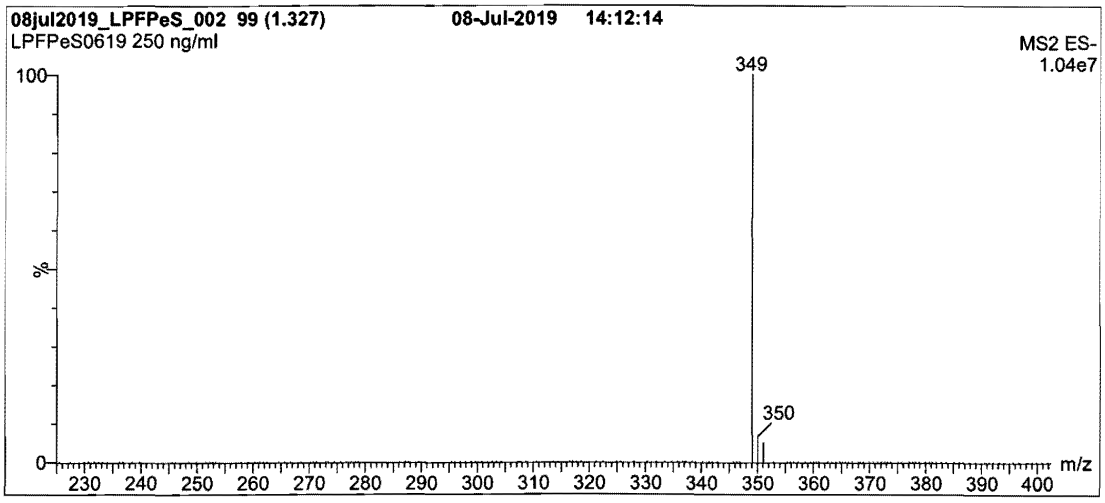
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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:

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

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

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly 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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

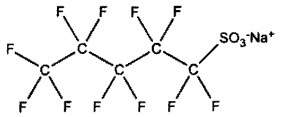
LPFPeS0619 (2 of 4)
rev0

19L0619

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	L-PFPeS	**LOT NUMBER:**	LPFPeS0619
COMPOUND:	Sodium perfluoro-1-pentanesulfonate		
STRUCTURE:		**CAS #:**	630402-22-1



MOLECULAR FORMULA:	$C_5F_{11}SO_3Na$	**MOLECULAR WEIGHT:**	372.09
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.9 ± 2.3 µg/ml (PFPeS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	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).

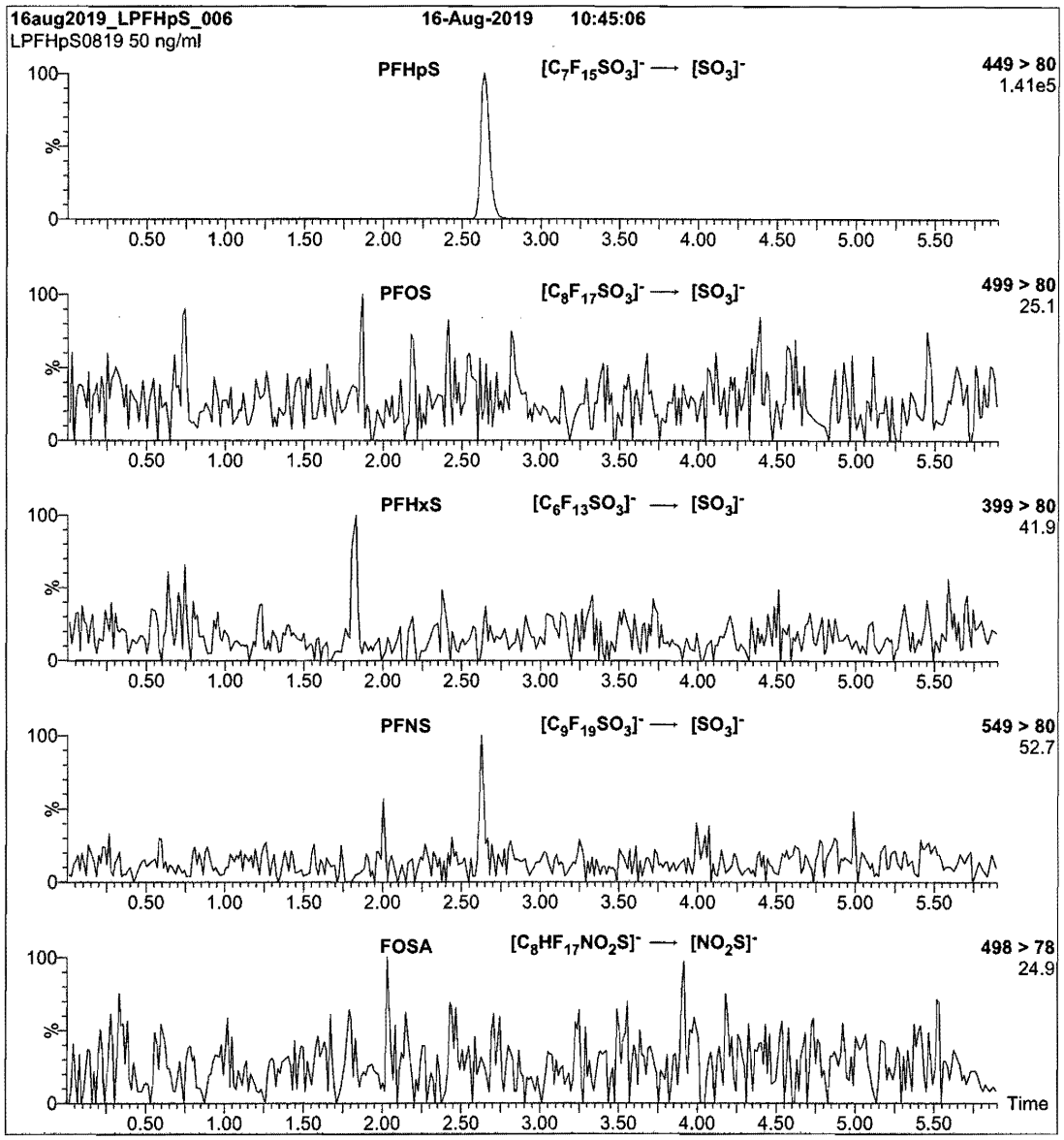
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

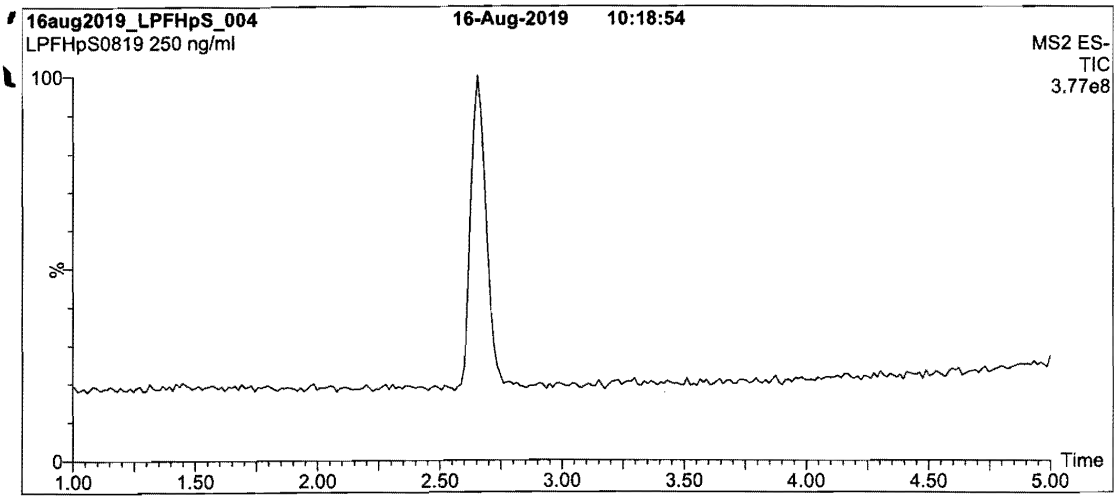
MS Parameters
Collision Gas (mbar) = 3.61e-3
Collision Energy (eV) = 42

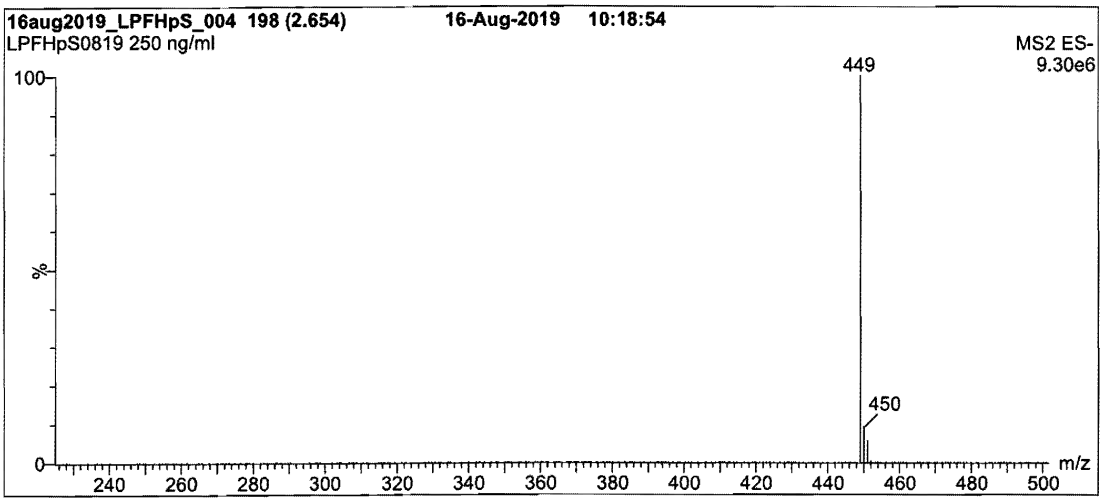
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

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:

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

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

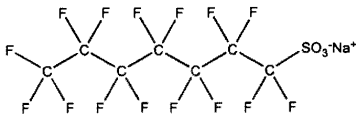
19L0650

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

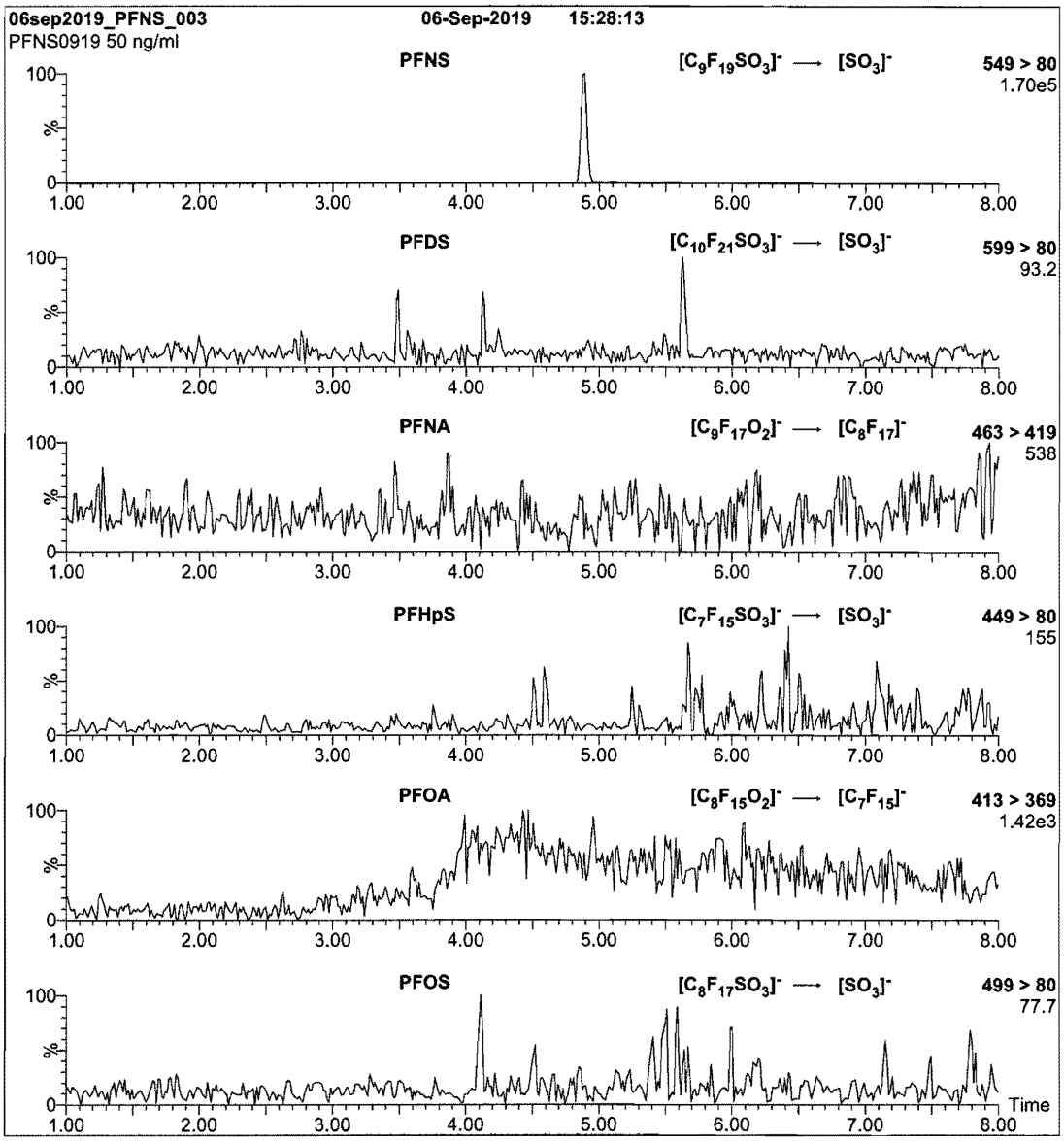
Certified By: _____ **Date:** 08/29/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

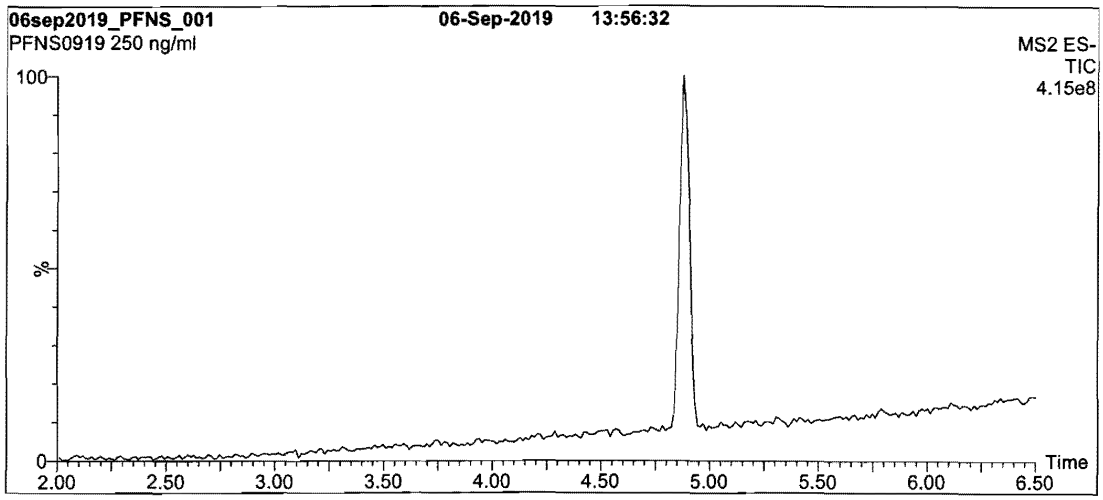
Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 64

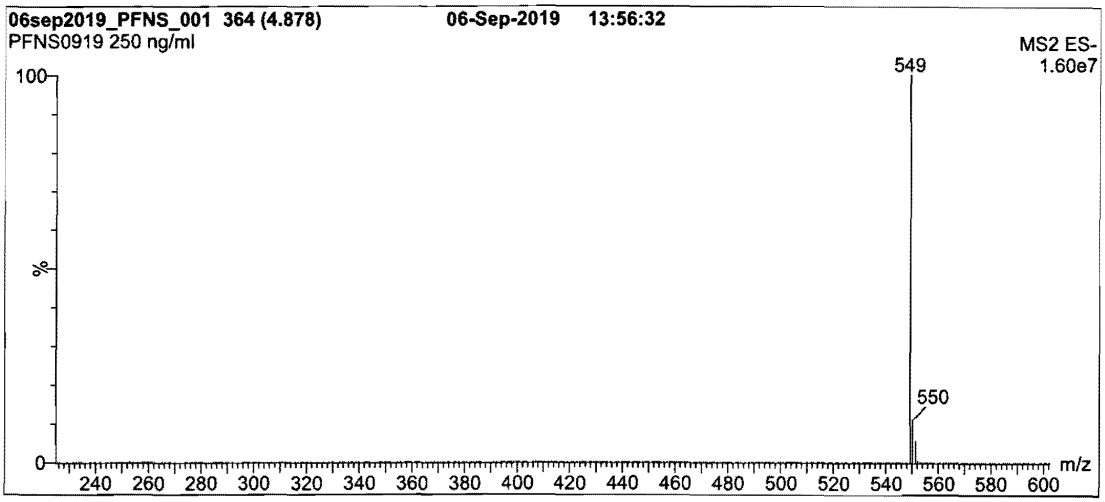
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFNS0919 (4 of 4)
rev0

19L0651

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFNS0919 (3 of 4)
rev0

19L0651

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

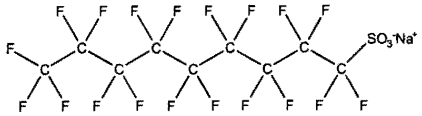
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

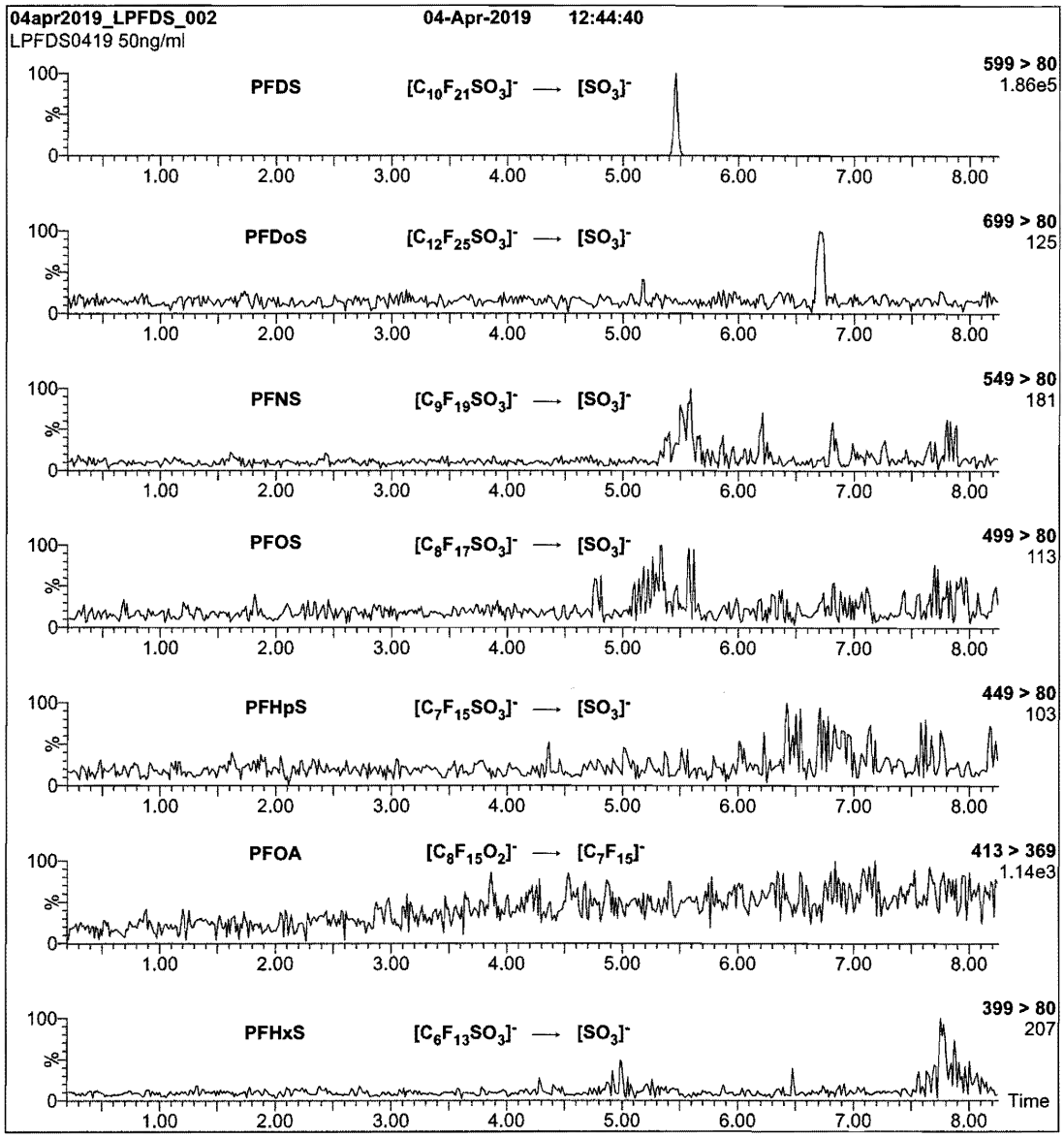
Certified By: _____ **Date:** 09/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

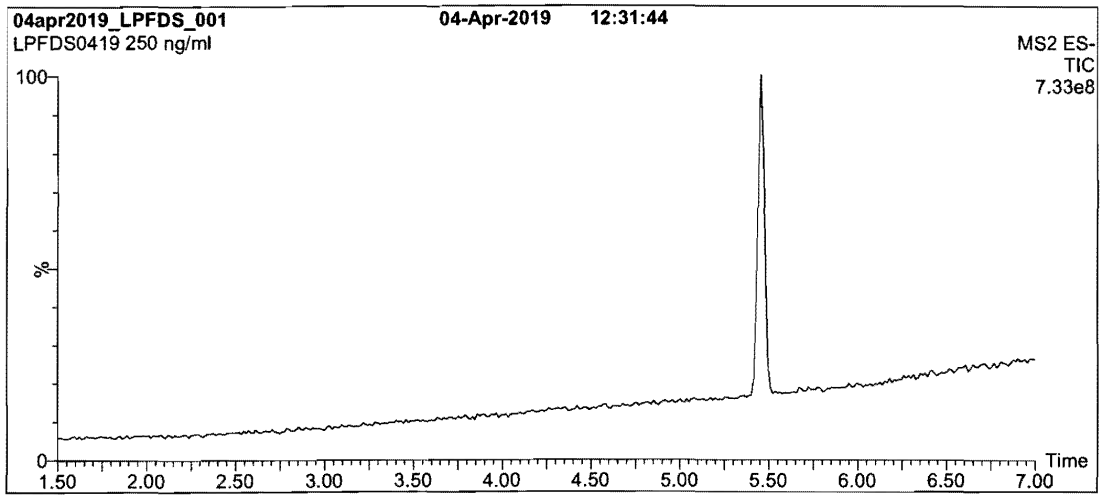
Collision Gas (mbar) = 2.99e-3
Collision Energy (eV) = 56

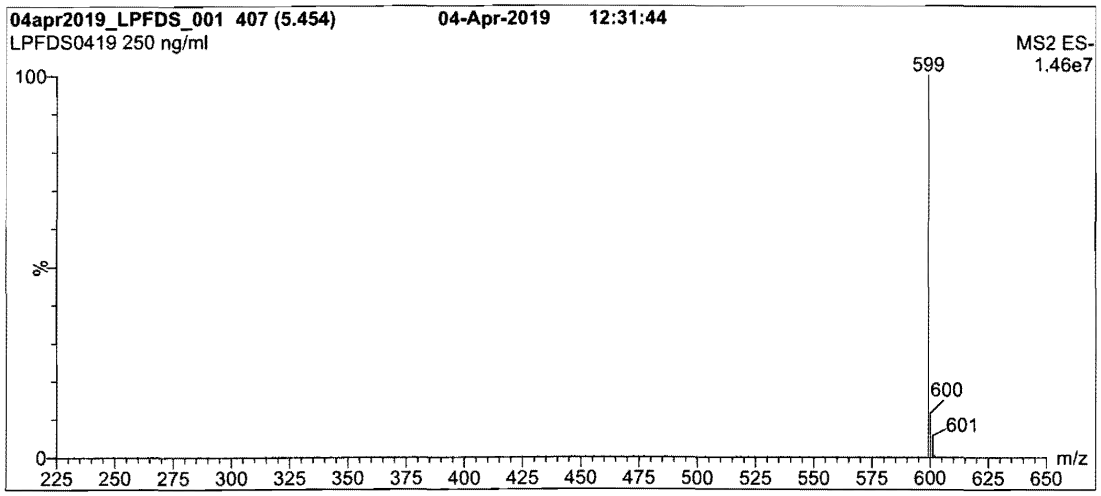
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

LPFDS0419 (4 of 4)
rev0

19L0652

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

LPFDS0419 (3 of 4)
rev0

19L0652

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 ISO 17034 REFERENCE MATERIAL PRODUCER

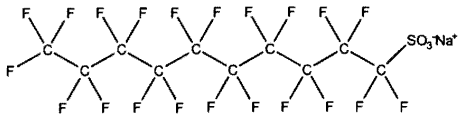
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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)	**SOLVENT(S):**	Methanol
	48.2 ± 2.4 µg/ml (PFDS anion)		
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

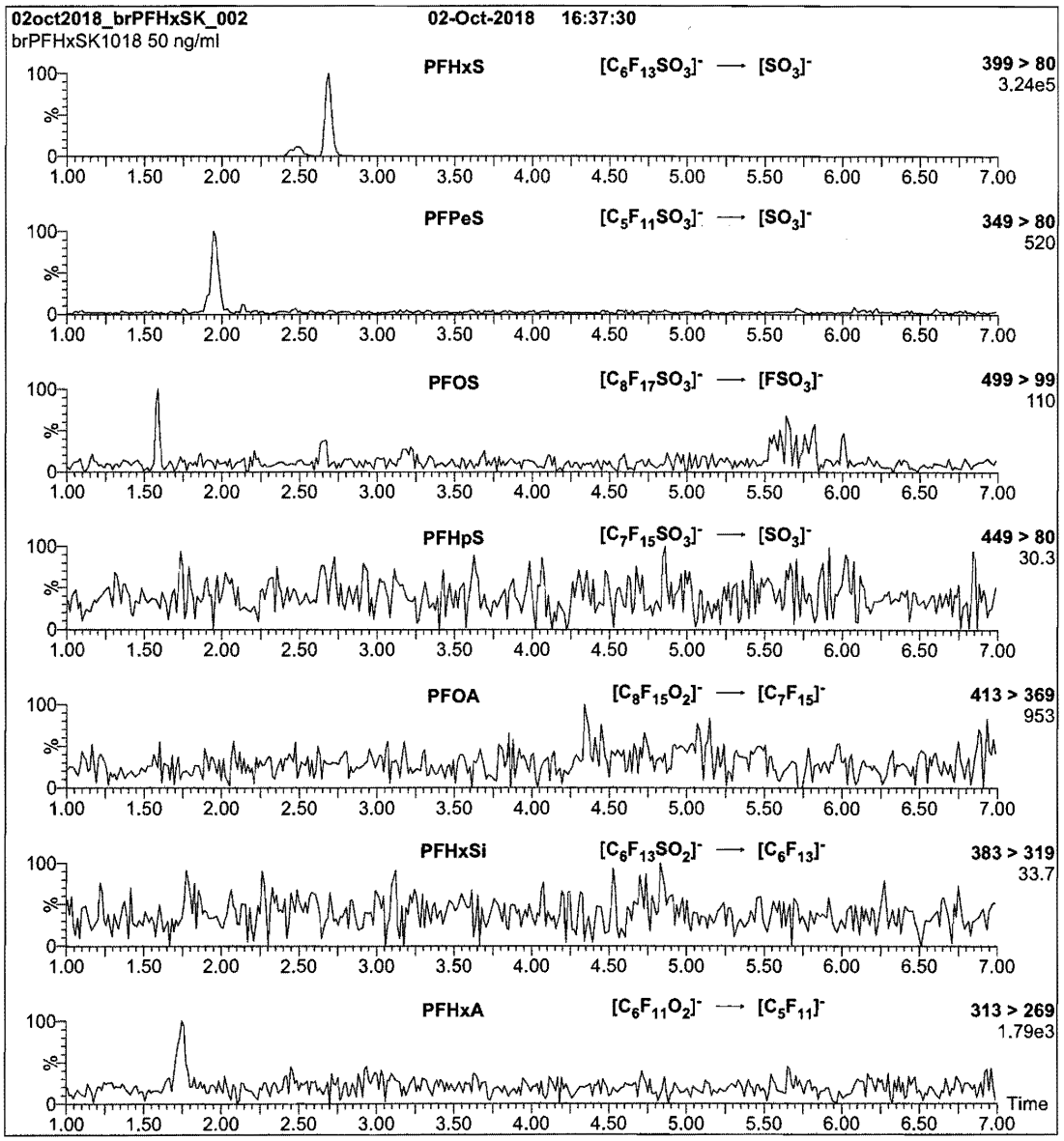
Certified By: _____ **Date:** 04/30/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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

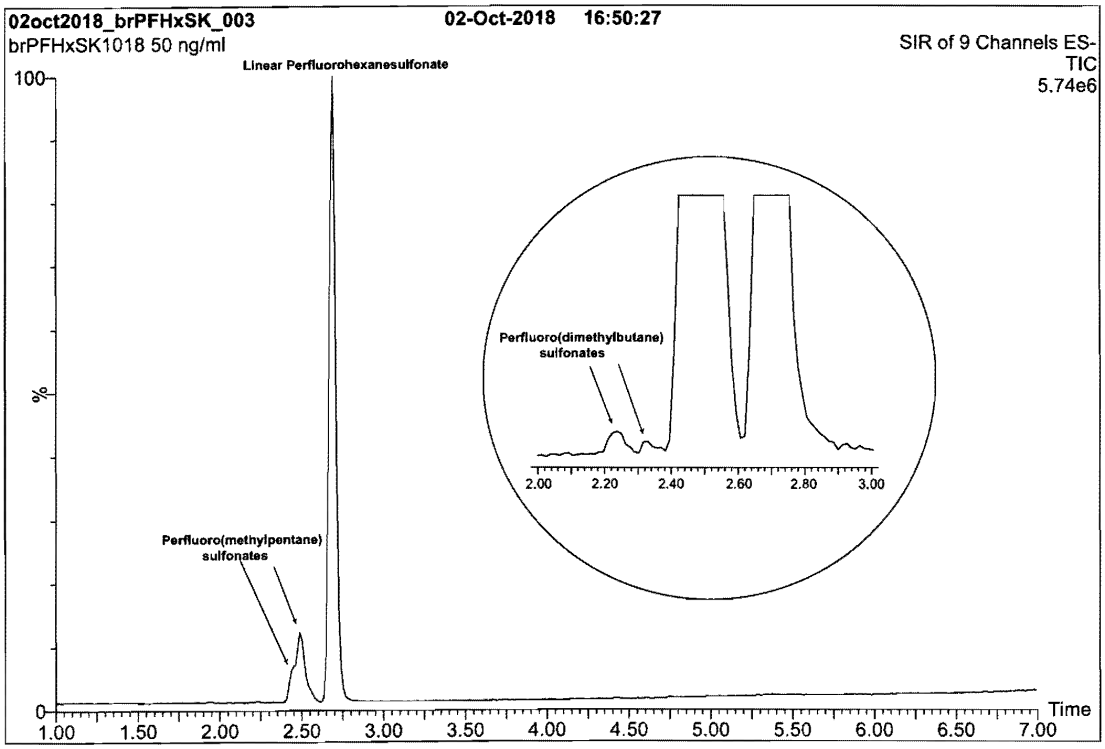
Collision Gas (mbar) = 2.87e-3
Collision Energy (eV) = 42

