

M67001_008959
MCB CAMP LEJUENE, NC
SSIC 5000-33a

**LABORATORY DATA PACKAGE, 21-1182, MCB CAMP LEJEUNE NC
(UNVALIDATED)**

09/29/2021
BATTELLE

Approved for public release: distribution unlimited.

CTO-6134: Camp Lejeune Site 89
Project No 100147043
PFAS by DoD QSM 5.3 Table B-15
SO
Batch 21-1182
Package DP-21-1130

Submitted to:
CH2M
5701 Cleveland Street
Virginia Beach, VA 23462 USA

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061



CTO-6134: Camp Lejeune Site 89
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Submitted to:
CH2M
5701 Cleveland Street
Virginia Beach, VA 23462 USA

NELAP Accreditation Number: E87856 (Florida Department of Health)
DoD-ELAP Accreditation Number: 91667

Submitted by:
Battelle Norwell Operations
141 Longwater Drive Suite 202
Norwell, MA 02061

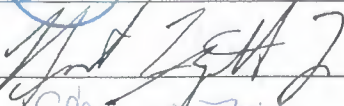
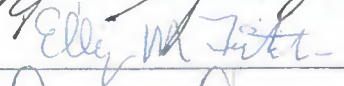
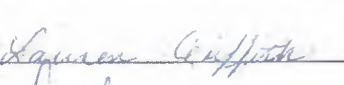
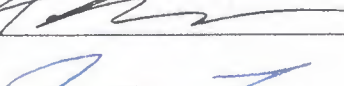
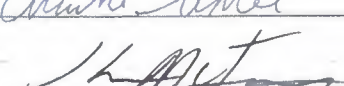
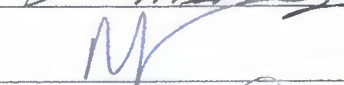
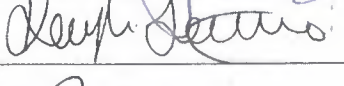
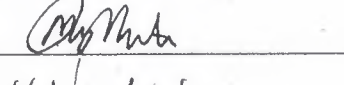
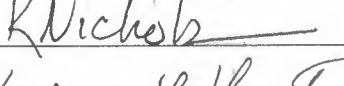
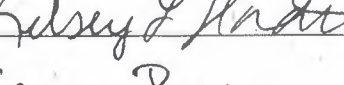
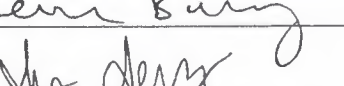
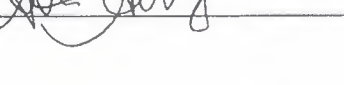
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QC Chemist Approval:		Digitally signed by Carla Devine Date: 2021.09.29 13:57:46 -04'00'
Project Manager Approval:		Digitally signed by Jonathan Thorn Date: 2021.09.29 14:06:10 -04'00'



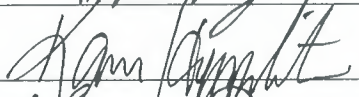
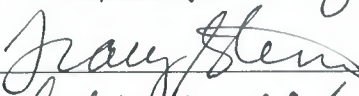
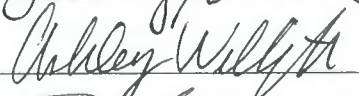
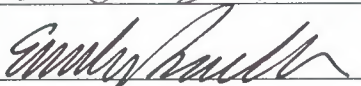
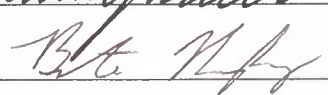
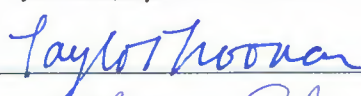
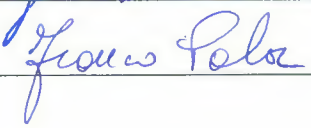
CTO-6134: Camp Lejeune Site 89
Project No 100147043
PFAS by DoD QSM 5.3 Table B-15
SO
Batch 21-1182
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1	<i>Work Plan</i> Laboratory Work Plan, Addendums To Work Plan, Memos From Project Manager, Special Instructions, Chain-of-Custody Reports.	1
2	<i>Tables</i> Analytical Data Tables, Qualifier Definitions.	17
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7	<i>Chromatograms</i> Sample And Standard Chromatograms.	368
8	<i>Unused Data</i>	NA

Master Signature Page

Name (Printed)	Signature	Initials	Date
Jonathan Thom		JRT	1/9/2020
Robert Lizette, Jr.		BL	1.9.2020
Elynn M. Fitch		EF	1/9/2020
Carla Devine		CRD	1/9/2020
Dennis Schumitz		DS	1/9/2020
Lauren Griffith		LMG	1.9.2020
Carrie P. McCarthy		CPM	1/9/2020
Rich Restucci		RR	1/9/2020
Sam Guimaraes		SAG	1/9/2020
Jordan Tower		JOT	1/9/2020
Christie Usher		CU	1/9/2020
Kevin McInerney		KM	1/14/2020
Matt Schumitz		MDS	1/14/2020
Weidong Li		W.L	1/14/2020
Kayla Lamarre		KAL	1/14/2020
MUNAZ MUNTASIR		MM	01/14/2020
Kristen Nichols		KN	01/14/2020
Kelsey Harnden		KH	01/30/2020
Kevin Bailey		KB	1/30/2020
Stephanie Schultz		SAS	1/30/2020

Master Signature Page

Name (Printed)	Signature	Initials	Date
Uimileo Brown		UB	01/30/20
Ryan Kelly		RK	01/30/20
KAREN HYPPOLITE		K.H.	01/31/20
Gail DeRuzzo		GD	01/31/2020
Tracy Stenner		JS	1/31/2020
Ashley Wellington		AW	1/31/2020
Daniel Cooney		DAC	1/31/2020
Peter Demers		PD	1/31/2020
Andy Delmon		AD	3/19/2021
Emily Reardon		ER	3/19/2021
Brenton Murphy		Bm	3/19/2021
Haley Hart		HH	3/19/21
Allison Wamness		AW	3/19/21
Taylor Noonan		TN	3/19/21
FRANCO PALA		FP	3/19/21

Sample Summary

Client: CH2M
SDG: 21-1182
Project/Site: Camp Lejeune Site 89
CTO: 6134

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Receipt Date
DF129PB-FS	Procedural Blank	SOLID	9/22/2021	9/22/2021
DF130LCS-FS	201113-02: Ottawa Sand	SOLID	9/22/2021	9/22/2021
F2834-FS	IR89-IDW-SO-091621	SO	9/16/2021	9/17/2021

Work Plan



WORK/QUALITY ASSURANCE PROJECT PLAN

1.0 GENERAL PROJECT INFORMATION

Project Title: CTO-6134: PFAS in Solid
Project Number: 100147043
Client: CH2M
 5701 Cleveland Street
 Suite 200
 Virginia Beach, VA 23462
 USA
Client Contact Information: Sonya Gordon
 Project Chemist
 (615) 828-0406(V)
 NA
 Sonya.Gordon@jacobs.com
Effective Date of QAPP: 4/28/2021
Version Number: 100147043(S)-02
Project Manager: Thorn, Jonathan
Laboratory Task Manager: Thorn, Jonathan
Deliverable Due Date: 5/12/2021

2.0 SCOPE OF WORK

Overview: Analysis of solid IDW sample for PFAS.
Matrix: Soil/Sediment

2.1 TECHNICAL APPROACH

2.1.1 Sample Receipt, Storage, and Handling

The list of samples for this project plan are presented in Attachment 1.

Storage Directions: Store refrigerated.
Sub_Sampling: None
Procedures: NA
Contact: NA
Comment: NA
Archiving: Archive excess sample for six months after receipt, notify client prior to disposal.
Disposal: Dispose of samples and extracts in appropriate waste streams.



WORK/QUALITY ASSURANCE PROJECT PLAN

2.1.2 Sample Preparation

None

Samples Expected:	Samples Per Batch:	Batches Expected:
1	20	1

Batch quality control samples are defined in Table 1.

Target samples are presented in Attachment 1.

Table 1: Quality Control Samples

Type:	Description:	Count:	Rgt:	Reference:	Comment:
PB	Laboratory control reagent blank.	1 per batch	--	NA	
LCS	Laboratory Control Sample	1 per batch	Yes	201113-02: Ottawa Sand Lot:2IC0342	

2.1.3 Extraction/Preparation

2.1.3.1 Extraction

SOP No.-Rev: **5-370-12**

SOP Title: *Extraction of Poly and Perfluoroalkyl Substances from Environmental Matrices*

Sample Size: 5.00 g

SIS and LCS/MS Compounds: Defined in Table 2.

Deviations: None.

Comments: Target 5 g dry weight, no extract splits.

Table 2: SIS and LCS/MS Spiking Level

Standard Type	Standard Contents		Spike Amount (ng)	Volume (uL)	Comment
PFAS-DoD Extracted Internal Standard	LI56	SIS	~ 25.0 ng	125 uL	NA
PFAS-DoD Second Source LCS/MS solution (HIGHER conc)	LI62	LCS/MS	~ 80 ng	200 uL	Spike between 100µL and 250 µL in 25 µL increments



WORK/QUALITY ASSURANCE PROJECT PLAN

2.1.3.2 Cleanup

None.

RIS spiking levels are presented in Table 3.

Extract PIV (uL): 5000

Table 3: RIS Spiking Level

Standard Type	Standard Contents		Spike Amount (ng)	Volume (uL)	Comment
PFAS-DoD Internal Standards	LI57	RIS	~ 25.0 ng	125 uL	NA

2.1.4 Instrumental Analysis

The list of analytes along with data quality criteria are presented in Attachment 2.

- 1) SOP_No-Rev: **5-369-08**
- SOP_Title: *Analysis of Perfluoroalkyl Substances in Environmental Samples by Liquid Chromatography and Tandem Mass Spectrometry (LC-MS/MS)*
- Deviations: None
- Comments: None

2.2. DELIVERABLES

Deliverables Due: 5/12/2021

LIMS Reports: No

Histograms: No

Excel Tables: No

EICs: No

Chromatograms: No

EDDs: No

Comments:

- Individual data sets will be due 14 days after receipt of each sample set.
- Full Level 4 data package (QSM 5.3 Table B-15 compliant) required.
- EDD required.
- Non-PO Project Number 707417CH SA.DM



WORK/QUALITY ASSURANCE PROJECT PLAN

3.0 QUALITY

The Method Quality Objectives are defined in Attachment 3.

4.0 ORGANIZATION AND COMMUNICATION

4.1 ORGANIZATION

The project team is defined in Table 4. Supervisors may make substitutions with Project Manager concurrence.

Table 4: Project Team and Roles

Staff Member	Role	Comment
Jonathan R. Thorn	Project Manager	NA
Allison Wamness	Sample Preparation	NA
Denise M. Schumitz	LC/MS/MS Analysis	NA
Matt D. Schumitz	Sample Custody	NA
Carla R. Devine	Quality Control Officer	NA
Zachary J. Willenberg	Quality Assurance Officer	NA

4.2 COMMUNICATION

A kick-off meeting will be held to discuss project scope and goals.

5.0 SCHEDULE

The project schedule is presented in Table 5.

Table 5. Schedule of Laboratory Activities

Activity:	Start Date:	End Date:	TAT (days):	Comment:
Sample Receipt	04/28/2021	04/28/2021	0	NA
Sample Preparation	04/28/2021	05/05/2021	7	NA
Instrument Analysis	05/05/2021	05/10/2021	5	NA
Quality Control Review	05/10/2021	05/12/2021	2	NA
Quality Assurance Review	05/12/2021	05/12/2021	0	NA

6.0 BUDGET



WORK/QUALITY ASSURANCE PROJECT PLAN

The labor budget for the analytical task is presented in Table 6.

Table 6. Labor Budget (Laboratory Analytical Task)

Labor Activity:	Hours/ Batch:	Batches:	Total Hours:	Comment:
Sample Receipt	2	1	2	Hours per 12 samples
Sample Preparation	6	1	6	6.5 hours per 12 samples
Instrument Analysis	5	1	5	Hours per 12 samples
Quality Control Review	2	1	2	1.5 hours per 12 samples
Quality Assurance Review	1	1	1	Hours per 12 samples

7.0 STAFF DEVELOPMENT

None anticipated.



WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 1: Target Samples

Shipment: SHP-210428-05
Status: Pending
Description: CTO-6134 Camp Lejeune Site 89 IDW
Range: G8552-G8552
Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	G8552	IR89-IDW-SO-042621	04/26/2021 4:30 pm	SOLIDS	R0119 (NA)			

Shipment: SHP-210917-01
Status: Pending
Description: Site 89
Range: F2834-F2834
Comment: NA

No:	BDO Id:	Client Sample ID:	Collection Date:	Matrix:	Storage Facility:	Location:	No:	Comments:
1	F2834	IR89-IDW-SO-091621	09/16/2021 4:32 pm	SO	R0119 (NA)			



WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name:	Master_369D
SOP Reference:	5-369 - Analysis of Perfluoroalkyl Substances in Environmental Samples by Liquid Chromatography and Tandem Mass Spectrometry (LC-MS/MS)
Description:	PFAS by DoD QSM 5.3 Table B-15
Matrix:	S - Solid Samples, like soil or sediment, prepared and analyzed under the same class of detection limits.
Detection Limit Study:	5-369
Instrument:	LC-MS/MS
MQO Criteria	Universal_LC
Standard Report:	Standard Result Report

Method Specific Reporting				Holding Times (days)	Data Flags
Result Units:	ng/g	Unit Conversion:	(none)	Sample: 14	DL_Flag: U
Weight Basis:	DRY	Result Format:	Fixed Digits	Frozen: 14	RL_Flag: J
Standard Basis:	SIS	# of Figures/Digits:	2	Extract: 28	PB_Flag: B
Oil Weight Basis:	No	Oil Weight Source:	Oil Weight		DIL_Flag: D
U-Value Substitution:	U-Flag=MD	Histograms:	No		HT_Flag: T
ECD_Reporting:	No				

No:	Analyte:	Report Name:	Type	RIS	SIS	Hidden:	Graph:
1	Perfluoro-n-hexanoic acid	PFHxA	T		13C5-PFHxA	No	No
2	Perfluoro-n-heptanoic Acid	PFHpA	T		13C4-PFHpA	No	No
3	Perfluoro-n-octanoic Acid	PFOA	T		13C8-PFOA	No	No
4	Perfluorononanoic Acid	PFNA	T		13C9-PFNA	No	No
5	Perfluoro-n-decanoic Acid	PFDA	T		13C6-PFDA	No	No
6	Perfluoro-n-undecanoic acid	PFUnA	T		13C7-PFUnA	No	No
7	Perfluoro-n-dodecanoic acid	PFDoA	T		13C2-PFDoA	No	No
8	Perfluoro-n-tridecanoic acid	PFTTrDA	T		13C2-PFTeDA	No	No
9	Perfluoro-n-tetradecanoic acid	PFTeDA	T		13C2-PFTeDA	No	No
10	N-methylperfluoro-1-octanesulfonamidoacetic acid	NMeFOSAA	T		d3-MeFOSAA	No	No
11	N-ethylperfluoro-octanesulfonamidoacetic acid	NEtFOSAA	T		d5-EtFOSAA	No	No
12	Perfluoro-1-butanedisulfonate	PFBS	T		13C3-PFBS	No	No
13	Perfluoro-1-hexanesulfonate	PFHxS	T		13C3-PFHxS	No	No
14	Perfluoro-1-octanesulfonate	PFOS	T		13C8-PFOS	No	No
15	Hexafluoropropylene oxide dimer acid	HFPO-DA	T		13C3-HFPO-DA	No	No
16	Adona	Adona	T		13C8-PFOA	No	No
17	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	9Cl-PF3ONS	T		13C8-PFOA	No	No



WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name: Master_369D

No:	Analyte:	Report Name:	Type	RIS	SIS	Hidden:	Graph:
18	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	T		13C8-PFOA	No	No
1	13C5-PFHxA	13C5-PFHxA	SIS	13C2-PFOA		No	No
2	13C4-PFHpA	13C4-PFHpA	SIS	13C2-PFOA		No	No
3	13C8-PFOA	13C8-PFOA	SIS	13C2-PFOA		No	No
4	13C9-PFNA	13C9-PFNA	SIS	13C2-PFOA		No	No
5	13C6-PFDA	13C6-PFDA	SIS	13C2-PFDA		No	No
6	13C7-PFUnA	13C7-PFUnA	SIS	13C2-PFDA		No	No
7	13C2-PFDoA	13C2-PFDoA	SIS	13C2-PFDA		No	No
8	13C2-PFTeDA	13C2-PFTeDA	SIS	13C2-PFDA		No	No
9	d3-MeFOSAA	d3-MeFOSAA	SIS	13C4-PFOS		No	No
10	d5-EtFOSAA	d5-EtFOSAA	SIS	13C4-PFOS		No	No
11	13C3-PFBS	13C3-PFBS	SIS	13C4-PFOS		No	No
12	13C3-PFHxS	13C3-PFHxS	SIS	13C4-PFOS		No	No
13	13C8-PFOS	13C8-PFOS	SIS	13C4-PFOS		No	No
14	13C3-HFPO-DA	13C3-HFPO-DA	SIS	13C2-PFOA		No	No

Total Analytes: 32

Subtract Peaks:

None

Sum Peaks:

None



WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 2: Test Codes

Project Test Code Name: Master_369D

ICAL Acceptance Criteria:

Curve Fit:	Limit Mean(%):	Mean Qual:	Limit Ind.:	Ind. Qual:	Min Points:	Points Qual:	Comments:
Linear	NA	NA	0.99	N	5	N	y = Bx + C
Quadratic	NA	NA	0.99	N	6	N	y = Ax^2 + Bx + C

Continuing Calibration Verification Criteria:

CCV Name: 5-369

Frequency Hrs:	Mean PD(%):	Individual PD(%):	RIS/SIS RT Window (min):	Area Limit Low(%):	Area Limit High(%):	Comment:
12 (N)	30 (N)	30 (N)	0.04 (N)	-50	100 (N)	NA

Independent Calibration Verification:

ICC Name: 5-369

Mean PD Limit(%):	Ind. PD Limit(%):	RIS/SIS Window Limit (Secs):	Area Limit High(%):	Area Limit Low(%):	Comment:
30 (N)	30 (N)	0.04 (N)	-50	100 (N)	NA

Mass Discrimination Criteria:

None

Degradation Check Criteria:

None



WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 3: Method Quality Objectives

MQO Application: <i>Universal_LC</i>			
MQO:	Acceptance Criteria:	Qual:	Corrective Action:
Procedural Blank	Samples must be greater than five times the blank concentration (>5xPB).	B	Review with Project Manager; re-analyze or justify results in project records.
PB Measurement Quality Objective	Organic results in the Procedural Blank are less than 1/2 times the LOQ (<1/2xLOQ)	N	Review with Project Manager; re-analyze or justify results in project records.
Laboratory Control Sample	Recovery values 70-130%.	N	Review with project manager; re-analyze or justify reporting the results in project records.
Matrix Spike / Matrix Spike Duplicate Recovery	Organics 70-130%. Analyte concentration in MS/MSD must be greater than five times reported background concentration.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the Original	n	
Matrix Spike/Spike Duplicate Precision	Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration in MS/MSD must be greater than five times reported background concentration.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the Original	n	
Standard Reference Material Accuracy	Organics Percent Difference less than 30% from a range of certified values on average. Analyte concentration must be greater than five times the Method Detection Limit (>5xMDL).	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Target is less than 5 times the MDL	n	
Analytical Duplicate Precision	Organics results less than 30% Relative Percent Difference (RPD). Analyte concentration must be > 5x MDL.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
	Organics Results in the Original is less than 5 times the MDL	n	



WORK/QUALITY ASSURANCE PROJECT PLAN

Attachment 3: Method Quality Objectives

MQO Application:		<i>Universal_LC</i>	
MQO:	Acceptance Criteria:	Qual:	Corrective Action:
Analytical Triplicate Precision	Organics results less than 30% Relative Standard Deviation (RSD). Analyte concentration must be > 5x MDL. Organics Results in the Original is less than 5 times the MDL	N n	Review with Project Manager; re-analyze or justify reporting results in the project records.
Surrogate Compound Recovery	Recovery results between 50% and 150%.	N	Review with Project Manager; re-analyze or justify reporting results in the project records.
Control Oil	RPD < 30% for at least 90% of analytes	N	Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented.
Instrument Calibration	5-369-8: R-squared greater than or equal to 0.990		Results examined by project manager, task leader, or subcontractor lab manager. Reextraction, reanalysis, or justification documented.
Independent Calibration Check Solution	5-369-8: Individual PD less than or equal to 30%. Mean Percent Difference less than or equal to 30%.	N	Review with Project Manager; re-analyze or justify in project records.
Continuing Calibration Verification	5-369-8: Individual PD less than or equal to 30%. Mean Percent Difference less than or equal to 30%.	N	Review with Project Manager; re-analyze or justify in project records.

ShpNo **SHP-210917-01**

It can be done

Battelle Project No: **100147043**

Sample Receipt Form

Approved: ☐ Authorized: ☐

Project Number: 707417CH.SA.DM

Client: CH2M/Jacobs

Received by: Schumitz, Matt

Date/Time Received: Friday, September 17, 2021 10:30 AM

No. of Shipping Containers: **1****SHIPMENT**

Method of Delivery: Commercial Carrier

Tracking Number: Fed Ex

COC Forms: ☒ Shipped with samples ☐ No Forms**Cooler(s)/Box(es)**

Cntr	Type	Tracking No.	Seal	Seal	Container	Therm.	Temp C	Smpls
1 of 1	Cooler	7748 1479 9184	Custody Seals	Intact	Intact	Therm_1	1.5	1

Samples

Sample Labels: ☒ Sample labels agree with COC forms
☐ Discrepancies (see Sample Custody Corrective Action Form)

Container Seals: ☐ Tape ☐ Custody Seals ☐ Other Seals (See sample Log)
☒ Seals intact for each shipping container
☐ Seals broken (See sample log for impacted samples)

Condition of Samples: ☒ Sample containers intact
☐ Sample containers broken/leaking (See Custody Corrective Action Form)

Temperature upon receipt (°C): 1.5 Temperature Blank used ☒ Yes ☐ No
(Note: If temperature upon receipt differs from required conditions, see sample log comment field)

Samples Acidified: ☐ Yes ☐ No ☒ Unknown

Initial pH 5-9?: ☐ Yes ☐ No ☒ NA
If no, individual sample adjustments on the Auxiliary Sample Receipt Form

Total Residual Chlorine Present?: ☐ Yes ☐ No ☒ NA
If yes, individual sample adjustments on the Auxiliary Sample Receipt Form

Head Space <1% in samples for water VOC analysis: ☐ Yes ☐ No ☒ NA
Individual sample deviations noted on sample log

Samples Containers:
 Samples returned in PC-grade jars: ☐ Yes ☐ No ☒ Unknown /Lot No.: UnKnown

Storage Location: Custody: Refrigerator - R0119 (NA) BDO IDs Assigned: F2834 - F2834

Samples logged in by: Schumitz, Matt Date/Time: 09/17/2021 10:30 AM

Approved By: Approved On:

Authorized By: Authorized On:



It can be done

ShpNo SHP-210917-01Battelle Project No: 100147043

Sample Receipt Form Details

Approved: ☐ Authorized: ☐Project Number: 707417CH.SA.DMClient: CH2M/JacobsReceived by: Schumitz, MattDate/Time Received: Friday, September 17, 2021 10:30 AMNo. of Shipping Containers: 1

BDO Id:	Client Sample ID:	Collection Date:	Login Date:	Ctrs:	Matrix:	Temp:	pH:	TRC:	VOC:	Stored In:	Loc:	No:	Comments:
F2834	IR89-IDW-SO-091621	09/16/21 16:32	09/17/21 11:03	1	SO	1.5	NA	NA	NA	R0119 (NA)			

Total Samples: 1

1615-828-0406 SONYA.GORDON@JACOBS.COM

Form NAL-056 | Rev1 | 1/23/2017 | Page 1 of 1

ORIGIN ID: NTUA (505) 417-4553
 BETH DAVIS
 JACOBS
 5701 CLEVELAND STREET
 SUITE 200
 VIRGINIA BEACH, VA 23462
 UNITED STATES US

SHIP DATE: 16SEP21
 ACTWGT: 20.00 LB
 CAD: 104331162/INET4400
 DIMS: 13x8x9 IN
 BILL SENDER

TO JONATHAN THORN
 BATTELLE
 141 LONGWATER DRIVE SUITE 202

NORWELL MA 02061

(781) 681-5565
 INV
 PO

REF 707417 CH.FIFK
 DEPT



56DJ31169AFE4A

TRK# 7748 1479 9184
 0201

FRI - 17 SEP 10:30A
 PRIORITY OVERNIGHT

XE XPUA

02061
 MA-US BOS



Thorn 1150

After printing this label:

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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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Data Tables



Project Client: CH2M
 Project Name: CTO-6134: Camp Lejeune Site 89
 Project No.: 100147043

Client ID IR89-IDW-SO-091621

Battelle ID F2834-FS
 Sample Type SA
 Collection Date 09/16/2021
 Extraction Date 09/22/2021
 Analytical Instrument Sciex 5500 (AC) LC/MS/MS
 % Moisture 8.94
 Matrix SO
 Sample Size 4.990
 Size Unit-Basis g

Analyte	CAS No.	Result (ng/g_Dry)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.0802 U	F2834-FS(0)	1.000	9/23/2021	0.0283	0.0802	0.200
PFHpA	375-85-9	0.0601 U	F2834-FS(0)	1.000	9/23/2021	0.0203	0.0601	0.200
PFOA	335-67-1	0.0802 U	F2834-FS(0)	1.000	9/23/2021	0.0243	0.0802	0.200
PFNA	375-95-1	0.0401 U	F2834-FS(0)	1.000	9/23/2021	0.0197	0.0401	0.200
PFDA	335-76-2	0.0401 U	F2834-FS(0)	1.000	9/23/2021	0.0186	0.0401	0.200
PFUnA	2058-94-8	0.0401 U	F2834-FS(0)	1.000	9/23/2021	0.0183	0.0401	0.200
PFDoA	307-55-1	0.0802 U	F2834-FS(0)	1.000	9/23/2021	0.0245	0.0802	0.200
PFTTrDA	72629-94-8	0.0401 U	F2834-FS(0)	1.000	9/23/2021	0.0112	0.0401	0.200
PFTeDA	376-06-7	0.100 U	F2834-FS(0)	1.000	9/23/2021	0.0433	0.100	0.200
NMeFOSAA	2355-31-9	0.100 U	F2834-FS(0)	1.000	9/23/2021	0.0409	0.100	0.200
NEtFOSAA	2991-50-6	0.0802 U	F2834-FS(0)	1.000	9/23/2021	0.0300	0.0802	0.200
PFBS	375-73-5	0.0401 U	F2834-FS(0)	1.000	9/23/2021	0.0140	0.0401	0.200
PFHxS	355-46-4	0.0331 J	F2834-FS(0)	1.000	9/23/2021	0.0324	0.0802	0.200
PFOS	1763-23-1	0.0499 J	F2834-FS(0)	1.000	9/23/2021	0.0277	0.0802	0.200
HFPO-DA	13252-13-6	0.0802 U	F2834-FS(0)	1.000	9/23/2021	0.0257	0.0802	0.200
Adona	919005-14-4	0.0802 U	F2834-FS(0)	1.000	9/23/2021	0.0333	0.0802	0.200
9CI-PF3ONS	756426-58-1	0.0401 U	F2834-FS(0)	1.000	9/23/2021	0.0193	0.0401	0.200
11CI-PF3OUdS	763051-92-9	0.0601 U	F2834-FS(0)	1.000	9/23/2021	0.0210	0.0601	0.200



Project Client: CH2M
 Project Name: CTO-6134: Camp Lejeune Site 89
 Project No.: 100147043

Client ID IR89-IDW-SO-091621

Battelle ID F2834-FS
 Sample Type SA
 Collection Date 09/16/2021
 Extraction Date 09/22/2021
 Analytical Instrument Sciex 5500 (AC) LC/MS/MS

<i>Surrogate Recoveries (%)</i>	<i>Recovery</i>	<i>Extract ID</i>	<i>Analysis Date</i>
13C5-PFHxA	80	F2834-FS(0)	9/23/2021
13C4-PFHpA	82	F2834-FS(0)	9/23/2021
13C8-PFOA	82	F2834-FS(0)	9/23/2021
13C9-PFNA	81	F2834-FS(0)	9/23/2021
13C6-PFDA	86	F2834-FS(0)	9/23/2021
13C7-PFUnA	82	F2834-FS(0)	9/23/2021
13C2-PFDoA	84	F2834-FS(0)	9/23/2021
13C2-PFTeDA	69	F2834-FS(0)	9/23/2021
d3-MeFOSAA	67	F2834-FS(0)	9/23/2021
d5-EtFOSAA	88	F2834-FS(0)	9/23/2021
13C3-PFBS	80	F2834-FS(0)	9/23/2021
13C3-PFHxS	87	F2834-FS(0)	9/23/2021
13C8-PFOS	80	F2834-FS(0)	9/23/2021
13C3-HFPO-DA	80	F2834-FS(0)	9/23/2021



It can be done

Project Client: CH2M

Project Name: CTO-6134: Camp Lejeune Site 89

Project No.: 100147043

Client ID LM41 IB

Battelle ID LM41 IB_09/22/2021

Sample Type IB

Collection Date NA

Extraction Date NA

Analysis Date 09/22/2021

Analytical Instrument Sciex 5500 (AC) LC/MS/MS

% Moisture NA

Matrix Solid

Sample Size 5.000

Size Unit-Basis g

Analyte	CAS No.	Result (ng/g_Dry)	DL	LOD	LOQ
PFHxA	307-24-4	0.0800 U	0.0283	0.0800	0.200
PFHpA	375-85-9	0.0600 U	0.0202	0.0600	0.200
PFOA	335-67-1	0.0800 U	0.0243	0.0800	0.200
PFNA	375-95-1	0.0400 U	0.0196	0.0400	0.200
PFDA	335-76-2	0.0400 U	0.0185	0.0400	0.200
PFUnA	2058-94-8	0.0400 U	0.0183	0.0400	0.200
PFDoA	307-55-1	0.0800 U	0.0245	0.0800	0.200
PFTTrDA	72629-94-8	0.0400 U	0.0112	0.0400	0.200
PFTeDA	376-06-7	0.100 U	0.0432	0.100	0.200
NMeFOSAA	2355-31-9	0.100 U	0.0408	0.100	0.200
NEtFOSAA	2991-50-6	0.0800 U	0.0299	0.0800	0.200
PFBS	375-73-5	0.0400 U	0.0140	0.0400	0.200
PFHxS	355-46-4	0.0800 U	0.0323	0.0800	0.200
PFOS	1763-23-1	0.0800 U	0.0277	0.0800	0.200
HFPO-DA	13252-13-6	0.0800 U	0.0256	0.0800	0.200
Adona	919005-14-4	0.0800 U	0.0332	0.0800	0.200
9CI-PF3ONS	756426-58-1	0.0400 U	0.0193	0.0400	0.200
11CI-PF3OUdS	763051-92-9	0.0600 U	0.0210	0.0600	0.200

Analyzed by: Griffith, Lauren

Printed: 9/30/2021

Isotope Dilution

S21-1182_Master_369D.xlsm



It can be done

Project Client: CH2M

Project Name: CTO-6134: Camp Lejeune Site 89

Project No.: 100147043

Client ID LM41 IB

Battelle ID LM41 IB_09/22/2021

Sample Type IB

Collection Date NA

Extraction Date NA

Analysis Date 09/22/2021

Analytical Instrument Sciex 5500 (AC) LC/MS/MS

% Moisture NA

Matrix Solid

Sample Size 5.000

Size Unit-Basis g

Surrogate Recoveries (%)

13C5-PFHxA	102
13C4-PFHpA	99
13C8-PFOA	98
13C9-PFNA	97
13C6-PFDA	100
13C7-PFUnA	109
13C2-PFDoA	101
13C2-PFTeDA	101
d3-MeFOSAA	109
d5-EtFOSAA	121
13C3-PFBS	104
13C3-PFHxS	103
13C8-PFOS	99
13C3-HFPO-DA	95



It can be done

Project Client: CH2M

Project Name: CTO-6134: Camp Lejeune Site 89

Project No.: 100147043

Client ID LM41 IB

Battelle ID LM41 IB_09/23/2021

Sample Type IB

Collection Date NA

Extraction Date NA

Analysis Date 09/23/2021

Analytical Instrument Sciex 5500 (AC) LC/MS/MS

% Moisture NA

Matrix Solid

Sample Size 5.000

Size Unit-Basis g

Analyte	CAS No.	Result (ng/g_Dry)	DL	LOD	LOQ
PFHxA	307-24-4	0.0800 U	0.0283	0.0800	0.200
PFHpA	375-85-9	0.0600 U	0.0202	0.0600	0.200
PFOA	335-67-1	0.0800 U	0.0243	0.0800	0.200
PFNA	375-95-1	0.0400 U	0.0196	0.0400	0.200
PFDA	335-76-2	0.0400 U	0.0185	0.0400	0.200
PFUnA	2058-94-8	0.0400 U	0.0183	0.0400	0.200
PFDoA	307-55-1	0.0800 U	0.0245	0.0800	0.200
PFTTrDA	72629-94-8	0.0400 U	0.0112	0.0400	0.200
PFTeDA	376-06-7	0.100 U	0.0432	0.100	0.200
NMeFOSAA	2355-31-9	0.100 U	0.0408	0.100	0.200
NEtFOSAA	2991-50-6	0.0800 U	0.0299	0.0800	0.200
PFBS	375-73-5	0.0400 U	0.0140	0.0400	0.200
PFHxS	355-46-4	0.0800 U	0.0323	0.0800	0.200
PFOS	1763-23-1	0.0800 U	0.0277	0.0800	0.200
HFPO-DA	13252-13-6	0.0800 U	0.0256	0.0800	0.200
Adona	919005-14-4	0.0800 U	0.0332	0.0800	0.200
9CI-PF3ONS	756426-58-1	0.0400 U	0.0193	0.0400	0.200
11CI-PF3OUdS	763051-92-9	0.0600 U	0.0210	0.0600	0.200

Analyzed by: Griffith, Lauren

Printed: 9/30/2021

Isotope Dilution

S21-1182_Master_369D.xlsm



It can be done

Project Client: CH2M

Project Name: CTO-6134: Camp Lejeune Site 89

Project No.: 100147043

Client ID LM41 IB

Battelle ID LM41 IB_09/23/2021

Sample Type IB

Collection Date NA

Extraction Date NA

Analysis Date 09/23/2021

Analytical Instrument Sciex 5500 (AC) LC/MS/MS

% Moisture NA

Matrix Solid

Sample Size 5.000

Size Unit-Basis g

Surrogate Recoveries (%)

13C5-PFHxA	98
13C4-PFHpA	93
13C8-PFOA	95
13C9-PFNA	91
13C6-PFDA	97
13C7-PFUnA	98
13C2-PFDoA	100
13C2-PFTeDA	96
d3-MeFOSAA	92
d5-EtFOSAA	97
13C3-PFBS	101
13C3-PFHxS	99
13C8-PFOS	97
13C3-HFPO-DA	87



Project Client: CH2M
 Project Name: CTO-6134: Camp Lejeune Site 89
 Project No.: 100147043

Client ID		Procedural Blank						
Battelle ID		DF129PB-FS						
Sample Type		PB						
Collection Date		09/22/2021						
Extraction Date		09/22/2021						
Analytical Instrument		Sciex 5500 (AC) LC/MS/MS						
% Moisture		0.00						
Matrix		SOLID						
Sample Size		5.030						
Size Unit-Basis		g						
Analyte	CAS No.	Result (ng/g_Dry)	Extract ID	DF	Analysis Date	DL	LOD	LOQ
PFHxA	307-24-4	0.0795 U	DF129PB-FS(0)	1.000	9/23/2021	0.0281	0.0795	0.199
PFHpA	375-85-9	0.0596 U	DF129PB-FS(0)	1.000	9/23/2021	0.0201	0.0596	0.199
PFOA	335-67-1	0.0795 U	DF129PB-FS(0)	1.000	9/23/2021	0.0241	0.0795	0.199
PFNA	375-95-1	0.0398 U	DF129PB-FS(0)	1.000	9/23/2021	0.0195	0.0398	0.199
PFDA	335-76-2	0.0398 U	DF129PB-FS(0)	1.000	9/23/2021	0.0184	0.0398	0.199
PFUnA	2058-94-8	0.0398 U	DF129PB-FS(0)	1.000	9/23/2021	0.0182	0.0398	0.199
PFDoA	307-55-1	0.0795 U	DF129PB-FS(0)	1.000	9/23/2021	0.0243	0.0795	0.199
PFTDA	72629-94-8	0.0398 U	DF129PB-FS(0)	1.000	9/23/2021	0.0111	0.0398	0.199
PFTeDA	376-06-7	0.0994 U	DF129PB-FS(0)	1.000	9/23/2021	0.0429	0.0994	0.199
NMeFOSAA	2355-31-9	0.0994 U	DF129PB-FS(0)	1.000	9/23/2021	0.0406	0.0994	0.199
NEtFOSAA	2991-50-6	0.0795 U	DF129PB-FS(0)	1.000	9/23/2021	0.0297	0.0795	0.199
PFBS	375-73-5	0.0398 U	DF129PB-FS(0)	1.000	9/23/2021	0.0139	0.0398	0.199
PFHxS	355-46-4	0.0795 U	DF129PB-FS(0)	1.000	9/23/2021	0.0321	0.0795	0.199
PFOS	1763-23-1	0.0372 J	DF129PB-FS(0)	1.000	9/23/2021	0.0275	0.0795	0.199
HFPO-DA	13252-13-6	0.0795 U	DF129PB-FS(0)	1.000	9/23/2021	0.0255	0.0795	0.199
Adona	919005-14-4	0.0795 U	DF129PB-FS(0)	1.000	9/23/2021	0.0330	0.0795	0.199
9CI-PF3ONS	756426-58-1	0.0398 U	DF129PB-FS(0)	1.000	9/23/2021	0.0192	0.0398	0.199
11CI-PF3OUdS	763051-92-9	0.0596 U	DF129PB-FS(0)	1.000	9/23/2021	0.0208	0.0596	0.199



Project Client: CH2M
 Project Name: CTO-6134: Camp Lejeune Site 89
 Project No.: 100147043

Client ID Procedural Blank

Battelle ID DF129PB-FS
 Sample Type PB
 Collection Date 09/22/2021
 Extraction Date 09/22/2021
 Analytical Instrument Sciex 5500 (AC) LC/MS/MS

<i>Surrogate Recoveries (%)</i>	<i>Recovery</i>	<i>Extract ID</i>	<i>Analysis Date</i>
13C5-PFHxA	115	DF129PB-FS(0)	9/23/2021
13C4-PFHpA	116	DF129PB-FS(0)	9/23/2021
13C8-PFOA	108	DF129PB-FS(0)	9/23/2021
13C9-PFNA	112	DF129PB-FS(0)	9/23/2021
13C6-PFDA	110	DF129PB-FS(0)	9/23/2021
13C7-PFUnA	107	DF129PB-FS(0)	9/23/2021
13C2-PFDoA	106	DF129PB-FS(0)	9/23/2021
13C2-PFTeDA	108	DF129PB-FS(0)	9/23/2021
d3-MeFOSAA	83	DF129PB-FS(0)	9/23/2021
d5-EtFOSAA	107	DF129PB-FS(0)	9/23/2021
13C3-PFBS	114	DF129PB-FS(0)	9/23/2021
13C3-PFHxS	121	DF129PB-FS(0)	9/23/2021
13C8-PFOS	115	DF129PB-FS(0)	9/23/2021
13C3-HFPO-DA	110	DF129PB-FS(0)	9/23/2021



Project Client: CH2M
 Project Name: CTO-6134: Camp Lejeune Site 89
 Project No.: 100147043

Client ID		Laboratory Control Sample								
Battelle ID		DF130LCS-FS								
Sample Type		LCS								
Collection Date		09/22/2021								
Extraction Date		09/22/2021								
Analytical Instrument		Sciex 5500 (AC) LC/MS/MS								
% Moisture		0.00								
Matrix		SOLID								
Sample Size		5.110								
Size Unit-Basis		g								
Analyte	CAS No.	Result (ng/g_Dry)	Extract ID	DF	Analysis Date	Target	Recovery	Qual	Control Limits	
									Lower	Upper
PFHxA	307-24-4	6.81	DF130LCS-FS(0)	1.000	9/23/2021	7.83	87		70	132
PFHpA	375-85-9	7.22	DF130LCS-FS(0)	1.000	9/23/2021	7.83	92		71	131
PFOA	335-67-1	7.40	DF130LCS-FS(0)	1.000	9/23/2021	7.83	95		69	133
PFNA	375-95-1	8.14	DF130LCS-FS(0)	1.000	9/23/2021	7.83	104		72	129
PFDA	335-76-2	7.32	DF130LCS-FS(0)	1.000	9/23/2021	7.83	93		69	133
PFUnA	2058-94-8	7.64	DF130LCS-FS(0)	1.000	9/23/2021	7.83	98		64	136
PFDoA	307-55-1	8.47	DF130LCS-FS(0)	1.000	9/23/2021	7.83	108		69	135
PFTTrDA	72629-94-8	8.69	DF130LCS-FS(0)	1.000	9/23/2021	7.83	111		66	139
PFTeDA	376-06-7	6.83	DF130LCS-FS(0)	1.000	9/23/2021	7.83	87		69	133
NMeFOSAA	2355-31-9	7.17	DF130LCS-FS(0)	1.000	9/23/2021	7.83	92		63	144
NEtFOSAA	2991-50-6	6.44	DF130LCS-FS(0)	1.000	9/23/2021	7.83	82		61	139
PFBS	375-73-5	7.66	DF130LCS-FS(0)	1.000	9/23/2021	7.83	98		72	128
PFHxS	355-46-4	6.71	DF130LCS-FS(0)	1.000	9/23/2021	7.83	86		67	130
PFOS	1763-23-1	7.88	DF130LCS-FS(0)	1.000	9/23/2021	7.83	101		68	136
HFPO-DA	13252-13-6	6.72	DF130LCS-FS(0)	1.000	9/23/2021	7.83	86		71	153
Adona	919005-14-4	7.21	DF130LCS-FS(0)	1.000	9/23/2021	7.83	92		61	139
9CI-PF3ONS	756426-58-1	6.95	DF130LCS-FS(0)	1.000	9/23/2021	7.83	89		60	140
11CI-PF3OUdS	763051-92-9	7.26	DF130LCS-FS(0)	1.000	9/23/2021	7.83	93		40	160



Project Client: CH2M
 Project Name: CTO-6134: Camp Lejeune Site 89
 Project No.: 100147043

Client ID Laboratory Control Sample

Battelle ID DF130LCS-FS
 Sample Type LCS
 Collection Date 09/22/2021
 Extraction Date 09/22/2021
 Analytical Instrument Sciex 5500 (AC) LC/MS/MS

<i>Surrogate Recoveries (%)</i>	<i>Recovery</i>	<i>Extract ID</i>	<i>Analysis Date</i>
13C5-PFHxA	95	DF130LCS-FS(0)	9/23/2021
13C4-PFHpA	97	DF130LCS-FS(0)	9/23/2021
13C8-PFOA	96	DF130LCS-FS(0)	9/23/2021
13C9-PFNA	88	DF130LCS-FS(0)	9/23/2021
13C6-PFDA	95	DF130LCS-FS(0)	9/23/2021
13C7-PFUnA	92	DF130LCS-FS(0)	9/23/2021
13C2-PFDoA	94	DF130LCS-FS(0)	9/23/2021
13C2-PFTeDA	87	DF130LCS-FS(0)	9/23/2021
d3-MeFOSAA	70	DF130LCS-FS(0)	9/23/2021
d5-EtFOSAA	84	DF130LCS-FS(0)	9/23/2021
13C3-PFBS	94	DF130LCS-FS(0)	9/23/2021
13C3-PFHxS	100	DF130LCS-FS(0)	9/23/2021
13C8-PFOS	97	DF130LCS-FS(0)	9/23/2021
13C3-HFPO-DA	97	DF130LCS-FS(0)	9/23/2021



Glossary of Data Qualifiers

Flag: Application:

B	Analyte found in the sample at a concentration <10x the level found in the procedural blank
D	Dilution Run. Initial run outside the initial calibration range of the instrument
E	Estimate, result is greater than the highest concentration level in the calibration
J	Analyte detected below the Limit of Quantitation (LOQ)
MI	Significant Matrix Interference - value could not be determined.
N	Quality Control (QC) value is outside the accuracy or precision Data Quality Objective (DQO)
NA	Not Applicable
T	Holding Time (HT) exceeded
U	Analyte not detected or detected below the Detection Limit (DL) value, Limit of Detection (LOD) reported
Q	Ion ratio outside of criteria (50% difference from calibration expected ratio)

Miscellaneous Documentation

QA/QC Summary Batch 21-1182

Project:	CTO-6134: Camp Lejeune Site 89
Client Project Manager:	Sonya Gordon
Parameters:	PFAS
Laboratory:	Battelle, Norwell, MA
Matrix:	SO
Data Set:	DP-21-1130
Analytical SOP:	5-369
Method Reference:	PFAS to QSM 5.3 Table B-15

Sample Custody		
Collection Date	Receipt Date	Temp (°C)
9/16/2021	9/17/2021	1.5
Corrective Actions	None.	
Sample Storage	The samples were stored refrigerated until extraction.	
Related samples	None.	

	METHOD SUMMARIES
Sample Preparation	Solid samples were homogenized and aliquoted into extraction tubes and fortified with surrogates prior to the addition of solvent. 2.5 mL of PFAS free water was added to the PB, LCS, and all samples with low moisture (< 20% moisture). The sample was serially extracted on the Geno/Grinder with 0.3% NH ₃ OH in methanol. After the first extraction, the samples were centrifuged and the extract was poured into a new falcon tube. After the second extraction, the samples were centrifuges and the extract was combined with the first extract. Extracts were refined with Envi-carb to remove co-extracted interferences and transferred to a 250 mL HDPE bottle. Extracts were brought to 300 mL with PFAS free water, pH was verified between 6.0 and 8.0, adjusted as needed, and processed through Weak-anion exchange (WAX) solid phase extraction (SPE) cartridges. Target analytes are eluted from the WAX SPE using 1% NH ₃ OH in methanol. Acetic acid was added to the extracts followed by fortified with internal standards. Extracts were transferred to LC-MS/MS for analysis.
Prep comments	pH of all samples prior to SPE was verified between 6 and 8 and adjusted as needed.
Analysis	PFAS were measured by liquid chromatography tandem mass spectrometry (LC-MS/MS) in the multiple reaction monitoring (MRM). An initial calibration consisting of representative target analytes, labelled analogs, and internal standards was analyzed prior to analysis to demonstrate the linear range of analysis. Calibration verification was performed at the beginning and end of 10 injections and at the end of each sequence. Target PFAS were quantified using the isotope dilution method. Samples are reported in ng/g concentrations on a dry weight basis to three (3) significant figures.
Analysis Comments	Samples analyzed on Sciex 5500 (AC) LC-MS/MS. MeFOSAA, EtFOSAA, PFHxS, and PFOS in the LCS, and field samples when detected, were found and reported as a combination of the branched and linear isomers.

QA/QC Summary

Batch 21-1182

	ADONA, 9CI-PF3ONS and 11CI-PF3OUdS are quantified using 13C8-PFOA. d5-EtFOSAA is quantified using 13C2-PFOA. The following calibration points were not used in the primary or secondary transitions, when applicable, for the calibration: • PFTeDA in the level one • ADONA in the level eight As these points are below the LOQ concentration equivalent, the reported concentrations are not above the high point of the calibrations, and these analytes use a minimum of five points for linear and six points for quadratic, there is no impact on the reported data excluding these points. Points in the middle of calibration points are not excluded from use. The following secondary transitions were not used in the calibration: • EtFOSAA in the level one The secondary transition is monitored solely for peak identification, not quantification. There is no impact on the reported data.

Holding Times	Extraction Date(s)	Analysis Date(s)
	9/22/2021	9/22 – 23/2021

Procedural Blank (PB)	A PB was prepared with this analytical batch to ensure the sample extraction and analysis methods are free of contamination.
≤ ½ the LOQ	No exceedances noted.
Samples >10x PB	No comments.

Laboratory Control Spike (LCS)	A LCS was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery	No exceedances noted.
	No comments.

Matrix Spike and Matrix Spike Duplicate (MS/MSD)	A MS/MSD was prepared with this analytical batch. The percent recoveries of target analytes were calculated to measure accuracy.
Laboratory derived control limits for recovery and <30% RPD	Project specific MS/MSD not included with this data set.
	No comments.

Extracted Internal Standard Analytes	Labelled analog compounds were added prior to extraction. The recoveries are calculated to measure extraction efficiency.
50-150% of true value	No exceedances noted.
	No comments.

QA/QC Summary
Batch 21-1182

Internal Standard Analytes	Labelled analog compounds were added prior to analysis.
+/- 50% of the area of the L5 calibration point.	No exceedances noted.
	No comments.
Initial Calibration (ICAL)	The LC-MS/MS was calibrated with multi-level calibration curve for all compounds using linear or quadratic curve fitting.
+/- 30% of true value, $R^2 \geq 0.99$	No exceedances noted.
	No comments.
Independent Calibration Check (ICC)	The independent check was run after each initial calibration to verify the calibration. This standard is from a different source than the ICAL.
+/- 30% of true value	No exceedances noted.
	No comments.
Continuing Calibration Verification (CCV)	Continuing calibration standards were run at the beginning and end of 10 injections and at the end of the sequence to ensure that initial calibration is still valid.
+/- 30% of true value	No exceedances noted.
	The following secondary transitions are outside of criteria: PFUnA, ADONA, 9CI-PF3ONS, and 11CI-PF3OUdS in LM34 CCV (9/23/2021 16:55:30) The secondary transition is monitored solely for peak identification, not quantification. There is no impact on the reported data.
Instrument Blank (IB)	Immediately following the highest standard analyzed and daily prior to sample analysis.
$\leq \frac{1}{2}$ the LOQ	No exceedances noted.
	No comments.



Project Client: CH2M
 Project Name: CTO-6134: Camp Lejeune Site 89
 Project Number: 100147043
 Preparation Batch: 21-1182
 Data Set: DP-21-1130
 Test Code: Master_369D

QC Parameter:	Exceed:	Justification:
Procedural Blank	0	None
PB Measurement Quality Objective	0	None
Laboratory Control Sample	0	None
Matrix Spike / Matrix Spike Duplicate Recovery	NA	None
Matrix Spike / Matrix Spike Duplicate Precision	NA	None
Extracted Internal Standard Analytes (Surrogates)	0	None
Instrument Calibration	0	None
Instrument Blank	0	None
Independent Calibration Check	0	None
Continuing Calibration Verification	0	None

It can be done**BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM**

Project Title:	CTO-6134: Camp Lejeune Site 89	Data Set Number:	DP-21-1130
Project Number:	100147043	Prep Batch Number:	21-1182
Entered By:	Lauren Griffith	Entered On:	09/27/2021
Test Code (Matrix Type):	Master_369D(S)		

Samples that were manually integrated are noted on the quant reports with the comment (TRUE).
LMG 9/27/2021

ADONA, 9CI-PF3ONS and 11CI-PF3OUdS are quantified using 13C8-PFOA

d5-EtFOSAA is quantified using 13C2-PFOA

The following calibration points were not used in the primary or secondary transitions, when applicable, for the calibration:

- PFTeDA in the level one
- ADONA in the level eight

As these points are below the LOQ concentration equivalent, the reported concentrations are not above the high point of the calibrations, and these analytes use a minimum of five points for linear and six points for quadratic, there is no impact on the reported data excluding these points. Points in the middle of calibration points are not excluded from use.

The following secondary transitions were not used in the calibration:

- NEtFOSAA in the level one

The secondary transition is monitored solely for peak identification, not quantification. There is no impact on the reported data.

The following secondary transitions are outside of criteria:

- PFUnA, ADONA, 9CI-PF3ONS and 11CI-PF3OUdS in LM34 CCV (9/23/2021 16:55:30)

The secondary transition is monitored solely for peak identification, not quantification. There is no impact on the reported data.

Task Leader Approval:

Supervisor Approval:

PM Approval:



Robert Lizotte, Jr.

2021.09.27 15:58:35 -04'00'



Example Calculation for PFAS

Calculation of final concentration from area:

$$\text{Concentration} = \left[\frac{PA - b}{m} \right] * C_{IS} * DF / S$$

Where:

PA = Area of target / area of internal standard

b = y intercept from calibration curve

CIS = concentration of internal standard (ng)

m = slope of calibration

DF = dilution factor

S = Sample Size

Sample ID: DF130LCS-FS(0)
 Client Sample ID: Laboratory Control Sample
 Sample Size: 5.11
 Units: g
 Dilution Factor: 1.000
 Target Analyte: PFHxA
 MRM Transition: 313.0 / 269.0
 Data file: AC_09222021_5-369.wiff
 Result table: 21-1182
 Area: 8,789,167.93
 IS Name: 13C5-PFHxA
 IS Area: 6,453,821.18
 IS Amount (ng): 25
 y-intercept: 0.01539
 slope: 0.96679

$$\text{Concentration} = \frac{[(8789167.93/6453821.18) - 0.01539]}{0.96679} * 25 * 1 / 5.11$$

$$\text{ng/g} = 6.81$$

*Final concentration may vary based on rounding.



Project Client: CH2M

Project Name: CTO-6134: Camp Lejeune Site 89

Project No.: 100147043

Preparation Batch: 21-1182

Data Set: DP-21-1130

		DF129PB-FS (Procedural Blank)	DF130LCS-FS (Laboratory Control Sample)	F2834-FS (IR89-IDW-SO-091621)
PfHxA	307-24-4	-	L	-
PfHpA	375-85-9	-	L	-
PFOA	335-67-1	-	L	-
PFNA	375-95-1	-	L	-
PFDA	335-76-2	-	L	-
PFUnA	2058-94-8	-	L	-
PFDoA	307-55-1	-	L	-
PfTrDA	72629-94-8	-	L	-
PfTeDA	376-06-7	-	L	-
NMeFOSAA	2355-31-9	-	L/Br	-
NEtFOSAA	2991-50-6	-	L/Br	-
PFBS	375-73-5	-	L	-
PfHxS	355-46-4	-	L/Br	L/Br
PFOS	1763-23-1	L/Br	L/Br	L/Br
HFPO-DA	13252-13-6	-	L	-
Adona	919005-14-4	-	L	-
9CI-PF3ONS	756426-58-1	-	L	-
11CI-PF3OUdS	763051-92-9	-	L	-

"L" :Linear

"Br": branched

"L/Br": Linear/Branched

"-": Not detected

Project Client: CH2M

Project Name: CTO-6134: Camp Lejeune Site 89

Project No.: 100147043



Passing criteria = 50% to 150% of internal standard area (compared to mid-point of calibration)

Sample Name	Sample ID	Analysis Date	13C3-PFBA	13C2-PFOA	13C2-PFDA	13C4-PFOS
LM37	L5	9/22/21 21:50	-	8,899,361.99	9,945,650.27	1,347,972.42
		Lower	-	4,449,681.00	4,972,825.14	673,986.21
		Upper	-	13,349,042.99	14,918,475.41	2,021,958.63

Sample Name	Sample ID	Analysis Date	13C3-PFBA	Qual	User	13C2-PFOA	Qual	User	13C2-PFDA	Qual	User	13C4-PFOS	Qual	User
LM33	L1	9/22/21 20:59	-			8,922,983.67			9,722,847.26			1,462,717.57		
LM34	L2	9/22/21 21:12	-			9,705,544.27			10,183,164.21			1,480,604.42		
LM35	L3	9/22/21 21:25	-			8,920,759.93			10,095,603.74			1,333,671.27		
LM36	L4	9/22/21 21:38	-			9,298,370.16			9,991,158.53			1,292,252.15		
LM37	L5	9/22/21 21:50	-			8,899,361.99			9,945,650.27			1,347,972.42		
LM38	L6	9/22/21 22:03	-			8,498,192.86			9,381,826.23			1,352,452.35		
LM39	L7	9/22/21 22:16	-			7,859,669.08			8,938,291.21			1,223,030.66		
LM40	L8	9/22/21 22:29	-			7,060,471.49			8,013,566.24			1,177,416.65		
LM41 IB	IB	9/22/21 22:42	-			9,086,483.51			9,713,825.94			1,355,790.66		
LM42 ICC	ICC	9/22/21 22:55	-			9,239,757.88			9,799,347.68			1,287,831.06		
LM34 CCV	CCV	9/23/21 16:55	-			9,368,749.47			9,570,386.31			1,310,265.41		
LM41 IB	IB	9/23/21 17:21	-			9,120,360.30			9,856,219.59			1,342,082.84		
DF129PB-FS(0)	Procedural Blank	9/23/21 17:59	-			4,756,478.34			5,116,614.16			735,674.88		
DF130LCS-FS(0)	Laboratory Control Sample	9/23/21 18:12	-			7,819,429.95			8,021,977.50			1,170,976.13		
F2834-FS(0)	IR89-IDW-SO-091621	9/23/21 18:25	-			9,373,840.80			9,620,654.31			1,429,360.32		
LM37 CCV	CCV	9/23/21 18:51	-			8,346,031.75			9,189,844.84			1,271,853.33		

Sample Name	LM37	Injection Vial	7
Sample ID	L5	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:50:52 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Asymmetry Factor	Passing Range
PFBS_1	298.9 / 80.0	1.80	1.18	0.8 – 1.5
PFHxA_1	313.0 / 269.0	2.16	1.20	0.8 – 1.5

Sample Name	LM38	Injection Vial	8
Sample ID	L6	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:03:45 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
PFBS 1	298.9 / 80.0	1.78	58	>10
PFBS 2	298.9 / 99.0	1.78	46	>10
PFHxA 1	313.0 / 269.0	2.13	57	>10
PFHxA 2	313.0 / 119.0	2.13	44	>10
PFHpA 1	363.0 / 319.0	2.55	47	>10
PFHpA 2	363.0 / 169.0	2.55	43	>10
PFHxS 1	399.0 / 80.0	2.56	60	>10
PFHxS 2	399.0 / 99.0	2.56	46	>10
PFOA 1	413.0 / 369.0	2.97	47	>10
PFOA 2	413.0 / 169.0	2.97	45	>10
PFNA 1	463.0 / 419.0	3.37	60	>10
PFNA 2	463.0 / 219.0	3.37	40	>10
PFOS 1	499.0 / 80.0	3.36	76	>10
PFOS 2	499.0 / 99.0	3.36	62	>10
PFDA 1	513.0 / 469.0	3.75	48	>10
PFDA 2	513.0 / 219.0	3.75	42	>10
PFUnA 1	563.0 / 519.0	4.09	51	>10
PFUnA 2	563.0 / 269.0	4.09	49	>10
PFDoA 1	613.0 / 569.0	4.40	60	>10
PFDoA 2	613.0 / 319.0	4.40	45	>10
PFTDA 1	663.0 / 619.0	4.67	74	>10
PFTDA 2	663.0 / 169.0	4.67	50	>10
PFTeDA 1	713.0 / 669.0	4.92	57	>10
PFTeDA 2	713.0 / 169.0	4.92	31	>10
NMeFOSAA 1	570.0 / 419.0	3.93	53	>10
NMeFOSAA 2	570.0 / 512.0	3.93	46	>10
NEtFOSAA 1	584.0 / 419.0	4.10	41	>10
NEtFOSAA 2	584.0 / 483.0	4.10	48	>10
HFPO-DA 1	285.0 / 169.0	2.25	58	>10
HFPO-DA 2	285.0 / 118.8	2.25	45	>10
ADONA 1	377.0 / 251.0	2.58	57	>10
ADONA 2	377.0 / 85.0	2.58	47	>10
9Cl-PF3ONS 1	531.0 / 351.0	3.57	57	>10
9Cl-PF3ONS 2	531.0 / 83.0	3.57	30	>10
11Cl-PF3OUdS 1	631.0 / 451.0	4.22	46	>10
11Cl-pf3OUdS 2	631.0 / 83.0	4.22	40	>10



Mass Spectral Acquisition Rate
Report

Page 40 of 416
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Printed: 27/09/2021 1:59:23 PM

Sample Name	LM38	Injection Vial	8
Sample ID	L6	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:03:45 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Spectra Acquisition Rate	Passing Range
13C2-PFDoA	615.0 / 570.0	4.40	52	>10
d3-MeFOSAA	573.0 / 419.0	3.92	41	>10
d5-EtFOSAA	589.0 / 419.0	4.10	43	>10
13C5-PFHxA	318.0 / 273.0	2.12	43	>10
13C4-PFHpA	367.0 / 322.0	2.54	59	>10
13C8-PFOA	421.0 / 376.0	2.95	46	>10
13C9-PFNA	472.0 / 427.0	3.36	51	>10
13C6-PFDA	519.0 / 474.0	3.74	40	>10
13C7-PFUnA	570.0 / 525.0	4.08	47	>10
13C2-PFTeDA	715.0 / 670.0	4.92	50	>10
13C3-PFBS	302.0 / 99.0	1.77	48	>10
13C3-PFHxS	402.0 / 99.0	2.55	51	>10
13C8-PFOS	507.0 / 99.0	3.35	39	>10
13C3-HFPO-DA	287.0 / 169.0	2.25	62	>10



Precision and Bias at the LOQ for PFAS in Solids

Analyte	CAS No.	Average (ng/g)	ST DEV	2 Sigma	n ¹
PFBA	375-22-4	10.37	1.2279	2.46	9
PFPeA	2706-90-3	9.44	0.8776	1.76	9
PFHxA	307-24-4	10.22	1.0229	2.05	33
PFHpA	375-85-9	10.12	1.0454	2.09	33
PFOA	335-67-1	10.06	1.0528	2.11	33
PFNA	375-95-1	10.01	1.3090	2.62	33
PFDA	335-76-2	10.04	1.0884	2.18	33
PFUnA	2058-94-8	9.83	0.9538	1.91	33
PFDoA	307-55-1	10.67	0.8012	1.60	33
PFTrDA	72629-94-8	10.31	1.1482	2.30	33
PFTeDA	376-06-7	10.94	1.0435	2.09	33
NMeFOSAA	2355-31-9	9.85	1.3511	2.70	34
NEtFOSAA	2991-50-6	10.20	1.3334	2.67	34
PFOSA	754-91-6	9.79	0.5648	1.13	9
PFBS	375-73-5	10.07	0.8377	1.68	33
PFPeS	2706-91-4	9.53	0.6453	1.29	7
PFHxS	355-46-4	10.22	0.9246	1.85	33
PFHpS	375-92-8	9.70	0.4462	0.89	9
PFOS	1763-23-1	10.21	1.1884	2.38	33
PFNS	68259-12-1	9.13	0.7183	1.44	7
PFDS	335-77-3	9.35	0.7479	1.50	9
4:2FTS	757124-72-4	9.81	0.9840	1.97	7
6:2FTS	27619-97-2	9.94	2.4102	4.82	9
8:2FTS	39108-34-4	9.95	2.0273	4.05	9
HFPO-DA	13252-13-6	11.63	1.1159	2.23	19
Adona	919005-14-4	10.35	1.2099	2.42	19
11Cl-PF3OUdS	763051-92-9	10.34	1.4687	2.94	19
9Cl-PF3ONS	756426-58-1	9.97	0.9943	1.99	19

¹ Minimum of 20 samples required per QAM for determination of uncertainty, results including less than 20 data points are estimated.

MDL Values calculated based on 40 CFR 136 (2017)

Compliant with DoD QSM 5.3 Table B-15

Matrix: Solid (based on 2 g sample with a 10-fold dilution)

Calculated to 3 significant figures

Analyte	CAS No.	MDL (ng/g)	LOD (ng/g)	LOQ (ng/g)
PFBA	375-22-4	0.733	2.00	5.00
PFPeA	2706-90-3	0.451	1.00	5.00
PFHxA	307-24-4	0.707	2.00	5.00
PFHpA	375-85-9	0.506	1.50	5.00
PFOA	335-67-1	0.607	2.00	5.00
PFNA	375-95-1	0.491	1.00	5.00
PFDA	335-76-2	0.463	1.00	5.00
PFUnA	2058-94-8	0.457	1.00	5.00
PFDaA	307-55-1	0.612	2.00	5.00
PFTTrDA	72629-94-8	0.280	1.00	5.00
PFTeDA	376-06-7	0.733	2.00	5.00
NMeFOSAA	2355-31-9	1.02	2.50	5.00
NEtFOSAA	2991-50-6	0.748	2.00	5.00
PFOSA	754-91-6	0.418	1.00	5.00
PFBS	375-73-5	0.350	1.00	5.00
PFPeS	2706-91-4	0.442	1.00	5.00
PFHxS	355-46-4	0.808	2.00	5.00
PFHpS	375-92-8	0.776	2.00	5.00
PFOS	1763-23-1	0.692	2.00	5.00
PFNS	68259-12-1	0.565	2.00	5.00
PFDS	335-77-3	0.237	0.500	5.00
4:2FTS	757124-72-4	1.20	2.50	5.00
6:2FTS	27619-97-2	0.797	2.00	5.00
8:2FTS	39108-34-4	1.44	3.00	5.00
3:3 FTCA	356-02-5	2.75	6.00	10.0
5:3 FTCA	914637-49-3	3.05	6.50	10.0
7:3 FTCA	812-70-4	1.98	4.00	10.0
HFPO-DA	13252-13-6	0.641	2.00	5.00
Adona	919005-14-4	0.830	2.00	5.00
9Cl-PF3ONS	756426-58-1	0.482	1.00	5.00
11Cl-PF3OUdS	763051-92-9	0.524	1.50	5.00

Analytes italicized in bold are included on our DoD ELAP scope of accreditation.