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brPFHxSK1018 (6 of 6)
rev0

1912653

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

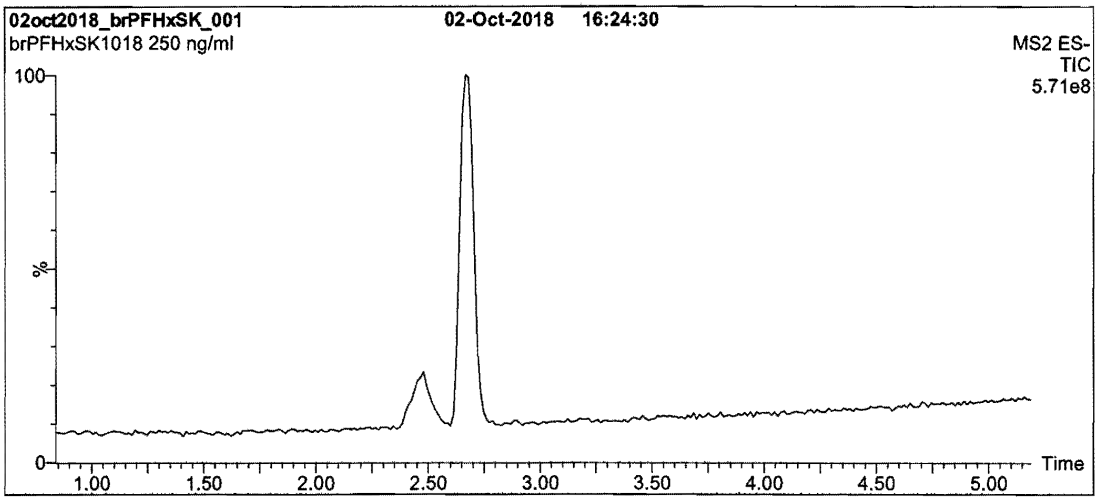
MS Parameters

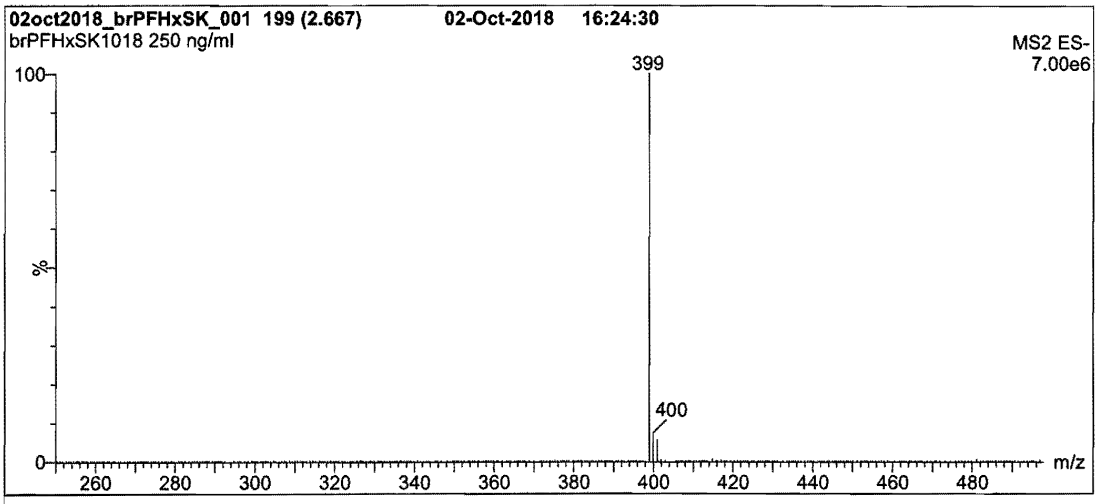
Experiment: SIR (9 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (2 - 6)
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

19L0653

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

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brPFHxSK1018 (4 of 6)
rev0

19L0653

Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: _____ **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)
rev0

19L0653

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

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:

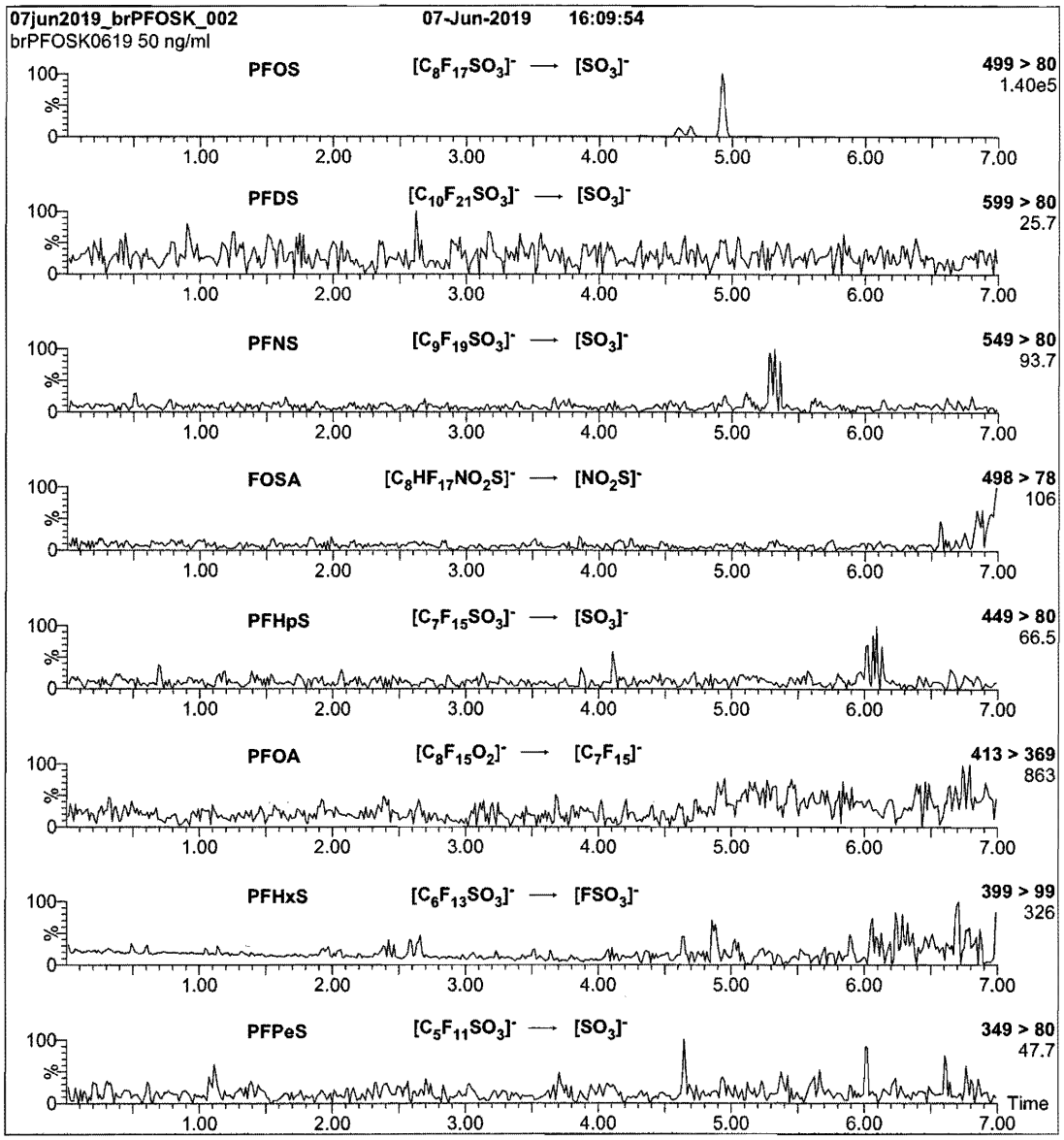
- See page 2 for further details.
- Contains ~ 0.3% of perfluoro-n-hexanoic acid and ~ 0.15% of perfluoro-1-pentanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

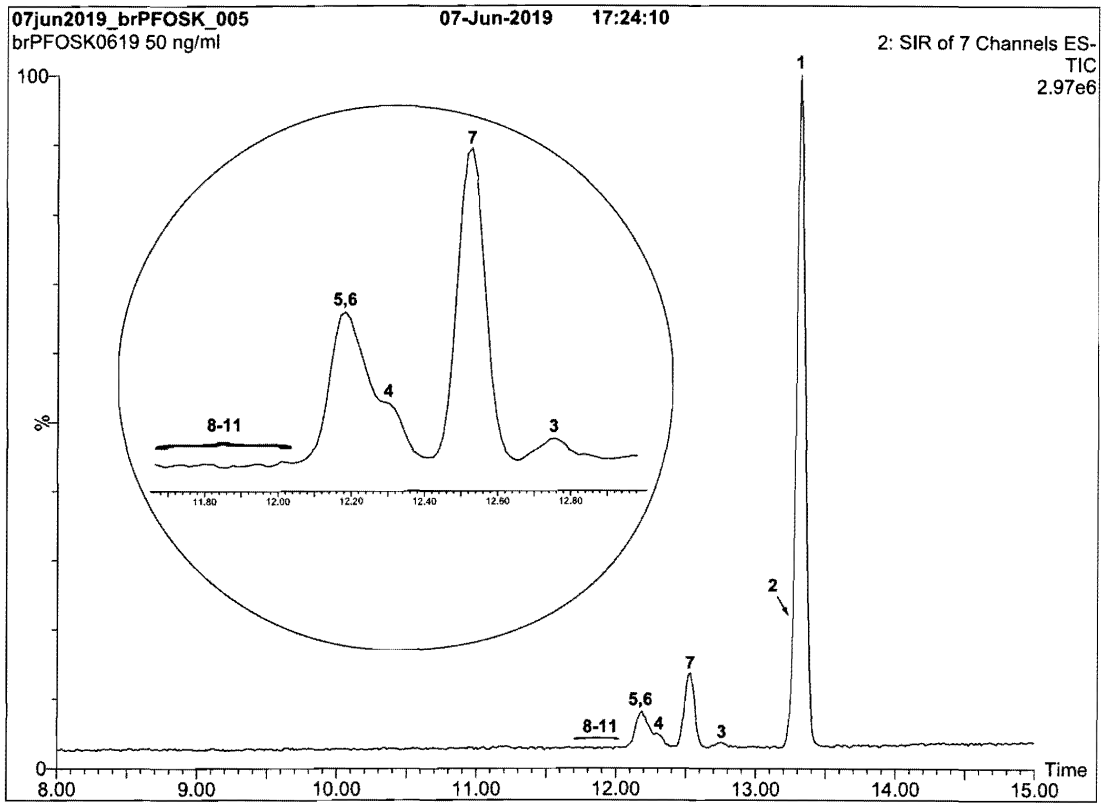
Collision Gas (mbar) = 2.97e-3
Collision Energy (eV) = 64

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brPFOSK0619 (6 of 6)
rev0

19L0654

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:

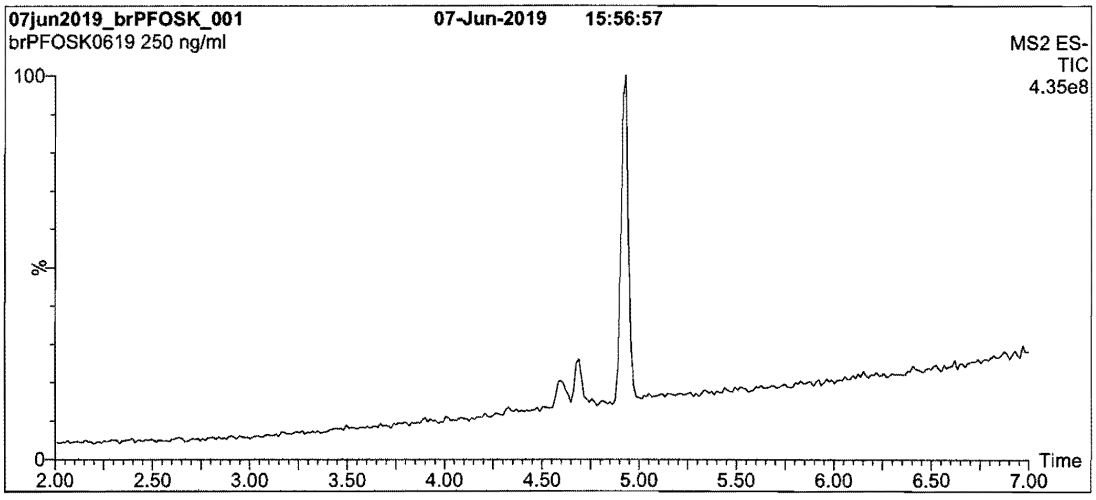
Column:	Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)
Injection:	50 ng/ml of br-PFOSK
Mobile Phase:	Gradient 50% (80:20 MeOH:ACN) / 50% H_2O (both with 10 mM NH_4OAc buffer) Ramp to 90% organic over 8 min and hold for 2 min. Return to initial conditions over 0.75 min. Time: 12 min
Flow:	300 µl/min

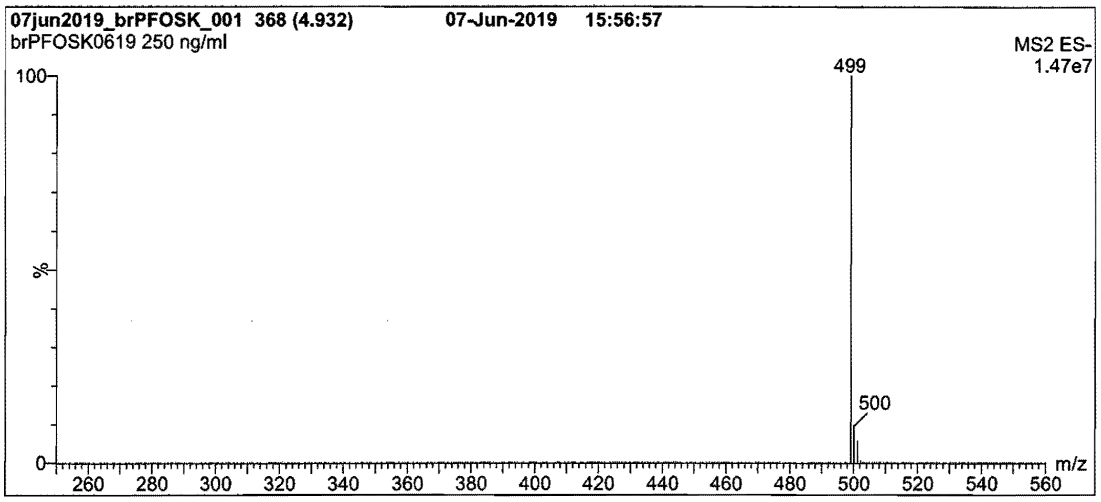
MS Conditions:

SIR (ES^-)
Source = 120 °C
Desolvation = 500 °C
Cone Voltage = 2.00V

19L0654

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

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brPFOSK0619 (4 of 6)
rev0

19L0654

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**	$CF_3CF_2CF_2CF_2CF_2CF_2CFSO_3^-K^+$ (CF$_3$ branch)	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CFCF_2SO_3^-K^+$ (CF$_3$ branch)	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CFCF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CFCF_2CF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CFCF_2CF_2CF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CFCF_2CF_2CF_2CF_2CF_2SO_3^-K^+$ (CF$_3$ branch)	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CCF_2CF_2CF_2CF_2SO_3^-K^+$ (2 CF$_3$ branches)	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2CCF_2CF_2CF_2SO_3^-K^+$ (2 CF$_3$ branches)	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CFCFCF_2CF_2CF_2SO_3^-K^+$ (2 CF$_3$ branches)	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CFCF_2CFCF_2CF_2SO_3^-K^+$ (2 CF$_3$ branches)	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

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brPFOSK0619 (3 of 6)
rev0

19L0654

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 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

19L0654

WELLINGTON LABORATORIES

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:

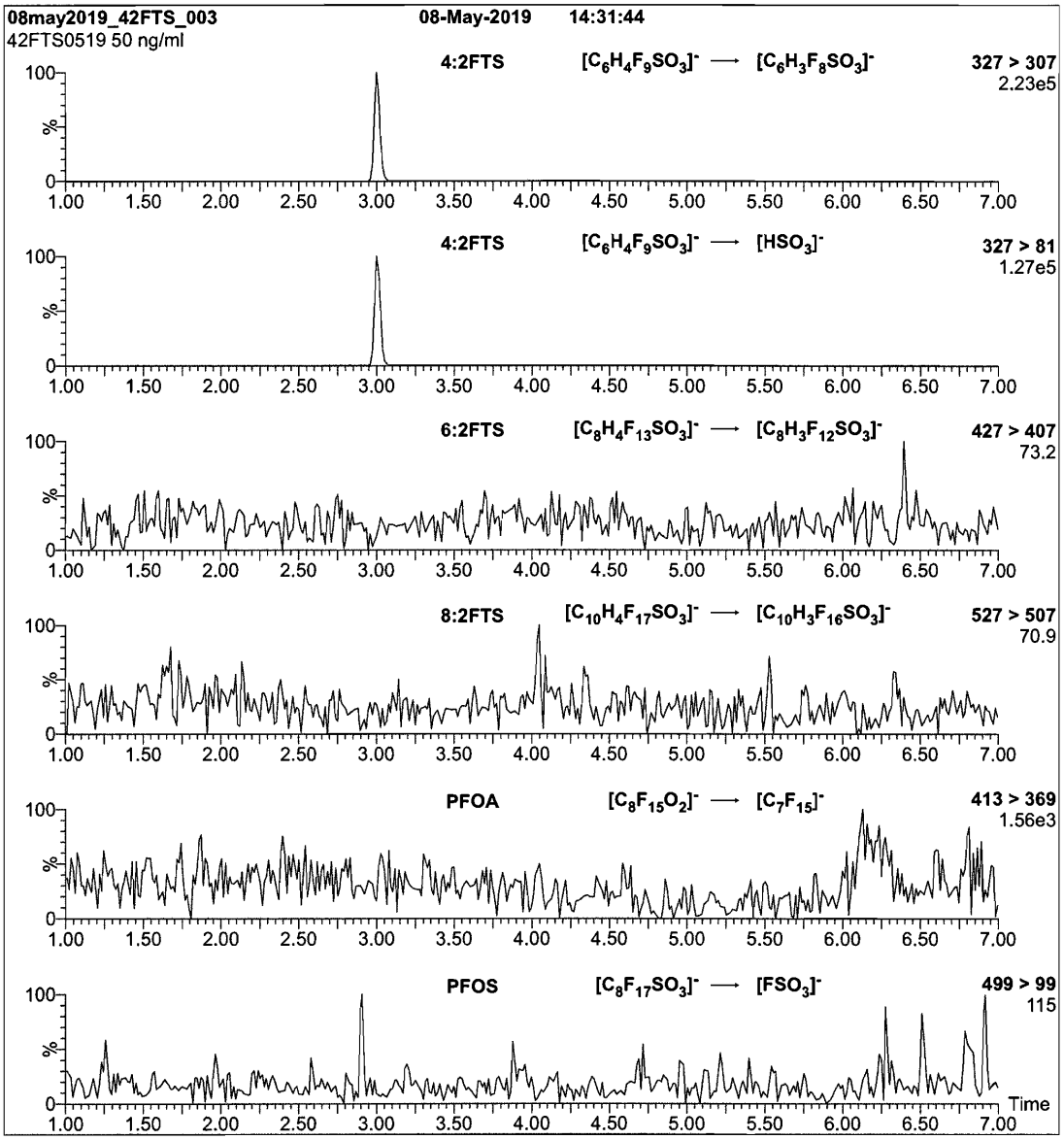
- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

19L0655

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

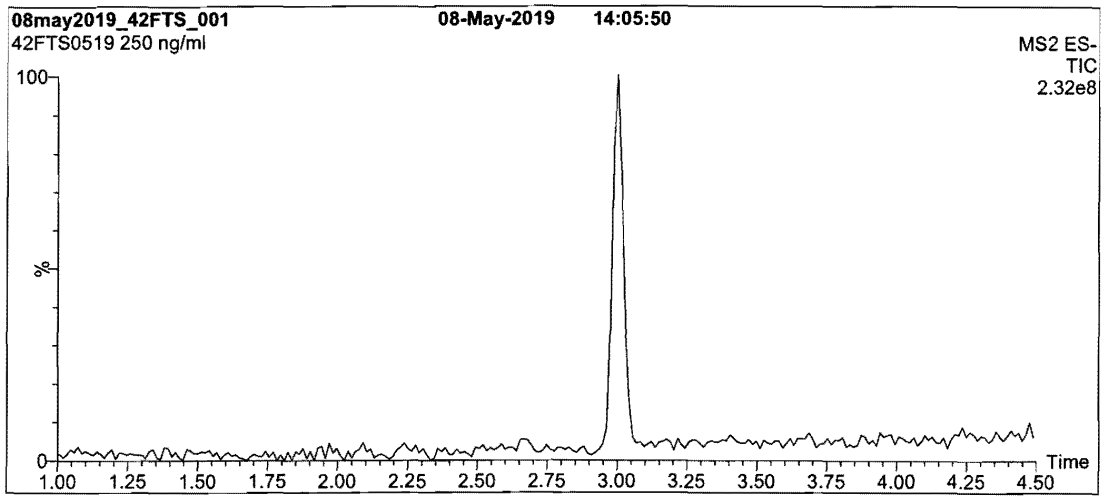
MS Parameters
Collision Gas (mbar) = 3.07e-3
Collision Energy (eV) = 18

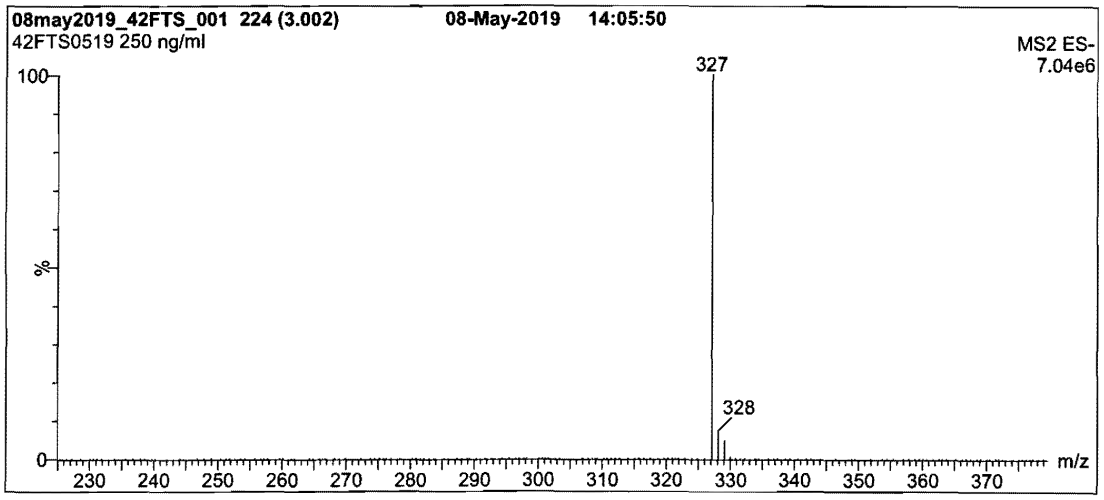
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

42FTS0519 (4 of 4)
rev0

19L0655

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

42FTS0519 (3 of 4)
rev0

19L0655

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. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

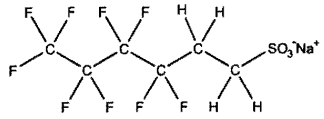
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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:	$C_6H_4F_9SO_3Na$	**MOLECULAR WEIGHT:**	350.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	46.7 ± 2.3 µg/ml (4:2FTS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	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.

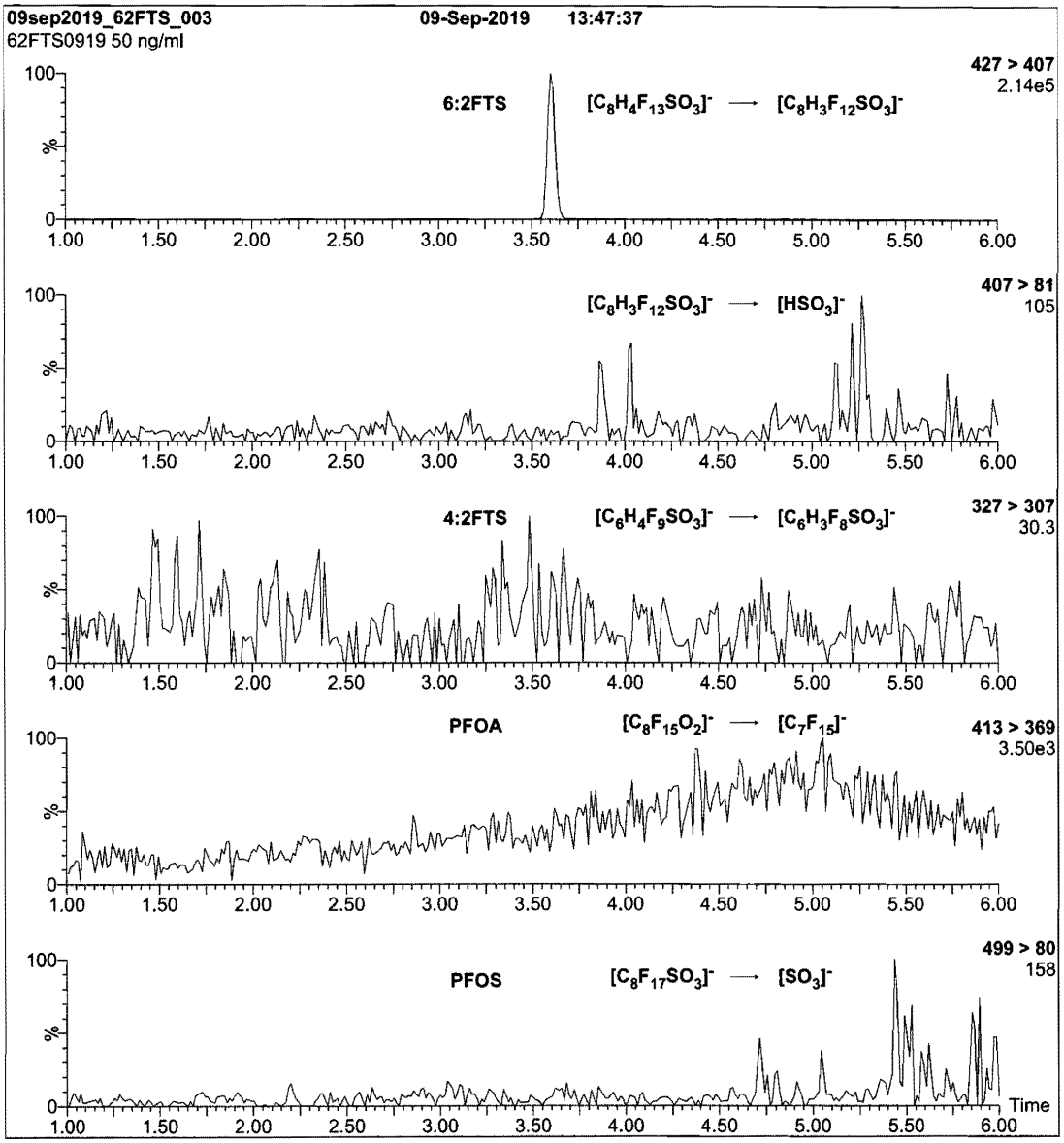
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

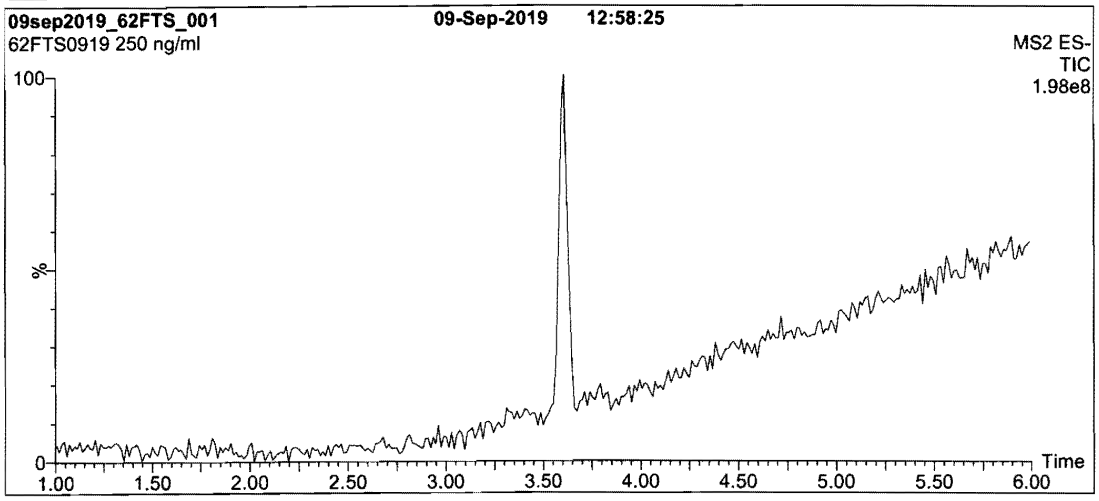
Collision Gas (mbar) = 3.61e-3
Collision Energy (eV) = 20

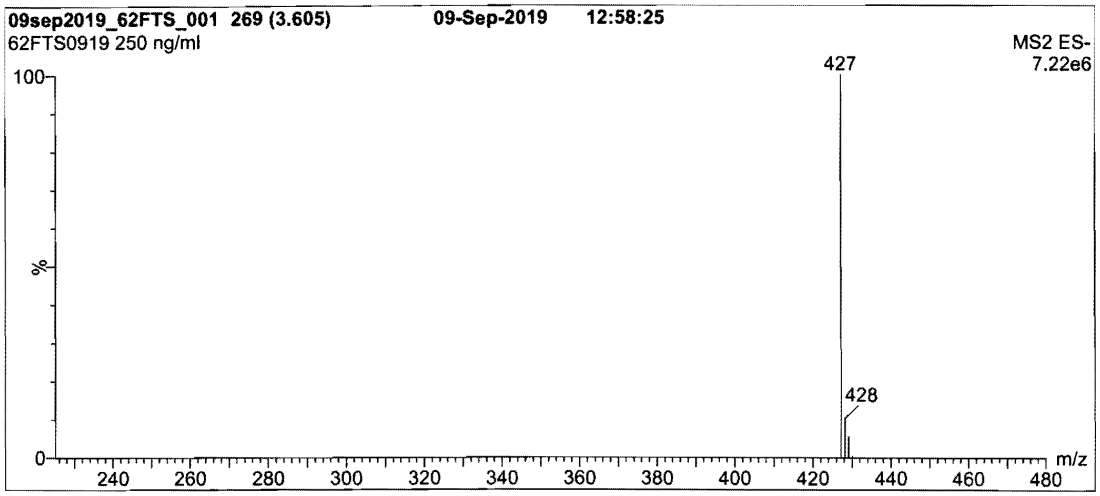
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

62FTS0919 (4 of 4)
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

191656

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

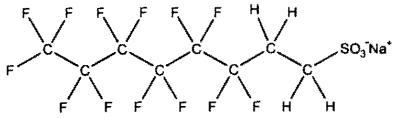
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

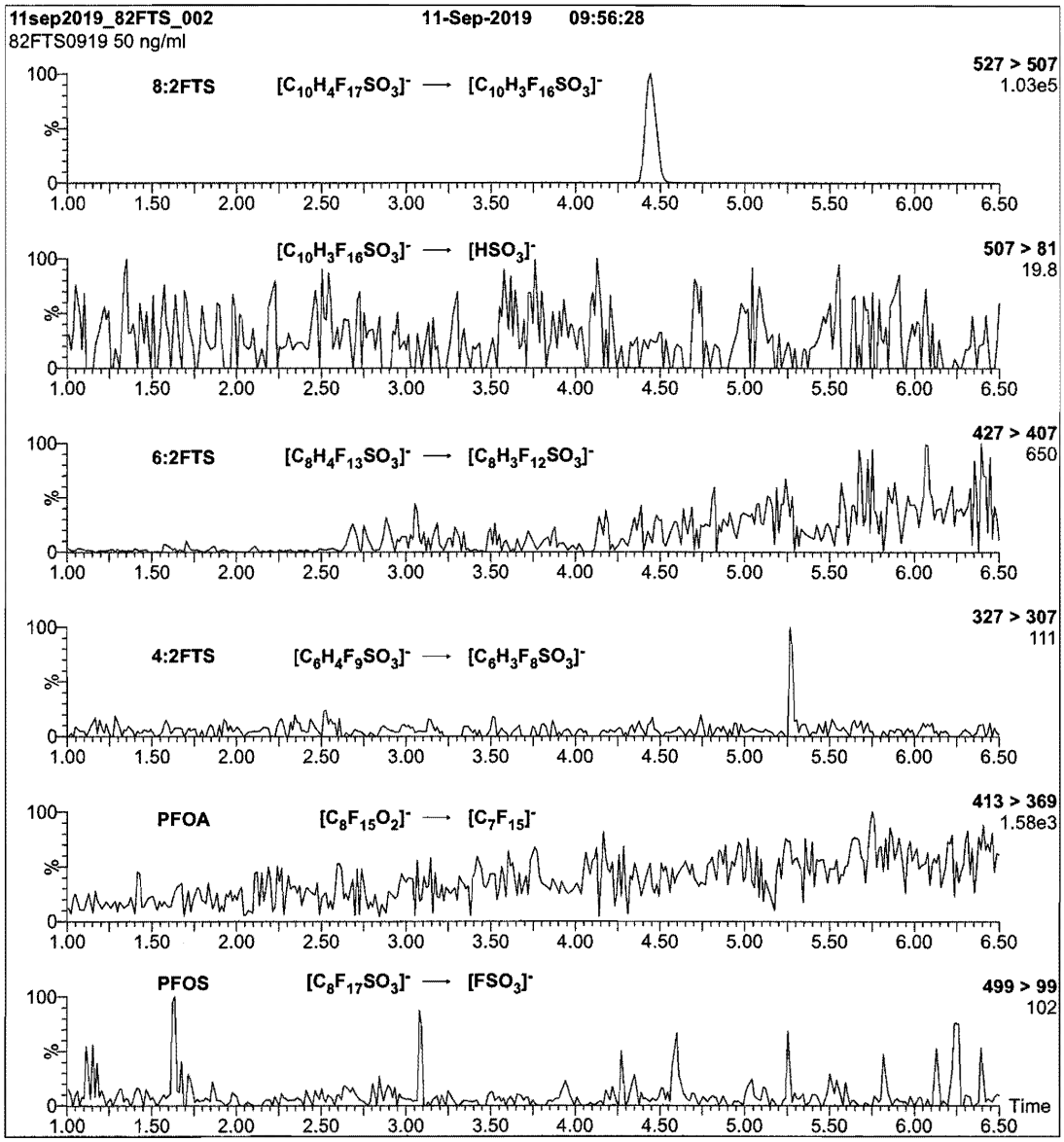
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **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

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

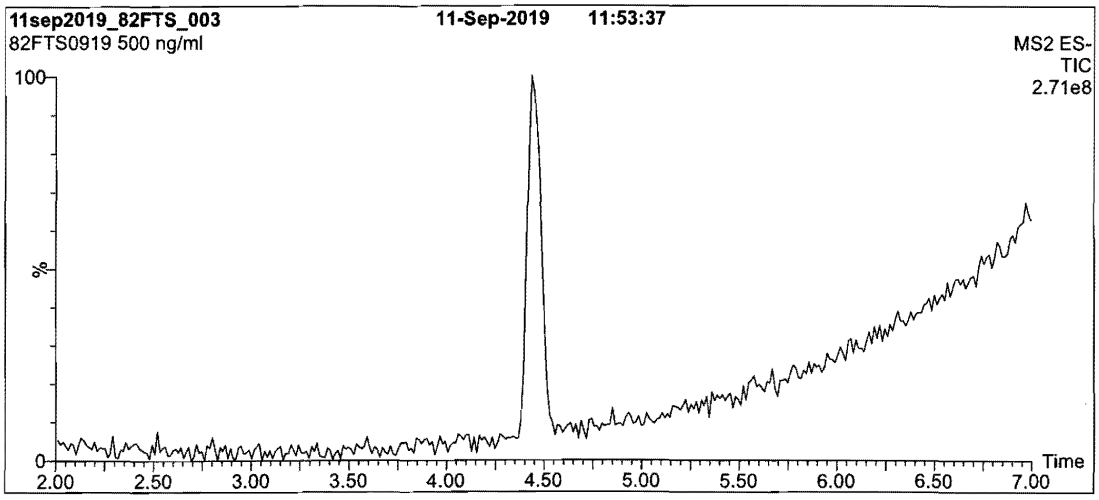
Collision Gas (mbar) = 3.49e-3
Collision Energy (eV) = 26

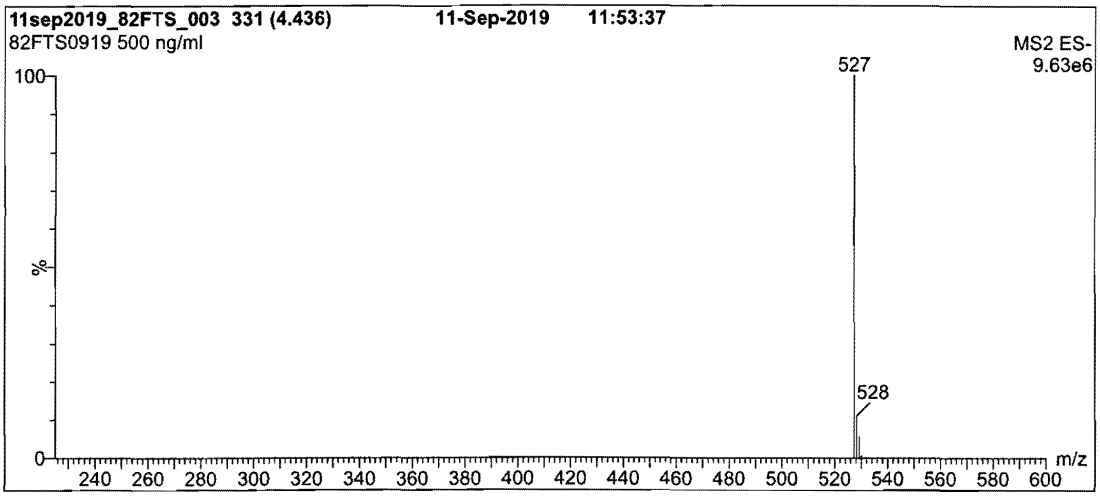
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

82FTS0919 (4 of 4)
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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

82FTS0919 (3 of 4)
rev0

19L0657

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

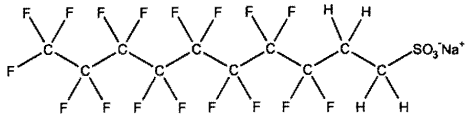
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L06517

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.

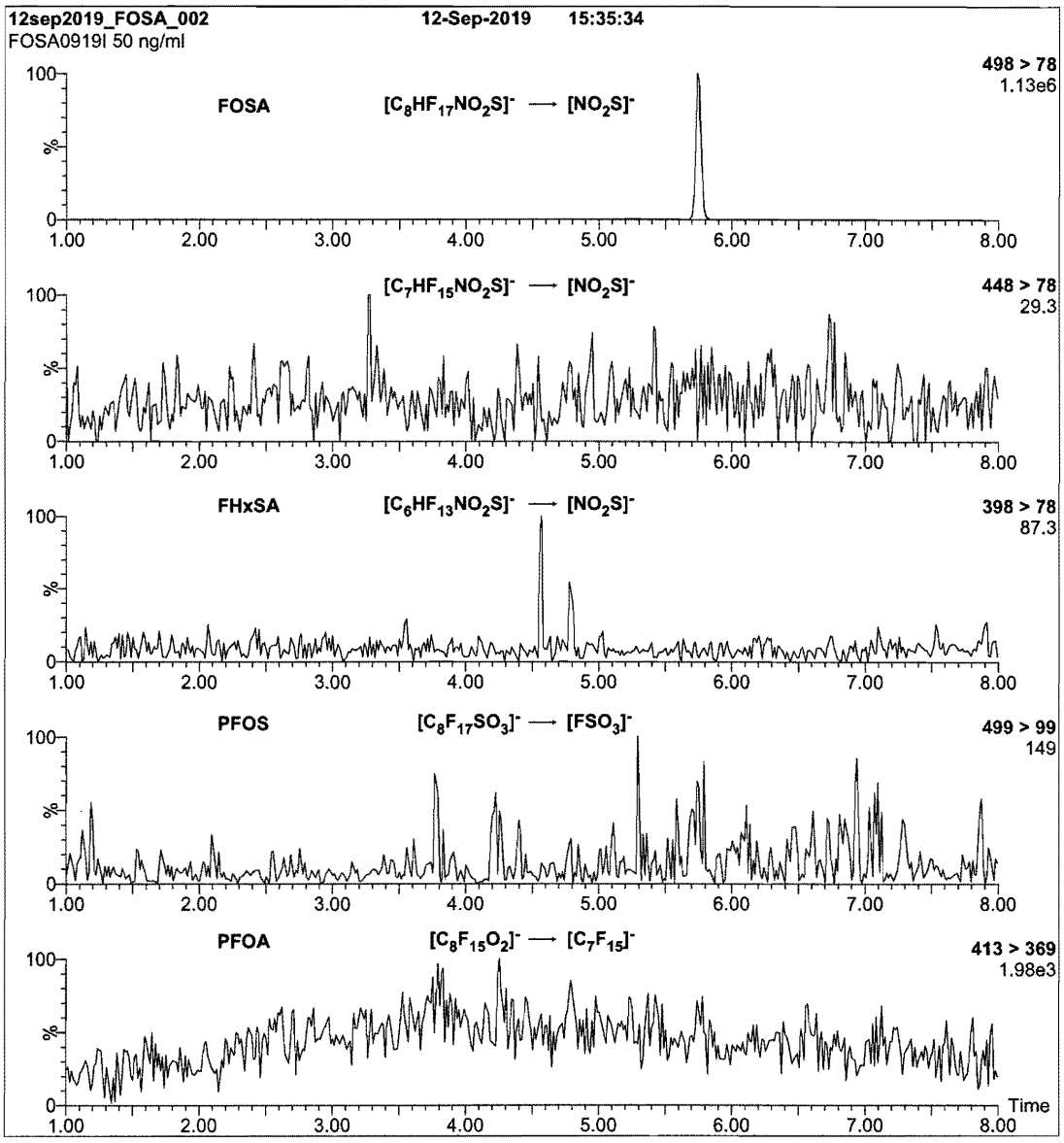
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/11/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

19L0658

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

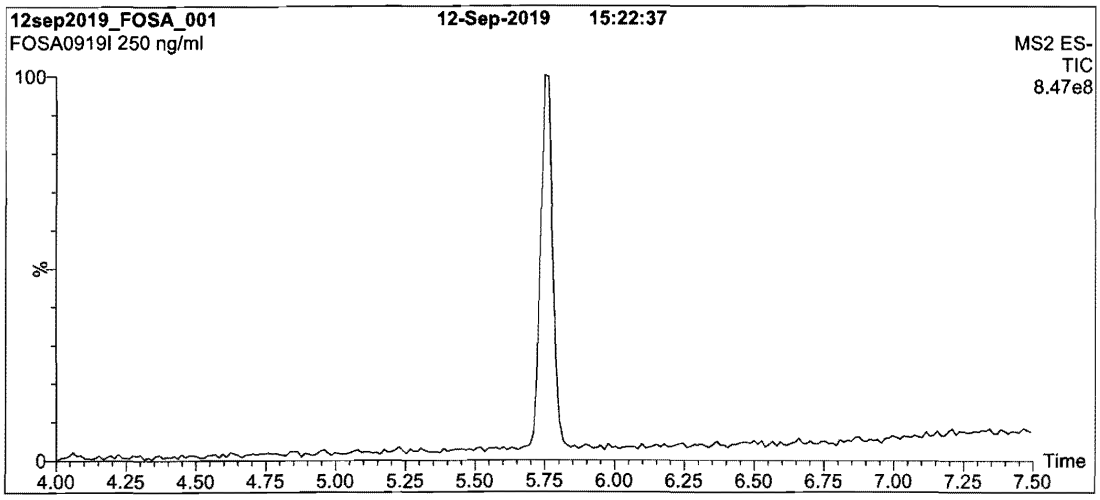
MS Parameters
Collision Gas (mbar) = 3.57e-3
Collision Energy (eV) = 30

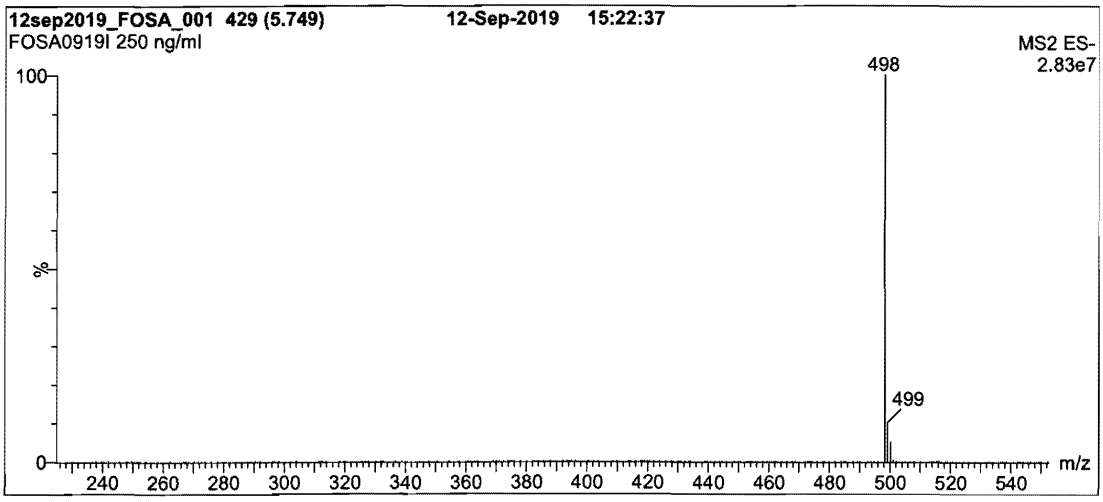
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

FOSA0919I (4 of 4)
rev0

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

FOSA0919I (3 of 4)
rev0

19L0658

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 ISO 17034 REFERENCE MATERIAL PRODUCER

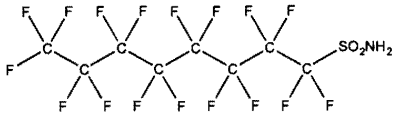
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0658

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	FOSA-I	**LOT NUMBER:**	FOSA0919I
COMPOUND:	Perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/12/2019		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

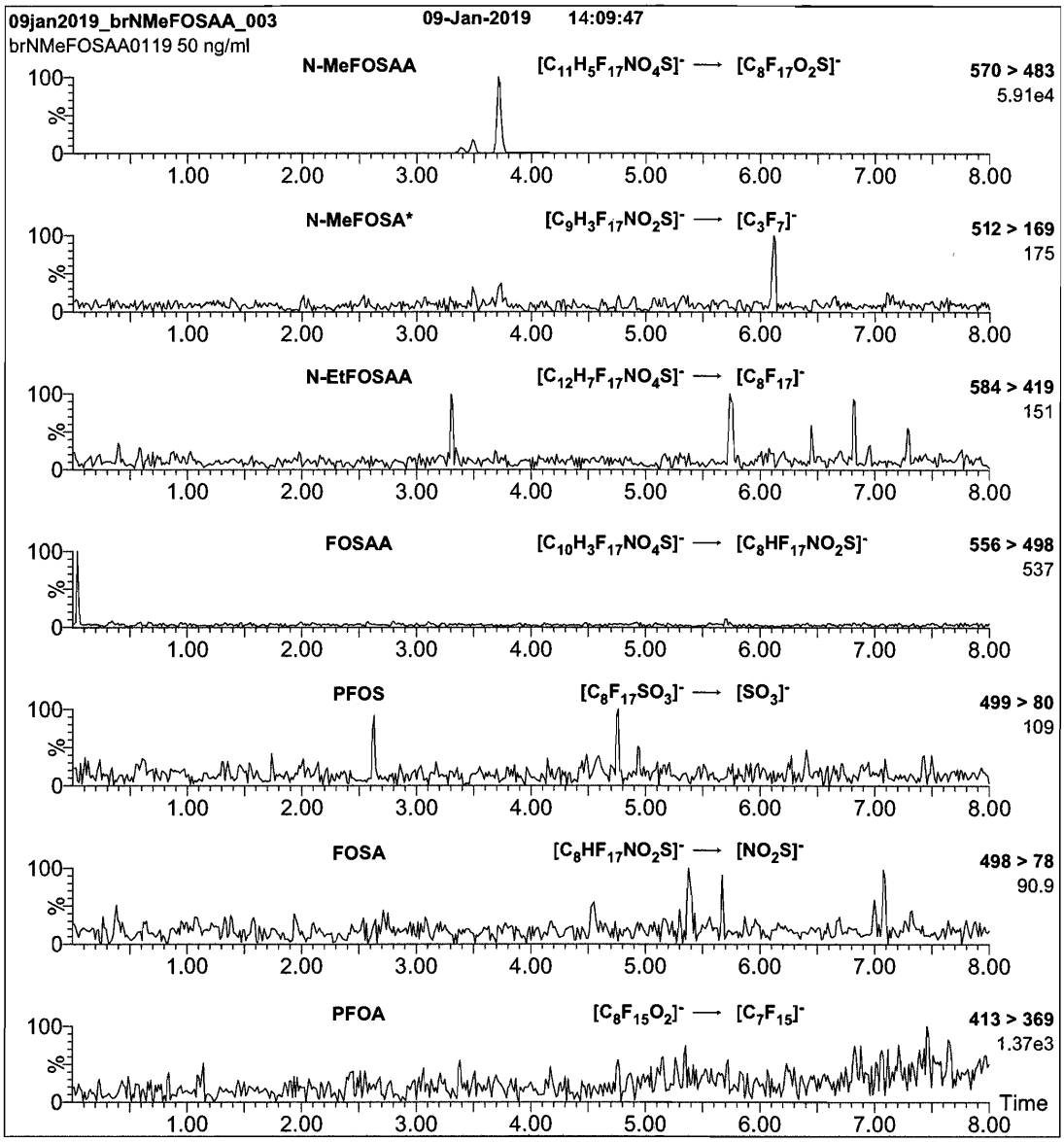
Certified By: _____ **Date:** 09/13/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

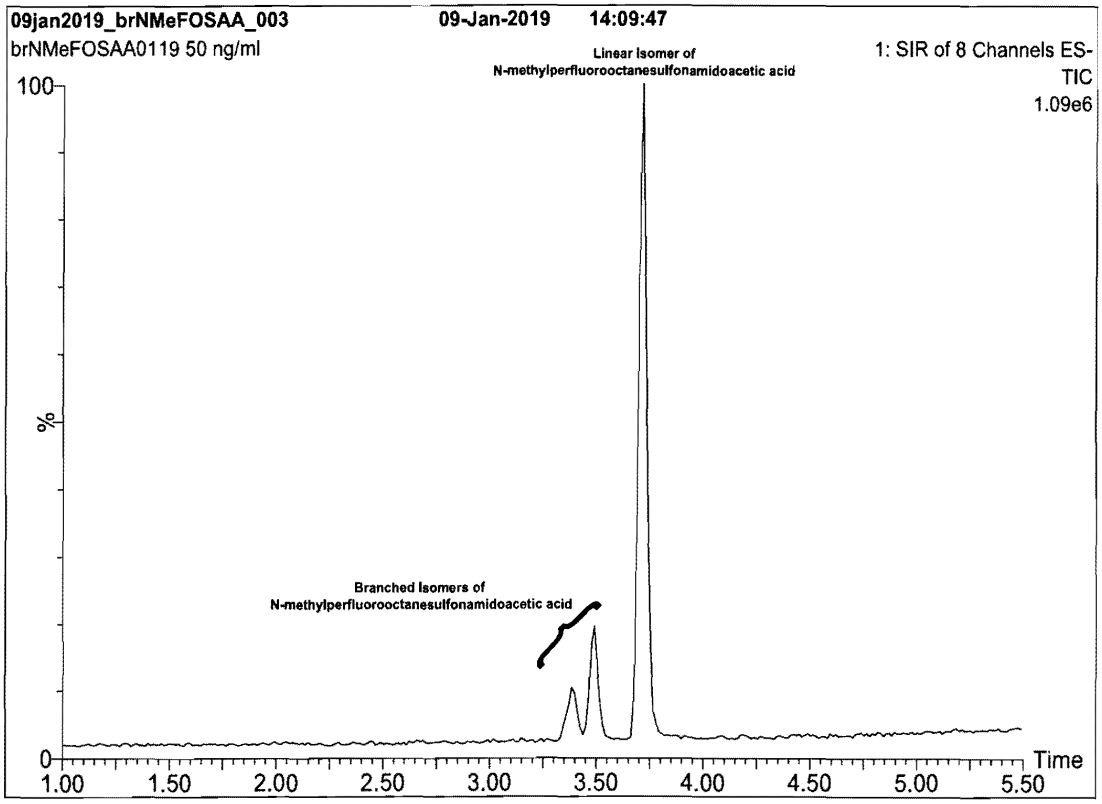
Collision Gas (mbar) = 2.79e-3
Collision Energy (eV) = 16

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brNMeFOSAA0119 (6 of 6)
rev0

19L0659

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

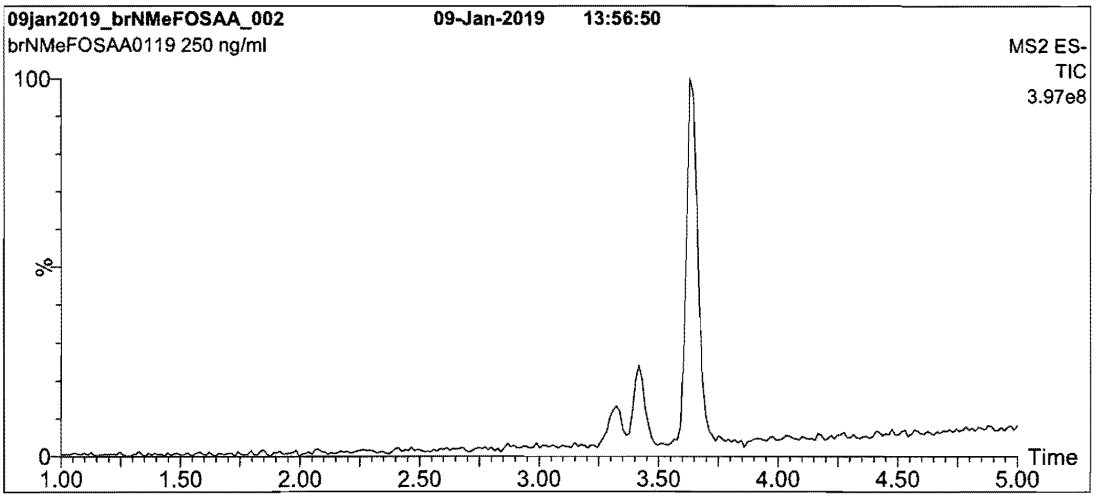
MS Parameters

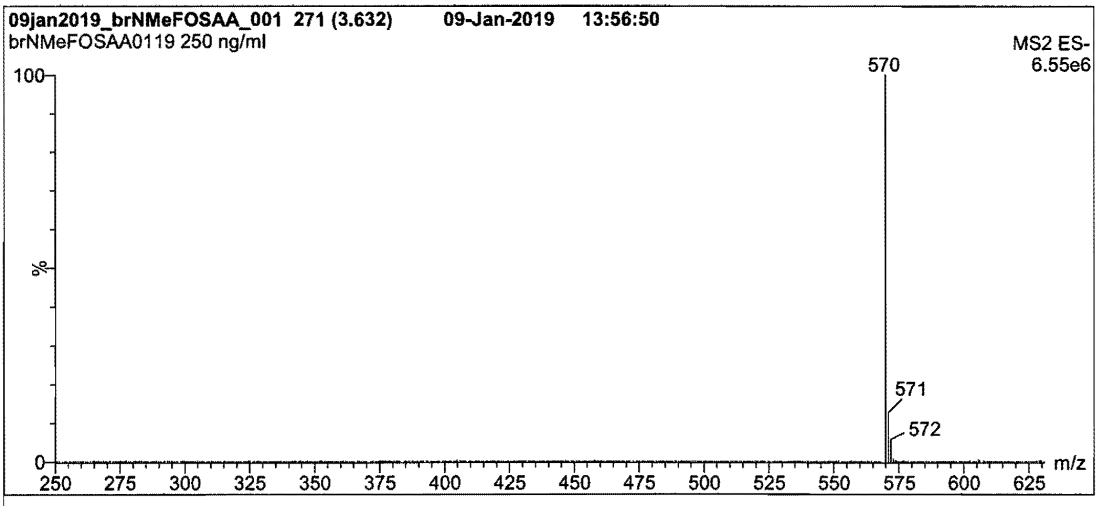
Experiment: SIR (8 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 2-64
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brNMeFOSAA0119 (4 of 6)
rev0

1910659

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

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brNMeFOSAA0119 (3 of 6)
rev0

19L0659

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

19L0659

WELLINGTON LABORATORIES

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:

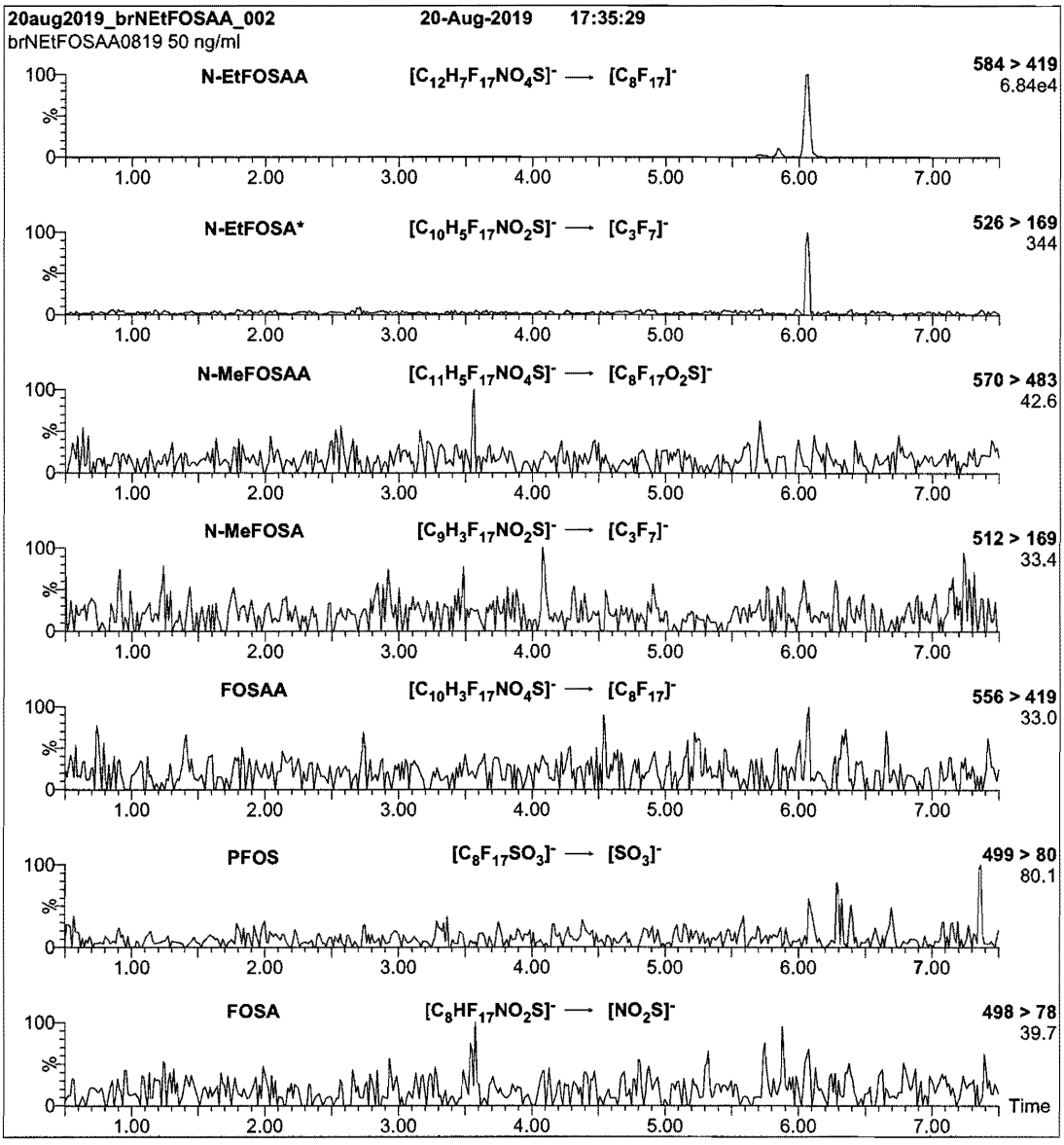
- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