Analytical Transitions for PFAS in non-potable water, solid, and tissue

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
NFDHA	151772-58-6	Target	295.0 / 201.0	NA
PFEESA	113507-82-7	Target	315.0 / 135.0	NA
PFMPA	377-73-1	Target	229.0 / 85.0	NA
PFMBA	863090-89-5	Target	279.0 / 85.0	NA
PFBA	375-22-4	Target	213.0 / 169.0	NA
PFPeA	2706-90-3	Target	263.0 / 219.0	NA
PFHxA	307-24-4	Target	313.0 / 269.0	313.0 / 119.0
PFHpA	375-85-9	Target	363.0 / 319.0	363.0 / 169.0
PFOA	335-67-1	Target	413.0 / 369.0	413.0 / 169.0
PFNA	375-95-1	Target	463.0 / 419.0	463.0 / 219.0
PFDA	335-76-2	Target	513.0 / 469.0	513.0 / 219.0
PFUnA	2058-94-8	Target	563.0 / 519.0	563.0 / 269.0
PFDoA	307-55-1	Target	613.0 / 569.0	613.0 / 319.0
PFTTrDA	72629-94-8	Target	663.0 / 619.0	663.0 / 169.0
PFTeDA	376-06-7	Target	713.0 / 669.0	713.0 / 169.0
PFHxDA	67905-19-5	Target	813.0 / 769.0	813.0 / 119.0
PFODA	16517-11-6	Target	913.0 / 869.0	913.0 / 319.0
NMeFOSAA	2355-31-9	Target	570.0 / 419.0	570.0 / 512.0
NEtFOSAA	2991-50-6	Target	584.0 / 419.0	584.0 / 483.0
NMeFOSA	31506-32-8	Target	512.0 / 219.0	512.0 / 169.0
NEtFOSA	4151-50-2	Target	526.0 / 219.0	526.0 / 169.0
NMeFOSE	24448-09-7	Target	616.0 / 59.0	NA
NEtFOSE	1691-99-2	Target	630.0 / 59.0	NA
PFOSA	754-91-6	Target	498.0 / 78.0	498.0 / 83.0
PFBS	375-73-5	Target	299.0 / 80.0	299.0 / 99.0
PFPeS	BDO-2114	Target	349.0 / 99.0	249.0 / 80.0
PFHxS	355-46-4	Target	399.0 / 80.0	399.0 / 99.0
PFHpS	375-99-6	Target	449.0 / 80.0	449.0 / 99.0
PFOS	1763-23-1	Target	499.0 / 80.0	499.0 / 99.0
PFNS	98789-57-2	Target	549.0 / 99.0	549.0 / 80.0
PFDS	2806-15-7	Target	599.0 / 80.0	599.0 / 99.0

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
PFDoS	79780-39-5	Target	669.0 / 80.0	699.0 / 99.0
4:2FTS	BDO-2205	Target	327.0 / 307.0	327.0 / 80.0
6:2FTS	27619-97-2	Target	427.0 / 407.0	427.0 / 81.0
8:2FTS	39108-34-4	Target	527.0 / 507.0	527.0 / 487.0
10:2FTS	108026-35-3	Target	627.0 / 607.0	NA
3:3 FTCA	356-02-5	Target	241.0 / 177.0	NA
5:3 FTCA	914637-49-3	Target	341.0 / 237.0	NA
7:3 FTCA	812-70-4	Target	441.0 / 337.0	NA
HFPO-DA	13252-13-6	Target	285.0 / 169.0	285.0 / 118.8
Adona	919005-14-4	Target	377.0 / 251.0	377.0 / 85.0
9Cl-PF3ONS	756426-58-1	Target	531.0 / 351.0	531.0 / 83.0
11Cl-PF3OUdS	763051-92-9	Target	631.0 / 451.0	631.0 / 83.0
¹³ C ₄ -PFBA	NA	SIS ¹	217.0 / 172.0	NA
¹³ C ₅ -PFPeA	NA	SIS ¹	268.0 / 223.0	NA
¹³ C ₅ -PFHxA	NA	SIS ¹	318.0 / 273.0	NA
¹³ C ₄ -PFHpA	NA	SIS ¹	367.0 / 322.0	NA
¹³ C ₈ -PFOA	NA	SIS ¹	421.0 / 376.0	NA
¹³ C ₉ -PFNA	NA	SIS ¹	472.0 / 427.0	NA
¹³ C ₆ -PFDA	NA	SIS ¹	519.0 / 474.0	NA
¹³ C ₇ -PFUnA	NA	SIS ¹	570.0 / 525.0	NA
¹³ C ₂ -PFDxA	NA	SIS ¹	615.0 / 570.0	NA
¹³ C ₂ -PFTeDA	NA	SIS ¹	715.0 / 670.0	NA
¹³ C ₂ -PFHxDA	NA	SIS ¹	815.0 / 770.0	NA
d ₃ -MeFOSAA	NA	SIS ¹	573.0 / 41/9.0	NA
d ₅ -EtFOSAA	NA	SIS ¹	589.0 / 419.0	NA
d ₃ -MeFOSA	NA	SIS ¹	515.0 / 219.0	NA
d ₅ -EtFOSA	NA	SIS ¹	531.0 / 219.0	NA
d ₇ -MeFOSE	NA	SIS ¹	623.0 / 59.0	NA
d ₉ -EtFOSE	NA	SIS ¹	639.0 / 59.0	NA
¹³ C ₈ -FOSA	NA	SIS ¹	506.0 / 78.0	NA
¹³ C ₃ -PFBS	NA	SIS ¹	302.0 / 99.0	NA

Analyte	CAS No.	Type	Primary Transition	Secondary Transition
¹³ C ₃ -PFHxS	NA	SIS ¹	402.0 / 99.0	NA
¹³ C ₈ -PFOS	NA	SIS ¹	507.0 / 99.0	NA
¹³ C ₂ -4:2FTS	NA	SIS ¹	329.0 / 81.0	NA
¹³ C ₂ -6:2FTS	NA	SIS ¹	429.0 / 81.0	NA
¹³ C ₂ -8:2FTS	NA	SIS ¹	529.0 / 81.0	NA
¹³ C ₃ -HFPO-DA	NA	SIS ¹	287.0 / 169.0	NA
¹³ C ₃ -PFBA	NA	IS ²	216.0 / 172.0	NA
¹³ C ₂ -PFOA	NA	IS ²	415.0 / 370.0	NA
¹³ C ₂ -PFDA	NA	IS ²	515.0 / 470.0	NA
¹³ C ₄ -PFOS	NA	IS ²	503.0 / 99.0	NA

¹ – extracted internal standard (surrogate)

² – injection internal standard



Solids Calibration to Sample Equivalents

ICAL (ng/mL)	PIV (mL) ¹	DF ²	Sample Size (g)	Sample Equivalent (ng/g_Dry) ³
0.05	5	1	5.00	0.050
0.125	5	1	5.00	0.125
0.250	5	1	5.00	0.250
0.500	5	1	5.00	0.500
1.000	5	1	5.00	1.000
2.500	5	1	5.00	2.500
10.000	5	1	5.00	10.000
25.000	5	1	5.00	25.000
50.000	5	1	5.00	50.000

¹ - Nominal PIV, not used in final calculations

² - base level dilution as part of the extraction procedure

³ - calculated equivalent of a sample based on the ICAL concentration

**Zef Scientific Inc.**

12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

Phone: 1.866.854.7988

QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

QTRAP 5500 Preventive Maintenance Checklist

Preventive Maintenance Date:	28SEPT2020
Request ID:	22955
Company Name:	Battelle Memorial Institute
Instrument ID:	Instrument AC
Instrument Model:	QTRAP 5500
Instrument Serial Number:	AU 23051004

☒ **PASS**

☐ **FAIL**

Any failure will lead to an automatic Service Call being open to investigate fault.

Preventive Maintenance is performed twice every year unless specified in the Service Contract. It is designed to help maintain optimum system performance and to help diagnose any system deficiencies.

Engineer is required the assigned Request ID for this PM otherwise making this job invalid.

Comments: _____

Performed By: _____ C. LAFLAMME **Date:** _____ 28SEPT2020

Approved By : _____ K. McInerney **Date:** _____ 28SEPT2020

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12707 High Bluff Dr.
Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
Canada H9P 1J8

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PRE PM PPG PERFORMANCE EVALUATION:

- ☒ Consult Customer concerning the unit overall performance.
- ☒ Check Logbook for Services recently performed.
- ☒ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10 ⁻⁵ Torr)	Acceptance Criteria
☒ CAD 0	0.8	0.4 to 1.1 x10 ⁻⁵ Torr
☒ CAD Low	1.5	Read Only
☒ CAD Medium	3.7	Read Only
☒ CAD High	4.5	Read Only
☒ CAD 12	4.5	2.4 to 4.5 x10 ⁻⁵ Torr

- ☒ Check for Front end contamination symptoms. Run Q1 POS PPG using PPG 2e-7 for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification
 - ☒ No degradation or Sensitivity drop
- ☒ Check for Q3 contamination symptoms. Run Q3 POS PPG using PPG 2e-7 for a few minutes and check for any TIC signal degradation or huge sensitivity drop where the sensitivity result can't pass specification
 - ☒ No degradation or Sensitivity drop

Pre PM PPG Test: Perform each of the following tests. Optimize ion source position only. The specifications listed for these Pre PM tests are guidelines only, not required to be met.

- ☒ Perform Q1 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 175.133	2.77 E7	Read Only	0.7700	Read Only
Q1 500.380	4.38 E7	Read Only	0.8181	Read Only
Q1 906.673	8.6 E7	Read Only	0.8941	Read Only

- ☒ Perform Q3 POS using POS PPG 2e-7M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 175.133	1.89 E7	Read Only	0.8878	Read Only
Q3 500.380	2.114 E7	Read Only	0.8879	Read Only
Q3 906.673	3.99 E7	Read Only	0.9981	Read Only

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USA 92130

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Suite 230
Dorval, QC
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LC/MS/MS Detector System

Appendix ZEFPM003-2L

☒ Perform MSMS POS in Product Ion scan with 609.3 parent and record daughter 195.1 using Reserpine 0.167 pmol/ul at the scan rate of 10 Da/s for 10 MCA. Calculate transmission efficiency comparing Q1POS 609 intensity. Transmission Efficiency: : 27.1% (Read Only)

Mass	MSMS Intensity		MSMS Width Value	Width Specs
	Value	Spec		
Q1 609.3	1.87 E7	Read Only	0.9991	Read Only
MS/MS 195.1	5.07 E6	Read Only	0.6970	Read Only

☒ Perform Q1 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Q1 933.636	1.15 E6	Read Only	0.7894	Read Only

☒ Perform Q3 NEG using NEG PPG 3e-5M. Scan Rate 10 Da/s. Record 10 mca.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Q3 933.636	1.11 E6	Read Only	0.7765	Read Only

☒ Perform Product Ion scan using NEG PPG 3e-5M. Record 10 mca.

Mass	Scan Rate	MCA	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	1.03 E5	Read Only	0.6710	Read Only

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QTRAP 5500

LC/MS/MS Detector System

Appendix ZEFPM003-2L

PREVENTIVE MAINTENANCE CHECKLIST:

- ☒ Check Cooling Fans for Turbo Pumps while MS is ON.
- ☒ Check QJet and QPS tuning voltage for reference.
- ☐ Record AC input Voltage while MS is OFF: 230 (200-240VAC).
If Out-of-Range, notify customer.
- ☒ Clean Interface
 - ☒ Curtain Plate
 - ☒ Orifice Plate
 - ☒ QJet
 - ☒ Q0 Rods.
- ☒ Replace Roughing Pump Oil.
- ☒ Inspect Oil Exhaust Filter, if Applicable. ☐ N/A
- ☒ Clean and inspect built-in divert valve if used. ☐ N/A
- ☒ Check Multiplier Voltage, optimize if necessary.
- ☒ Replace four Air Filters at the bottom of the mass spectrometer.
- ☒ Pump down overnight if possible. ☐ N/A
- ☒ Perform Maintenance on Turbo V source.
- ☒ Replace Electrode, if necessary. ☐ N/A
- ☒ Check Turbo heaters resistances.
- ☒ Check if Temperature is reached at 500C with TIS Probe installed.
- ☐ Check if Temperature is reached at 500C with APCI Probe installed. ☒ N/A

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LC/MS/MS Detector System

Appendix ZEFPM003-2L

POST PM PPG PERFORMANCE TESTS:

- ☒ Set-up Sample for Infusion.
- ☒ Check spray and adjust sprayer's position of the TIS source.
- ☒ Check Vacuum Pressure:

CAD Settings	Vacuum Reading (x 10 ⁻⁵ Torr)	Acceptance Criteria
☒ CAD 0	1.0	0.4 to 1.1 x10 ⁻⁵ Torr
☒ CAD Low	1.5	Read Only
☒ CAD Medium	3.7	Read Only
☒ CAD High	4.5	Read Only
☒ CAD 12	4.5	2.4 to 4.5 x10 ⁻⁵ Torr

- ☒ Perform Q1 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q1 Intensity		Q1 Width Value	Width Specs
	Value	Spec		
Scan Rate 10 Da/s Record 10 mca				
Q1 175.133	6.64 E6	≥1.2 ^e 6	0.7993	0.6 to 0.8
Q1 500.380	2.19 E7	≥9.0 ^e 6	0.7455	0.6 to 0.8
Q1 906.673	1.66 E7	≥1.4 ^e 7	0.7930	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q1 906.673	8.96 E7	≥6.8 ^e 7	0.7903	0.6 to 0.8

- ☒ Perform Q3 POS using POS PPG 2e-7M. Mass calibrate to less than 0.1 amu.

Mass	Q3 Intensity		Q3 Width Value	Width Specs
	Value	Spec		
Scan Rate 10 Da/s Record 10 mca				
Q3 175.133	3.79 E6	≥1.2 ^e 6	0.7183	0.6 to 0.8
Q3 500.380	2.3 E7	≥9.0 ^e 6	0.7599	0.6 to 0.8
Q3 906.673	1.989 E7	≥1.4 ^e 7	0.7523	0.6 to 0.8
Scan Rate 1000 Da/s Record 50 mca				
Q3 906.673	8.43 E7	≥6.8 ^e 7	0.6984	0.6 to 0.8

- ☒ Perform "Product of 609.3" POS and record product ion 195.1 using Reserpine 0.167pmol/uL. Record 10 mca. Calculate Transmission efficiency comparing Q1POS 609 intensity.

Transmission Efficiency: 17.14% (≥ 10.0%)

Mass	MSMS Intensity		Width Value	Width Specs
	Value	Spec		
Q1 609.3	4.23 E7	N/A	0.7619	Read Only
MS/MS 195.1	7.25 E6	N/A	0.7360	Read Only

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Appendix ZEFPM003-2L

- ☒ Perform Q1 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q1 Intensity		Q1 Width Value	Width Specs
			Value	Spec		
Q1 933.636	10	10	1.27 E7	$\geq 1.0^{E7}$	0.7344	0.6 to 0.8
Q1 933.636	1000	50	8.26 E7	$\geq 4.0^{E7}$	0.7028	0.6 to 0.8

- ☒ Perform Q3 NEG using NEG PPG 3e-5M. Mass calibrate to less than 0.1 amu.

Mass	Scan Rate	Mca	Q3 Intensity		Q3 Width Value	Width Specs
			Value	Spec		
Q3 933.636	10	10	1.52 E7	$\geq 8.0^{E6}$	0.7090	0.6 to 0.8
Q3 933.636	1000	50	6.25 E7	$\geq 4.0^{E7}$	0.7265	0.6 to 0.8

- ☒ Perform Product Ion scan using NEG PPG 3e-5M.

Mass	Scan Rate	Mca	MSMS Intensity		MSMS Width Value	Width Specs
			Value	Spec		
MSMS 45	10	10	2.07 E6	Read Only	0.6914	Read Only

- ☒ Perform ER POS 118.087 and 922.01 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 118.087	0.05	1.42 E7	≥7.2 ^{e6}	0.1576	<0.35
ER 922.010	0.05	1.86 E8	≥2.8 ^{e6}	0.2239	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 118.087	0.05	2.89 E7	≥2.4 ^{e7}	0.2612	<0.65
ER 922.010	0.05	4.00 E8	≥6.8 ^{e7}	0.4280	<0.65

- ☒ Perform ER NEG 431.982 and 601.978 using ESI Tuning Mix 1:100 in ES Tuning Dilution Solvent. Apply suggested Scan Rate and Record number of MCA. Mass calibrate to less than 0.1 amu.

Mass	Fill Time (ms)	ER Intensity		ER Width Value	Width Specs
		Value	Spec		
ScanRate : 1000 Da/s ; 50 Mca					
ER 431.982	0.05	2.59 E8	≥4.4 ^{e7}	0.1973	<0.35
ER 601.978	0.05	3.34 E8	≥5.6 ^{e7}	0.1776	<0.35
ScanRate : 10000 Da/s ; 50 Mca					
ER 431.982	0.05	8.86 E8	≥1.2 ^{e8}	0.3873	<0.65
ER 601.978	0.05	1.27 E9	≥1.6 ^{e8}	0.3687	<0.65

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Suite 200
San Diego, CA
USA 92130

1975 Hymus Blvd.
Suite 230
Dorval, QC
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- ☒ Perform EPI POS 397.2 using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Q0 Trapping OFF		Q0 Trapping ON	
		Intensity	Spec	Intensity	Spec
EPI 397.2	10000	2.25 E6	$\geq 2.0 \text{ } ^\text{e}6$	1.23 E7	$\geq 6.4 \text{ } ^\text{e}6$

- ☒ Perform MS3 POS full scan Fragmentation ON & OFF using Reserpine 0.167pmol/uL. Record 20 mca.

Mass	Scan Rate (Da/s)	Fragamentation OFF		Fragmentation ON	
		Intensity	Spec	Intensity	Spec
MS3 397.2	1000	3.43 E7	Contains only 397.2	N/A	N/A
☐ 236 OR ☒ 365	1000	YES	Fragment Intensity	3.74 E6	$\geq 1.6 \times 10^\text{e}6$

REVIEW:

- ☒ Attach all spectrums printouts to this procedure.
- ☒ If any parameter setting access modes were changed during the PM, ensure they are returned to their normal access mode and that their offsets are adjusted to match optimized values from the post-PM acquisition files.
- ☐ Empty tuning cache folder, if necessary. ☒ N/A
- ☒ Update Service Work Order status
- ☒ Fill and replace PM Label.

END OF PREVENTIVE MAINTENANCE CHECKLIST

Document history:

06 OCT 2016: Appendix ZEFPM003-2L: Removed requirements to fit Manufacturer's testing criteria.

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LL42	PFAS DoD Internal Standard	-	-	-	210802-20
LL42	PFAS DoD Internal Standard	-	-	-	210802-22
LL42	PFAS DoD Internal Standard	-	-	-	210802-23
LL42	PFAS DoD Internal Standard	-	-	-	210802-24
LM18	PFAS DoD Second Source LCS/MS (18 Analytes)	-	-	-	210730-02
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-05
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-06
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-07
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-08
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-09
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-10
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-11
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-12
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-14
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-15
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-16
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-17
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-21
LM23	PFAS DoD Surrogate (18 Targets)	-	-	-	210830-22
LM33	PFAS DoD ICAL L2	LJ46	-	-	210407-05
LM33	PFAS DoD ICAL L2	LJ46	-	-	210407-06
LM33	PFAS DoD ICAL L2	LJ46	-	-	210407-07
LM33	PFAS DoD ICAL L2	LJ46	-	-	210407-08
LM33	PFAS DoD ICAL L2	LJ46	-	-	210407-09
LM33	PFAS DoD ICAL L2	LL55	-	-	210802-01
LM33	PFAS DoD ICAL L2	LL55	-	-	210802-02
LM33	PFAS DoD ICAL L2	LL55	-	-	210802-11
LM33	PFAS DoD ICAL L2	LL55	-	-	210802-15
LM33	PFAS DoD ICAL L2	LL55	-	-	210802-16
LM33	PFAS DoD ICAL L2	LL55	-	-	210802-17
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-05
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-06
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-07
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-08
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-09
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-10
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-11
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-12
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-14
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-15
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-16
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-17
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-21
LM33	PFAS DoD ICAL L2	LM23	-	-	210830-22
LM33	PFAS DoD ICAL L2	LM25	-	-	210830-23
LM33	PFAS DoD ICAL L2	LM25	-	-	210830-24
LM33	PFAS DoD ICAL L2	LM25	-	-	210830-25
LM33	PFAS DoD ICAL L2	LM25	-	-	210830-26
LM33	PFAS DoD ICAL L2	LM31	LM30	LM29	210528-02
LM33	PFAS DoD ICAL L2	LM31	LM30	LM29	210714-01
LM34	PFAS DoD ICAL L3	LJ46	-	-	210407-05
LM34	PFAS DoD ICAL L3	LJ46	-	-	210407-06
LM34	PFAS DoD ICAL L3	LJ46	-	-	210407-07
LM34	PFAS DoD ICAL L3	LJ46	-	-	210407-08
LM34	PFAS DoD ICAL L3	LJ46	-	-	210407-09
LM34	PFAS DoD ICAL L3	LL55	-	-	210802-01
LM34	PFAS DoD ICAL L3	LL55	-	-	210802-02
LM34	PFAS DoD ICAL L3	LL55	-	-	210802-11

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LM34	PFAS DoD ICAL L3	LL55	-	-	210802-15
LM34	PFAS DoD ICAL L3	LL55	-	-	210802-16
LM34	PFAS DoD ICAL L3	LL55	-	-	210802-17
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-05
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-06
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-07
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-08
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-09
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-10
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-11
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-12
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-14
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-15
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-16
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-17
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-21
LM34	PFAS DoD ICAL L3	LM23	-	-	210830-22
LM34	PFAS DoD ICAL L3	LM25	-	-	210830-23
LM34	PFAS DoD ICAL L3	LM25	-	-	210830-24
LM34	PFAS DoD ICAL L3	LM25	-	-	210830-25
LM34	PFAS DoD ICAL L3	LM25	-	-	210830-26
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-01
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-02
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-03
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-04
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-05
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-06
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-07
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-08
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-09
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-10
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-11
LM34	PFAS DoD ICAL L3	LM30	LM29	LH59	210216-12
LM34	PFAS DoD ICAL L3	LM30	LM29	-	210528-02
LM34	PFAS DoD ICAL L3	LM30	LM29	LK59	210628-13
LM34	PFAS DoD ICAL L3	LM30	LM29	LK59	210628-14
LM34	PFAS DoD ICAL L3	LM30	LM29	LK59	210628-15
LM34	PFAS DoD ICAL L3	LM30	LM29	-	210714-01
LM35	PFAS DoD ICAL L4	LJ46	-	-	210407-05
LM35	PFAS DoD ICAL L4	LJ46	-	-	210407-06
LM35	PFAS DoD ICAL L4	LJ46	-	-	210407-07
LM35	PFAS DoD ICAL L4	LJ46	-	-	210407-08
LM35	PFAS DoD ICAL L4	LJ46	-	-	210407-09
LM35	PFAS DoD ICAL L4	LL55	-	-	210802-01
LM35	PFAS DoD ICAL L4	LL55	-	-	210802-02
LM35	PFAS DoD ICAL L4	LL55	-	-	210802-11
LM35	PFAS DoD ICAL L4	LL55	-	-	210802-15
LM35	PFAS DoD ICAL L4	LL55	-	-	210802-16
LM35	PFAS DoD ICAL L4	LL55	-	-	210802-17
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-05
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-06
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-07
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-08
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-09
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-10
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-11
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-12
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-14

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-15
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-16
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-17
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-21
LM35	PFAS DoD ICAL L4	LM23	-	-	210830-22
LM35	PFAS DoD ICAL L4	LM25	-	-	210830-23
LM35	PFAS DoD ICAL L4	LM25	-	-	210830-24
LM35	PFAS DoD ICAL L4	LM25	-	-	210830-25
LM35	PFAS DoD ICAL L4	LM25	-	-	210830-26
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-01
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-02
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-03
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-04
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-05
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-06
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-07
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-08
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-09
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-10
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-11
LM35	PFAS DoD ICAL L4	LM30	LM29	LH59	210216-12
LM35	PFAS DoD ICAL L4	LM30	LM29	-	210528-02
LM35	PFAS DoD ICAL L4	LM30	LM29	LK59	210628-13
LM35	PFAS DoD ICAL L4	LM30	LM29	LK59	210628-14
LM35	PFAS DoD ICAL L4	LM30	LM29	LK59	210628-15
LM35	PFAS DoD ICAL L4	LM30	LM29	-	210714-01
LM36	PFAS DoD ICAL L5	LJ46	-	-	210407-05
LM36	PFAS DoD ICAL L5	LJ46	-	-	210407-06
LM36	PFAS DoD ICAL L5	LJ46	-	-	210407-07
LM36	PFAS DoD ICAL L5	LJ46	-	-	210407-08
LM36	PFAS DoD ICAL L5	LJ46	-	-	210407-09
LM36	PFAS DoD ICAL L5	LL55	-	-	210802-01
LM36	PFAS DoD ICAL L5	LL55	-	-	210802-02
LM36	PFAS DoD ICAL L5	LL55	-	-	210802-11
LM36	PFAS DoD ICAL L5	LL55	-	-	210802-15
LM36	PFAS DoD ICAL L5	LL55	-	-	210802-16
LM36	PFAS DoD ICAL L5	LL55	-	-	210802-17
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-05
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-06
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-07
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-08
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-09
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-10
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-11
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-12
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-14
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-15
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-16
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-17
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-21
LM36	PFAS DoD ICAL L5	LM23	-	-	210830-22
LM36	PFAS DoD ICAL L5	LM25	-	-	210830-23
LM36	PFAS DoD ICAL L5	LM25	-	-	210830-24
LM36	PFAS DoD ICAL L5	LM25	-	-	210830-25
LM36	PFAS DoD ICAL L5	LM25	-	-	210830-26
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-01
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-02
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-03

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-04
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-05
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-06
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-07
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-08
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-09
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-10
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-11
LM36	PFAS DoD ICAL L5	LM30	LM29	LH59	210216-12
LM36	PFAS DoD ICAL L5	LM30	LM29	-	210528-02
LM36	PFAS DoD ICAL L5	LM30	LM29	LK59	210628-13
LM36	PFAS DoD ICAL L5	LM30	LM29	LK59	210628-14
LM36	PFAS DoD ICAL L5	LM30	LM29	LK59	210628-15
LM36	PFAS DoD ICAL L5	LM30	LM29	-	210714-01
LM37	PFAS DoD ICAL L6	LJ46	-	-	210407-05
LM37	PFAS DoD ICAL L6	LJ46	-	-	210407-06
LM37	PFAS DoD ICAL L6	LJ46	-	-	210407-07
LM37	PFAS DoD ICAL L6	LJ46	-	-	210407-08
LM37	PFAS DoD ICAL L6	LJ46	-	-	210407-09
LM37	PFAS DoD ICAL L6	LL55	-	-	210802-01
LM37	PFAS DoD ICAL L6	LL55	-	-	210802-02
LM37	PFAS DoD ICAL L6	LL55	-	-	210802-11
LM37	PFAS DoD ICAL L6	LL55	-	-	210802-15
LM37	PFAS DoD ICAL L6	LL55	-	-	210802-16
LM37	PFAS DoD ICAL L6	LL55	-	-	210802-17
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-05
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-06
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-07
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-08
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-09
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-10
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-11
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-12
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-14
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-15
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-16
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-17
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-21
LM37	PFAS DoD ICAL L6	LM23	-	-	210830-22
LM37	PFAS DoD ICAL L6	LM25	-	-	210830-23
LM37	PFAS DoD ICAL L6	LM25	-	-	210830-24
LM37	PFAS DoD ICAL L6	LM25	-	-	210830-25
LM37	PFAS DoD ICAL L6	LM25	-	-	210830-26
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-01
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-02
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-03
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-04
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-05
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-06
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-07
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-08
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-09
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-10
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-11
LM37	PFAS DoD ICAL L6	LM29	LH59	-	210216-12
LM37	PFAS DoD ICAL L6	LM29	-	-	210528-02
LM37	PFAS DoD ICAL L6	LM29	LK59	-	210628-13
LM37	PFAS DoD ICAL L6	LM29	LK59	-	210628-14

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LM37	PFAS DoD ICAL L6	LM29	LK59	-	210628-15
LM37	PFAS DoD ICAL L6	LM29	-	-	210714-01
LM38	PFAS DoD ICAL L7	LJ46	-	-	210407-05
LM38	PFAS DoD ICAL L7	LJ46	-	-	210407-06
LM38	PFAS DoD ICAL L7	LJ46	-	-	210407-07
LM38	PFAS DoD ICAL L7	LJ46	-	-	210407-08
LM38	PFAS DoD ICAL L7	LJ46	-	-	210407-09
LM38	PFAS DoD ICAL L7	LL55	-	-	210802-01
LM38	PFAS DoD ICAL L7	LL55	-	-	210802-02
LM38	PFAS DoD ICAL L7	LL55	-	-	210802-11
LM38	PFAS DoD ICAL L7	LL55	-	-	210802-15
LM38	PFAS DoD ICAL L7	LL55	-	-	210802-16
LM38	PFAS DoD ICAL L7	LL55	-	-	210802-17
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-05
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-06
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-07
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-08
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-09
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-10
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-11
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-12
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-14
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-15
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-16
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-17
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-21
LM38	PFAS DoD ICAL L7	LM23	-	-	210830-22
LM38	PFAS DoD ICAL L7	LM25	-	-	210830-23
LM38	PFAS DoD ICAL L7	LM25	-	-	210830-24
LM38	PFAS DoD ICAL L7	LM25	-	-	210830-25
LM38	PFAS DoD ICAL L7	LM25	-	-	210830-26
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-01
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-02
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-03
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-04
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-05
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-06
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-07
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-08
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-09
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-10
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-11
LM38	PFAS DoD ICAL L7	LM29	LH59	-	210216-12
LM38	PFAS DoD ICAL L7	LM29	-	-	210528-02
LM38	PFAS DoD ICAL L7	LM29	LK59	-	210628-13
LM38	PFAS DoD ICAL L7	LM29	LK59	-	210628-14
LM38	PFAS DoD ICAL L7	LM29	LK59	-	210628-15
LM38	PFAS DoD ICAL L7	LM29	-	-	210714-01
LM39	PFAS DoD ICAL L8	LJ46	-	-	210407-05
LM39	PFAS DoD ICAL L8	LJ46	-	-	210407-06
LM39	PFAS DoD ICAL L8	LJ46	-	-	210407-07
LM39	PFAS DoD ICAL L8	LJ46	-	-	210407-08
LM39	PFAS DoD ICAL L8	LJ46	-	-	210407-09
LM39	PFAS DoD ICAL L8	LL55	-	-	210802-01
LM39	PFAS DoD ICAL L8	LL55	-	-	210802-02
LM39	PFAS DoD ICAL L8	LL55	-	-	210802-11
LM39	PFAS DoD ICAL L8	LL55	-	-	210802-15
LM39	PFAS DoD ICAL L8	LL55	-	-	210802-16

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LM39	PFAS DoD ICAL L8	LL55	-	-	210802-17
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-05
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-06
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-07
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-08
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-09
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-10
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-11
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-12
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-14
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-15
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-16
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-17
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-21
LM39	PFAS DoD ICAL L8	LM23	-	-	210830-22
LM39	PFAS DoD ICAL L8	LM25	-	-	210830-23
LM39	PFAS DoD ICAL L8	LM25	-	-	210830-24
LM39	PFAS DoD ICAL L8	LM25	-	-	210830-25
LM39	PFAS DoD ICAL L8	LM25	-	-	210830-26
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-01
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-02
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-03
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-04
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-05
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-06
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-07
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-08
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-09
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-10
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-11
LM39	PFAS DoD ICAL L8	LM29	LH59	-	210216-12
LM39	PFAS DoD ICAL L8	LM29	-	-	210528-02
LM39	PFAS DoD ICAL L8	LM29	LK59	-	210628-13
LM39	PFAS DoD ICAL L8	LM29	LK59	-	210628-14
LM39	PFAS DoD ICAL L8	LM29	LK59	-	210628-15
LM39	PFAS DoD ICAL L8	LM29	-	-	210714-01
LM40	PFAS DoD ICAL L9	LJ46	-	-	210407-05
LM40	PFAS DoD ICAL L9	LJ46	-	-	210407-06
LM40	PFAS DoD ICAL L9	LJ46	-	-	210407-07
LM40	PFAS DoD ICAL L9	LJ46	-	-	210407-08
LM40	PFAS DoD ICAL L9	LJ46	-	-	210407-09
LM40	PFAS DoD ICAL L9	LL55	-	-	210802-01
LM40	PFAS DoD ICAL L9	LL55	-	-	210802-02
LM40	PFAS DoD ICAL L9	LL55	-	-	210802-11
LM40	PFAS DoD ICAL L9	LL55	-	-	210802-15
LM40	PFAS DoD ICAL L9	LL55	-	-	210802-16
LM40	PFAS DoD ICAL L9	LL55	-	-	210802-17
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-05
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-06
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-07
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-08
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-09
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-10
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-11
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-12
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-14
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-15
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-16

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-17
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-21
LM40	PFAS DoD ICAL L9	LM23	-	-	210830-22
LM40	PFAS DoD ICAL L9	LM25	-	-	210830-23
LM40	PFAS DoD ICAL L9	LM25	-	-	210830-24
LM40	PFAS DoD ICAL L9	LM25	-	-	210830-25
LM40	PFAS DoD ICAL L9	LM25	-	-	210830-26
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-01
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-02
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-03
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-04
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-05
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-06
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-07
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-08
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-09
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-10
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-11
LM40	PFAS DoD ICAL L9	LM29	LH59	-	210216-12
LM40	PFAS DoD ICAL L9	LM29	-	-	210528-02
LM40	PFAS DoD ICAL L9	LM29	LK59	-	210628-13
LM40	PFAS DoD ICAL L9	LM29	LK59	-	210628-14
LM40	PFAS DoD ICAL L9	LM29	LK59	-	210628-15
LM40	PFAS DoD ICAL L9	LM29	-	-	210714-01
LM42	PFAS DoD ICC	LJ46	-	-	210407-05
LM42	PFAS DoD ICC	LJ46	-	-	210407-06
LM42	PFAS DoD ICC	LJ46	-	-	210407-07
LM42	PFAS DoD ICC	LJ46	-	-	210407-08
LM42	PFAS DoD ICC	LJ46	-	-	210407-09
LM42	PFAS DoD ICC	LL55	-	-	210802-01
LM42	PFAS DoD ICC	LL55	-	-	210802-02
LM42	PFAS DoD ICC	LL55	-	-	210802-11
LM42	PFAS DoD ICC	LL55	-	-	210802-15
LM42	PFAS DoD ICC	LL55	-	-	210802-16
LM42	PFAS DoD ICC	LL55	-	-	210802-17
LM42	PFAS DoD ICC	LM08	LH61	-	210216-01
LM42	PFAS DoD ICC	LM08	LH61	-	210216-02
LM42	PFAS DoD ICC	LM08	LH61	-	210216-03
LM42	PFAS DoD ICC	LM08	LH61	-	210216-04
LM42	PFAS DoD ICC	LM08	LH61	-	210216-05
LM42	PFAS DoD ICC	LM08	LH61	-	210216-06
LM42	PFAS DoD ICC	LM08	LH61	-	210216-07
LM42	PFAS DoD ICC	LM08	LH61	-	210216-08
LM42	PFAS DoD ICC	LM08	LH61	-	210216-09
LM42	PFAS DoD ICC	LM08	LH61	-	210216-10
LM42	PFAS DoD ICC	LM08	LH61	-	210216-11
LM42	PFAS DoD ICC	LM08	LH61	-	210216-12
LM42	PFAS DoD ICC	LM08	LK59	-	210628-13
LM42	PFAS DoD ICC	LM08	LK59	-	210628-14
LM42	PFAS DoD ICC	LM08	LK59	-	210628-15
LM42	PFAS DoD ICC	LM08	-	-	210819-02
LM42	PFAS DoD ICC	LM23	-	-	210830-05
LM42	PFAS DoD ICC	LM23	-	-	210830-06
LM42	PFAS DoD ICC	LM23	-	-	210830-07
LM42	PFAS DoD ICC	LM23	-	-	210830-08
LM42	PFAS DoD ICC	LM23	-	-	210830-09
LM42	PFAS DoD ICC	LM23	-	-	210830-10
LM42	PFAS DoD ICC	LM23	-	-	210830-11

Battelle Standard ID	Description	Intermediate Solutions			Battelle Reagent ID (purchased solutions)
LM42	PFAS DoD ICC	LM23	-	-	210830-12
LM42	PFAS DoD ICC	LM23	-	-	210830-14
LM42	PFAS DoD ICC	LM23	-	-	210830-15
LM42	PFAS DoD ICC	LM23	-	-	210830-16
LM42	PFAS DoD ICC	LM23	-	-	210830-17
LM42	PFAS DoD ICC	LM23	-	-	210830-21
LM42	PFAS DoD ICC	LM23	-	-	210830-22
LM42	PFAS DoD ICC	LM25	-	-	210830-23
LM42	PFAS DoD ICC	LM25	-	-	210830-24
LM42	PFAS DoD ICC	LM25	-	-	210830-25
LM42	PFAS DoD ICC	LM25	-	-	210830-26



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LH59

Description: PFAS - IRAD ICAL Stock 1

Stock Id: 210216-01							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-1-dodecanesulfonate	400	48.50	1	98.000	1	5	3.88000
Stock Id: 210216-02							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro (2-ethoxyethane) sulfonic acid	400	44.60	1	98.000	1	5	3.56800
Stock Id: 210216-03							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1H,1H,2H,2H-perfluorododecane sulfonate	400	48.30	1	98.000	1	5	3.86400
Stock Id: 210216-04							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-methylperfluoro-1-octanesulfonamide	400	50.00	1	98.000	1	5	4.00000
Stock Id: 210216-05							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-1-octanesulfonamide	400	50.00	1	98.000	1	5	4.00000
Stock Id: 210216-06							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	400	50.00	1	98.000	1	5	4.00000
Stock Id: 210216-07							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	400	50.00	1	98.000	1	5	4.00000
Stock Id: 210216-08							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-3-methoxypropanoic acid	400	50.00	1	98.000	1	5	4.00000
Stock Id: 210216-09							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
nonafluoro-3,6-dioxaheptanoic acid	400	50.00	1	98.000	1	5	4.00000

Solution Prepared By: Wamness, Allison

Date Prepared:

2/25/2021 **Expiration Date:**

2/25/2022

Solution Volume : 10 mL X 1 Vials **Refrigerator/Freezer No:** Sample Preparation: Freezer - F0035

Comment:

Approved By: _____ **Date:** _____



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LH59

Description: PFAS - IRAD ICAL Stock 1

Stock Id: 210216-10							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-4-methoxybutanoic acid	400	50.00	1	98.000	1	5	4.00000
Stock Id: 210216-11							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-n-hexadecanoic acid	400	50.00	1	98.000	1	5	4.00000
Stock Id: 210216-12							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-n-octadecanoic acid	400	50.00	1	98.000	1	5	4.00000

Final Concentrations:

Analyte:	Conc (ug/mL):
1H,1H,2H,2H-perfluorododecane sulfonate	3.86400
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	4.00000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	4.00000
N-ethylperfluoro-1-octanesulfonamide	4.00000
N-methylperfluoro-1-octanesulfonamide	4.00000
nonafluoro-3,6-dioxahexanoic acid	4.00000
Perfluoro (2-ethoxyethane) sulfonic acid	3.56800
Perfluoro-1-dodecanesulfonate	3.88000
Perfluoro-3-methoxypropanoic acid	4.00000
Perfluoro-4-methoxybutanoic acid	4.00000
Perfluoro-n-hexadecanoic acid	4.00000
Perfluoro-n-octadecanoic acid	4.00000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210216-01	Pipette	B909301606
210216-02	Pipette	B909301606
210216-03	Pipette	B909301606
210216-04	Pipette	B909301606
210216-05	Pipette	B909301606
210216-06	Pipette	B909301606
210216-07	Pipette	B909301606

Solution Prepared By: Wamness, Allison	Date Prepared: 2/25/2021	Expiration Date: 2/25/2022
Solution Volume : 10 mL X 1 Vials Refrigerator/Freezer No: Sample Preparation: Freezer - F0035		

Comment:

Approved By: _____ **Date:** _____

**It can be done****Standard Solution Concentrations****Approved:** ☐**Standard Laboratory ID Number:** **LH59****Description:** PFAS - IRAD ICAL Stock 1

210216-08	Pipette	B909301606
210216-09	Pipette	B909301606
210216-10	Pipette	B909301606
210216-11	Pipette	B909301606
210216-12	Pipette	B909301606

Solution Prepared By: Wamness, Allison	Date Prepared: 2/25/2021	Expiration Date: 2/25/2022

Solution Volume : 10 mL X 1 Vials	Refrigerator/Freezer No: Sample Preparation: Freezer - F0035

Comment:**Approved By:** _____ **Date:** _____



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LH61

Description: PFAS IRAD MS Stock

Stock Id: 210216-01							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-1-dodecanesulfonate	600	48.50	1	98.000	1	7.5	3.88000
Stock Id: 210216-02							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro (2-ethoxyethane) sulfonic acid	600	44.60	1	98.000	1	7.5	3.56800
Stock Id: 210216-03							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1H,1H,2H,2H-perfluorododecane sulfonate	600	48.30	1	98.000	1	7.5	3.86400
Stock Id: 210216-04							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-methylperfluoro-1-octanesulfonamide	600	50.00	1	98.000	1	7.5	4.00000
Stock Id: 210216-05							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
N-ethylperfluoro-1-octanesulfonamide	600	50.00	1	98.000	1	7.5	4.00000
Stock Id: 210216-06							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	600	50.00	1	98.000	1	7.5	4.00000
Stock Id: 210216-07							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	600	50.00	1	98.000	1	7.5	4.00000
Stock Id: 210216-08							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-3-methoxypropanoic acid	600	50.00	1	98.000	1	7.5	4.00000
Stock Id: 210216-09							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
nonafluoro-3,6-dioxaheptanoic acid	600	50.00	1	98.000	1	7.5	4.00000

Solution Prepared By: Kelly, Ryan

Date Prepared:

2/25/2021 Expiration Date:

2/25/2022

Solution Volume : 10 mL X 1 Vials Refrigerator/Freezer No: Sample Preparation: Freezer - F0035

Comment:

Approved By: _____ Date: _____



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LH61

Description: PFAS IRAD MS Stock

Stock Id: 210216-10							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-4-methoxybutanoic acid	600	50.00	1	98.000	1	7.5	4.00000
Stock Id: 210216-11							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-n-hexadecanoic acid	600	50.00	1	98.000	1	7.5	4.00000
Stock Id: 210216-12							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
Perfluoro-n-octadecanoic acid	600	50.00	1	98.000	1	7.5	4.00000

Final Concentrations:

Analyte:	Conc (ug/mL):
1H,1H,2H,2H-perfluorododecane sulfonate	3.86400
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	4.00000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	4.00000
N-ethylperfluoro-1-octanesulfonamide	4.00000
N-methylperfluoro-1-octanesulfonamide	4.00000
nonafluoro-3,6-dioxahexanoic acid	4.00000
Perfluoro (2-ethoxyethane) sulfonic acid	3.56800
Perfluoro-1-dodecanesulfonate	3.88000
Perfluoro-3-methoxypropanoic acid	4.00000
Perfluoro-4-methoxybutanoic acid	4.00000
Perfluoro-n-hexadecanoic acid	4.00000
Perfluoro-n-octadecanoic acid	4.00000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210216-01	Pipette	B820865811
210216-02	Pipette	B820865811
210216-03	Pipette	B820865811
210216-04	Pipette	B820865811
210216-05	Pipette	B820865811
210216-06	Pipette	B820865811
210216-07	Pipette	B820865811

Solution Prepared By: Kelly, Ryan	Date Prepared: 2/25/2021	Expiration Date: 2/25/2022
Solution Volume : 10 mL X 1 Vials Refrigerator/Freezer No: Sample Preparation: Freezer - F0035		

Comment:

Approved By: _____ **Date:** _____

It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LH61

Description: PFAS IRAD MS Stock

210216-08	Pipette	B820865811
210216-09	Pipette	B820865811
210216-10	Pipette	B820865811
210216-11	Pipette	B820865811
210216-12	Pipette	B820865811

Solution Prepared By: Kelly, Ryan	Date Prepared: 2/25/2021	Expiration Date: 2/25/2022

Solution Volume : 10 mL X 1 Vials	Refrigerator/Freezer No:	Sample Preparation: Freezer - F0035

Comment:

Approved By: _____ **Date:** _____



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LJ46

Description: PFAS-DoD Surrogate (43 Targets)

Stock Id: 210407-05							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210407-06							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
d5-EtFOSA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210407-07							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
d3-MeFOSA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210407-08							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
d7-MeFOSE	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210407-09							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
d9-EtFOSE	1000	50.00	1	98.000	1	100	0.50000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFHxDA	.50000
d3-MeFOSA	.50000
d5-EtFOSA	.50000
d7-MeFOSE	.50000
d9-EtFOSE	.50000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210407-05	Pipette	B820865811
210407-06	Pipette	B820865811
210407-07	Pipette	B820865811
210407-08	Pipette	B820865811
210407-09	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey	Date Prepared: 5/4/2021	Expiration Date: 5/4/2022
Solution Volume : 40 mL X 4 Vials Refrigerator/Freezer No: Sample Preparation: Freezer - F0035		

Comment:

Approved By: Schumitz, Denise **Date:** 5/7/2021 9:50:00 AM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LK59

Description: PFAS - FTCA Stock

Stock Id: 210628-13							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
3-perfluoropropyl propanoic Acid	1000	50.00	1	98.000	1	10	5.00000
Stock Id: 210628-14							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
3-Perfluoroheptyl propanoic acid	1000	50.00	1	98.000	1	10	5.00000
Stock Id: 210628-15							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
3-Perfluoropentyl propanoic acid	1000	50.00	1	98.000	1	10	5.00000

Final Concentrations:

Analyte:	Conc (ug/mL):
3-Perfluoroheptyl propanoic acid	5.00000
3-Perfluoropentyl propanoic acid	5.00000
3-perfluoropropyl propanoic Acid	5.00000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210628-13	Pipette	B820865811
210628-14	Pipette	B820865811
210628-15	Pipette	B820865811

Solution Prepared By: Bailey, Kevin	Date Prepared: 6/30/2021	Expiration Date: 6/30/2022
Solution Volume : 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121		

Comment:

Approved By: Schumitz, Denise **Date:** 7/2/2021 1:18:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LL42

Description: PFAS DoD Internal Standard

Stock Id: 210802-20							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C4-PFOS	1000	47.90	1	98.000	1	100	0.47900
Stock Id: 210802-22							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C3-PFBA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210802-23							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210802-24							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	1000	50.00	1	98.000	1	100	0.50000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.50000
13C2-PFOA	.50000
13C3-PFBA	.50000
13C4-PFOS	.47900

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210802-20	Pipette	B820865811
210802-22	Pipette	B820865811
210802-23	Pipette	B820865811
210802-24	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey	Date Prepared: 8/2/2021	Expiration Date: 8/2/2022
Solution Volume : 40 mL X 4 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121		
Comment:		

Approved By: Schumitz, Denise Date: 8/3/2021 12:07:00 PM



Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LL55

Description: PFAS DoD Surrogate (28 targets)

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
210802-01	13C4-PFBA	Neat	~50.0000 00	05/13/25	---	---	1000 uL	1	100	~0.5000
210802-02	13C5-PFPeA	Neat	~50.0000 00	12/23/25	---	---	1000 uL	1	100	~0.5000
210802-11	13C8-FOSA-I	Neat	~50.0000 00	03/02/26	---	---	1000 uL	1	100	~0.5000
210802-15	13C2-4:2FTS	Neat	~50.0000 00	06/24/26	---	---	1000 uL	1	100	~0.5000
210802-16	13C2-6:2FTS	Neat	~50.0000 00	05/14/26	---	---	1000 uL	1	100	~0.5000
210802-17	13C2-8:2FTS	Neat	~50.0000 00	07/09/26	---	---	1000 uL	1	100	~0.5000

Solution Prepared By: Harnden, Kelsey

Date Prepared: 8/9/2021

Expiration Date: 8/9/2022

Solution Volume 40 mL X 4 Vials

Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Balance ID:

Comment:

Solvent: HPLC Grade Methanol

Lot: 211780

Approved By: Schumitz, Denise Date: 8/11/2021 3:24:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LL55

Description: PFAS DoD Surrogate (28 targets)

Stock Id: 210802-01							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C4-PFBA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210802-02							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C5-PFPeA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210802-11							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C8-FOSA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210802-15							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	1000	46.90	1	98.000	1	100	0.46900
Stock Id: 210802-16							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-6:2FTS	1000	47.60	1	98.000	1	100	0.47600
Stock Id: 210802-17							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-8:2FTS	1000	48.00	1	98.000	1	100	0.48000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-4:2FTS	.46900
13C2-6:2FTS	.47600
13C2-8:2FTS	.48000
13C4-PFBA	.50000
13C5-PFPeA	.50000
13C8-FOSA	.50000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210802-01	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey	Date Prepared: 8/9/2021	Expiration Date: 8/9/2022
Solution Volume 40 mL X 4 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Schumitz, Denise Date: 8/11/2021 3:24:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LL55

Description: PFAS DoD Surrogate (28 targets)

210802-02	Pipette	B820865811
210802-11	Pipette	B820865811
210802-15	Pipette	B820865811
210802-16	Pipette	B820865811
210802-17	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 8/9/2021 **Expiration Date:** 8/9/2022

Solution Volume 40 mL X 4 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Schumitz, Denise **Date:** 8/11/2021 3:24:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM08

Description: PFAS IRAD LCS/MS

Stock Id: 210819-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic aci	2000	1.00	1	100.000	1	10	0.20000
1H,1H,2H,2H-Perfluorodecane sulfonate	2000	1.01	1	100.000	1	10	0.20200
1H,1H,2H,2H-Perfluorohexane sulfonate	2000	1.00	1	100.000	1	10	0.20000
1H,1H,2H,2H-Perfluorooctane sulfonate	2000	1.00	1	100.000	1	10	0.20000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	2000	1.00	1	100.000	1	10	0.20000
Adona	2000	1.00	1	100.000	1	10	0.20000
Hexafluoropropylene oxide dimer acid	2000	1.00	1	100.000	1	10	0.20000
N-ethylperfluoro-octanesulfonamidoacetic acid	2000	1.00	1	100.000	1	10	0.20000
N-methylperfluoro-1-octanesulfonamidoacetic acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-1-butanefluoride	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-1-decanesulfonate	2000	1.01	1	100.000	1	10	0.20200
Perfluoro-1-heptanesulfonate	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-1-hexanesulfonate	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-1-nonanesulfonate	2000	1.01	1	100.000	1	10	0.20200
Perfluoro-1-octanesulfonamide	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-1-octanesulfonate	2000	1.00	1	100.000	1	10	0.20000
perfluoro-1-pentanesulfonate	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-butanoic Acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-decanoic Acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-dodecanoic acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-heptanoic Acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-hexanoic acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-octanoic Acid	2000	1.00	1	100.000	1	10	0.20000
Perfluorononanoic Acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-pentanoic acid	2000	1.01	1	100.000	1	10	0.20200
Perfluoro-n-tetradecanoic acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-tridecanoic acid	2000	1.00	1	100.000	1	10	0.20000
Perfluoro-n-undecanoic acid	2000	1.00	1	100.000	1	10	0.20000

Stock Id: LH61

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1H,1H,2H,2H-perfluorododecane sulfonate	500	3.86	---	---	1	10	0.19320
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	500	4.00	---	---	1	10	0.20000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	500	4.00	---	---	1	10	0.20000
N-ethylperfluoro-1-octanesulfonamide	500	4.00	---	---	1	10	0.20000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

8/23/2021

Expiration Date:

2/25/2022

Solution Volume : 10 mL X 1 Vials **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Lizotte Jr, Robert

Date: 8/25/2021 1:59:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM08

Description: PFAS IRAD LCS/MS

N-methylperfluoro-1-octanesulfonamide	500	4.00	---	---	1	10	0.20000
nonafluoro-3,6-dioxahexanoic acid	500	4.00	---	---	1	10	0.20000
Perfluoro (2-ethoxyethane) sulfonic acid	500	3.57	---	---	1	10	0.17840
Perfluoro-1-dodecanesulfonate	500	3.88	---	---	1	10	0.19400
Perfluoro-3-methoxypropanoic acid	500	4.00	---	---	1	10	0.20000
Perfluoro-4-methoxybutanoic acid	500	4.00	---	---	1	10	0.20000
Perfluoro-n-hexadecanoic acid	500	4.00	---	---	1	10	0.20000
Perfluoro-n-octadecanoic acid	500	4.00	---	---	1	10	0.20000

Stock Id: LK59

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
3-Perfluoroheptyl propanoic acid	400	5.00	---	---	1	10	0.20000
3-Perfluoropentyl propanoic acid	400	5.00	---	---	1	10	0.20000
3-perfluoropropyl propanoic Acid	400	5.00	---	---	1	10	0.20000

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.20000
1H,1H,2H,2H-Perfluorodecane sulfonate	.20200
1H,1H,2H,2H-perfluorododecane sulfonate	.19320
1H,1H,2H,2H-Perfluorohexane sulfonate	.20000
1H,1H,2H,2H-Perfluorooctane sulfonate	.20000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.20000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.20000
3-Perfluoroheptyl propanoic acid	.20000
3-Perfluoropentyl propanoic acid	.20000
3-perfluoropropyl propanoic Acid	.20000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.20000
Adona	.20000
Hexafluoropropylene oxide dimer acid	.20000
N-ethylperfluoro-1-octanesulfonamide	.20000
N-ethylperfluoro-octanesulfonamidoacetic acid	.20000
N-methylperfluoro-1-octanesulfonamide	.20000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.20000
nonafluoro-3,6-dioxahexanoic acid	.20000
Perfluoro (2-ethoxyethane) sulfonic acid	.17840
Perfluoro-1-butanedisulfonate	.20000
Perfluoro-1-decanedisulfonate	.20200
Perfluoro-1-dodecanedisulfonate	.19400

Solution Prepared By: Harnden, Kelsey	Date Prepared: 8/23/2021	Expiration Date: 2/25/2022
Solution Volume : 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Lizotte Jr, Robert Date: 8/25/2021 1:59:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM08

Description: PFAS IRAD LCS/MS

Perfluoro-1-heptanesulfonate	.20000
Perfluoro-1-hexanesulfonate	.20000
Perfluoro-1-nonanesulfonate	.20200
Perfluoro-1-octanesulfonamide	.20000
Perfluoro-1-octanesulfonate	.20000
perfluoro-1-pentanesulfonate	.20000
Perfluoro-3-methoxypropanoic acid	.20000
Perfluoro-4-methoxybutanoic acid	.20000
Perfluoro-n-butanoic Acid	.20000
Perfluoro-n-decanoic Acid	.20000
Perfluoro-n-dodecanoic acid	.20000
Perfluoro-n-heptanoic Acid	.20000
Perfluoro-n-hexadecanoic acid	.20000
Perfluoro-n-hexanoic acid	.20000
Perfluoro-n-octadecanoic acid	.20000
Perfluoro-n-octanoic Acid	.20000
Perfluorononanoic Acid	.20000
Perfluoro-n-pentanoic acid	.20200
Perfluoro-n-tetradecanoic acid	.20000
Perfluoro-n-tridecanoic acid	.20000
Perfluoro-n-undecanoic acid	.20000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210819-02	Pipette	B820865811
LH61	Pipette	B820865811
LK59	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 8/23/2021 **Expiration Date:** 2/25/2022

Solution Volume : 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Lizotte Jr, Robert **Date:** 8/25/2021 1:59:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM18

Description: PFAS DoD Second Source LCS/MS (18 Analytes)

Stock Id: 210730-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	4000	2.00	1	100.000	1	20	0.40000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	4000	2.00	1	100.000	1	20	0.40000
Adona	4000	2.00	1	100.000	1	20	0.40000
Hexafluoropropylene oxide dimer acid	4000	2.00	1	100.000	1	20	0.40000
N-ethylperfluoro-octanesulfonamidoacetic acid	4000	2.00	1	100.000	1	20	0.40000
N-methylperfluoro-1-octanesulfonamidoacetic acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-1-butanefluoride	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-1-hexanesulfonate	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-1-octanesulfonate	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-decanoic Acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-dodecanoic acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-heptanoic Acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-hexanoic acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-octanoic Acid	4000	2.00	1	100.000	1	20	0.40000
Perfluorononanoic Acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-tetradecanoic acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-tridecanoic acid	4000	2.00	1	100.000	1	20	0.40000
Perfluoro-n-undecanoic acid	4000	2.00	1	100.000	1	20	0.40000

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.40000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.40000
Adona	.40000
Hexafluoropropylene oxide dimer acid	.40000
N-ethylperfluoro-octanesulfonamidoacetic acid	.40000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.40000
Perfluoro-1-butanefluoride	.40000
Perfluoro-1-hexanesulfonate	.40000
Perfluoro-1-octanesulfonate	.40000
Perfluoro-n-decanoic Acid	.40000
Perfluoro-n-dodecanoic acid	.40000
Perfluoro-n-heptanoic Acid	.40000
Perfluoro-n-hexanoic acid	.40000
Perfluoro-n-octanoic Acid	.40000
Perfluorononanoic Acid	.40000

Solution Prepared By: Harnden, Kelsey Date Prepared: 9/2/2021 Expiration Date: 9/2/2022

Solution Volume : 40 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: 15.2mL Methanol (210730-01) +800ul PFAS Free Water

Approved By: Schumitz, Denise Date: 9/15/2021 9:06:00 AM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM18

Description: PFAS DoD Second Source LCS/MS (18 Analytes)

Perfluoro-n-tetradecanoic acid	.40000
Perfluoro-n-tridecanoic acid	.40000
Perfluoro-n-undecanoic acid	.40000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210730-02	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/2/2021 **Expiration Date:** 9/2/2022

Solution Volume : 40 mL X 1 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: 15.2mL Methanol (210730-01) +800ul PFAS Free Water

Approved By: Schumitz, Denise **Date:** 9/15/2021 9:06:00 AM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM23

Description: PFAS DoD Surrogate (18 Targets)

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
210830-16	13C8-PFOS	Neat	~50.0000 n0	07/19/26	---	---	1000 uL	1	100	~0.5000
210830-15	13C3-PFHxS	Neat	~50.0000 n0	06/09/26	---	---	1000 uL	1	100	~0.5000
210830-14	13C3-PFBS	Neat	~50.0000 n0	03/26/26	---	---	1000 uL	1	100	~0.5000
210830-08	13C9-PFNA	Neat	~50.0000 n0	03/24/25	---	---	1000 uL	1	100	~0.5000
210830-09	13C6-PFDA	Neat	~50.0000 n0	07/20/26	---	---	1000 uL	1	100	~0.5000
210830-10	13C7-PFUdA	Neat	~50.0000 n0	08/12/25	---	---	1000 uL	1	100	~0.5000
210830-05	13C5-PFHxA	Neat	~50.0000 n0	02/02/26	---	---	1000 uL	1	100	~0.5000
210830-06	13C4-PFHpA	Neat	~50.0000 n0	06/24/26	---	---	1000 uL	1	100	~0.5000
210830-07	13C8-PFOA	Neat	~50.0000 n0	08/10/26	---	---	1000 uL	1	100	~0.5000
210830-17	13C3-HFPO-DA	Neat	~50.0000 n0	08/18/24	---	---	1000 uL	1	100	~0.5000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/10/2021	Expiration Date: 9/10/2022
Solution Volume 40 mL X 4 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0123	

Balance ID: _____	Solvent: _____ Lot: _____
Comment:	Methanol HPLC 211792

Approved By: Lizotte Jr, Robert Date: 9/17/2021 8:50:00 AM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: **LM23**

Description: PFAS DoD Surrogate (18 Targets)

210830-22	d3-N-MeFOSAA	Neat	~50.0000 n0	06/08/26	---	---	1000 uL	1	100	~0.5000
210830-21	d5-N-EtFOSAA	Neat	~50.0000 n0	03/02/26	---	---	1000 uL	1	100	~0.5000
210830-11	13C2-PFDoA	Neat	~50.0000 n0	02/10/26	---	---	1000 uL	1	100	~0.5000
210830-12	13C2-PFTeDA	Neat	~50.0000 n0	05/13/26	---	---	1000 uL	1	100	~0.5000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/10/2021	Expiration Date: 9/10/2022
Solution Volume 40 mL X 4 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0123	

Balance ID: _____

Comment:

Solvent: _____ Lot: _____

Methanol HPLC 211792

Approved By: Lizotte Jr, Robert Date: 9/17/2021 8:50:00 AM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM23

Description: PFAS DoD Surrogate (18 Targets)

Stock Id: 210830-05							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C5-PFHxA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-06							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C4-PFHpA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-07							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C8-PFOA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-08							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C9-PFNA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-09							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C6-PFDA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-10							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C7-PFUnA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-11							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-12							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFTeDA	1000	50.00	1	98.000	1	100	0.50000
Stock Id: 210830-14							
Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C3-PFBS	1000	46.60	1	98.000	1	100	0.46600

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/10/2021

Expiration Date:

9/10/2022

Solution Volume

40 mL X

4

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0123

Comment:

Approved By: Lizotte Jr, Robert

Date: 9/17/2021 8:50:00 AM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM23

Description: PFAS DoD Surrogate (18 Targets)

Stock Id: 210830-15

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C3-PFHxS	1000	47.40	1	98.000	1	100	0.47400

Stock Id: 210830-16

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C8-PFOS	1000	47.90	1	98.000	1	100	0.47900

Stock Id: 210830-17

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C3-HFPO-DA	1000	50.00	1	98.000	1	100	0.50000

Stock Id: 210830-21

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
d5-EtFOSAA	1000	50.00	1	98.000	1	100	0.50000

Stock Id: 210830-22

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
d3-MeFOSAA	1000	50.00	1	98.000	1	100	0.50000

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDoA	.50000
13C2-PFTeDA	.50000
13C3-HFPO-DA	.50000
13C3-PFBS	.46600
13C3-PFHxS	.47400
13C4-PFHpA	.50000
13C5-PFHxA	.50000
13C6-PFDA	.50000
13C7-PFUnA	.50000
13C8-PFOA	.50000
13C8-PFOS	.47900
13C9-PFNA	.50000
d3-MeFOSAA	.50000
d5-EtFOSAA	.50000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/10/2021

Expiration Date:

9/10/2022

Solution Volume 40 mL X 4 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0123

Comment:

Approved By: Lizotte Jr, Robert

Date: 9/17/2021 8:50:00 AM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM23

Description: PFAS DoD Surrogate (18 Targets)

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210830-05	Pipette	B820865811
210830-06	Pipette	B820865811
210830-07	Pipette	B820865811
210830-08	Pipette	B820865811
210830-09	Pipette	B820865811
210830-10	Pipette	B820865811
210830-11	Pipette	B820865811
210830-12	Pipette	B820865811
210830-14	Pipette	B820865811
210830-15	Pipette	B820865811
210830-16	Pipette	B820865811
210830-17	Pipette	B820865811
210830-21	Pipette	B820865811
210830-22	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/10/2021

Expiration Date:

9/10/2022

Solution Volume 40 mL X 4 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0123

Comment:

Approved By: Lizotte Jr, Robert

Date: 9/17/2021 8:50:00 AM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM25

Description: PFAS DoD Internal Standard

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
210830-23	13C3-PFBA	Neat	~50.0000 n0	02/24/25	---	---	1000 uL	1	100	~0.5000
210830-24	13C2-PFOA	Neat	~50.0000 n0	05/05/26	---	---	1000 uL	1	100	~0.5000
210830-25	13C2-PFDA	Neat	~50.0000 n0	06/08/26	---	---	1000 uL	1	100	~0.5000
210830-26	13C4-PFOS	Neat	~50.0000 n0	03/30/26	---	---	1000 uL	1	100	~0.5000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/16/2021	Expiration Date: 9/16/2022
Solution Volume 40 mL X 4 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____	Solvent: _____ Lot: _____
Comment:	Methanol HPLC 211792

Approved By: Lizotte Jr, Robert Date: 9/17/2021 8:50:00 AM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM25

Description: PFAS DoD Internal Standard

Stock Id: 210830-23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C3-PFBA	1000	50.00	1	98.000	1	100	0.50000

Stock Id: 210830-24

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFOA	1000	50.00	1	98.000	1	100	0.50000

Stock Id: 210830-25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	1000	50.00	1	98.000	1	100	0.50000

Stock Id: 210830-26

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C4-PFOS	1000	47.90	1	98.000	1	100	0.47900

Final Concentrations:

Analyte:	Conc (ug/mL):
13C2-PFDA	.50000
13C2-PFOA	.50000
13C3-PFBA	.50000
13C4-PFOS	.47900

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210830-23	Pipette	B820865811
210830-24	Pipette	B820865811
210830-25	Pipette	B820865811
210830-26	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/16/2021	Expiration Date: 9/16/2022
Solution Volume 40 mL X 4 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Lizotte Jr, Robert **Date:** 9/17/2021 8:50:00 AM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM29

Description: PFAS DoD High ICAL Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
210528-02	PFOA DOD	Neat	~1.00000 n	04/30/26	---	---	1000 uL	1	4	~0.2000
210714-01	PFOA DOD	Neat	~1.00000 n	04/30/26	---	---	1000 uL	1	4	~0.2000
LH59	PFAS - IRAD ICAL Stock 1	Solution	~0	02/25/22	---	---	500 uL	1	4	~0.0000
LK59	PFAS - FTCA Stock	Solution	~0	06/30/22	---	---	400 uL	1	4	~0.0000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____	Solvent: _____	Lot: _____
Comment:	Methanol HPLC	211792

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:45:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM29

Description: PFAS DoD High ICAL Stock

Stock Id: 210528-02

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic aci	1000	1.00	1	100.000	1	4	0.25000
1H,1H,2H,2H-Perfluorodecane sulfonate	1000	1.01	1	100.000	1	4	0.25250
1H,1H,2H,2H-Perfluorohexane sulfonate	1000	1.00	1	100.000	1	4	0.25000
1H,1H,2H,2H-Perfluorooctane sulfonate	1000	1.00	1	100.000	1	4	0.25000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	1000	1.00	1	100.000	1	4	0.25000
Adona	1000	1.00	1	100.000	1	4	0.25000
Hexafluoropropylene oxide dimer acid	1000	1.00	1	100.000	1	4	0.25000
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	1.00	1	100.000	1	4	0.25000
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-butanefluoride	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-decanesulfonate	1000	1.01	1	100.000	1	4	0.25250
Perfluoro-1-heptanesulfonate	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-hexanesulfonate	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-nonanesulfonate	1000	1.01	1	100.000	1	4	0.25250
Perfluoro-1-octanesulfonamide	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-octanesulfonate	1000	1.00	1	100.000	1	4	0.25000
perfluoro-1-pentanesulfonate	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-butanoic Acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-decanoic Acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-dodecanoic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-heptanoic Acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-hexanoic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-octanoic Acid	1000	1.01	1	100.000	1	4	0.25250
Perfluorononanoic Acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-pentanoic acid	1000	1.01	1	100.000	1	4	0.25250
Perfluoro-n-tetradecanoic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-tridecanoic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-undecanoic acid	1000	1.00	1	100.000	1	4	0.25000

Stock Id: 210714-01

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic aci	1000	1.00	1	100.000	1	4	0.25000
1H,1H,2H,2H-Perfluorodecane sulfonate	1000	1.01	1	100.000	1	4	0.25250
1H,1H,2H,2H-Perfluorohexane sulfonate	1000	1.00	1	100.000	1	4	0.25000
1H,1H,2H,2H-Perfluorooctane sulfonate	1000	1.00	1	100.000	1	4	0.25000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:45:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: **LM29**

Description: PFAS DoD High ICAL Stock

9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	1000	1.00	1	100.000	1	4	0.25000
Adona	1000	1.00	1	100.000	1	4	0.25000
Hexafluoropropylene oxide dimer acid	1000	1.00	1	100.000	1	4	0.25000
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	1.00	1	100.000	1	4	0.25000
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-butanedisulfonate	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-decanedisulfonate	1000	1.01	1	100.000	1	4	0.25250
Perfluoro-1-heptanedisulfonate	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-hexanedisulfonate	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-nonanedisulfonate	1000	1.01	1	100.000	1	4	0.25250
Perfluoro-1-octanesulfonamide	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-1-octanesulfonate	1000	1.00	1	100.000	1	4	0.25000
perfluoro-1-pentanedisulfonate	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-butanedic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-decanedic Acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-dodecanedic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-heptanedic Acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-hexanedic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-octanedic Acid	1000	1.01	1	100.000	1	4	0.25250
Perfluorononanoic Acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-pentanedic acid	1000	1.01	1	100.000	1	4	0.25250
Perfluoro-n-tetradecanoic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-tridecanoic acid	1000	1.00	1	100.000	1	4	0.25000
Perfluoro-n-undecanoic acid	1000	1.00	1	100.000	1	4	0.25000