191660

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

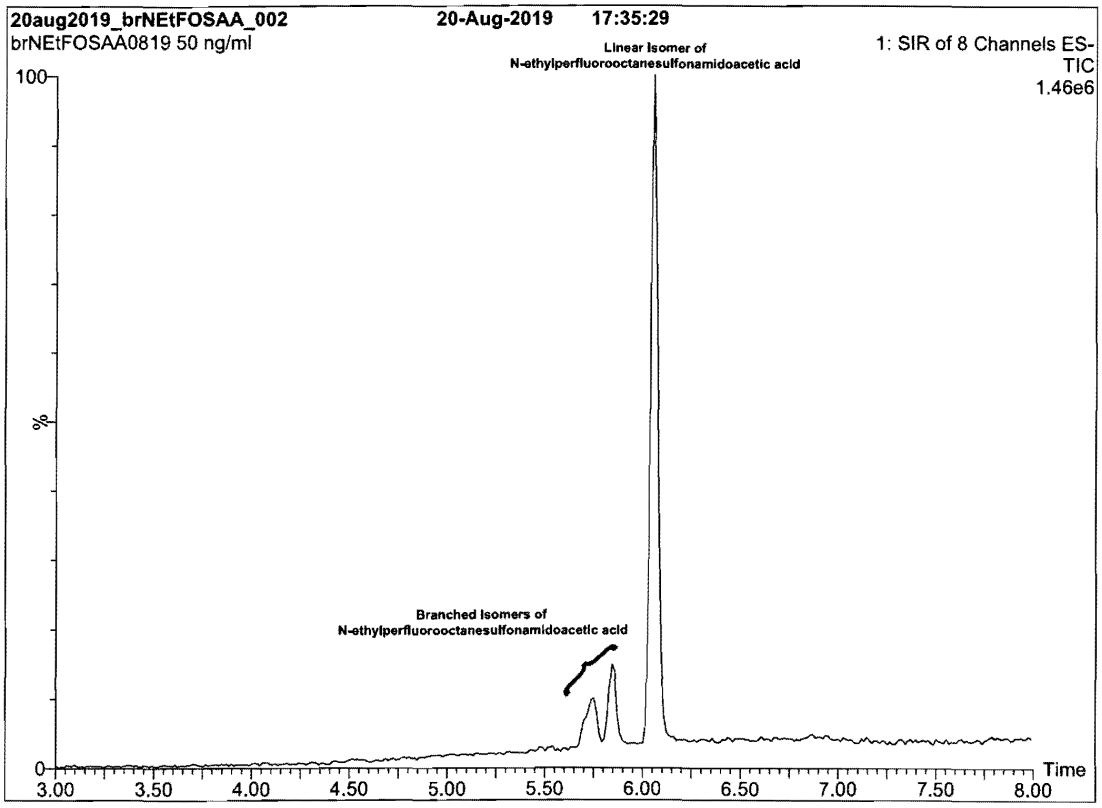
Collision Gas (mbar) = 3.53e-3
Collision Energy (eV) = 18

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brNEtFOSAA0819 (6 of 6)
rev0

19L0660

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)

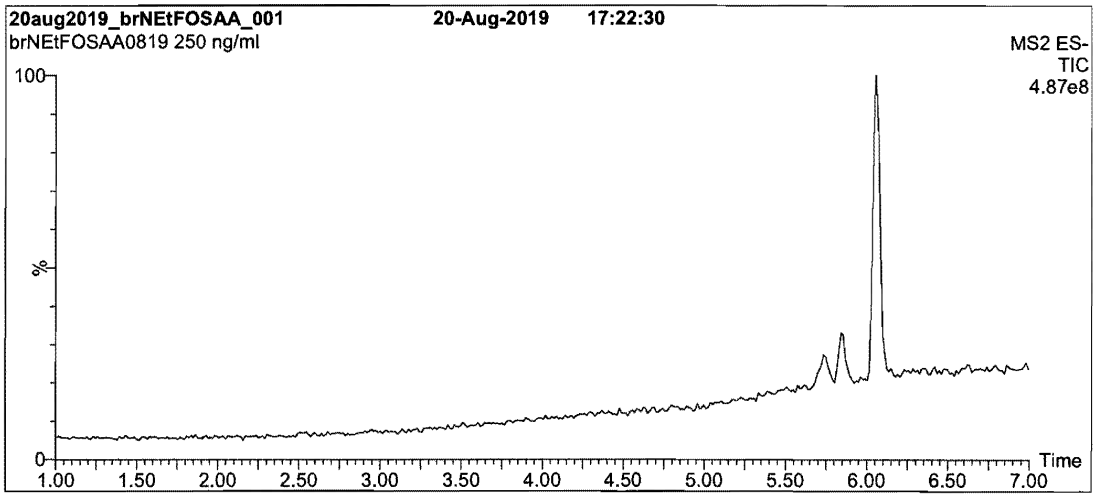
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (2-64)
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

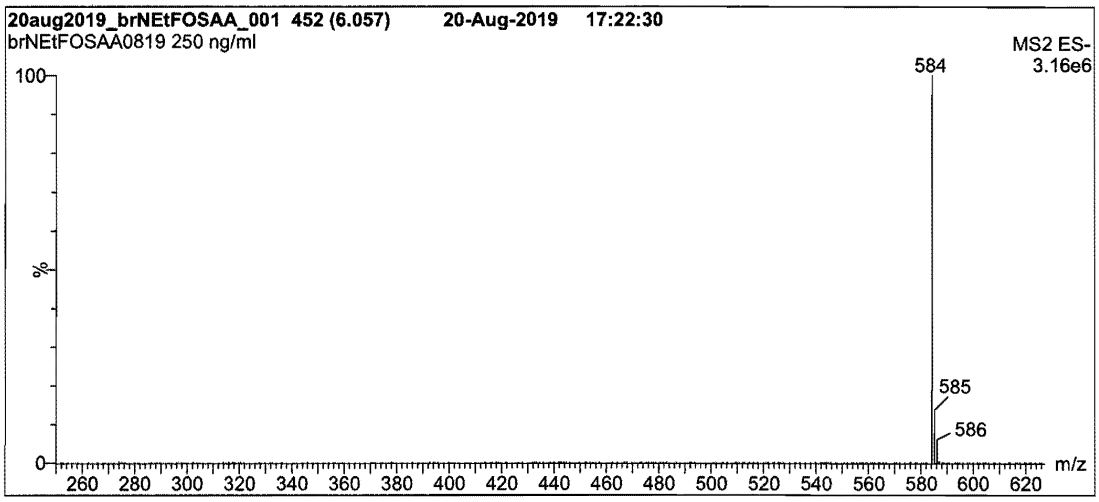
Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brNEtFOSAA0819 (5 of 6)
rev0

19L0660

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

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brNEtFOSAA0819 (4 of 6)
rev0

19L0660

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

Form#:13, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

brNEtFOSAA0819 (3 of 6)
rev0

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

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

19L0660

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:

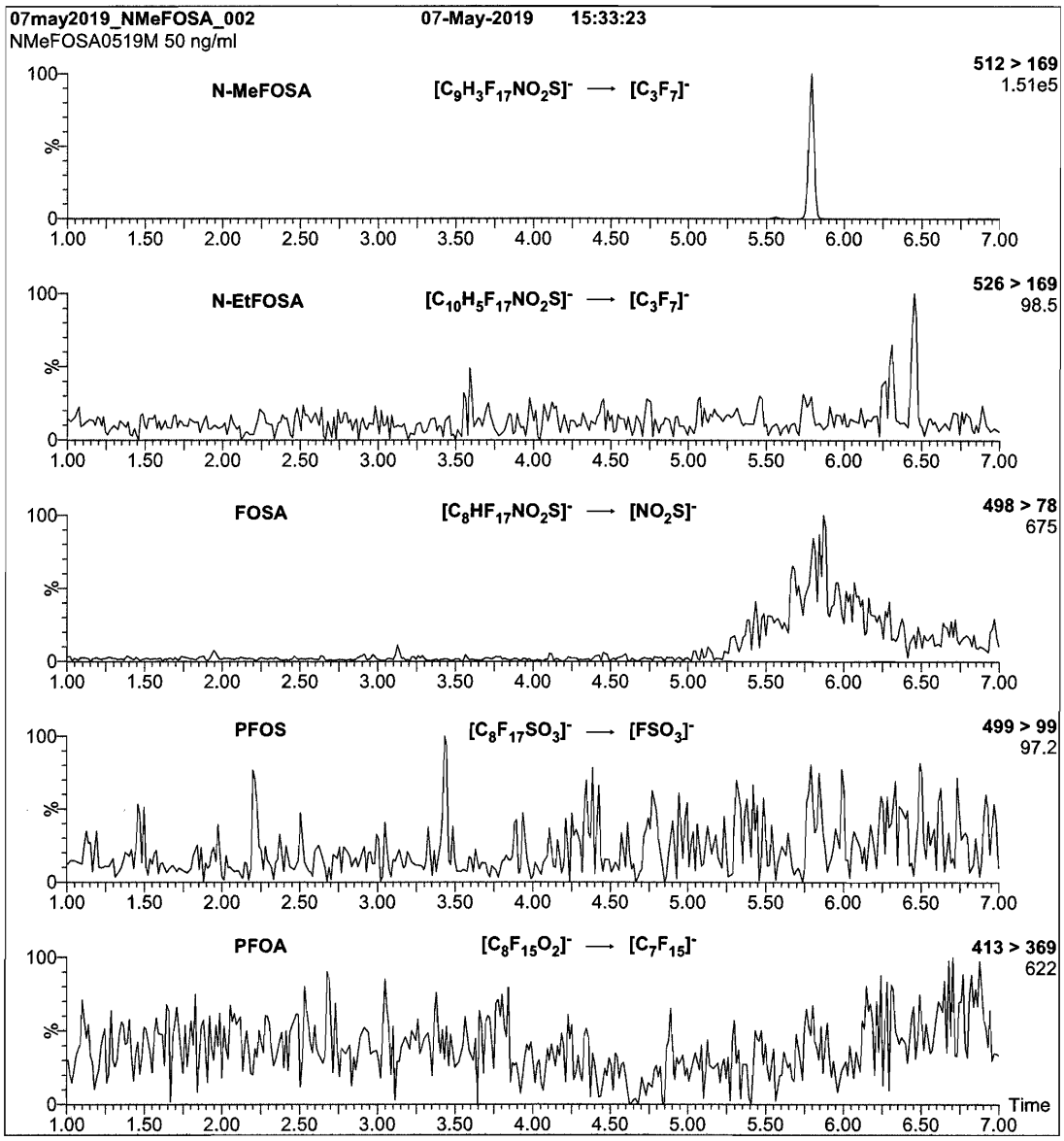
- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

191661

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

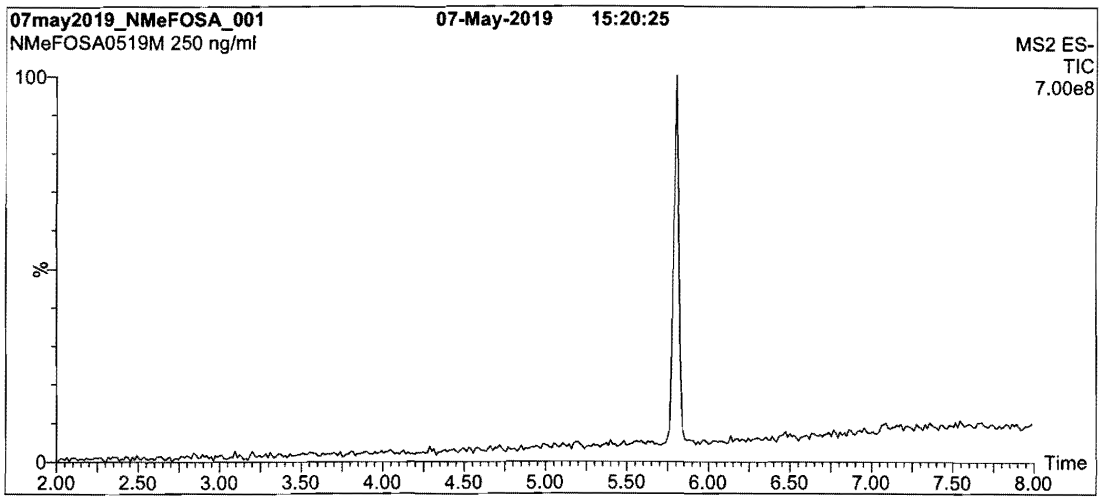
Collision Gas (mbar) = 2.99e-3
Collision Energy (eV) = 24

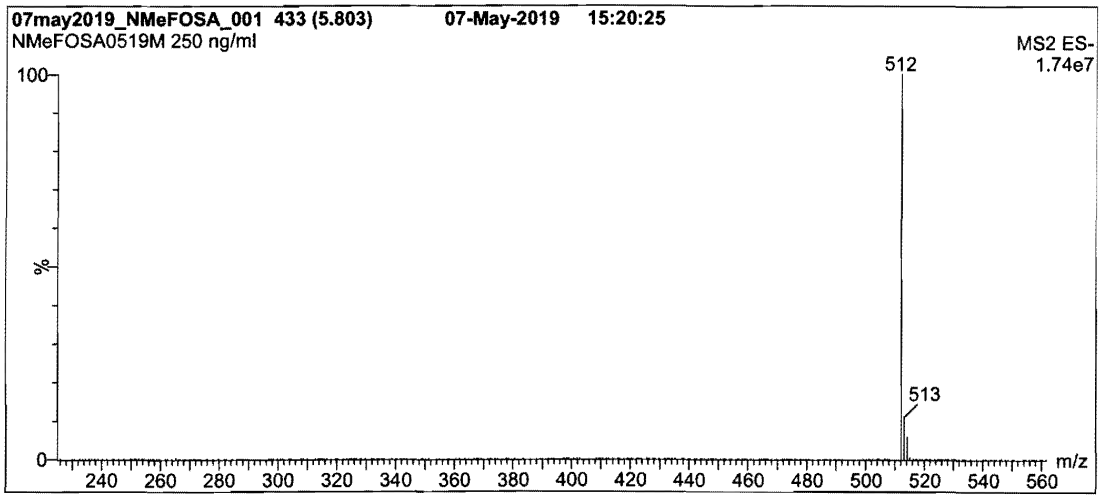
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NMeFOSA0519M (4 of 4)
rev0

19L0661

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

NMeFOSA0519M (3 of 4)
rev0

19L0661

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

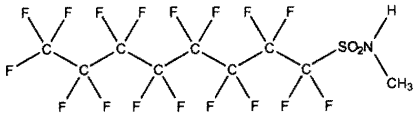
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0661

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	N-MeFOSA-M	**LOT NUMBER:**	NMeFOSA0519M
COMPOUND:	N-methylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/07/2019		
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.

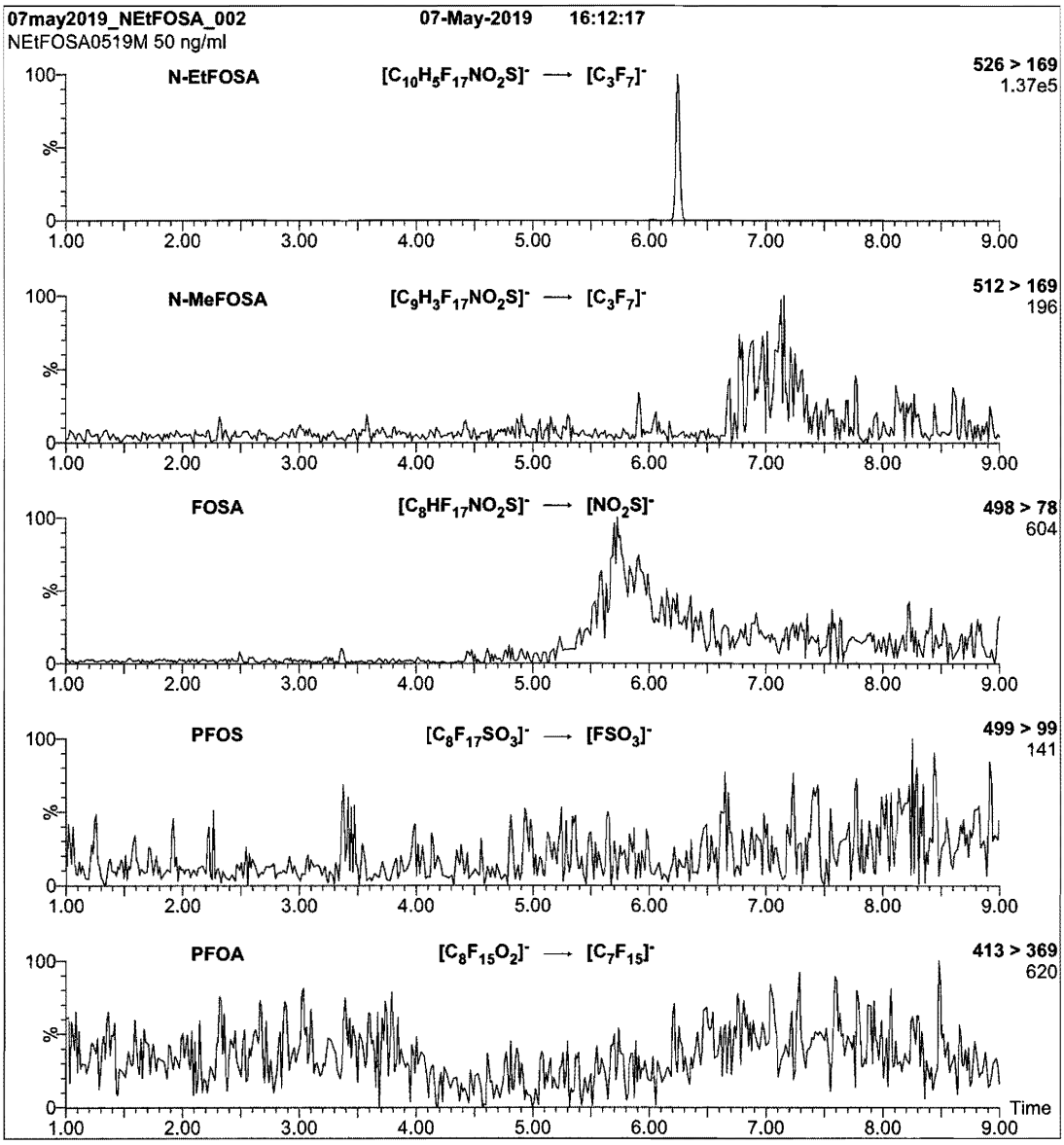
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/09/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

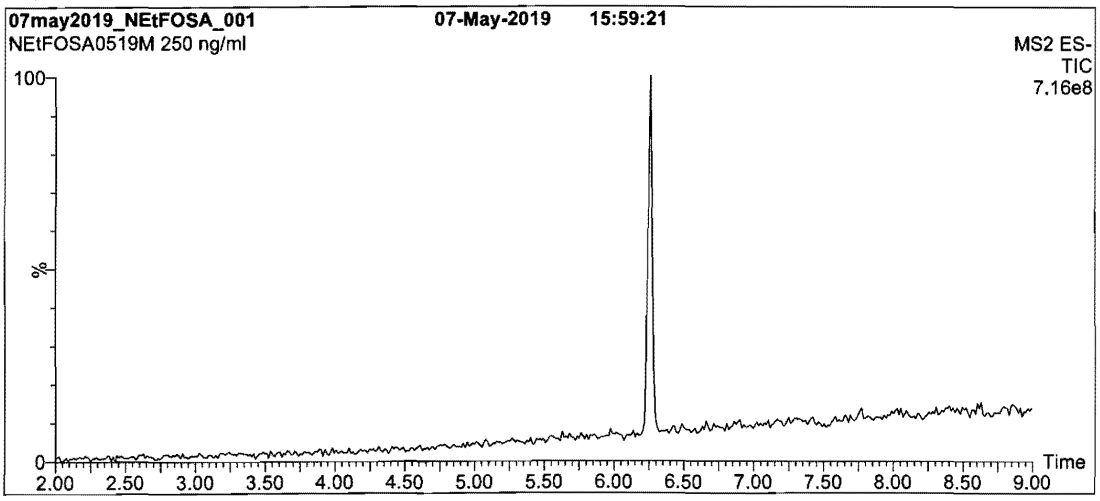
Collision Gas (mbar) = 3.00e-3
Collision Energy (eV) = 24

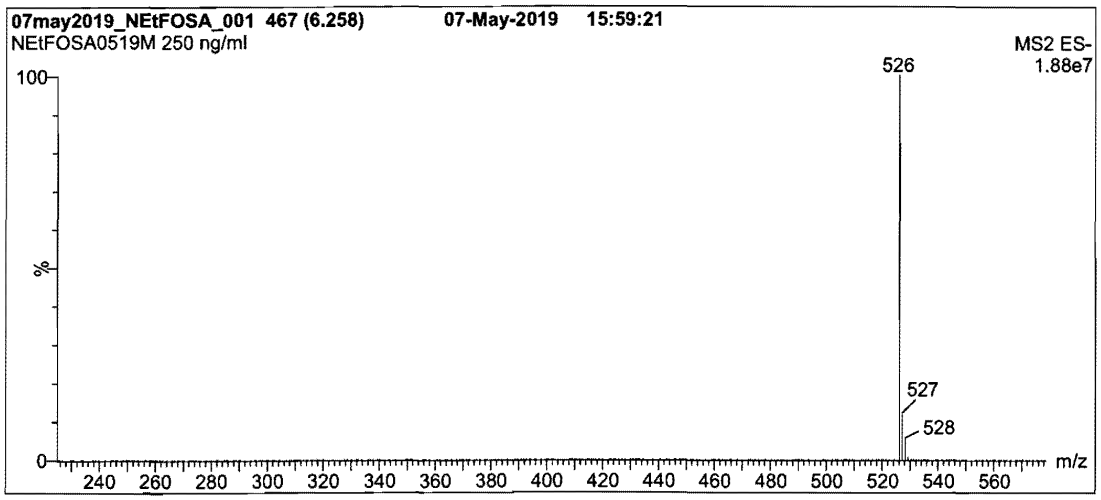
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NEtFOSA0519M (4 of 4)
rev0

19L0662

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

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:

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

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

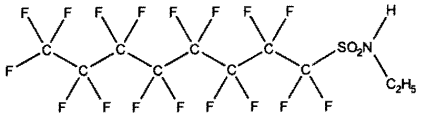
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L0662

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	N-EtFOSA-M	**LOT NUMBER:**	NEtFOSA0519M
COMPOUND:	N-ethylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	4151-50-2



MOLECULAR FORMULA:	$C_{10}H_6F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/07/2019		
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.

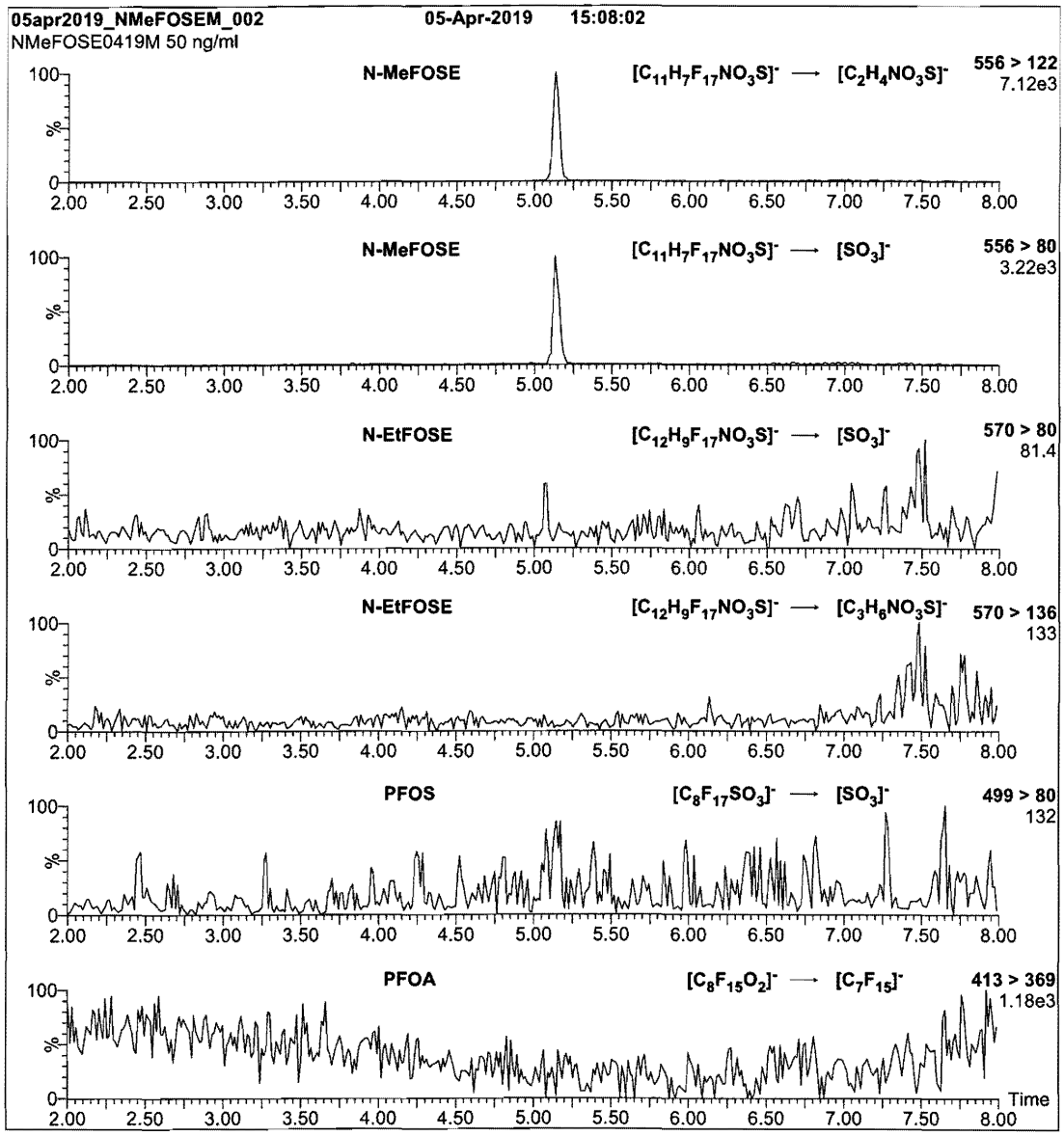
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

19L 0663

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

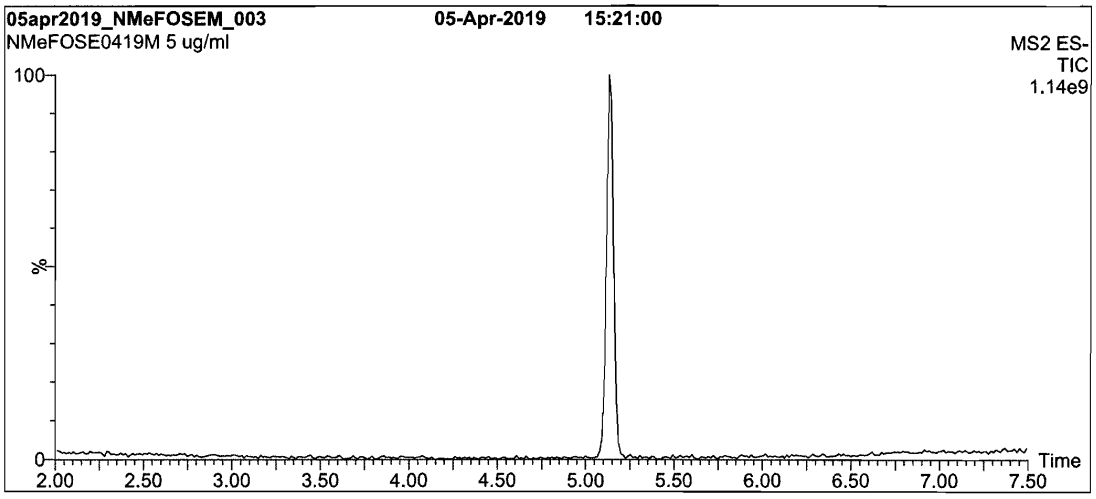
MS Parameters

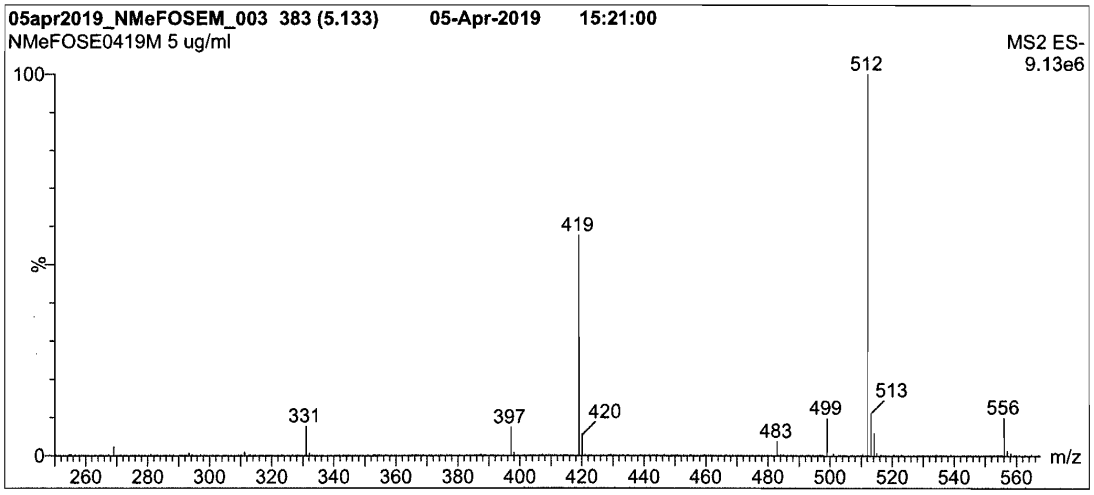
Collision Gas (mbar) = 2.94e-3
Collision Energy (eV) = 36

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NMeFOSE0419M (5 of 5)
rev0

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

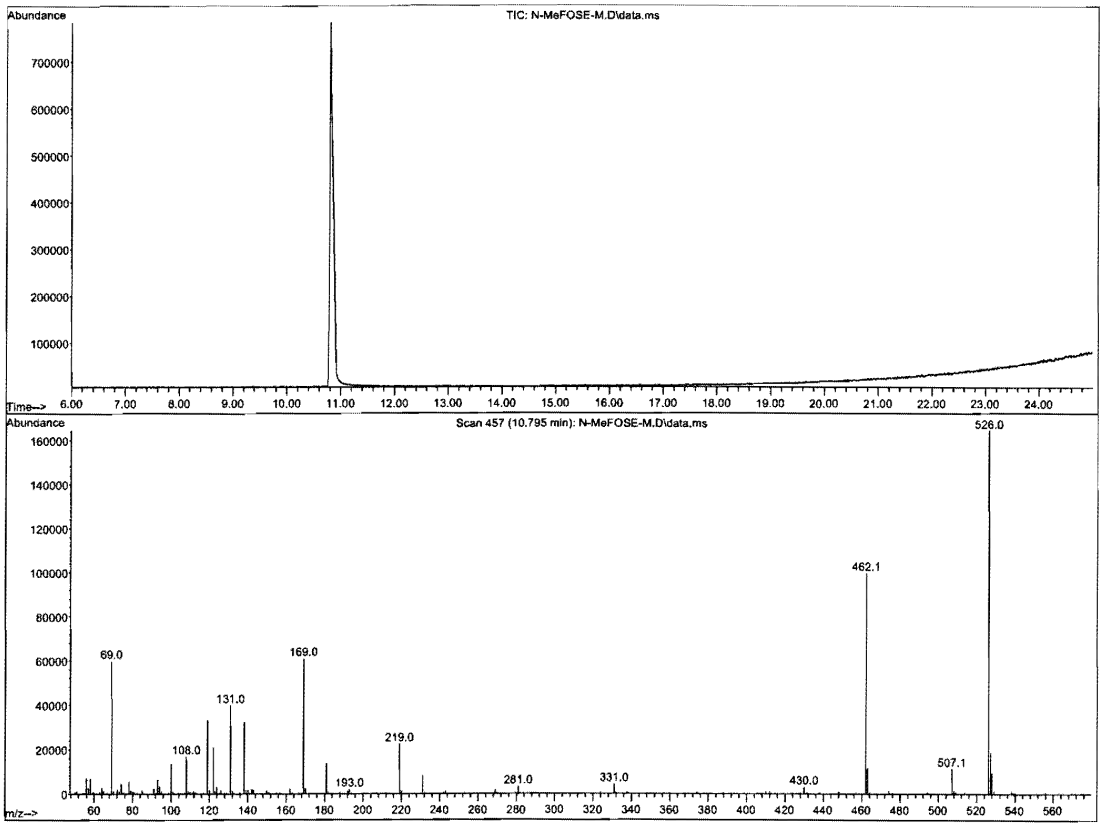
MS Parameters

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

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:

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

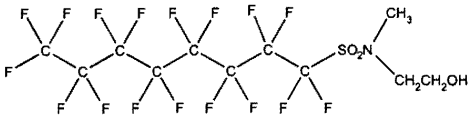
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

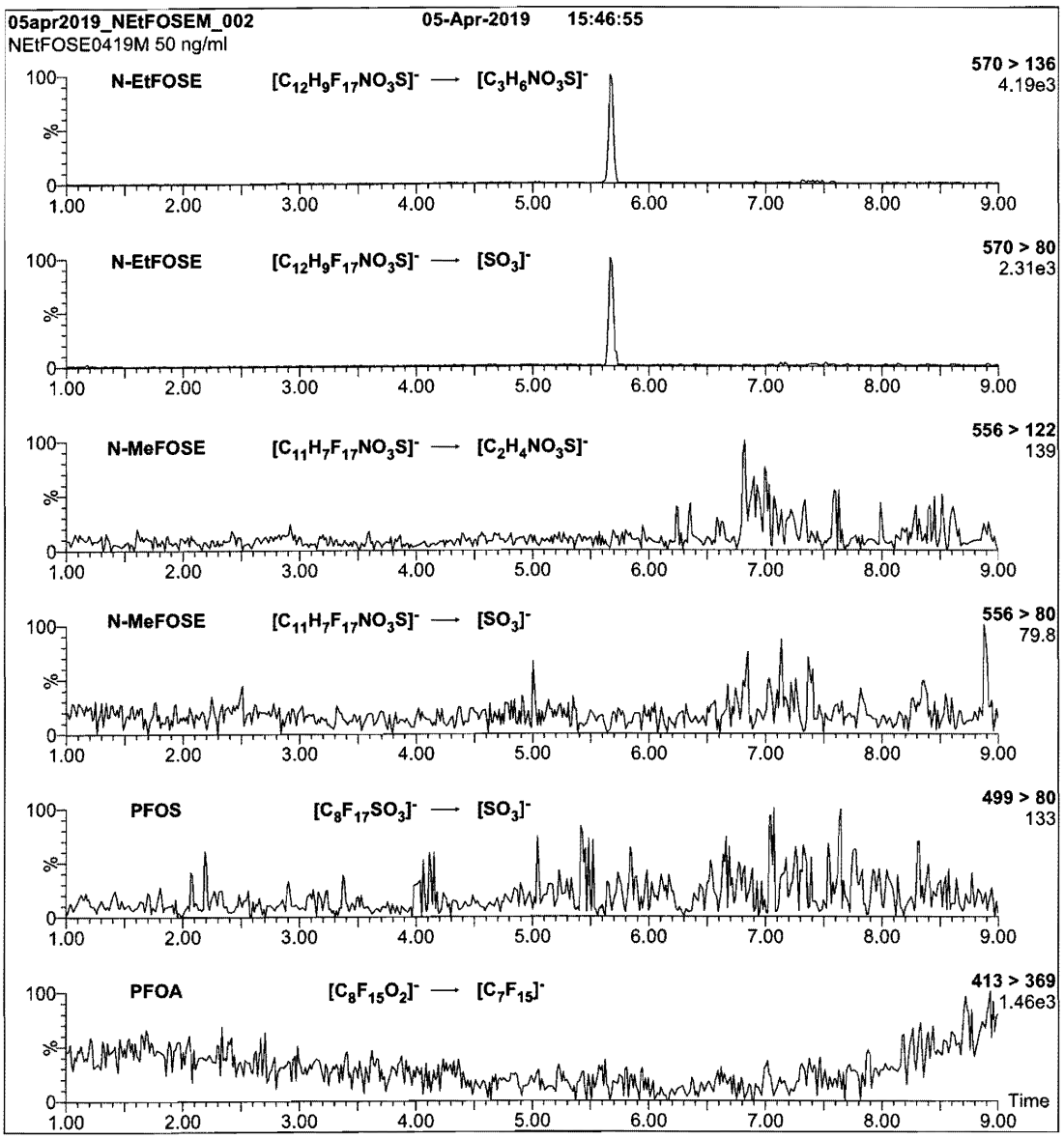
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

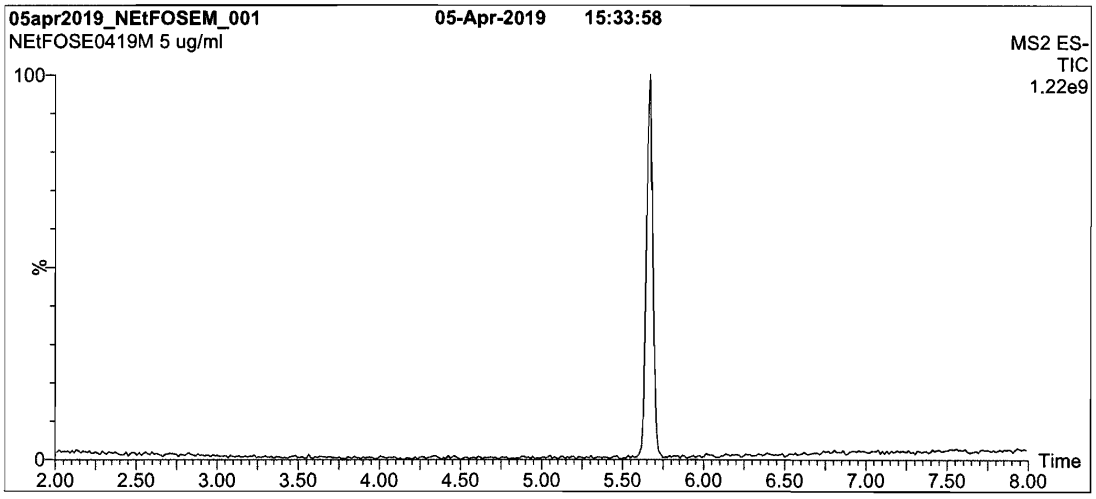
Collision Gas (mbar) = 2.76e-3
Collision Energy (eV) = 32

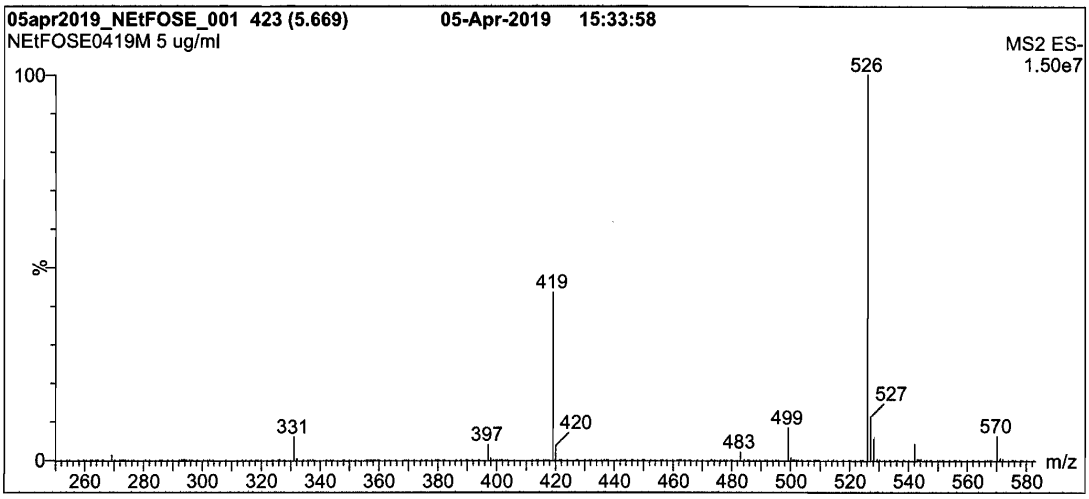
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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)

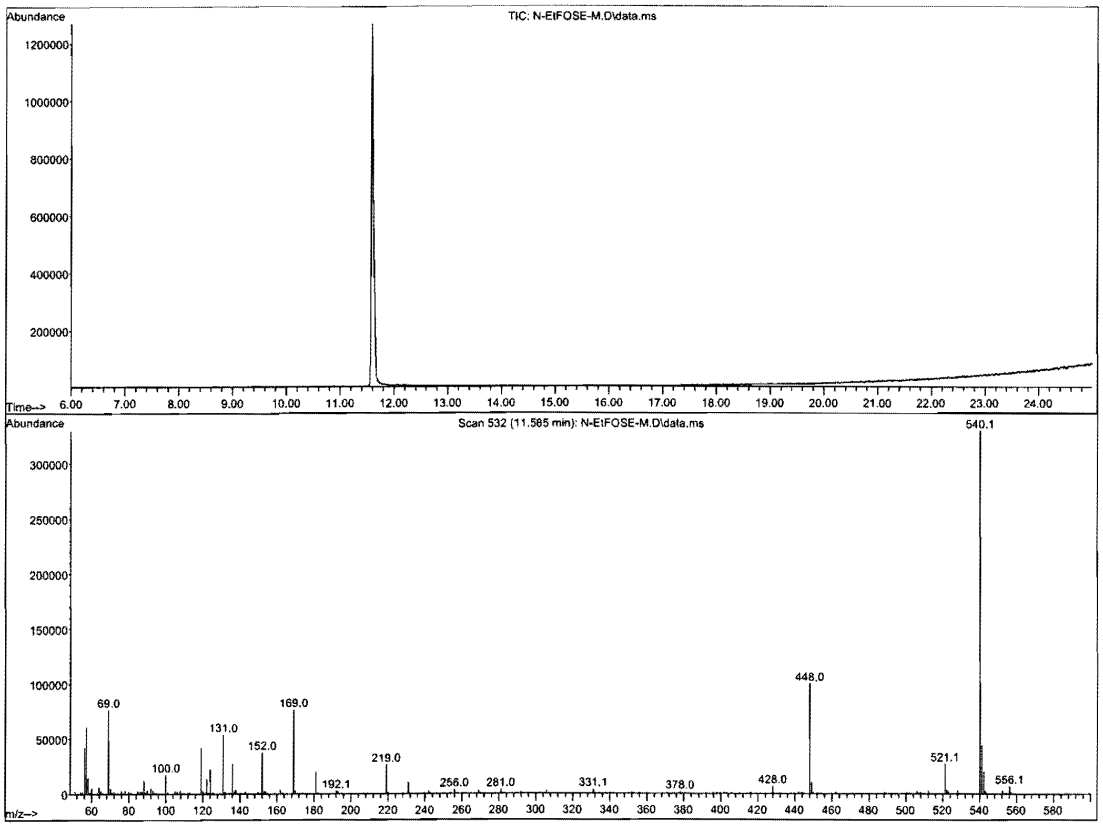
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Desolvation Temperature (°C) = 450
Desolvation Gas Flow (l/hr) = 1000

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

NEtFOSE0419M (4 of 5)
rev0

19L0664

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)

19L0664

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. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

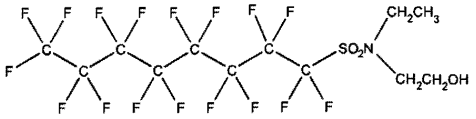
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

19L 0664

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.

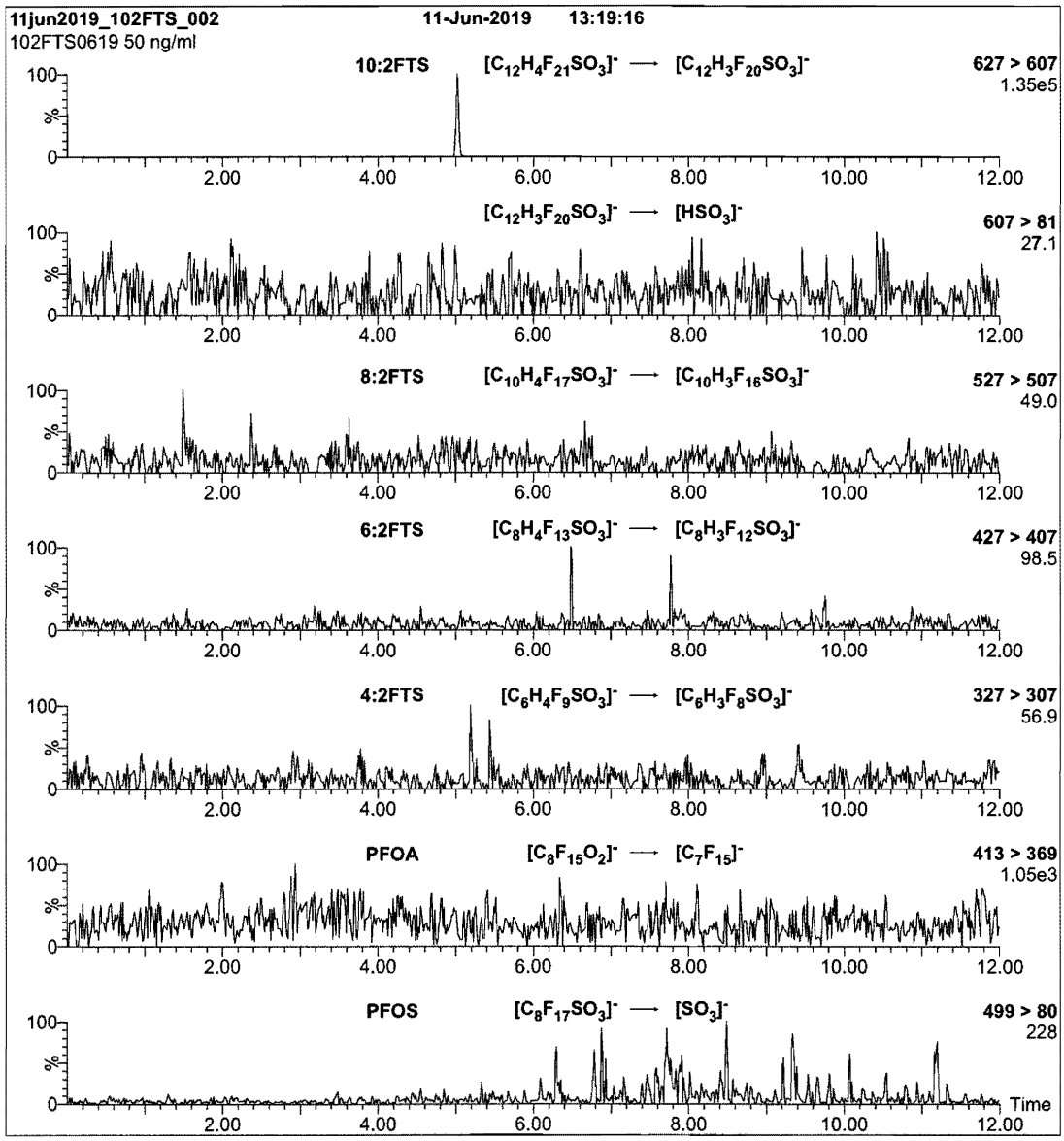
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **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

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

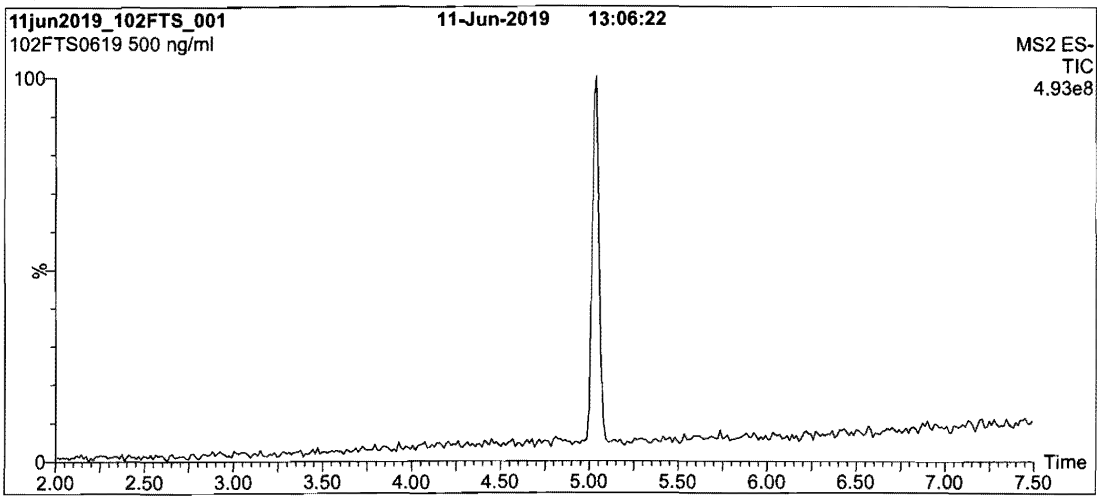
Collision Gas (mbar) = 2.92e-3
Collision Energy (eV) = 25

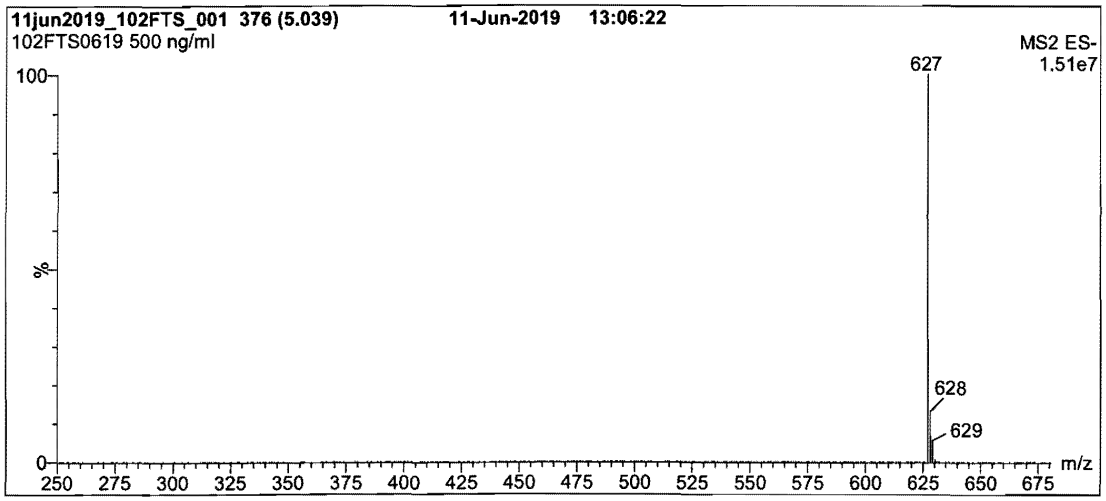
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

102FTS0619 (4 of 4)
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

102FTS0619 (3 of 4)
rev0

19L0665

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:

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

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

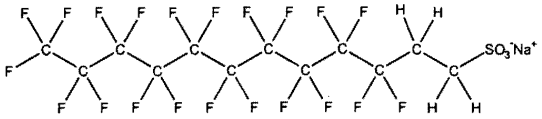
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

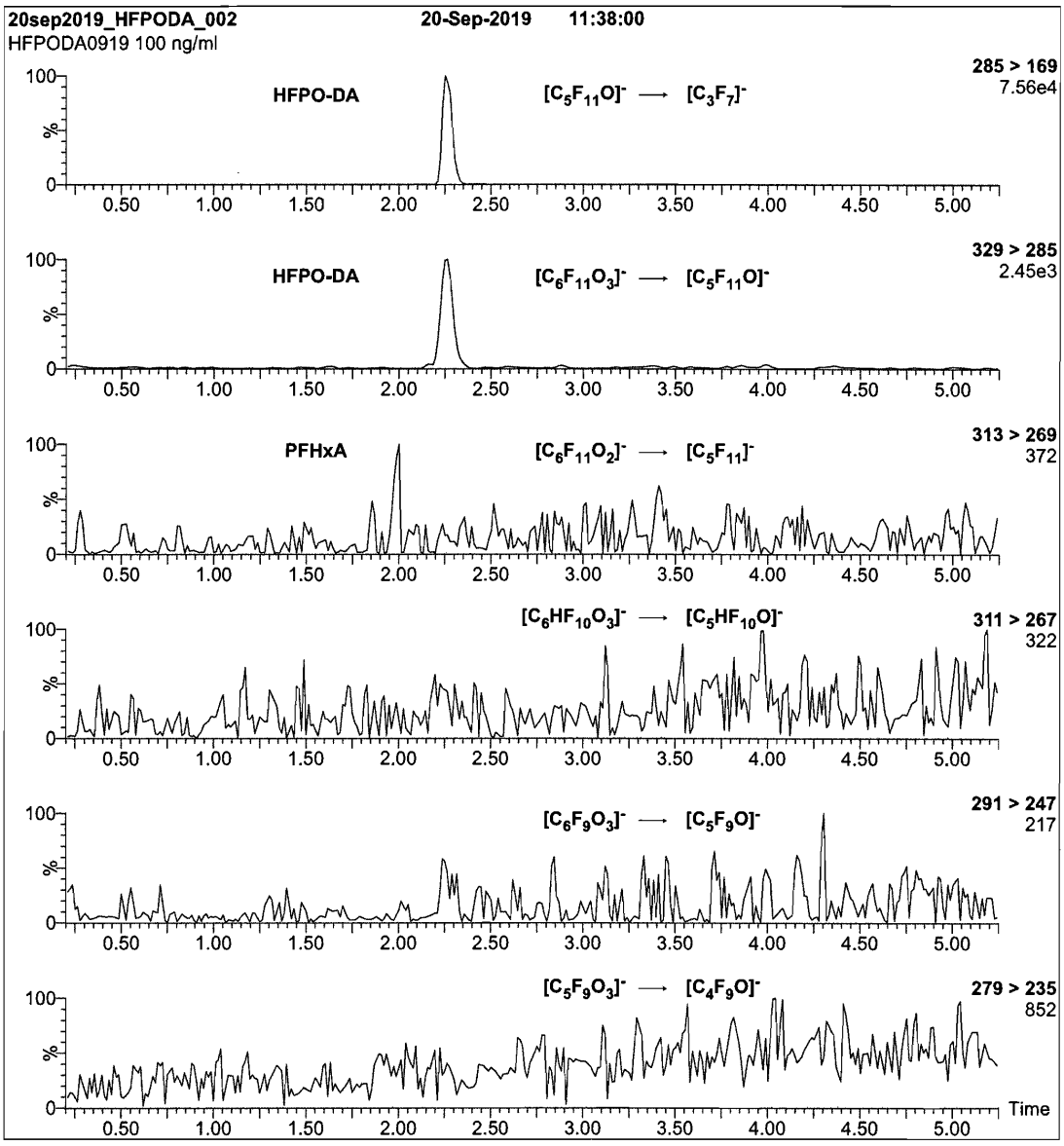
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

1910666

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

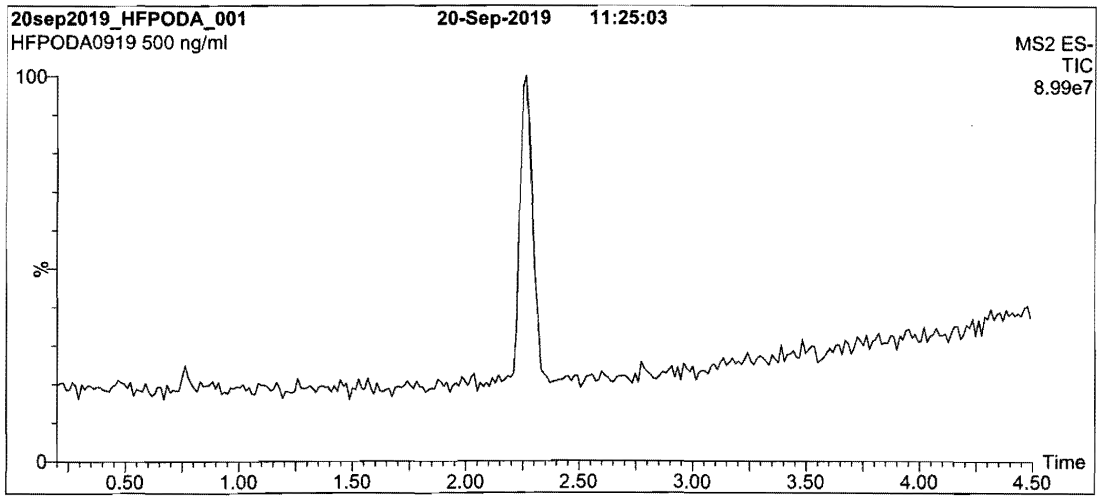
Collision Gas (mbar) = 3.60e-3
Collision Energy (eV) = 8

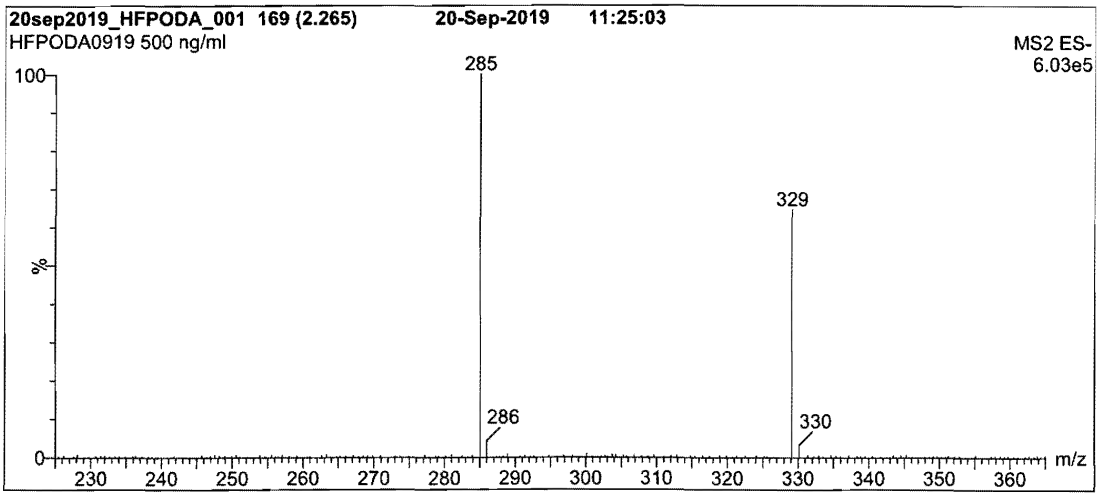
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

HFPODA0919 (4 of 4)
rev0

1910666

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

HFPODA0919 (3 of 4)
rev0

19L 0666

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. 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

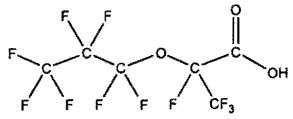
WELLINGTON LABORATORIES

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

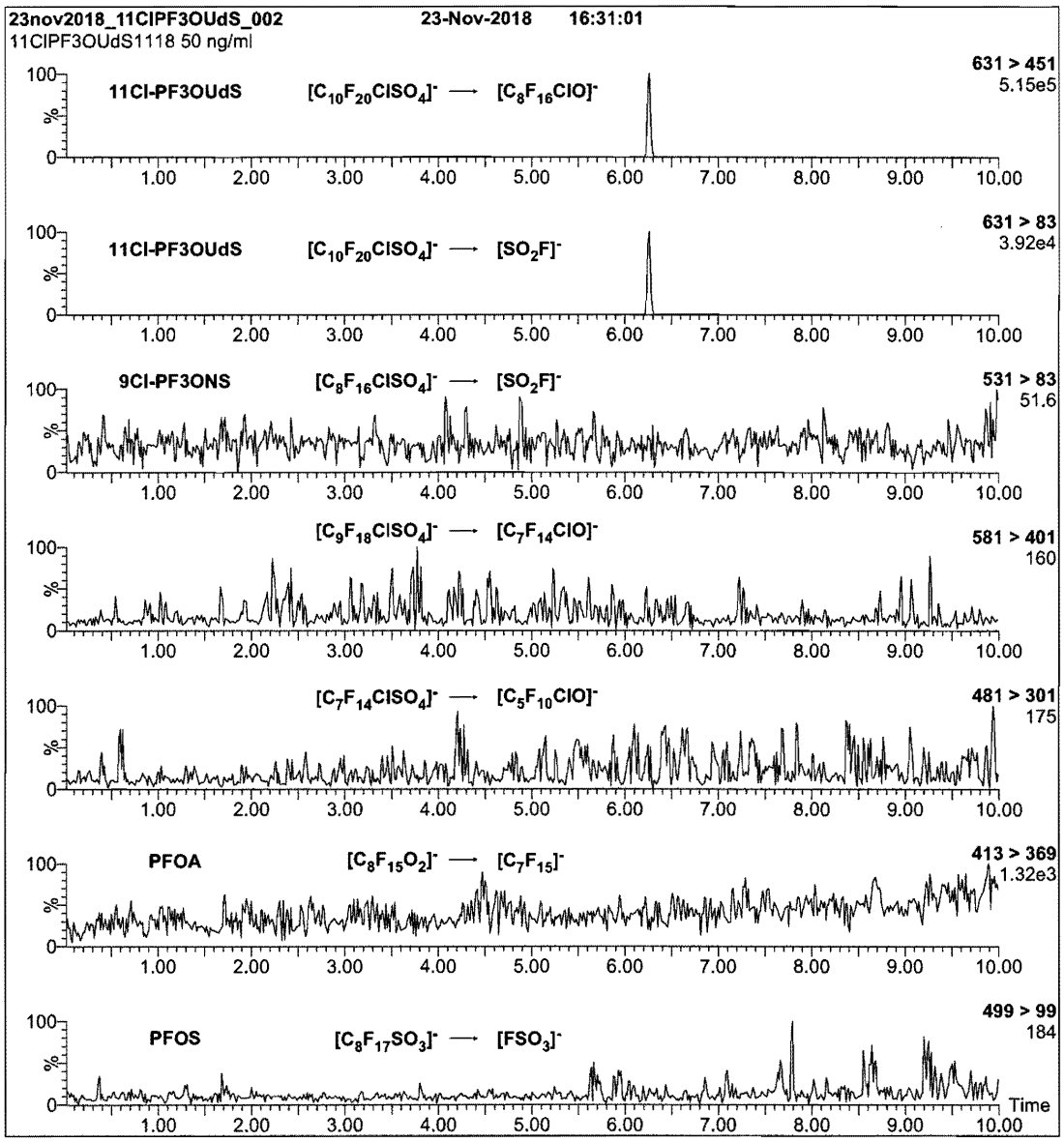
Certified By: _____ **Date:** 09/30/2019 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

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

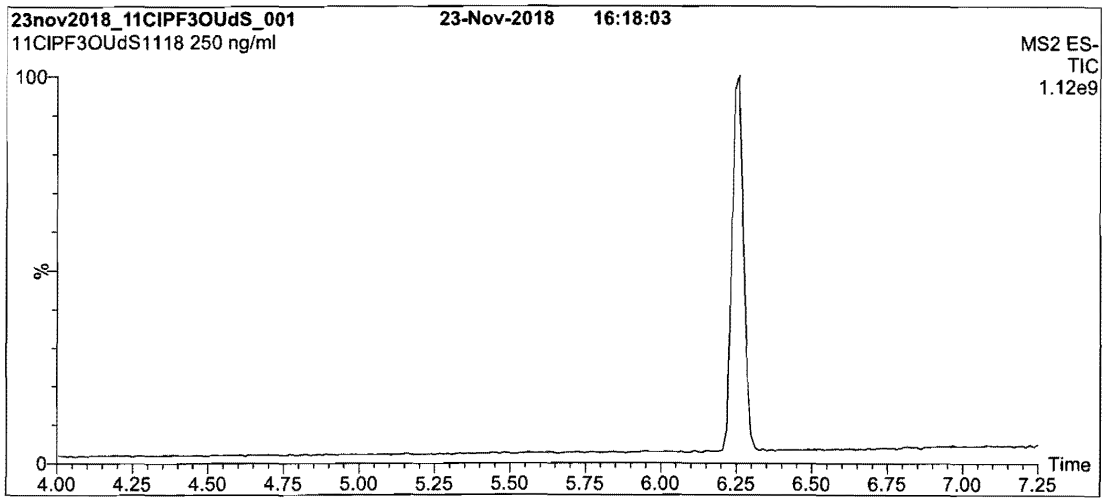
Collision Gas (mbar) = 2.84e-3
Collision Energy (eV) = 24

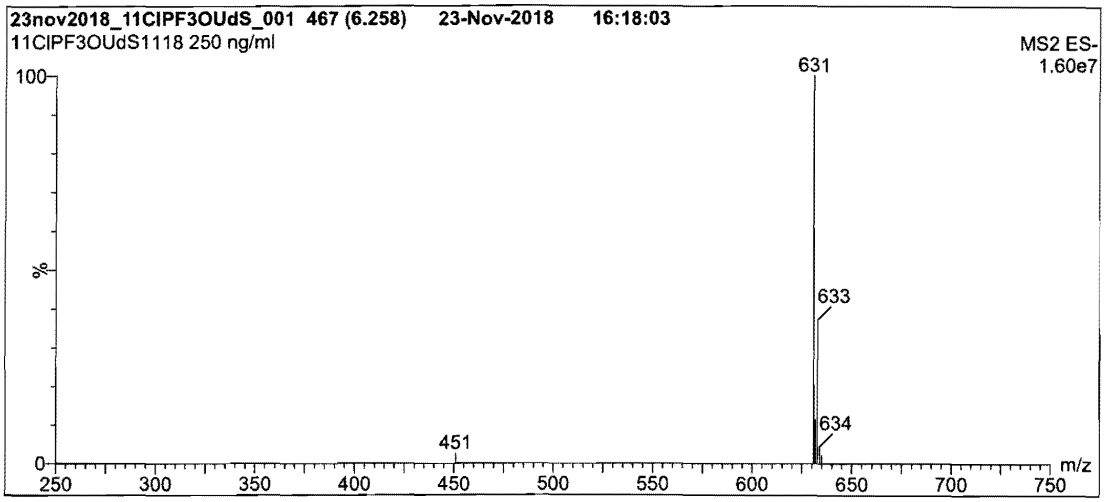
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

11ClPF3OUdS1118 (4 of 4)
rev0

1910667

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

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. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

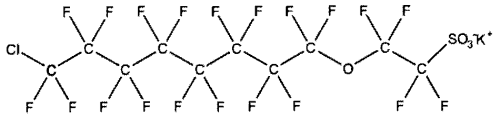
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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) 47.1 ± 2.4 µg/ml (11Cl-PF3OUdS anion)	**SOLVENT(S):**	Methanol
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.