Stock Id: **LH59**

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
1H,1H,2H,2H-perfluorododecane sulfonate	500	3.86	---	---	1	4	0.48300
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	500	4.00	---	---	1	4	0.50000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	500	4.00	---	---	1	4	0.50000
N-ethylperfluoro-1-octanesulfonamide	500	4.00	---	---	1	4	0.50000
N-methylperfluoro-1-octanesulfonamide	500	4.00	---	---	1	4	0.50000
nonafluoro-3,6-dioxahexanoic acid	500	4.00	---	---	1	4	0.50000
Perfluoro (2-ethoxyethane) sulfonic acid	500	3.57	---	---	1	4	0.44600
Perfluoro-1-dodecanedisulfonate	500	3.88	---	---	1	4	0.48500
Perfluoro-3-methoxypropanoic acid	500	4.00	---	---	1	4	0.50000
Perfluoro-4-methoxybutanoic acid	500	4.00	---	---	1	4	0.50000
Perfluoro-n-hexadecanoic acid	500	4.00	---	---	1	4	0.50000
Perfluoro-n-octadecanoic acid	500	4.00	---	---	1	4	0.50000

Solution Prepared By: Harnden, Kelsey Date Prepared: 9/17/2021 Expiration Date: 2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:45:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM29

Description: PFAS DoD High ICAL Stock

Stock Id: LK59

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
3-Perfluoroheptyl propanoic acid	400	5.00	---	---	1	4	0.50000
3-Perfluoropentyl propanoic acid	400	5.00	---	---	1	4	0.50000
3-perfluoropropyl propanoic Acid	400	5.00	---	---	1	4	0.50000

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.50000
1H,1H,2H,2H-Perfluorodecane sulfonate	.50500
1H,1H,2H,2H-perfluorododecane sulfonate	.48300
1H,1H,2H,2H-Perfluorohexane sulfonate	.50000
1H,1H,2H,2H-Perfluorooctane sulfonate	.50000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.50000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.50000
3-Perfluoroheptyl propanoic acid	.50000
3-Perfluoropentyl propanoic acid	.50000
3-perfluoropropyl propanoic Acid	.50000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.50000
Adona	.50000
Hexafluoropropylene oxide dimer acid	.50000
N-ethylperfluoro-1-octanesulfonamide	.50000
N-ethylperfluoro-octanesulfonamidoacetic acid	.50000
N-methylperfluoro-1-octanesulfonamide	.50000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.50000
nonafluoro-3,6-dioxahexanoic acid	.50000
Perfluoro (2-ethoxyethane) sulfonic acid	.44600
Perfluoro-1-butanedisulfonate	.50000
Perfluoro-1-decanedisulfonate	.50500
Perfluoro-1-dodecanedisulfonate	.48500
Perfluoro-1-heptanedisulfonate	.50000
Perfluoro-1-hexanedisulfonate	.50000
Perfluoro-1-nonanedisulfonate	.50500
Perfluoro-1-octanesulfonamide	.50000
Perfluoro-1-octanedisulfonate	.50000
perfluoro-1-pentanedisulfonate	.50000
Perfluoro-3-methoxypropanoic acid	.50000
Perfluoro-4-methoxybutanoic acid	.50000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Litzotte Jr, Robert **Date:** 9/20/2021 1:45:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM29

Description: PFAS DoD High ICAL Stock

Perfluoro-n-butanoic Acid	.50000
Perfluoro-n-decanoic Acid	.50000
Perfluoro-n-dodecanoic acid	.50000
Perfluoro-n-heptanoic Acid	.50000
Perfluoro-n-hexadecanoic acid	.50000
Perfluoro-n-hexanoic acid	.50000
Perfluoro-n-octadecanoic acid	.50000
Perfluoro-n-octanoic Acid	.50500
Perfluorononanoic Acid	.50000
Perfluoro-n-pentanoic acid	.50500
Perfluoro-n-tetradecanoic acid	.50000
Perfluoro-n-tridecanoic acid	.50000
Perfluoro-n-undecanoic acid	.50000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
210528-02	Pipette	B820865811
210714-01	Pipette	B820865811
LH59	Pipette	B820865811
LK59	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:45:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM30

Description: PFAS DoD ICAL Low Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM29	PFAS DoD High ICAL Stock	Solution	~1	02/25/22	---	---	1000 uL	1	10	~0.1000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID:

Comment:

Solvent: Methanol HPLC

Lot: 211792

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:43:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: **LM30**

Description: PFAS DoD ICAL Low Stock

Stock Id: **LM29**

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic aci	1000	0.50	---	---	1	10	0.05000
1H,1H,2H,2H-Perfluorodecane sulfonate	1000	0.51	---	---	1	10	0.05050
1H,1H,2H,2H-perfluorododecane sulfonate	1000	0.48	---	---	1	10	0.04830
1H,1H,2H,2H-Perfluorohexane sulfonate	1000	0.50	---	---	1	10	0.05000
1H,1H,2H,2H-Perfluorooctane sulfonate	1000	0.50	---	---	1	10	0.05000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	1000	0.50	---	---	1	10	0.05000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	1000	0.50	---	---	1	10	0.05000
3-Perfluoroheptyl propanoic acid	1000	0.50	---	---	1	10	0.05000
3-Perfluoropentyl propanoic acid	1000	0.50	---	---	1	10	0.05000
3-perfluoropropyl propanoic Acid	1000	0.50	---	---	1	10	0.05000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	1000	0.50	---	---	1	10	0.05000
Adona	1000	0.50	---	---	1	10	0.05000
Hexafluoropropylene oxide dimer acid	1000	0.50	---	---	1	10	0.05000
N-ethylperfluoro-1-octanesulfonamide	1000	0.50	---	---	1	10	0.05000
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.50	---	---	1	10	0.05000
N-methylperfluoro-1-octanesulfonamide	1000	0.50	---	---	1	10	0.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.50	---	---	1	10	0.05000
nonafluoro-3,6-dioxaheptanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro (2-ethoxyethane) sulfonic acid	1000	0.45	---	---	1	10	0.04460
Perfluoro-1-butanefluoride	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-decanesulfonate	1000	0.51	---	---	1	10	0.05050
Perfluoro-1-dodecanesulfonate	1000	0.49	---	---	1	10	0.04850
Perfluoro-1-heptanesulfonate	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-hexanesulfonate	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-nonanesulfonate	1000	0.51	---	---	1	10	0.05050
Perfluoro-1-octanesulfonamide	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-octanesulfonate	1000	0.50	---	---	1	10	0.05000
perfluoro-1-pentanesulfonate	1000	0.50	---	---	1	10	0.05000
Perfluoro-3-methoxypropanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-4-methoxybutanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-butanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-decanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-dodecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-heptanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-hexadecanoic acid	1000	0.50	---	---	1	10	0.05000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:43:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM30

Description: PFAS DoD ICAL Low Stock

Perfluoro-n-hexanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-octadecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-octanoic Acid	1000	0.51	---	---	1	10	0.05050
Perfluorononanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-pentanoic acid	1000	0.51	---	---	1	10	0.05050
Perfluoro-n-tetradecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-tridecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-undecanoic acid	1000	0.50	---	---	1	10	0.05000

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.05000
1H,1H,2H,2H-Perfluorodecane sulfonate	.05050
1H,1H,2H,2H-perfluorododecane sulfonate	.04830
1H,1H,2H,2H-Perfluorohexane sulfonate	.05000
1H,1H,2H,2H-Perfluorooctane sulfonate	.05000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.05000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.05000
3-Perfluoroheptyl propanoic acid	.05000
3-Perfluoropentyl propanoic acid	.05000
3-perfluoropropyl propanoic Acid	.05000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.05000
Adona	.05000
Hexafluoropropylene oxide dimer acid	.05000
N-ethylperfluoro-1-octanesulfonamide	.05000
N-ethylperfluoro-octanesulfonamidoacetic acid	.05000
N-methylperfluoro-1-octanesulfonamide	.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.05000
nonafluoro-3,6-dioxaheptanoic acid	.05000
Perfluoro (2-ethoxyethane) sulfonic acid	.04460
Perfluoro-1-butanedisulfonate	.05000
Perfluoro-1-decanedisulfonate	.05050
Perfluoro-1-dodecanedisulfonate	.04850
Perfluoro-1-heptanedisulfonate	.05000
Perfluoro-1-hexanedisulfonate	.05000
Perfluoro-1-nonanedisulfonate	.05050
Perfluoro-1-octanesulfonamide	.05000
Perfluoro-1-octanedisulfonate	.05000
perfluoro-1-pentanedisulfonate	.05000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:43:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM30

Description: PFAS DoD ICAL Low Stock

Perfluoro-3-methoxypropanoic acid	.05000
Perfluoro-4-methoxybutanoic acid	.05000
Perfluoro-n-butanoic Acid	.05000
Perfluoro-n-decanoic Acid	.05000
Perfluoro-n-dodecanoic acid	.05000
Perfluoro-n-heptanoic Acid	.05000
Perfluoro-n-hexadecanoic acid	.05000
Perfluoro-n-hexanoic acid	.05000
Perfluoro-n-octadecanoic acid	.05000
Perfluoro-n-octanoic Acid	.05050
Perfluorononanoic Acid	.05000
Perfluoro-n-pentanoic acid	.05050
Perfluoro-n-tetradecanoic acid	.05000
Perfluoro-n-tridecanoic acid	.05000
Perfluoro-n-undecanoic acid	.05000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LM29	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 1:43:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM31

Description: PFAS DoD LOWER ICAL Stock

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM30	PFAS DoD ICAL Low Stock	Solution	~1	02/25/22	---	---	2000 uL	1	4	~0.5000

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment:

Solvent:	Lot:
Methanol HPLC	211792

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:41:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: **LM31**

Description: PFAS DoD LOWER ICAL Stock

Stock Id: **LM30**

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	2000	0.05	---	---	1	4	0.02500
1H,1H,2H,2H-Perfluorodecane sulfonate	2000	0.05	---	---	1	4	0.02526
1H,1H,2H,2H-perfluorododecane sulfonate	2000	0.05	---	---	1	4	0.02415
1H,1H,2H,2H-Perfluorohexane sulfonate	2000	0.05	---	---	1	4	0.02500
1H,1H,2H,2H-Perfluorooctane sulfonate	2000	0.05	---	---	1	4	0.02500
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	2000	0.05	---	---	1	4	0.02500
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	2000	0.05	---	---	1	4	0.02500
3-Perfluoroheptyl propanoic acid	2000	0.05	---	---	1	4	0.02500
3-Perfluoropentyl propanoic acid	2000	0.05	---	---	1	4	0.02500
3-perfluoropropyl propanoic Acid	2000	0.05	---	---	1	4	0.02500
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	2000	0.05	---	---	1	4	0.02500
Adona	2000	0.05	---	---	1	4	0.02500
Hexafluoropropylene oxide dimer acid	2000	0.05	---	---	1	4	0.02500
N-ethylperfluoro-1-octanesulfonamide	2000	0.05	---	---	1	4	0.02500
N-ethylperfluoro-octanesulfonamidoacetic acid	2000	0.05	---	---	1	4	0.02500
N-methylperfluoro-1-octanesulfonamide	2000	0.05	---	---	1	4	0.02500
N-methylperfluoro-1-octanesulfonamidoacetic acid	2000	0.05	---	---	1	4	0.02500
nonafluoro-3,6-dioxaheptanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro (2-ethoxyethane) sulfonic acid	2000	0.04	---	---	1	4	0.02230
Perfluoro-1-butanedisulfonate	2000	0.05	---	---	1	4	0.02500
Perfluoro-1-decanedisulfonate	2000	0.05	---	---	1	4	0.02526
Perfluoro-1-dodecanedisulfonate	2000	0.05	---	---	1	4	0.02425
Perfluoro-1-heptanedisulfonate	2000	0.05	---	---	1	4	0.02500
Perfluoro-1-hexanedisulfonate	2000	0.05	---	---	1	4	0.02500
Perfluoro-1-nonanedisulfonate	2000	0.05	---	---	1	4	0.02526
Perfluoro-1-octanesulfonamide	2000	0.05	---	---	1	4	0.02500
Perfluoro-1-octanedisulfonate	2000	0.05	---	---	1	4	0.02500
perfluoro-1-pentanedisulfonate	2000	0.05	---	---	1	4	0.02500
Perfluoro-3-methoxypropanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-4-methoxybutanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-butanoic Acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-decanoic Acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-dodecanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-heptanoic Acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-hexadecanoic acid	2000	0.05	---	---	1	4	0.02500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:41:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM31

Description: PFAS DoD LOWER ICAL Stock

Perfluoro-n-hexanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-octadecanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-octanoic Acid	2000	0.05	---	---	1	4	0.02526
Perfluorononanoic Acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-pentanoic acid	2000	0.05	---	---	1	4	0.02526
Perfluoro-n-tetradecanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-tridecanoic acid	2000	0.05	---	---	1	4	0.02500
Perfluoro-n-undecanoic acid	2000	0.05	---	---	1	4	0.02500

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.02500
1H,1H,2H,2H-Perfluorodecane sulfonate	.02526
1H,1H,2H,2H-perfluorododecane sulfonate	.02415
1H,1H,2H,2H-Perfluorohexane sulfonate	.02500
1H,1H,2H,2H-Perfluorooctane sulfonate	.02500
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.02500
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.02500
3-Perfluoroheptyl propanoic acid	.02500
3-Perfluoropentyl propanoic acid	.02500
3-perfluoropropyl propanoic Acid	.02500
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.02500
Adona	.02500
Hexafluoropropylene oxide dimer acid	.02500
N-ethylperfluoro-1-octanesulfonamide	.02500
N-ethylperfluoro-octanesulfonamidoacetic acid	.02500
N-methylperfluoro-1-octanesulfonamide	.02500
N-methylperfluoro-1-octanesulfonamidoacetic acid	.02500
nonafluoro-3,6-dioxaheptanoic acid	.02500
Perfluoro (2-ethoxyethane) sulfonic acid	.02230
Perfluoro-1-butanedisulfonate	.02500
Perfluoro-1-decanedisulfonate	.02526
Perfluoro-1-dodecanedisulfonate	.02425
Perfluoro-1-heptanedisulfonate	.02500
Perfluoro-1-hexanedisulfonate	.02500
Perfluoro-1-nonanedisulfonate	.02526
Perfluoro-1-octanesulfonamide	.02500
Perfluoro-1-octanedisulfonate	.02500
perfluoro-1-pentanedisulfonate	.02500

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 1:41:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM31

Description: PFAS DoD LOWER ICAL Stock

Perfluoro-3-methoxypropanoic acid	.02500
Perfluoro-4-methoxybutanoic acid	.02500
Perfluoro-n-butanoic Acid	.02500
Perfluoro-n-decanoic Acid	.02500
Perfluoro-n-dodecanoic acid	.02500
Perfluoro-n-heptanoic Acid	.02500
Perfluoro-n-hexadecanoic acid	.02500
Perfluoro-n-hexanoic acid	.02500
Perfluoro-n-octadecanoic acid	.02500
Perfluoro-n-octanoic Acid	.02526
Perfluorononanoic Acid	.02500
Perfluoro-n-pentanoic acid	.02526
Perfluoro-n-tetradecanoic acid	.02500
Perfluoro-n-tridecanoic acid	.02500
Perfluoro-n-undecanoic acid	.02500

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LM30	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Comment:

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 1:41:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM33

Description: PFAS DoD ICAL L2

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM31	PFAS DoD LOWER ICAL Stock	Solution	~1	02/25/22	---	---	50 uL	1	10	~0.0050
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	100 uL	1	10	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	100 uL	1	10	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	100 uL	1	10	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	100 uL	1	10	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:39:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM33

Description: PFAS DoD ICAL L2

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	100	0.50	---	---	1	10	0.00500
d3-MeFOSA	100	0.50	---	---	1	10	0.00500
d5-EtFOSA	100	0.50	---	---	1	10	0.00500
d7-MeFOSE	100	0.50	---	---	1	10	0.00500
d9-EtFOSE	100	0.50	---	---	1	10	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	100	0.47	---	---	1	10	0.00469
13C2-6:2FTS	100	0.48	---	---	1	10	0.00476
13C2-8:2FTS	100	0.48	---	---	1	10	0.00480
13C4-PFBA	100	0.50	---	---	1	10	0.00500
13C5-PFPeA	100	0.50	---	---	1	10	0.00500
13C8-FOSA	100	0.50	---	---	1	10	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	100	0.50	---	---	1	10	0.00500
13C2-PFTeDA	100	0.50	---	---	1	10	0.00500
13C3-HFPO-DA	100	0.50	---	---	1	10	0.00500
13C3-PFBS	100	0.47	---	---	1	10	0.00466
13C3-PFHxS	100	0.47	---	---	1	10	0.00474
13C4-PFHpA	100	0.50	---	---	1	10	0.00500
13C5-PFHxA	100	0.50	---	---	1	10	0.00500
13C6-PFDA	100	0.50	---	---	1	10	0.00500
13C7-PFUnA	100	0.50	---	---	1	10	0.00500
13C8-PFOA	100	0.50	---	---	1	10	0.00500
13C8-PFOS	100	0.48	---	---	1	10	0.00479
13C9-PFNA	100	0.50	---	---	1	10	0.00500
d3-MeFOSAA	100	0.50	---	---	1	10	0.00500
d5-EtFOSAA	100	0.50	---	---	1	10	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	100	0.50	---	---	1	10	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:39:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM33

Description: PFAS DoD ICAL L2

13C2-PFOA	100	0.50	---	---	1	10	0.00500
13C3-PFBA	100	0.50	---	---	1	10	0.00500
13C4-PFOS	100	0.48	---	---	1	10	0.00479

Stock Id: LM31

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	50	0.03	---	---	1	10	0.00012
1H,1H,2H,2H-Perfluorodecane sulfonate	50	0.03	---	---	1	10	0.00012
1H,1H,2H,2H-perfluorododecane sulfonate	50	0.02	---	---	1	10	0.00012
1H,1H,2H,2H-Perfluorohexane sulfonate	50	0.03	---	---	1	10	0.00012
1H,1H,2H,2H-Perfluorooctane sulfonate	50	0.03	---	---	1	10	0.00012
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	50	0.03	---	---	1	10	0.00013
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	50	0.03	---	---	1	10	0.00013
3-Perfluoroheptyl propanoic acid	50	0.03	---	---	1	10	0.00013
3-Perfluoropentyl propanoic acid	50	0.03	---	---	1	10	0.00013
3-perfluoropropyl propanoic Acid	50	0.03	---	---	1	10	0.00013
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	50	0.03	---	---	1	10	0.00012
Adona	50	0.03	---	---	1	10	0.00012
Hexafluoropropylene oxide dimer acid	50	0.03	---	---	1	10	0.00012
N-ethylperfluoro-1-octanesulfonamide	50	0.03	---	---	1	10	0.00013
N-ethylperfluoro-octanesulfonamidoacetic acid	50	0.03	---	---	1	10	0.00012
N-methylperfluoro-1-octanesulfonamide	50	0.03	---	---	1	10	0.00013
N-methylperfluoro-1-octanesulfonamidoacetic acid	50	0.03	---	---	1	10	0.00012
nonafluoro-3,6-dioxaheptanoic acid	50	0.03	---	---	1	10	0.00013
Perfluoro (2-ethoxyethane) sulfonic acid	50	0.02	---	---	1	10	0.00011
Perfluoro-1-butanefluoride	50	0.03	---	---	1	10	0.00012
Perfluoro-1-decanesulfonate	50	0.03	---	---	1	10	0.00012
Perfluoro-1-dodecanesulfonate	50	0.02	---	---	1	10	0.00012
Perfluoro-1-heptanesulfonate	50	0.03	---	---	1	10	0.00012
Perfluoro-1-hexanesulfonate	50	0.03	---	---	1	10	0.00012
Perfluoro-1-nonanesulfonate	50	0.03	---	---	1	10	0.00012
Perfluoro-1-octanesulfonamide	50	0.03	---	---	1	10	0.00012
Perfluoro-1-octanesulfonate	50	0.03	---	---	1	10	0.00012
perfluoro-1-pentanesulfonate	50	0.03	---	---	1	10	0.00012
Perfluoro-3-methoxypropanoic acid	50	0.03	---	---	1	10	0.00013
Perfluoro-4-methoxybutanoic acid	50	0.03	---	---	1	10	0.00013
Perfluoro-n-butanoic Acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-decanoic Acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-dodecanoic acid	50	0.03	---	---	1	10	0.00012

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:39:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM33

Description: PFAS DoD ICAL L2

Perfluoro-n-heptanoic Acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-hexadecanoic acid	50	0.03	---	---	1	10	0.00013
Perfluoro-n-hexanoic acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-octadecanoic acid	50	0.03	---	---	1	10	0.00013
Perfluoro-n-octanoic Acid	50	0.03	---	---	1	10	0.00012
Perfluorononanoic Acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-pentanoic acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-tetradecanoic acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-tridecanoic acid	50	0.03	---	---	1	10	0.00012
Perfluoro-n-undecanoic acid	50	0.03	---	---	1	10	0.00012

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.00012
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.00012
1H,1H,2H,2H-perfluorododecane sulfonate	.00012

Solution Prepared By: Harnden, Kelsey Date Prepared: 9/17/2021 Expiration Date: 2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:39:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM33

Description: PFAS DoD ICAL L2

1H,1H,2H,2H-Perfluorohexane sulfonate	.00012
1H,1H,2H,2H-Perfluorooctane sulfonate	.00012
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.00013
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.00013
3-Perfluoroheptyl propanoic acid	.00013
3-Perfluoropentyl propanoic acid	.00013
3-perfluoropropyl propanoic Acid	.00013
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.00012
Adona	.00012
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.00012
N-ethylperfluoro-1-octanesulfonamide	.00013
N-ethylperfluoro-octanesulfonamidoacetic acid	.00012
N-methylperfluoro-1-octanesulfonamide	.00013
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00012
nonafluoro-3,6-dioxahexanoic acid	.00013
Perfluoro (2-ethoxyethane) sulfonic acid	.00011
Perfluoro-1-butanedisulfonate	.00012
Perfluoro-1-decanedisulfonate	.00012
Perfluoro-1-dodecanedisulfonate	.00012
Perfluoro-1-heptanedisulfonate	.00012
Perfluoro-1-hexanedisulfonate	.00012
Perfluoro-1-nonanedisulfonate	.00012
Perfluoro-1-octanesulfonamide	.00012
Perfluoro-1-octanedisulfonate	.00012
perfluoro-1-pentanedisulfonate	.00012
Perfluoro-3-methoxypropanoic acid	.00013
Perfluoro-4-methoxybutanoic acid	.00013
Perfluoro-n-butanedic acid	.00012
Perfluoro-n-decanedic Acid	.00012
Perfluoro-n-dodecanedic acid	.00012
Perfluoro-n-heptanedic Acid	.00012
Perfluoro-n-hexadecanedic acid	.00013
Perfluoro-n-hexanedic acid	.00012

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:39:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM33

Description: PFAS DoD ICAL L2

Perfluoro-n-octadecanoic acid	.00013
Perfluoro-n-octanoic Acid	.00012
Perfluorononanoic Acid	.00012
Perfluoro-n-pentanoic acid	.00012
Perfluoro-n-tetradecanoic acid	.00012
Perfluoro-n-tridecanoic acid	.00012
Perfluoro-n-undecanoic acid	.00012

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM31	Pipette	B814659662

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 1:39:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM34

Description: PFAS DoD ICAL L3

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM30	PFAS DoD ICAL Low Stock	Solution	~1	02/25/22	---	---	100 uL	1	20	~0.0050
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	200 uL	1	20	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	200 uL	1	20	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	200 uL	1	20	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	200 uL	1	20	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 2 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 1:54:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM34

Description: PFAS DoD ICAL L3

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	200	0.50	---	---	1	20	0.00500
d3-MeFOSA	200	0.50	---	---	1	20	0.00500
d5-EtFOSA	200	0.50	---	---	1	20	0.00500
d7-MeFOSE	200	0.50	---	---	1	20	0.00500
d9-EtFOSE	200	0.50	---	---	1	20	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	200	0.47	---	---	1	20	0.00469
13C2-6:2FTS	200	0.48	---	---	1	20	0.00476
13C2-8:2FTS	200	0.48	---	---	1	20	0.00480
13C4-PFBA	200	0.50	---	---	1	20	0.00500
13C5-PFPeA	200	0.50	---	---	1	20	0.00500
13C8-FOSA	200	0.50	---	---	1	20	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	200	0.50	---	---	1	20	0.00500
13C2-PFTeDA	200	0.50	---	---	1	20	0.00500
13C3-HFPO-DA	200	0.50	---	---	1	20	0.00500
13C3-PFBS	200	0.47	---	---	1	20	0.00466
13C3-PFHxS	200	0.47	---	---	1	20	0.00474
13C4-PFHpA	200	0.50	---	---	1	20	0.00500
13C5-PFHxA	200	0.50	---	---	1	20	0.00500
13C6-PFDA	200	0.50	---	---	1	20	0.00500
13C7-PFUnA	200	0.50	---	---	1	20	0.00500
13C8-PFOA	200	0.50	---	---	1	20	0.00500
13C8-PFOS	200	0.48	---	---	1	20	0.00479
13C9-PFNA	200	0.50	---	---	1	20	0.00500
d3-MeFOSAA	200	0.50	---	---	1	20	0.00500
d5-EtFOSAA	200	0.50	---	---	1	20	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	200	0.50	---	---	1	20	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 2 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:54:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM34

Description: PFAS DoD ICAL L3

13C2-PFOA	200	0.50	---	---	1	20	0.00500
13C3-PFBA	200	0.50	---	---	1	20	0.00500
13C4-PFOS	200	0.48	---	---	1	20	0.00479

Stock Id: LM30

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	100	0.05	---	---	1	20	0.00026
1H,1H,2H,2H-Perfluorodecane sulfonate	100	0.05	---	---	1	20	0.00026
1H,1H,2H,2H-perfluorododecane sulfonate	100	0.05	---	---	1	20	0.00024
1H,1H,2H,2H-Perfluorohexane sulfonate	100	0.05	---	---	1	20	0.00026
1H,1H,2H,2H-Perfluorooctane sulfonate	100	0.05	---	---	1	20	0.00026
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	100	0.05	---	---	1	20	0.00025
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	100	0.05	---	---	1	20	0.00025
3-Perfluoroheptyl propanoic acid	100	0.05	---	---	1	20	0.00025
3-Perfluoropentyl propanoic acid	100	0.05	---	---	1	20	0.00025
3-perfluoropropyl propanoic Acid	100	0.05	---	---	1	20	0.00025
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	100	0.05	---	---	1	20	0.00026
Adona	100	0.05	---	---	1	20	0.00026
Hexafluoropropylene oxide dimer acid	100	0.05	---	---	1	20	0.00026
N-ethylperfluoro-1-octanesulfonamide	100	0.05	---	---	1	20	0.00025
N-ethylperfluoro-octanesulfonamidoacetic acid	100	0.05	---	---	1	20	0.00026
N-methylperfluoro-1-octanesulfonamide	100	0.05	---	---	1	20	0.00025
N-methylperfluoro-1-octanesulfonamidoacetic acid	100	0.05	---	---	1	20	0.00026
nonafluoro-3,6-dioxaheptanoic acid	100	0.05	---	---	1	20	0.00025
Perfluoro (2-ethoxyethane) sulfonic acid	100	0.04	---	---	1	20	0.00022
Perfluoro-1-butanefluoride	100	0.05	---	---	1	20	0.00026
Perfluoro-1-decanesulfonate	100	0.05	---	---	1	20	0.00026
Perfluoro-1-dodecanesulfonate	100	0.05	---	---	1	20	0.00024
Perfluoro-1-heptanesulfonate	100	0.05	---	---	1	20	0.00026
Perfluoro-1-hexanesulfonate	100	0.05	---	---	1	20	0.00026
Perfluoro-1-nonanesulfonate	100	0.05	---	---	1	20	0.00026
Perfluoro-1-octanesulfonamide	100	0.05	---	---	1	20	0.00026
Perfluoro-1-octanesulfonate	100	0.05	---	---	1	20	0.00026
perfluoro-1-pentanesulfonate	100	0.05	---	---	1	20	0.00026
Perfluoro-3-methoxypropanoic acid	100	0.05	---	---	1	20	0.00025
Perfluoro-4-methoxybutanoic acid	100	0.05	---	---	1	20	0.00025
Perfluoro-n-butanoic Acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-decanoic Acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-dodecanoic acid	100	0.05	---	---	1	20	0.00026

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

2

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:54:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM34

Description: PFAS DoD ICAL L3

Perfluoro-n-heptanoic Acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-hexadecanoic acid	100	0.05	---	---	1	20	0.00025
Perfluoro-n-hexanoic acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-octadecanoic acid	100	0.05	---	---	1	20	0.00025
Perfluoro-n-octanoic Acid	100	0.05	---	---	1	20	0.00026
Perfluorononanoic Acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-pentanoic acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-tetradecanoic acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-tridecanoic acid	100	0.05	---	---	1	20	0.00026
Perfluoro-n-undecanoic acid	100	0.05	---	---	1	20	0.00026

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.00026
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.00026
1H,1H,2H,2H-perfluorododecane sulfonate	.00024

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 2 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:54:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM34

Description: PFAS DoD ICAL L3

1H,1H,2H,2H-Perfluorohexane sulfonate	.00026
1H,1H,2H,2H-Perfluorooctane sulfonate	.00026
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.00025
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.00025
3-Perfluoroheptyl propanoic acid	.00025
3-Perfluoropentyl propanoic acid	.00025
3-perfluoropropyl propanoic Acid	.00025
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.00026
Adona	.00026
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.00026
N-ethylperfluoro-1-octanesulfonamide	.00025
N-ethylperfluoro-octanesulfonamidoacetic acid	.00026
N-methylperfluoro-1-octanesulfonamide	.00025
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00026
nonafluoro-3,6-dioxaheptanoic acid	.00025
Perfluoro (2-ethoxyethane) sulfonic acid	.00022
Perfluoro-1-butanesulfonate	.00026
Perfluoro-1-decanesulfonate	.00026
Perfluoro-1-dodecanesulfonate	.00024
Perfluoro-1-heptanesulfonate	.00026
Perfluoro-1-hexanesulfonate	.00026
Perfluoro-1-nonanesulfonate	.00026
Perfluoro-1-octanesulfonamide	.00026
Perfluoro-1-octanesulfonate	.00026
perfluoro-1-pentanesulfonate	.00026
Perfluoro-3-methoxypropanoic acid	.00025
Perfluoro-4-methoxybutanoic acid	.00025
Perfluoro-n-butanoic Acid	.00026
Perfluoro-n-decanoic Acid	.00026
Perfluoro-n-dodecanoic acid	.00026
Perfluoro-n-heptanoic Acid	.00026
Perfluoro-n-hexadecanoic acid	.00025
Perfluoro-n-hexanoic acid	.00026

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 2 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 1:54:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM34

Description: PFAS DoD ICAL L3

Perfluoro-n-octadecanoic acid	.00025
Perfluoro-n-octanoic Acid	.00026
Perfluorononanoic Acid	.00026
Perfluoro-n-pentanoic acid	.00026
Perfluoro-n-tetradecanoic acid	.00026
Perfluoro-n-tridecanoic acid	.00026
Perfluoro-n-undecanoic acid	.00026

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM30	Pipette	B814659662

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 2 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 1:54:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM35

Description: PFAS DoD ICAL L4

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM30	PFAS DoD ICAL Low Stock	Solution	~1	02/25/22	---	---	100 uL	1	10	~0.0100
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	100 uL	1	10	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	100 uL	1	10	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	100 uL	1	10	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	100 uL	1	10	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:01:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM35

Description: PFAS DoD ICAL L4

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	100	0.50	---	---	1	10	0.00500
d3-MeFOSA	100	0.50	---	---	1	10	0.00500
d5-EtFOSA	100	0.50	---	---	1	10	0.00500
d7-MeFOSE	100	0.50	---	---	1	10	0.00500
d9-EtFOSE	100	0.50	---	---	1	10	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	100	0.47	---	---	1	10	0.00469
13C2-6:2FTS	100	0.48	---	---	1	10	0.00476
13C2-8:2FTS	100	0.48	---	---	1	10	0.00480
13C4-PFBA	100	0.50	---	---	1	10	0.00500
13C5-PFPeA	100	0.50	---	---	1	10	0.00500
13C8-FOSA	100	0.50	---	---	1	10	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	100	0.50	---	---	1	10	0.00500
13C2-PFTeDA	100	0.50	---	---	1	10	0.00500
13C3-HFPO-DA	100	0.50	---	---	1	10	0.00500
13C3-PFBS	100	0.47	---	---	1	10	0.00466
13C3-PFHxS	100	0.47	---	---	1	10	0.00474
13C4-PFHpA	100	0.50	---	---	1	10	0.00500
13C5-PFHxA	100	0.50	---	---	1	10	0.00500
13C6-PFDA	100	0.50	---	---	1	10	0.00500
13C7-PFUnA	100	0.50	---	---	1	10	0.00500
13C8-PFOA	100	0.50	---	---	1	10	0.00500
13C8-PFOS	100	0.48	---	---	1	10	0.00479
13C9-PFNA	100	0.50	---	---	1	10	0.00500
d3-MeFOSAA	100	0.50	---	---	1	10	0.00500
d5-EtFOSAA	100	0.50	---	---	1	10	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	100	0.50	---	---	1	10	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:01:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM35

Description: PFAS DoD ICAL L4

13C2-PFOA	100	0.50	---	---	1	10	0.00500
13C3-PFBA	100	0.50	---	---	1	10	0.00500
13C4-PFOS	100	0.48	---	---	1	10	0.00479

Stock Id: LM30

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	100	0.05	---	---	1	10	0.00050
1H,1H,2H,2H-Perfluorodecane sulfonate	100	0.05	---	---	1	10	0.00050
1H,1H,2H,2H-perfluorododecane sulfonate	100	0.05	---	---	1	10	0.00048
1H,1H,2H,2H-Perfluorohexane sulfonate	100	0.05	---	---	1	10	0.00050
1H,1H,2H,2H-Perfluorooctane sulfonate	100	0.05	---	---	1	10	0.00050
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	100	0.05	---	---	1	10	0.00050
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	100	0.05	---	---	1	10	0.00050
3-Perfluoroheptyl propanoic acid	100	0.05	---	---	1	10	0.00050
3-Perfluoropentyl propanoic acid	100	0.05	---	---	1	10	0.00050
3-perfluoropropyl propanoic Acid	100	0.05	---	---	1	10	0.00050
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	100	0.05	---	---	1	10	0.00050
Adona	100	0.05	---	---	1	10	0.00050
Hexafluoropropylene oxide dimer acid	100	0.05	---	---	1	10	0.00050
N-ethylperfluoro-1-octanesulfonamide	100	0.05	---	---	1	10	0.00050
N-ethylperfluoro-octanesulfonamidoacetic acid	100	0.05	---	---	1	10	0.00050
N-methylperfluoro-1-octanesulfonamide	100	0.05	---	---	1	10	0.00050
N-methylperfluoro-1-octanesulfonamidoacetic acid	100	0.05	---	---	1	10	0.00050
nonafluoro-3,6-dioxaheptanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro (2-ethoxyethane) sulfonic acid	100	0.04	---	---	1	10	0.00045
Perfluoro-1-butanefluoride	100	0.05	---	---	1	10	0.00050
Perfluoro-1-decanesulfonate	100	0.05	---	---	1	10	0.00050
Perfluoro-1-dodecanesulfonate	100	0.05	---	---	1	10	0.00049
Perfluoro-1-heptanesulfonate	100	0.05	---	---	1	10	0.00050
Perfluoro-1-hexanesulfonate	100	0.05	---	---	1	10	0.00050
Perfluoro-1-nonanesulfonate	100	0.05	---	---	1	10	0.00050
Perfluoro-1-octanesulfonamide	100	0.05	---	---	1	10	0.00050
Perfluoro-1-octanesulfonate	100	0.05	---	---	1	10	0.00050
perfluoro-1-pentanesulfonate	100	0.05	---	---	1	10	0.00050
Perfluoro-3-methoxypropanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-4-methoxybutanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-butanoic Acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-decanoic Acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-dodecanoic acid	100	0.05	---	---	1	10	0.00050

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:01:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM35

Description: PFAS DoD ICAL L4

Perfluoro-n-heptanoic Acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-hexadecanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-hexanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-octadecanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-octanoic Acid	100	0.05	---	---	1	10	0.00050
Perfluorononanoic Acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-pentanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-tetradecanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-tridecanoic acid	100	0.05	---	---	1	10	0.00050
Perfluoro-n-undecanoic acid	100	0.05	---	---	1	10	0.00050

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.00050
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.00050
1H,1H,2H,2H-perfluorododecane sulfonate	.00048

Solution Prepared By: Harnden, Kelsey Date Prepared: 9/17/2021 Expiration Date: 2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:01:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM35

Description: PFAS DoD ICAL L4

1H,1H,2H,2H-Perfluorohexane sulfonate	.00050
1H,1H,2H,2H-Perfluorooctane sulfonate	.00050
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.00050
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.00050
3-Perfluoroheptyl propanoic acid	.00050
3-Perfluoropentyl propanoic acid	.00050
3-perfluoropropyl propanoic Acid	.00050
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.00050
Adona	.00050
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.00050
N-ethylperfluoro-1-octanesulfonamide	.00050
N-ethylperfluoro-octanesulfonamidoacetic acid	.00050
N-methylperfluoro-1-octanesulfonamide	.00050
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00050
nonafluoro-3,6-dioxahexanoic acid	.00050
Perfluoro (2-ethoxyethane) sulfonic acid	.00045
Perfluoro-1-butanedisulfonate	.00050
Perfluoro-1-decanedisulfonate	.00050
Perfluoro-1-dodecanedisulfonate	.00049
Perfluoro-1-heptanedisulfonate	.00050
Perfluoro-1-hexanedisulfonate	.00050
Perfluoro-1-nonanedisulfonate	.00050
Perfluoro-1-octanedisulfonamide	.00050
Perfluoro-1-octanedisulfonate	.00050
perfluoro-1-pentanedisulfonate	.00050
Perfluoro-3-methoxypropanoic acid	.00050
Perfluoro-4-methoxybutanoic acid	.00050
Perfluoro-n-butanedic acid	.00050
Perfluoro-n-decanedic Acid	.00050
Perfluoro-n-dodecanedic acid	.00050
Perfluoro-n-heptanedic Acid	.00050
Perfluoro-n-hexadecanedic acid	.00050
Perfluoro-n-hexanedic acid	.00050

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 2:01:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM35

Description: PFAS DoD ICAL L4

Perfluoro-n-octadecanoic acid	.00050
Perfluoro-n-octanoic Acid	.00050
Perfluorononanoic Acid	.00050
Perfluoro-n-pentanoic acid	.00050
Perfluoro-n-tetradecanoic acid	.00050
Perfluoro-n-tridecanoic acid	.00050
Perfluoro-n-undecanoic acid	.00050

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM30	Pipette	B814659662

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 2:01:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM36

Description: PFAS DoD ICAL L5

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM30	PFAS DoD ICAL Low Stock	Solution	~1	02/25/22	---	---	800 uL	1	40	~0.0200
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	400 uL	1	40	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	400 uL	1	40	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	400 uL	1	40	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	400 uL	1	40	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 4 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:06:00 PM



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LM36

Description: PFAS DoD ICAL L5

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	400	0.50	---	---	1	40	0.00500
d3-MeFOSA	400	0.50	---	---	1	40	0.00500
d5-EtFOSA	400	0.50	---	---	1	40	0.00500
d7-MeFOSE	400	0.50	---	---	1	40	0.00500
d9-EtFOSE	400	0.50	---	---	1	40	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	400	0.47	---	---	1	40	0.00469
13C2-6:2FTS	400	0.48	---	---	1	40	0.00476
13C2-8:2FTS	400	0.48	---	---	1	40	0.00480
13C4-PFBA	400	0.50	---	---	1	40	0.00500
13C5-PFPeA	400	0.50	---	---	1	40	0.00500
13C8-FOSA	400	0.50	---	---	1	40	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	400	0.50	---	---	1	40	0.00500
13C2-PFTeDA	400	0.50	---	---	1	40	0.00500
13C3-HFPO-DA	400	0.50	---	---	1	40	0.00500
13C3-PFBS	400	0.47	---	---	1	40	0.00466
13C3-PFHxS	400	0.47	---	---	1	40	0.00474
13C4-PFHpA	400	0.50	---	---	1	40	0.00500
13C5-PFHxA	400	0.50	---	---	1	40	0.00500
13C6-PFDA	400	0.50	---	---	1	40	0.00500
13C7-PFUnA	400	0.50	---	---	1	40	0.00500
13C8-PFOA	400	0.50	---	---	1	40	0.00500
13C8-PFOS	400	0.48	---	---	1	40	0.00479
13C9-PFNA	400	0.50	---	---	1	40	0.00500
d3-MeFOSAA	400	0.50	---	---	1	40	0.00500
d5-EtFOSAA	400	0.50	---	---	1	40	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	400	0.50	---	---	1	40	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

4

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: _____

Date: _____



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LM36

Description: PFAS DoD ICAL L5

13C2-PFOA	400	0.50	---	---	1	40	0.00500
13C3-PFBA	400	0.50	---	---	1	40	0.00500
13C4-PFOS	400	0.48	---	---	1	40	0.00479

Stock Id: LM30

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	800	0.05	---	---	1	40	0.00100
1H,1H,2H,2H-Perfluorodecane sulfonate	800	0.05	---	---	1	40	0.00102
1H,1H,2H,2H-perfluorododecane sulfonate	800	0.05	---	---	1	40	0.00097
1H,1H,2H,2H-Perfluorohexane sulfonate	800	0.05	---	---	1	40	0.00100
1H,1H,2H,2H-Perfluorooctane sulfonate	800	0.05	---	---	1	40	0.00100
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	800	0.05	---	---	1	40	0.00100
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	800	0.05	---	---	1	40	0.00100
3-Perfluoroheptyl propanoic acid	800	0.05	---	---	1	40	0.00100
3-Perfluoropentyl propanoic acid	800	0.05	---	---	1	40	0.00100
3-perfluoropropyl propanoic Acid	800	0.05	---	---	1	40	0.00100
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	800	0.05	---	---	1	40	0.00100
Adona	800	0.05	---	---	1	40	0.00100
Hexafluoropropylene oxide dimer acid	800	0.05	---	---	1	40	0.00100
N-ethylperfluoro-1-octanesulfonamide	800	0.05	---	---	1	40	0.00100
N-ethylperfluoro-octanesulfonamidoacetic acid	800	0.05	---	---	1	40	0.00100
N-methylperfluoro-1-octanesulfonamide	800	0.05	---	---	1	40	0.00100
N-methylperfluoro-1-octanesulfonamidoacetic acid	800	0.05	---	---	1	40	0.00100
nonafluoro-3,6-dioxaheptanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro (2-ethoxyethane) sulfonic acid	800	0.04	---	---	1	40	0.00089
Perfluoro-1-butanefluoride	800	0.05	---	---	1	40	0.00100
Perfluoro-1-decanesulfonate	800	0.05	---	---	1	40	0.00102
Perfluoro-1-dodecanesulfonate	800	0.05	---	---	1	40	0.00097
Perfluoro-1-heptanesulfonate	800	0.05	---	---	1	40	0.00100
Perfluoro-1-hexanesulfonate	800	0.05	---	---	1	40	0.00100
Perfluoro-1-nonanesulfonate	800	0.05	---	---	1	40	0.00102
Perfluoro-1-octanesulfonamide	800	0.05	---	---	1	40	0.00100
Perfluoro-1-octanesulfonate	800	0.05	---	---	1	40	0.00100
perfluoro-1-pentanesulfonate	800	0.05	---	---	1	40	0.00100
Perfluoro-3-methoxypropanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro-4-methoxybutanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-butanoic Acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-decanoic Acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-dodecanoic acid	800	0.05	---	---	1	40	0.00100

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

4

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By:

Date:



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LM36

Description: PFAS DoD ICAL L5

Perfluoro-n-heptanoic Acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-hexadecanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-hexanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-octadecanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-octanoic Acid	800	0.05	---	---	1	40	0.00102
Perfluorononanoic Acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-pentanoic acid	800	0.05	---	---	1	40	0.00102
Perfluoro-n-tetradecanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-tridecanoic acid	800	0.05	---	---	1	40	0.00100
Perfluoro-n-undecanoic acid	800	0.05	---	---	1	40	0.00100

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.00100
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.00102
1H,1H,2H,2H-perfluorododecane sulfonate	.00097

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 4 Vials **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: _____ **Date:** _____



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LM36

Description: PFAS DoD ICAL L5

1H,1H,2H,2H-Perfluorohexane sulfonate	.00100
1H,1H,2H,2H-Perfluorooctane sulfonate	.00100
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.00100
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.00100
3-Perfluoroheptyl propanoic acid	.00100
3-Perfluoropentyl propanoic acid	.00100
3-perfluoropropyl propanoic Acid	.00100
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.00100
Adona	.00100
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.00100
N-ethylperfluoro-1-octanesulfonamide	.00100
N-ethylperfluoro-octanesulfonamidoacetic acid	.00100
N-methylperfluoro-1-octanesulfonamide	.00100
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00100
nonafluoro-3,6-dioxahexanoic acid	.00100
Perfluoro (2-ethoxyethane) sulfonic acid	.00089
Perfluoro-1-butanedisulfonate	.00100
Perfluoro-1-decanedisulfonate	.00102
Perfluoro-1-dodecanedisulfonate	.00097
Perfluoro-1-heptanedisulfonate	.00100
Perfluoro-1-hexanedisulfonate	.00100
Perfluoro-1-nonanedisulfonate	.00102
Perfluoro-1-octanesulfonamide	.00100
Perfluoro-1-octanedisulfonate	.00100
perfluoro-1-pentanedisulfonate	.00100
Perfluoro-3-methoxypropanoic acid	.00100
Perfluoro-4-methoxybutanoic acid	.00100
Perfluoro-n-butanedisulfonate	.00100
Perfluoro-n-decanedisulfonate	.00100
Perfluoro-n-dodecanedisulfonate	.00100
Perfluoro-n-heptanedisulfonate	.00100
Perfluoro-n-hexadecanedisulfonate	.00100
Perfluoro-n-hexanedisulfonate	.00100

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 4 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: _____ **Date:** _____



It can be done

Standard Solution Concentrations

Approved: ☐

Standard Laboratory ID Number: LM36

Description: PFAS DoD ICAL L5

Perfluoro-n-octadecanoic acid	.00100
Perfluoro-n-octanoic Acid	.00102
Perfluorononanoic Acid	.00100
Perfluoro-n-pentanoic acid	.00102
Perfluoro-n-tetradecanoic acid	.00100
Perfluoro-n-tridecanoic acid	.00100
Perfluoro-n-undecanoic acid	.00100

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM30	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 4 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: _____ **Date:** _____



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM37

Description: PFAS DoD ICAL L6

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM29	PFAS DoD High ICAL Stock	Solution	~1	02/25/22	---	---	200 uL	1	40	~0.0050
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	400 uL	1	40	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	400 uL	1	40	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	400 uL	1	40	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	400 uL	1	40	~0.0100

Solution Prepared By: Harnden, Kelsey

Date Prepared: 9/17/2021

Expiration Date: 2/25/2022

Solution Volume 10 mL X 4 Vials

Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:08:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM37

Description: PFAS DoD ICAL L6

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	400	0.50	---	---	1	40	0.00500
d3-MeFOSA	400	0.50	---	---	1	40	0.00500
d5-EtFOSA	400	0.50	---	---	1	40	0.00500
d7-MeFOSE	400	0.50	---	---	1	40	0.00500
d9-EtFOSE	400	0.50	---	---	1	40	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	400	0.47	---	---	1	40	0.00469
13C2-6:2FTS	400	0.48	---	---	1	40	0.00476
13C2-8:2FTS	400	0.48	---	---	1	40	0.00480
13C4-PFBA	400	0.50	---	---	1	40	0.00500
13C5-PFPeA	400	0.50	---	---	1	40	0.00500
13C8-FOSA	400	0.50	---	---	1	40	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	400	0.50	---	---	1	40	0.00500
13C2-PFTeDA	400	0.50	---	---	1	40	0.00500
13C3-HFPO-DA	400	0.50	---	---	1	40	0.00500
13C3-PFBS	400	0.47	---	---	1	40	0.00466
13C3-PFHxS	400	0.47	---	---	1	40	0.00474
13C4-PFHpA	400	0.50	---	---	1	40	0.00500
13C5-PFHxA	400	0.50	---	---	1	40	0.00500
13C6-PFDA	400	0.50	---	---	1	40	0.00500
13C7-PFUnA	400	0.50	---	---	1	40	0.00500
13C8-PFOA	400	0.50	---	---	1	40	0.00500
13C8-PFOS	400	0.48	---	---	1	40	0.00479
13C9-PFNA	400	0.50	---	---	1	40	0.00500
d3-MeFOSAA	400	0.50	---	---	1	40	0.00500
d5-EtFOSAA	400	0.50	---	---	1	40	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	400	0.50	---	---	1	40	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

4

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:08:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: **LM37**

Description: PFAS DoD ICAL L6

13C2-PFOA	400	0.50	---	---	1	40	0.00500
13C3-PFBA	400	0.50	---	---	1	40	0.00500
13C4-PFOS	400	0.48	---	---	1	40	0.00479

Stock Id: **LM29**

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	200	0.50	---	---	1	40	0.00250
1H,1H,2H,2H-Perfluorodecane sulfonate	200	0.51	---	---	1	40	0.00252
1H,1H,2H,2H-perfluorododecane sulfonate	200	0.48	---	---	1	40	0.00242
1H,1H,2H,2H-Perfluorohexane sulfonate	200	0.50	---	---	1	40	0.00250
1H,1H,2H,2H-Perfluorooctane sulfonate	200	0.50	---	---	1	40	0.00250
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	200	0.50	---	---	1	40	0.00250
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	200	0.50	---	---	1	40	0.00250
3-Perfluoroheptyl propanoic acid	200	0.50	---	---	1	40	0.00250
3-Perfluoropentyl propanoic acid	200	0.50	---	---	1	40	0.00250
3-perfluoropropyl propanoic Acid	200	0.50	---	---	1	40	0.00250
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	200	0.50	---	---	1	40	0.00250
Adona	200	0.50	---	---	1	40	0.00250
Hexafluoropropylene oxide dimer acid	200	0.50	---	---	1	40	0.00250
N-ethylperfluoro-1-octanesulfonamide	200	0.50	---	---	1	40	0.00250
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.50	---	---	1	40	0.00250
N-methylperfluoro-1-octanesulfonamide	200	0.50	---	---	1	40	0.00250
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.50	---	---	1	40	0.00250
nonafluoro-3,6-dioxaheptanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro (2-ethoxyethane) sulfonic acid	200	0.45	---	---	1	40	0.00223
Perfluoro-1-butanefluoride	200	0.50	---	---	1	40	0.00250
Perfluoro-1-decanesulfonate	200	0.51	---	---	1	40	0.00252
Perfluoro-1-dodecanesulfonate	200	0.49	---	---	1	40	0.00243
Perfluoro-1-heptanesulfonate	200	0.50	---	---	1	40	0.00250
Perfluoro-1-hexanesulfonate	200	0.50	---	---	1	40	0.00250
Perfluoro-1-nonanesulfonate	200	0.51	---	---	1	40	0.00252
Perfluoro-1-octanesulfonamide	200	0.50	---	---	1	40	0.00250
Perfluoro-1-octanesulfonate	200	0.50	---	---	1	40	0.00250
perfluoro-1-pentanesulfonate	200	0.50	---	---	1	40	0.00250
Perfluoro-3-methoxypropanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro-4-methoxybutanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-butanoic Acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-decanoic Acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-dodecanoic acid	200	0.50	---	---	1	40	0.00250

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

4

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:08:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM37

Description: PFAS DoD ICAL L6

Perfluoro-n-heptanoic Acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-hexadecanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-hexanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-octadecanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-octanoic Acid	200	0.51	---	---	1	40	0.00252
Perfluorononanoic Acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-pentanoic acid	200	0.51	---	---	1	40	0.00252
Perfluoro-n-tetradecanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-tridecanoic acid	200	0.50	---	---	1	40	0.00250
Perfluoro-n-undecanoic acid	200	0.50	---	---	1	40	0.00250

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.00250
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.00252
1H,1H,2H,2H-perfluorododecane sulfonate	.00242

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 4 Vials **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:08:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM37

Description: PFAS DoD ICAL L6

1H,1H,2H,2H-Perfluorohexane sulfonate	.00250
1H,1H,2H,2H-Perfluorooctane sulfonate	.00250
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.00250
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.00250
3-Perfluoroheptyl propanoic acid	.00250
3-Perfluoropentyl propanoic acid	.00250
3-perfluoropropyl propanoic Acid	.00250
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.00250
Adona	.00250
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.00250
N-ethylperfluoro-1-octanesulfonamide	.00250
N-ethylperfluoro-octanesulfonamidoacetic acid	.00250
N-methylperfluoro-1-octanesulfonamide	.00250
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00250
nonafluoro-3,6-dioxaheptanoic acid	.00250
Perfluoro (2-ethoxyethane) sulfonic acid	.00223
Perfluoro-1-butanedisulfonate	.00250
Perfluoro-1-decanedisulfonate	.00252
Perfluoro-1-dodecanedisulfonate	.00243
Perfluoro-1-heptanedisulfonate	.00250
Perfluoro-1-hexanedisulfonate	.00250
Perfluoro-1-nonanedisulfonate	.00252
Perfluoro-1-octanesulfonamide	.00250
Perfluoro-1-octanedisulfonate	.00250
perfluoro-1-pentanedisulfonate	.00250
Perfluoro-3-methoxypropanoic acid	.00250
Perfluoro-4-methoxybutanoic acid	.00250
Perfluoro-n-butanedic acid	.00250
Perfluoro-n-decanedic Acid	.00250
Perfluoro-n-dodecanedic acid	.00250
Perfluoro-n-heptanedic Acid	.00250
Perfluoro-n-hexadecanedic acid	.00250
Perfluoro-n-hexanedic acid	.00250

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 4 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:08:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM37

Description: PFAS DoD ICAL L6

Perfluoro-n-octadecanoic acid	.00250
Perfluoro-n-octanoic Acid	.00252
Perfluorononanoic Acid	.00250
Perfluoro-n-pentanoic acid	.00252
Perfluoro-n-tetradecanoic acid	.00250
Perfluoro-n-tridecanoic acid	.00250
Perfluoro-n-undecanoic acid	.00250

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM29	Pipette	B814659662

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 4 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 2:08:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM38

Description: PFAS DoD ICAL L7

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM29	PFAS DoD High ICAL Stock	Solution	~1	02/25/22	---	---	200 uL	1	10	~0.0200
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	100 uL	1	10	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	100 uL	1	10	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	100 uL	1	10	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	100 uL	1	10	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:10:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM38

Description: PFAS DoD ICAL L7

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	100	0.50	---	---	1	10	0.00500
d3-MeFOSA	100	0.50	---	---	1	10	0.00500
d5-EtFOSA	100	0.50	---	---	1	10	0.00500
d7-MeFOSE	100	0.50	---	---	1	10	0.00500
d9-EtFOSE	100	0.50	---	---	1	10	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	100	0.47	---	---	1	10	0.00469
13C2-6:2FTS	100	0.48	---	---	1	10	0.00476
13C2-8:2FTS	100	0.48	---	---	1	10	0.00480
13C4-PFBA	100	0.50	---	---	1	10	0.00500
13C5-PFPeA	100	0.50	---	---	1	10	0.00500
13C8-FOSA	100	0.50	---	---	1	10	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	100	0.50	---	---	1	10	0.00500
13C2-PFTeDA	100	0.50	---	---	1	10	0.00500
13C3-HFPO-DA	100	0.50	---	---	1	10	0.00500
13C3-PFBS	100	0.47	---	---	1	10	0.00466
13C3-PFHxS	100	0.47	---	---	1	10	0.00474
13C4-PFHpA	100	0.50	---	---	1	10	0.00500
13C5-PFHxA	100	0.50	---	---	1	10	0.00500
13C6-PFDA	100	0.50	---	---	1	10	0.00500
13C7-PFUnA	100	0.50	---	---	1	10	0.00500
13C8-PFOA	100	0.50	---	---	1	10	0.00500
13C8-PFOS	100	0.48	---	---	1	10	0.00479
13C9-PFNA	100	0.50	---	---	1	10	0.00500
d3-MeFOSAA	100	0.50	---	---	1	10	0.00500
d5-EtFOSAA	100	0.50	---	---	1	10	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	100	0.50	---	---	1	10	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:10:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM38

Description: PFAS DoD ICAL L7

13C2-PFOA	100	0.50	---	---	1	10	0.00500
13C3-PFBA	100	0.50	---	---	1	10	0.00500
13C4-PFOS	100	0.48	---	---	1	10	0.00479

Stock Id: LM29

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	200	0.50	---	---	1	10	0.01000
1H,1H,2H,2H-Perfluorodecane sulfonate	200	0.51	---	---	1	10	0.01010
1H,1H,2H,2H-perfluorododecane sulfonate	200	0.48	---	---	1	10	0.00966
1H,1H,2H,2H-Perfluorohexane sulfonate	200	0.50	---	---	1	10	0.01000
1H,1H,2H,2H-Perfluorooctane sulfonate	200	0.50	---	---	1	10	0.01000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	200	0.50	---	---	1	10	0.01000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	200	0.50	---	---	1	10	0.01000
3-Perfluoroheptyl propanoic acid	200	0.50	---	---	1	10	0.01000
3-Perfluoropentyl propanoic acid	200	0.50	---	---	1	10	0.01000
3-perfluoropropyl propanoic Acid	200	0.50	---	---	1	10	0.01000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	200	0.50	---	---	1	10	0.01000
Adona	200	0.50	---	---	1	10	0.01000
Hexafluoropropylene oxide dimer acid	200	0.50	---	---	1	10	0.01000
N-ethylperfluoro-1-octanesulfonamide	200	0.50	---	---	1	10	0.01000
N-ethylperfluoro-octanesulfonamidoacetic acid	200	0.50	---	---	1	10	0.01000
N-methylperfluoro-1-octanesulfonamide	200	0.50	---	---	1	10	0.01000
N-methylperfluoro-1-octanesulfonamidoacetic acid	200	0.50	---	---	1	10	0.01000
nonafluoro-3,6-dioxaheptanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro (2-ethoxyethane) sulfonic acid	200	0.45	---	---	1	10	0.00892
Perfluoro-1-butanefluoride	200	0.50	---	---	1	10	0.01000
Perfluoro-1-decanesulfonate	200	0.51	---	---	1	10	0.01010
Perfluoro-1-dodecanesulfonate	200	0.49	---	---	1	10	0.00970
Perfluoro-1-heptanesulfonate	200	0.50	---	---	1	10	0.01000
Perfluoro-1-hexanesulfonate	200	0.50	---	---	1	10	0.01000
Perfluoro-1-nonanesulfonate	200	0.51	---	---	1	10	0.01010
Perfluoro-1-octanesulfonamide	200	0.50	---	---	1	10	0.01000
Perfluoro-1-octanesulfonate	200	0.50	---	---	1	10	0.01000
perfluoro-1-pentanesulfonate	200	0.50	---	---	1	10	0.01000
Perfluoro-3-methoxypropanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro-4-methoxybutanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-butanoic Acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-decanoic Acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-dodecanoic acid	200	0.50	---	---	1	10	0.01000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:10:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM38

Description: PFAS DoD ICAL L7

Perfluoro-n-heptanoic Acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-hexadecanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-hexanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-octadecanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-octanoic Acid	200	0.51	---	---	1	10	0.01010
Perfluorononanoic Acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-pentanoic acid	200	0.51	---	---	1	10	0.01010
Perfluoro-n-tetradecanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-tridecanoic acid	200	0.50	---	---	1	10	0.01000
Perfluoro-n-undecanoic acid	200	0.50	---	---	1	10	0.01000

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.01000
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.01010
1H,1H,2H,2H-perfluorododecane sulfonate	.00966

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:10:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM38

Description: PFAS DoD ICAL L7

1H,1H,2H,2H-Perfluorohexane sulfonate	.01000
1H,1H,2H,2H-Perfluorooctane sulfonate	.01000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.01000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.01000
3-Perfluoroheptyl propanoic acid	.01000
3-Perfluoropentyl propanoic acid	.01000
3-perfluoropropyl propanoic Acid	.01000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.01000
Adona	.01000
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.01000
N-ethylperfluoro-1-octanesulfonamide	.01000
N-ethylperfluoro-octanesulfonamidoacetic acid	.01000
N-methylperfluoro-1-octanesulfonamide	.01000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.01000
nonafluoro-3,6-dioxaheptanoic acid	.01000
Perfluoro (2-ethoxyethane) sulfonic acid	.00892
Perfluoro-1-butanedisulfonate	.01000
Perfluoro-1-decanedisulfonate	.01010
Perfluoro-1-dodecanedisulfonate	.00970
Perfluoro-1-heptanedisulfonate	.01000
Perfluoro-1-hexanedisulfonate	.01000
Perfluoro-1-nonanedisulfonate	.01010
Perfluoro-1-octanesulfonamide	.01000
Perfluoro-1-octanedisulfonate	.01000
perfluoro-1-pentanedisulfonate	.01000
Perfluoro-3-methoxypropanoic acid	.01000
Perfluoro-4-methoxybutanoic acid	.01000
Perfluoro-n-butanedic acid	.01000
Perfluoro-n-decanedic Acid	.01000
Perfluoro-n-dodecanedic acid	.01000
Perfluoro-n-heptanedic Acid	.01000
Perfluoro-n-hexadecanedic acid	.01000
Perfluoro-n-hexanedic acid	.01000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:10:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM38

Description: PFAS DoD ICAL L7

Perfluoro-n-octadecanoic acid	.01000
Perfluoro-n-octanoic Acid	.01010
Perfluorononanoic Acid	.01000
Perfluoro-n-pentanoic acid	.01010
Perfluoro-n-tetradecanoic acid	.01000
Perfluoro-n-tridecanoic acid	.01000
Perfluoro-n-undecanoic acid	.01000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM29	Pipette	B814657482

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 2:10:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM39

Description: PFAS DoD ICAL L8

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM29	PFAS DoD High ICAL Stock	Solution	~1	02/25/22	---	---	500 uL	1	10	~0.0500
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	100 uL	1	10	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	100 uL	1	10	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	100 uL	1	10	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	100 uL	1	10	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:12:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: **LM39**

Description: PFAS DoD ICAL L8

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	100	0.50	---	---	1	10	0.00500
d3-MeFOSA	100	0.50	---	---	1	10	0.00500
d5-EtFOSA	100	0.50	---	---	1	10	0.00500
d7-MeFOSE	100	0.50	---	---	1	10	0.00500
d9-EtFOSE	100	0.50	---	---	1	10	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	100	0.47	---	---	1	10	0.00469
13C2-6:2FTS	100	0.48	---	---	1	10	0.00476
13C2-8:2FTS	100	0.48	---	---	1	10	0.00480
13C4-PFBA	100	0.50	---	---	1	10	0.00500
13C5-PFPeA	100	0.50	---	---	1	10	0.00500
13C8-FOSA	100	0.50	---	---	1	10	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	100	0.50	---	---	1	10	0.00500
13C2-PFTeDA	100	0.50	---	---	1	10	0.00500
13C3-HFPO-DA	100	0.50	---	---	1	10	0.00500
13C3-PFBS	100	0.47	---	---	1	10	0.00466
13C3-PFHxS	100	0.47	---	---	1	10	0.00474
13C4-PFHpA	100	0.50	---	---	1	10	0.00500
13C5-PFHxA	100	0.50	---	---	1	10	0.00500
13C6-PFDA	100	0.50	---	---	1	10	0.00500
13C7-PFUnA	100	0.50	---	---	1	10	0.00500
13C8-PFOA	100	0.50	---	---	1	10	0.00500
13C8-PFOS	100	0.48	---	---	1	10	0.00479
13C9-PFNA	100	0.50	---	---	1	10	0.00500
d3-MeFOSAA	100	0.50	---	---	1	10	0.00500
d5-EtFOSAA	100	0.50	---	---	1	10	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	100	0.50	---	---	1	10	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:12:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM39

Description: PFAS DoD ICAL L8

13C2-PFOA	100	0.50	---	---	1	10	0.00500
13C3-PFBA	100	0.50	---	---	1	10	0.00500
13C4-PFOS	100	0.48	---	---	1	10	0.00479

Stock Id: LM29

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	500	0.50	---	---	1	10	0.02500
1H,1H,2H,2H-Perfluorodecane sulfonate	500	0.51	---	---	1	10	0.02526
1H,1H,2H,2H-perfluorododecane sulfonate	500	0.48	---	---	1	10	0.02415
1H,1H,2H,2H-Perfluorohexane sulfonate	500	0.50	---	---	1	10	0.02500
1H,1H,2H,2H-Perfluorooctane sulfonate	500	0.50	---	---	1	10	0.02500
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	500	0.50	---	---	1	10	0.02500
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	500	0.50	---	---	1	10	0.02500
3-Perfluoroheptyl propanoic acid	500	0.50	---	---	1	10	0.02500
3-Perfluoropentyl propanoic acid	500	0.50	---	---	1	10	0.02500
3-perfluoropropyl propanoic Acid	500	0.50	---	---	1	10	0.02500
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	500	0.50	---	---	1	10	0.02500
Adona	500	0.50	---	---	1	10	0.02500
Hexafluoropropylene oxide dimer acid	500	0.50	---	---	1	10	0.02500
N-ethylperfluoro-1-octanesulfonamide	500	0.50	---	---	1	10	0.02500
N-ethylperfluoro-octanesulfonamidoacetic acid	500	0.50	---	---	1	10	0.02500
N-methylperfluoro-1-octanesulfonamide	500	0.50	---	---	1	10	0.02500
N-methylperfluoro-1-octanesulfonamidoacetic acid	500	0.50	---	---	1	10	0.02500
nonafluoro-3,6-dioxaheptanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro (2-ethoxyethane) sulfonic acid	500	0.45	---	---	1	10	0.02230
Perfluoro-1-butanefluoride	500	0.50	---	---	1	10	0.02500
Perfluoro-1-decanesulfonate	500	0.51	---	---	1	10	0.02526
Perfluoro-1-dodecanesulfonate	500	0.49	---	---	1	10	0.02425
Perfluoro-1-heptanesulfonate	500	0.50	---	---	1	10	0.02500
Perfluoro-1-hexanesulfonate	500	0.50	---	---	1	10	0.02500
Perfluoro-1-nonanesulfonate	500	0.51	---	---	1	10	0.02526
Perfluoro-1-octanesulfonamide	500	0.50	---	---	1	10	0.02500
Perfluoro-1-octanesulfonate	500	0.50	---	---	1	10	0.02500
perfluoro-1-pentanesulfonate	500	0.50	---	---	1	10	0.02500
Perfluoro-3-methoxypropanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro-4-methoxybutanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-butanoic Acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-decanoic Acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-dodecanoic acid	500	0.50	---	---	1	10	0.02500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:12:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM39

Description: PFAS DoD ICAL L8

Perfluoro-n-heptanoic Acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-hexadecanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-hexanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-octadecanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-octanoic Acid	500	0.51	---	---	1	10	0.02526
Perfluorononanoic Acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-pentanoic acid	500	0.51	---	---	1	10	0.02526
Perfluoro-n-tetradecanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-tridecanoic acid	500	0.50	---	---	1	10	0.02500
Perfluoro-n-undecanoic acid	500	0.50	---	---	1	10	0.02500

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.02500
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.02526
1H,1H,2H,2H-perfluorododecane sulfonate	.02415

Solution Prepared By: Harnden, Kelsey Date Prepared: 9/17/2021 Expiration Date: 2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:12:00 PM