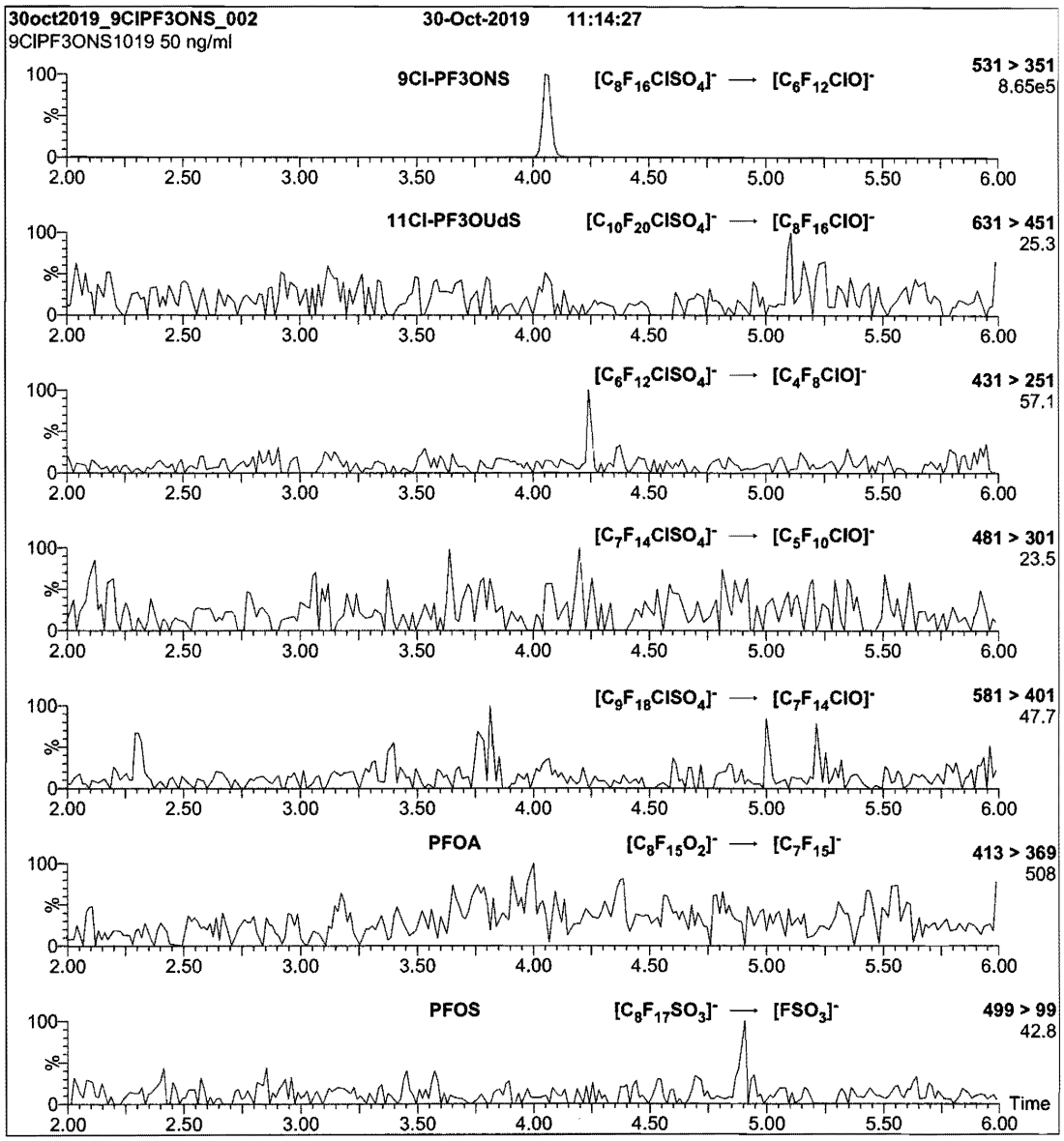
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/28/2018 (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

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

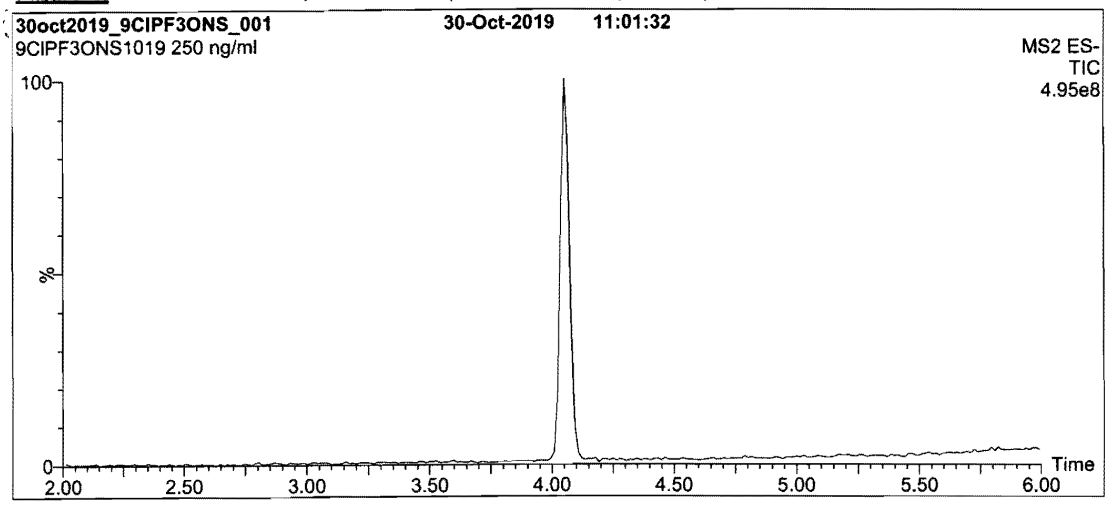
Collision Gas (mbar) = 3.25e-3
Collision Energy (eV) = 20

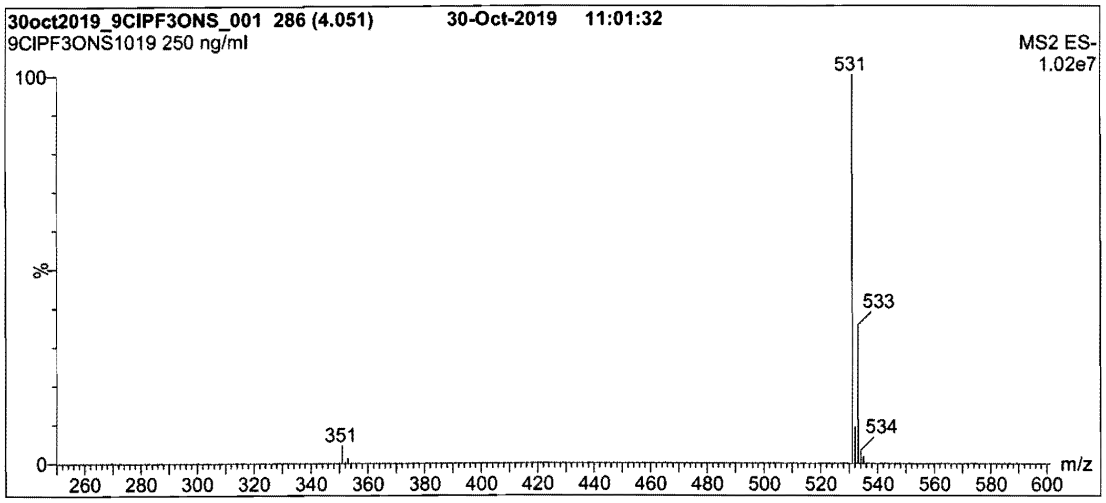
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

9ClPF3ONS1019 (4 of 4)
rev0

19L0668

Figure 1: **9Cl-PF3ONS; 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) = 70.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

9ClPF3ONS1019 (3 of 4)
rev0

19L0668

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

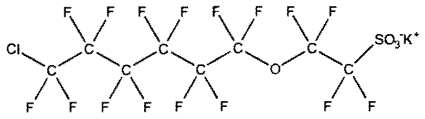
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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.

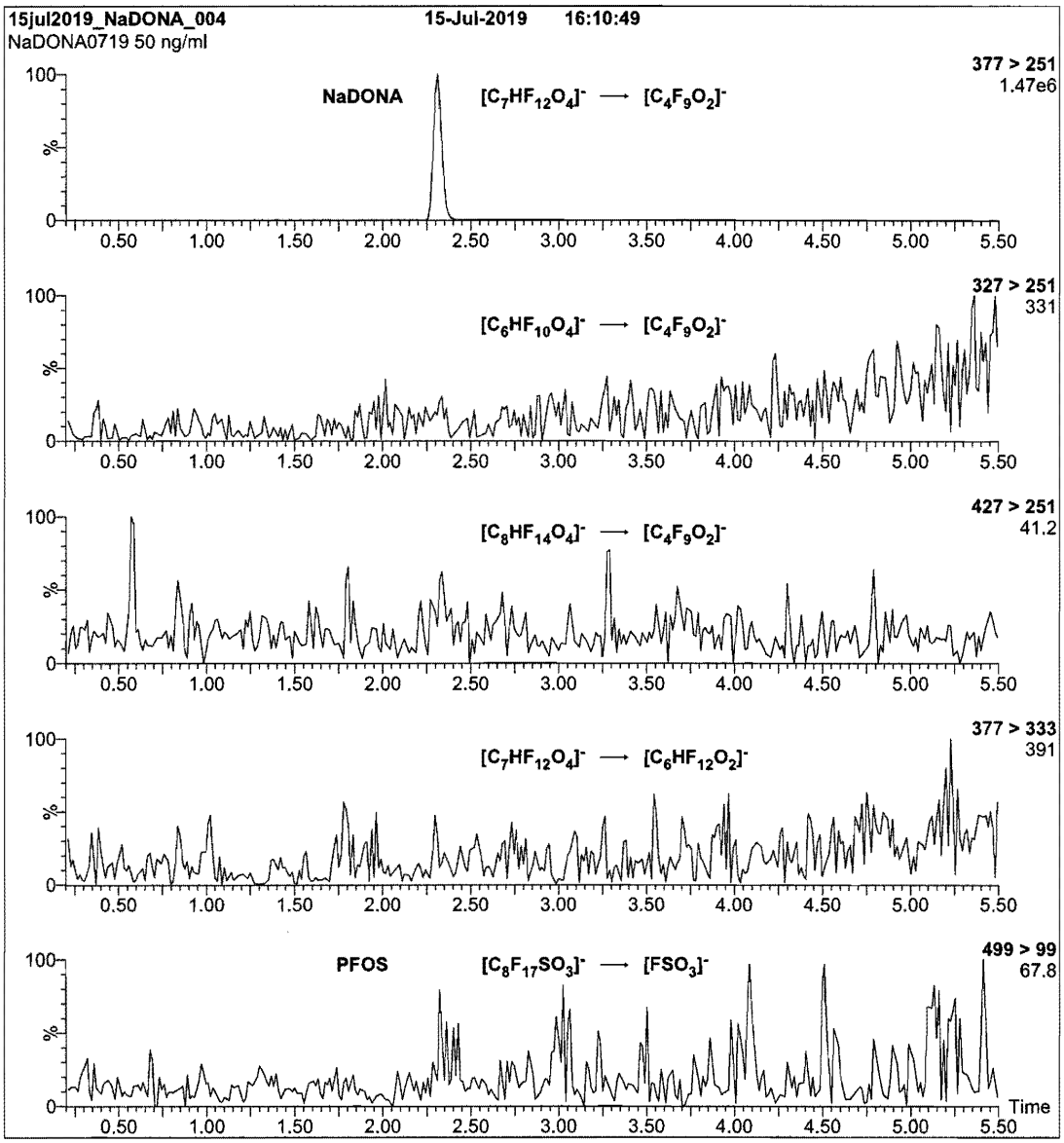
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

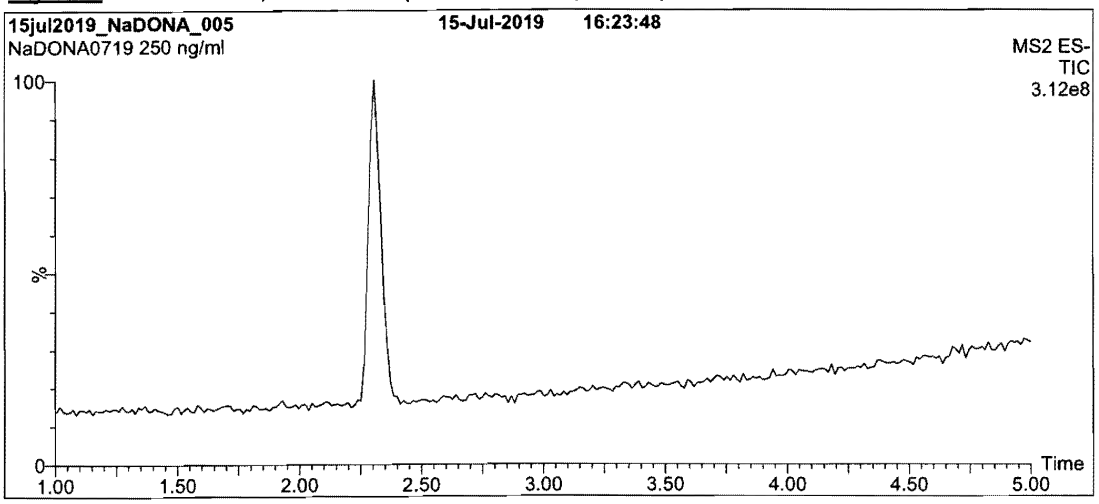
Collision Gas (mbar) = 3.37e-3
Collision Energy (eV) = 10

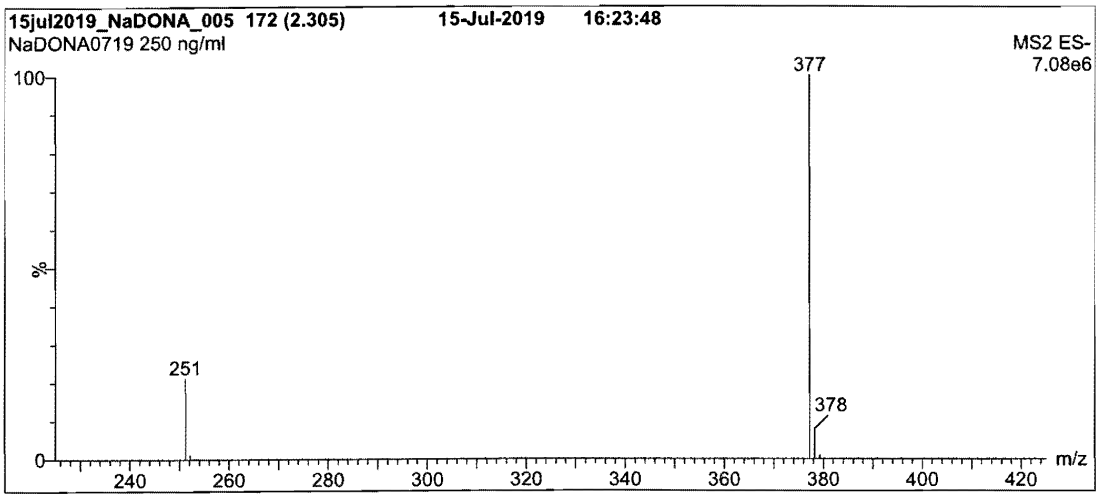
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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 $x_1, x_2, \ldots x_n$ 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

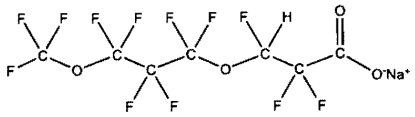
19L0669

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)	**SOLVENT(S):**	Methanol
	47.1 ± 2.4 µg/ml (NaDONA anion)		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.

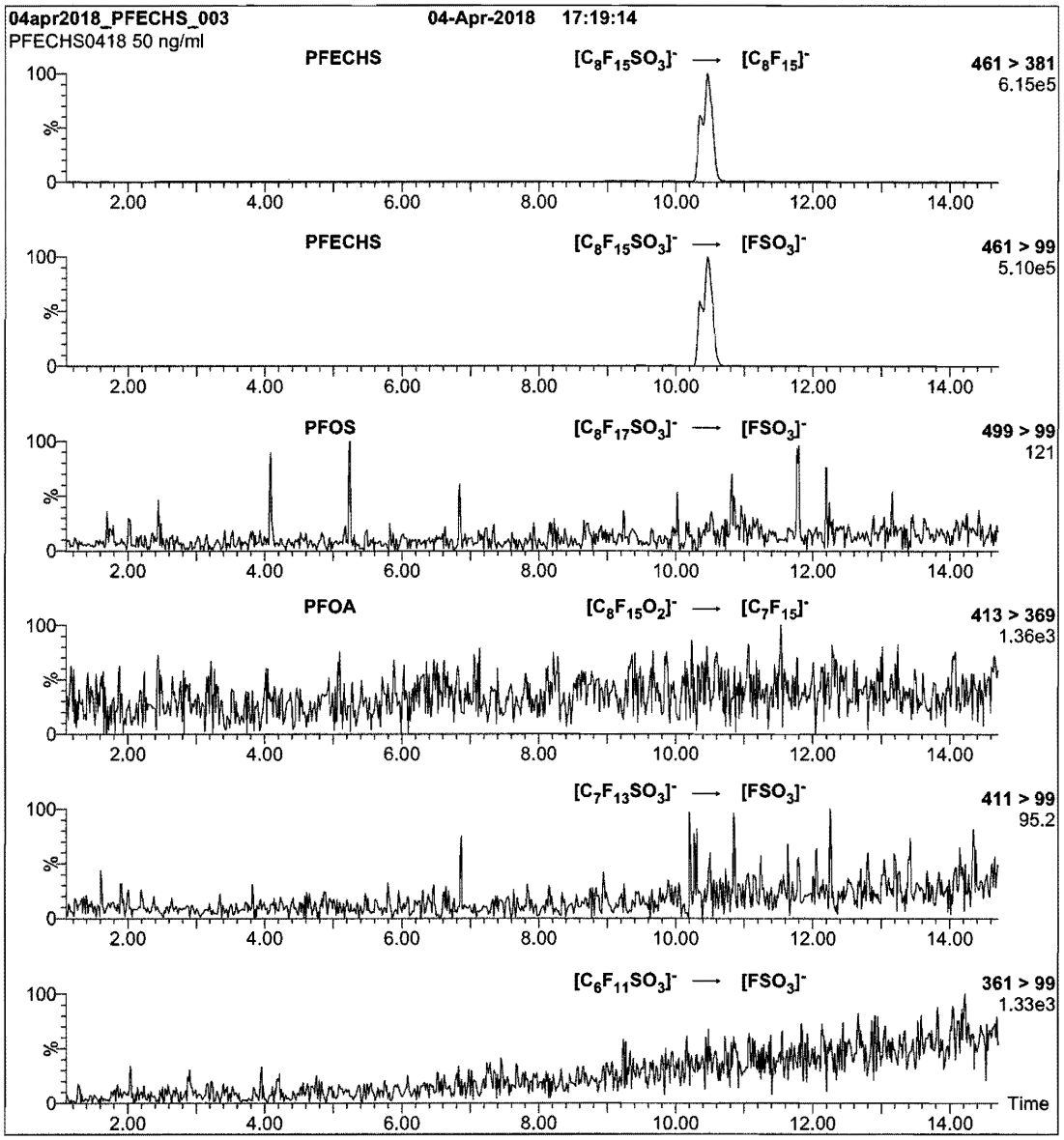
FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/25/2019 (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

1910670

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

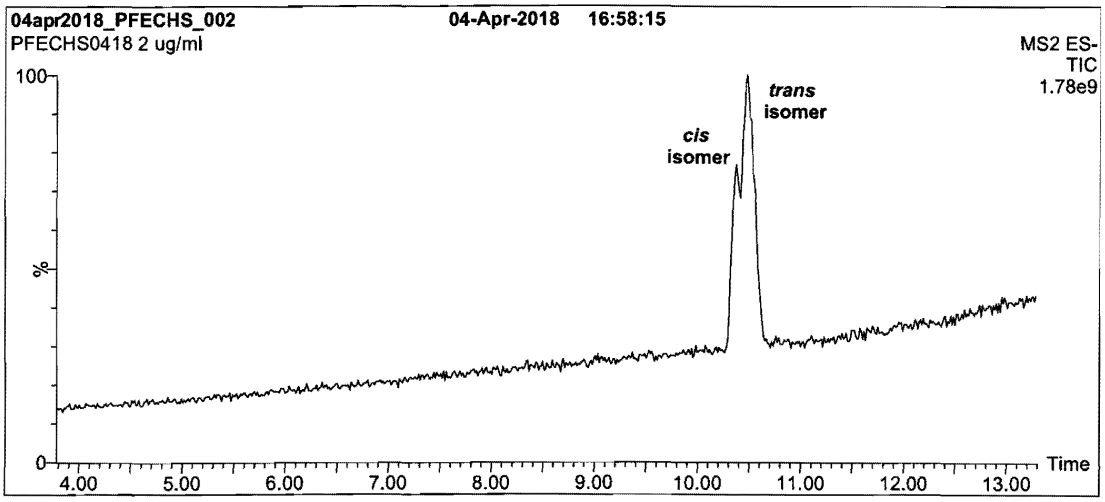
Collision Gas (mbar) = 3.37e-3
Collision Energy (eV) = 24

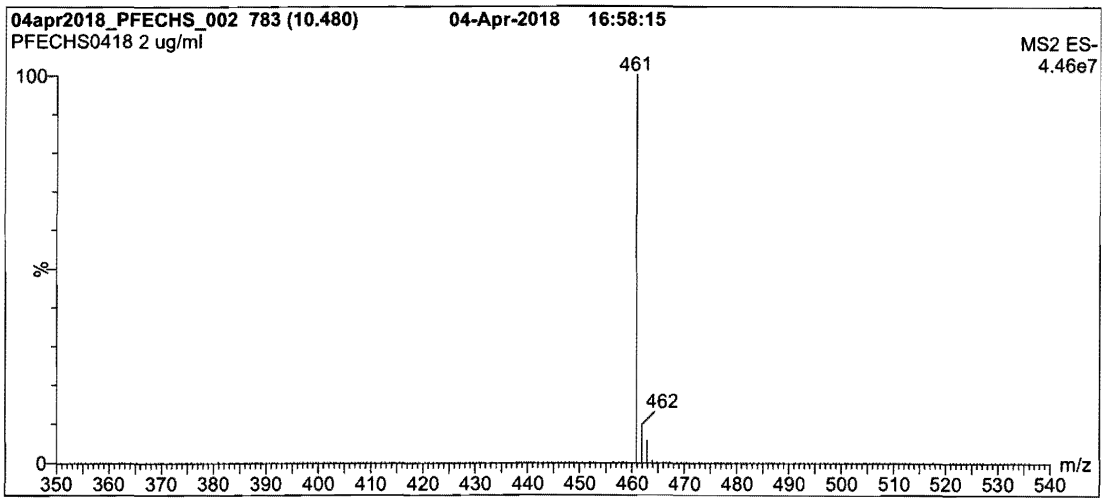
Form#:27, Issued 2004-11-10
Revision#:5, Revised 2018-01-22

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:

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

1910670

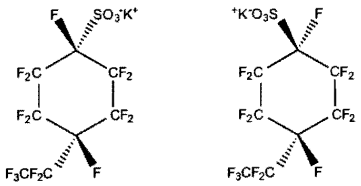
WELLINGTON LABORATORIES

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:	$C_8F_{15}SO_3K$	**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

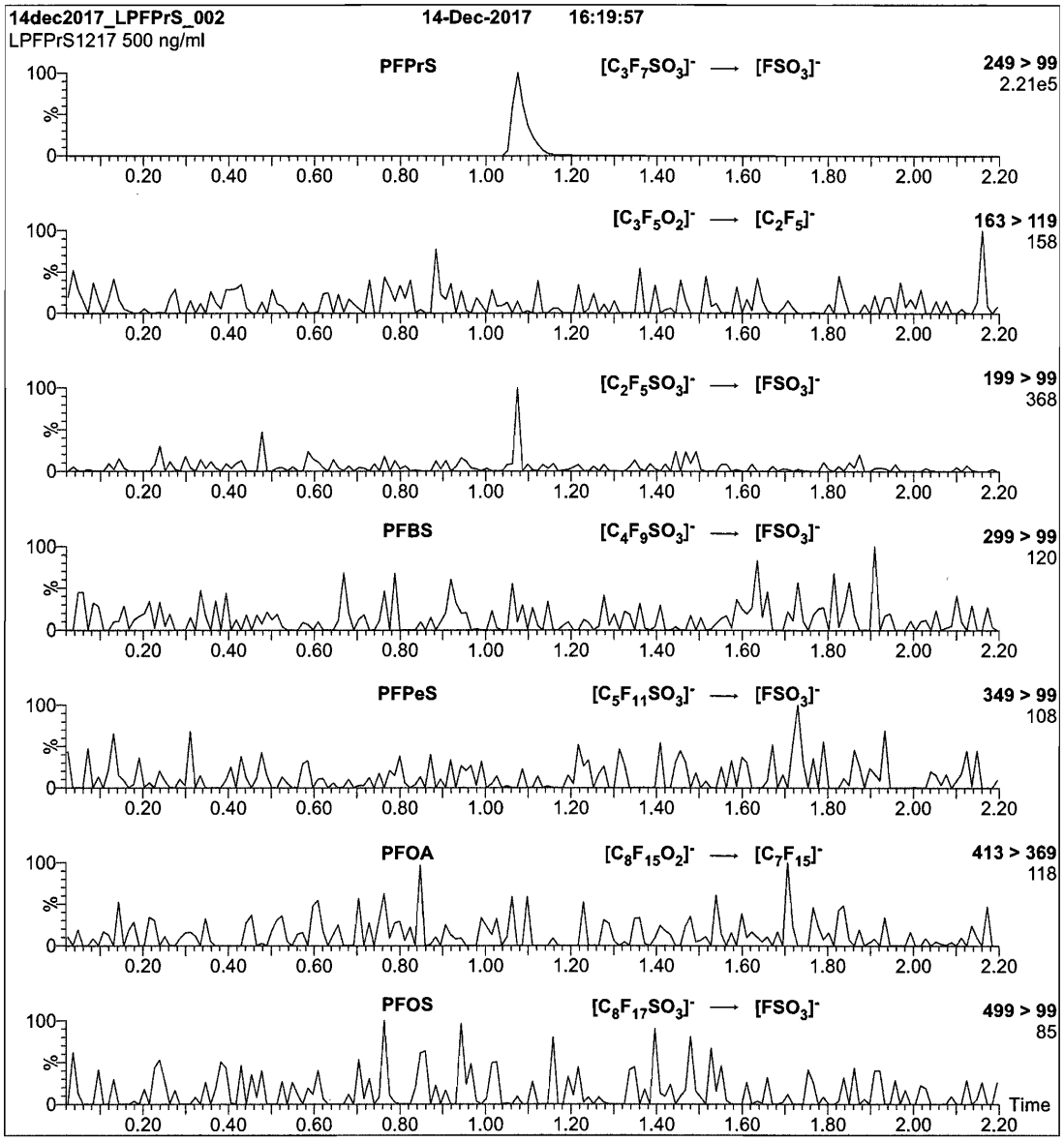
Certified By: _____ **Date:** 04/09/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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 2018-01-22

17L0671

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

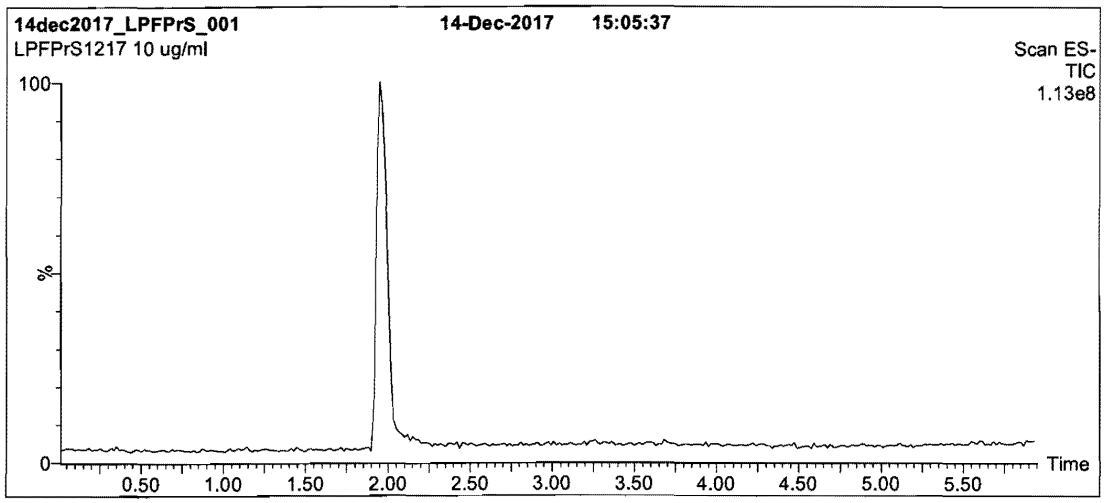
Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

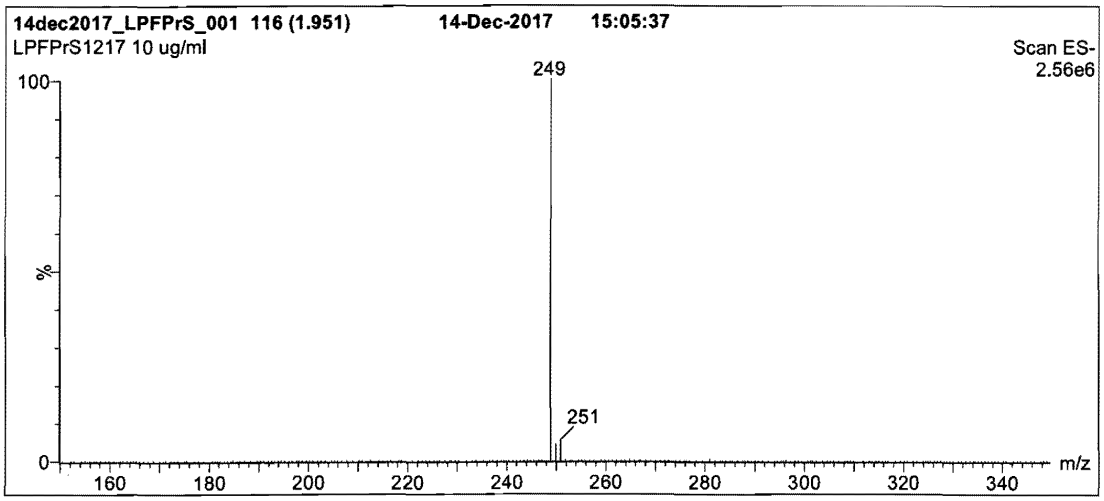
Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-06

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

191067I

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

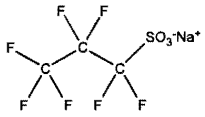
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

196671

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	L-PFPrS	**LOT NUMBER:**	LPFPrS1217
COMPOUND:	Sodium perfluoro-1-propanesulfonate		
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

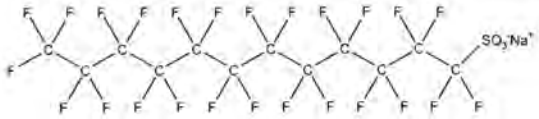
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

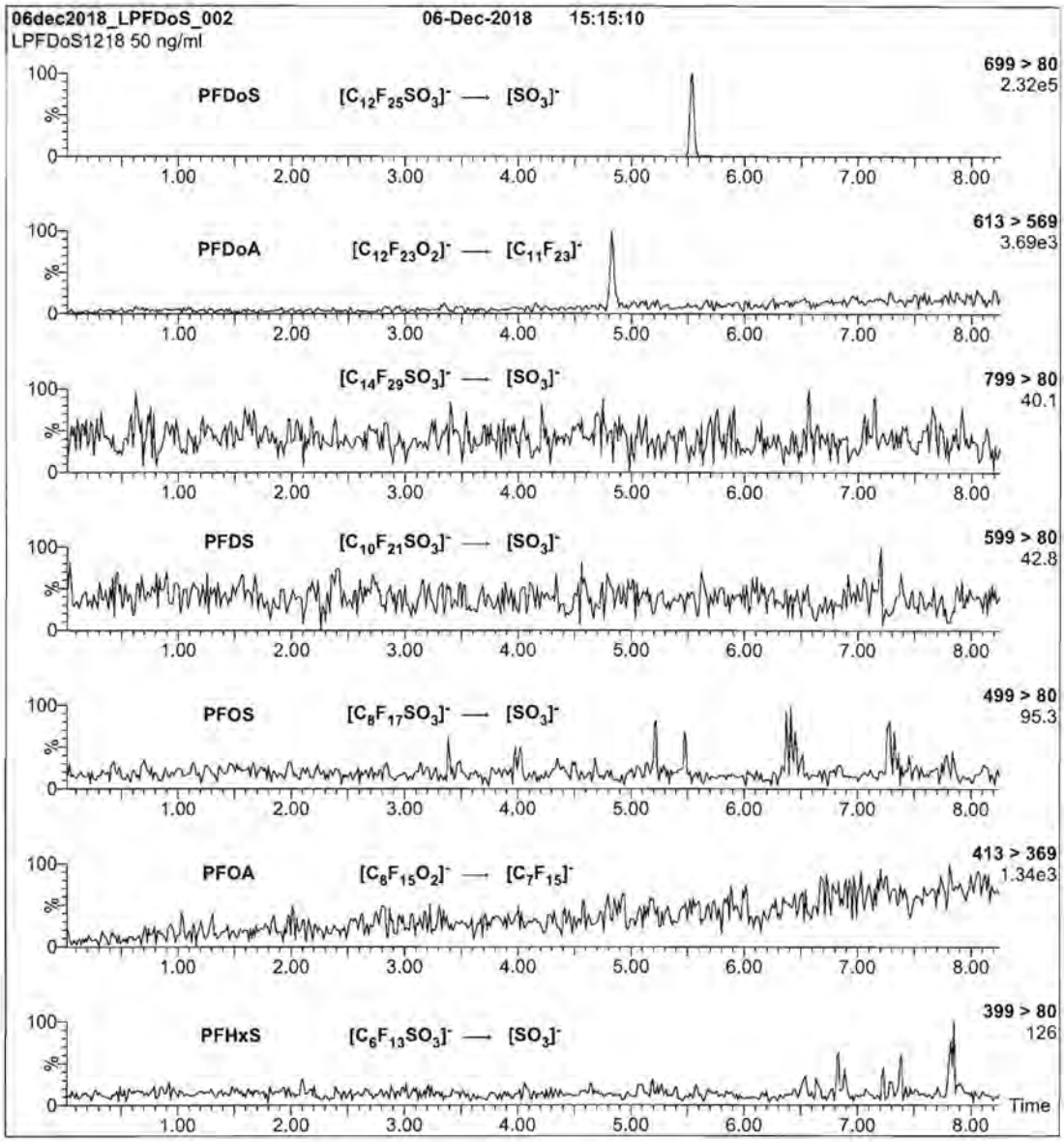
Certified By: _____ **Date:** 12/20/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

19L707

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

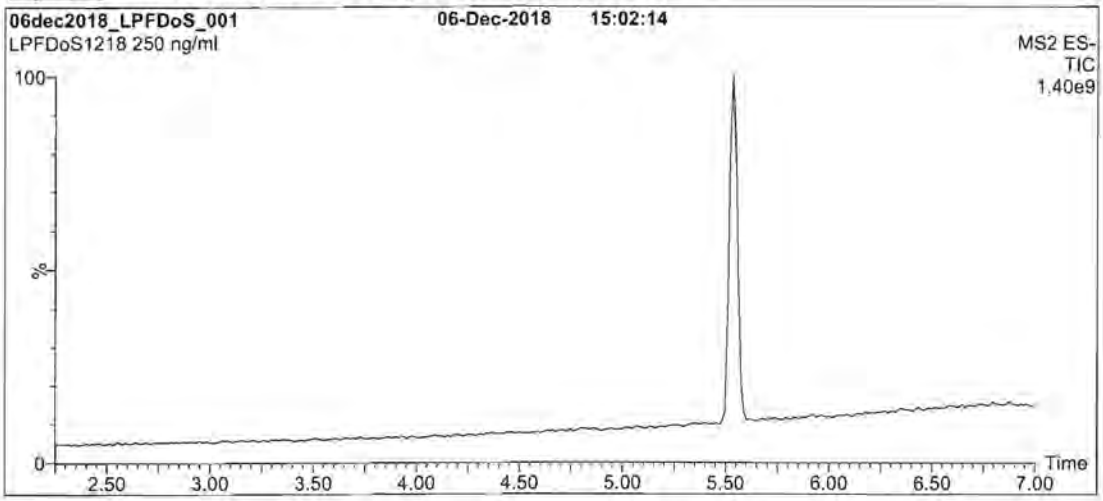
Collision Gas (mbar) = 3.27e-3
Collision Energy (eV) = 60

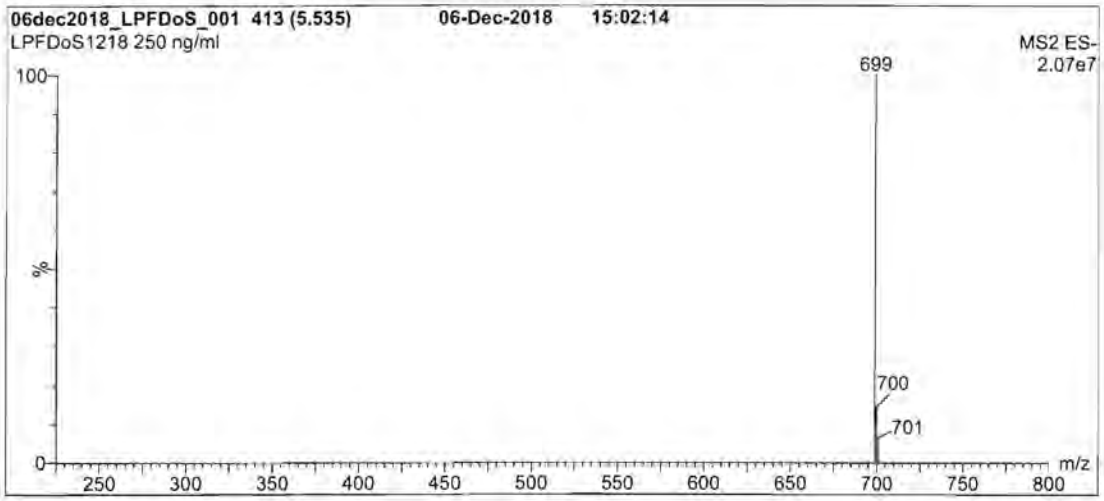
Form#:27, Issued 2004-11-10
Revision#:6, Revised 2018-08-14

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#:5, 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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED

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

LPFDoS1218 (2 of 4)
rev0

"sys_sample_code","lab_anl_method_name","analysis_date","analysis_time","total_or_dissolved","column_number","test_type","cas_rn","chemical_name","result_value","result_error_delta","result_type_code","reportable_result","detect_flag","lab_qualifiers","organic_yn","method_detection_limit","reporting_detection_limit","quantatation_limit","result_unit","detection_limit_unit","tic_retention_time","result_comment","qc_original_conc","qc_spike_added","qc_spike_measured","qc_spike_recovery","qc_dup_original_conc","qc_dup_spike_added","qc_dup_spike_measured","qc_dup_spike_recovery","qc_rpd","qc_spike_lcl","qc_spike_ucl","qc_rpd_cl","qc_spike_status","qc_dup_spike_status","qc_rpd_status"
"EB02-20200624","537_MOD","07/06/20","21:19","N","NA","000","375-73-5","PFBS","","","TRG","Yes","N","U","Y","0.00142","0.00207","0.00414","UG_L","UG_L","","","

(PFUNA)","","","TRG","Yes","N","U","Y","0.00142","0.00207","0.00414","UG_L","UG_L","","","

"EB02-20200624","537_MOD","07/06/20","21:19","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","68.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","68.2","68.2","","","","","","50","150","","","","",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","375-73-5","PFBS","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.00517","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","13252-13-6","HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)","","","TRG","Yes","N","U","Y","0.00228","0.00284","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","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-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","919005-14-4","4,8-DIOXA-3H-PERFLUORONONANOIC ACID (ADONA)","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.00959","","TRG","Yes","Y","","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.00360","","TRG","Yes","Y","J","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","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-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","0.00199","","TRG","Yes","Y","J","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","756426-58-1","9-CHLOROHEXADECAFLUORO-3-OXANONE-1-SULFONIC ACID (9Cl-PF3ONS)","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","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-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","2991-50-6","EtFOSAA","0.00192","","TRG","Yes","Y","J","Y","0.00130","0.00189","0.00379","UG_L","UG_L",""
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID

(PFUNA)","","","TRG","Yes","N","U","Y","0.00130","0.00189","0.00379","UG_L","UG_L","","","

","","","","
"24-GW-24MW06-20200624","537_MOD","07/06/20","21:30","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","62.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","62.8","62.8","","","","","","50","150","","","","","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","375-73-5","PFBS","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","","","","","","","","","","","","","","","","","","","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.00538","","TRG","Yes","Y","","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","13252-13-6","HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)","","","TRG","Yes","N","U","Y","0.00229","0.00285","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","919005-14-4","4,8-DIOXA-3H-PERFLUORONONANOIC ACID (ADONA)","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.00980","","TRG","Yes","Y","","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.00385","","TRG","Yes","Y","","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","0.00176","","TRG","Yes","Y","J","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","756426-58-1","9-CHLOROHEXADECAFLUORO-3-OXANONE-1-SULFONIC ACID (9Cl-PF3ONS)","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","2355-31-9","MeFOSAA","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","2991-50-6","EtFOSAA","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","
"DUP01-20200624","537_MOD","07/06/20","21:40","N","NA","000","763051-92-9","11-CHLOROEICOSAFLUORO-3-OXAUNDECANE-1-SULFONIC ACID (11Cl-

PF3OUdS)","","","TRG","Yes","N","U","Y","0.00130","0.00190","0.00380","UG_L","UG_L","","","

"24-GW-24MW10D-20200624","537_MOD","07/06/20","21:51","N","NA","000","375-73-5","PFBS","","","TRG","Yes","N","U","Y","0.00132","0.00193","0.00386","UG_L","UG_L","","","

CHLOROEICOSAFLUORO-3-OXAUNDECANE-1-SULFONIC ACID (11Cl-PF3OUdS)","","","TRG","Yes","N","U","Y","0.00132","0.00193","0.00386","UG_L","UG_L","","","

,"","","","",""
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","375-73-
5","PFBS","","","TRG","Yes","N","U","Y","0.00134","0.00195","0.00391","UG_L","UG_L","","","

ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.00134","0.00195","0.00391","UG_L","UG_L","","","","","","","","","","
","","","","","","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","72629-94-
8","PFTrDA","","","TRG","Yes","N","U","Y","0.00134","0.00195","0.00391","UG_L","UG_L","","","","","","","","","","
","","","","","","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.00134","0.00195","0.00391","UG_L","UG_L","","","","","","","","","","
","","","","","","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C3-PFBS","13C3-
PFBS","82.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","82.3","82.3","","","","","","50","150","","
","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C3-HFPO-DA","13C3-HFPO-
DA","63.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","63.8","63.8","","","","","","50","150","","
","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C2-PFHxA","13C2-
PFHxA","70.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","70.3","70.3","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C4-PFHpA","13C4-
PFHpA","75.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.2","75.2","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C3-PFHxS","13C3-
PFHxS","78.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","78.6","78.6","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C5-PFNA","13C5-
PFNA","73.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.5","73.5","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C2-PFOA","13C2-
PFOA","76.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","76.8","76.8","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C8-PFOS","13C8-
PFOS","75.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.1","75.1","","","","","","50","150","","
","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C2-PFDA","13C2-
PFDA","70.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","70.7","70.7","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","d3-MeFOSAA","d3-
MeFOSAA","74.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.3","74.3","","","","","","50","15
0","","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C2-PFUnA","13C2-
PFUnA","64.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","64.4","64.4","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","75.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.0","75.0","","","","","","50","150
","","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C2-PFDoA","13C2-
PFDoA","70.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","70.7","70.7","","","","","","50","150","
","","","","
"DUP02-20200624","537_MOD","07/06/20","22:01","N","NA","000","13C2-PFTeDA","13C2-
PFTeDA","64.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","64.5","64.5","","","","","","50","150"
","","","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","375-73-
5","PFBS","0.0787","","TRG","Yes","Y","","Y","0.00134","0.00196","0.00392","UG_L","UG_L","","","","","","","","","
","","","","","","","","","","

"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.228","","TRG","Yes","Y","","Y","0.00134","0.00196","0.00392","UG_L","UG_L","","","

1","PERFLUORODODECANOIC ACID
(PFDOA)","","","TRG","Yes","N","U","Y","0.00134","0.00196","0.00392","UG_L","UG_L","","","","","","","","","","
","","","","","","","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","72629-94-
8","PFTrDA","","","TRG","Yes","N","U","Y","0.00134","0.00196","0.00392","UG_L","UG_L","","","","","","","","","","
","","","","","","","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.00134","0.00196","0.00392","UG_L","UG_L","","","","","","","","","","
","","","","","","","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C3-PFBS","13C3-
PFBS","79.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","79.8","79.8","","","","","","50","150","","
","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C3-HFPO-DA","13C3-HFPO-
DA","73.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.9","73.9","","","","","","50","150","","
","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C2-PFHxA","13C2-
PFHxA","77.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","77.8","77.8","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C4-PFHpA","13C4-
PFHpA","77.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","77.6","77.6","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C3-PFHxS","13C3-
PFHxS","80.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","80.8","80.8","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C5-PFNA","13C5-
PFNA","74.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.2","74.2","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C2-PFOA","13C2-
PFOA","76.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","76.0","76.0","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C8-PFOS","13C8-
PFOS","80.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","80.6","80.6","","","","","","50","150","","
","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C2-PFDA","13C2-
PFDA","71.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","71.0","71.0","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","d3-MeFOSAA","d3-
MeFOSAA","76.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","76.2","76.2","","","","","","50","15
0","","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C2-PFUnA","13C2-
PFUnA","62.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","62.7","62.7","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","75.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.3","75.3","","","","","","50","150
","","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C2-PFDoA","13C2-
PFDoA","68.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","68.3","68.3","","","","","","50","150","
","","","
"24-GW-24MW10C-20200624","537_MOD","07/06/20","22:12","N","NA","000","13C2-PFTeDA","13C2-
PFTeDA","65.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","65.8","65.8","","","","","","50","150"
","","","","
"24-GW-24MW07R-20200624","537_MOD","07/06/20","22:22","N","NA","000","375-73-
5","PFBS","0.0323","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00393","UG_L","UG_L","","","","","","","","","
","","","","","","","","","

"24-GW-24MW07R-20200624","537_MOD","07/06/20","22:22","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.134","","TRG","Yes","Y","","Y","0.00135","0.00197","0.00393","UG_L","UG_L","","","

"24-GW-24MW07R-20200624","537_MOD","07/06/20","22:22","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","","","TRG","Yes","N","U","Y","0.00135","0.00197","0.00393","UG_L","UG_L","","","

","","","","","","","","","
","","","","","","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","","","","","","

8","PFTrDA","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","","","","","","
","","","","","","","","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","376-06-
7","PFTeDA","","","TRG","Yes","N","U","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","","","","","","
","","","","","","","","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C3-PFBS","13C3-
PFBS","78.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","78.9","78.9","","","","","","50","150","","
","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C3-HFPO-DA","13C3-HFPO-
DA","69.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","69.4","69.4","","","","","","50","150","","
","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C2-PFHxA","13C2-
PFHxA","72.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","72.1","72.1","","","","","","50","150","
","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C4-PFHpA","13C4-
PFHpA","71.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","71.7","71.7","","","","","","50","150","
","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C3-PFHxS","13C3-
PFHxS","76.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","76.2","76.2","","","","","","50","150","
","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C5-PFNA","13C5-
PFNA","71.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","71.3","71.3","","","","","","50","150","","
","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C2-PFOA","13C2-
PFOA","70.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","70.0","70.0","","","","","","50","150","","
","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C8-PFOS","13C8-
PFOS","71.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","71.0","71.0","","","","","","50","150","","
","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C2-PFDA","13C2-
PFDA","69.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","69.6","69.6","","","","","","50","150","","
","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","d3-MeFOSAA","d3-
MeFOSAA","59.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","59.6","59.6","","","","","","50","15
0","","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C2-PFUnA","13C2-
PFUnA","59.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","59.5","59.5","","","","","","50","150","
","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","d5-EtFOSAA","d5-
EtFOSAA","64.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","64.3","64.3","","","","","","50","150
","","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C2-PFDoA","13C2-
PFDoA","66.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","66.9","66.9","","","","","","50","150","
","","","","
"B0F0257-BLK1","537_MOD","07/06/20","19:03","N","NA","000","13C2-PFTeDA","13C2-
PFTeDA","56.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","56.8","56.8","","","","","","50","150"
","","","","","
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","375-73-
5","PFBS","0.0432","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.
0432","108","","","","","","72","130","","","","","
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID
(PFHXA)","0.0434","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.
0434","108","","","","","","72","129","","","","","
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13252-13-6","HEXAFLUOROPROPYLENE

OXIDE DIMER ACID (HFPO-
DA)","0.0395","","TRG","Yes","Y","","Y","0.00241","0.00300","0.00400","UG_L","UG_L","","","","0.0400","0.0395
","98.7","","","","","","","70","130","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID
(PFHPA)","0.0414","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.
0414","104","","","","","","","72","130","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","919005-14-4","4,8-DIOXA-3H-
PERFLUORONONANOIC ACID
(ADONA)","0.0404","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0
.0404","101","","","","","","","70","130","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC
ACID
(PFHXS)","0.0377","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.
0377","94.2","","","","","","","68","131","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","0.0391","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0
391","97.7","","","","","","","71","133","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","0.0400","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0
400","100","","","","","","","69","130","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","1763-23-
1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","0.0386","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0386","96
.5","","","","","","","65","140","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","756426-58-1","9-
CHLOROHEXADECAFLUORO-3-OXANONE-1-SULFONIC ACID (9Cl-
PF3ONS)","0.0431","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.
0431","108","","","","","","","70","130","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","0.0437","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0
437","109","","","","","","","71","129","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","2355-31-
9","MeFOSAA","0.0434","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.040
0","0.0434","108","","","","","","","65","136","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","2991-50-
6","EtFOSAA","0.0378","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400
","0.0378","94.6","","","","","","","61","135","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","0.0431","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.
0431","108","","","","","","","69","133","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","763051-92-9","11-CHLOROEICOSAFLUORO-3-
OXAUNDECANE-1-SULFONIC ACID (11Cl-
PF3OUdS)","0.0448","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","
0.0448","112","","","","","","","70","130","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","0.0389","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.
0389","97.3","","","","","","","72","134","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","72629-94-
8","PFTrDA","0.0370","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400",
"0.0370","92.6","","","","","","","65","144","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","376-06-
7","PFTeDA","0.0418","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400",
"0.0418","105","","","","","","","71","132","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C3-PFBS","13C3-

PFBS","73.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.7","73.7","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C3-HFPO-DA","13C3-HFPO-DA","76.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","76.0","76.0","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C2-PFHxA","13C2-PFHxA","74.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.6","74.6","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C4-PFHpA","13C4-PFHpA","73.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.0","73.0","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C3-PFHxS","13C3-PFHxS","74.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.6","74.6","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C5-PFNA","13C5-PFNA","75.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.0","75.0","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C2-PFOA","13C2-PFOA","76.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","76.9","76.9","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C8-PFOS","13C8-PFOS","73.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.0","73.0","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C2-PFDA","13C2-PFDA","70.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","70.8","70.8","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","64.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","64.8","64.8","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C2-PFUnA","13C2-PFUnA","60.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","60.0","60.0","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","68.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","68.9","68.9","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C2-PFDoA","13C2-PFDoA","69.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","69.0","69.0","","","","","","50","150","","","","",""
"B0F0257-BS1","537_MOD","07/06/20","19:13","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","61.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","61.2","61.2","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","375-73-5","PFBS","0.0412","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0412","103","","","","","4.63","72","130","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.0395","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0395","98.8","","","","","9.22","72","129","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13252-13-6","HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)","0.0448","","TRG","Yes","Y","","Y","0.00241","0.00300","0.00400","UG_L","UG_L","","","","0.0400","0.0448","112","","","","","12.7","70","130","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0383","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0383","95.7","","","","","7.88","72","130","","","",""

"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","919005-14-4","4,8-DIOXA-3H-PERFLUORONONANOIC ACID
(ADONA)","0.0350","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0350","87.4","","","","","14.5","70","130","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID
(PFHXS)","0.0398","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0398","99.5","","","","","5.50","68","131","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","0.0393","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0393","98.2","","","","","0.463","71","133","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","0.0400","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0400","100","","","","","0.00915","69","130","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","0.0384","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0384","96.1","","","","","0.435","65","140","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","756426-58-1","9-CHLOROHEXADECAFLUORO-3-OXANONE-1-SULFONIC ACID (9Cl-
PF3ONS)","0.0373","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0373","93.3","","","","","14.2","70","130","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","0.0428","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0428","107","","","","","1.94","71","129","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","2355-31-9","MeFOSAA","0.0408","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0408","102","","","","","6.11","65","136","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","2991-50-6","EtFOSAA","0.0419","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0419","105","","","","","10.1","61","135","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","0.0406","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0406","101","","","","","6.07","69","133","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","763051-92-9","11-CHLOROEICOSAFLUORO-3-OXAUNDECANE-1-SULFONIC ACID (11Cl-
PF3OUdS)","0.0419","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0419","105","","","","","6.76","70","130","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","0.0364","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0364","91.0","","","","","6.73","72","134","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","72629-94-8","PFTrDA","0.0357","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0357","89.1","","","","","3.81","65","144","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","376-06-7","PFTeDA","0.0395","","TRG","Yes","Y","","Y","0.00137","0.00200","0.00400","UG_L","UG_L","","","","0.0400","0.0395","98.8","","","","","5.62","71","132","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C3-PFBS","13C3-PFBS","87.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","87.0","87.0","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C3-HFPO-DA","13C3-HFPO-DA","77.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","77.1","77.1","","","","","","50","150","","","","",""

"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C2-PFHxA","13C2-PFHxA","84.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","84.4","84.4","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C4-PFHpA","13C4-PFHpA","87.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","87.1","87.1","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C3-PFHxS","13C3-PFHxS","80.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","80.5","80.5","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C5-PFNA","13C5-PFNA","82.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","82.5","82.5","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C2-PFOA","13C2-PFOA","85.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","85.4","85.4","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C8-PFOS","13C8-PFOS","85.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","85.7","85.7","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C2-PFDA","13C2-PFDA","81.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","81.1","81.1","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","75.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.1","75.1","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C2-PFUnA","13C2-PFUnA","71.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","71.9","71.9","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","78.9","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","78.9","78.9","","","","","","50","150","","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C2-PFDoA","13C2-PFDoA","79.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","79.4","79.4","","","","","","50","150","","","","",""
"B0F0257-BSD1","537_MOD","07/06/20","19:24","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","70.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","70.3","70.3","","","","","","50","150","","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","375-73-5","PFBS","0.120","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","0.0787","0.0398","0.120","104","","","","","","","72","130","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.268","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","0.228","0.0398","0.268","98.7","","","","","","","72","129","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13252-13-6","HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)","0.0442","","TRG","Yes","Y","","Y","0.00240","0.00299","0.00398","UG_L","UG_L","","","","0.0398","0.0442","111","","","","","","","70","130","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0558","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","0.0133","0.0398","0.0558","107","","","","","","","72","130","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","919005-14-4","4,8-DIOXA-3H-PERFLUORONONANOIC ACID (ADONA)","0.0383","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398","0.0383","96.3","","","","","","","70","130","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC

ACID
(PFHXS)","0.0760","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","0.0360","0.03
98","0.0760","100","","","","","","","68","131","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID
(PFOA)","0.0791","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","0.0422","0.039
8","0.0791","92.7","","","","","","","71","133","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","375-95-1","PERFLUORONONANOIC ACID
(PFNA)","0.0397","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398","0.0
397","99.8","","","","","","","69","130","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","1763-23-
1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION
","0.0383","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","0.00176","0.0398","0.0
383","91.9","","","","","","","65","140","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","756426-58-1","9-
CHLOROHEXADECAFLUORO-3-OXANONE-1-SULFONIC ACID (9Cl-
PF3ONS)","0.0400","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398","0.
0400","101","","","","","","","70","130","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","335-76-2","PERFLUORODECANOIC ACID
(PFDA)","0.0425","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398","0.0
425","107","","","","","","","71","129","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","2355-31-
9","MeFOSAA","0.0411","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.039
8","0.0411","103","","","","","","","65","136","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","2991-50-
6","EtFOSAA","0.0454","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","0.00155",
"0.0398","0.0454","110","","","","","","","61","135","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID
(PFUNA)","0.0401","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398","0.
0401","101","","","","","","","69","133","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","763051-92-9","11-CHLOROEICOSAFLUORO-3-
OXAUNDECANE-1-SULFONIC ACID (11Cl-
PF3OUdS)","0.0403","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398","
0.0403","101","","","","","","","70","130","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID
(PFDOA)","0.0410","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398","0.
0410","103","","","","","","","72","134","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","72629-94-
8","PFTrDA","0.0379","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398",
"0.0379","95.1","","","","","","","65","144","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","376-06-
7","PFTeDA","0.0384","","TRG","Yes","Y","","Y","0.00136","0.00199","0.00398","UG_L","UG_L","","","","0.0398",
"0.0384","96.6","","","","","","","71","132","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C3-PFBS","13C3-
PFBS","74.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.6","74.6","","","","","","50","150","",
"","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C3-HFPO-DA","13C3-HFPO-
DA","67.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","67.6","67.6","","","","","","50","150","","",
","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C2-PFHxA","13C2-
PFHxA","73.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.7","73.7","","","","","","50","150","
","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C4-PFHpA","13C4-
PFHpA","74.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.2","74.2","","","","","","50","150","
","","","",""