It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM39

Description: PFAS DoD ICAL L8

1H,1H,2H,2H-Perfluorohexane sulfonate	.02500
1H,1H,2H,2H-Perfluorooctane sulfonate	.02500
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.02500
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.02500
3-Perfluoroheptyl propanoic acid	.02500
3-Perfluoropentyl propanoic acid	.02500
3-perfluoropropyl propanoic Acid	.02500
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.02500
Adona	.02500
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.02500
N-ethylperfluoro-1-octanesulfonamide	.02500
N-ethylperfluoro-octanesulfonamidoacetic acid	.02500
N-methylperfluoro-1-octanesulfonamide	.02500
N-methylperfluoro-1-octanesulfonamidoacetic acid	.02500
nonafluoro-3,6-dioxaheptanoic acid	.02500
Perfluoro (2-ethoxyethane) sulfonic acid	.02230
Perfluoro-1-butanedisulfonate	.02500
Perfluoro-1-decanedisulfonate	.02526
Perfluoro-1-dodecanedisulfonate	.02425
Perfluoro-1-heptanedisulfonate	.02500
Perfluoro-1-hexanedisulfonate	.02500
Perfluoro-1-nonanedisulfonate	.02526
Perfluoro-1-octanesulfonamide	.02500
Perfluoro-1-octanedisulfonate	.02500
perfluoro-1-pentanedisulfonate	.02500
Perfluoro-3-methoxypropanoic acid	.02500
Perfluoro-4-methoxybutanoic acid	.02500
Perfluoro-n-butanedic acid	.02500
Perfluoro-n-decanedic Acid	.02500
Perfluoro-n-dodecanedic acid	.02500
Perfluoro-n-heptanedic Acid	.02500
Perfluoro-n-hexadecanedic acid	.02500
Perfluoro-n-hexanedic acid	.02500

Solution Prepared By: Harnden, Kelsey Date Prepared: 9/17/2021 Expiration Date: 2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:12:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM39

Description: PFAS DoD ICAL L8

Perfluoro-n-octadecanoic acid	.02500
Perfluoro-n-octanoic Acid	.02526
Perfluorononanoic Acid	.02500
Perfluoro-n-pentanoic acid	.02526
Perfluoro-n-tetradecanoic acid	.02500
Perfluoro-n-tridecanoic acid	.02500
Perfluoro-n-undecanoic acid	.02500

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM29	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 2:12:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM40

Description: PFAS DoD ICAL L9

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM29	PFAS DoD High ICAL Stock	Solution	~1	02/25/22	---	---	1000 uL	1	10	~0.1000
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	100 uL	1	10	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	100 uL	1	10	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	100 uL	1	10	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	100 uL	1	10	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:14:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM40

Description: PFAS DoD ICAL L9

Stock Id: LJ46

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	100	0.50	---	---	1	10	0.00500
d3-MeFOSA	100	0.50	---	---	1	10	0.00500
d5-EtFOSA	100	0.50	---	---	1	10	0.00500
d7-MeFOSE	100	0.50	---	---	1	10	0.00500
d9-EtFOSE	100	0.50	---	---	1	10	0.00500

Stock Id: LL55

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	100	0.47	---	---	1	10	0.00469
13C2-6:2FTS	100	0.48	---	---	1	10	0.00476
13C2-8:2FTS	100	0.48	---	---	1	10	0.00480
13C4-PFBA	100	0.50	---	---	1	10	0.00500
13C5-PFPeA	100	0.50	---	---	1	10	0.00500
13C8-FOSA	100	0.50	---	---	1	10	0.00500

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	100	0.50	---	---	1	10	0.00500
13C2-PFTeDA	100	0.50	---	---	1	10	0.00500
13C3-HFPO-DA	100	0.50	---	---	1	10	0.00500
13C3-PFBS	100	0.47	---	---	1	10	0.00466
13C3-PFHxS	100	0.47	---	---	1	10	0.00474
13C4-PFHpA	100	0.50	---	---	1	10	0.00500
13C5-PFHxA	100	0.50	---	---	1	10	0.00500
13C6-PFDA	100	0.50	---	---	1	10	0.00500
13C7-PFUnA	100	0.50	---	---	1	10	0.00500
13C8-PFOA	100	0.50	---	---	1	10	0.00500
13C8-PFOS	100	0.48	---	---	1	10	0.00479
13C9-PFNA	100	0.50	---	---	1	10	0.00500
d3-MeFOSAA	100	0.50	---	---	1	10	0.00500
d5-EtFOSAA	100	0.50	---	---	1	10	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	100	0.50	---	---	1	10	0.00500

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:14:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM40

Description: PFAS DoD ICAL L9

13C2-PFOA	100	0.50	---	---	1	10	0.00500
13C3-PFBA	100	0.50	---	---	1	10	0.00500
13C4-PFOS	100	0.48	---	---	1	10	0.00479

Stock Id: LM29

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	1000	0.50	---	---	1	10	0.05000
1H,1H,2H,2H-Perfluorodecane sulfonate	1000	0.51	---	---	1	10	0.05050
1H,1H,2H,2H-perfluorododecane sulfonate	1000	0.48	---	---	1	10	0.04830
1H,1H,2H,2H-Perfluorohexane sulfonate	1000	0.50	---	---	1	10	0.05000
1H,1H,2H,2H-Perfluorooctane sulfonate	1000	0.50	---	---	1	10	0.05000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	1000	0.50	---	---	1	10	0.05000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	1000	0.50	---	---	1	10	0.05000
3-Perfluoroheptyl propanoic acid	1000	0.50	---	---	1	10	0.05000
3-Perfluoropentyl propanoic acid	1000	0.50	---	---	1	10	0.05000
3-perfluoropropyl propanoic Acid	1000	0.50	---	---	1	10	0.05000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	1000	0.50	---	---	1	10	0.05000
Adona	1000	0.50	---	---	1	10	0.05000
Hexafluoropropylene oxide dimer acid	1000	0.50	---	---	1	10	0.05000
N-ethylperfluoro-1-octanesulfonamide	1000	0.50	---	---	1	10	0.05000
N-ethylperfluoro-octanesulfonamidoacetic acid	1000	0.50	---	---	1	10	0.05000
N-methylperfluoro-1-octanesulfonamide	1000	0.50	---	---	1	10	0.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	1000	0.50	---	---	1	10	0.05000
nonafluoro-3,6-dioxaheptanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro (2-ethoxyethane) sulfonic acid	1000	0.45	---	---	1	10	0.04460
Perfluoro-1-butanefluoride	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-decanesulfonate	1000	0.51	---	---	1	10	0.05050
Perfluoro-1-dodecanesulfonate	1000	0.49	---	---	1	10	0.04850
Perfluoro-1-heptanesulfonate	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-hexanesulfonate	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-nonanesulfonate	1000	0.51	---	---	1	10	0.05050
Perfluoro-1-octanesulfonamide	1000	0.50	---	---	1	10	0.05000
Perfluoro-1-octanesulfonate	1000	0.50	---	---	1	10	0.05000
perfluoro-1-pentanesulfonate	1000	0.50	---	---	1	10	0.05000
Perfluoro-3-methoxypropanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-4-methoxybutanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-butanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-decanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-dodecanoic acid	1000	0.50	---	---	1	10	0.05000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:14:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM40

Description: PFAS DoD ICAL L9

Perfluoro-n-heptanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-hexadecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-hexanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-octadecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-octanoic Acid	1000	0.51	---	---	1	10	0.05050
Perfluorononanoic Acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-pentanoic acid	1000	0.51	---	---	1	10	0.05050
Perfluoro-n-tetradecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-tridecanoic acid	1000	0.50	---	---	1	10	0.05000
Perfluoro-n-undecanoic acid	1000	0.50	---	---	1	10	0.05000

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	.05000
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.05050
1H,1H,2H,2H-perfluorododecane sulfonate	.04830

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:14:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM40

Description: PFAS DoD ICAL L9

1H,1H,2H,2H-Perfluorohexane sulfonate	.05000
1H,1H,2H,2H-Perfluorooctane sulfonate	.05000
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.05000
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.05000
3-Perfluoroheptyl propanoic acid	.05000
3-Perfluoropentyl propanoic acid	.05000
3-perfluoropropyl propanoic Acid	.05000
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.05000
Adona	.05000
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.05000
N-ethylperfluoro-1-octanesulfonamide	.05000
N-ethylperfluoro-octanesulfonamidoacetic acid	.05000
N-methylperfluoro-1-octanesulfonamide	.05000
N-methylperfluoro-1-octanesulfonamidoacetic acid	.05000
nonafluoro-3,6-dioxahexanoic acid	.05000
Perfluoro (2-ethoxyethane) sulfonic acid	.04460
Perfluoro-1-butanesulfonate	.05000
Perfluoro-1-decanesulfonate	.05050
Perfluoro-1-dodecanesulfonate	.04850
Perfluoro-1-heptanesulfonate	.05000
Perfluoro-1-hexanesulfonate	.05000
Perfluoro-1-nonanesulfonate	.05050
Perfluoro-1-octanesulfonamide	.05000
Perfluoro-1-octanesulfonate	.05000
perfluoro-1-pentanesulfonate	.05000
Perfluoro-3-methoxypropanoic acid	.05000
Perfluoro-4-methoxybutanoic acid	.05000
Perfluoro-n-butanoic Acid	.05000
Perfluoro-n-decanoic Acid	.05000
Perfluoro-n-dodecanoic acid	.05000
Perfluoro-n-heptanoic Acid	.05000
Perfluoro-n-hexadecanoic acid	.05000
Perfluoro-n-hexanoic acid	.05000

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:14:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM40

Description: PFAS DoD ICAL L9

Perfluoro-n-octadecanoic acid	.05000
Perfluoro-n-octanoic Acid	.05050
Perfluorononanoic Acid	.05000
Perfluoro-n-pentanoic acid	.05050
Perfluoro-n-tetradecanoic acid	.05000
Perfluoro-n-tridecanoic acid	.05000
Perfluoro-n-undecanoic acid	.05000

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM23	Pipette	B814659662
LM25	Pipette	B814659662
LM29	Pipette	B820865811

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 2:14:00 PM



It can be done

Standard Solution Prep Form II

Approved: ☒

Standard Laboratory ID Number: LM42

Description: PFAS DoD ICC

Assigned Lab ID (from receipt log)	Chemical Name:	Source	Stock (ug/mL)	Expir. Date	Purity (%)	Density (g/mL)	Amount Taken	Conv. Fact.	Final Vol. (mL)	Std. Conc. (ug/mL)
LM08	PFAS IRAD LCS/MS	Solution	~1	02/25/22	---	---	125 uL	1	10	~0.0125
LM23	PFAS DoD Surrogate (18 Targets)	Solution	~1	09/10/22	---	---	100 uL	1	10	~0.0100
LL55	PFAS DoD Surrogate (28 targets)	Solution	~1	08/09/22	---	---	100 uL	1	10	~0.0100
LJ46	PFAS-DoD Surrogate (43 Targets)	Solution	~1	05/04/22	---	---	100 uL	1	10	~0.0100
LM25	PFAS DoD Internal Standard	Solution	~1	09/16/22	---	---	100 uL	1	10	~0.0100

Solution Prepared By: Harnden, Kelsey	Date Prepared: 9/17/2021	Expiration Date: 2/25/2022
Solution Volume 10 mL X 1 Vials	Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121	

Balance ID: _____

Comment: Methanol with 4% water, 1% NH₃OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert Date: 9/20/2021 2:16:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: **LM42**

Description: PFAS DoD ICC

Stock Id: **LJ46**

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFHxDA	100	0.50	---	---	1	10	0.00500
d3-MeFOSA	100	0.50	---	---	1	10	0.00500
d5-EtFOSA	100	0.50	---	---	1	10	0.00500
d7-MeFOSE	100	0.50	---	---	1	10	0.00500
d9-EtFOSE	100	0.50	---	---	1	10	0.00500

Stock Id: **LL55**

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-4:2FTS	100	0.47	---	---	1	10	0.00469
13C2-6:2FTS	100	0.48	---	---	1	10	0.00476
13C2-8:2FTS	100	0.48	---	---	1	10	0.00480
13C4-PFBA	100	0.50	---	---	1	10	0.00500
13C5-PFPeA	100	0.50	---	---	1	10	0.00500
13C8-FOSA	100	0.50	---	---	1	10	0.00500

Stock Id: **LM08**

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic aci	125	0.20	---	---	1	10	0.00250
1H,1H,2H,2H-Perfluorodecane sulfonate	125	0.20	---	---	1	10	0.00253
1H,1H,2H,2H-perfluorododecane sulfonate	125	0.19	---	---	1	10	0.00242
1H,1H,2H,2H-Perfluorohexane sulfonate	125	0.20	---	---	1	10	0.00250
1H,1H,2H,2H-Perfluorooctane sulfonate	125	0.20	---	---	1	10	0.00250
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	125	0.20	---	---	1	10	0.00250
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	125	0.20	---	---	1	10	0.00250
3-Perfluoroheptyl propanoic acid	125	0.20	---	---	1	10	0.00250
3-Perfluoropentyl propanoic acid	125	0.20	---	---	1	10	0.00250
3-perfluoropropyl propanoic Acid	125	0.20	---	---	1	10	0.00250
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic aci	125	0.20	---	---	1	10	0.00250
Adona	125	0.20	---	---	1	10	0.00250
Hexafluoropropylene oxide dimer acid	125	0.20	---	---	1	10	0.00250
N-ethylperfluoro-1-octanesulfonamide	125	0.20	---	---	1	10	0.00250
N-ethylperfluoro-octanesulfonamidoacetic acid	125	0.20	---	---	1	10	0.00250
N-methylperfluoro-1-octanesulfonamide	125	0.20	---	---	1	10	0.00250
N-methylperfluoro-1-octanesulfonamidoacetic acid	125	0.20	---	---	1	10	0.00250
nonafluoro-3,6-dioxaheptanoic acid	125	0.20	---	---	1	10	0.00250

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:16:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM42

Description: PFAS DoD ICC

Perfluoro (2-ethoxyethane) sulfonic acid	125	0.18	---	---	1	10	0.00223
Perfluoro-1-butanedisulfonate	125	0.20	---	---	1	10	0.00250
Perfluoro-1-decanedisulfonate	125	0.20	---	---	1	10	0.00253
Perfluoro-1-dodecanedisulfonate	125	0.19	---	---	1	10	0.00243
Perfluoro-1-heptanedisulfonate	125	0.20	---	---	1	10	0.00250
Perfluoro-1-hexanedisulfonate	125	0.20	---	---	1	10	0.00250
Perfluoro-1-nonanedisulfonate	125	0.20	---	---	1	10	0.00253
Perfluoro-1-octanedisulfonamide	125	0.20	---	---	1	10	0.00250
Perfluoro-1-octanedisulfonate	125	0.20	---	---	1	10	0.00250
perfluoro-1-pentanedisulfonate	125	0.20	---	---	1	10	0.00250
Perfluoro-3-methoxypropanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-4-methoxybutanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-butanoic Acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-decanoic Acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-dodecanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-heptanoic Acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-hexadecanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-hexanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-octadecanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-octanoic Acid	125	0.20	---	---	1	10	0.00250
Perfluorononanoic Acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-pentanoic acid	125	0.20	---	---	1	10	0.00253
Perfluoro-n-tetradecanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-tridecanoic acid	125	0.20	---	---	1	10	0.00250
Perfluoro-n-undecanoic acid	125	0.20	---	---	1	10	0.00250

Stock Id: LM23

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDoA	100	0.50	---	---	1	10	0.00500
13C2-PFTeDA	100	0.50	---	---	1	10	0.00500
13C3-HFPO-DA	100	0.50	---	---	1	10	0.00500
13C3-PFBS	100	0.47	---	---	1	10	0.00466
13C3-PFHxS	100	0.47	---	---	1	10	0.00474
13C4-PFHpA	100	0.50	---	---	1	10	0.00500
13C5-PFHxA	100	0.50	---	---	1	10	0.00500
13C6-PFDA	100	0.50	---	---	1	10	0.00500
13C7-PFUnA	100	0.50	---	---	1	10	0.00500
13C8-PFOA	100	0.50	---	---	1	10	0.00500
13C8-PFOS	100	0.48	---	---	1	10	0.00479

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 Vials Refrigerator/Freezer No: VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:16:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM42

Description: PFAS DoD ICC

13C9-PFNA	100	0.50	---	---	1	10	0.00500
d3-MeFOSAA	100	0.50	---	---	1	10	0.00500
d5-EtFOSAA	100	0.50	---	---	1	10	0.00500

Stock Id: LM25

Chemical Name	Stock Amount uL	Initial Conc. (ug/mL)	Density (g/mL)	Purity	Conv. Factor	Final Vol mL	Concentration (ug/mL)
13C2-PFDA	100	0.50	---	---	1	10	0.00500
13C2-PFOA	100	0.50	---	---	1	10	0.00500
13C3-PFBA	100	0.50	---	---	1	10	0.00500
13C4-PFOS	100	0.48	---	---	1	10	0.00479

Final Concentrations:

Analyte:	Conc (ug/mL):
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid	.00250
13C2-4:2FTS	.00469
13C2-6:2FTS	.00476
13C2-8:2FTS	.00480
13C2-PFDA	.00500
13C2-PFDoA	.00500
13C2-PFHxDA	.00500
13C2-PFOA	.00500
13C2-PFTeDA	.00500
13C3-HFPO-DA	.00500
13C3-PFBA	.00500
13C3-PFBS	.00466
13C3-PFHxS	.00474
13C4-PFBA	.00500
13C4-PFHpA	.00500
13C4-PFOS	.00479
13C5-PFHxA	.00500
13C5-PFPeA	.00500
13C6-PFDA	.00500
13C7-PFUnA	.00500
13C8-FOSA	.00500
13C8-PFOA	.00500
13C8-PFOS	.00479
13C9-PFNA	.00500
1H,1H,2H,2H-Perfluorodecane sulfonate	.00253
1H,1H,2H,2H-perfluorododecane sulfonate	.00242

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume

10 mL X

1

Vials

Refrigerator/Freezer No:

VOC Laboratory: Refrigerator - R0121

Comment:

Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:16:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM42

Description: PFAS DoD ICC

1H,1H,2H,2H-Perfluorohexane sulfonate	.00250
1H,1H,2H,2H-Perfluorooctane sulfonate	.00250
2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol	.00250
2-(N-methylperfluoro-1-octanesulfonamido)-ethanol	.00250
3-Perfluoroheptyl propanoic acid	.00250
3-Perfluoropentyl propanoic acid	.00250
3-perfluoropropyl propanoic Acid	.00250
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	.00250
Adona	.00250
d3-MeFOSA	.00500
d3-MeFOSAA	.00500
d5-EtFOSA	.00500
d5-EtFOSAA	.00500
d7-MeFOSE	.00500
d9-EtFOSE	.00500
Hexafluoropropylene oxide dimer acid	.00250
N-ethylperfluoro-1-octanesulfonamide	.00250
N-ethylperfluoro-octanesulfonamidoacetic acid	.00250
N-methylperfluoro-1-octanesulfonamide	.00250
N-methylperfluoro-1-octanesulfonamidoacetic acid	.00250
nonafluoro-3,6-dioxaheptanoic acid	.00250
Perfluoro (2-ethoxyethane) sulfonic acid	.00223
Perfluoro-1-butanesulfonate	.00250
Perfluoro-1-decanesulfonate	.00253
Perfluoro-1-dodecanesulfonate	.00243
Perfluoro-1-heptanesulfonate	.00250
Perfluoro-1-hexanesulfonate	.00250
Perfluoro-1-nonanesulfonate	.00253
Perfluoro-1-octanesulfonamide	.00250
Perfluoro-1-octanesulfonate	.00250
perfluoro-1-pentanesulfonate	.00250
Perfluoro-3-methoxypropanoic acid	.00250
Perfluoro-4-methoxybutanoic acid	.00250
Perfluoro-n-butanoic Acid	.00250
Perfluoro-n-decanoic Acid	.00250
Perfluoro-n-dodecanoic acid	.00250
Perfluoro-n-heptanoic Acid	.00250
Perfluoro-n-hexadecanoic acid	.00250
Perfluoro-n-hexanoic acid	.00250

Solution Prepared By: Harnden, Kelsey

Date Prepared:

9/17/2021

Expiration Date:

2/25/2022

Solution Volume 10 mL X 1 **Vials** **Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert

Date: 9/20/2021 2:16:00 PM



It can be done

Standard Solution Concentrations

Approved: ☒

Standard Laboratory ID Number: LM42

Description: PFAS DoD ICC

Perfluoro-n-octadecanoic acid	.00250
Perfluoro-n-octanoic Acid	.00250
Perfluorononanoic Acid	.00250
Perfluoro-n-pentanoic acid	.00253
Perfluoro-n-tetradecanoic acid	.00250
Perfluoro-n-tridecanoic acid	.00250
Perfluoro-n-undecanoic acid	.00250

Syringes/Pipettes:

Stock ID:	Type:	Battelle ID:
LJ46	Pipette	B814659662
LL55	Pipette	B814659662
LM08	Pipette	B814657482
LM23	Pipette	B814659662
LM25	Pipette	B814659662

Solution Prepared By: Harnden, Kelsey **Date Prepared:** 9/17/2021 **Expiration Date:** 2/25/2022

Solution Volume 10 mL X 1 **Vials Refrigerator/Freezer No:** VOC Laboratory: Refrigerator - R0121

Comment: Methanol with 4% water, 1% NH3OH and 0.625% Acetic Acid

Approved By: Lizotte Jr, Robert **Date:** 9/20/2021 2:16:00 PM



It can be done

BDO Id: 210216-01

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	L-PFDoS	Received:	2/16/2021
Vendor:	Wellington Laboratories	Custodian:	Schumitz, Matt
Catalogue No:	L-PFDoS	Expires:	11/18/2025
Type:	Solution	Consumed:	
Lot No:	LPFDoS1120	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea mL	% Moisture:	
Description:	L-PFDoS		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
Perfluoro-1-dodecanesulfonate	79780-39-5	48.5000	98.00	--	--	☐			1
Total Analytes:	1								

Notes:

Analyte: Comment:

1 Perfluoro-1-dodecanesulfonate

Acid

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: L-PFDoS
COMPOUND: Sodium perfluoro-1-dodecanesulfonate

LOT NUMBER: LPFDoS1120

STRUCTURE:

CAS #: 1260224-54-1



MOLECULAR FORMULA: $C_{12}F_{25}SO_3Na$
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
48.5 ± 2.4 µg/mL (PFDoS acid)
48.4 ± 2.4 µg/mL (PFDoS anion)

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/18/2020
EXPIRY DATE: (mm/dd/yyyy) 11/18/2025
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).

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Certified By:
B.G. Chittim, General Manager

Date: 12/15/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210216-02

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: PFEESA
 Vendor: Wellington Laboratories
 Catalogue No: PFEESA
 Type: Solution
 Lot No: PFEESA0520
 Quantity: 1 ea mL % Moisture:
 Description: PFEESA
 Received: 2/16/2021
 Custodian: Schumitz, Matt
 Expires: 5/13/2025
 Consumed:
 Stored In: VOC Laboratory - R0123

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
Perfluoro (2-ethoxyethane) sulfonic a	113507-82-7	44.6000	98.00	--	--	☐			1
Total Analytes:		1							

Notes:

Analyte:	Comment:
1 Perfluoro (2-ethoxyethane) sulfonic acid	Acid

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

PFEESA

LOT NUMBER:

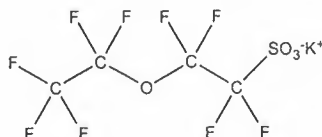
PFEESA0520

COMPOUND:

Potassium perfluoro(2-ethoxyethane)sulfonate

STRUCTURE:**CAS #:**

117205-07-9

**MOLECULAR FORMULA:** $C_4F_9SO_4K$ **MOLECULAR WEIGHT:**

354.19

CONCENTRATION:

50.0 ± 2.5 µg/ml (K salt)
44.6 ± 2.2 µg/ml (PFEESA acid)
44.5 ± 2.2 µg/ml (PFEESA anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2020

EXPIRY DATE: (mm/dd/yyyy)

05/13/2025

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-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/29/2020

(mm/dd/yyyy)

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It can be done

BDO Id: 210216-03

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: 10:2FTS Received: 2/16/2021
 Vendor: Wellington Laboratories Custodian: Schumitz, Matt
 Catalogue No: 10:2FTS Expires: 8/17/2023
 Type: Solution Consumed:
 Lot No: 102FTS0820 Stored In: VOC Laboratory - R0123
 Quantity: 1 ea mL % Moisture:
 Description: 10:2FTS

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
1H,1H,2H,2H-perfluorododecane sulf	BDO-2401	48.3000	98.00	--	--	☐			1

Total Analytes: 1

Notes:

Analyte:	Comment:
1 1H,1H,2H,2H-perfluorododecane sulfonate	Acid

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS0820
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

STRUCTURE: **CAS #:** 108026-35-3



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
48.3 ± 2.4 µg/ml (10:2FTS acid)
48.2 ± 2.4 µg/ml (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/17/2020
EXPIRY DATE: (mm/dd/yyyy) 08/17/2023
RECOMMENDED STORAGE: Refrigerate ampoule

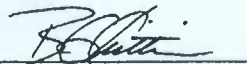
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: 
B.G. Chittim, General Manager

Date: 08/28/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210216-04

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	N-MeFOSA-M	Received:	2/16/2021
Vendor:	Wellington Laboratories	Custodian:	Schumitz, Matt
Catalogue No:	N-MeFOSA-M	Expires:	10/20/2025
Type:	Solution	Consumed:	
Lot No:	NMeFOSA1020M	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea mL	% Moisture:	
Description:	N-MeFOSA-M		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
N-methylperfluoro-1-octanesulfonami	31506-32-8	50.0000	98.00	--	--	☐			
Total Analytes:		1							

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

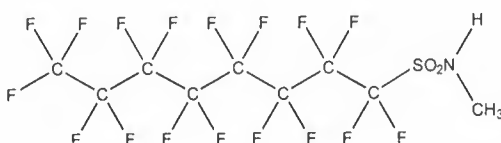
**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA1020M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA: $C_9H_4F_{17}NO_2S$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/20/2020
EXPIRY DATE: (mm/dd/yyyy) 10/20/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:
B.G. Chittim, General Manager

Date: 10/21/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210216-05

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	N-EtFOSA-M	Received:	2/16/2021
Vendor:	Wellington Laboratories	Custodian:	Schumitz, Matt
Catalogue No:	N-EtFOSA-M	Expires:	11/23/2025
Type:	Solution	Consumed:	
Lot No:	N-EtFOSA-M	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea mL	% Moisture:	
Description:	N-EtFOSA-M		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
N-ethylperfluoro-1-octanesulfonamid	4151-50-2	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

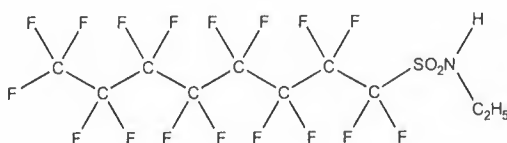
**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA1120M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: $C_{10}H_6F_{17}NO_2S$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/23/2020
EXPIRY DATE: (mm/dd/yyyy) 11/23/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 527.20
SOLVENT(S): Methanol

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:
B.G. Chittim, General Manager

Date: 12/15/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210216-06

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: N-MeFOSE-M Received: 2/16/2021
 Vendor: Wellington Laboratories Custodian: Schumitz, Matt
 Catalogue No: N-MeFOSE-M Expires: 10/9/2025
 Type: Solution Consumed:
 Lot No: N-MeFOSE-M Stored In: VOC Laboratory - R0121
 Quantity: 1 ea mL % Moisture:
 Description: N-MeFOSE-M

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
2-(N-methylperfluoro-1-octanesulfon	24448-09-7	50.0000	98.00	--	--	☐			
Total Analytes:		1							

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE1020M
COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 24448-09-7



MOLECULAR FORMULA: $C_{11}H_{17}F_{17}NO_3S$ **MOLECULAR WEIGHT:** 557.22
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/09/2020 (HRGC/LRMS)
 10/09/2020 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 10/09/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS Data (TIC and Mass Spectrum)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
 B.G. Chittim, General Manager

Date: 10/09/2020
 (mm/dd/yyyy)

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It can be done

BDO Id: 210216-07

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: N-EtFOSE-M Received: 2/16/2021
 Vendor: Wellington Laboratories Custodian: Schumitz, Matt
 Catalogue No: N-EtFOSE-M Expires: 10/6/2025
 Type: Solution Consumed:
 Lot No: N-EtFOSE-M Stored In: VOC Laboratory - R0123
 Quantity: 1 ea mL % Moisture:
 Description: N-EtFOSE-M

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
2-(N-ethylperfluoro-1-octanesulfona	1691-99-2	50.0000	98.00	--	--	☐			
Total Analytes:		1							

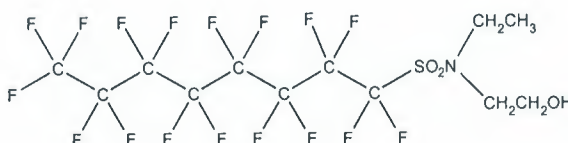
Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE1020M
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: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/05/2020 (HRGC/LRMS)
10/06/2020 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 10/06/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (TIC and Mass Spectrum)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 10/20/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210216-08

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: PF4OPeA Received: 2/16/2021
 Vendor: Wellington Laboratories Custodian: Schumitz, Matt
 Catalogue No: PF4OPeA Expires: 3/31/2025
 Type: Solution Consumed:
 Lot No: PF4OPeA0320 Stored In: VOC Laboratory - R0123
 Quantity: 1 ea mL % Moisture:
 Description: PF4OPeA

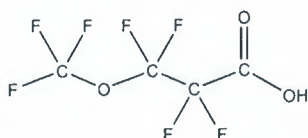
Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
Perfluoro-4-oxapentanoic acid	377-73-1	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: PF4OPeA **LOT NUMBER:** PF4OPeA0320
COMPOUND: Perfluoro-4-oxapentanoic acid
SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)
STRUCTURE: **CAS #:** 377-73-1



MOLECULAR FORMULA: $C_4HF_7O_3$ **MOLECULAR WEIGHT:** 230.04
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/31/2020
EXPIRY DATE: (mm/dd/yyyy) 03/31/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

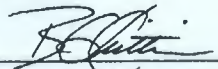
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 12/21/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210216-09

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	3,6-OPFHpA	Received:	2/16/2021
Vendor:	Wellington Laboratories	Custodian:	Schumitz, Matt
Catalogue No:	3,6-OPFHpA	Expires:	3/31/2025
Type:	Solution	Consumed:	
Lot No:	36OPFHpA0320	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea mL	% Moisture:	
Description:	3,6-OPFHpA		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Units:	Cert Val:	Lower Limit:	Upper Limit:
Perfluoro-3,6-dioxaheptanoic acid	151772-58-6	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

210216-09



WELLINGTON LABORATORIES

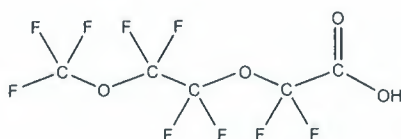
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 3,6-OPFHpA
COMPOUND: Perfluoro-3,6-dioxaheptanoic acid

LOT NUMBER: 36OPFHpA0320

STRUCTURE:

CAS #: 151772-58-6



MOLECULAR FORMULA: C₅H₉F₉O₄
CONCENTRATION: 50.0 ± 2.5 µg/ml

MOLECULAR WEIGHT: 296.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/31/2020
EXPIRY DATE: (mm/dd/yyyy) 03/31/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 05/27/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210216-10

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	PF5OHxA	Received:	2/16/2021
Vendor:	Wellington Laboratories	Custodian:	Schumitz, Matt
Catalogue No:	PF5OHxA	Expires:	3/31/2025
Type:	Solution	Consumed:	
Lot No:	PF5OHxA0320	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea mL	% Moisture:	
Description:	PF5OHxA		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
Perfluoro-5-oxahexanoic acid	863090-89-5	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

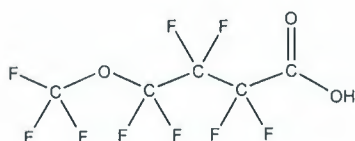


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PF5OHxA
COMPOUND: Perfluoro-5-oxahexanoic acid
SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)
STRUCTURE:

LOT NUMBER: PF5OHxA0320
CAS #: 863090-89-5



MOLECULAR FORMULA: C₅HF₉O₃
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/31/2020
EXPIRY DATE: (mm/dd/yyyy) 03/31/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 280.05
SOLVENT(S): Methanol
Water (<1%)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 12/21/2020
(mm/dd/yyyy)

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



It can be done

BDO Id: 210216-11

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	PFHxDA	Received:	2/16/2021
Vendor:	Wellington Laboratories	Custodian:	Schumitz, Matt
Catalogue No:	PFHxDA	Expires:	8/25/2025
Type:	Solution	Consumed:	
Lot No:	PFHxDA0820	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea mL	% Moisture:	
Description:	PFHxDA		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
Perfluoro-n-hexadecanoic acid	67905-19-5	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

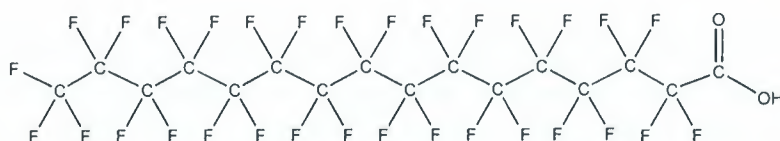
**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: PFHxDA
COMPOUND: Perfluoro-n-hexadecanoic acid

LOT NUMBER: PFHxDA0820

STRUCTURE:

CAS #: 67905-19-5



MOLECULAR FORMULA: $C_{16}HF_{31}O_2$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 814.13
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/25/2020
EXPIRY DATE: (mm/dd/yyyy) 08/25/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 08/27/2020
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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It can be done

BDO Id: 210216-12

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	PFODA	Received:	2/16/2021
Vendor:	Wellington Laboratories	Custodian:	Schumitz, Matt
Catalogue No:	PFODA	Expires:	11/13/2025
Type:	Solution	Consumed:	
Lot No:	PFODA1020	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea mL	% Moisture:	
Description:	PFODA		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Units:	Cert Val:	Lower Limit:	Upper Limit:
Perfluoro-n-octadecanoic acid	16517-11-6	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA **LOT NUMBER:** PFODA1020
COMPOUND: Perfluoro-n-octadecanoic acid

STRUCTURE: **CAS #:** 16517-11-6



MOLECULAR FORMULA: $C_{18}H_{35}O_2$ **MOLECULAR WEIGHT:** 914.14
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/13/2020
EXPIRY DATE: (mm/dd/yyyy) 11/13/2025
RECOMMENDED STORAGE: Store ampoule at ambient temperature in a dark place

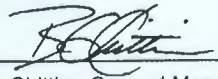
DOCUMENTATION/ DATA ATTACHED:

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.
- The solubility of this product in methanol is very sensitive to storage conditions and solvent composition. The stated validity period applies to the sealed ampoules stored at ambient temperature.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 11/17/2020
B.G. Chittim, General Manager (mm/dd/yyyy)

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It can be done

BDO Id: 210407-05

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	<u>13C2-PFHxDA</u>	Received:	<u>4/7/2021</u>
Vendor:	<u>Wellington Laboratories</u>	Custodian:	<u>Harnden, Kelsey</u>
Catalogue No:	<u>M2PFHxDA</u>	Expires:	<u>1/15/2026</u>
Type:	<u>Solution</u>	Consumed:	<u></u>
Lot No:	<u>M2PFHxDA1220</u>	Stored In:	<u>VOC Laboratory - R0123</u>
Quantity:	<u>1 ea</u> <u>mL</u>	% Moisture:	<u></u>
Description:	<u>13C2-PFHxDA</u>		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFHxDA	BDO-2430	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by:	<u></u>	Approved on:	<u></u>
Authorized by:	<u></u>	Authorized on:	<u></u>

210407-05



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1220
COMPOUND: Perfluoro-n-(1,2-¹³C₂)hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₄HF₃₁O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL

MOLECULAR WEIGHT: 816.11
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/15/2021
EXPIRY DATE: (mm/dd/yyyy) 01/15/2026

ISOTOPIC PURITY: ≥99% ¹³C
 (1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

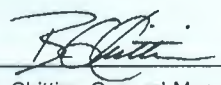
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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 ~0.5% of native perfluoro-n-hexadecanoic acid and ~0.4% of perfluoro-n-(¹³C₁)pentadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 02/01/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210407-06

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: d-N-EtFOSA-M **Received:** 4/7/2021
Vendor: Wellington Laboratories **Custodian:** Harnden, Kelsey
Catalogue No: d-N-EtFOSA-M **Expires:** 11/23/2025
Type: Solution **Consumed:** _____
Lot No: dNEtFOSA1120M **Stored In:** VOC Laboratory - R0123
Quantity: 1 ea mL **% Moisture:** _____
Description: d-N-EtFOSA-M

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
N-ethylperfluoro-1-octanesulfonamid	4151-50-2	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

210407-06



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d₅-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA1120M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₁₀D₅HF₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/23/2020
EXPIRY DATE: (mm/dd/yyyy) 11/23/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 532.23
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥98% ²H₅

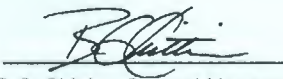
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 12/15/2020
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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It can be done

BDO Id: 210407-07

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	<u>d-N-MeFOSA-M</u>	Received:	<u>4/7/2021</u>
Vendor:	<u>Wellington Laboratories</u>	Custodian:	<u>Harnden, Kelsey</u>
Catalogue No:	<u>d-N-MeFOSA-M</u>	Expires:	<u>8/6/2025</u>
Type:	<u>Solution</u>	Consumed:	<u></u>
Lot No:	<u>dNMeFOSA0820M</u>	Stored In:	<u>VOC Laboratory - R0123</u>
Quantity:	<u>1 ea</u> <u>mL</u>	% Moisture:	<u></u>
Description:	<u>d-N-MeFOSA-M</u>		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
N-methylperfluoro-1-octanesulfonami	31506-32-8	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by:	<u></u>	Approved on:	<u></u>
Authorized by:	<u></u>	Authorized on:	<u></u>



WELLINGTON LABORATORIES

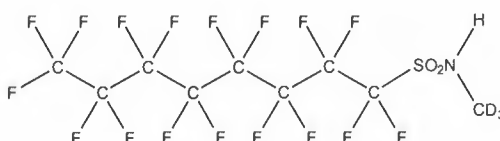
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
COMPOUND: N-methyl-d₃-perfluoro-1-octanesulfonamide

LOT NUMBER: dNMeFOSA0820M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₈D₃HF₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/06/2020
EXPIRY DATE: (mm/dd/yyyy) 08/06/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 516.19
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥98% ²H₃

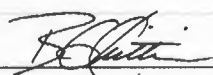
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 08/07/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210407-08

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	<u>d7-N-MeFOSE-M</u>	Received:	<u>4/7/2021</u>
Vendor:	<u>Wellington Laboratories</u>	Custodian:	<u>Harnden, Kelsey</u>
Catalogue No:	<u>d7-N-MeFOSE-M</u>	Expires:	<u>1/6/2026</u>
Type:	<u>Solution</u>	Consumed:	<u></u>
Lot No:	<u>d7NMeFOSE1220M</u>	Stored In:	<u>VOC Laboratory - R0123</u>
Quantity:	<u>1 ea</u> <u>mL</u>	% Moisture:	<u></u>
Description:	<u>d7-N-MeFOSE-M</u>		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
2-(N-methylperfluoro-1-octanesulfon	24448-09-7	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by:	<u></u>	Approved on:	<u></u>
Authorized by:	<u></u>	Authorized on:	<u></u>

210407-08



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d7-N-MeFOSE-M **LOT NUMBER:** d7NMeFOSE1220M
COMPOUND: 2-(N-methyl-d3-perfluoro-1-octanesulfonamido)ethan-d4-ol
STRUCTURE: **CAS #:** 1265205-95-5



MOLECULAR FORMULA: C₁₁D₇HF₁₇NO₃S **MOLECULAR WEIGHT:** 564.27
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₇
LAST TESTED: (mm/dd/yyyy) 01/06/2021 (HRGC/LRMS)
 12/23/2020 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 01/06/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

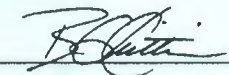
DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 01/18/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210407-09

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: d9-N-EtFOSE-M **Received:** 4/7/2021
Vendor: Wellington Laboratories **Custodian:** Harnden, Kelsey
Catalogue No: d9-N-EtFOSE-M **Expires:** 12/30/2025
Type: Solution **Consumed:** _____
Lot No: d9NEtFOSE1220M **Stored In:** VOC Laboratory - R0123
Quantity: 1 ea mL **% Moisture:** _____
Description: d9-N-EtFOSE-M

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
2-(N-ethylperfluoro-1-octanesulfona	1691-99-2	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d9-N-EtFOSE-M **LOT NUMBER:** d9NEtFOSE1220M
COMPOUND: 2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)ethan-d4-ol

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{12}D_9HF_{17}NO_3S$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/30/2020 (HRGC/LRMS)
 12/23/2020 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 12/30/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 580.31
SOLVENT(S): Methanol
ISOTOPIC PURITY: $\geq 98\%$ $^2H_9$

DOCUMENTATION/ DATA ATTACHED:

Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- In order to see the molecular ion (adduct free), the LC mobile phase should be free of ammonium acetate buffer.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
 B.G. Chittim, General Manager

Date: 01/11/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210528-02

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: PFOA DOD
Received: 5/28/2021
Vendor: ABSOLUTE STANDARDS
Custodian: Schumitz, Matt
Catalogue No: 64029
Expires: 4/30/2026
Type: Solution
Consumed:
Lot No: 043021
Stored In: LC Laboratory - F0111
Quantity: 3 ea mL **% Moisture:**
Description: PFOA DOD

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Lower Limit:	Upper Limit:
11-chloroeicosafuoro-3-oxaundecan	763051-92-9	1.0000	100.00	--	--	☐		
1H,1H,2H,2H-Perfluorodecane sulfon	39108-34-4	1.0100	100.00	--	--	☐		
1H,1H,2H,2H-Perfluorohexane sulfon	757124-72-4	1.0000	100.00	--	--	☐		
1H,1H,2H,2H-Perfluorooctane sulfon	27619-97-2	1.0000	100.00	--	--	☐		
9-chlorohexadecafluoro-3-oxanonane	756426-58-1	1.0000	100.00	--	--	☐		
Adona	919005-14-4	1.0000	100.00	--	--	☐		
Hexafluoropropylene oxide dimer aci	13252-13-6	1.0000	100.00	--	--	☐		
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	1.0000	100.00	--	--	☐		
N-methylperfluoro-1-octanesulfonami	2355-31-9	1.0000	100.00	--	--	☐		
Perfluoro-1-butanefluoride	375-73-5	1.0000	100.00	--	--	☐		
Perfluoro-1-decanesulfonate	335-77-3	1.0100	100.00	--	--	☐		
Perfluoro-1-heptanesulfonate	375-92-8	1.0000	100.00	--	--	☐		
Perfluoro-1-hexanesulfonate	355-46-4	1.0000	100.00	--	--	☐		
Perfluoro-1-nonanesulfonate	68259-12-1	1.0100	100.00	--	--	☐		
Perfluoro-1-octanesulfonamide	754-91-6	1.0000	100.00	--	--	☐		
Perfluoro-1-octanesulfonate	1763-23-1	1.0000	100.00	--	--	☐		
perfluoro-1-pentanesulfonate	2706-91-4	1.0000	100.00	--	--	☐		
Perfluoro-n-butanoic Acid	375-22-4	1.0000	100.00	--	--	☐		
Perfluoro-n-decanoic Acid	335-76-2	1.0000	100.00	--	--	☐		
Perfluoro-n-dodecanoic acid	307-55-1	1.0000	100.00	--	--	☐		
Perfluoro-n-heptanoic Acid	375-85-9	1.0000	100.00	--	--	☐		
Perfluoro-n-hexanoic acid	307-24-4	1.0000	100.00	--	--	☐		
Perfluoro-n-octanoic Acid	335-67-1	1.0100	100.00	--	--	☐		
Perfluorononanoic Acid	375-95-1	1.0000	100.00	--	--	☐		
Perfluoro-n-pentanoic acid	2706-90-3	1.0100	100.00	--	--	☐		
Perfluoro-n-tetradecanoic acid	376-06-7	1.0000	100.00	--	--	☐		
Perfluoro-n-tridecanoic acid	72629-94-8	1.0000	100.00	--	--	☐		
Perfluoro-n-undecanoic acid	2058-94-8	1.0000	100.00	--	--	☐		

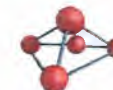
Total Analytes: 28

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number: **64029**
Lot Number: **043021**
Description: **PFOA - DOD**
28 components
Expiration Date: **043026**
Recommended Storage: **Freezer (0 °C)**
Nominal Concentration (µg/mL): **1.0**
NIST Test ID#: **6UTB**

Solvent(s):
Methanol (1 mM KOH)
2-Propanol

Lot#
043021 (98%)
23214 (2%)

Formulated By: Benson Cran	DATE: 043021
Reviewed By: Pedro L. Rentas	DATE: 043021

Volume(s) shown below were combined and diluted to (mL):

Note: All assigned values are anion concentrations.

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol (mL)	Uncertainty Pipette (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (±) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.)		
									CAS#	OSHA PEL (TWA)	LD50
1. Perfluoro-n-butanoic acid (linear)	99542	042821	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A
2. Perfluoro-n-pentanoic acid (PFPeA)	99543	042021	0.02	2.00	0.017	50.3	1.01	0.02	2706-90-3	N/A	N/A
3. Perfluorohexanoic acid	99199	042821	0.02	2.00	0.017	50.1	1.00	0.02	307-24-4	N/A	N/A
4. Perfluorooctanoic acid	99197	081920	0.02	2.00	0.017	50.1	1.00	0.02	375-85-9	N/A	N/A
5. Perfluorooctanoic acid (branched)*	99202	021820	0.02	2.00	0.017	50.3	1.01	0.02	335-67-1	N/A	LD ₅₀ rat 188mg/kg
6. Perfluorononanoic acid	99200	010721	0.02	2.00	0.017	50.2	1.00	0.02	375-95-1	N/A	N/A
7. Perfluorodecanoic acid	99195	101420	0.02	2.00	0.017	50.1	1.00	0.02	335-76-2	N/A	LD ₅₀ rat 57mg/kg
8. Perfluoroundecanoic acid	99205	042821	0.02	2.00	0.017	50.1	1.00	0.02	2058-94-8	N/A	N/A
9. Tricosafuorodecanoic acid	99196	042921	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A
10. Perfluorotridecanoic acid	99204	042821	0.02	2.00	0.017	50.1	1.00	0.02	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid	99203	042921	0.02	2.00	0.017	50.0	1.00	0.02	376-06-7	N/A	N/A
12. Perfluoro-1-octanesulfonamide	3677	FOA10201	0.02	2.00	0.017	50.0	1.00	0.05	754-91-6	N/A	N/A
13. N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA1119	0.02	2.00	0.017	50.0	1.00	0.05	00-00-0	N/A	N/A
14. N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	2.00	0.017	50.0	1.00	0.05	00-00-0	N/A	N/A
15. Perfluorobutanesulfonic acid	99194	042821	0.02	2.00	0.017	50.1	1.00	0.02	375-73-5	N/A	N/A
16. Perfluoro-1-pentanesulfonic acid (PFPeS)	99544	042921	0.02	2.00	0.017	50.1	1.00	0.02	630402-22-1	N/A	N/A
17. Perfluorohexanesulfonic acid (branched)*	99198	081920	0.02	2.00	0.017	50.2	1.00	0.02	355-46-4	N/A	N/A
18. Perfluoro-1-heptanesulfonic acid	3672	LPFHpS0120	0.021	2.10	0.017	47.6	1.00	0.05	375-92-8	N/A	N/A
19. Heptadecafluorooctanesulfonic acid (branched)*	99201	010721	0.02	2.00	0.017	50.2	1.00	0.02	1763-23-1	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid	3957	LPFNS0820	0.021	2.10	0.017	48.0	1.01	0.05	98789-57-2	N/A	N/A
21. Perfluoro-1-decanesulfonic acid	3671	LPFDS0820	0.021	2.10	0.017	48.2	1.01	0.05	2806-15-7	N/A	N/A
22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid	65271	042821	0.02	2.00	0.017	50.1	1.00	0.05	757124-72-4	N/A	N/A
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid	65272	042821	0.02	2.00	0.017	50.1	1.00	0.05	27619-97-2	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid	3662	82FTS0520	0.021	2.10	0.017	47.9	1.01	0.05	27619-96-1	N/A	N/A
25. 2-(heptafluoropropoxy)-2,3,3,3-tetrafluoropropionic acid	99966	031121	0.02	2.00	0.017	50.2	1.00	0.02	13252-13-6	N/A	N/A
26. 11-Chlorodecafluoro-3-oxaundecane-1-sulfonic acid	4165	11CPFD304S120	0.021	2.12	0.017	47.1	1.00	0.05	83329-89-9	N/A	N/A
27. 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	4164	9CPFD30NS1020	0.021	2.14	0.017	48.6	1.00	0.05	73606-19-6	N/A	N/A
28. Dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA)	4103	NaDONA1120	0.021	2.12	0.017	47.1	1.00	0.05	958445-44-8	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	021820	0.01	1.00	0.004	44.2	0.44	0.006	335-67-1	N/A	LD ₅₀ rat 188mg/kg
Perfluorooctanoic acid (branched isomer)*	99202	021820	0.01	1.00	0.004	6.0	0.06	0.001	335-67-1	N/A	LD ₅₀ rat 188mg/kg
Perfluorohexanesulfonic acid (linear)*	99198	081920	0.01	1.00	0.004	49.6	0.50	0.01	355-46-4	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	99198	081920	0.01	1.00	0.004	0.6	0.01	0.0001	355-46-4	N/A	N/A
Heptadecafluorooctanesulfonic acid (linear)*	99201	010721	0.01	1.00	0.004	38.2	0.38	0.01	1763-23-1	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.01	1.00	0.004	7.5	0.08	0.001	1763-23-1	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.01	1.00	0.004	4.0	0.04	0.001	1763-23-1	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.01	1.00	0.004	0.5	0.005	0.0001	1763-23-1	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNMeFOSAA1119	0.01	1.00	0.004	36.0	0.36	0.02	2355-31-9	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA1119	0.01	1.00	0.004	6.5	0.06	0.005	00-00-0	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA1119	0.01	1.00	0.004	5.0	0.05	0.003	00-00-0	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA1119	0.01	1.00	0.004	2.5	0.02	0.0002	00-00-0	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSAA1120	0.01	1.00	0.004	36.6	0.37	0.02	2991-50-6	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.01	1.00	0.004	7.7	0.08	0.004	00-00-0	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.01	1.00	0.004	5.3	0.05	0.002	00-00-0	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.01	1.00	0.004	0.4	0.004	0.0003	00-00-0	N/A	N/A

*Concentrations for branched and linear isomers are based on LCMS chromatographic analysis only.

A qualitative standard (Sect. 3.19) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This qualitative PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers, but the linear only PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (±) 0.2% of the stated value, unless otherwise stated.
- All Standards, when opened, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).



It can be done

BDO Id: 210628-13

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: FPrPA **Received:** 6/28/2021
Vendor: Wellington Laboratories **Custodian:** Schumitz, Matt
Catalogue No: FPrPA **Expires:** 11/12/2025
Type: Solution **Consumed:** _____
Lot No: FPrPA1020 **Stored In:** LC Laboratory - R0107
Quantity: 1 ea ML **% Moisture:** _____
Description: FPrPA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
3-perfluoropropyl propanoic Acid	356-02-5	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by: _____ **Approved on:** _____
Authorized by: _____ **Authorized on:** _____

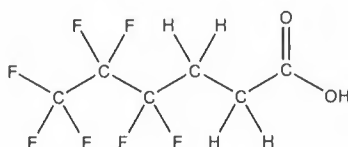
**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: FPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPrPA1020

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: C₈H₅F₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/12/2020
EXPIRY DATE: (mm/dd/yyyy) 11/12/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 242.09
SOLVENT(S): Methanol

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% of the unsaturated 3:3 telomer acid (C₈H₃F₇O₂) as an impurity determined by ¹⁹F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 11/27/2020
(mm/dd/yyyy)

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



It can be done

BDO Id: 210628-14

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	<u>FHpPA</u>	Received:	<u>6/28/2021</u>
Vendor:	<u>Wellington Laboratories</u>	Custodian:	<u>Schumitz, Matt</u>
Catalogue No:	<u>FHpPA</u>	Expires:	<u>11/12/2025</u>
Type:	<u>Solution</u>	Consumed:	<u></u>
Lot No:	<u>FHpPA1020</u>	Stored In:	<u>LC Laboratory - R0107</u>
Quantity:	<u>1 ea</u> <u>mL</u>	% Moisture:	<u></u>
Description:	<u>FHpPA</u>		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
3-Perfluoroheptyl propanoic acid	812-70-4	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by:	<u></u>	Approved on:	<u></u>
Authorized by:	<u></u>	Authorized on:	<u></u>

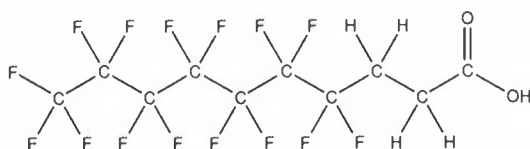
**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: FHpPA
COMPOUND: 3-Perfluoroheptyl propanoic acid

LOT NUMBER: FHpPA1020

STRUCTURE:

CAS #: 812-70-4



MOLECULAR FORMULA: $C_{10}H_5F_{15}O_2$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/12/2020
EXPIRY DATE: (mm/dd/yyyy) 11/12/2025
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 442.12
SOLVENT(S): Methanol

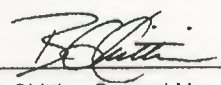
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 11/27/2020
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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It can be done

BDO Id: 210628-15

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name:	<u>FPePA</u>	Received:	<u>6/28/2021</u>
Vendor:	<u>Wellington Laboratories</u>	Custodian:	<u>Schumitz, Matt</u>
Catalogue No:	<u>FPePA</u>	Expires:	<u>10/5/2023</u>
Type:	<u>Solution</u>	Consumed:	<u></u>
Lot No:	<u>FPePA0920</u>	Stored In:	<u>LC Laboratory - R0107</u>
Quantity:	<u>1 ea</u> <u>mL</u>	% Moisture:	<u></u>
Description:	<u>FPePA</u>		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
3-Perfluoropentyl propanoic acid	914637-49-3	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by:	<u></u>	Approved on:	<u></u>
Authorized by:	<u></u>	Authorized on:	<u></u>

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

FPePA

LOT NUMBER:

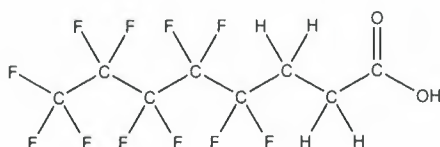
FPePA0920

COMPOUND:

3-Perfluoropentyl propanoic acid

STRUCTURE:**CAS #:**

914637-49-3

**MOLECULAR FORMULA:** $C_8H_5F_{11}O_2$ **MOLECULAR WEIGHT:**

342.11

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/05/2020

EXPIRY DATE: (mm/dd/yyyy)

10/05/2023

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains <1% of the unsaturated 5:3 telomer acid ($C_8H_3F_{11}O_2$) as an impurity determined by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General ManagerDate: 10/13/2020
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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It can be done

BDO Id: 210714-01

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: PFOA DOD
Received: 7/14/2021
Vendor: ABSOLUTE STANDARDS
Custodian: Schumitz, Matt
Catalogue No: 64029
Expires: 4/30/2026
Type: Solution
Consumed:
Lot No: 043021
Stored In: LC Laboratory - F0111
Quantity: 5 ea mL **% Moisture:**
Description: PFOA DOD

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Lower Limit:	Upper Limit:
11-chloroeicosafuoro-3-oxaundecan	763051-92-9	1.0000	100.00	--	--	☐		
1H,1H,2H,2H-Perfluorodecane sulfon	39108-34-4	1.0100	100.00	--	--	☐		
1H,1H,2H,2H-Perfluorohexane sulfon	757124-72-4	1.0000	100.00	--	--	☐		
1H,1H,2H,2H-Perfluorooctane sulfon	27619-97-2	1.0000	100.00	--	--	☐		
9-chlorohexadecafluoro-3-oxanonane	756426-58-1	1.0000	100.00	--	--	☐		
Adona	919005-14-4	1.0000	100.00	--	--	☐		
Hexafluoropropylene oxide dimer aci	13252-13-6	1.0000	100.00	--	--	☐		
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	1.0000	100.00	--	--	☐		
N-methylperfluoro-1-octanesulfonami	2355-31-9	1.0000	100.00	--	--	☐		
Perfluoro-1-butanefluoride	375-73-5	1.0000	100.00	--	--	☐		
Perfluoro-1-decanesulfonate	335-77-3	1.0100	100.00	--	--	☐		
Perfluoro-1-heptanesulfonate	375-92-8	1.0000	100.00	--	--	☐		
Perfluoro-1-hexanesulfonate	355-46-4	1.0000	100.00	--	--	☐		
Perfluoro-1-nonanesulfonate	68259-12-1	1.0100	100.00	--	--	☐		
Perfluoro-1-octanesulfonamide	754-91-6	1.0000	100.00	--	--	☐		
Perfluoro-1-octanesulfonate	1763-23-1	1.0000	100.00	--	--	☐		
perfluoro-1-pentanesulfonate	2706-91-4	1.0000	100.00	--	--	☐		
Perfluoro-n-butanoic Acid	375-22-4	1.0000	100.00	--	--	☐		
Perfluoro-n-decanoic Acid	335-76-2	1.0000	100.00	--	--	☐		
Perfluoro-n-dodecanoic acid	307-55-1	1.0000	100.00	--	--	☐		
Perfluoro-n-heptanoic Acid	375-85-9	1.0000	100.00	--	--	☐		
Perfluoro-n-hexanoic acid	307-24-4	1.0000	100.00	--	--	☐		
Perfluoro-n-octanoic Acid	335-67-1	1.0100	100.00	--	--	☐		
Perfluorononanoic Acid	375-95-1	1.0000	100.00	--	--	☐		
Perfluoro-n-pentanoic acid	2706-90-3	1.0100	100.00	--	--	☐		
Perfluoro-n-tetradecanoic acid	376-06-7	1.0000	100.00	--	--	☐		
Perfluoro-n-tridecanoic acid	72629-94-8	1.0000	100.00	--	--	☐		
Perfluoro-n-undecanoic acid	2058-94-8	1.0000	100.00	--	--	☐		

Total Analytes: 28

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____



Certified Reference Material CRM



CERTIFIED WEIGHT REPORT

Part Number: 64029
Lot Number: 043021
Description: PFOA - DOD
28 components
Expiration Date: 043026
Recommended Storage: Freezer (0 °C)
Nominal Concentration (µg/mL): 1.0
NIST Test ID#: 6UTB

Solvent(s): Methanol (1 mM KOH)
2-Propanol
Lot#: 043021 (96%)
23214 (2%)

Formulated By: Benson Chan	043021
DATE	
Reviewed By: Pedro L. Renteria	043021
DATE	

Volume(s) shown below were combined and diluted to (mL):

100.0 0.012

Note: All assigned values are anion concentrations.

5E-05 Balance Uncertainty
Flask Uncertainty

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty P.pete (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (±) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.)		
									CAS#	OSHA PEL (TWA)	LDSO
1. Perfluoro-n-butyric acid (L-PFBA)	99542	042921	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A
2. Perfluoro-n-pentanoic acid (PFPeA)	99543	042021	0.02	2.00	0.017	50.3	1.01	0.02	2706-90-3	N/A	N/A
3. Perfluoro-hexanoic acid	99199	042821	0.02	2.00	0.017	50.1	1.00	0.12	307-24-4	N/A	N/A
4. Perfluoroheptanoic acid	99197	061920	0.02	2.00	0.017	50.1	1.00	0.02	375-85-9	N/A	N/A
5. Perfluorooctanoic acid (branched)*	99202	021820	0.02	2.00	0.017	50.3	1.01	0.02	335-67-1	N/A	or-rel 186mg/kg
6. Perfluorononanoic acid	99200	010721	0.02	2.00	0.017	50.2	1.00	0.02	375-95-1	N/A	N/A
7. Perfluorodecanoic acid	99195	101420	0.02	2.00	0.017	50.1	1.00	0.02	335-76-2	N/A	or-rel 57mg/kg
8. Perfluoroundecanoic acid	99205	042821	0.02	2.00	0.017	50.1	1.00	0.12	2058-94-8	N/A	N/A
9. Tricosulfurododecanoic acid	99196	042921	0.02	2.00	0.017	50.1	1.00	0.12	307-55-1	N/A	N/A
10. Perfluorotridecanoic acid	99204	042821	0.02	2.00	0.017	50.1	1.00	0.12	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid	99203	042921	0.02	2.00	0.017	50.0	1.00	0.12	376-06-7	N/A	N/A
12. Perfluoro-1-octanesulfonamide	3677	FOSA10201	0.02	2.00	0.017	50.0	1.00	0.05	754-91-6	N/A	N/A
13. N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNEFOSAA1119	0.02	2.00	0.017	50.0	1.00	0.05	00-00-0	N/A	N/A
14. N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	2.00	0.017	50.0	1.00	0.05	00-00-0	N/A	N/A
15. Perfluorobutanesulfonic acid	99194	042821	0.02	2.00	0.017	50.1	1.00	0.12	375-73-5	N/A	N/A
16. Perfluoro-1-pentanesulfonic acid (PFPeS)	99544	042921	0.02	2.00	0.017	50.1	1.00	0.02	830402-22-1	N/A	N/A
17. Perfluorohexanesulfonic acid (branched)*	99198	061920	0.02	2.00	0.017	50.2	1.00	0.02	355-46-4	N/A	N/A
18. Perfluoro-1-heptanesulfonic acid	3672	LPFHpS0120	0.021	2.10	0.017	47.6	1.00	0.05	375-82-8	N/A	N/A
19. Heptadecafluorooctanesulfonic acid (branched)*	99201	010721	0.02	2.00	0.017	50.2	1.00	0.02	1763-23-1	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid	3957	LPFNs0920	0.021	2.10	0.017	46.0	1.01	0.05	98789-57-2	N/A	N/A
21. Perfluoro-1-decane sulfonic acid	3671	LPFDs0820	0.021	2.10	0.017	48.2	1.01	0.05	2906-15-7	N/A	N/A
22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid	65271	042821	0.02	2.00	0.017	50.1	1.00	0.05	757124-72-4	N/A	N/A
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid	65272	042821	0.02	2.00	0.017	50.1	1.00	0.05	27619-97-2	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid	3662	82FTS0520	0.021	2.10	0.017	47.9	1.01	0.05	27619-96-1	N/A	N/A
25. 2-(Heptafluoropropoxy)-2,3,3,3-tetrafluoropropionic acid	99666	031121	0.02	2.00	0.017	50.2	1.00	0.02	13252-13-6	N/A	N/A
26. 11-Chlorooctadecafluoro-3-oxaundecane-1-sulfonic acid	4165	11CPFOUS1220	0.021	2.12	0.017	47.1	1.00	0.05	83329-89-9	N/A	N/A
27. 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	4164	9CPFF3ONS1020	0.021	2.14	0.017	46.6	1.00	0.05	73606-19-6	N/A	N/A
28. Dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA)	4103	NaDONA1120	0.021	2.12	0.017	47.1	1.00	0.05	958445-44-8	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	021820	0.02	2.00	0.004	44.2	0.88	0.010	335-67-1	N/A	or-rel 186mg/kg
Perfluorooctanoic acid (branched isomer)*	99202	021820	0.02	2.00	0.004	6.0	0.12	0.001	335-67-1	N/A	or-rel 186mg/kg
Perfluorohexanesulfonic acid (linear)*	99198	061920	0.02	2.00	0.017	49.6	0.99	0.02	355-46-4	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	99198	061920	0.02	2.00	0.017	0.6	0.01	0.0002	355-46-4	N/A	N/A
Heptadecafluorooctanesulfonic acid (linear)*	99201	010721	0.02	2.00	0.017	38.2	0.76	0.02	1763-23-1	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.02	2.00	0.017	7.5	0.15	0.003	1763-23-1	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.02	2.00	0.017	4.0	0.08	0.002	1763-23-1	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.02	2.00	0.017	0.5	0.010	0.0002	1763-23-1	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNEFOSAA1119	0.02	2.00	0.017	36.0	0.72	0.04	2355-31-9	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNEFOSAA1119	0.02	2.00	0.017	6.5	0.13	0.011	00-00-0	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNEFOSAA1119	0.02	2.00	0.017	5.0	0.10	0.005	00-00-0	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNEFOSAA1119	0.02	2.00	0.017	2.5	0.05	0.0009	00-00-0	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSAA1120	0.02	2.00	0.017	36.6	0.73	0.04	2991-50-6	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	2.00	0.017	7.7	0.15	0.009	00-00-0	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	2.00	0.017	5.3	0.11	0.005	00-00-0	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	2.00	0.017	0.4	0.007	0.0006	00-00-0	N/A	N/A

*Concentrations for branched and linear isomers are based on LCMS chromatographic analysis only.

A qualitative standard (Sect. 3.19) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This qualitative PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers, but the linear only PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.1

1. The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.

* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).

* Standards are certified (±) 0.5% of the stated value, unless otherwise stated.

* All Standards, after opening ampoule, should be stored with caps tight and under appropriate laboratory conditions.

* Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results."

NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).



It can be done

BDO Id: 210730-02

Reagent Receipt Report

Approved: ☐ Authorized ☐

Name: Method 537.1 Analyte Primary Dilutio
Received: 7/30/2021
Vendor: Cambridge Isotope Laborat
Custodian: Schumitz, Matt
Catalogue No: ES-5631
Expires: 9/9/2025
Type: Solution
Consumed: _____
Lot No: PR-31374
Stored In: Sample Preparation - C0103
Quantity: 4 ea mL **% Moisture:** _____
Description: Method 537.1 Analyte Primary Dilution STD

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Lower Limit:	Upper Limit:
11-chloroeicosafluoro-3-oxaundecan	763051-92-9	2.0000	100.00	--	--	☐		
9-chlorohexadecafluoro-3-oxanonane	756426-58-1	2.0000	100.00	--	--	☐		
Adona	919005-14-4	2.0000	100.00	--	--	☐		
Hexafluoropropylene oxide dimer aci	13252-13-6	2.0000	100.00	--	--	☐		
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	2.0000	100.00	--	--	☐		
N-methylperfluoro-1-octanesulfonami	2355-31-9	2.0000	100.00	--	--	☐		
Perfluoro-1-butanefluoride	375-73-5	2.0000	100.00	--	--	☐		
Perfluoro-1-hexanesulfonate	355-46-4	2.0000	100.00	--	--	☐		
Perfluoro-1-octanesulfonate	1763-23-1	2.0000	100.00	--	--	☐		
Perfluoro-n-decanoic Acid	335-76-2	2.0000	100.00	--	--	☐		
Perfluoro-n-dodecanoic acid	307-55-1	2.0000	100.00	--	--	☐		
Perfluoro-n-heptanoic Acid	375-85-9	2.0000	100.00	--	--	☐		
Perfluoro-n-hexanoic acid	307-24-4	2.0000	100.00	--	--	☐		
Perfluoro-n-octanoic Acid	335-67-1	2.0000	100.00	--	--	☐		
Perfluorononanoic Acid	375-95-1	2.0000	100.00	--	--	☐		
Perfluoro-n-tetradecanoic acid	376-06-7	2.0000	100.00	--	--	☐		
Perfluoro-n-tridecanoic acid	72629-94-8	2.0000	100.00	--	--	☐		
Perfluoro-n-undecanoic acid	2058-94-8	2.0000	100.00	--	--	☐		

Total Analytes: 18

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____



Product Description: Method 537.1 Analyte Primary Dilution STD (PDS)
Catalog Number: ES-5631
Lot Number: PR-31374
Solvent: Methanol (w/ 4Molar Equivalents NaOH)
Volume per Ampoule: 1.2 mL
Storage Conditions: Store at room temperature away from light and moisture.
Intended Use: For Research Use Only. Not for use in diagnostic procedures.
QC Release Date: September 29, 2020
Expiration Date: September 29, 2025

Component	Acronym	Target Concentration (ng/mL)	Gravimetric Concentration of Salt $\pm$ Uncertainty, (k=2) (ng/mL)	Gravimetric Concentration of Free Acid $\pm$ Uncertainty (k=2) (ng/mL)
Perfluorohexanoic acid, sodium salt	PFHxA	2,000	2,140 $\pm$ 32	2,000 $\pm$ 32
Perfluoroheptanoic acid	PFHpA	2,000	-	2,000 $\pm$ 20
Perfluorooctanoic acid	PFOA	2,000	-	2,000 $\pm$ 20
Perfluorononanoic acid	PFNA	2,000	-	2,000 $\pm$ 20
Perfluorodecanoic acid, sodium salt	PFDA	2,000	2,086 $\pm$ 21	2,000 $\pm$ 21
Perfluoroundecanoic acid, sodium salt	PFUdA	2,000	2,078 $\pm$ 32	2,000 $\pm$ 32
Perfluorododecanoic acid, sodium salt	PFDoA	2,000	2,072 $\pm$ 34	2,000 $\pm$ 34
Perfluorotridecanoic acid	PFTTrDA	2,000	-	2,000 $\pm$ 32
Perfluorotetradecanoic acid	PFTeDA	2,000	-	2,000 $\pm$ 31
Perfluorobutanesulfonate potassium salt	PFBS	2,000	2,254 $\pm$ 23	2,000 $\pm$ 23
Potassium perfluorohexanesulfonate (mixed isomers),	PFHxS	2,000	2,190 $\pm$ 22	2,000 $\pm$ 22
Perfluorooctanesulfonate (mixed isomers)	PFOS	2,000	-	2,000 $\pm$ 32
N-Ethylperfluorooctanesulfonamidoacetic acid (mixed isomers)	N-EtFOSAA	2,000	-	2,000 $\pm$ 32
N-Methylperfluorooctanesulfonamidoacetic acid (mixed isomers)	N-MeFOSAA	2,000	-	2,000 $\pm$ 20
Tetrafluoro-2-(heptafluoropropoxy)propanoic acid "GENX"	HFPO-DA	2,000	-	2,000 $\pm$ 20
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid, potassium salt	11CL-PF3OUDS	2,000	2,121 $\pm$ 21	2,000 $\pm$ 21
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid, potassium salt	9CL-PF3ONS	2,000	2,143 $\pm$ 26	2,000 $\pm$ 26
Dodecafluoro-3H-4,8-dioxananoic acid, sodium salt	NaDONA	2,000	2,116 $\pm$ 106	2,000 $\pm$ 106

Notes:

- 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.



Cambridge Isotope Laboratories certifies that this product meets the concentration specification stated above. Volumetric measurements are made with Class A glassware and syringes that are traceable to NIST.

Authorized Signature: Thomas Dorsey
Quality Review



It can be done

BDO Id: 210802-01

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	<u>13C4-PFBA</u>	Received:	<u>8/2/2021</u>
Vendor:	<u>Wellington Laboratories</u>	Custodian:	<u>Harnden, Kelsey</u>
Catalogue No:	<u>MPFBA</u>	Expires:	<u>5/13/2025</u>
Type:	<u>Solution</u>	Consumed:	<u></u>
Lot No:	<u>MPFBA0420</u>	Stored In:	<u>VOC Laboratory - R0123</u>
Quantity:	<u>1 ea</u> <u>mL</u>	% Moisture:	<u></u>
Description:	<u>MPFBA</u>		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
13C4-PFBA	BDO-2105	50.0000	98.00	--	--	☐			

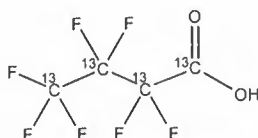
Total Analytes: 1

Notes:

Approved by:	<u></u>	Approved on:	<u></u>
Authorized by:	<u></u>	Authorized on:	<u></u>

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:**

MPFBA

LOT NUMBER: MPFBA0420**COMPOUND:**Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid**STRUCTURE:****CAS #:** Not available**MOLECULAR FORMULA:**¹³C₄HF₇O₂**CONCENTRATION:**

50.0 ± 2.5 µg/ml

MOLECULAR WEIGHT: 218.01**SOLVENT(S):**Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

ISOTOPIC PURITY:≥99% ¹³C
(1,2,3,4-¹³C₄)**LAST TESTED:** (mm/dd/yyyy)

05/13/2020

EXPIRY DATE: (mm/dd/yyyy)

05/13/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**Certified By:**
B.G. Chittim, General Manager**Date:** 05/20/2020
(mm/dd/yyyy)**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA**
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com



It can be done

BDO Id: 210802-02

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C5-PFPeA Received: 8/2/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M5PFPeA Expires: 12/23/2025
Type: Solution Consumed:
Lot No: M5PFPeA1220 Stored In: VOC Laboratory - R0123
Quantity: 1 ea mL % Moisture:
Description: M5PFPeA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C5-PFPeA	BDO-2216	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210802-02



WELLINGTON LABORATORIES

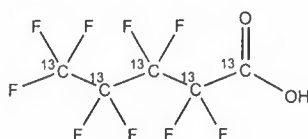
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}\text{C}_5$]pentanoic acid

LOT NUMBER: M5PFPeA1220

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}\text{C}_5\text{HF}_9\text{O}_2$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: $\geq 99\%$ ^{13}C
($^{13}\text{C}_5$)

LAST TESTED: (mm/dd/yyyy) 12/23/2020

EXPIRY DATE: (mm/dd/yyyy) 12/23/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 01/19/2021
(mm/dd/yyyy)

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



It can be done

BDO Id: 210802-11

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C8-FOSA-I Received: 8/2/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M8FOSA-I Expires: 3/2/2026
Type: Solution Consumed:
Lot No: M8FOSA0221I Stored In: VOC Laboratory - R0123
Quantity: 1 ea ML % Moisture:
Description: M8FOSA-I

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C8-FOSA	BDO-2225	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____



WELLINGTON LABORATORIES

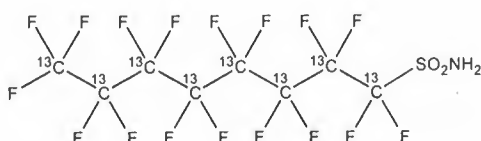
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-(¹³C₈)octanesulfonamide

LOT NUMBER: M8FOSA02211

STRUCTURE:

CAS #: 1365803-60-6



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/02/2021
EXPIRY DATE: (mm/dd/yyyy) 03/02/2026
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09
SOLVENT(S): Isopropanol
ISOTOPIC PURITY: ≥99% (¹³C₈)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~1.0% of perfluoro-1-(¹³C₈)octanesulfonamide and ~0.2% of perfluoro-1-(¹³C₇)heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 03/17/2021
(mm/dd/yyyy)

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

It can be done

BDO Id: 210802-15

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	13C2-4:2FTS	Received:	8/2/2021
Vendor:	Wellington Laboratories	Custodian:	Harnden, Kelsey
Catalogue No:	M2-4:2FTS	Expires:	6/24/2026
Type:	Solution	Consumed:	
Lot No:	M242FTS0621	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea ML	% Moisture:	
Description:	M2-4:2FTS		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-4:2FTS	BDO-2229	46.9000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

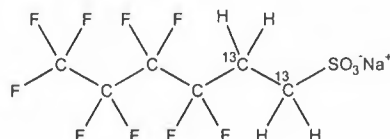


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-4:2FTS **LOT NUMBER:** M242FTS0621
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-(1,2-¹³C₂)hexanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄H₄F₉SO₃Na **MOLECULAR WEIGHT:** 352.12
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
46.9 ± 2.3 µg/mL (M2-4:2FTS acid)
46.7 ± 2.3 µg/mL (M2-4:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 06/24/2021 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 06/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 4:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 4:2FTS and M2-4:2FTS will produce signals in the m/z 329 to m/z 309 channel during SRM analysis. We recommend using the m/z 329 to m/z 81 transition to monitor for M2-4:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 07/05/2021
(mm/dd/yyyy)

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

It can be done

BDO Id: 210802-16

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	13C2-6:2FTS	Received:	8/2/2021
Vendor:	Wellington Laboratories	Custodian:	Harnden, Kelsey
Catalogue No:	M2-6:2FTS	Expires:	5/14/2026
Type:	Solution	Consumed:	
Lot No:	M262FTS0521	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea ML	% Moisture:	
Description:	M2-6:2FTS		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-6:2FTS	BDO-2230	47.6000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

210802-16

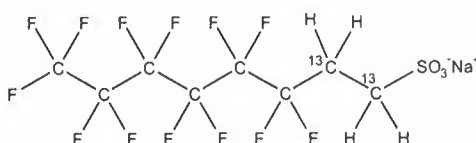


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0521
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-(1,2-¹³C₂)octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 47.6 ± 2.4 µg/mL (M2-6:2FTS acid)
 47.5 ± 2.4 µg/mL (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 05/14/2021 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 05/14/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
 B.G. Chittim, General Manager

Date: 05/26/2021
 (mm/dd/yyyy)

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



It can be done

BDO Id: 210802-17

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C2-8:2FTS Received: 8/2/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M2-8:2FTS Expires: 7/9/2026
Type: Solution Consumed:
Lot No: M282FTS0621 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ML % Moisture:
Description: M2-8:2FTS

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-8:2FTS	BDO-2220	48.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

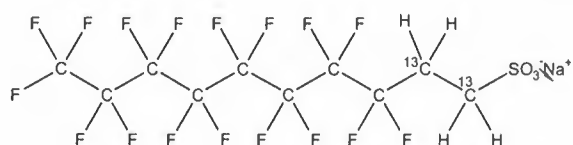
210802-17



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0621
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-(1,2-¹³C₂)decanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 552.15
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 48.0 ± 2.4 µg/mL (M2-8:2FTS acid)
 47.9 ± 2.4 µg/mL (M2-8:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 07/09/2021 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 07/09/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/12/2021

(mm/dd/yyyy)

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It can be done

BDO Id: 210802-20

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C4-PFOS Received: 8/2/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: MPFOS Expires: 3/30/2026
Type: Solution Consumed:
Lot No: MPFOS0321 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ML % Moisture:
Description: MPFOS

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C4-PFOS	BDO-2121	47.9000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

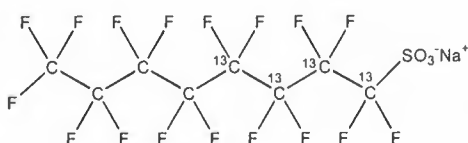
Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0321
COMPOUND: Sodium perfluoro-1-(1,2,3,4-¹³C₄)octanesulfonate
STRUCTURE: **CAS #:** 960315-53-1



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 47.9 ± 2.4 µg/mL (MPFOS acid)
 47.8 ± 2.4 µg/mL (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 03/30/2021 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 03/30/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.4% sodium perfluoro-1-(1,2,3-¹³C₃)heptanesulfonate.

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Certified By:
 B.G. Chittim, General Manager

Date: 04/08/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210802-22

Reagent Receipt Report

Approved: ☐ Authenticated: ☐

Name:	13C3-PFBA	Received:	8/2/2021
Vendor:	Wellington Laboratories	Custodian:	Harnden, Kelsey
Catalogue No:	M3PFBA	Expires:	2/24/2025
Type:	Solution	Consumed:	
Lot No:	M3PFBA0120	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea ML	% Moisture:	
Description:	M3PFBA		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C3-PFBA	BDO-2231	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

210802-22



WELLINGTON LABORATORIES

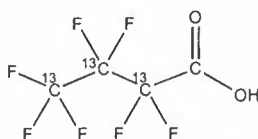
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBA
COMPOUND: Perfluoro-n-[2,3,4-¹³C₃]butanoic acid

LOT NUMBER: M3PFBA0120

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₃¹²CHF₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/ml

MOLECULAR WEIGHT: 217.02
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/24/2020
EXPIRY DATE: (mm/dd/yyyy) 02/24/2025

ISOTOPIC PURITY: ≥99% ¹³C
(2,3,4-¹³C₃)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-[¹³C₃]propanoic acid and also contains ~ 1.0% of perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid due to the naturally occurring isotopic abundance of ¹³C in the unlabelled carbon atom.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 03/27/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210802-23

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C2-PFOA Received: 8/2/2021
Vendor: M2PFOA Custodian: Harnden, Kelsey
Catalogue No: M2PFOA Expires: 5/5/2026
Type: Solution Consumed:
Lot No: M2PFOA0421 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ML % Moisture:
Description: M2PFOA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFOA	BDO-2107	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210802.23



WELLINGTON LABORATORIES

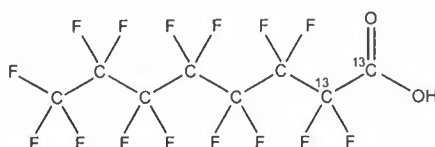
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA
COMPOUND: Perfluoro-n-(1,2-¹³C₂)octanoic acid

LOT NUMBER: M2PFOA0421

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₅O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL

MOLECULAR WEIGHT: 416.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/05/2021
EXPIRY DATE: (mm/dd/yyyy) 05/05/2026

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 05/12/2021
(mm/dd/yyyy)

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It can be done

BDO Id: 210802-24

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C2-PFDA Received: 8/2/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: MPFDA Expires: 6/8/2026
Type: Solution Consumed:
Lot No: MPFDA0621 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ML % Moisture:
Description: MPFDA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFDA	BDO-2110	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210802-24



WELLINGTON LABORATORIES

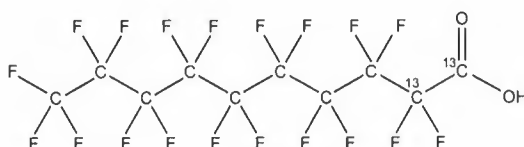
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA
COMPOUND: Perfluoro-n-(1,2-¹³C₂)decanoic acid

LOT NUMBER: MPFDA0621

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/08/2021
EXPIRY DATE: (mm/dd/yyyy) 06/08/2026

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 06/18/2021
(mm/dd/yyyy)

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It can be done

BDO Id: 210819-02

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	PFOA DOD(062421)	Received:	8/19/2021
Vendor:	ABSOLUTE STANDARDS	Custodian:	Schumitz, Matt
Catalogue No:	64029	Expires:	6/24/2026
Type:	Solution	Consumed:	
Lot No:	062421	Stored In:	LC Laboratory - F0111
Quantity:	8 ea mL	% Moisture:	
Description:	PFOA DOD(062421)		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
11-chloroeicosafuoro-3-oxaundecan	763051-92-9	1.0000	100.00	--	--	☐			
1H,1H,2H,2H-Perfluorodecane sulfo	39108-34-4	1.0100	100.00	--	--	☐			
1H,1H,2H,2H-Perfluorohexane sulfon	757124-72-4	1.0000	100.00	--	--	☐			
1H,1H,2H,2H-Perfluorooctane sulfon	27619-97-2	1.0000	100.00	--	--	☐			
9-chlorohexadecafluoro-3-oxanone	756426-58-1	1.0000	100.00	--	--	☐			
Adona	919005-14-4	1.0000	100.00	--	--	☐			
Hexafluoropropylene oxide dimer aci	13252-13-6	1.0000	100.00	--	--	☐			
N-ethylperfluoro-octanesulfonamidoa	2991-50-6	1.0000	100.00	--	--	☐			
N-methylperfluoro-1-octanesulfonami	2355-31-9	1.0000	100.00	--	--	☐			
Perfluoro-1-butanefluoride	375-73-5	1.0000	100.00	--	--	☐			
Perfluoro-1-decanesulfonate	335-77-3	1.0100	100.00	--	--	☐			
Perfluoro-1-heptanesulfonate	375-92-8	1.0000	100.00	--	--	☐			
Perfluoro-1-hexanesulfonate	355-46-4	1.0000	100.00	--	--	☐			
Perfluoro-1-nonanesulfonate	68259-12-1	1.0100	100.00	--	--	☐			
Perfluoro-1-octanesulfonamide	754-91-6	1.0000	100.00	--	--	☐			
Perfluoro-1-octanesulfonate	1763-23-1	1.0000	100.00	--	--	☐			
perfluoro-1-pentanesulfonate	2706-91-4	1.0000	100.00	--	--	☐			
Perfluoro-n-butanoic Acid	375-22-4	1.0000	100.00	--	--	☐			
Perfluoro-n-decanoic Acid	335-76-2	1.0000	100.00	--	--	☐			
Perfluoro-n-dodecanoic acid	307-55-1	1.0000	100.00	--	--	☐			
Perfluoro-n-heptanoic Acid	375-85-9	1.0000	100.00	--	--	☐			
Perfluoro-n-hexanoic acid	307-24-4	1.0000	100.00	--	--	☐			
Perfluoro-n-octanoic Acid	335-67-1	1.0000	100.00	--	--	☐			
Perfluorononanoic Acid	375-95-1	1.0000	100.00	--	--	☐			
Perfluoro-n-pentanoic acid	2706-90-3	1.0100	100.00	--	--	☐			
Perfluoro-n-tetradecanoic acid	376-06-7	1.0000	100.00	--	--	☐			
Perfluoro-n-tridecanoic acid	72629-94-8	1.0000	100.00	--	--	☐			
Perfluoro-n-undecanoic acid	2058-94-8	1.0000	100.00	--	--	☐			

Total Analytes: 28

Notes:

Approved by:	Approved on:
Authorized by:	Authorized on:



CERTIFIED WEIGHT REPORT

Part Number: 64029
 Lot Number: 062421
 Description: PFOA - DOD
 26 components
 062426
 Expiration Date: Freezer (0 °C)
 Recommended Storage: 1.0
 Nominal Concentration (µg/mL): NIST Test ID:
 BUTB

Solvent(s): Lot#
 Methanol (1 mM KOH) 043021 (96%)
 2-Propanol 23214 (2%)

Formulated By: Benson Chan	DATE
Reviewed By: Pedro L. Rentes	DATE

Volume(s) shown below were combined and diluted to (mL):

Note: All assigned values are anion concentrations.

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol (mL)	Uncertainty Pipette (mL)	Initial Conc (µg/mL)	Final Conc (µg/mL)	Expanded Uncertainty (±) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.)	CAS#	OSHA PEL (TWA)	LD50
1. Perfluoro-n-butyric acid (L-PFBA)	99542	042921	0.02	1.00	0.004	50.1	1.00	0.01	375-22-4	N/A	N/A	
2. Perfluoro-n-pentanoic acid (PFPeA)	99543	042021	0.02	1.00	0.004	50.3	1.01	0.02	2705-90-3	N/A	N/A	
3. Perfluorohexanoic acid	99199	042821	0.02	1.00	0.004	50.1	1.00	0.12	307-24-4	N/A	N/A	
4. Perfluoroheptanoic acid	99197	081920	0.02	1.00	0.004	50.1	1.00	0.01	375-85-9	N/A	N/A	
5. Perfluorooctanoic acid (linear)*	99202	061621	0.02	1.00	0.004	50.3	1.00	0.01	335-67-1	N/A	cr-rel 186mg/kg	
6. Perfluorononanoic acid	99200	010721	0.02	1.00	0.004	50.2	1.00	0.01	375-95-1	N/A	N/A	
7. Perfluorodecanoic acid	99195	101420	0.02	1.00	0.004	50.1	1.00	0.01	335-75-2	N/A	cr-rel 57mg/kg	
8. Perfluoroundecanoic acid	99205	042821	0.02	1.00	0.004	50.1	1.00	0.12	2058-94-8	N/A	N/A	
9. Tricosulfurodecanoic acid	99196	042921	0.02	1.00	0.004	50.1	1.00	0.12	307-55-1	N/A	N/A	
10. Perfluorotetradecanoic acid	99204	042821	0.02	1.00	0.004	50.1	1.00	0.12	72629-94-8	N/A	N/A	
11. Perfluorohexadecanoic acid	99203	042921	0.02	1.00	0.004	50.0	1.00	0.12	376-06-7	N/A	N/A	
12. Perfluoro-1-octanesulfonamide	3677	FCSA10201	0.02	1.00	0.004	50.0	1.00	0.05	754-91-6	N/A	N/A	
13. N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNMeFOSAA1119	0.02	1.00	0.004	50.0	1.00	0.05	00-00-0	N/A	N/A	
14. N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSAA1120	0.02	1.00	0.004	50.0	1.00	0.05	00-00-0	N/A	N/A	
15. Perfluorobutanesulfonic acid	99194	042821	0.02	1.00	0.004	50.1	1.00	0.12	375-73-5	N/A	N/A	
16. Perfluoro-1-pentanesulfonic acid (PFPeS)	99544	042921	0.02	1.00	0.004	50.1	1.00	0.02	830402-22-1	N/A	N/A	
17. Perfluorohexanesulfonic acid (linear)*	99198	081920	0.02	1.00	0.004	50.2	1.00	0.01	355-46-4	N/A	N/A	
18. Perfluoro-1-heptanesulfonic acid	3672	LPFHgS0120	0.021	1.05	0.004	47.6	1.00	0.05	375-92-8	N/A	N/A	
19. Heptadecafluorooctanesulfonic acid (linear)*	99201	010721	0.02	1.00	0.004	50.2	1.00	0.01	1763-23-1	N/A	N/A	
20. Perfluoro-1-nonanesulfonic acid	3957	LPFNS0620	0.021	1.05	0.004	48.0	1.01	0.05	98789-57-2	N/A	N/A	
21. Perfluoro-1-decane sulfonic acid	3671	LPFDS0121	0.021	1.05	0.004	48.2	1.01	0.05	2806-15-7	N/A	N/A	
22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid	65271	042821	0.02	1.00	0.004	50.1	1.00	0.05	757124-72-4	N/A	N/A	
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid	65272	042821	0.02	1.00	0.004	50.1	1.00	0.05	27619-97-2	N/A	N/A	
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid	3662	B2FTS1120	0.021	1.05	0.004	47.9	1.01	0.05	27619-96-1	N/A	N/A	
25. 2-(heptafluoropropoxy)-2,3,3,3-tetrafluoropropionic acid	99686	031121	0.02	1.00	0.004	50.2	1.00	0.01	13252-13-6	N/A	N/A	
26. 11-Chlorooctadecafluoro-3-oxaundecane-1-sulfonic acid	4165	11CIPF30US-220	0.021	1.06	0.004	47.1	1.00	0.05	83329-89-9	N/A	N/A	
27. 9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid	4164	9CIPF30NS0421	0.021	1.07	0.004	46.6	1.00	0.05	73606-19-6	N/A	N/A	
28. Dodecafluoro-3H-4,8-dioxanonenoic acid (ADONA)	4103	NaDONA1120	0.021	1.06	0.004	47.1	1.00	0.05	958445-44-8	N/A	N/A	

Perfluorooctanoic acid (linear)*	99202	061621	0.04	2.00	0.004	44.2	1.77	0.020	335-67-1	N/A	cr-rel 186mg/kg	
Perfluorooctanoic acid (branched isomer)*	99202	061621	0.04	2.00	0.004	6.0	0.24	0.003	335-67-1	N/A	cr-rel 186mg/kg	
Perfluorohexanesulfonic acid (linear)*	99198	081920	0.02	1.00	0.004	49.6	0.99	0.01	355-46-4	N/A	N/A	
Perfluorohexanesulfonic acid (branched isomer)*	99198	081920	0.02	1.00	0.004	0.6	0.01	0.0002	355-46-4	N/A	N/A	
Heptadecafluorooctanesulfonic acid (linear)*	99201	010721	0.02	1.00	0.004	38.2	0.76	0.01	1763-23-1	N/A	N/A	
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.02	1.00	0.004	7.5	0.15	0.002	1763-23-1	N/A	N/A	
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.02	1.00	0.004	4.0	0.08	0.001	1763-23-1	N/A	N/A	
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	010721	0.02	1.00	0.004	0.5	0.010	0.0001	1763-23-1	N/A	N/A	
N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNMeFOSAA1119	0.02	1.00	0.004	36.0	0.72	0.03	2355-31-9	N/A	N/A	
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA1119	0.02	1.00	0.004	6.5	0.13	0.011	00-00-0	N/A	N/A	
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA1119	0.02	1.00	0.004	5.0	0.10	0.005	00-00-0	N/A	N/A	
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSAA1119	0.02	1.00	0.004	2.5	0.05	0.0005	00-00-0	N/A	N/A	
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSAA1120	0.02	1.00	0.004	36.6	0.73	0.04	2991-50-5	N/A	N/A	
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	1.00	0.004	7.7	0.15	0.009	00-00-0	N/A	N/A	
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	1.00	0.004	5.3	0.11	0.005	00-00-0	N/A	N/A	
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSAA1120	0.02	1.00	0.004	0.4	0.007	0.0006	00-00-0	N/A	N/A	

*Concentrations for branched and linear isomers are based on LC/MS chromatographic analysis only.

A qualitative standard (Sect. 3.19) is available for PFOA that contains the linear and branched isomers (Wellington Labs, Cat. No. T-PFOA, or equivalent). This qualitative PFOA standard must be purchased and used to identify the retention times of the branched PFOA isomers, but the linear only PFOA standard must be used for quantitation (Sect. 12.2) until a quantitative PFOA standard containing the branched and linear isomers becomes commercially available.

*The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.

*Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).

*All standards, after opening sample, should be stored with caps tight and under appropriate laboratory conditions.

*Uncertainty Reference: Taylor, B.N., and Kuyat, G.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, 1994.



It can be done

BDO Id: 210830-05

Reagent Receipt Report

Approved: ☐ ~~Not Approved~~ ☐

Name: 13C5-PFHxA Received: 8/30/2021
 Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
 Catalogue No: M5PFHxA Expires: 2/2/2026
 Type: Solution Consumed:
 Lot No: M5PFHxA0121 Stored In: VOC Laboratory - R0123
 Quantity: 1 ea ampoule % Moisture:
 Description: M5PFHxA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
13C5-PFHxA	BDO-2217	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

210830-05



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFHxA **LOT NUMBER:** M5PFHxA0121
COMPOUND: Perfluoro-n-(1,2,3,4,6-¹³C₅)hexanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₅¹²C₁HF₁₁O₂ **MOLECULAR WEIGHT:** 319.02
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2,3,4,6-¹³C₅)
LAST TESTED: (mm/dd/yyyy) 02/02/2021
EXPIRY DATE: (mm/dd/yyyy) 02/02/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

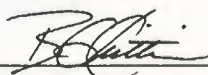
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim, General Manager

Date: 02/05/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210830-06

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C4-PFHpA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M4PFHpA Expires: 6/24/2026
Type: Solution Consumed:
Lot No: M4PFHpA0621 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: M4PFHpA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C4-PFHpA	BDO-2218	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210830-06



WELLINGTON LABORATORIES

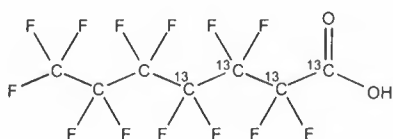
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-(1,2,3,4-¹³C₄)heptanoic acid

LOT NUMBER: M4PFHpA0621

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂
CONCENTRATION: 50.0 ± 2.5 µg/mL

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)

LAST TESTED: (mm/dd/yyyy) 06/24/2021

EXPIRY DATE: (mm/dd/yyyy) 06/24/2026

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

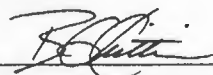
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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 ~0.03% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 07/12/2021
(mm/dd/yyyy)

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com



It can be done

BDO Id: 210830-07

Reagent Receipt Report

Approved: ☐ ☐

Name:	13C8-PFOA	Received:	8/30/2021
Vendor:	Wellington Laboratories	Custodian:	Harnden, Kelsey
Catalogue No:	M8PFOA	Expires:	8/10/2026
Type:	Solution	Consumed:	
Lot No:	M8PFOA0821	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea ampoule	% Moisture:	
Description:	M8PFOA		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Lower Limit:	Upper Limit:
13C8-PFOA	BDO-2219	50.0000	98.00	--	--	☐		

Total Analytes: 1

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

210830-07



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

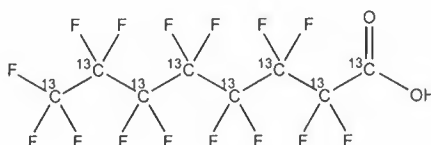
M8PFOA

LOT NUMBER:

M8PFOA0821

COMPOUND:Perfluoro-n-(¹³C₈)octanoic acid**STRUCTURE:****CAS #:**

1350614-84-4

**MOLECULAR FORMULA:**¹³C₈H₁₅O₂**MOLECULAR WEIGHT:**

422.01

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

08/10/2021

(¹³C₈)**EXPIRY DATE:** (mm/dd/yyyy)

08/10/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~0.9% of perfluoro-n-(¹³C₄)octanoic acid (MPFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**Certified By:**

B.G. Chittim, General Manager
Date: 08/12/2021

(mm/dd/yyyy)

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It can be done

BDO Id: 210830-08

Reagent Receipt Report

Approved: ☐ Submitted ☐

Name: 13C9-PFNA Received: 8/30/2021
 Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
 Catalogue No: M9PFNA Expires: 3/24/2025
 Type: Solution Consumed:
 Lot No: M9PFNA0320 Stored In: VOC Laboratory - R0123
 Quantity: 1 ea ampoule % Moisture:
 Description: M9PFNA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C9-PFNA	BDO-2221	50.0000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

210830-08



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

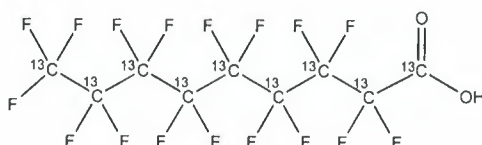
M9PFNA

LOT NUMBER:

M9PFNA0320

COMPOUND:Perfluoro-n-[$^{13}\text{C}_9$]nonanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $^{13}\text{C}_9\text{HF}_{17}\text{O}_2$ **MOLECULAR WEIGHT:**

473.01

CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY: $\geq 99\%$ ^{13}C **LAST TESTED:** (mm/dd/yyyy)

03/24/2020

EXPIRY DATE: (mm/dd/yyyy)

03/24/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

($^{13}\text{C}_9$)**DOCUMENTATION/ DATA ATTACHED:**

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 1.0% of $^{13}\text{C}_5\text{C}_4\text{HF}_{17}\text{O}_2$ (MPFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 04/20/2020

(mm/dd/yyyy)

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It can be done

BDO Id: 210830-09

Reagent Receipt Report

Approved: ☐ ☐

Name: 13C6-PFDA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M6PFDA Expires: 7/20/2026
Type: Solution Consumed:
Lot No: M6PFDA0721 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: M6PFDA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Lower Limit:	Upper Limit:
13C6-PFDA	BDO-2222	50.0000	98.00	--	--	☐		
Total Analytes:	1							

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

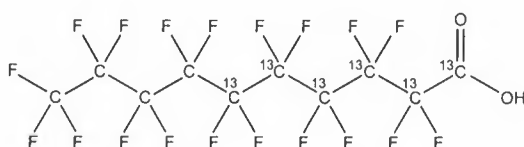
210850-09



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M6PFDA **LOT NUMBER:** M6PFDA0721
COMPOUND: Perfluoro-n-(1,2,3,4,5,6-¹³C₆)decanoic acid
STRUCTURE: **CAS #:** 2328024-56-0



MOLECULAR FORMULA: ¹³C₆¹²C₄HF₁₉O₂ **MOLECULAR WEIGHT:** 520.04
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 07/20/2021 (1,2,3,4,5,6-¹³C₆)
EXPIRY DATE: (mm/dd/yyyy) 07/20/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

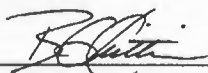
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim, General Manager

Date: 08/09/2021
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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It can be done

BDO Id: 210830-10

Reagent Receipt Report

Approved: ☐ ☐

Name: 13C7-PFUDa Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M7PFUDa Expires: 8/12/2025
Type: Solution Consumed:
Lot No: M7PFUDa0820 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: M7PFUDa

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C7-PFUnA	BDO-2223	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

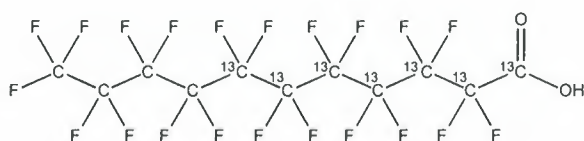
210830-10



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M7PFUdA **LOT NUMBER:** M7PFUdA0820
COMPOUND: Perfluoro-n-[1,2,3,4,5,6,7-¹³C₇]undecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₇¹²C₄HF₂₁O₂ **MOLECULAR WEIGHT:** 571.04
CONCENTRATION: 50.0 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2,3,4,5,6,7-¹³C₇)
LAST TESTED: (mm/dd/yyyy) 08/12/2020
EXPIRY DATE: (mm/dd/yyyy) 08/12/2025
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

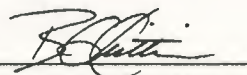
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 08/24/2020
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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It can be done

BDO Id: 210830-11

Reagent Receipt Report

Approved: ☐ ☐

Name: 13C2-PFDoA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: MPFDoA Expires: 2/10/2026
Type: Solution Consumed:
Lot No: MPFDoA0221 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: MPFDoA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFDoA	BDO-2112	50.0000	98.00	--	--	☐		
Total Analytes:	1							

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

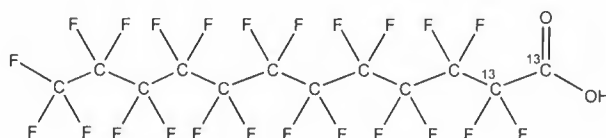
210836-11



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA **LOT NUMBER:** MPFDoA0221
COMPOUND: Perfluoro-n-(1,2-¹³C₂)dodecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂ **MOLECULAR WEIGHT:** 616.08
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 02/10/2021 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 02/10/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 03/09/2021
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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It can be done

BDO Id: 210830-12

Reagent Receipt Report

Approved: ☐ All Test Used ☐

Name: 13C2-PFTeDA Received: 8/30/2021
 Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
 Catalogue No: M2PFTeDA Expires: 5/13/2026
 Type: Solution Consumed:
 Lot No: M2PFTeDA0521 Stored In: VOC Laboratory - R0123
 Quantity: 1 ea ampoule % Moisture:
 Description: M2PFTeDA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFTeDA	BDO-2224	50.0000	98.00	--	--	☐			
Total Analytes:		1							

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

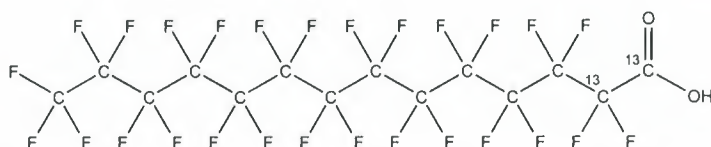
210830-12



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA **LOT NUMBER:** M2PFTeDA0521
COMPOUND: Perfluoro-n-(1,2-¹³C₂)tetradecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₂H₂₇O₂ **MOLECULAR WEIGHT:** 716.10
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 05/13/2021
EXPIRY DATE: (mm/dd/yyyy) 05/13/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

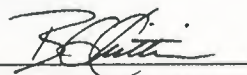
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 05/25/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210830-14

Reagent Receipt Report

Approved: ☐ 2010-2016 ☐

Name: 13C3-PFBS Received: 8/30/2021
 Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
 Catalogue No: M3PFBS Expires: 3/26/2026
 Type: Solution Consumed: _____
 Lot No: M3PFBS0321 Stored In: VOC Laboratory - R0123
 Quantity: 1 ea ampoule % Moisture: _____
 Description: M3PFBS

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
13C3-PFBS	BDO-2226	46.6000	98.00	--	--	☐			
Total Analytes:		1							

Notes:

Approved by: _____ Approved on: _____
 Authorized by: _____ Authorized on: _____

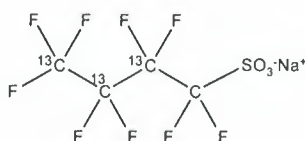
210830-14



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0321
COMPOUND: Sodium perfluoro-1-(2,3,4-¹³C₃)butanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₃¹²CF₉SO₃Na **MOLECULAR WEIGHT:** 325.06
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 46.6 ± 2.3 µg/mL (M3PFBS acid)
 46.5 ± 2.3 µg/mL (M3PFBS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 03/26/2021 (2,3,4-¹³C₃)
EXPIRY DATE: (mm/dd/yyyy) 03/26/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

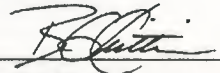
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 03/31/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210830-15

Reagent Receipt Report

Approved: ☐ ☐

Name:	13C3-PFHxS	Received:	8/30/2021
Vendor:	Wellington Laboratories	Custodian:	Harnden, Kelsey
Catalogue No:	M3PFHxS	Expires:	6/9/2026
Type:	Solution	Consumed:	
Lot No:	M3PFHxS0621	Stored In:	VOC Laboratory - R0123
Quantity:	1 ea ampoule	% Moisture:	
Description:	M3PFHxS		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
13C3-PFHxS	BDO-2227	47.4000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by:	_____	Approved on:	_____
Authorized by:	_____	Authorized on:	_____

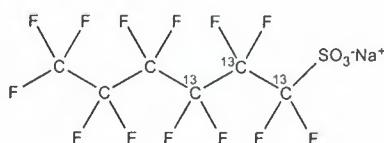
210830-15



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFHxS **LOT NUMBER:** M3PFHxS0621
COMPOUND: Sodium perfluoro-1-(1,2,3-¹³C₃)hexanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₃¹²C₃F₁₃SO₃Na **MOLECULAR WEIGHT:** 425.07
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 47.4 ± 2.4 µg/mL (M3PFHxS acid)
 47.3 ± 2.4 µg/mL (M3PFHxS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 06/09/2021 (1,2,3-¹³C₃)
EXPIRY DATE: (mm/dd/yyyy) 06/09/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

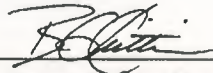
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 06/22/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210830-16

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name:	<u>13C8-PFOS</u>	Received:	<u>8/30/2021</u>
Vendor:	<u>Wellington Laboratories</u>	Custodian:	<u>Harnden, Kelsey</u>
Catalogue No:	<u>M8PFOS</u>	Expires:	<u>7/19/2026</u>
Type:	<u>Solution</u>	Consumed:	<u></u>
Lot No:	<u>M8PFOS0721</u>	Stored In:	<u>VOC Laboratory - R0123</u>
Quantity:	<u>1 ea</u> <u>ampoule</u>	% Moisture:	<u></u>
Description:	<u>M8PFOS</u>		

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C8-PFOS	BDO-2228	47.9000	98.00	--	--	☐			

Total Analytes: 1

Notes:

Approved by:	<u></u>	Approved on:	<u></u>
Authorized by:	<u></u>	Authorized on:	<u></u>

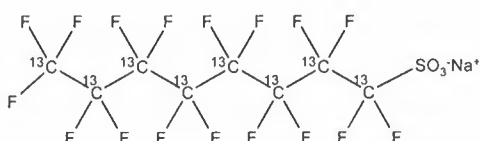
210830-16



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8PFOS **LOT NUMBER:** M8PFOS0721
COMPOUND: Sodium perfluoro-1-($^{13}\text{C}_8$)octanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}\text{C}_8\text{F}_{17}\text{SO}_3\text{Na}$ **MOLECULAR WEIGHT:** 530.05
CONCENTRATION: 50.0 $\pm$ 2.5 $\mu\text{g/mL}$ (Na salt) **SOLVENT(S):** Methanol
 47.9 $\pm$ 2.4 $\mu\text{g/mL}$ (M8PFOS acid)
 47.8 $\pm$ 2.4 $\mu\text{g/mL}$ (M8PFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** $\geq 99\%$ ^{13}C
LAST TESTED: (mm/dd/yyyy) 07/19/2021 ($^{13}\text{C}_8$)
EXPIRY DATE: (mm/dd/yyyy) 07/19/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan 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-($^{13}\text{C}_7$)heptanesulfonate ($^{13}\text{C}_7$ -PFHpS) and ~1.0% of sodium perfluoro-1-($^{13}\text{C}_4$)octanesulfonate (MPFOS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 08/04/2021

(mm/dd/yyyy)

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It can be done

BDO Id: 210830-17

Reagent Receipt Report

Approved: ☐ ☐

Name: 13C3-HFPO-DA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M3HFPO-DA Expires: 8/18/2024
Type: Solution Consumed:
Lot No: M3HFPODA0821 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: M3HFPO-DA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C3-HFPO-DA	BDO-2276	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210830-17

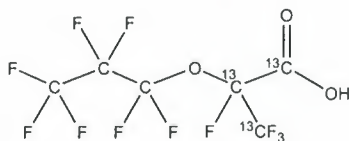


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3HFPO-DA **LOT NUMBER:** M3HFPODA0821
COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)(¹³C₃)propanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₃¹²C₃HF₁₁O₃
CONCENTRATION: 50.0 ± 2.5 µg/mL
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/18/2021
EXPIRY DATE: (mm/dd/yyyy) 08/18/2024
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 333.03
SOLVENT(S): Methanol
ISOTOPIC PURITY: ≥99% ¹³C
 (¹³C₃)

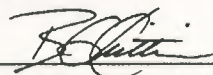
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 08/18/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210830-21

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: d5-N-EtFOSAA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: d5-N-EtFOSAA Expires: 3/2/2026
Type: Solution Consumed:
Lot No: d5NEtFOSAA0321 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: d5-N-EtFOSAA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert Val:	Cert Val:	Lower Limit:	Upper Limit:
d5-EtFOSAA	BDO-1839	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210830-21



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0321
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₂D₅H₃F₁₇NO₄S **MOLECULAR WEIGHT:** 590.26
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% ²H₅
LAST TESTED: (mm/dd/yyyy) 03/02/2021
EXPIRY DATE: (mm/dd/yyyy) 03/02/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

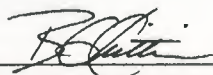
Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 03/05/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210830-22

Reagent Receipt Report

Approved: ☐ ☐

Name: d3-N-MeFOSAA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: d3-N-MeFOSAA Expires: 6/8/2026
Type: Solution Consumed:
Lot No: d3NMeFOSAA0521 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: d3-N-MeFOSAA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
d3-MeFOSAA	BDO-1838	50.0000	98.00	--	--	☐			
Total Analytes:		1							

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

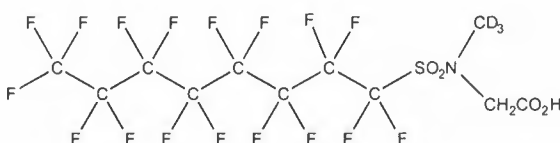
210830-22



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0521
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: $50.0 \pm 2.5 \mu\text{g/mL}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** $\geq 98\% \text{ } ^2\text{H}_3$
LAST TESTED: (mm/dd/yyyy) 06/08/2021
EXPIRY DATE: (mm/dd/yyyy) 06/08/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
 B.G. Chittim, General Manager

Date: 06/16/2021
 (mm/dd/yyyy)

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It can be done

BDO Id: 210830-23

Reagent Receipt Report

Approved: ☐ Available: ☐

Name: 13C3-PFBA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M3PFBA Expires: 2/24/2025
Type: Solution Consumed:
Lot No: M3PFBA0120 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: M3PFBA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C3-PFBA	BDO-2231	50.0000	98.00	--	--	☐			
Total Analytes:		1							

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210830-23



WELLINGTON LABORATORIES

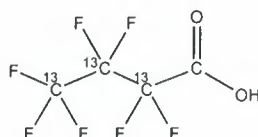
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBA
COMPOUND: Perfluoro-n-[2,3,4-¹³C₃]butanoic acid

LOT NUMBER: M3PFBA0120

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₃¹²CHF₇O₂
CONCENTRATION: 50.0 ± 2.5 µg/ml

MOLECULAR WEIGHT: 217.02
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/24/2020

ISOTOPIC PURITY: ≥99%¹³C
(2,3,4-¹³C₃)

EXPIRY DATE: (mm/dd/yyyy) 02/24/2025

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

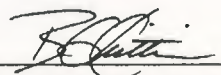
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-[¹³C₃]propanoic acid and also contains ~ 1.0% of perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid due to the naturally occurring isotopic abundance of ¹³C in the unlabelled carbon atom.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 03/27/2020
(mm/dd/yyyy)

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It can be done

BDO Id: 210830-24

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C2-PFOA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: M2PFOA Expires: 5/5/2026
Type: Solution Consumed:
Lot No: M2PFOA0421 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: M2PFOA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFOA	BDO-2107	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210830-24



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

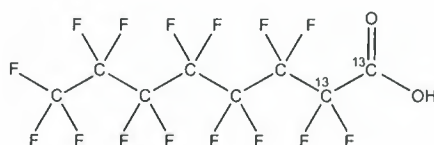
M2PFOA

LOT NUMBER:

M2PFOA0421

COMPOUND:Perfluoro-n-(1,2-¹³C₂)octanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:** $^{13}\text{C}_2^{12}\text{C}_6\text{HF}_{15}\text{O}_2$ **MOLECULAR WEIGHT:**

416.05

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):Methanol
Water (<1%)**CHEMICAL PURITY:**

>98%

ISOTOPIC PURITY:≥99% ¹³C
(1,2-¹³C₂)**LAST TESTED:** (mm/dd/yyyy)

05/05/2021

EXPIRY DATE: (mm/dd/yyyy)

05/05/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (Full Scan and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**Certified By:**

B.G. Chittim, General Manager
Date: 05/12/2021

(mm/dd/yyyy)

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

It can be done

BDO Id: 210830-25

Reagent Receipt Report

Approved: ☐ Authorized: ☐

Name: 13C2-PFDA Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: MPFDA Expires: 6/8/2026
Type: Solution Consumed:
Lot No: MPFDA0621 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: MPFDA

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C2-PFDA	BDO-2110	50.0000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____

210830-25



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0621
COMPOUND: Perfluoro-n-(1,2-¹³C₂)decanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₉O₂ **MOLECULAR WEIGHT:** 516.07
CONCENTRATION: 50.0 ± 2.5 µg/mL **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
 (1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 06/08/2021
EXPIRY DATE: (mm/dd/yyyy) 06/08/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

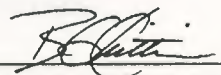
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 06/18/2021
 (mm/dd/yyyy)

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

It can be done

BDO Id: 210830-26

Reagent Receipt Report

Approved: ☐ Author: ☐

Name: 13C4-PFOS Received: 8/30/2021
Vendor: Wellington Laboratories Custodian: Harnden, Kelsey
Catalogue No: MPFOS Expires: 3/30/2026
Type: Solution Consumed:
Lot No: MPFOS0321 Stored In: VOC Laboratory - R0123
Quantity: 1 ea ampoule % Moisture:
Description: MPFOS

Analyte:	CAS No:	Concentration (ug/mL):	Purity:	Density:	Density Units:	Cert	Cert Val:	Lower Limit:	Upper Limit:
13C4-PFOS	BDO-2121	47.9000	98.00	--	--	☐			
Total Analytes:	1								

Notes:

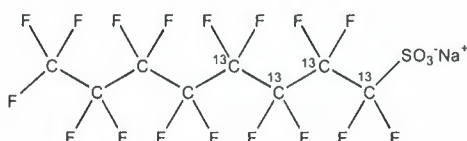
Approved by: _____ Approved on: _____
Authorized by: _____ Authorized on: _____



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0321
COMPOUND: Sodium perfluoro-1-(1,2,3,4-¹³C₄)octanesulfonate
STRUCTURE: **CAS #:** 960315-53-1



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 47.9 ± 2.4 µg/mL (MPFOS acid)
 47.8 ± 2.4 µg/mL (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 03/30/2021 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 03/30/2026
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~0.4% sodium perfluoro-1-(1,2,3-¹³C₃)heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
 B.G. Chittim, General Manager

Date: 04/08/2021
 (mm/dd/yyyy)

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

ACCREDITATIONS

Accrediting Authority	Laboratory ID
U.S. Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP)	91667
State of Florida Department of Health	E87856
State of New York Department of Health	12105
State of Washington Department of Ecology	C1050
State of California	3045
State of Maine	MA00056
State of Vermont	VT 87856
State of New Hampshire	2137
Commonwealth of Pennsylvania Department of Environmental Protection	68-05687
State of Alaska Department of Environmental Conservation	19-005
State of Rhode Island	E87856

Current certificates and lists of accredited parameters are available upon request.

Sample Preparation

It can be done**BATTELLE - NORWELL OPERATIONS
SAMPLE PREPARATION RECORDS****Project Title(s)**

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182**CTO-6134: PFAS in Solid
SO**

SOP Numbers (see workplan for modifications)

ExtractionSOP No. 5-370

This Batch Contains The Following Samples:DF129PB-FS
DF130LCS-FS
F2834-FSLaboratory Preparation Records
COMPLETE AND VALIDATED

Prep Task Leader: Taylor Noonan

Approved By:	Date	Initials
Denise Schumitz	09/29/2021	DMS



It can be done

**BATTELLE - NORWELL OPERATIONS
SAMPLE IDENTIFICATION PAGE****Project Title(s)**

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182**CTO-6134: PFAS in Solid****SO**

Sample ID	Description
DF129PB-FS	Procedural Blank
DF130LCS-FS	Laboratory Control Sample - Ottawa Sand (201113-02)
F2834-FS	IR89-IDW-SO-091621

Samples Assigned By:

Matt Schumitz

Date : September 17, 2021

Comments:



It can be done

BATTELLE - NORWELL OPERATIONS SAMPLE CUSTODY LOG

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

**CTO-6134: PFAS in Solid
SO**

Requested On/By: 09/22/2021 TN		Purpose: Sample Preparation	
Relinquished On/By: 09/22/2021 MDS		Last Activity:	Return
Accepted On/By: 09/22/2021 AW Stored In Facility: Sample Preparation Stored Until: 09/22/2021 Stored Comment: NA		Returned On/To: 09/22/2021 MDS Returned To Facility: Custody: NA Returned Comment: NA	

No.	BDO-ID:	Ctrs	*	Condition:	Custody Comment:
1	F2834	1	--	Intact	NA
Total Samples		1	* "C" = Consumed Container		



It can be done

BATTELLE - NORWELL OPERATIONS ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182**CTO-6134: PFAS in Solid****SO**

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)
DF129PB-FS	NA	Y	NA	NA	NA	5.03	100.00	0.00	5.03
DF130LCS-FS	NA	Y	NA	NA	NA	5.11	100.00	0.00	5.11
F2834-FS	1	Y	0.78	12.75	11.68	5.48	91.06	8.94	4.99

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "Y" = Sample homogenized per SOP requirements



It can be done

BATTELLE - NORWELL OPERATIONS ELECTRONIC DRY WEIGHT DETERMINATION

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182**CTO-6134: PFAS in Solid****SO**

Sample ID:	Ctrs.	*	Tare Wt. (g)	Aliquot Wt. (g)	Dry Wt. (g)	Sample Wet Wt. (g)	% Dry Wt.	% Moisture	Sample Dry Wt. (g)

Task: **Wet Weight**

BNO-ID:	Date/Initials:	Battelle-ID:
DF129PB-FS	09/22/2021 AW	BAL-007
DF130LCS-FS	09/22/2021 AW	BAL-007
F2834-FS	09/22/2021 AW	BAL-007

Task: **Tare Weight**

BNO-ID:	Date/Initials:	Battelle-ID:
DF129PB-FS	--	--
DF130LCS-FS	--	--
F2834-FS	09/20/2021 AW	BAL-009

Task: **Aliquot Wet Weight**

BNO-ID:	Date/Initials:	Battelle-ID:
DF129PB-FS	--	--
DF130LCS-FS	--	--
F2834-FS	09/20/2021 AW	BAL-009

Task: **Aliquot Dry Weight**

BNO-ID:	Date/Initials:	Battelle-ID:
DF129PB-FS	--	--
DF130LCS-FS	--	--
F2834-FS	09/21/2021 AW	BAL-009

Percent Dry Wt (%) = [(Sample Dry Wt. (g) - Tare Wt. (g))/(Aliquot Wet Wt. (g) - Tare Wt. (g))] * 100

Sample Dry Wt. (%) = [(Sample Wet Wt. (g) * (Percent Dry Wt./100)]

* "Y" = Sample homogenized per SOP requirements



It can be done

BATTELLE - NORWELL OPERATIONS SURROGATE SPIKE FORM

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

CTO-6134: PFAS in Solid

SO

Sample ID	Standard ID	Type	Vial No.	Vol Added (uL)	Date Spiked/ Spiked By	Witn'd By	Comment
DF129PB-FS	LM23	SIS	1	50	09/22/21 AW	KH	NA
DF130LCS-FS	LM18	LCS/MS	1	100	09/22/21 AW	KH	NA
DF130LCS-FS	LM23	SIS	1	50	09/22/21 AW	KH	NA
F2834-FS	LM23	SIS	1	50	09/22/21 AW	KH	NA

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
LM18	Pipette	B814659662
LM23	Pipette	B814659662



It can be done

BATTELLE - NORWELL OPERATIONS SAMPLE EXTRACTION FORM

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

**CTO-6134: PFAS in Solid
SO**

Sample ID	1st Extraction	2nd Extraction	3rd Extraction	Comment
DF129PB-FS	09/22/21 AW	09/22/21 AW	NA	NA
DF130LCS-FS	09/22/21 AW	09/22/21 AW	NA	NA
F2834-FS	09/22/21 AW	09/22/21 AW	NA	NA

Solvents/Reagent Preparations:

Name	ID	Expires	Lot No	Procedure	Comments
0.3% NH3OH in Methanol	RP-210922-2	09/22/21	R06G070	1 mL NH3OH + 99 mL methanol	
0.3% NH3OH in Methanol	RP-210922-2	09/22/21	211798	1 mL NH3OH + 99 mL methanol	

Solvents/Reagents:



It can be done

BATTELLE - NORWELL OPERATIONS COLUMN FRACTIONATION FORM

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

CTO-6134: PFAS in Solid

SO

Extract Id	Date	Init.	Conc. ID	Turbo °C	Turbo PSI	KD °C	Comments
DF129PB-FS(0)	09/23/21	AW	NA	NA	NA	NA	NA
DF130LCS-FS(0)	09/23/21	AW	NA	NA	NA	NA	NA
F2834-FS(0)	09/23/21	AW	NA	NA	NA	NA	NA

Column Diameter: 13 mm **Procedure Comment:**

Elution Volume: 5 mL

Solvents

Reagents

Reagent Prep	Weight g	Name	Expires	Lot No	Procedure
RP-210923-10	Not Measured	Pre-packed SPE Column	09/23/21	020831139A	Pre-packed SPE Column
RP-210923-11	Not Measured	Whatman Indicator Strips pH 0-14	09/23/21	10D0411	
RP-210923-4	Not Measured	1% NH3OH in methanol	10/23/21	R06G070	3.3 mL NH3OH + 97 mL
RP-210923-4	Not Measured	1% NH3OH in methanol	10/23/21	211798	3.3 mL NH3OH + 97 mL

Fractions



It can be done

BATTELLE - NORWELL OPERATIONS EXTRACT CLEANUP FORM

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

**CTO-6134: PFAS in Solid
SO**

Extract Id	Date	Init.	Comments
DF129PB-FS(0)	09/23/21	AW	NA
DF130LCS-FS(0)	09/23/21	AW	NA
F2834-FS(0)	09/23/21	AW	NA

Cleanup:

Envi-Carb

Reagents:

Reagent Prep	Name	Expires	Lot No	Procedure
191209-01	Supelclean ENVI-Carb SPE Bulk Packing	12/09/24	122395	NA



It can be done

**BATTELLE - NORWELL OPERATIONS
EXTRACT CLEANUP FORM**

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

**CTO-6134: PFAS in Solid
SO**

Extract Id	Date	Init.	Comments



It can be done

BATTELLE - NORWELL OPERATIONS INTERNAL STANDARD SPIKING FORM

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

CTO-6134: PFAS in Solid

SO

(N/A Fraction)

Extract Id	Extr. Vol. (uL)	Added (uL)	Std. Id	Accm . (uL)	Vial No.	Pre Inj. Vol. (uL)^	Final Dilution *	Date Spiked/ Spiked By	Witn'd By
DF129PB-FS(0)	4950	50	LL42	50	4	5000	1.000	09/23/21 AW	KH
DF130LCS-FS(0)	4950	50	LL42	50	4	5000	1.000	09/23/21 AW	KH
F2834-FS(0)	4950	50	LL42	50	4	5000	1.000	09/23/21 AW	KH

Syringes/Pipettes Used:

Std ID	Type	Syr/Pip
LL42	Pipette	B814659662

* - Final Dilution is any HPLC, dilutions, or other manipulation

^ - Pre Injection Volume (PIV) includes any RIS spikes.



It can be done

BATTELLE - NORWELL OPERATIONS PREPARATION EXTRACT SPLIT FORM

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

CTO-6134: PFAS in Solid

SO

Extract		*	Extract Date	Source		Initial Extract Vol (uL)	Extract Split	Extract Split	Total Dilution	Date/Initials
Name	#			Name	#					
DF129PB-FS	0	--	9/22/2021 11:14:00 AM	NA		NA	NA	1.000	1.000	09/22/21 AW
DF130LCS-FS	0	--	9/22/2021 11:14:00 AM	NA		NA	NA	1.000	1.000	09/22/21 AW
F2834-FS	0	--	9/22/2021 11:14:00 AM	NA		NA	NA	1.000	1.000	09/22/21 AW

Total Oil = [Sample Volume (uL) / Aliquot Volume (uL)] * [Aliquot Weight (mg)]

Dilution Factor = [Sample Volume (uL) / Aliquot Volume (uL)] * Prior Dilution Factor

* - "C" = Extract is Consumed



It can be done

BATTELLE - NORWELL OPERATIONS EXTRACT - INSTRUMENT FACILITY CUSTODY PAGE

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

**CTO-6134: PFAS in Solid
SO**

Purpose: LC-MS/MS TRANSFER		Last Activity: Prep->Inst	
Relinquished On/By: Sep 23 2021 2:51PM TN		Received On/By: Sep 23 2021 2:51PM KB	
Relinquished From: Sample Preparation: NA		Received Location: LC Laboratory: NA	
Relinquish Comment: NA		Received Comment: NA	

No.	BDO-ID:	PIV:	DF:	Condition:	Custody Comment:
1	DF129PB-FS(0)	5000	1	Intact	NA
2	DF130LCS-FS(0)	5000	1	Intact	NA
3	F2834-FS(0)	5000	1	Intact	NA

Total Extracts: 3



It can be done

BATTELLE - NORWELL OPERATIONS SAMPLE SPECIFIC COMMENTS

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

**CTO-6134: PFAS in Solid
SO**

Sample ID:	Comment:	Date/Initials:
DF129PB-FS	60 ul HCL was added into sample to get a pH between 6-8.	09/23/21 AW
DF129PB-FS	SPE started at 1:19 PM, manifold 10, ended at 2:39 PM	09/23/21 AW
DF130LCS-FS	60 ul HCL was added into sample to get a pH between 6-8.	09/23/21 AW
DF130LCS-FS	SPE started at 1:19 PM, manifold 10, ended at 2:46 PM	09/23/21 AW
F2834-FS	40 ul HCL was added into sample to get a pH between 6-8.	09/23/21 AW
F2834-FS	SPE started at 1:19 PM, manifold 4, ended at 2:41 PM	09/23/21 AW



It can be done

**BATTELLE - NORWELL OPERATIONS
MISCELLANEOUS DOCUMENTATION FORM**

Project Title(s)

CTO-6134: Camp Lejeune Site 89

Project No.(s)

100147043

21-1182

**CTO-6134: PFAS in Solid
SO**

Entered By:

On:

Task Leader Approval:

On:

Supervisor Approval:

On:

PM Approval:

On:

Analytical Calibrations



Sequence Report

Created with Analyst Reporter
Printed: 27/09/2021 2:07:54 PM

Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
3	LM33	L1	9/22/2021 8:59:24 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
4	LM34	L2	9/22/2021 9:12:15 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
5	LM35	L3	9/22/2021 9:25:08 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
6	LM36	L4	9/22/2021 9:38:00 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
7	LM37	L5	9/22/2021 9:50:52 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
8	LM38	L6	9/22/2021 10:03:45 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
9	LM39	L7	9/22/2021 10:16:37 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
10	LM40	L8	9/22/2021 10:29:29 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
11	LM41 IB	IB	9/22/2021 10:42:24 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
12	LM42 ICC	ICC	9/22/2021 10:55:17 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff
13	LL61 Branch	Branched Standard	9/22/2021 11:08:09 PM	5- 0369 REV.dam	AC_09222021_5-369.wiff



Sequence Report

Created with Analyst Reporter
Printed: 27/09/2021 2:09:10 PM

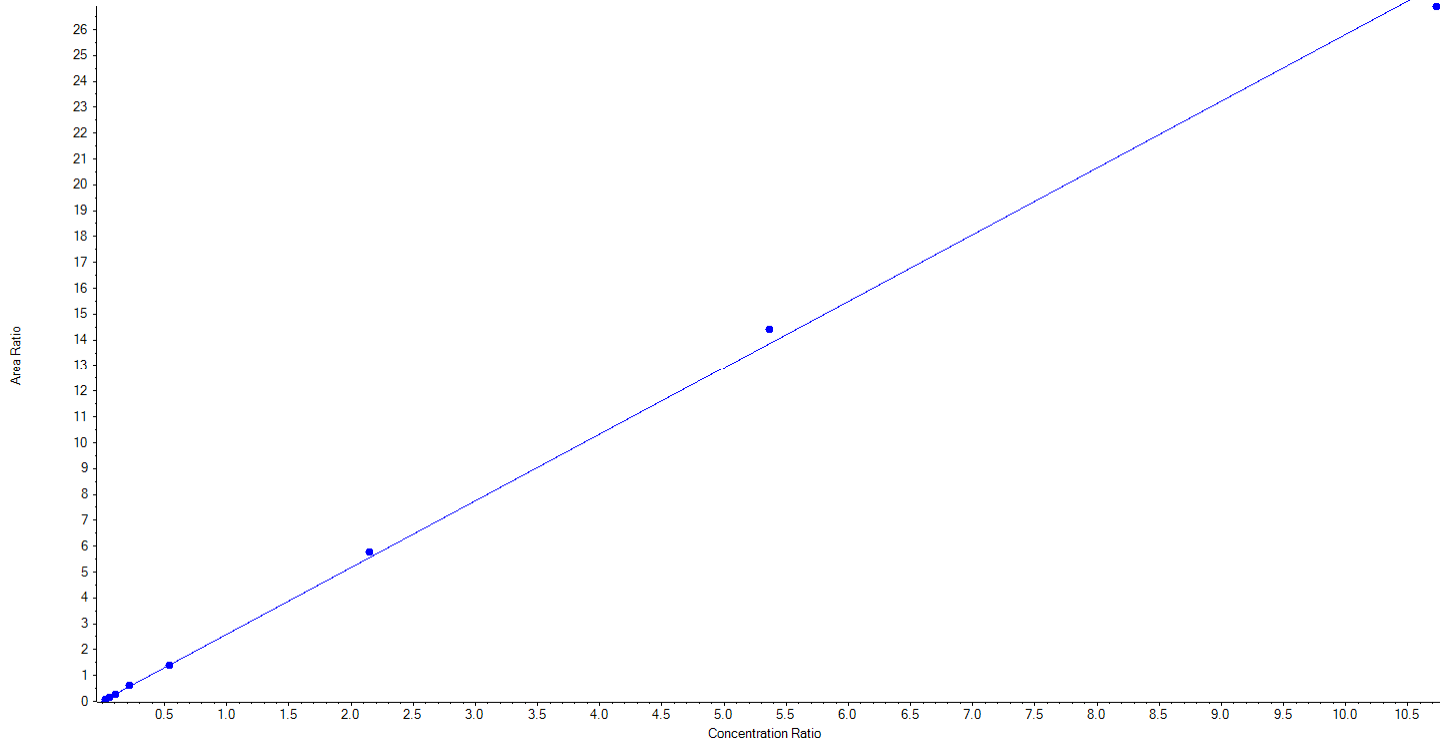
Vial	Laboratory Sample ID	Client Sample ID	Acquisition Date	Acquisition Method	Data File
2	LM34 CCV	CCV	9/23/2021 4:55:30 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff
3	LM40	L8	9/23/2021 5:08:22 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff
4	LM41 IB	IB	9/23/2021 5:21:13 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff
1	~~080521-04 (1)~~		~~9/23/2021 5:34:05 PM~~	~~5- 0369 REV.dam~~	~~AC_09232021_5-369.wiff~~
2	~~080521-04 (2)~~		~~9/23/2021 5:46:57 PM~~	~~5- 0369 REV.dam~~	~~AC_09232021_5-369.wiff~~
3	DF129PB-FS(0)	Procedural Blank	9/23/2021 5:59:51 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff
4	DF130LCS-FS(0)	Laboratory Control Sample	9/23/2021 6:12:45 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff
5	F2834-FS(0)	IR89-IDW-SO-091621	9/23/2021 6:25:37 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff
6	MeOH		9/23/2021 6:38:29 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff
7	LM37 CCV	CCV	9/23/2021 6:51:22 PM	5- 0369 REV.dam	AC_09232021_5-369.wiff

1 Samples do not apply to this batch. LMG 09/27/2021

Analyte Name	PFBS_1	Data File	AC_09222021_5-369.wiff
MRM Transition	298.9 / 80.0	Result Table	21-1182
Internal Standard	13C3-PFBS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 2.57985x + 0.01363$ ($r = 0.99934$) (weighting: $1/x$) $r^2: 0.9987$