"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C3-PFHxS","13C3-PFHxS","75.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.3","75.3","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C5-PFNA","13C5-PFNA","75.1","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.1","75.1","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C2-PFOA","13C2-PFOA","72.7","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","72.7","72.7","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C8-PFOS","13C8-PFOS","74.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","74.0","74.0","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C2-PFDA","13C2-PFDA","69.8","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","69.8","69.8","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","68.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","68.0","68.0","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C2-PFUnA","13C2-PFUnA","61.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","61.6","61.6","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","65.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","65.6","65.6","","","","","","50","150","","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C2-PFDoA","13C2-PFDoA","64.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","64.0","64.0","","","","","","50","150","","","","",""
"B0F0257-MS1","537_MOD","07/06/20","19:34","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","62.0","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","62.0","62.0","","","","","","50","150","","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","375-73-5","PFBS","0.112","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","0.0787","0.0413","0.112","79.9","0.120","0.0413","0.112","79.9","26.2","72","130","30","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","307-24-4","PERFLUOROHEXANOIC ACID (PFHXA)","0.262","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","0.228","0.0413","0.262","81.8","0.268","0.0413","0.262","81.8","18.7","72","129","30","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13252-13-6","HEXAFLUOROPROPYLENE OXIDE DIMER ACID (HFPO-DA)","0.0404","","TRG","Yes","Y","","Y","0.00249","0.00310","0.00413","UG_L","UG_L","","","","0.0413","0.0404","97.9","0.0442","0.0413","0.0404","97.9","12.5","70","130","30","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","375-85-9","PERFLUOROHEPTANOIC ACID (PFHPA)","0.0558","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","0.0133","0.0413","0.0558","103","0.0558","0.0413","0.0558","103","3.81","72","130","30","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","919005-14-4","4,8-DIOXA-3H-PERFLUORONONANOIC ACID (ADONA)","0.0416","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0416","101","0.0383","0.0413","0.0416","101","4.76","70","130","30","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","355-46-4","PERFLUOROHEXANESULFONIC ACID (PFHXS)","0.0846","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","0.0360","0.0413","0.0846","118","0.0760","0.0413","0.0846","118","16.5","68","131","30","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","335-67-1","PERFLUOROOCTANOIC ACID (PFOA)","0.0837","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","0.0422","0.0413","0.0837","100","0.0791","0.0413","0.0837","100","7.58","71","133","30","","","",""

"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","375-95-1","PERFLUORONONANOIC ACID (PFNA)","0.0420","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0420","102","0.0397","0.0413","0.0420","102","2.18","69","130","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","1763-23-1","HEPTADECAFLUOROACTANESULFONIC ACID SOLUTION","0.0394","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","0.00176","0.0413","0.0394","91.1","0.0383","0.0413","0.0394","91.1","0.874","65","140","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","756426-58-1","9-CHLOROHEXADECAFLUORO-3-OXANONE-1-SULFONIC ACID (9Cl-PF3ONS)","0.0380","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0380","92.0","0.0400","0.0413","0.0380","92.0","9.33","70","130","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","335-76-2","PERFLUORODECANOIC ACID (PFDA)","0.0435","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0435","105","0.0425","0.0413","0.0435","105","1.89","71","129","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","2355-31-9","MeFOSAA","0.0372","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0372","90.1","0.0411","0.0413","0.0372","90.1","13.4","65","136","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","2991-50-6","EtFOSAA","0.0388","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","0.00155","0.0413","0.0388","90.2","0.0454","0.0413","0.0388","90.2","19.8","61","135","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","2058-94-8","PERFLUOROUNDECANOIC ACID (PFUNA)","0.0407","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0407","98.5","0.0401","0.0413","0.0407","98.5","2.51","69","133","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","763051-92-9","11-CHLOROEICOSAFLUORO-3-OXAUNDECANE-1-SULFONIC ACID (11Cl-PF3OUdS)","0.0418","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0418","101","0.0403","0.0413","0.0418","101","0","70","130","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","307-55-1","PERFLUORODODECANOIC ACID (PFDOA)","0.0393","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0393","95.3","0.0410","0.0413","0.0393","95.3","7.77","72","134","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","72629-94-8","PFTrDA","0.0371","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0371","89.8","0.0379","0.0413","0.0371","89.8","5.73","65","144","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","376-06-7","PFTeDA","0.0406","","TRG","Yes","Y","","Y","0.00141","0.00207","0.00413","UG_L","UG_L","","","","0.0413","0.0406","98.3","0.0384","0.0413","0.0406","98.3","1.74","71","132","30","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C3-PFBS","13C3-PFBS","86.6","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","86.6","86.6","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C3-HFPO-DA","13C3-HFPO-DA","73.3","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","73.3","73.3","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C2-PFHxA","13C2-PFHxA","80.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","80.4","80.4","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C4-PFHpA","13C4-PFHpA","76.2","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","76.2","76.2","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C3-PFHxS","13C3-PFHxS","75.5","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","75.5","75.5","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C5-PFNA","13C5-PFNA","83.4","","IS","Yes","Y","","Y","","","","PCT_REC","","","","","100","83.4","83.4","","","","","","50","150","",

,"","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C2-PFOA","13C2-PFOA","79.7","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","79.7","79.7","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C8-PFOS","13C8-PFOS","85.7","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","85.7","85.7","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C2-PFDA","13C2-PFDA","80.5","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","80.5","80.5","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","d3-MeFOSAA","d3-MeFOSAA","81.9","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","81.9","81.9","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C2-PFUnA","13C2-PFUnA","71.0","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","71.0","71.0","","","","","","50","150","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","d5-EtFOSAA","d5-EtFOSAA","80.1","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","80.1","80.1","","","","","","50","150","","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C2-PFDoA","13C2-PFDoA","75.2","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","75.2","75.2","","","","","","50","150","","","","","",""
"B0F0257-MSD1","537_MOD","07/06/20","19:45","N","NA","000","13C2-PFTeDA","13C2-PFTeDA","75.1","","IS","Yes","Y","","Y","","","","","PCT_REC","","","","","100","75.1","75.1","","","","","","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. July 30, 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 July 14, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48600_RV1:

SDG #	**Fraction**
2001315, 2001358	Perfluoroalkyl & Polyfluoroalkyl Substances

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 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-2405-008-01-0066; January 2020
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.3, 2019
- DoD General Validation Guidelines, November 2019

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

Sincerely,

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

L:\Wood Environmental\El Toro\48600COV_RV1.wpd ADV

52 pages-ADV (100% Stage 4 for this job) Attachment 1

Stage 2B/4 - do not validate QC samples **LDC #48600 (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
A	2001315	07/14/20	07/28/20	7	0																												
B	2001358	07/14/20	07/28/20	6	0																												
Total	T/PG			13	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	13

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\48600ST.wpd

LDC Report# 48600A96_RV1

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro and Tustin PFAS

LDC Report Date: July 30, 2020

Parameters: Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 2001315

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
24-GW-15DBMW51-20200618	2001315-03	Water	06/18/20
24-GW-24NEW8-20200618	2001315-04	Water	06/18/20
24-GW-09DGMW75R-20200618	2001315-05	Water	06/18/20
24-GW-24NEW4-20200618	2001315-06	Water	06/18/20
24-GW-18PS8-20200618	2001315-07	Water	06/18/20
24-GW-08DGMW73-20200618	2001315-08	Water	06/18/20
24-GW-18PS3A-20200618	2001315-09	Water	06/18/20

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 (November 2019). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by 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 method.

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 method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample EB01-20200618 was identified as an equipment blank. No contaminants were found.

Sample SB01-20200618 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 method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. 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-24NEW8-20200618	13C2-PFTeDA	44.3 (50-150)	Perfluorotetradecanoic acid (PFTeDA)	NA	-
24-GW-09DGMW75R-20200618	d5-EtFOSAA 13C2-PFDoA 13C2-PFTeDA	48.3 (50-150) 48.1 (50-150) 40.7 (50-150)	N-Ethylperfluorooctanesulfonamidoacetic acid (EtFOSAA) Perfluorododecanoic acid (PFDoA) 11-Chloroeicosafluoro-3-Oxaundecane-1-sulfonic acid (11CL-PF3OUdS) Perfluorotridecanoic acid (PFTrDA) Perfluorotetradecanoic acid (PFTeDA)	NA	-
24-GW-24NEW4-20200618	d3-MeFOSAA 13C2-PFTeDA	49.6 (50-150) 49.1 (50-150)	N-Methylperfluorooctanesulfonamidoacetic acid (MeFOSAA) Perfluorotetradecanoic acid (PFTeDA)	NA	-
24-GW-18PS8-20200618	13C2-PFTeDA	44.7 (50-150)	Perfluorotetradecanoic acid (PFTeDA)	NA	-
24-GW-08DGMW73-20200618	13C2-PFTeDA	49.6 (50-150)	Perfluorotetradecanoic acid (PFTeDA)	NA	-
24-GW-18PS3A-20200618	13C2-PFDoA 13C2-PFTeDA	49.3 (50-150) 41.1 (50-150)	Perfluorododecanoic acid (PFDoA) 11-Chloroeicosafluoro-3-Oxaundecane-1-sulfonic acid (11CL-PF3OUdS) Perfluorotridecanoic acid (PFTrDA) 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
24-GW-15DBMW51-20200618	Perfluorodecanoic acid (PFDA)	8.904 (2.393-7.179)	J (all detects)	P
24-GW-18PS8-20200618	Perfluoroheptanoic acid (PFHpA)	400.117 (29.461-88.383)	J (all detects)	P
24-GW-18PS3A-20200618	Perfluorononanoic acid (PFNA)	28.350 (6.705-20.115)	J (all detects)	P

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to 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 2001315

Sample	Compound	Flag	A or P	Reason
24-GW-15DBMW51-20200618	Perfluorodecanoic acid (PFDA)	J (all detects)	P	Target compound identification (ion abundance ratio)
24-GW-18PS8-20200618	Perfluoroheptanoic acid (PFHpA)	J (all detects)	P	Target compound identification (ion abundance ratio)
24-GW-18PS3A-20200618	Perfluorononanoic acid (PFNA)	J (all detects)	P	Target compound identification (ion abundance ratio)

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG 2001315

No Sample Data Qualified in this SDG

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG 2001315

No Sample Data Qualified in this SDG

LDC #: 48600A96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/18/20
SDG #: 2001315 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: AT
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M/QSM 5.3 Table B-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	RSD ≤ 20, r² TV/CV ≤ 30
IV.	Continuing calibration/ISC	A/A	b ≤ 30
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	SB01-20200618 EB01-20200618
VII.	Matrix spike/Matrix spike duplicates	N	
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 ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	24-GW-15DBDMW51-20200618	2001315-03	Water	06/18/20
2	24-GW-24NEW8-20200618	2001315-04	Water	06/18/20
3	24-GW-09DGMW75R-20200618	2001315-05	Water	06/18/20
4	24-GW-24NEW4-20200618	2001315-06	Water	06/18/20
5	24-GW-18PS8-20200618	2001315-07	Water	06/18/20
6	24-GW-08DGMW73-20200618	2001315-08	Water	06/18/20
7	24-GW-18PS3A-20200618	2001315-09	Water	06/18/20
8				
9				
10				

Notes:

	BOF0205						

LDC #: 46600A 96

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: n
2nd Reviewer:

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?	✓			
Were 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 (ICV) standard analyzed after each initial calibration for each instrument?	✓			
Were all ICV 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?		✓		

LEVEL IV CHECKLIST_LCMS_PFAS_QSM5.3_TABLE B-15

LDC #: 48600A96

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: JK
2nd Reviewer:

Validation Area	Yes	No	NA	Findings/Comments
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?			✓	
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

TARGET COMPOUND WORKSHEET

METHOD: PFAS

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 (PFTrDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. N-Methylperfluorooctanesulfonamidoacetic acid (MeFOSAA)			
K. N-Ethylperfluorooctanesulfonamidoacetic acid (EtFOSAA)			
L. Perfluorobutanesulfonic acid (PFBS)			
M. Perfluorohexanesulfonic acid (PFHxS)			
N. Perfluorooctanesulfonic acid (PFOS)			
O. 11-Chloroeicosafluoro-3-Oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			

COMPNDL_VISTA

LDC #: 48600A96

VALIDATION FINDINGS WORKSHEET
Labeled Compounds

Page: 1 of 1
Reviewer: JZ
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
		BOF0205-BLK1	EFOS	49.0 (50-150)	J all=A
			DDA	46.4	
			TDA	39.0	
		2 (ND)	TDA	44.3	(I)
		3 (ND)	EFOS	48.3	(K)
			DDA	48.1	(G, O, H)
			TDA	40.7	
		4 (ND)	MFOS	49.6	(J)
			TDA	49.1	
		5 (ND)	TDA	44.7	
		6	↓	49.6	
		7	DDA	49.3	
			TDA	41.1	

BS = 13C3-PFBS HXS = 13C3-PFHxS OS = 13C8-PFOS TDA = 13C2-PFTeDA EFOS = d5-EtFOSAA
HXA = 13C2-PFHxA NA = 13C5-PFNA DA = 13C2-PFDA DDA = 13C2-PFDoA
HPA = 13C4-PFHpA OA = 13C2-PFOA UDA = 13C2-PFUnA MFOS = d3-MeFOSAA

V:\VALIDATION WORKSHEETS\PFAS-537M\TABLE B15\LC_INTST_VISTA.DOCX

LDC #: 48600A96

VALIDATION FINDINGS WORKSHEET
Target Compound Identification

Page: 1 of 1
Reviewer: A
2nd Reviewer:

METHOD: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3 m

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 within QC limits and between 50-150%?

#	Date	Sample ID	Associated Compound	Ion ratio (~~≤50%D~~ limits) N	Qualifications
		1	~~B~~	~~81.718 (29.461-88.383)~~	J (all detects)
			E	8.904 (2.393-7.179)	
		5	B	400.117 (29.461-88.383)	
		7	D	28.350 (6.705-20.115)	

V:\VALIDATION WORKSHEETS\PFAS-537M\TABLE B15\TCI.DOCX

LDC # 48600A96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 2
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
7/2/2020	SCN977	PFOA	1	0.0228	0.02	0.00040
			2	0.0500	0.04	0.0016
			3	0.0861	0.08	0.0064
			4	0.1895	0.16	0.0256
			5	0.4613	0.40	0.1600
			6	0.9003	0.80	0.6400
			7	4.4574	4.00	16.0000
			8	8.7616	8.00	64.0000
			9	21.6651	20.00	400.0000
			10	43.3424	40.00	1600.0000

Regression Output	Calculated		Reported	
Constant	c	0.02693	c	0.0278768
Std Err of Y Est				.
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.09040	-0.0001803	1.10119	-0.000039346
Std Err of Coef.				
Correlation Coefficient		0.999996		
Coefficient of Determination (r^2)		0.999992		0.999173

LDC # 52600A96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 2 of 2
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
7/6/2020	SCN977	PFOS	1	0.0340	0.02	0.00040
			2	0.0461	0.04	0.0016
			3	0.0944	0.08	0.0064
			4	0.1962	0.16	0.0256
			5	0.5120	0.40	0.1600
			6	1.0234	0.80	0.6400
			7	4.9413	4.00	16.0000
			8	9.7209	8.00	64.0000
			9	25.0818	20.00	400.0000
			10	50.0016	40.00	1600.0000

Regression Output	Calculated		Reported	
Constant	c	-0.01463	c	0.0340096
Std Err of Y Est				
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.24196	0.0002202	1.23386	0.0000359750
Std Err of Coef.				
Correlation Coefficient		0.999988		
Coefficient of Determination (r^2)		0.999976		0.999886

LDC # 46000A96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 2
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
7/6/2020	SCN977	PFOA	1	0.0283	0.02	0.00040
			2	0.0513	0.04	0.0016
			3	0.0937	0.08	0.0064
			4	0.1952	0.16	0.0256
			5	0.4739	0.40	0.1600
			6	0.8828	0.80	0.6400
			7	4.5622	4.00	16.0000
			8	9.3191	8.00	64.0000
			9	20.7411	20.00	400.0000
			10	41.4806	40.00	1600.0000

Regression Output	Calculated		Reported	
Constant	c	0.09230	c	0.0543225
Std Err of Y Est				
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.09128	-0.0014190	1.13013	-0.000202972
Std Err of Coef.				
Correlation Coefficient		0.999825		
Coefficient of Determination (r^2)		0.999651		0.999173

LDC # 48600196

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 2 of 2
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
7/6/2020	SCN977	PFOS	1	0.0184	0.02	0.00040
			2	0.0397	0.04	0.0016
			3	0.0806	0.08	0.0064
			4	0.1980	0.16	0.0256
			5	0.4633	0.40	0.1600
			6	1.0057	0.80	0.6400
			7	4.8637	4.00	16.0000
			8	10.3716	8.00	64.0000
			9	24.6679	20.00	400.0000
			10	47.3616	40.00	1600.0000

Regression Output	Calculated		Reported	
Constant	c	-0.03049	c	-0.0944633
Std Err of Y Est				
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.28839	-0.0026132	1.27905	-0.0001870130
Std Err of Coef.				
Correlation Coefficient		0.999980		
Coefficient of Determination (r^2)		0.999959		0.999703

LDC # 46600196

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

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 * (aveRRF - RRF)/aveRRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
aveRRF = initial calib average RRF
RRF = continuing calib RRF
Ax = Area of compound
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound	(IS)	Conc	Reported Conc	Recalculated Conc	Reported %R	Recalculated %R
1			PFOA	(13C2-PFOA)	see 1	Okc			
			PFOS	(13C8-PFOS)					
2			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
3			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
4			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
5			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
6			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					

LDC #: 48600A96

VALIDATION FINDINGS WORKSHEET
LCS Results Verification

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control duplicate were recalculated for the compounds identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)
%Recovery = 100 * SSC/SA

Where:
SSC = Spiked concentration
SA = Spike added
LCS = Laboratory control spike recovery
LCSD = Laboratory control spike duplicate recovery

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS/LCSD ID: B0F0205-BS/D

Compound	SA (ug/L)		SSC (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
PFOA	0.0400	0.0400	0.0477	0.0487	119	119	122	122	2.15	2.07
PFBS	0.0400	0.0400	0.0451	0.0445	113	113	111	111	1.34	1.34

LDC # 48600A9V

VALIDATION FINDINGS WORKSHEET
Sample Results Verification

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Compound results for all Level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax)\,(Vo)\,(Df)}{(RRF)\,(Wt)\,(\%S)}$$

Where:
Ax = Area or height of the peak for the compound to be measured
Ais = Area or height of the peak for the internal standard
Cis = Concentration of the internal standard
DF = Dilution factor
Vt = Volume of extract in milliters (mL)
RRF = Average relative response factor
Vo = Volume of sample in milliters (mL)

Sample #	Compound	Ax	Ais	Cis	DF	RRF	Vt (mL)	Vo (mL)	Calculated Concentration (ug/L)	Reported Concentration (ug/L)	% Diff
1	PFOS	5.657E+02	1.849E+03	12.5	1	curve	1	257.58	0.0119	0.0119	0

LDC Report# 48600B96

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro and Tustin PFAS

LDC Report Date: July 29, 2020

Parameters: Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level: Stage 4

Laboratory: Vista Analytical Laboratory

Sample Delivery Group (SDG): 2001358

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
24-GW-24MW06-20200624	2001358-02	Water	06/24/20
DUP01-20200624	2001358-03	Water	06/24/20
24-GW-24MW10D-20200624	2001358-04	Water	06/24/20
DUP02-20200624	2001358-05	Water	06/24/20
24-GW-24MW10C-20200624	2001358-06	Water	06/24/20
24GW-24MW07R-20200624	2001358-07	Water	06/24/20
24-GW-24MW10C-20200624MS	2001358-06MS	Water	06/24/20
24-GW-24MW10C-20200624MSD	2001358-06MSD	Water	06/24/20

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 EB01-20200624 was identified as an equipment blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

Samples 24-GW-24MW06-20200624 and DUP01-20200624 and samples 24-GW-24MW10D-20200624 and DUP02-20200624 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	24-GW-24MW06-20200624	DUP01-20200624				
Perfluorohexanoic acid (PFHxA)	0.00517	0.00538	-	0.00021 (≤0.00380)	-	-
Perfluorohexanesulfonic acid (PFHxS)	0.00959	0.00980	-	0.00021 (≤0.00380)	-	-
Perfluorooctanoic acid (PFOA)	0.00360	0.00385	-	0.00025 (≤0.00380)	-	-
Perfluorooctanesulfonic acid (PFOS)	0.00199	0.00176	-	0.00023 (≤0.00380)	-	-
N-Ethylperfluorooctanesulfonamidoacetic acid (EtFOSAA)	0.00192	0.00190U	-	0.00002 (≤0.00380)	-	-

Compound	Concentration (ng/L)		RPD (Limits)	Difference (Limits)	Flag	A or P
	24-GW-24MW10D-20200624	DUP02-20200624				
Perfluorohexanoic acid (PFHxA)	0.00488	0.00539	-	0.00051 (≤0.00391)	-	-
N-Ethylperfluorooctanesulfonamidoacetic acid (EtFOSAA)	0.00154	0.00283	-	0.00002 (≤0.00391)	-	-

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
24-GW-24MW10C-20200624	Perfluorooctanesulfonic acid (PFOS)	4.052 (1.299-3.897)	J (all detects)	P

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 one sample.

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 2001358

Sample	Compound	Flag	A or P	Reason
24-GW-24MW10C-20200624	Perfluorooctanesulfonic acid (PFOS)	J (all detects)	P	Target compound identification (ion abundance ratio)

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG 2001358

No Sample Data Qualified in this SDG

MCAS El Toro and Tustin PFAS
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG 2001358

No Sample Data Qualified in this SDG

LDC #: 48600B96 **VALIDATION COMPLETENESS WORKSHEET** Date: 7/18/20
SDG #: 2001358 Stage 4 Page: 1 of 1
Laboratory: Vista Analytical Laboratory Reviewer: PL
2nd Reviewer:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M/QSM 5.3 Table B-15)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	RSD≤ 20, 12 TV/ICV≤ 30
IV.	Continuing calibration/ISC	A/A	D≤ 30
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	EB02-20200624
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples	A	LCS/D
IX.	Field duplicates	SW	D = 1+2, 3+4
X.	Labeled Compounds	A	
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 ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	24-GW-24MW06-20200624	2001358-02	Water	06/27/20
2	DUP01-20200624	2001358-03	Water	06/27/20
3	24-GW-24MW10D-20200624	2001358-04	Water	06/27/20
4	DUP02-20200624	2001358-05	Water	06/27/20
5	24-GW-24MW10C-20200624	2001358-06	Water	06/27/20
6	24GW-24MW07R-20200624	2001358-07	Water	06/27/20
7	24-GW-24MW10C-20200624MS	2001358-06MS	Water	06/27/20
8	24-GW-24MW10C-20200624MSD	2001358-06MSD	Water	06/27/20
9				
10				

Notes:

	B0F0257						

LDC #: 48600B96

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: M
2nd Reviewer:

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?	✓			
Were 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 (ICV) standard analyzed after each initial calibration for each instrument?	✓			
Were all ICV 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?		✓		

LEVEL IV CHECKLIST_LCMS_PFAS_QSM5.3_TABLE B-15

LDC #: 49600B96 **VALIDATION FINDINGS CHECKLIST** Page: 2 of 2
Reviewer: MC
2nd Reviewer: _____

Validation Area	Yes	No	NA	Findings/Comments
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?	✓			
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

TARGET COMPOUND WORKSHEET

METHOD: PFAS

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 (PFTrDA)			
I. Perfluorotetradecanoic acid (PFTeDA)			
J. N-Methylperfluorooctanesulfonamidoacetic acid (MeFOSAA)			
K. N-Ethylperfluorooctanesulfonamidoacetic acid (EtFOSAA)			
L. Perfluorobutanesulfonic acid (PFBS)			
M. Perfluorohexanesulfonic acid (PFHxS)			
N. Perfluorooctanesulfonic acid (PFOS)			
O. 11-Chloroeicosafluoro-3-Oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			

COMPNDL_VISTA

LDC #: 48600B96

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DOD QSM 5.3

Compound	Concentration (ng/L)		RPD	Difference	Limits	Qualification
	1	2	(≤30)	<5x LOQ	<LOQ	
A	0.00517	0.00538		0.00021	0.00380	
M	0.00959	0.00980		0.00021	0.00380	
C	0.00360	0.00385		0.00025	0.00380	
N	0.00199	0.00176		0.00023	0.00380	
K	0.00192	0.00190U		0.00002	0.00380	

Compound	Concentration (ng/L)		RPD	Difference		Qualification
	3	4	(≤30)	<5x LOQ	LOQ	
A	0.00488	0.00539		0.00051	0.00391	
K	0.00154	0.00283		0.00002	0.00391	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2020\48600B96_FD_Wood El Toro

LDC #: 46600B16

VALIDATION FINDINGS WORKSHEET
Target Compound Identification

Page: 1 of 1
Reviewer: N
2nd Reviewer:

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".

X 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 within QC limits and between 50-150%?

#	Date	Sample ID	Associated Compound	Ion ratio (~~≤50%D~~)	Qualifications
		5	N	4.052 (1.299-3.897)	J (all detects)

V:\VALIDATION WORKSHEETS\PFAS-537M\TABLE B15\TCI.DOCX

LDC # 48600B96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 1 of 2
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
7/6/2020	SCN977	PFOA	1	0.0283	0.02	0.00040
			2	0.0513	0.04	0.0016
			3	0.0937	0.08	0.0064
			4	0.1952	0.16	0.0256
			5	0.4739	0.40	0.1600
			6	0.8828	0.80	0.6400
			7	4.5622	4.00	16.0000
			8	9.3191	8.00	64.0000
			9	20.7411	20.00	400.0000
			10	41.4806	40.00	1600.0000

Regression Output	Calculated		Reported	
Constant	c	0.09230	c	0.0543225
Std Err of Y Est				.
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.09128	-0.0014190	1.13013	-0.000202972
Std Err of Coef.				
Correlation Coefficient		0.999825		
Coefficient of Determination (r^2)		0.999651		0.999173

LDC # 48600B96

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Page: 2 of 2
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Calibration Date	Instrument	Compound	Standard	(Y) Response ratio	(X) Conc. Ratio	(X^2) Conc. Ratio
7/6/2020	SCN977	PFOS	1	0.0184	0.02	0.00040
			2	0.0397	0.04	0.0016
			3	0.0806	0.08	0.0064
			4	0.1980	0.16	0.0256
			5	0.4633	0.40	0.1600
			6	1.0057	0.80	0.6400
			7	4.8637	4.00	16.0000
			8	10.3716	8.00	64.0000
			9	24.6679	20.00	400.0000
			10	47.3616	40.00	1600.0000

Regression Output	Calculated		Reported	
Constant	c	-0.03049	c	-0.0944633
Std Err of Y Est				
Degrees of Freedom				
	b	a	b	a
X Coefficient(s)	1.28839	-0.0026132	1.27905	-0.0001870130
Std Err of Coef.				
Correlation Coefficient		0.999980		
Coefficient of Determination (r^2)		0.999959		0.999703

LDC #: 48600B96

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

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 * (aveRRF - RRF)/aveRRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
aveRRF = initial calib average RRF
RRF = continuing calib RRF
Ax = Area of compound
Cx = Concentration of compound,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

#	Standard ID	Calibration Date	Compound	(IS)	Conc	Reported Conc	Recalculated Conc	Reported %R	Recalculated %R
1	ST200706P1-11	7/6/2020	PFOA	(13C2-PFOA)	10.00	10.10	10.08	100.8	100.8
			PFOS	(13C8-PFOS)	10.00	9.91	9.89	99.1	98.9
2			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
3			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
4			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
5			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					
6			PFOA	(13C2-PFOA)					
			PFOS	(13C8-PFOS)					

LDC # 48660B96

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)
%Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked concentration SC = Sample concentration
SA = Spike added
RPD = | MS - MSD | * 2/(MS + MSD) MS = Matrix spike recovery MSD = Matrix spike duplicate recovery

MS/MSD ID: 7/8

Compound	SA (ug/L)		SC (ug/L)	SSC (ug/L)		MS Percent Recovery		MSD Percent Recovery		MS/MSD RPD	
	MS	MSD		MS	MSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
PFOA	0.0398	0.0413	0.0422	0.0791	0.0837	92.7	92.7	100	100	7.58	5.65
PFOS	0.0398	0.0413	0.00176	0.0383	0.0394	91.9	91.8	91.1	91.1	0.874	2.83

LDC #: 48600B96

VALIDATION FINDINGS WORKSHEET
LCS Results Verification

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control duplicate were recalculated for the compounds identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)
%Recovery = 100 * SSC/SA

Where:
SSC = Spiked concentration
SA = Spike added
LCS = Laboratory control spike recovery
LCSD = Laboratory control spike duplicate recovery

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS/LCSD ID: B0F0257-BS/D

Compound	SA (ug/L)		SSC (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
PFOA	0.0400	0.0400	0.0391	0.0393	97.7	97.8	98.3	98.3	0.463	0.510
PFBS	0.0400	0.0400	0.0386	0.0384	96.5	96.5	96.0	96.0	0.435	0.519

LDC # 48600B96

VALIDATION FINDINGS WORKSHEET
Sample Results Verification

Page: 1 of 1
Reviewer: SC
2nd Reviewer:

Method: LC/MS/MS and Isotope Dilution Compliant with Table B-15 of DoD QSM 5.3

Compound results for all Level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax)\,(Vo)\,(Df)}{(RRF)\,(Wt)\,(\%S)}$$

Where:
Ax = Area or height of the peak for the compound to be measured
Ais = Area or height of the peak for the internal standard
Cis = Concentration of the internal standard
DF = Dilution factor
Vt = Volume of extract in milliters (mL)
RRF = Average relative response factor
Vo = Volume of sample in milliters (mL)

Sample #	Compound	Ax	Ais	Cis	DF	RRF	Vt (mL)	Vo (mL)	Calculated Concentration (ug/L)	Reported Concentration (ug/L)	% Diff
1	PFOA	9.027E+02	1.001E+04	12.5	1	curve	1	263.89	0.00360	0.00360	0

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	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358

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	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	DUP02-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10D	Monitoring well	6107253.31	2191377.71	24-GW-24MW10D-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	DUP01-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW06	Well	6108204.97	2188549.97	24-GW-24MW06-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW07R	Monitoring well	6108018.59	2191115.97	24-GW-24MW07R-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358
EL_TORO_MCAS	SITE 00024	24MW10C	Monitoring well	6107252.81	2191377.69	24-GW-24MW10C-20200624	Ground water	24-Jun-20	Perfluoroalkyl Compounds	2001358