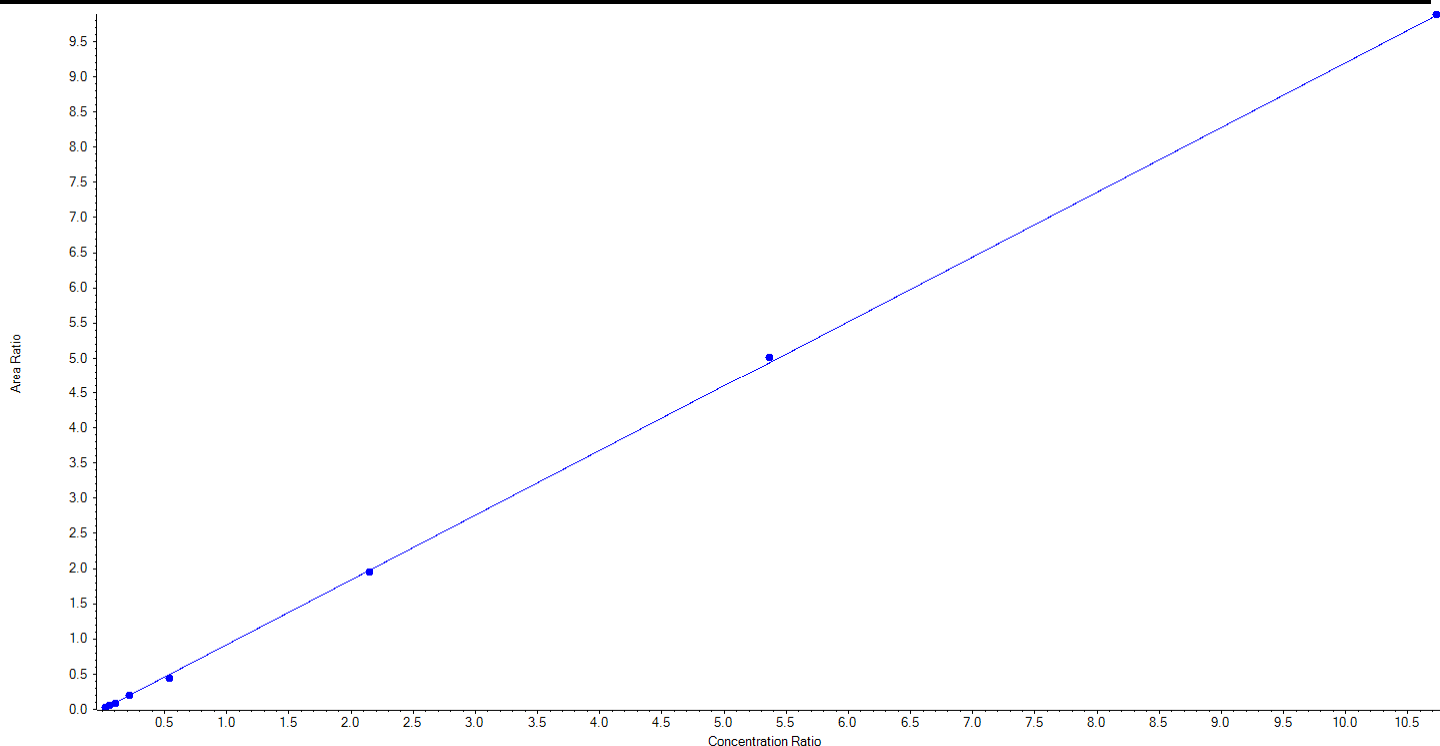
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.119	95.1
4	LM34	L2	True	0.250	0.242	96.6
5	LM35	L3	True	0.500	0.474	94.8
6	LM36	L4	True	1.000	1.093	109.3
7	LM37	L5	True	2.500	2.471	98.9
8	LM38	L6	True	10.000	10.428	104.3
9	LM39	L7	True	25.000	26.007	104.0
10	LM40	L8	True	50.000	48.542	97.1



Analyte Name	PFBS_2	Data File	AC_09222021_5-369.wiff
MRM Transition	298.9 / 99.0	Result Table	21-1182
Internal Standard	13C3-PFBS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.92001x + -3.37445e-4$ ($r = 0.99973$) (weighting: $1/x$) $r^2: 0.9995$

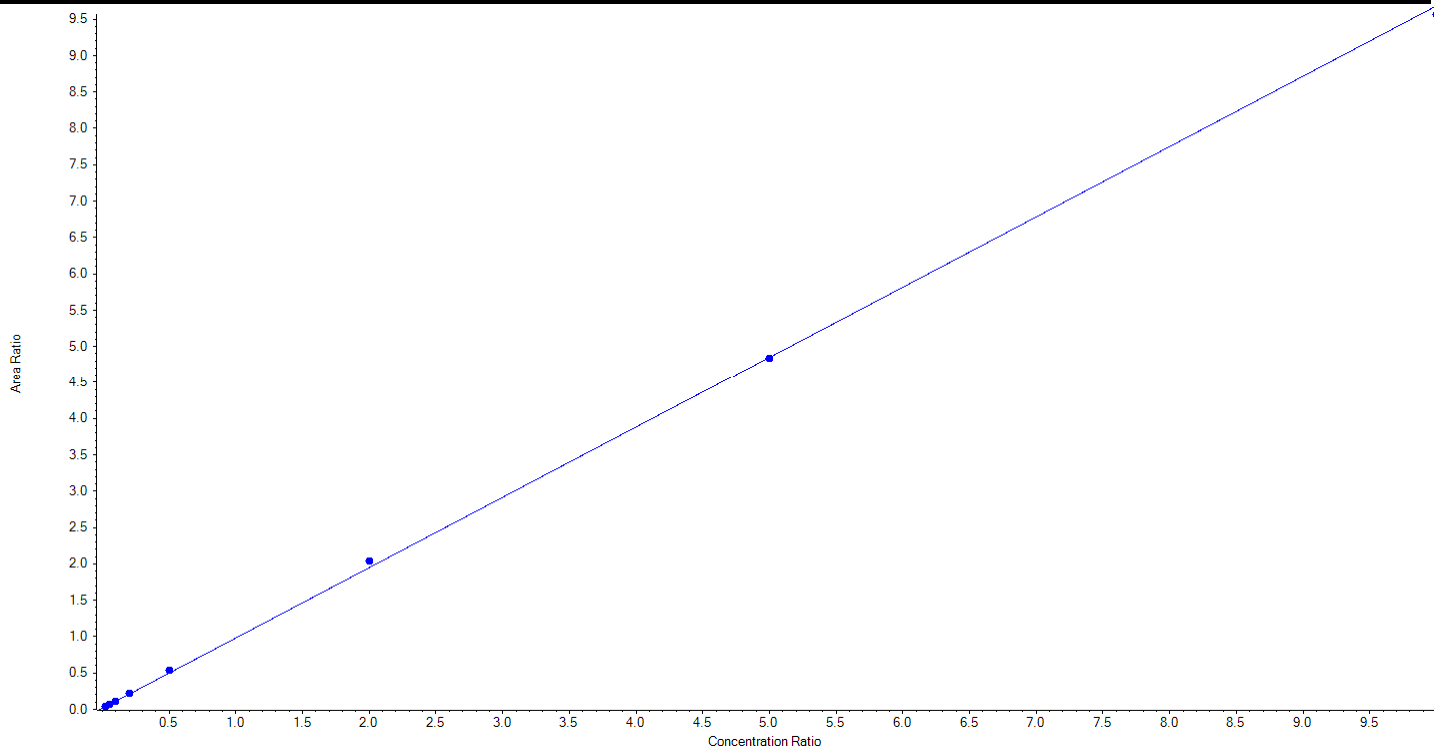
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.145	116.3
4	LM34	L2	True	0.250	0.261	104.3
5	LM35	L3	True	0.500	0.460	92.0
6	LM36	L4	True	1.000	0.985	98.5
7	LM37	L5	True	2.500	2.213	88.5
8	LM38	L6	True	10.000	9.883	98.8
9	LM39	L7	True	25.000	25.365	101.5
10	LM40	L8	True	50.000	50.063	100.1



Analyte Name	PFHxA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	313.0 / 269.0	Result Table	21-1182
Internal Standard	13C5-PFHxA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.96679x + 0.01539$ ($r = 0.99973$) (weighting: $1/x$) $r^2: 0.9995$

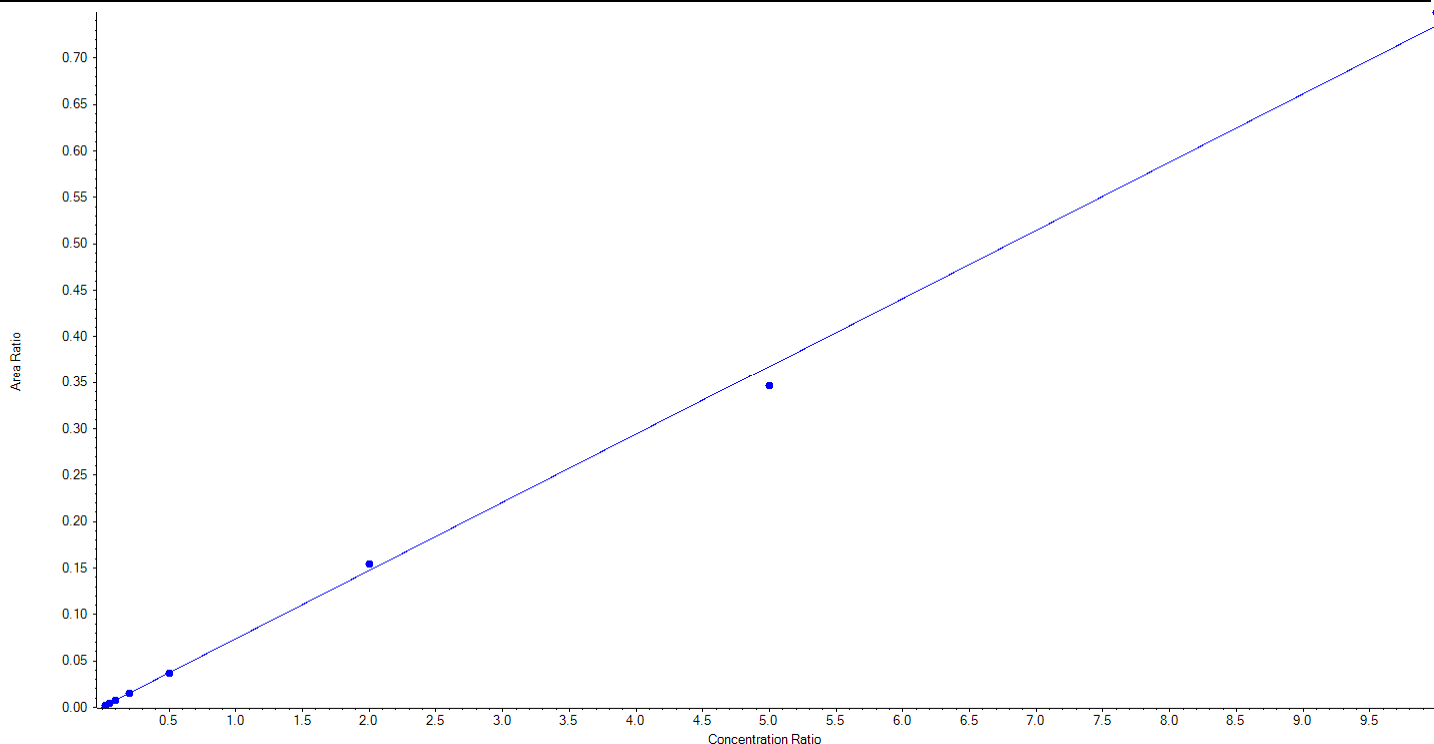
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.109	86.9
4	LM34	L2	True	0.250	0.244	97.5
5	LM35	L3	True	0.500	0.495	99.1
6	LM36	L4	True	1.000	1.067	106.7
7	LM37	L5	True	2.500	2.671	106.8
8	LM38	L6	True	10.000	10.439	104.4
9	LM39	L7	True	25.000	24.969	99.9
10	LM40	L8	True	50.000	49.382	98.8



Analyte Name	PFHxA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	313.0 / 119.0	Result Table	21-1182
Internal Standard	13C5-PFHxA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.07342x + 5.38571e-4$ ($r = 0.99925$) (weighting: $1/x$) $r^2: 0.9985$

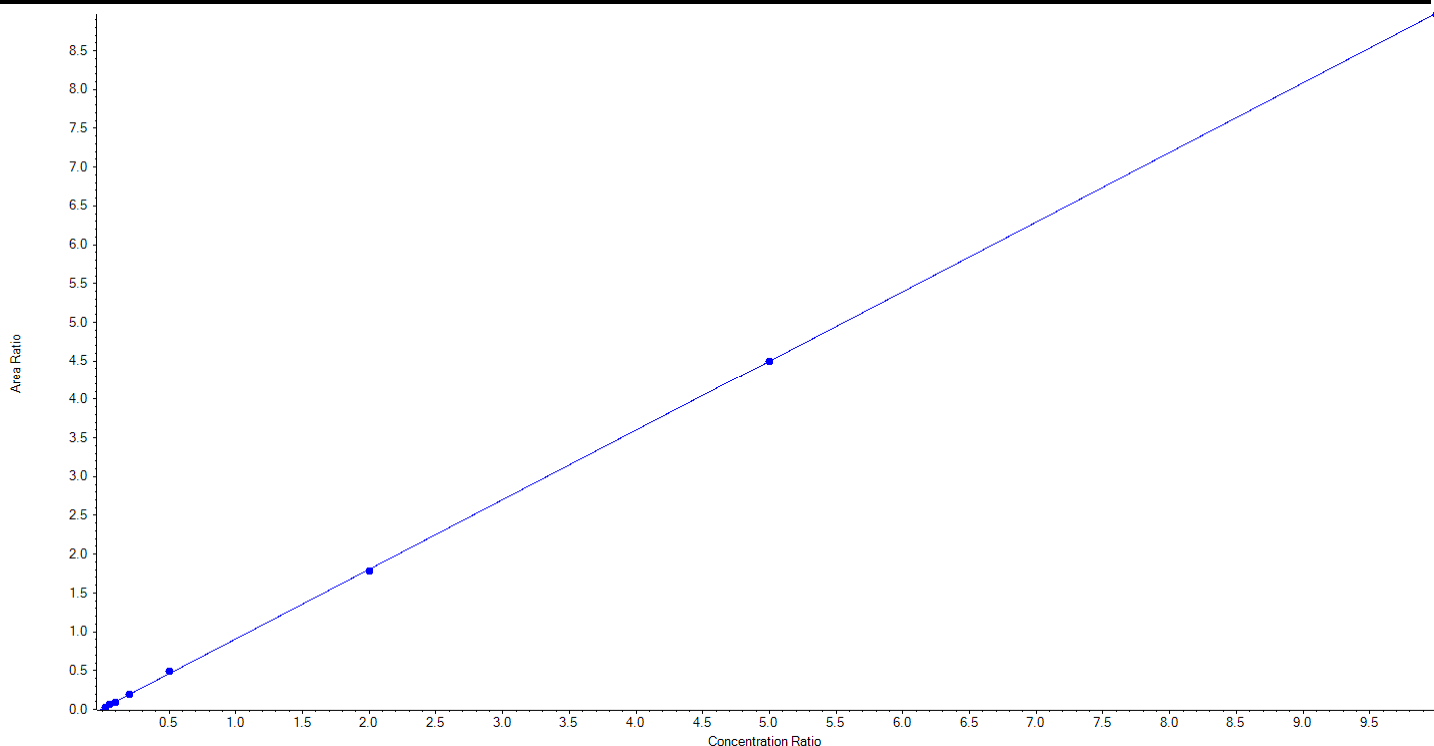
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.127	101.6
4	LM34	L2	True	0.250	0.247	98.8
5	LM35	L3	True	0.500	0.488	97.7
6	LM36	L4	True	1.000	1.028	102.8
7	LM37	L5	True	2.500	2.450	98.0
8	LM38	L6	True	10.000	10.503	105.0
9	LM39	L7	True	25.000	23.570	94.3
10	LM40	L8	True	50.000	50.962	101.9



Analyte Name	PFHpA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	363.0 / 319.0	Result Table	21-1182
Internal Standard	13C4-PFHpA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.89720x + 0.01132$ ($r = 0.99985$) (weighting: $1/x$) $r^2: 0.9997$

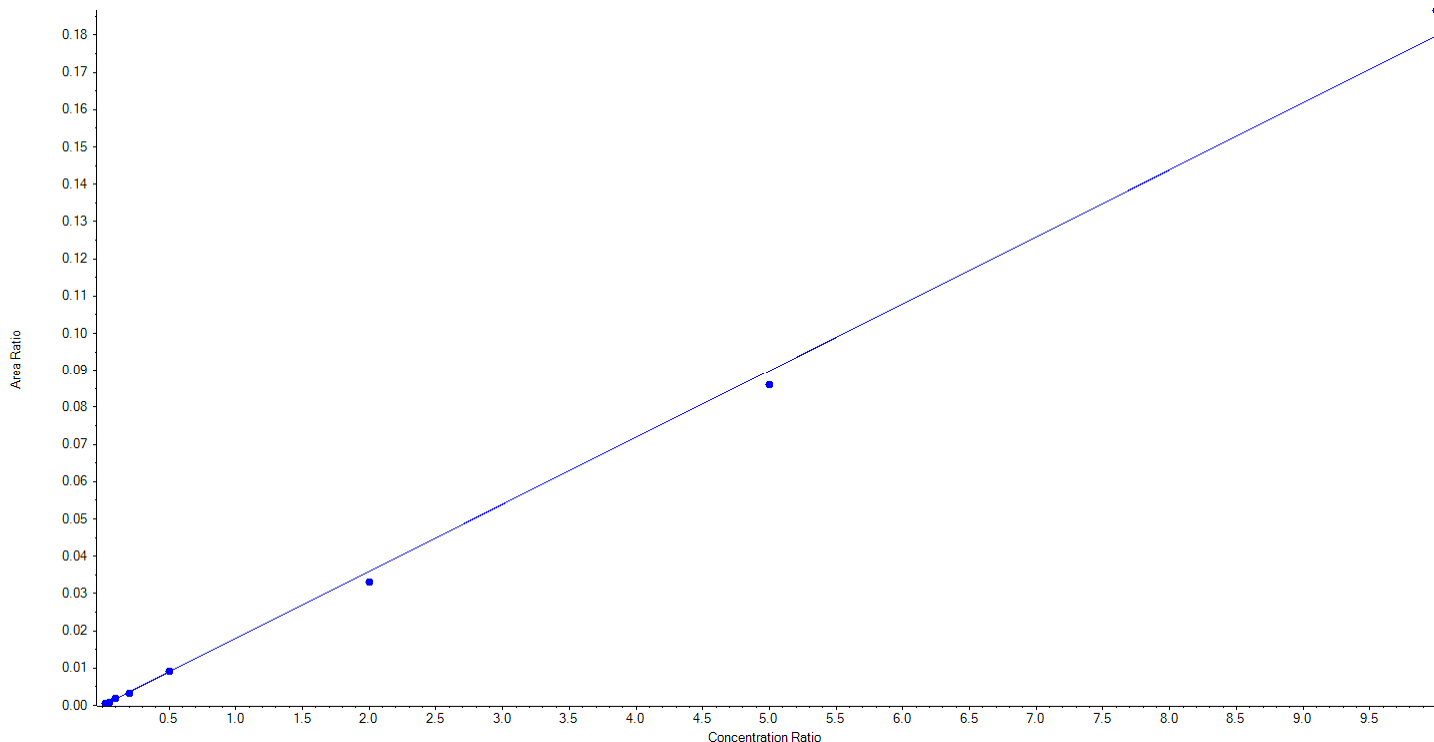
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.107	85.6
4	LM34	L2	True	0.250	0.276	110.4
5	LM35	L3	True	0.500	0.474	94.8
6	LM36	L4	True	1.000	1.021	102.1
7	LM37	L5	True	2.500	2.707	108.3
8	LM38	L6	True	10.000	9.893	98.9
9	LM39	L7	True	25.000	24.994	100.0
10	LM40	L8	True	50.000	49.902	99.8



Analyte Name	PFHpA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	363.0 / 169.0	Result Table	21-1182
Internal Standard	13C4-PFHpA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.01798x + -1.28064e-5$ ($r = 0.99883$) (weighting: $1/x$) $r^2: 0.9977$

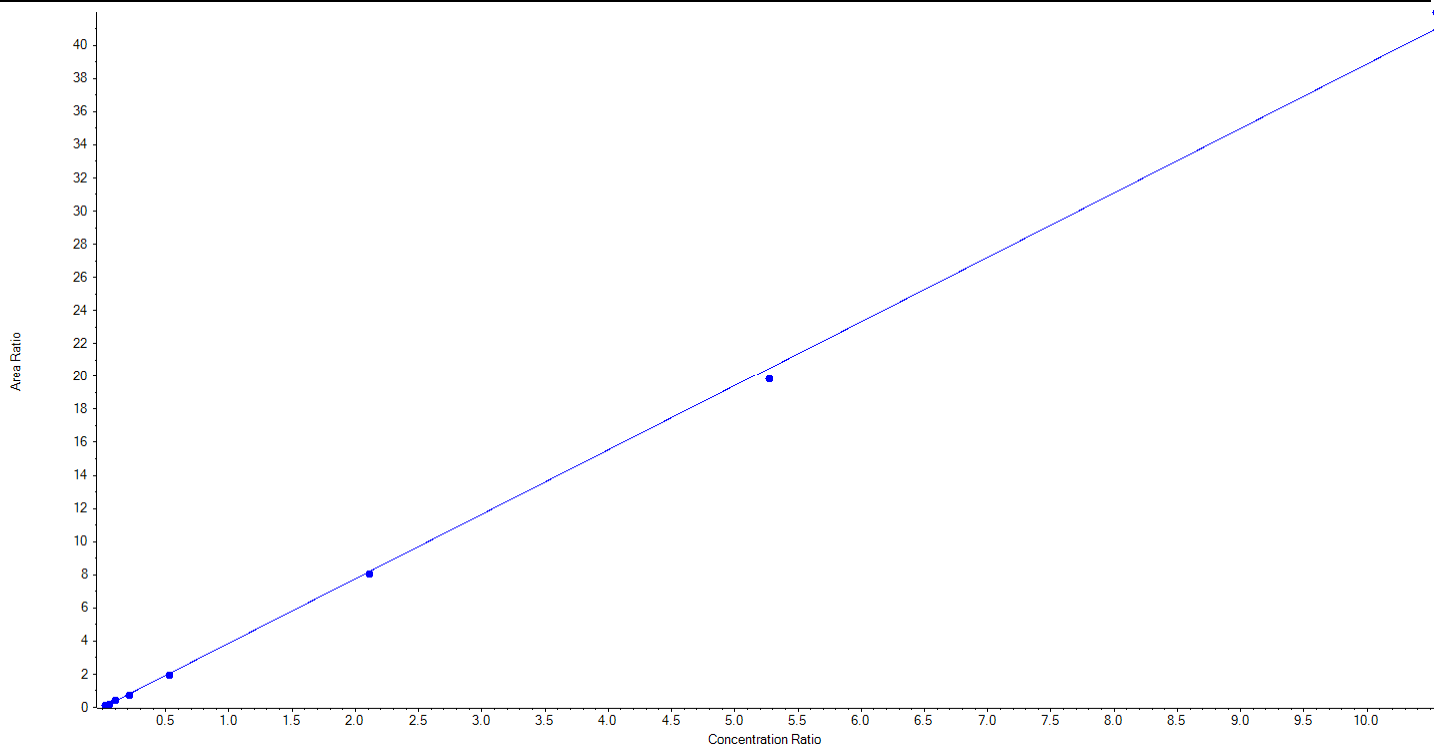
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.132	105.3
4	LM34	L2	True	0.250	0.246	98.5
5	LM35	L3	True	0.500	0.556	111.2
6	LM36	L4	True	1.000	0.912	91.2
7	LM37	L5	True	2.500	2.564	102.6
8	LM38	L6	True	10.000	9.200	92.0
9	LM39	L7	True	25.000	23.894	95.6
10	LM40	L8	True	50.000	51.871	103.7



Analyte Name	PFHxS_1	Data File	AC_09222021_5-369.wiff
MRM Transition	399.0 / 80.0	Result Table	21-1182
Internal Standard	13C3-PFHxS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 3.88916x - 0.01440$ ($r = 0.99957$) (weighting: $1/x$) $r^2: 0.9991$

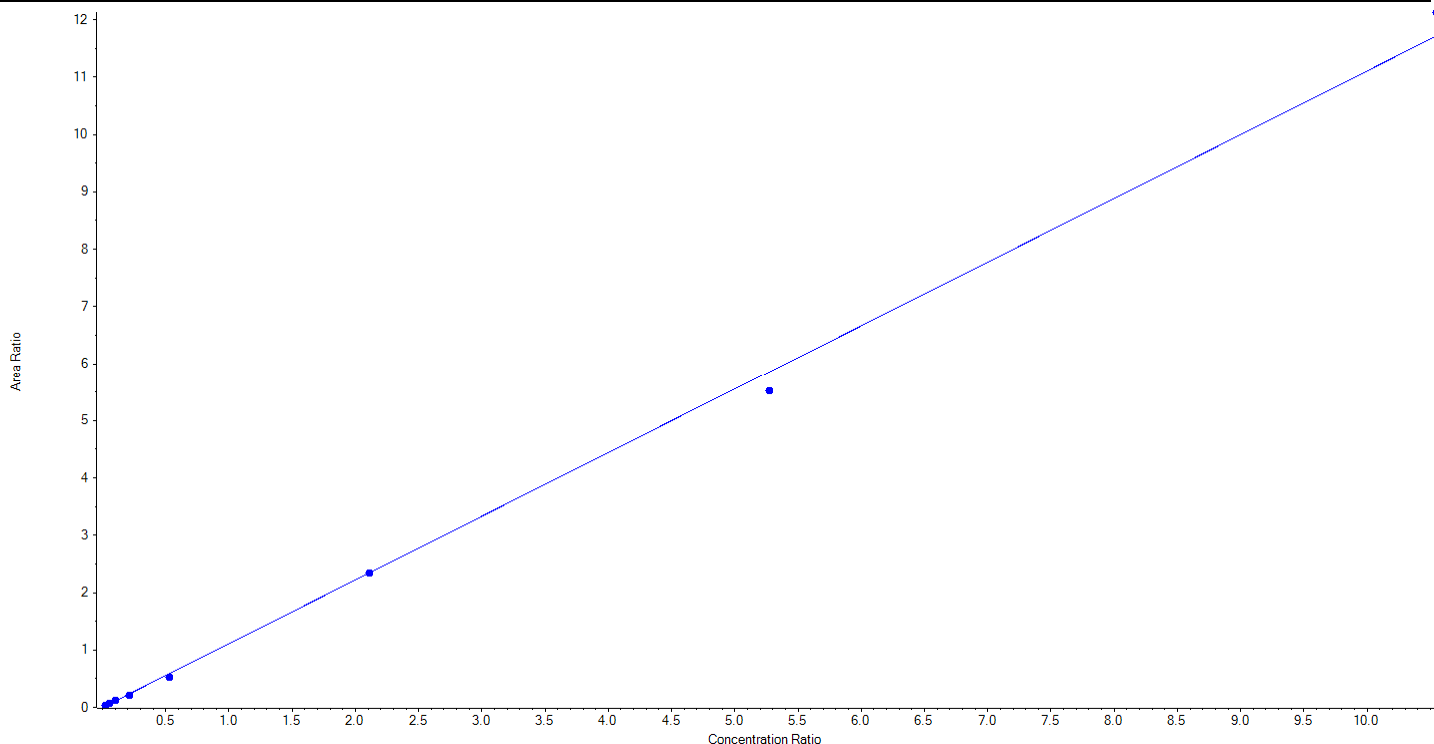
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.134	107.1
4	LM34	L2	True	0.250	0.272	108.8
5	LM35	L3	True	0.500	0.505	101.0
6	LM36	L4	True	1.000	0.913	91.3
7	LM37	L5	True	2.500	2.365	94.6
8	LM38	L6	True	10.000	9.796	98.0
9	LM39	L7	True	25.000	24.212	96.9
10	LM40	L8	True	50.000	51.177	102.4



Analyte Name	PFHxS_2	Data File	AC_09222021_5-369.wiff
MRM Transition	399.0 / 99.0	Result Table	21-1182
Internal Standard	13C3-PFHxS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.11091x - 0.00112$ ($r = 0.99888$) (weighting: $1/x$) $r^2: 0.9978$

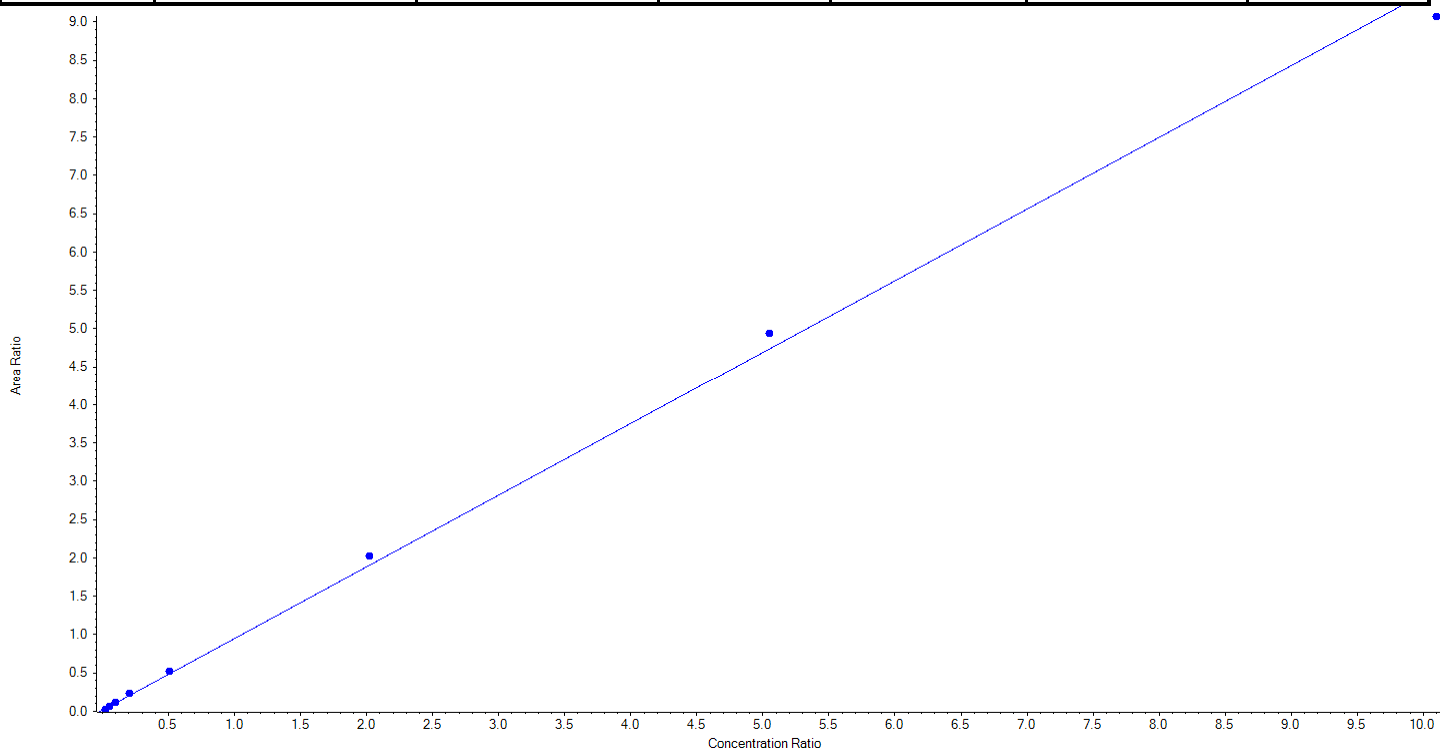
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.117	93.3
4	LM34	L2	True	0.250	0.303	121.1
5	LM35	L3	True	0.500	0.529	105.7
6	LM36	L4	True	1.000	0.935	93.5
7	LM37	L5	True	2.500	2.222	88.9
8	LM38	L6	True	10.000	9.968	99.7
9	LM39	L7	True	25.000	23.562	94.3
10	LM40	L8	True	50.000	51.739	103.5



Analyte Name	PFOA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	413.0 / 369.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.93514x + 0.01493$ ($r = 0.99872$) (weighting: $1/x$) $r^2: 0.9974$

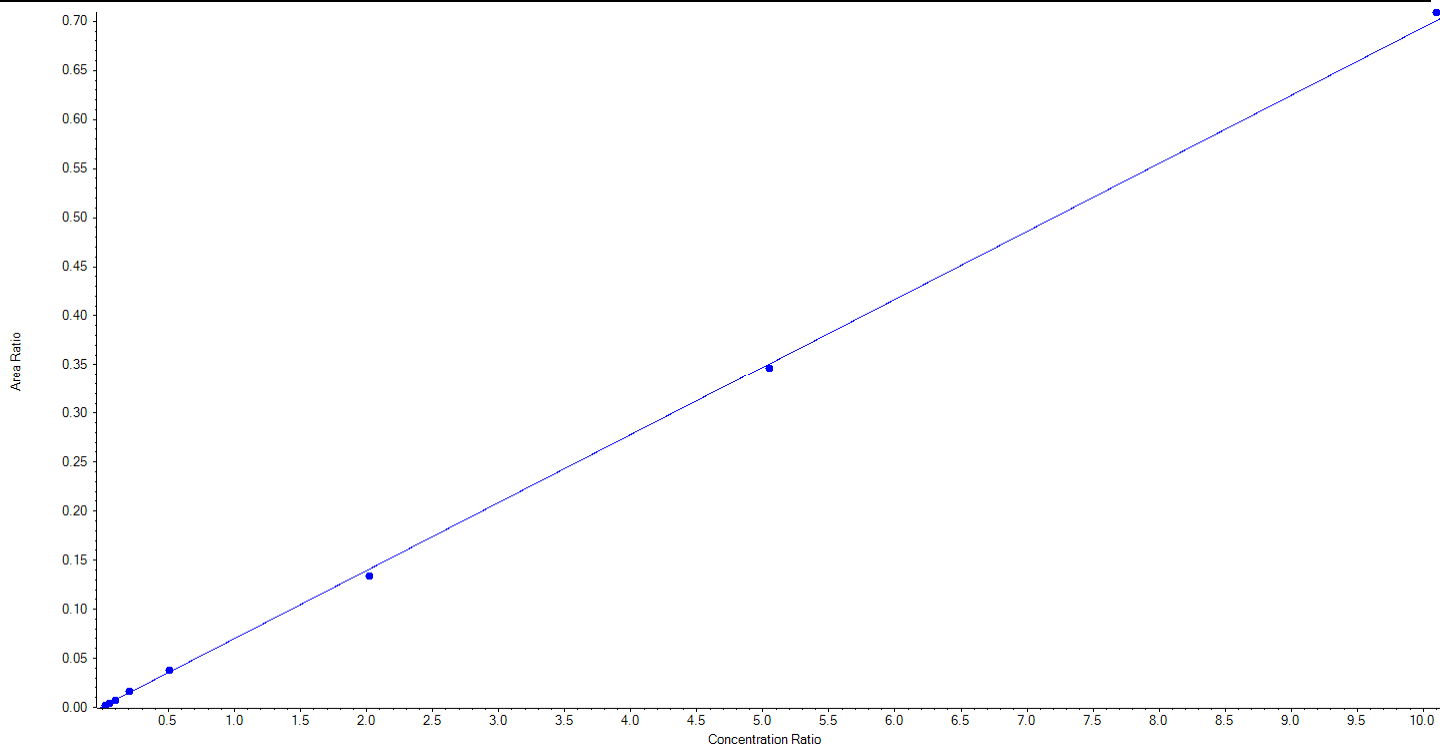
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.126	0.092	73.4
4	LM34	L2	True	0.253	0.243	95.9
5	LM35	L3	True	0.505	0.516	102.1
6	LM36	L4	True	1.010	1.146	113.5
7	LM37	L5	True	2.525	2.738	108.4
8	LM38	L6	True	10.100	10.741	106.4
9	LM39	L7	True	25.250	26.370	104.4
10	LM40	L8	True	50.500	48.423	95.9



Analyte Name	PFOA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	413.0 / 169.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.06930x + 8.46339e-4$ ($r = 0.99965$) (weighting: $1/x$) $r^2: 0.9993$

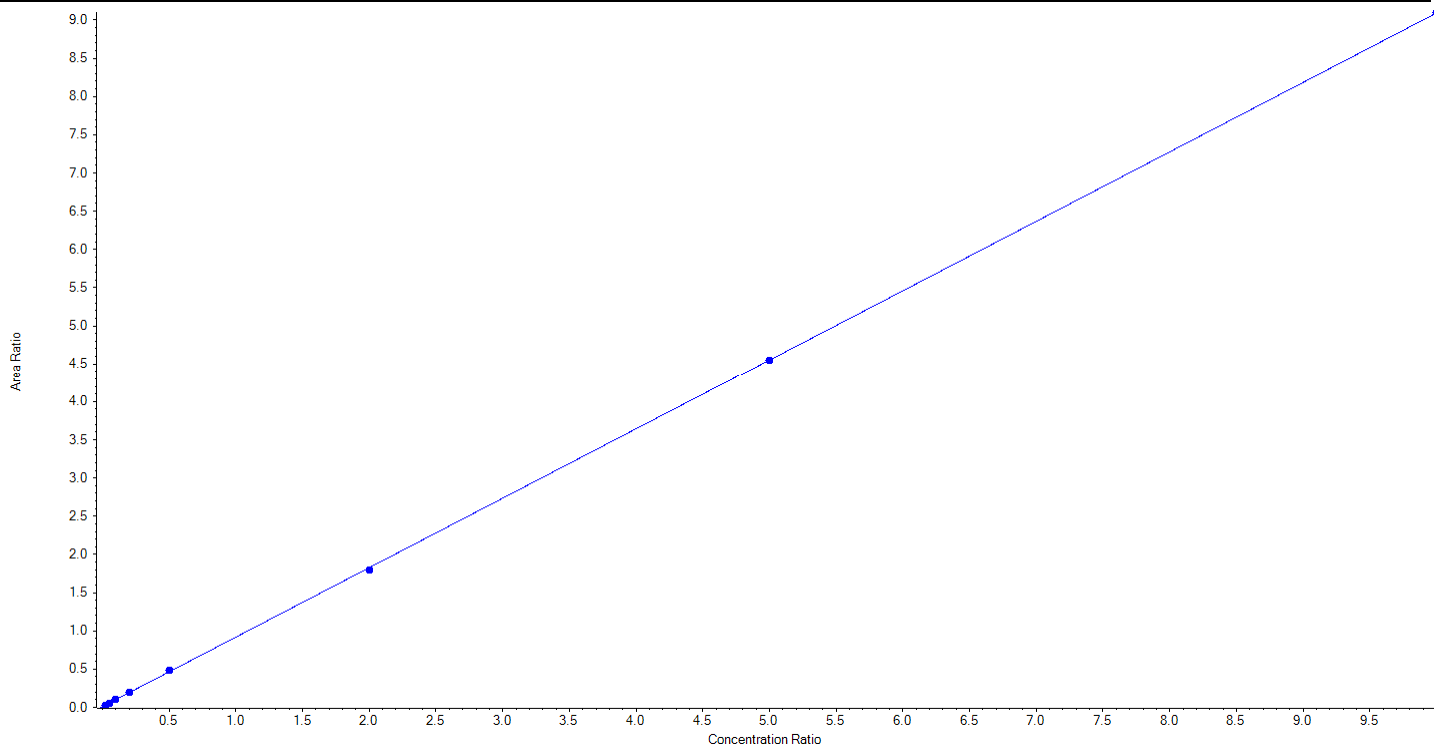
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.126	0.118	93.7
4	LM34	L2	True	0.253	0.249	98.6
5	LM35	L3	True	0.505	0.481	95.3
6	LM36	L4	True	1.010	1.127	111.6
7	LM37	L5	True	2.525	2.676	106.0
8	LM38	L6	True	10.100	9.586	94.9
9	LM39	L7	True	25.250	24.940	98.8
10	LM40	L8	True	50.500	51.091	101.2



Analyte Name	PFNA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	463.0 / 419.0	Result Table	21-1182
Internal Standard	13C9-PFNA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.90806x + 0.01108$ ($r = 0.99993$) (weighting: $1/x$) $r^2: 0.9999$

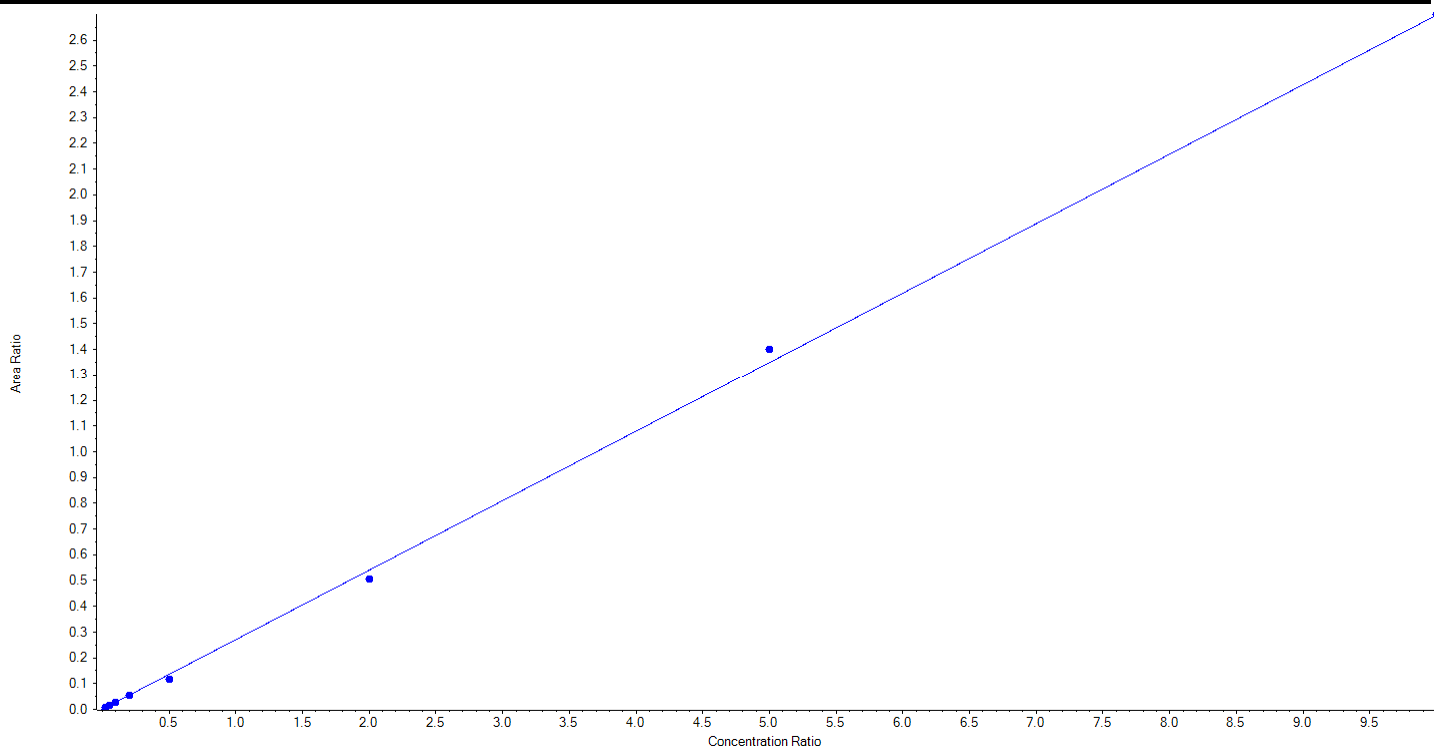
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.107	85.6
4	LM34	L2	True	0.250	0.257	102.7
5	LM35	L3	True	0.500	0.529	105.9
6	LM36	L4	True	1.000	1.030	103.0
7	LM37	L5	True	2.500	2.609	104.4
8	LM38	L6	True	10.000	9.859	98.6
9	LM39	L7	True	25.000	24.954	99.8
10	LM40	L8	True	50.000	50.030	100.1



Analyte Name	PFNA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	463.0 / 219.0	Result Table	21-1182
Internal Standard	13C9-PFNA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.26960x + 0.00121$ ($r = 0.99915$) (weighting: $1/x$) $r^2: 0.9983$

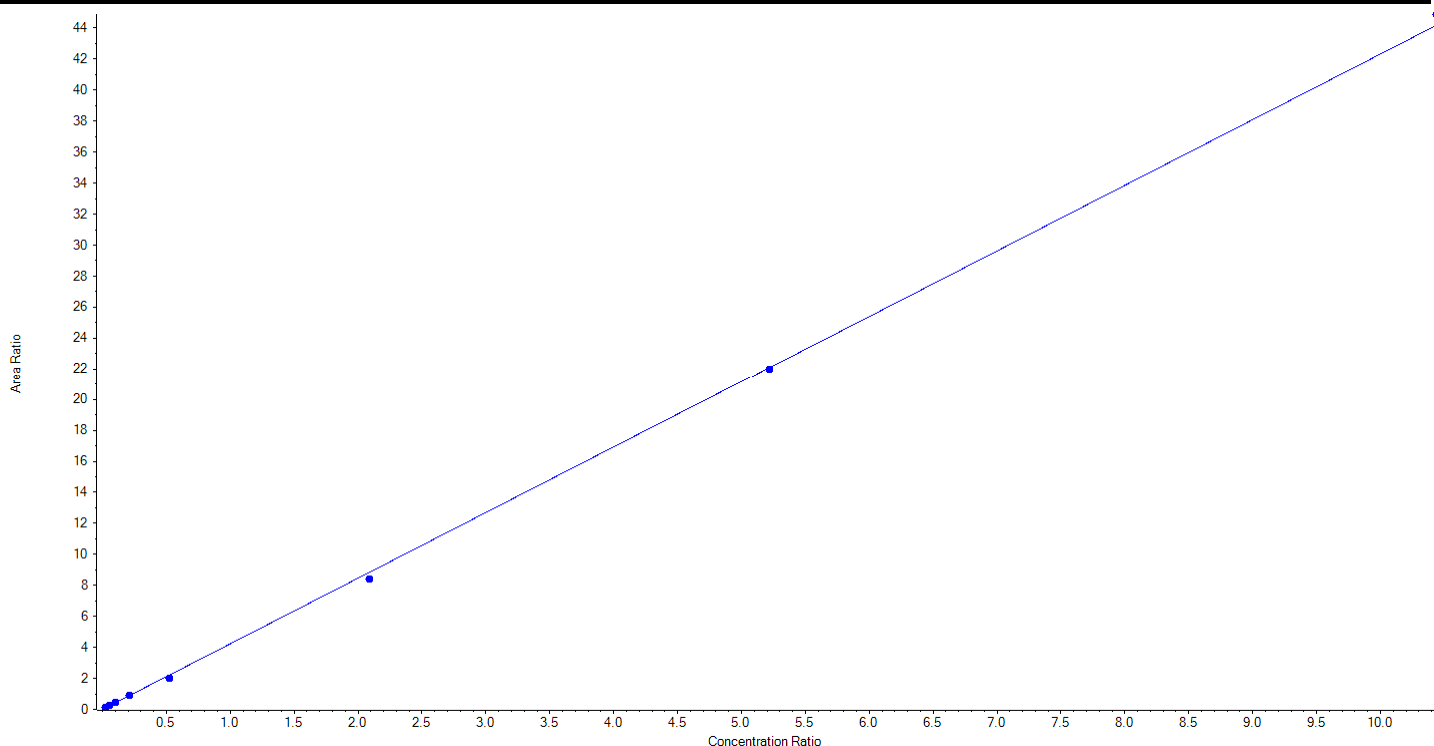
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.121	96.7
4	LM34	L2	True	0.250	0.299	119.6
5	LM35	L3	True	0.500	0.507	101.5
6	LM36	L4	True	1.000	1.003	100.3
7	LM37	L5	True	2.500	2.114	84.6
8	LM38	L6	True	10.000	9.360	93.6
9	LM39	L7	True	25.000	25.924	103.7
10	LM40	L8	True	50.000	50.046	100.1



Analyte Name	PFOS_1	Data File	AC_09222021_5-369.wiff
MRM Transition	499.0 / 80.0	Result Table	21-1182
Internal Standard	13C8-PFOS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 4.23243x + -8.67611e-4$ ($r = 0.99965$) (weighting: $1/x$) $r^2: 0.9993$

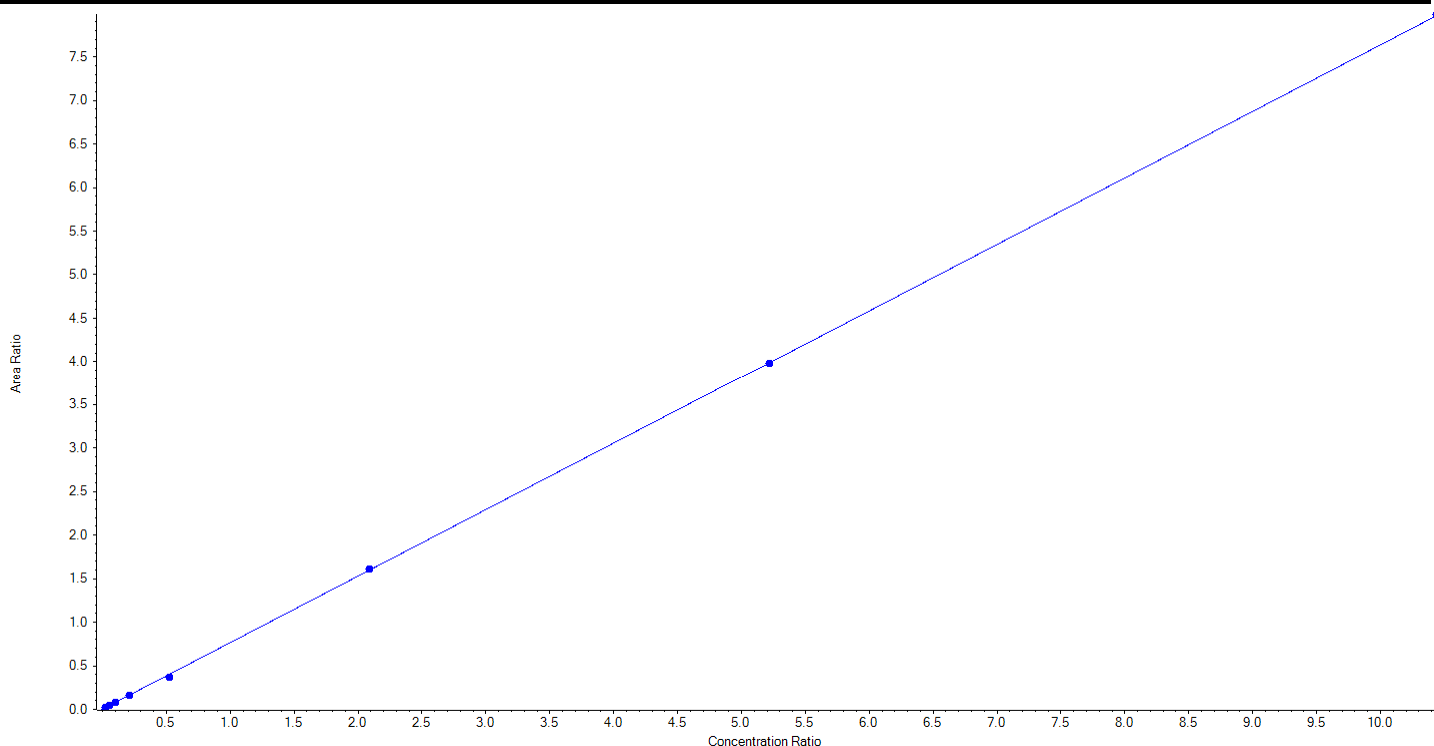
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.136	108.8
4	LM34	L2	True	0.250	0.258	103.3
5	LM35	L3	True	0.500	0.488	97.5
6	LM36	L4	True	1.000	1.036	103.6
7	LM37	L5	True	2.500	2.259	90.4
8	LM38	L6	True	10.000	9.534	95.3
9	LM39	L7	True	25.000	24.884	99.5
10	LM40	L8	True	50.000	50.781	101.6



Analyte Name	PFOS_2	Data File	AC_09222021_5-369.wiff
MRM Transition	499.0 / 99.0	Result Table	21-1182
Internal Standard	13C8-PFOS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.76341x + 0.00338$ ($r = 0.99989$) (weighting: $1/x$) $r^2: 0.9998$

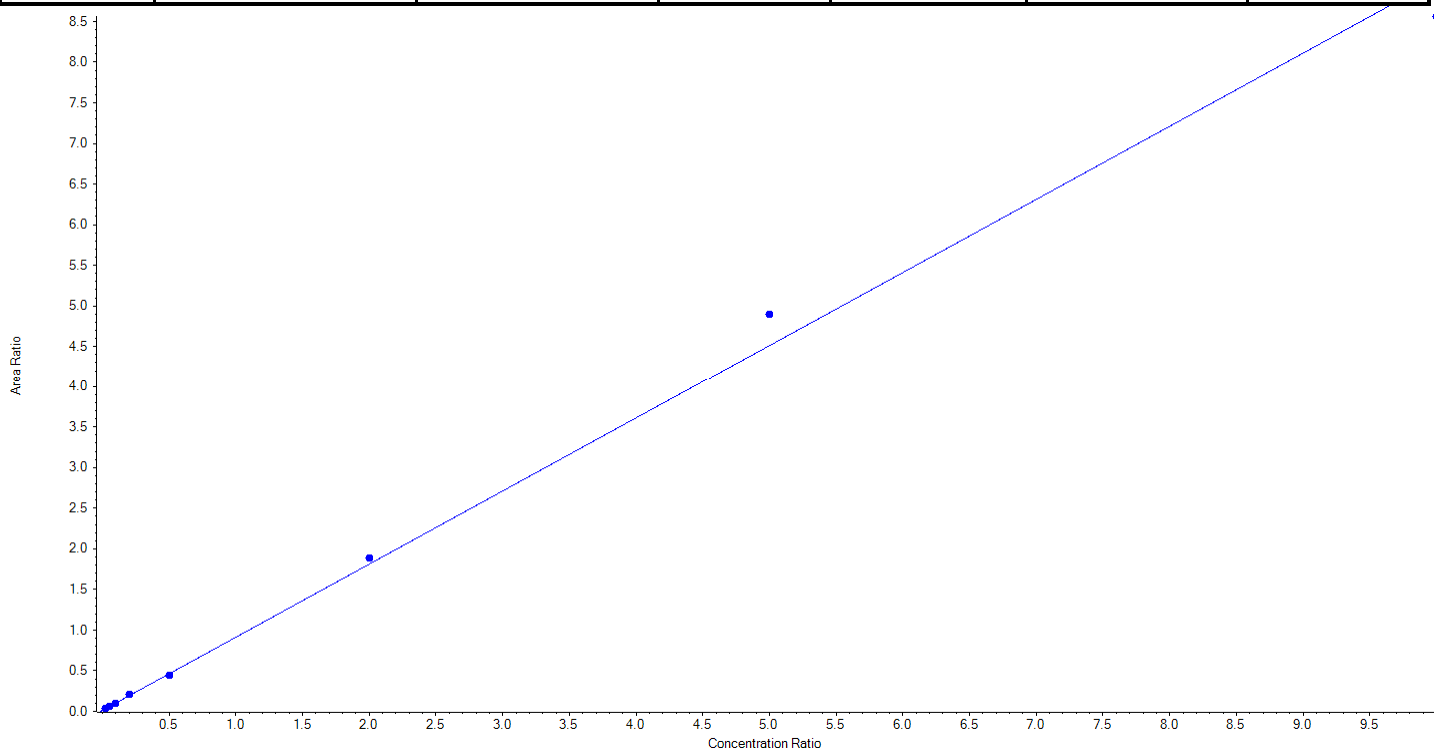
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.122	97.5
4	LM34	L2	True	0.250	0.277	110.9
5	LM35	L3	True	0.500	0.486	97.3
6	LM36	L4	True	1.000	1.007	100.7
7	LM37	L5	True	2.500	2.314	92.6
8	LM38	L6	True	10.000	10.103	101.0
9	LM39	L7	True	25.000	24.981	99.9
10	LM40	L8	True	50.000	50.085	100.2



Analyte Name	PFDA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	513.0 / 469.0	Result Table	21-1182
Internal Standard	13C6-PFDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.89976x + 0.01292$ ($r = 0.99805$) (weighting: $1/x$) $r^2: 0.9961$

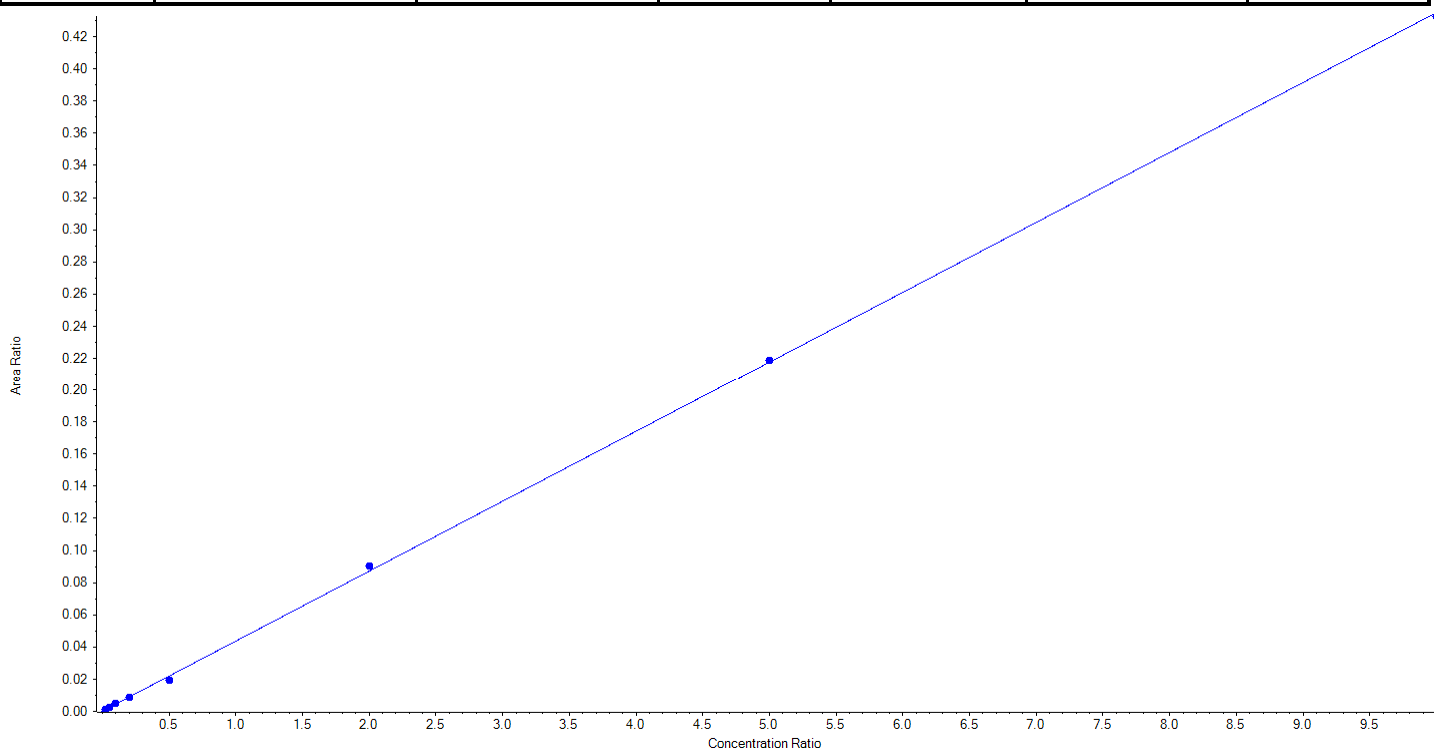
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.104	83.0
4	LM34	L2	True	0.250	0.260	103.9
5	LM35	L3	True	0.500	0.503	100.7
6	LM36	L4	True	1.000	1.087	108.7
7	LM37	L5	True	2.500	2.407	96.3
8	LM38	L6	True	10.000	10.402	104.0
9	LM39	L7	True	25.000	27.111	108.4
10	LM40	L8	True	50.000	47.501	95.0



Analyte Name	PFDA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	513.0 / 219.0	Result Table	21-1182
Internal Standard	13C6-PFDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.04348x + 2.54678e-4$ ($r = 0.99961$) (weighting: $1/x$) $r^2: 0.9992$

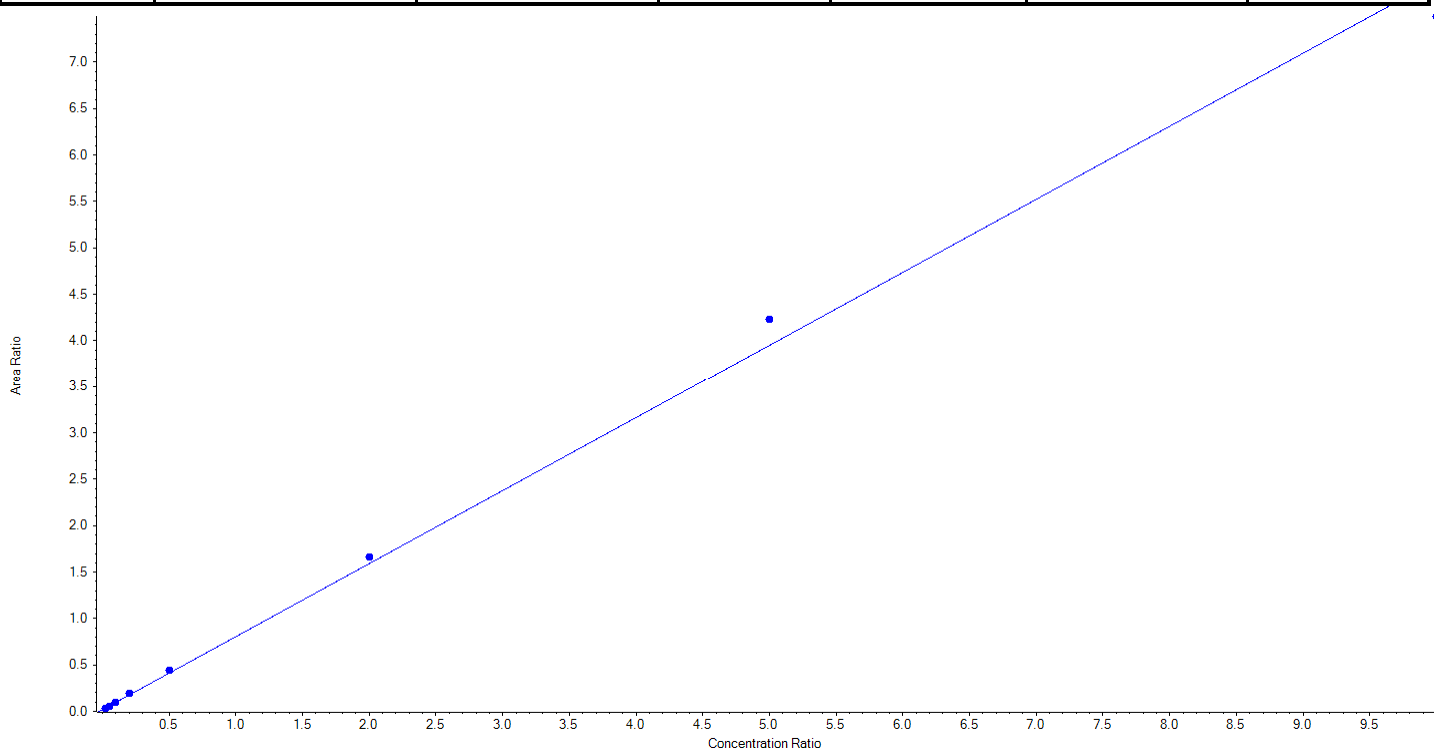
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.107	85.6
4	LM34	L2	True	0.250	0.270	108.0
5	LM35	L3	True	0.500	0.572	114.3
6	LM36	L4	True	1.000	1.004	100.4
7	LM37	L5	True	2.500	2.201	88.0
8	LM38	L6	True	10.000	10.385	103.9
9	LM39	L7	True	25.000	25.123	100.5
10	LM40	L8	True	50.000	49.715	99.4



Analyte Name	PFUnA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	563.0 / 519.0	Result Table	21-1182
Internal Standard	13C7-PFUnA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.78645x + 0.01844$ ($r = 0.99821$) (weighting: $1/x$) $r^2: 0.9964$

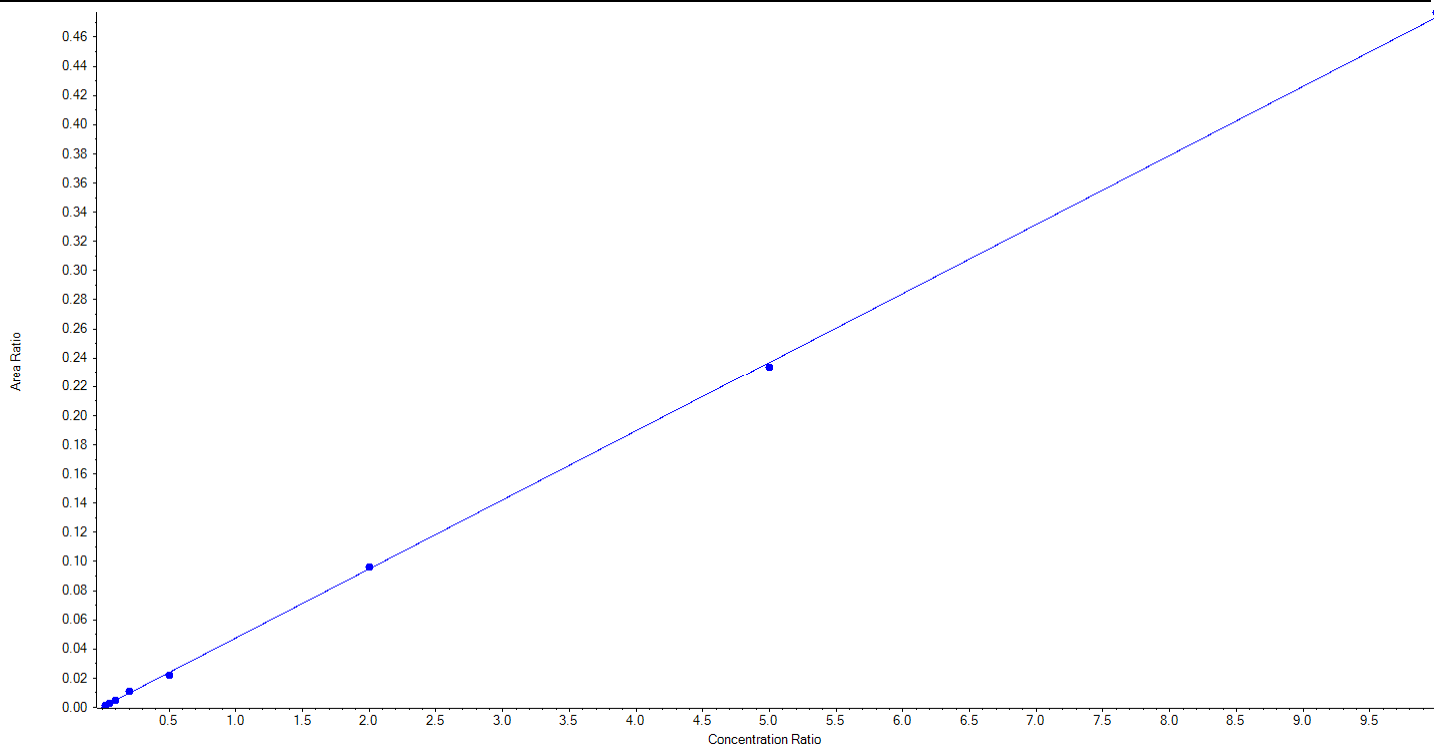
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.105	83.7
4	LM34	L2	True	0.250	0.218	87.0
5	LM35	L3	True	0.500	0.517	103.4
6	LM36	L4	True	1.000	1.125	112.5
7	LM37	L5	True	2.500	2.663	106.5
8	LM38	L6	True	10.000	10.480	104.8
9	LM39	L7	True	25.000	26.759	107.0
10	LM40	L8	True	50.000	47.509	95.0



Analyte Name	PFUnA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	563.0 / 269.0	Result Table	21-1182
Internal Standard	13C7-PFUnA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.04733x + 2.40945e-4$ ($r = 0.99976$) (weighting: $1/x$) $r^2: 0.9995$

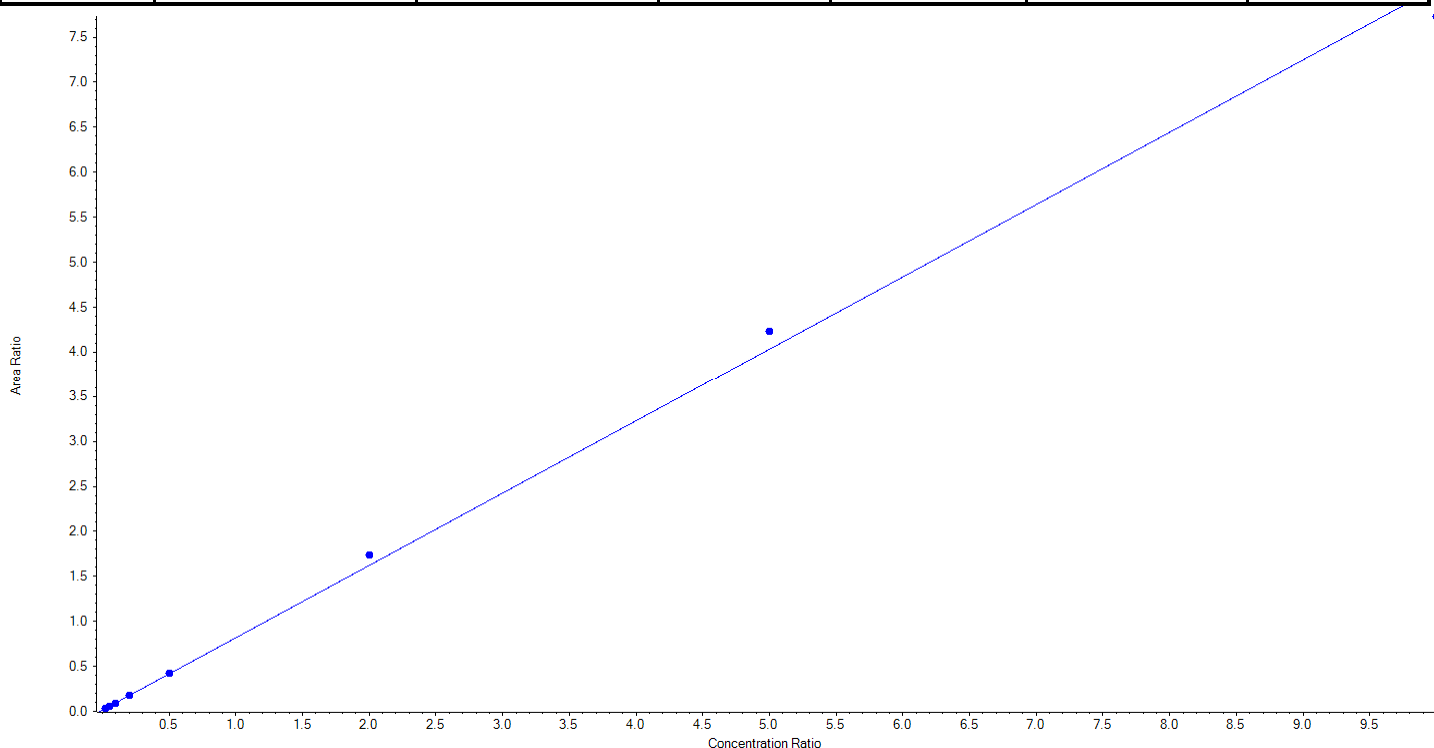
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.126	101.2
4	LM34	L2	True	0.250	0.236	94.5
5	LM35	L3	True	0.500	0.505	101.1
6	LM36	L4	True	1.000	1.117	111.7
7	LM37	L5	True	2.500	2.280	91.2
8	LM38	L6	True	10.000	10.102	101.0
9	LM39	L7	True	25.000	24.665	98.7
10	LM40	L8	True	50.000	50.343	100.7



Analyte Name	PFD _o A_1	Data File	AC_09222021_5-369.wiff
MRM Transition	613.0 / 569.0	Result Table	21-1182
Internal Standard	13C2-PFD _o A	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.80375x + 0.01438$ ($r = 0.99884$) (weighting: $1/x$) $r^2: 0.9977$

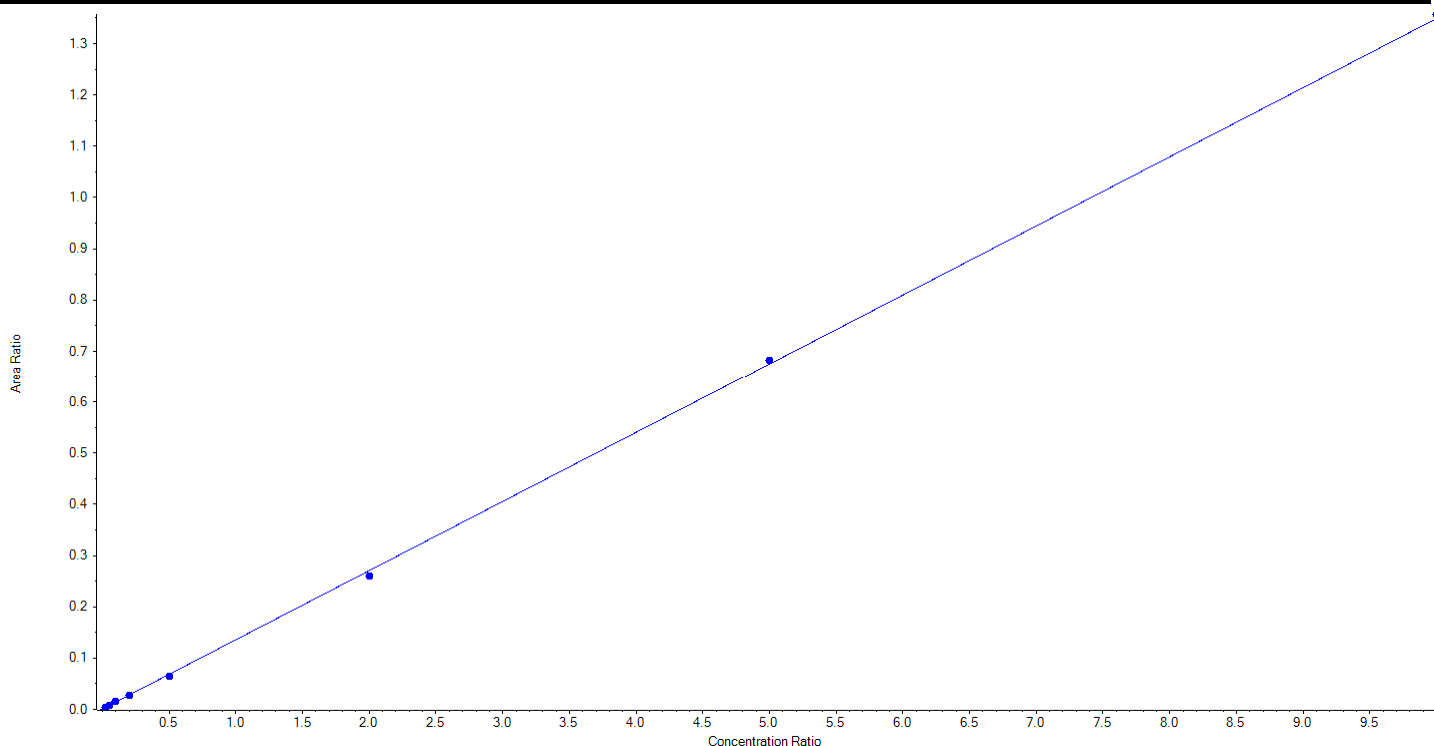
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.117	93.9
4	LM34	L2	True	0.250	0.241	96.3
5	LM35	L3	True	0.500	0.495	98.9
6	LM36	L4	True	1.000	1.018	101.8
7	LM37	L5	True	2.500	2.519	100.8
8	LM38	L6	True	10.000	10.730	107.3
9	LM39	L7	True	25.000	26.261	105.0
10	LM40	L8	True	50.000	47.994	96.0



Analyte Name	PFD _o A_2	Data File	AC_09222021_5-369.wiff
MRM Transition	613.0 / 319.0	Result Table	21-1182
Internal Standard	13C2-PFD _o A	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.13476x + 0.00113$ ($r = 0.99981$) (weighting: $1/x$) $r^2: 0.9996$

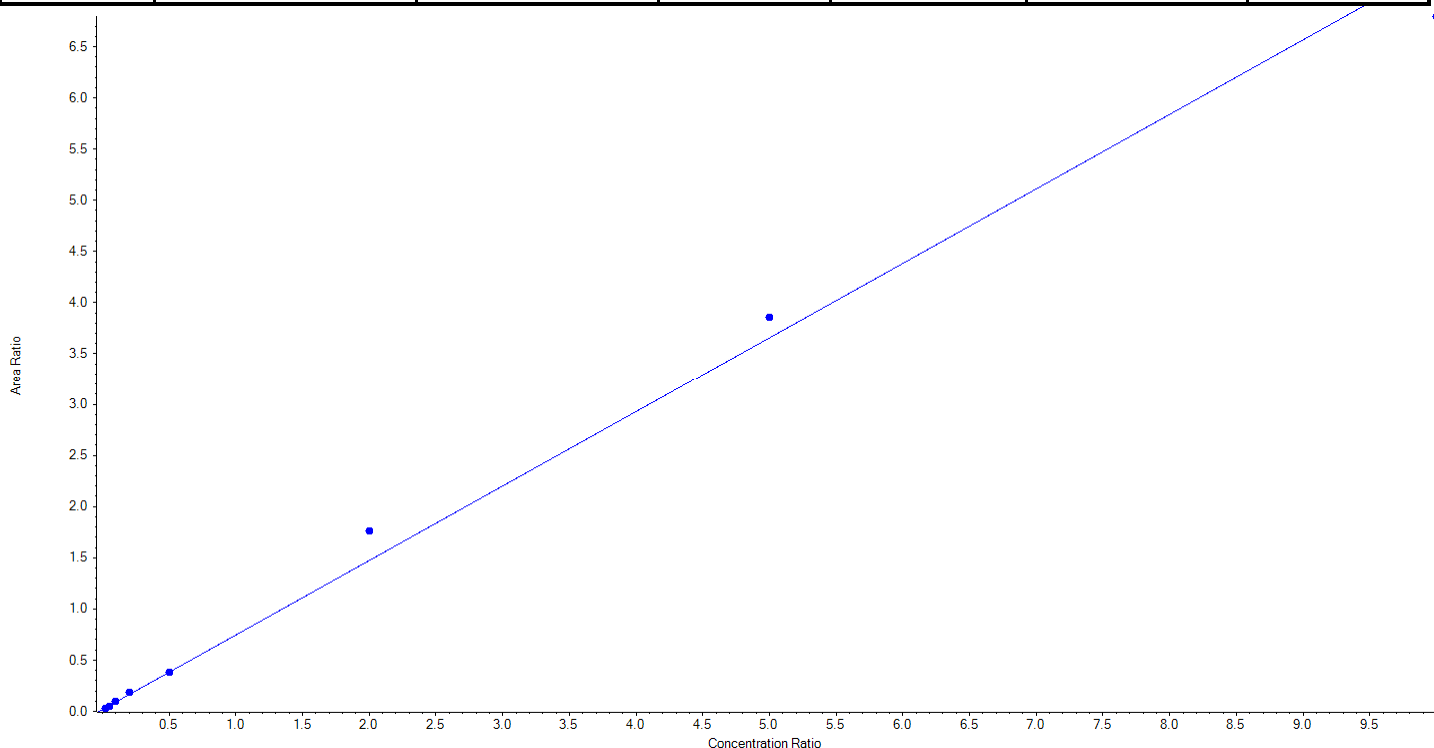
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.138	110.3
4	LM34	L2	True	0.250	0.248	99.2
5	LM35	L3	True	0.500	0.516	103.3
6	LM36	L4	True	1.000	0.951	95.1
7	LM37	L5	True	2.500	2.360	94.4
8	LM38	L6	True	10.000	9.611	96.1
9	LM39	L7	True	25.000	25.260	101.0
10	LM40	L8	True	50.000	50.291	100.6



Analyte Name	PFTTrDA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	663.0 / 619.0	Result Table	21-1182
Internal Standard	13C2-PFTeDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.72755x + 0.01853$ ($r = 0.99578$) (weighting: $1/x$) $r^2: 0.9916$

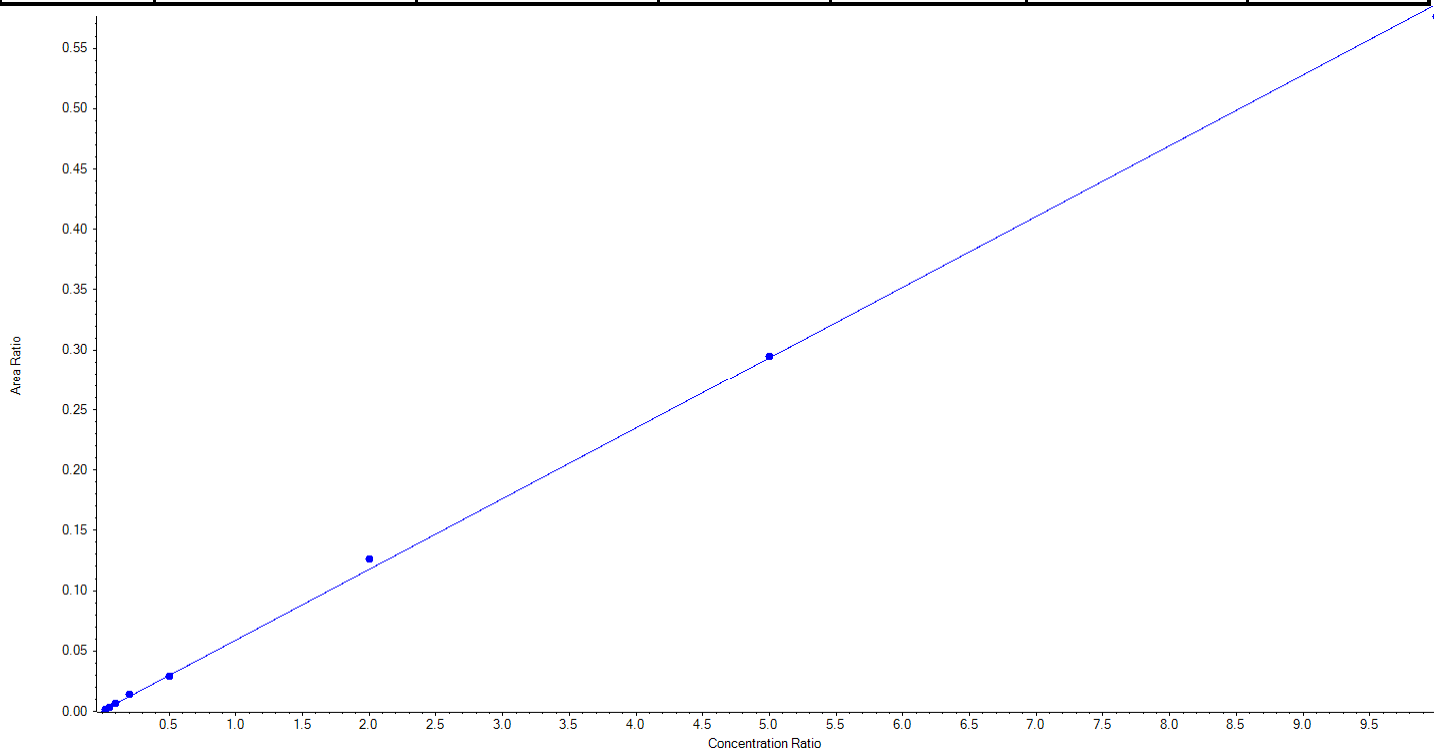
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.093	74.4
4	LM34	L2	True	0.250	0.216	86.6
5	LM35	L3	True	0.500	0.533	106.6
6	LM36	L4	True	1.000	1.133	113.3
7	LM37	L5	True	2.500	2.527	101.1
8	LM38	L6	True	10.000	11.955	119.6
9	LM39	L7	True	25.000	26.355	105.4
10	LM40	L8	True	50.000	46.563	93.1



Analyte Name	PFTTrDA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	663.0 / 169.0	Result Table	21-1182
Internal Standard	13C2-PFTeDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.05860x + 4.34730e-4$ ($r = 0.99943$) (weighting: $1/x$) $r^2: 0.9989$

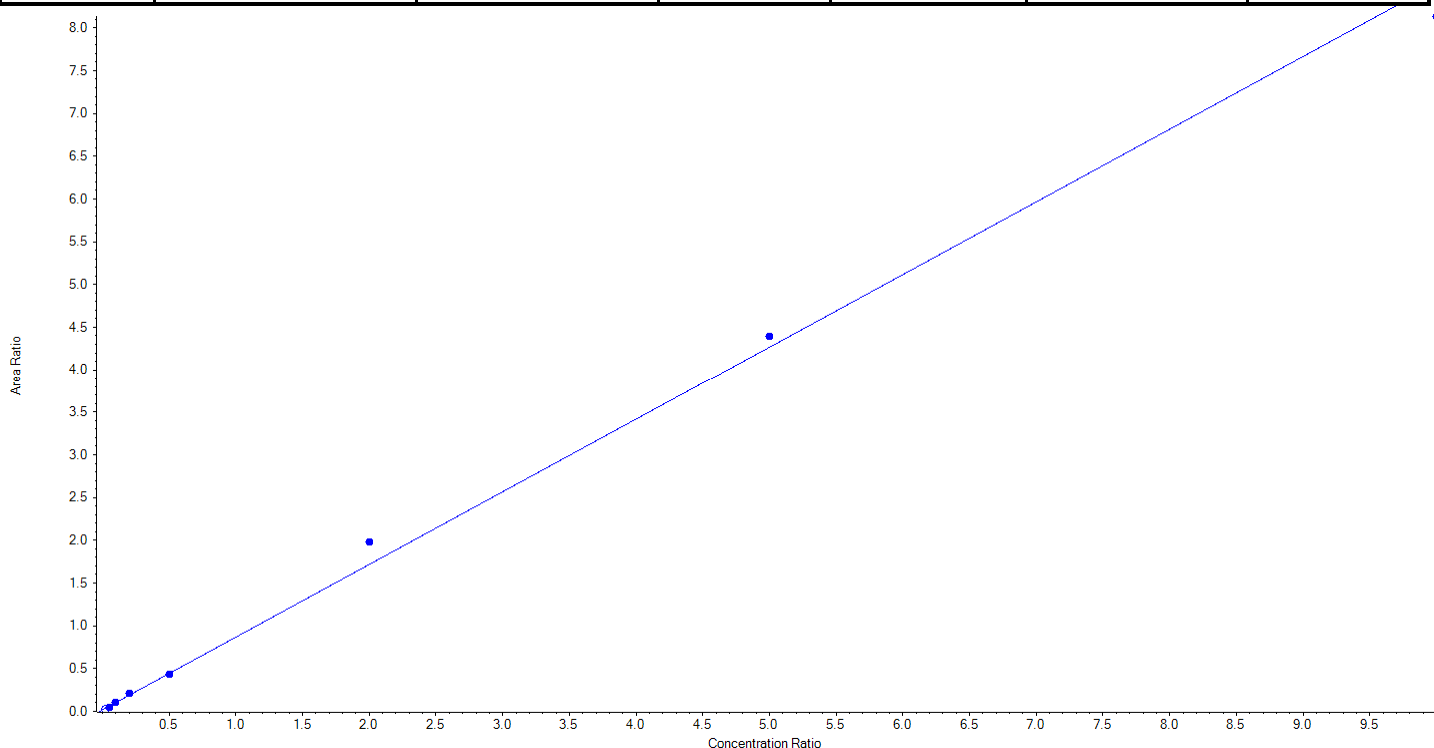
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.101	81.2
4	LM34	L2	True	0.250	0.246	98.5
5	LM35	L3	True	0.500	0.518	103.7
6	LM36	L4	True	1.000	1.144	114.4
7	LM37	L5	True	2.500	2.412	96.5
8	LM38	L6	True	10.000	10.721	107.2
9	LM39	L7	True	25.000	25.108	100.4
10	LM40	L8	True	50.000	49.124	98.3



Analyte Name	PFTeDA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	713.0 / 669.0	Result Table	21-1182
Internal Standard	13C2-PFTeDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.84964x + 0.01834$ ($r = 0.99769$) (weighting: $1/x$) $r^2: 0.9954$

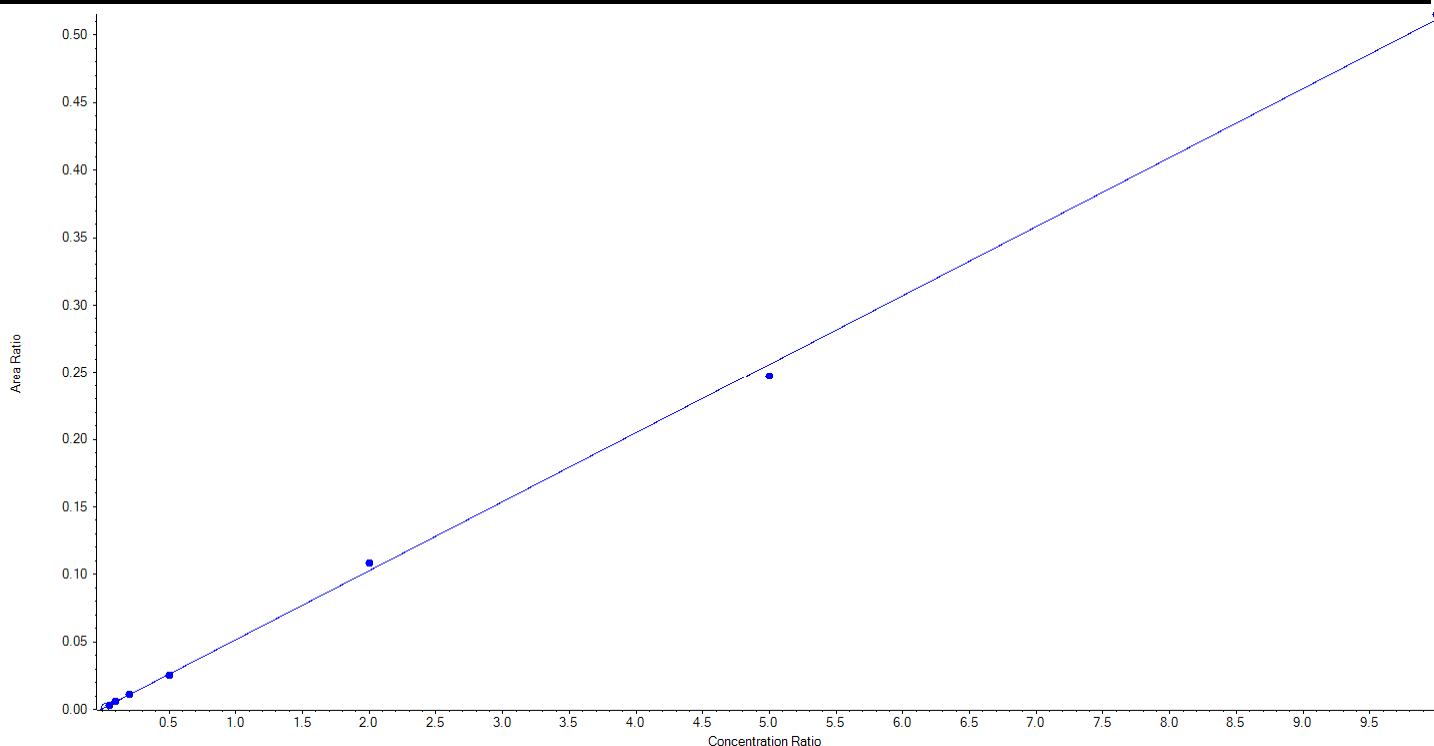
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	False	0.125	0.039	31.1
4	LM34	L2	True	0.250	0.189	75.5
5	LM35	L3	True	0.500	0.505	101.0
6	LM36	L4	True	1.000	1.125	112.5
7	LM37	L5	True	2.500	2.437	97.5
8	LM38	L6	True	10.000	11.513	115.1
9	LM39	L7	True	25.000	25.734	102.9
10	LM40	L8	True	50.000	47.747	95.5



Analyte Name	PFTeDA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	713.0 / 169.0	Result Table	21-1182
Internal Standard	13C2-PFTeDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.05109x + 5.41783e-4$ ($r = 0.99960$) (weighting: $1/x$) $r^2: 0.9992$

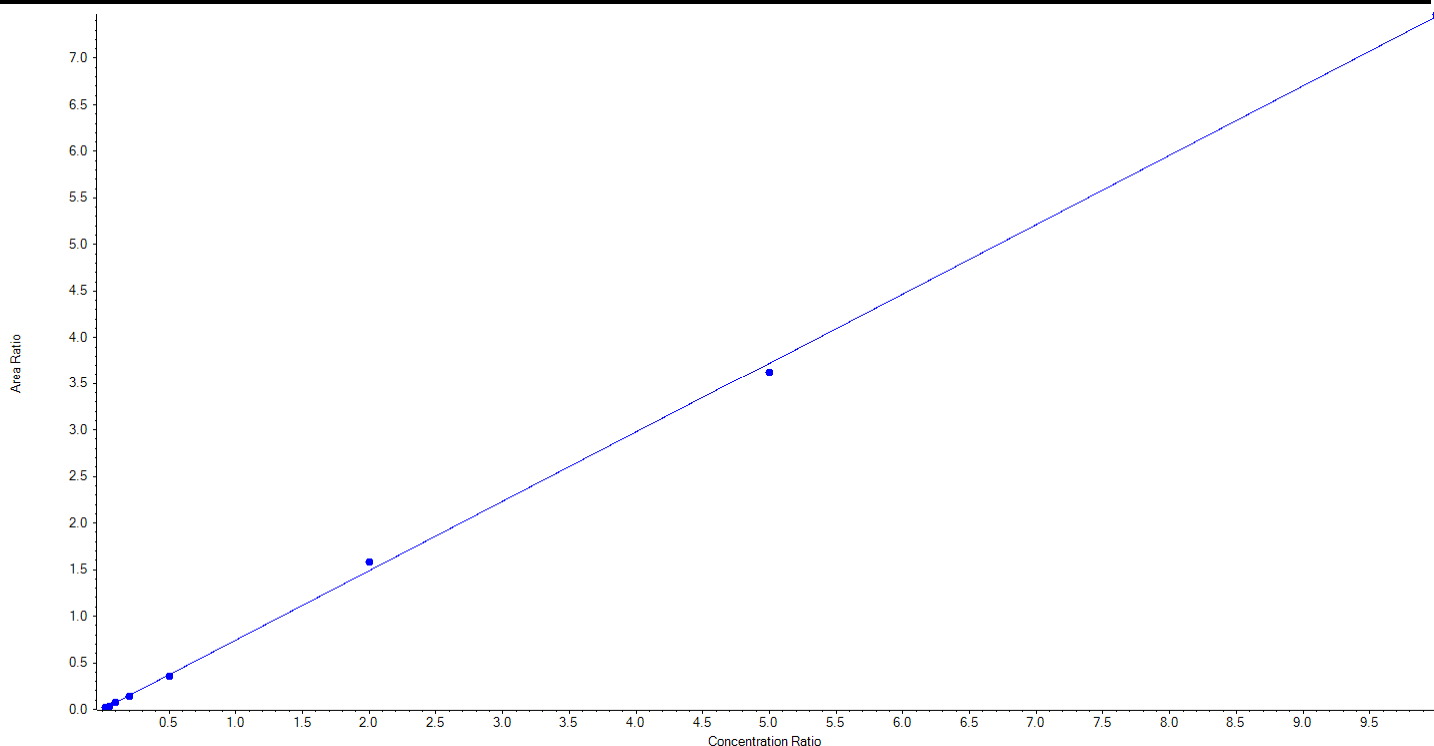
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	False	0.125	0.099	79.0
4	LM34	L2	True	0.250	0.235	93.9
5	LM35	L3	True	0.500	0.511	102.2
6	LM36	L4	True	1.000	1.055	105.5
7	LM37	L5	True	2.500	2.396	95.9
8	LM38	L6	True	10.000	10.523	105.2
9	LM39	L7	True	25.000	24.165	96.7
10	LM40	L8	True	50.000	50.365	100.7



Analyte Name	NMeFOSAA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	570.0 / 419.0	Result Table	21-1182
Internal Standard	d3-MeFOSAA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.74475x + -3.63858e-4$ ($r = 0.99963$) (weighting: $1/x$) $r^2: 0.9993$

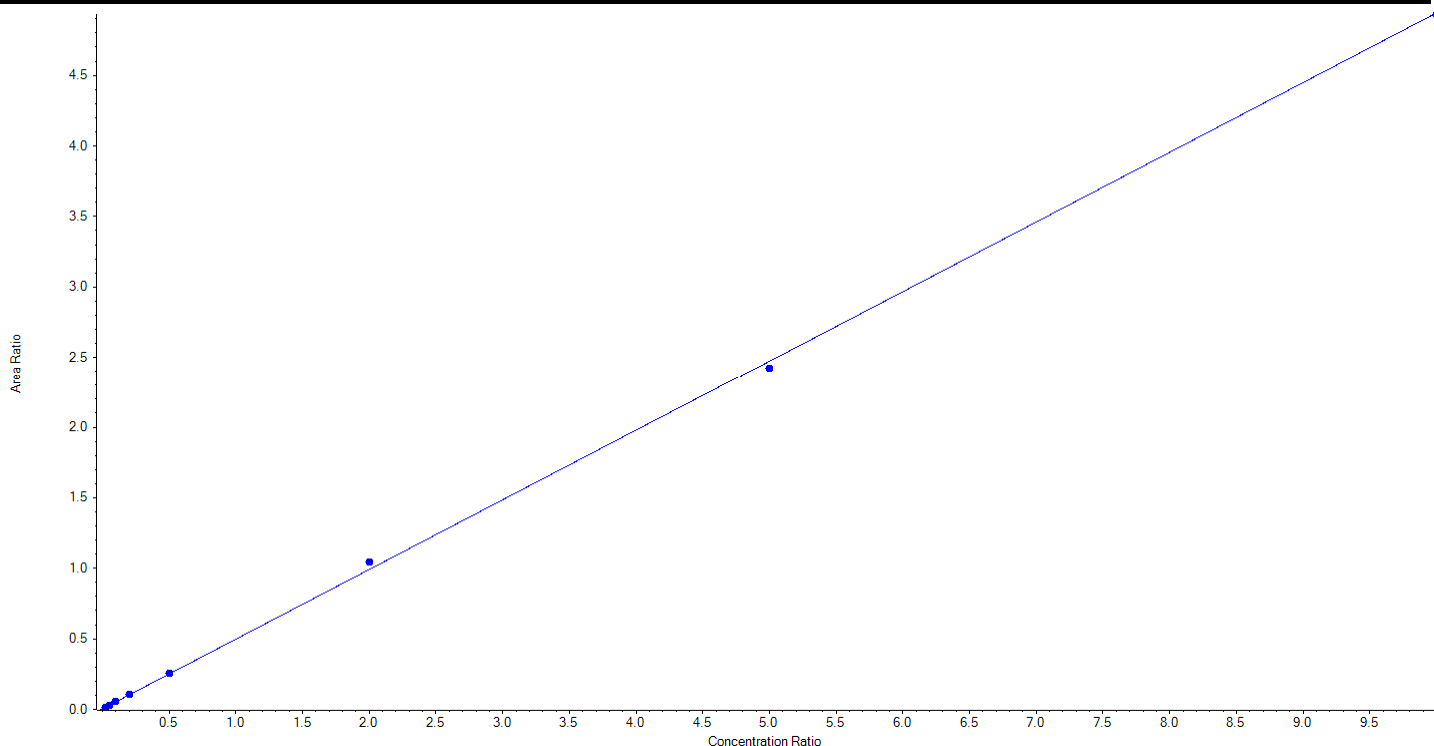
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.122	97.9
4	LM34	L2	True	0.250	0.246	98.5
5	LM35	L3	True	0.500	0.537	107.3
6	LM36	L4	True	1.000	0.965	96.5
7	LM37	L5	True	2.500	2.399	96.0
8	LM38	L6	True	10.000	10.616	106.2
9	LM39	L7	True	25.000	24.352	97.4
10	LM40	L8	True	50.000	50.138	100.3



Analyte Name	NMeFOSAA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	570.0 / 512.0	Result Table	21-1182
Internal Standard	d3-MeFOSAA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.49383x + 0.00413$ ($r = 0.99971$) (weighting: $1/x$) $r^2: 0.9994$

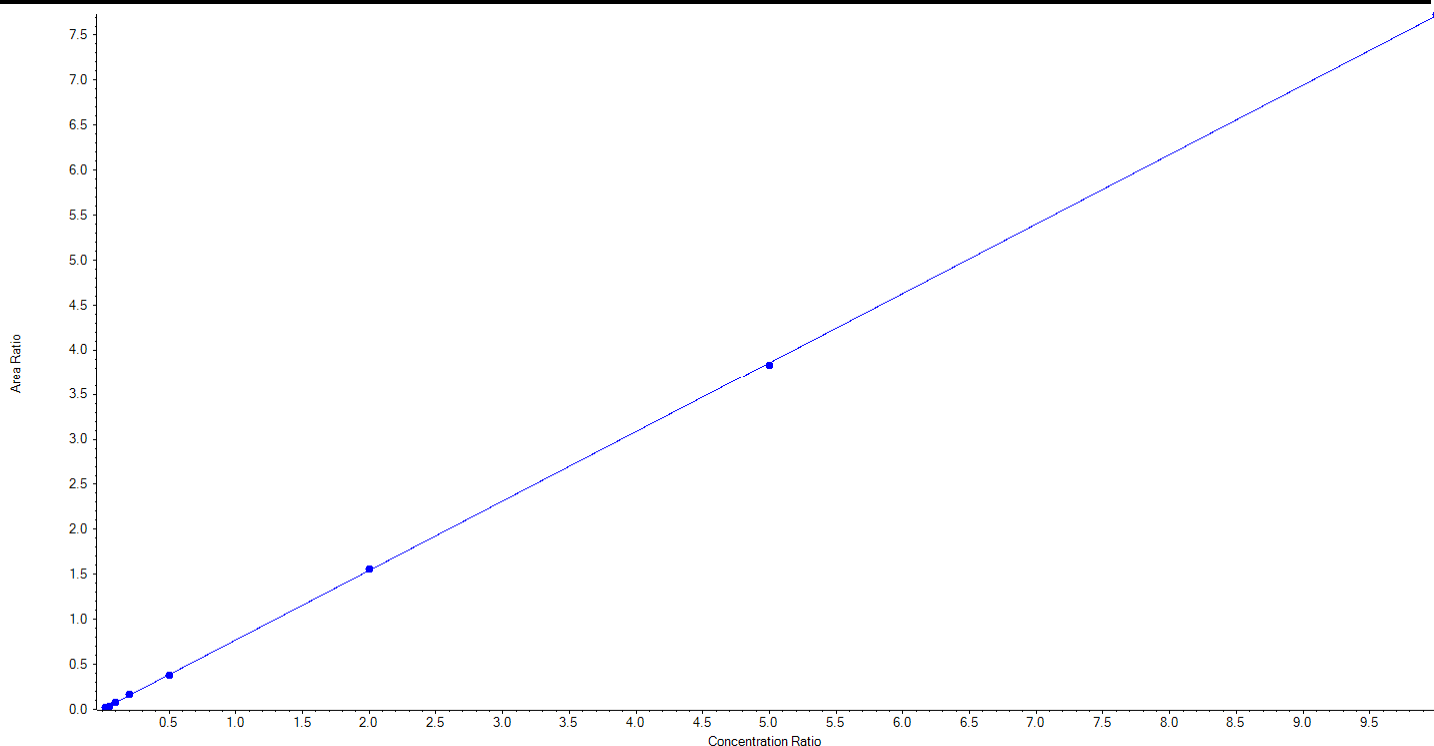
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.121	97.0
4	LM34	L2	True	0.250	0.215	85.9
5	LM35	L3	True	0.500	0.532	106.5
6	LM36	L4	True	1.000	1.065	106.5
7	LM37	L5	True	2.500	2.527	101.1
8	LM38	L6	True	10.000	10.522	105.2
9	LM39	L7	True	25.000	24.511	98.0
10	LM40	L8	True	50.000	49.882	99.8



Analyte Name	NEtFOSAA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	584.0 / 419.0	Result Table	21-1182
Internal Standard	d5-EtFOSAA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.77161x + -2.68856e-5$ ($r = 0.99996$) (weighting: $1/x$) $r^2: 0.9999$

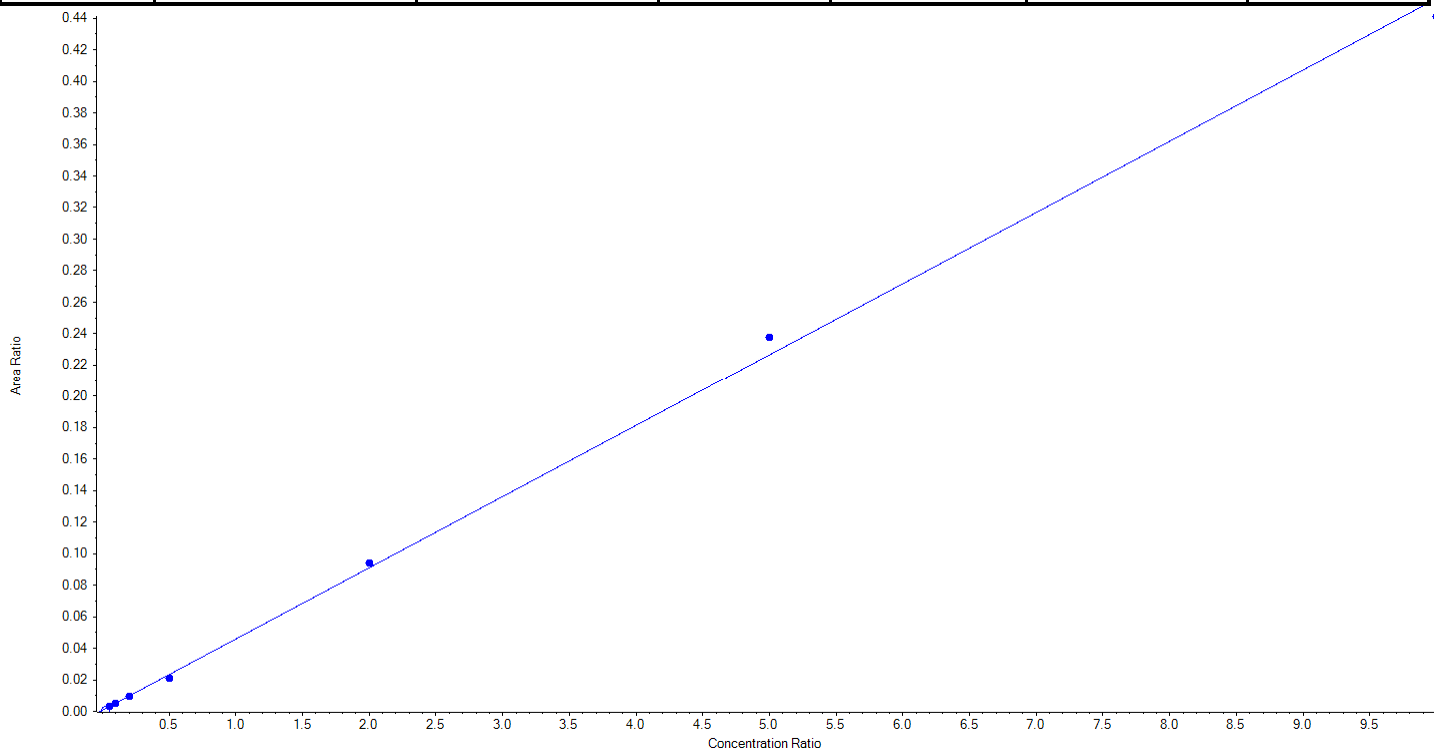
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.130	104.4
4	LM34	L2	True	0.250	0.237	94.6
5	LM35	L3	True	0.500	0.492	98.4
6	LM36	L4	True	1.000	1.047	104.7
7	LM37	L5	True	2.500	2.433	97.3
8	LM38	L6	True	10.000	10.106	101.1
9	LM39	L7	True	25.000	24.852	99.4
10	LM40	L8	True	50.000	50.079	100.2



Analyte Name	NEtFOSAA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	584.0 / 483.0	Result Table	21-1182
Internal Standard	d5-EtFOSAA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.04516x + 7.37839e-4$ ($r = 0.99914$) (weighting: $1/x$) $r^2: 0.9983$

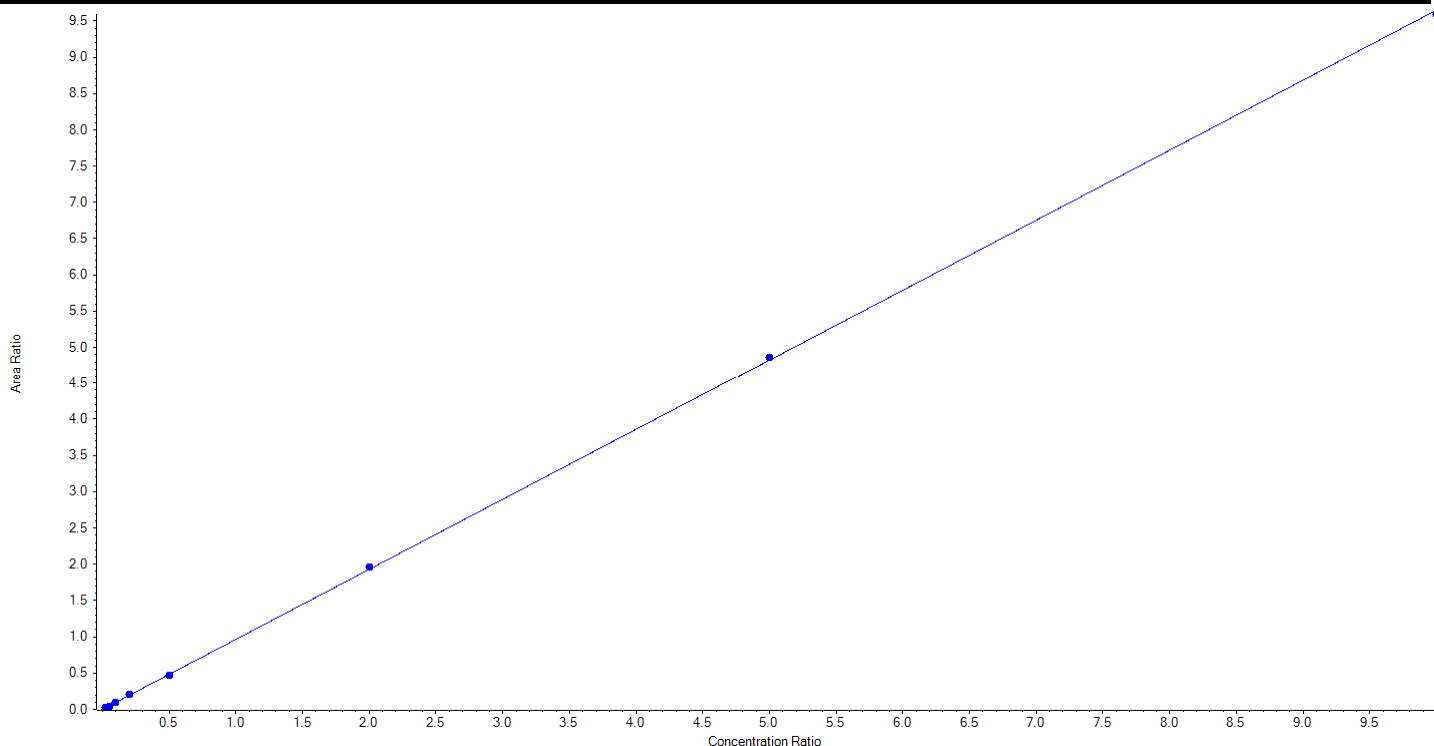
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	False	0.125	0.019	15.1
4	LM34	L2	True	0.250	0.297	118.6
5	LM35	L3	True	0.500	0.450	90.0
6	LM36	L4	True	1.000	0.958	95.8
7	LM37	L5	True	2.500	2.247	89.9
8	LM38	L6	True	10.000	10.340	103.4
9	LM39	L7	True	25.000	26.208	104.8
10	LM40	L8	True	50.000	48.751	97.5



Analyte Name	HFPO-DA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	285.0 / 169.0	Result Table	21-1182
Internal Standard	13C3-HFPO-DA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.96470x + 7.03896e-4$ ($r = 0.99990$) (weighting: $1/x$) $r^2: 0.9998$

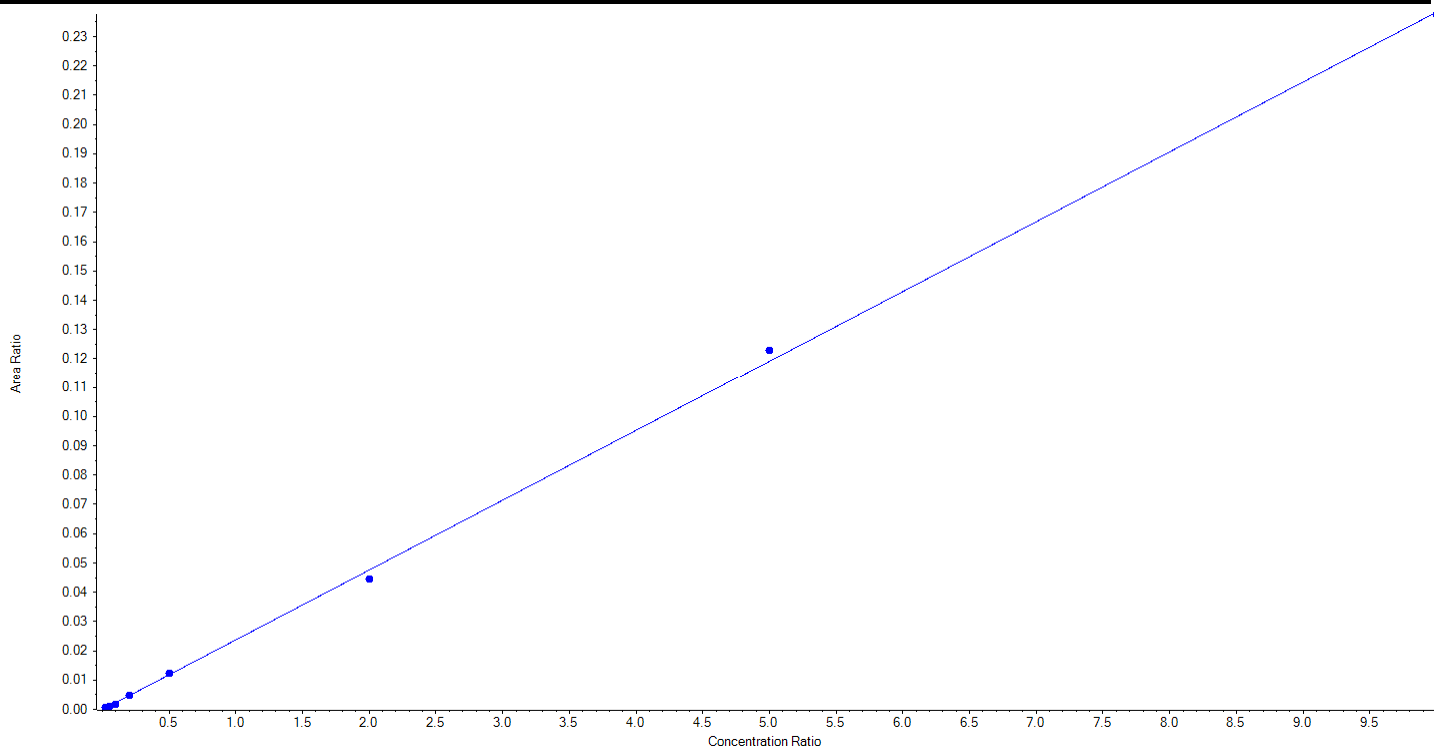
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.129	103.1
4	LM34	L2	True	0.250	0.245	97.9
5	LM35	L3	True	0.500	0.469	93.8
6	LM36	L4	True	1.000	1.071	107.1
7	LM37	L5	True	2.500	2.408	96.3
8	LM38	L6	True	10.000	10.169	101.7
9	LM39	L7	True	25.000	25.198	100.8
10	LM40	L8	True	50.000	49.687	99.4



Analyte Name	HFPO-DA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	285.0 / 118.8	Result Table	21-1182
Internal Standard	13C3-HFPO-DA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.02384x + -1.04414e-4$ ($r = 0.99945$) (weighting: $1/x$) $r^2: 0.9989$

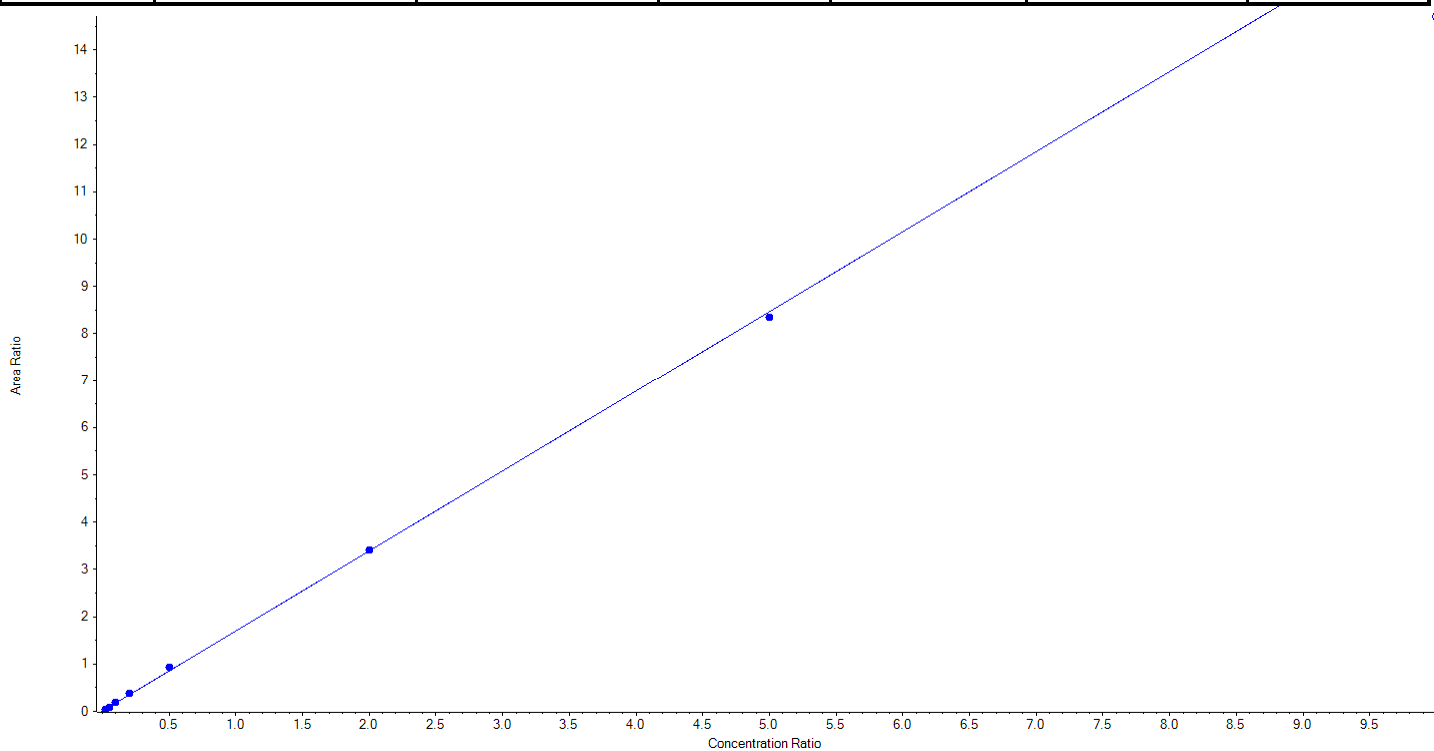
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.136	108.9
4	LM34	L2	True	0.250	0.270	108.1
5	LM35	L3	True	0.500	0.404	80.8
6	LM36	L4	True	1.000	1.016	101.6
7	LM37	L5	True	2.500	2.611	104.4
8	LM38	L6	True	10.000	9.346	93.5
9	LM39	L7	True	25.000	25.763	103.1
10	LM40	L8	True	50.000	49.829	99.7



Analyte Name	ADONA_1	Data File	AC_09222021_5-369.wiff
MRM Transition	377.0 / 251.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.69183x + 0.00872$ ($r = 0.99950$) (weighting: $1/x$) $r^2: 0.9990$

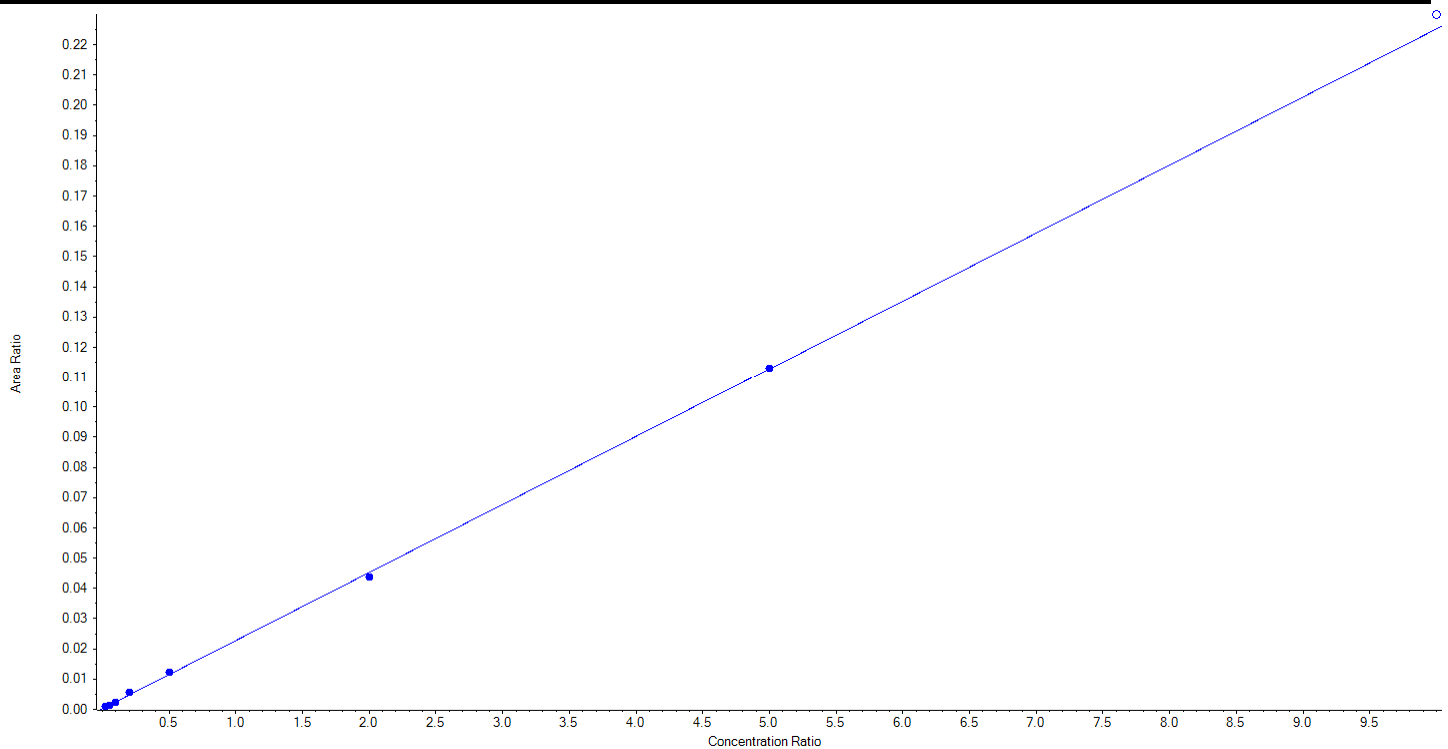
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.107	85.9
4	LM34	L2	True	0.250	0.238	95.4
5	LM35	L3	True	0.500	0.508	101.5
6	LM36	L4	True	1.000	1.094	109.4
7	LM37	L5	True	2.500	2.715	108.6
8	LM38	L6	True	10.000	10.072	100.7
9	LM39	L7	True	25.000	24.641	98.6
10	LM40	L8	False	50.000	43.434	86.9



Analyte Name	ADONA_2	Data File	AC_09222021_5-369.wiff
MRM Transition	377.0 / 85.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.02250x + 2.65880e-4$ ($r = 0.99925$) (weighting: $1/x$) $r^2: 0.9985$

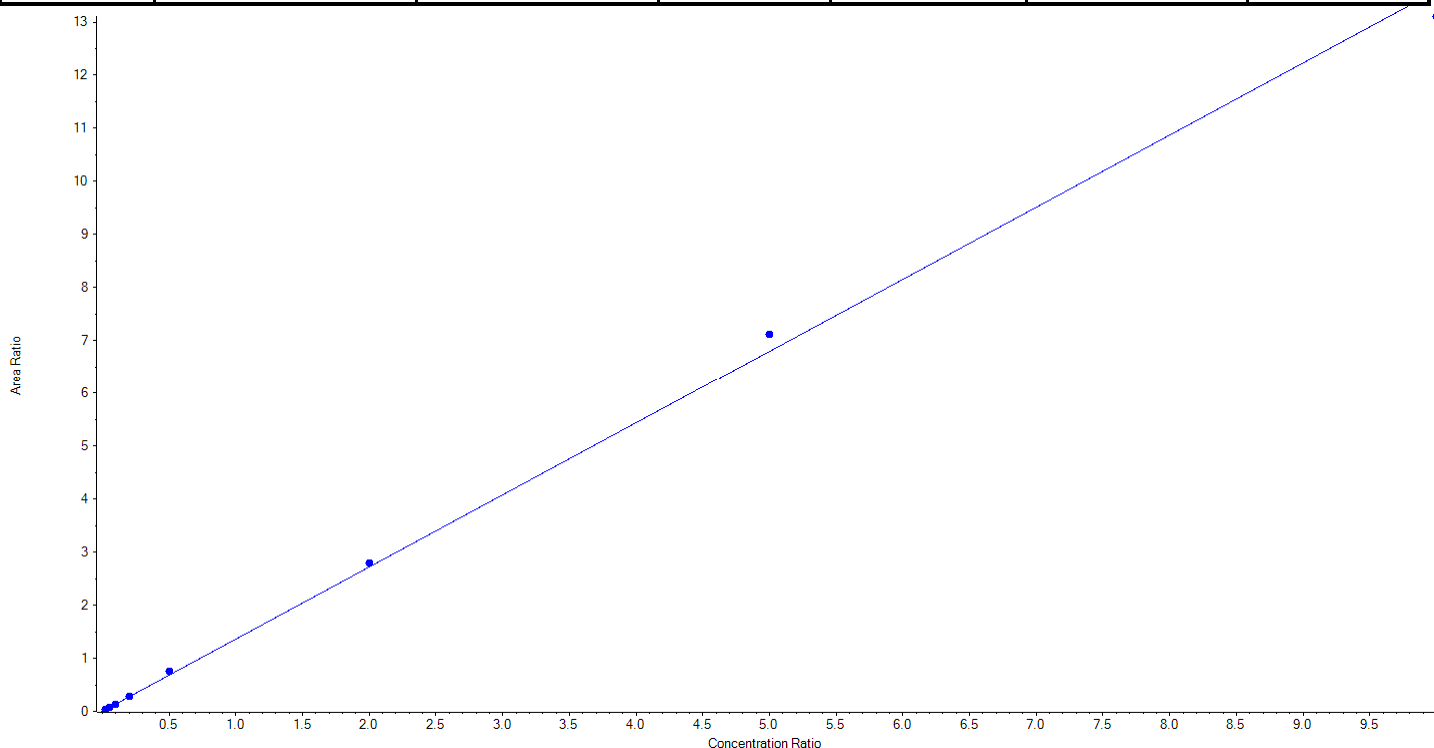
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.130	103.6
4	LM34	L2	True	0.250	0.209	83.5
5	LM35	L3	True	0.500	0.466	93.3
6	LM36	L4	True	1.000	1.157	115.7
7	LM37	L5	True	2.500	2.668	106.7
8	LM38	L6	True	10.000	9.696	97.0
9	LM39	L7	True	25.000	25.049	100.2
10	LM40	L8	False	50.000	51.057	102.1



Analyte Name	9CI-PF3ONS_1	Data File	AC_09222021_5-369.wiff
MRM Transition	531.0 / 351.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.35853x + 0.00371$ ($r = 0.99903$) (weighting: $1/x$) $r^2: 0.9981$

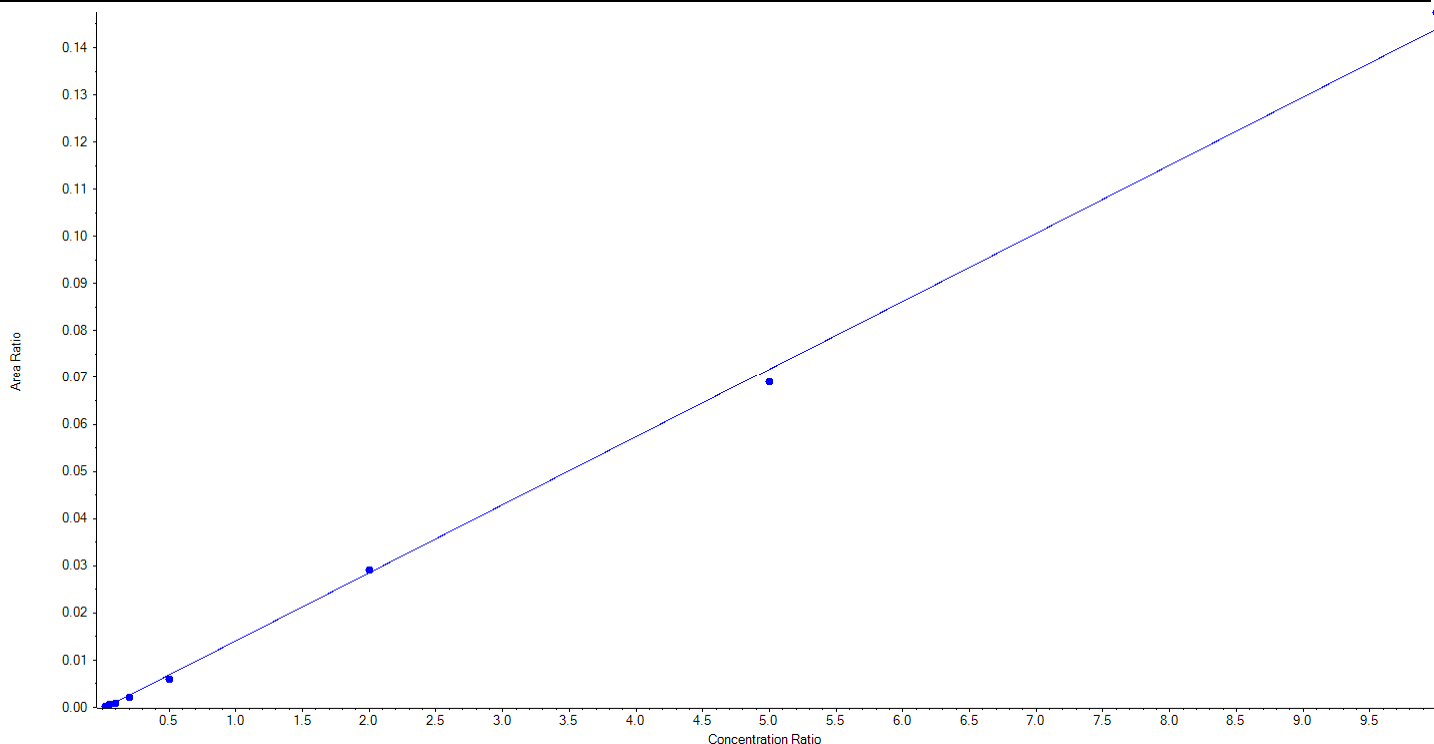
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.108	86.8
4	LM34	L2	True	0.250	0.234	93.7
5	LM35	L3	True	0.500	0.497	99.3
6	LM36	L4	True	1.000	1.050	105.0
7	LM37	L5	True	2.500	2.777	111.1
8	LM38	L6	True	10.000	10.287	102.9
9	LM39	L7	True	25.000	26.205	104.8
10	LM40	L8	True	50.000	48.216	96.4



Analyte Name	9CI-PF3ONS_2	Data File	AC_09222021_5-369.wiff
MRM Transition	531.0 / 83.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.01443x + -3.27181e-4$ ($r = 0.99900$) (weighting: $1/x$) $r^2: 0.9980$

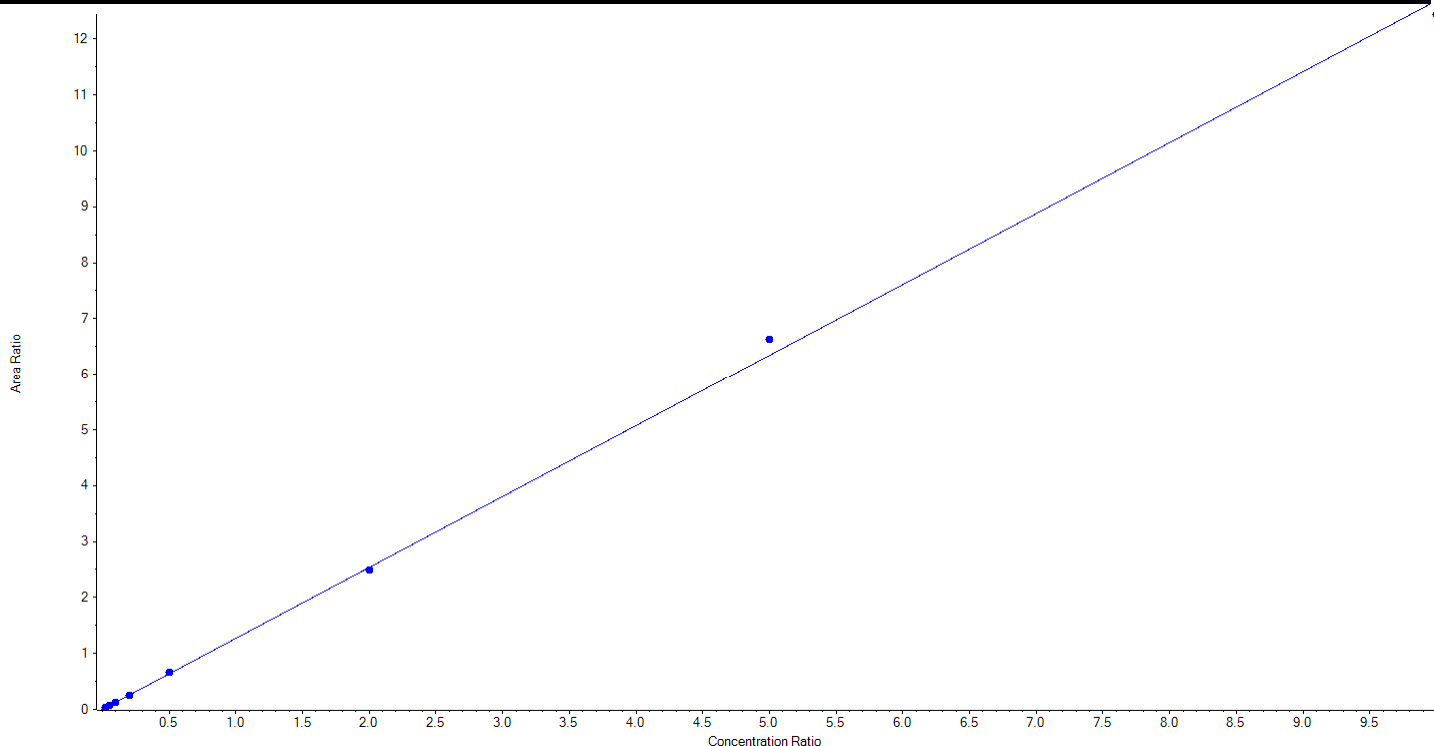
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.155	124.2
4	LM34	L2	True	0.250	0.305	122.1
5	LM35	L3	True	0.500	0.389	77.8
6	LM36	L4	True	1.000	0.882	88.2
7	LM37	L5	True	2.500	2.177	87.1
8	LM38	L6	True	10.000	10.212	102.1
9	LM39	L7	True	25.000	24.043	96.2
10	LM40	L8	True	50.000	51.212	102.4



Analyte Name	11CI-PF3OUdS_1	Data File	AC_09222021_5-369.wiff
MRM Transition	631.0 / 451.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.26808x + 0.00157$ ($r = 0.99956$) (weighting: $1/x$) $r^2: 0.9991$

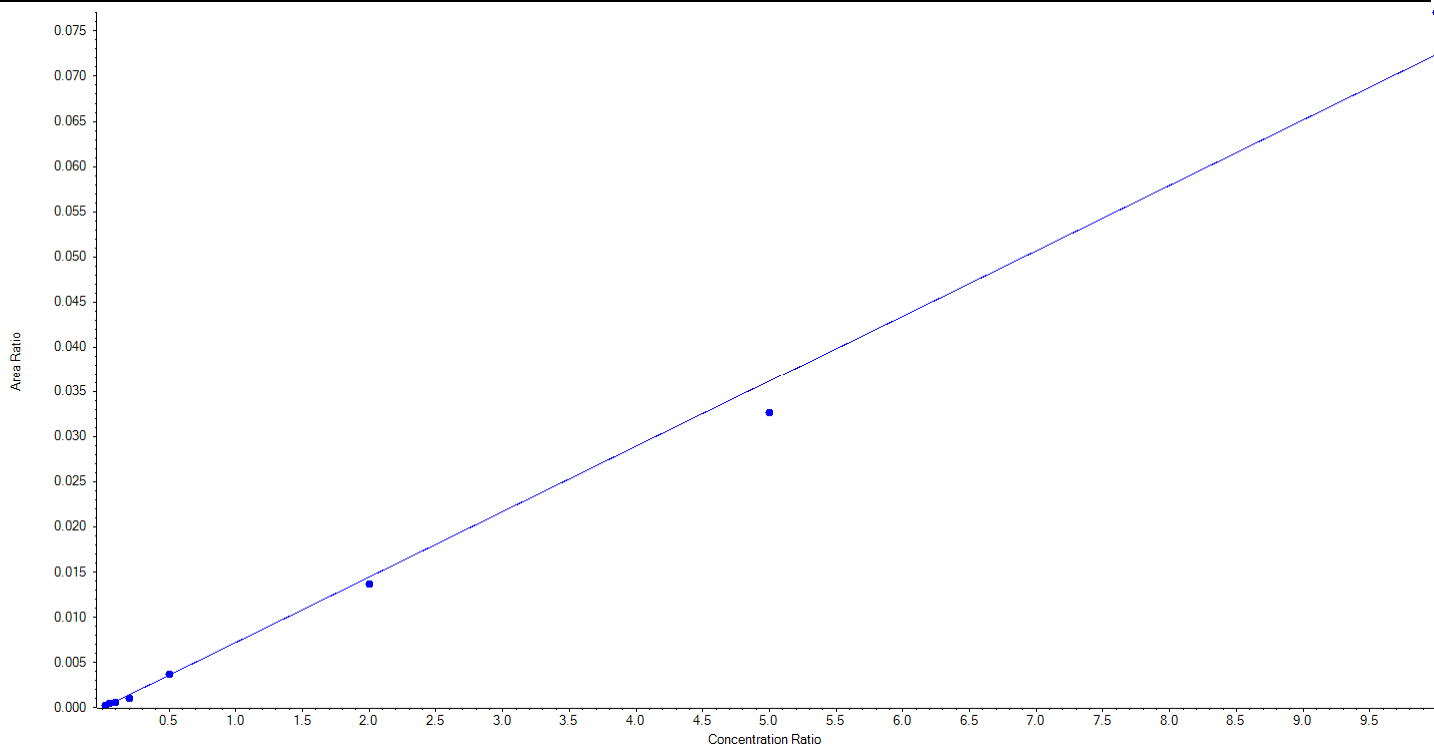
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.127	101.7
4	LM34	L2	True	0.250	0.243	97.3
5	LM35	L3	True	0.500	0.482	96.5
6	LM36	L4	True	1.000	1.008	100.8
7	LM37	L5	True	2.500	2.579	103.1
8	LM38	L6	True	10.000	9.809	98.1
9	LM39	L7	True	25.000	26.103	104.4
10	LM40	L8	True	50.000	49.023	98.1



Analyte Name	11Cl-pf3OUdS_2	Data File	AC_09222021_5-369.wiff
MRM Transition	631.0 / 83.0	Result Table	21-1182
Internal Standard	13C8-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.00725x + -5.41583e-5$ ($r = 0.99659$) (weighting: $1/x$) $r^2: 0.9932$

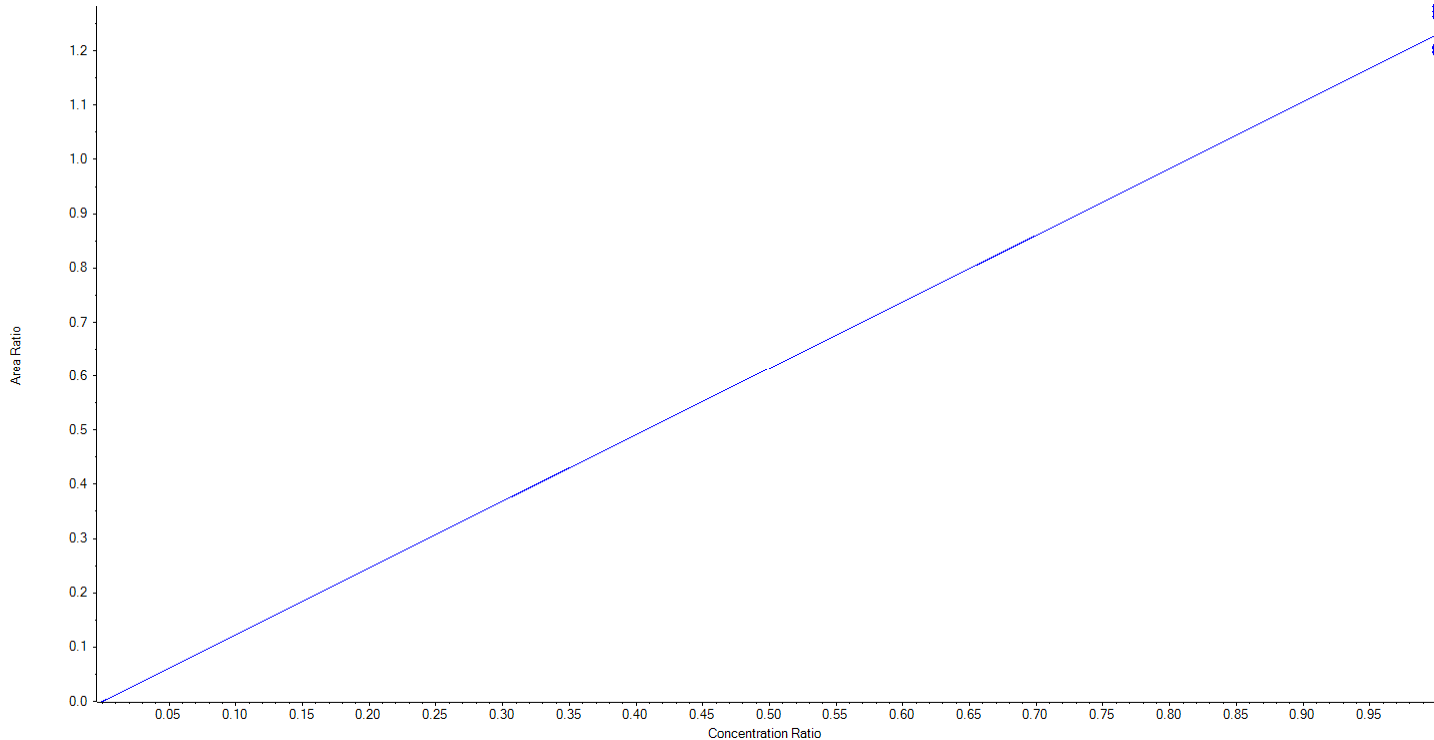
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	0.125	0.159	127.1
4	LM34	L2	True	0.250	0.313	125.0
5	LM35	L3	True	0.500	0.412	82.5
6	LM36	L4	True	1.000	0.729	72.9
7	LM37	L5	True	2.500	2.532	101.3
8	LM38	L6	True	10.000	9.446	94.5
9	LM39	L7	True	25.000	22.577	90.3
10	LM40	L8	True	50.000	53.206	106.4



Analyte Name	13C2-PFDaA	Data File	AC_09222021_5-369.wiff
MRM Transition	615.0 / 570.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.22903 x$ (std. dev. = 0.03665) (weighting: None) r^2 :N/A

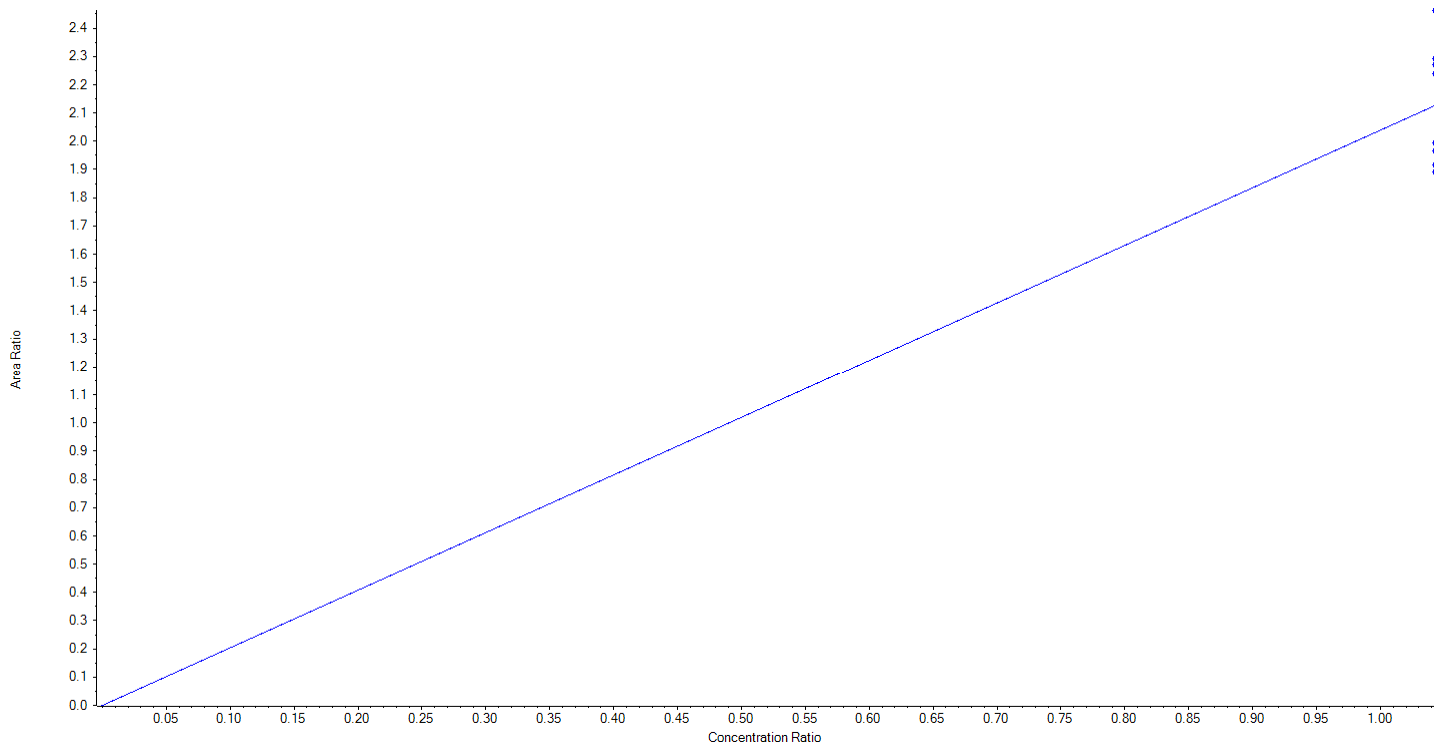
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	4.908	98.2
4	LM34	L2	True	5.000	5.142	102.8
5	LM35	L3	True	5.000	4.871	97.4
6	LM36	L4	True	5.000	4.878	97.6
7	LM37	L5	True	5.000	4.915	98.3
8	LM38	L6	True	5.000	4.895	97.9
9	LM39	L7	True	5.000	5.178	103.6
10	LM40	L8	True	5.000	5.214	104.3



Analyte Name	d3-MeFOSAA	Data File	AC_09222021_5-369.wiff
MRM Transition	573.0 / 419.0	Result Table	21-1182_SIS
Internal Standard	13C4-PFOS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 2.03919x$ (std. dev. = 0.20410) (weighting: None) r^2 :N/A

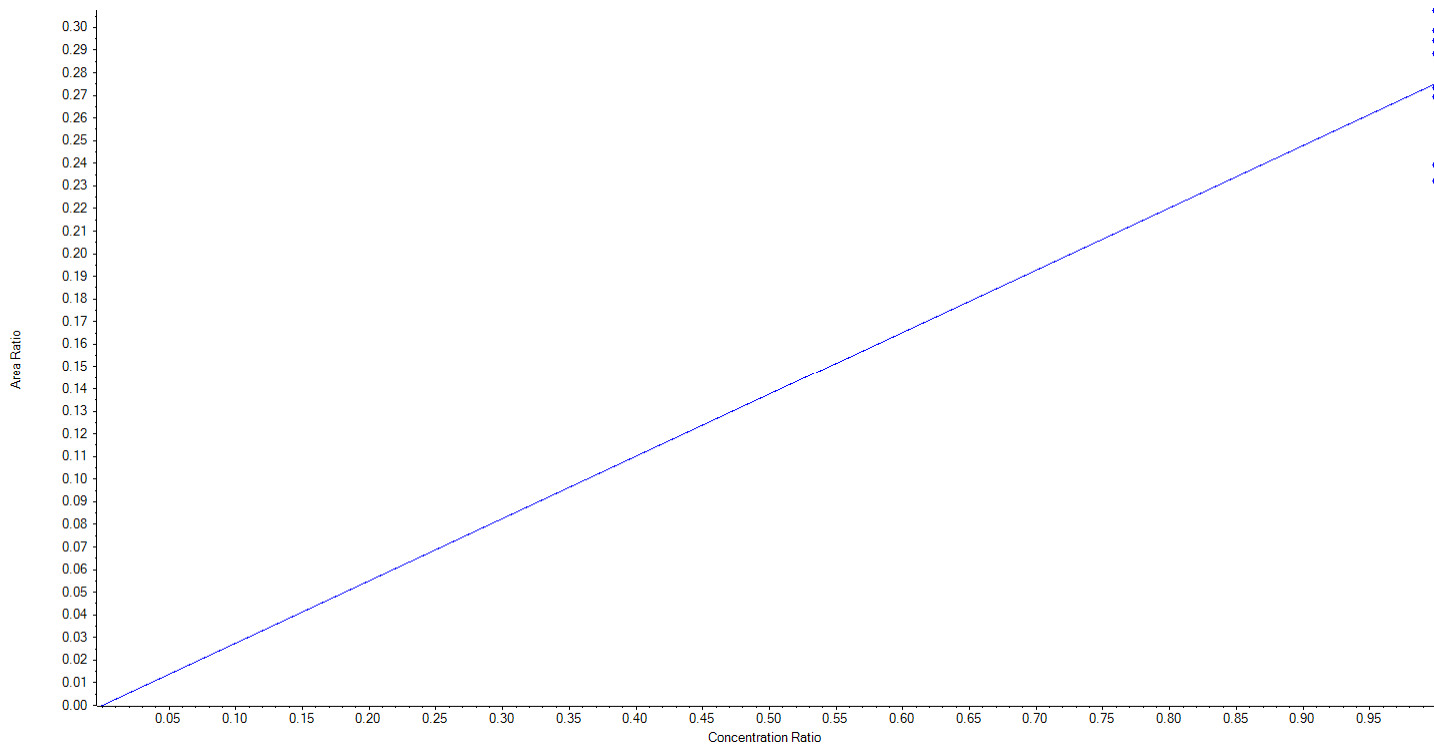
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	4.443	88.9
4	LM34	L2	True	5.000	5.332	106.7
5	LM35	L3	True	5.000	5.258	105.2
6	LM36	L4	True	5.000	5.784	115.7
7	LM37	L5	True	5.000	5.387	107.7
8	LM38	L6	True	5.000	4.617	92.4
9	LM39	L7	True	5.000	4.682	93.6
10	LM40	L8	True	5.000	4.497	89.9



Analyte Name	d5-EtFOSAA	Data File	AC_09222021_5-369.wiff
MRM Transition	589.0 / 419.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.27533x$ (std. dev. = 0.02753) (weighting: None) r^2 : N/A

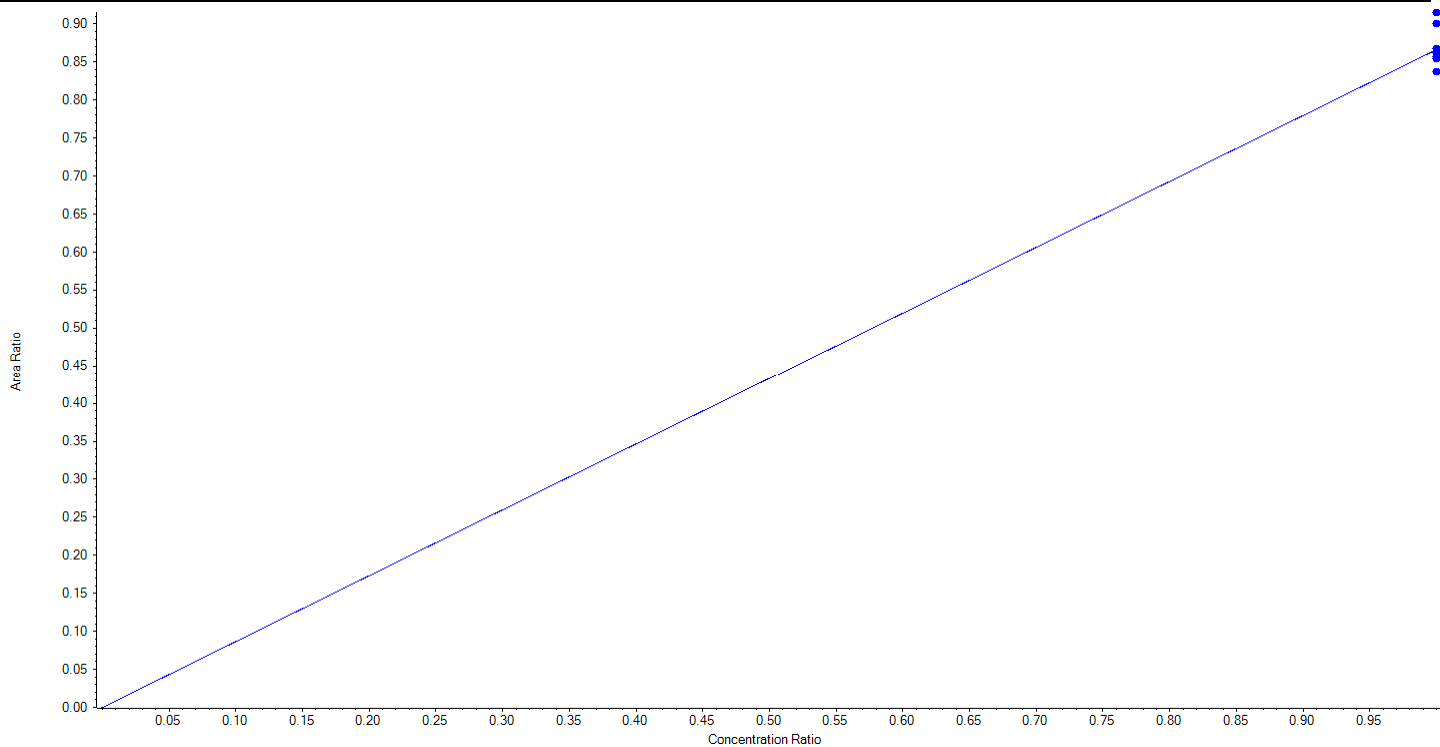
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	4.961	99.2
4	LM34	L2	True	5.000	5.425	108.5
5	LM35	L3	True	5.000	5.338	106.8
6	LM36	L4	True	5.000	5.240	104.8
7	LM37	L5	True	5.000	5.583	111.7
8	LM38	L6	True	5.000	4.891	97.8
9	LM39	L7	True	5.000	4.344	86.9
10	LM40	L8	True	5.000	4.217	84.4



Analyte Name	13C5-PFHxA	Data File	AC_09222021_5-369.wiff
MRM Transition	318.0 / 273.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.86619x$ (std. dev. = 0.02817) (weighting: None) r^2 : N/A

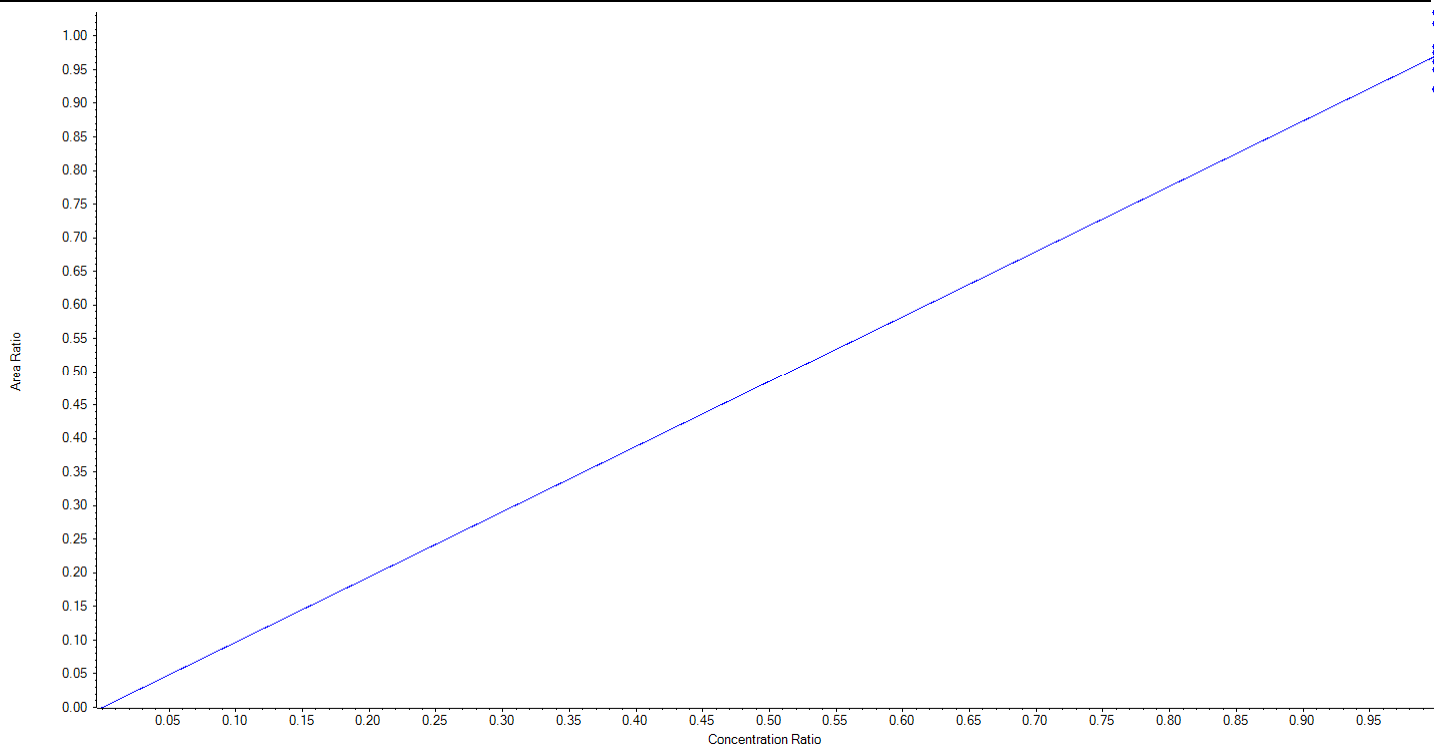
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	4.832	96.6
4	LM34	L2	True	5.000	4.830	96.6
5	LM35	L3	True	5.000	4.974	99.5
6	LM36	L4	True	5.000	5.005	100.1
7	LM37	L5	True	5.000	4.948	99.0
8	LM38	L6	True	5.000	4.928	98.6
9	LM39	L7	True	5.000	5.201	104.0
10	LM40	L8	True	5.000	5.282	105.6



Analyte Name	13C4-PFHpA	Data File	AC_09222021_5-369.wiff
MRM Transition	367.0 / 322.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.97071x$ (std. dev. = 0.04153) (weighting: None) r^2 : N/A

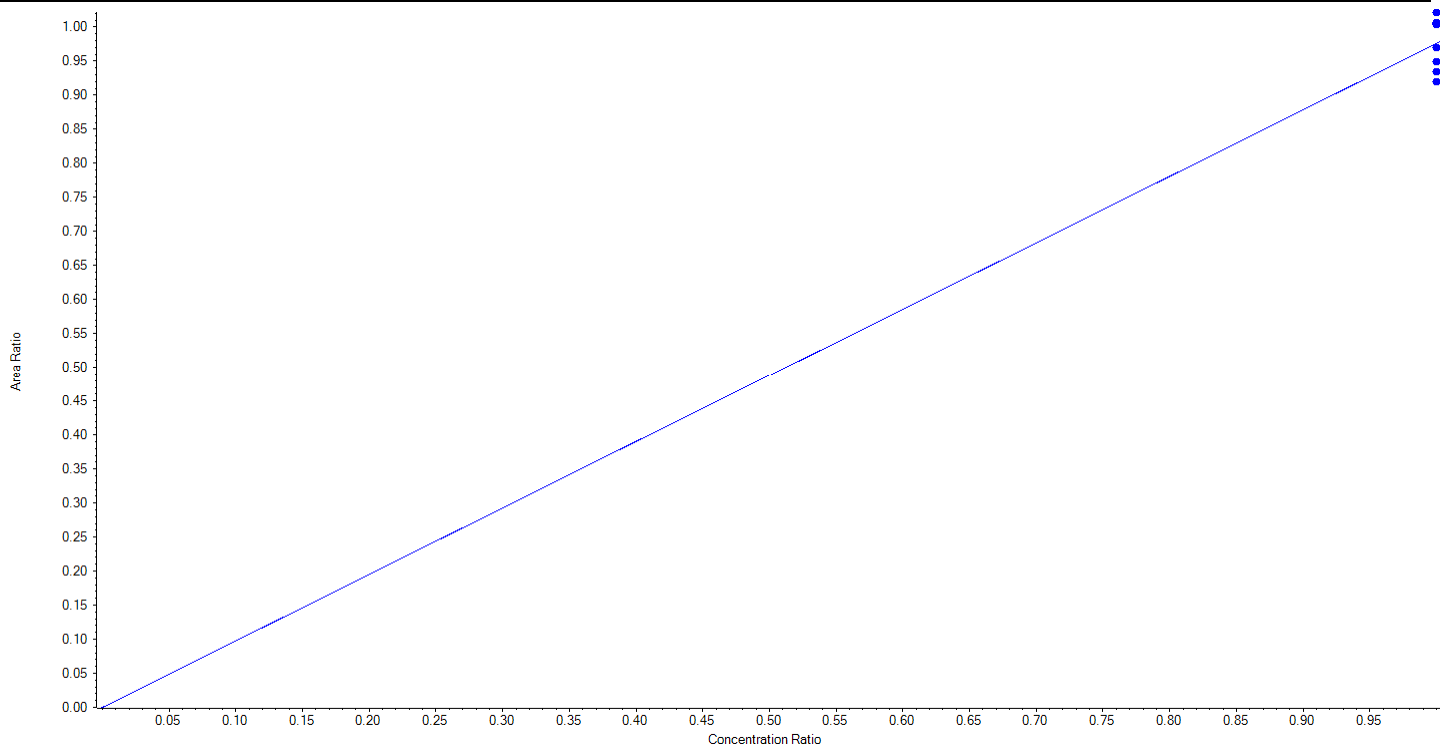
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	5.330	106.6
4	LM34	L2	True	5.000	4.736	94.7
5	LM35	L3	True	5.000	5.021	100.4
6	LM36	L4	True	5.000	4.954	99.1
7	LM37	L5	True	5.000	4.747	94.9
8	LM38	L6	True	5.000	5.243	104.9
9	LM39	L7	True	5.000	5.072	101.5
10	LM40	L8	True	5.000	4.896	97.9



Analyte Name	13C8-PFOA	Data File	AC_09222021_5-369.wiff
MRM Transition	421.0 / 376.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.97608x$ (std. dev. = 0.03832) (weighting: None) r^2 : N/A

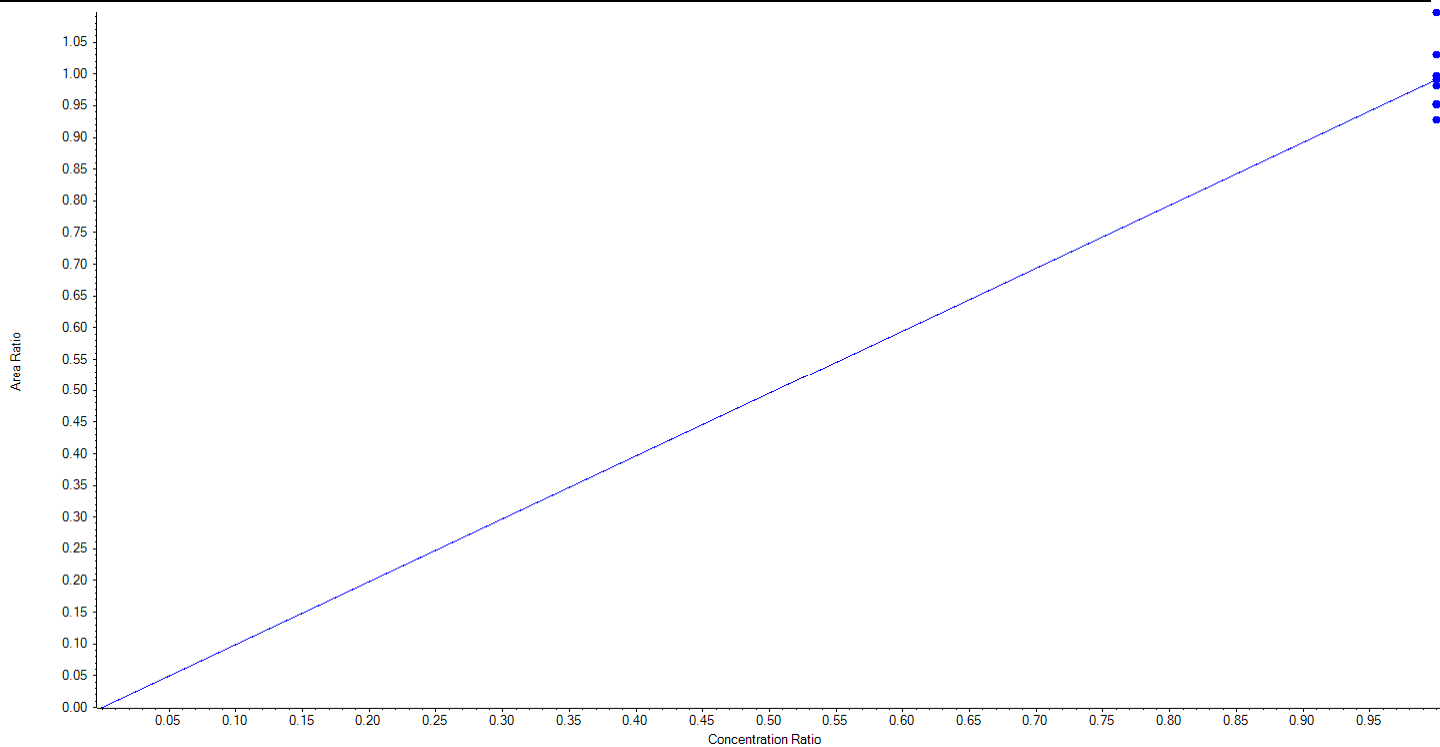
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	5.142	102.9
4	LM34	L2	True	5.000	4.859	97.2
5	LM35	L3	True	5.000	4.967	99.3
6	LM36	L4	True	5.000	4.788	95.8
7	LM37	L5	True	5.000	4.710	94.2
8	LM38	L6	True	5.000	5.154	103.1
9	LM39	L7	True	5.000	5.148	103.0
10	LM40	L8	True	5.000	5.232	104.6



Analyte Name	13C9-PFNA	Data File	AC_09222021_5-369.wiff
MRM Transition	472.0 / 427.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.99110x$ (std. dev. = 0.05330) (weighting: None) r^2 :N/A

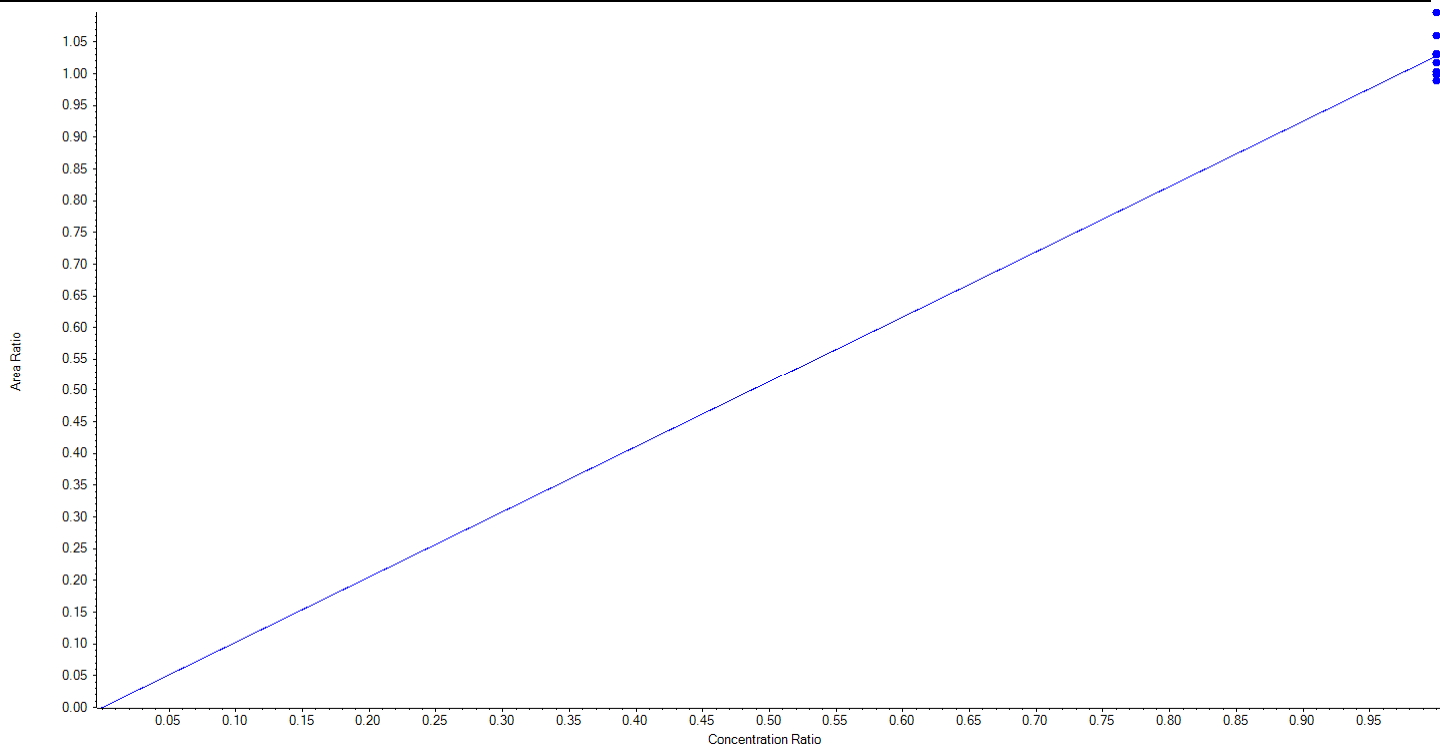
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	5.533	110.7
4	LM34	L2	True	5.000	4.811	96.2
5	LM35	L3	True	5.000	5.033	100.7
6	LM36	L4	True	5.000	4.678	93.6
7	LM37	L5	True	5.000	4.996	99.9
8	LM38	L6	True	5.000	5.198	104.0
9	LM39	L7	True	5.000	4.800	96.0
10	LM40	L8	True	5.000	4.951	99.0



Analyte Name	13C6-PFDA	Data File	AC_09222021_5-369.wiff
MRM Transition	519.0 / 474.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.02790 x$ (std. dev. = 0.03553) (weighting: None) r^2 :N/A

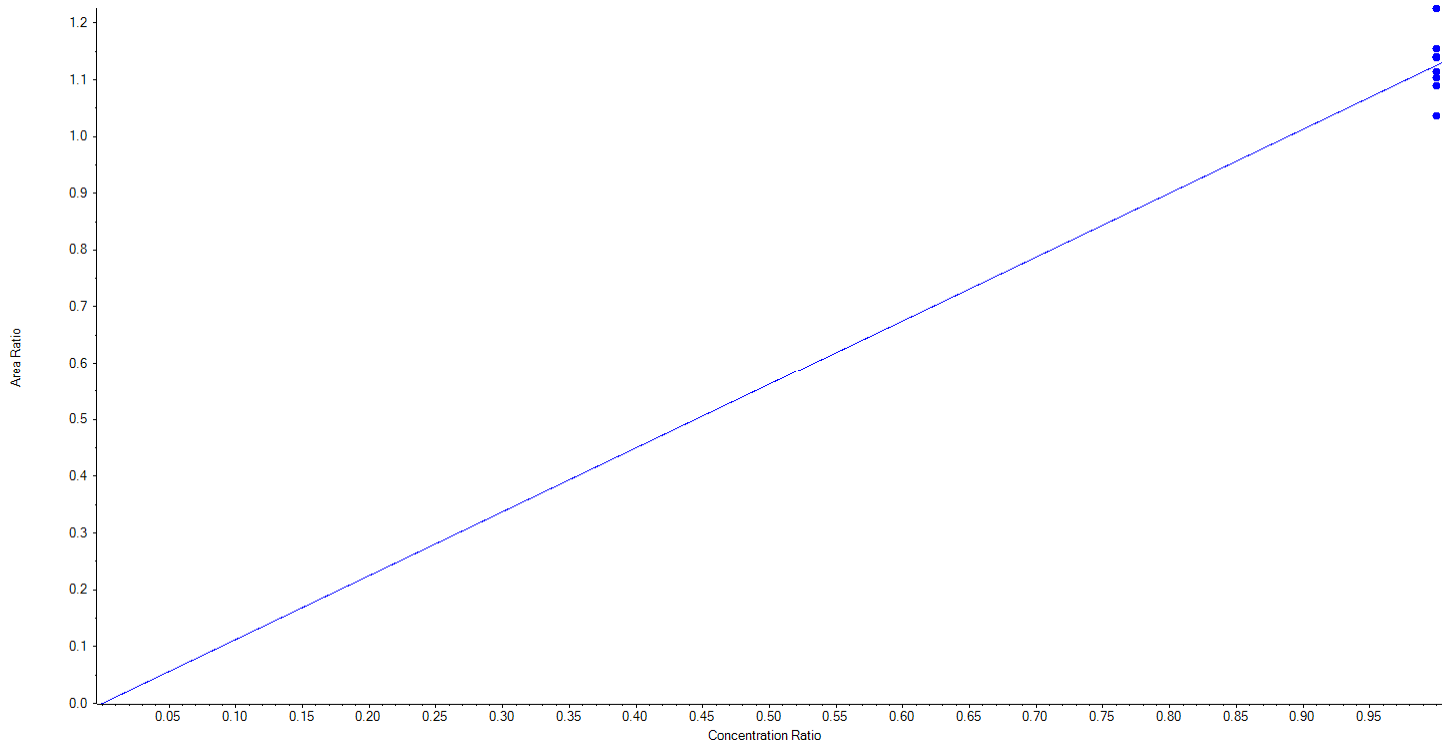
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	5.333	106.7
4	LM34	L2	True	5.000	4.946	98.9
5	LM35	L3	True	5.000	5.008	100.2
6	LM36	L4	True	5.000	5.015	100.3
7	LM37	L5	True	5.000	5.153	103.1
8	LM38	L6	True	5.000	4.878	97.6
9	LM39	L7	True	5.000	4.813	96.3
10	LM40	L8	True	5.000	4.853	97.1



Analyte Name	13C7-PFUnA	Data File	AC_09222021_5-369.wiff
MRM Transition	570.0 / 525.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.12520x$ (std. dev. = 0.05477) (weighting: None) r^2 :N/A

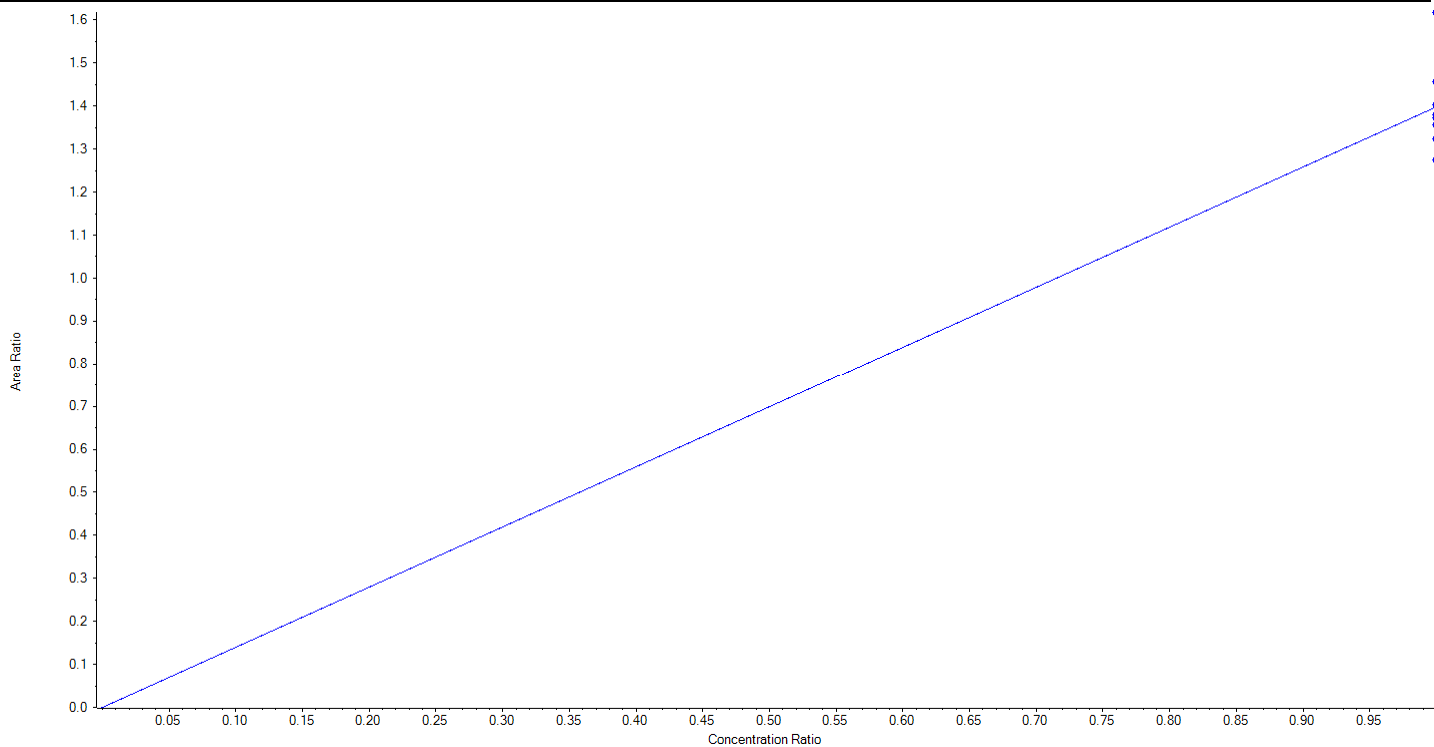
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	5.070	101.4
4	LM34	L2	True	5.000	5.444	108.9
5	LM35	L3	True	5.000	4.902	98.1
6	LM36	L4	True	5.000	5.057	101.1
7	LM37	L5	True	5.000	5.130	102.6
8	LM38	L6	True	5.000	4.951	99.0
9	LM39	L7	True	5.000	4.608	92.2
10	LM40	L8	True	5.000	4.838	96.8



Analyte Name	13C2-PFTeDA	Data File	AC_09222021_5-369.wiff
MRM Transition	715.0 / 670.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFDA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.39818x$ (std. dev. = 0.10335) (weighting: None) r^2 :N/A

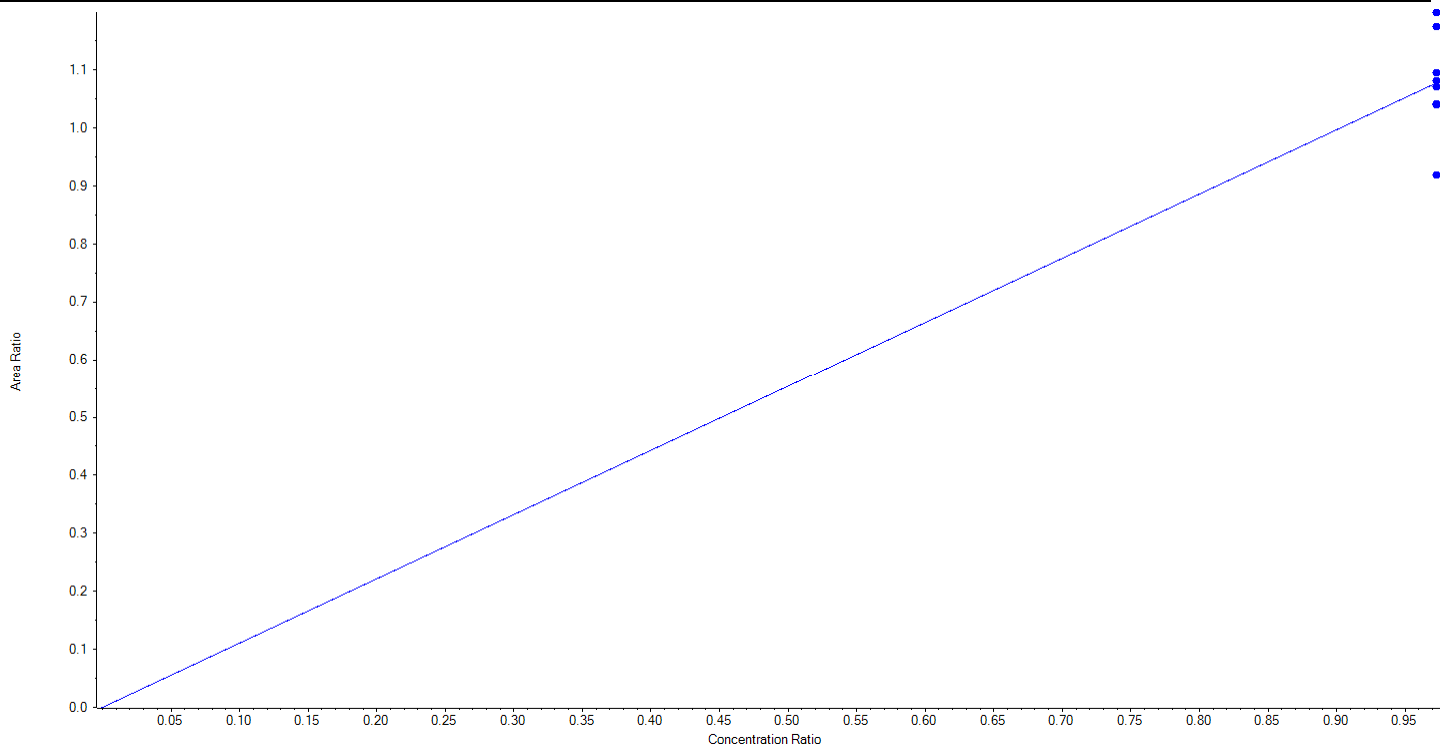
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	4.908	98.2
4	LM34	L2	True	5.000	4.936	98.7
5	LM35	L3	True	5.000	4.561	91.2
6	LM36	L4	True	5.000	4.732	94.6
7	LM37	L5	True	5.000	5.017	100.3
8	LM38	L6	True	5.000	4.853	97.1
9	LM39	L7	True	5.000	5.208	104.2
10	LM40	L8	True	5.000	5.784	115.7



Analyte Name	13C3-PFBS	Data File	AC_09222021_5-369.wiff
MRM Transition	302.0 / 99.0	Result Table	21-1182_SIS
Internal Standard	13C4-PFOS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.10764 x$ (std. dev. = 0.08889) (weighting: None) r^2 :N/A

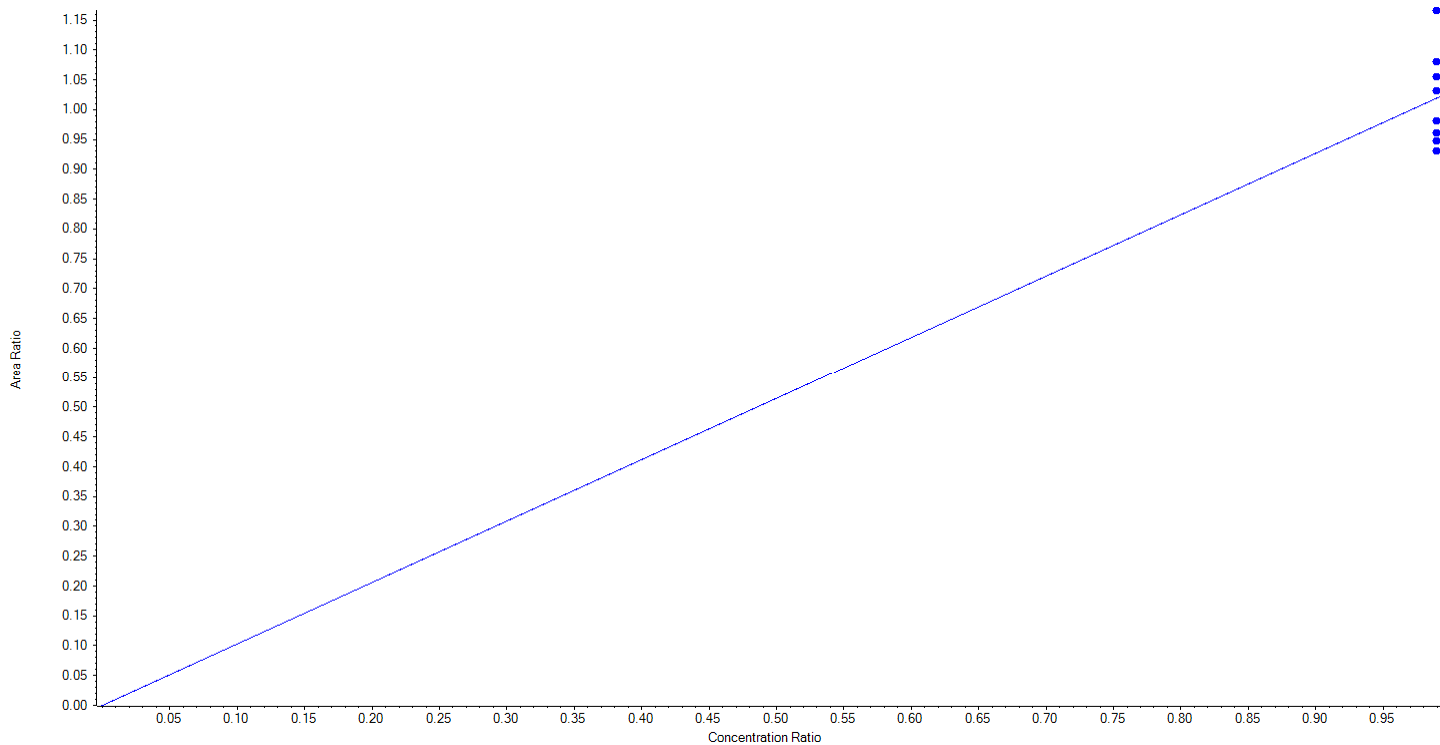
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	4.660	3.972	85.2
4	LM34	L2	True	4.660	4.501	96.6
5	LM35	L3	True	4.660	5.184	111.3
6	LM36	L4	True	4.660	5.076	108.9
7	LM37	L5	True	4.660	4.735	101.6
8	LM38	L6	True	4.660	4.499	96.6
9	LM39	L7	True	4.660	4.634	99.5
10	LM40	L8	True	4.660	4.677	100.4



Analyte Name	13C3-PFHxS	Data File	AC_09222021_5-369.wiff
MRM Transition	402.0 / 99.0	Result Table	21-1182_SIS
Internal Standard	13C4-PFOS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 1.02988x$ (std. dev. = 0.08058) (weighting: None) r^2 : N/A

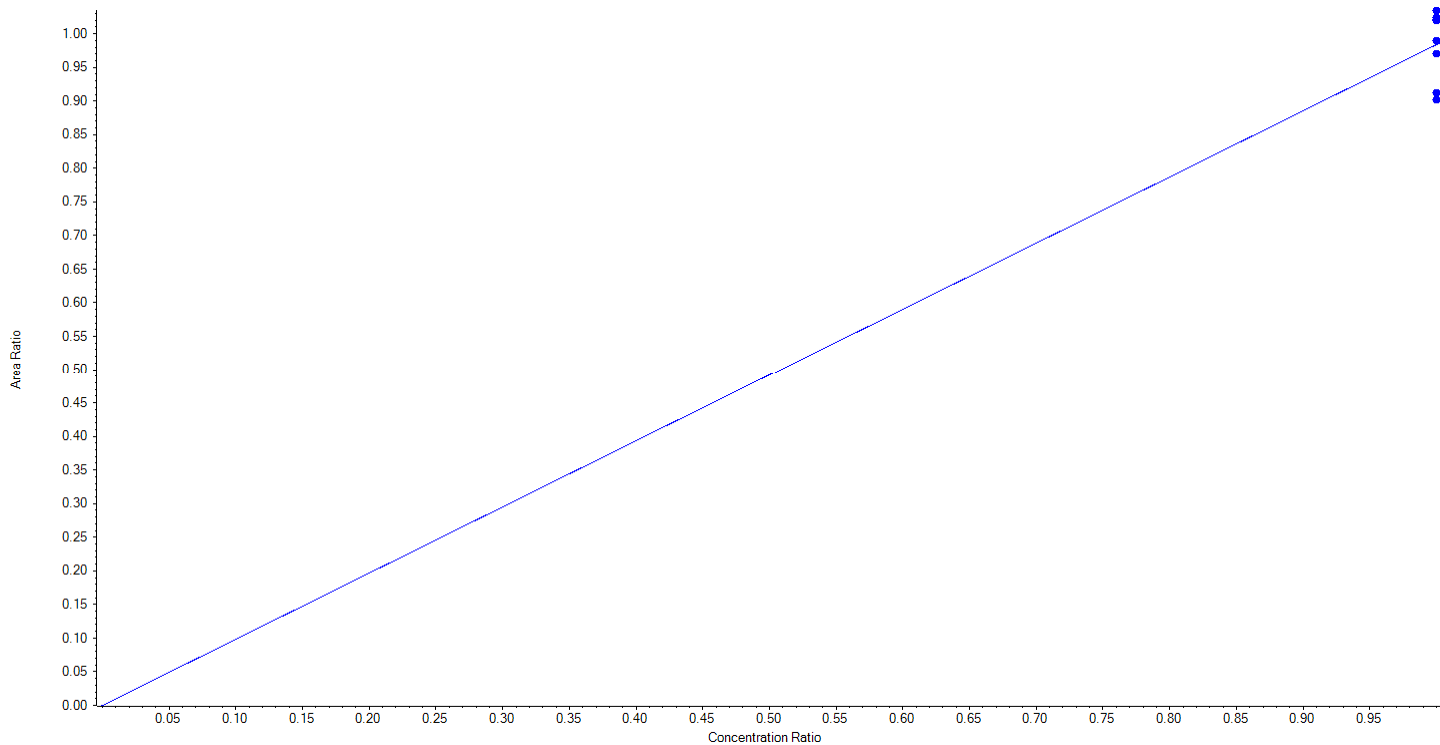
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	4.740	4.332	91.4
4	LM34	L2	True	4.740	4.404	92.9
5	LM35	L3	True	4.740	4.794	101.2
6	LM36	L4	True	4.740	5.423	114.4
7	LM37	L5	True	4.740	4.907	103.5
8	LM38	L6	True	4.740	4.567	96.4
9	LM39	L7	True	4.740	5.026	106.0
10	LM40	L8	True	4.740	4.467	94.2



Analyte Name	13C8-PFOS	Data File	AC_09222021_5-369.wiff
MRM Transition	507.0 / 99.0	Result Table	21-1182_SIS
Internal Standard	13C4-PFOS	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.98386 x$ (std. dev. = 0.05165) (weighting: None) r^2 :N/A

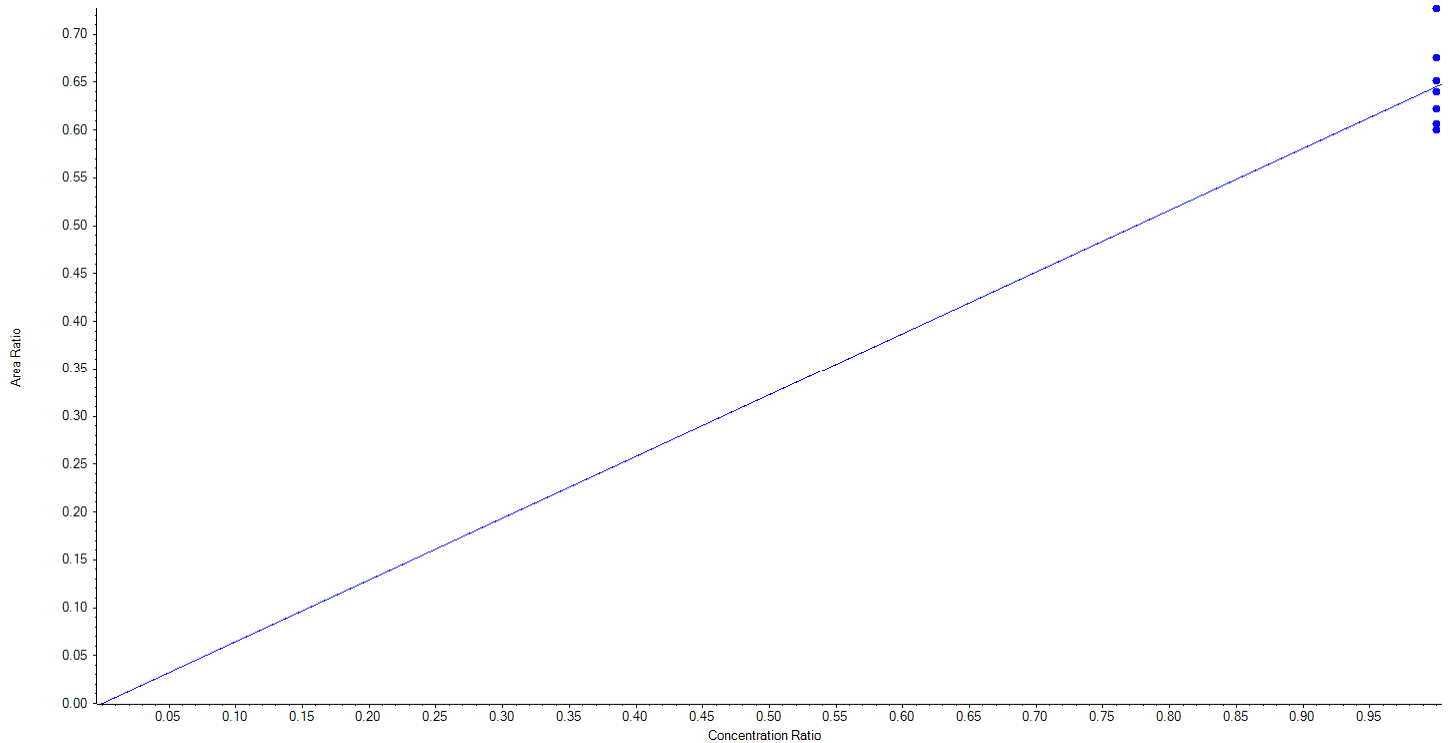
Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	4.790	4.392	91.7
4	LM34	L2	True	4.790	4.442	92.7
5	LM35	L3	True	4.790	4.982	104.0
6	LM36	L4	True	4.790	5.036	105.2
7	LM37	L5	True	4.790	4.961	103.6
8	LM38	L6	True	4.790	4.815	100.5
9	LM39	L7	True	4.790	4.968	103.7
10	LM40	L8	True	4.790	4.724	98.6



Analyte Name	13C3-HFPO-DA	Data File	AC_09222021_5-369.wiff
MRM Transition	287.0 / 169.0	Result Table	21-1182_SIS
Internal Standard	13C2-PFOA	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Acquisition Method	5-0369_REV.dam

Regression Equation: $y = 0.64527x$ (std. dev. = 0.04091) (weighting: None) r^2 :N/A

Vial	Sample Name	Sample ID	Used for ICAL	Target Conc. (ng/mL)	Calculated Conc. (ng/mL)	Recovery (%)
3	LM33	L1	True	5.000	4.960	99.2
4	LM34	L2	True	5.000	4.653	93.1
5	LM35	L3	True	5.000	4.961	99.2
6	LM36	L4	True	5.000	4.698	94.0
7	LM37	L5	True	5.000	4.819	96.4
8	LM38	L6	True	5.000	5.045	100.9
9	LM39	L7	True	5.000	5.232	104.7
10	LM40	L8	True	5.000	5.632	112.6



	Isotope Dilution Calibration Curve Concentrations (ng/mL)									IB (ng/mL)	ICC (ng/mL)
	LM32	LM33	LM34	LM35	LM36	LM37	LM38	LM39	LM40	LM41	LM42
PFMPA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFEEA	0.045	0.112	0.223	0.446	0.892	2.230	8.920	22.300	44.600	-	2.230
NFDHA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFMBA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFBA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFPeA	0.051	0.126	0.253	0.505	1.010	2.525	10.100	25.250	50.500	-	2.525
PFHxA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFHpA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFOA	0.051	0.126	0.253	0.505	1.010	2.525	10.100	25.250	50.500	-	2.500
PFNA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFDA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFUnA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFDaA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFTrDA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFTeDA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFHxDA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFODA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
NMeFOSAA (Branched)	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
NetFOSAA (Branched)	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
NMeFOSA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
NetFOSA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
NMeFOSE	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
NetFOSE	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFOSA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFBS	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFPeS	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFHxS (Branched)	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFHpS	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFOS (Branched)	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
PFNS	0.051	0.126	0.253	0.505	1.010	2.525	10.100	25.250	50.500	-	2.525
PFDs	0.051	0.126	0.253	0.505	1.010	2.525	10.100	25.250	50.500	-	2.525
PFDs	0.049	0.121	0.243	0.485	0.970	2.425	9.700	24.250	48.500	-	2.425
4:2FTS	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
6:2FTS	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
8:2FTS	0.051	0.126	0.253	0.505	1.010	2.525	10.100	25.250	50.500	-	2.525
10:2FTS	0.048	0.121	0.242	0.483	0.966	2.415	9.660	24.150	48.300	-	2.415
3:3 FTCA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
5:3 FTCA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
7:3 FTCA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
HFPO-DA	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
Adona	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
9CI-PF3ONS	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
11CI-PF3OUs	0.050	0.125	0.250	0.500	1.000	2.500	10.000	25.000	50.000	-	2.500
	Surrogates / Extracted Internal Standards										
13C4-PFBA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C5-PFPeA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C5-PFHxA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C4-PFHpA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C8-PFOA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C9-PFNA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C6-PFDA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C7-PFUnA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C2-PFDaA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C2-PFTeDA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C2-PFHxDA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
d3-MeFOSAA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
d5-EtFOSAA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
D3-MeFOSA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
D5-EtFOSA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
D7-MeFOSE	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
D9-EtFOSE	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C8-FOSA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C3-PFBS	4.660	4.660	4.660	4.660	4.660	4.660	4.660	4.660	4.660	4.660	4.660
13C3-PFHxS	4.740	4.740	4.740	4.740	4.740	4.740	4.740	4.740	4.740	4.740	4.740
13C8-PFOS	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790
13C2-4:2FTS	4.690	4.690	4.690	4.690	4.690	4.690	4.690	4.690	4.690	4.690	4.690
13C2-6:2FTS	4.760	4.760	4.760	4.760	4.760	4.760	4.760	4.760	4.760	4.760	4.760
13C2-8:2FTS	4.800	4.800	4.800	4.800	4.800	4.800	4.800	4.800	4.800	4.800	4.800
13C3-HFPO-DA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
	Internal Standards										
13C3-PFBA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C2-PFOA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C2-PFDA	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
13C4-PFOS	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790	4.790

Sample Name	LM33	Injection Vial	3
Sample ID	L1	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.80	106694.15	0.119	1702.2	False	13C3-PFBS	1343547.34	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.79	38101.23	0.145	349.8	False	13C3-PFBS	1343547.34	4.660	PFBS	0.357	0.339	✓
PFHxA_1	313.0 / 269.0	2.15	271922.59	0.109	475.5	False	13C5-PFHxA	7469504.88	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.16	17946.40	0.127	135.0	False	13C5-PFHxA	7469504.88	5.000	PFHxA	0.066	0.071	✓
PFHpA_1	363.0 / 319.0	2.58	281878.11	0.107	396.8	False	13C4-PFHpA	9234132.17	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.56	4252.55	0.132	104.3	False	13C4-PFHpA	9234132.17	5.000	PFHpA	0.015	0.018	✓
PFHxS_1	399.0 / 80.0	2.59	130089.66	0.134	730.1	False	13C3-PFHxS	1362502.22	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.59	35717.78	0.117	106.2	False	13C3-PFHxS	1362502.22	4.740	PFHxS	0.275	0.293	✓
PFOA_1	413.0 / 369.0	2.99	288591.85	0.092	149.3	False	13C8-PFOA	8957478.33	5.000	PFOA			
PFOA_2	413.0 / 169.0	3.00	22231.73	0.118	62.0	False	13C8-PFOA	8957478.33	5.000	PFOA	0.077	0.072	✓
PFNA_1	463.0 / 419.0	3.41	298589.67	0.107	599.3	False	13C9-PFNA	9786367.87	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.41	75573.62	0.121	313.5	False	13C9-PFNA	9786367.87	5.000	PFNA	0.253	0.278	✓
PFOS_1	499.0 / 80.0	3.39	157438.12	0.136	492.7	False	13C8-PFOS	1319681.39	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.40	30095.25	0.122	329.3	False	13C8-PFOS	1319681.39	4.790	PFOS	0.191	0.188	✓
PFDA_1	513.0 / 469.0	3.78	336679.08	0.104	404.0	False	13C6-PFDA	10659811.48	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.79	12627.21	0.107	256.5	False	13C6-PFDA	10659811.48	5.000	PFDA	0.038	0.045	✓
PFUnA_1	563.0 / 519.0	4.13	386988.35	0.105	855.1	False	13C7-PFUnA	11092872.99	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.13	15951.30	0.126	202.9	False	13C7-PFUnA	11092872.99	5.000	PFUnA	0.041	0.053	✓
PFDoA_1	613.0 / 569.0	4.43	389908.00	0.117	458.4	True	13C2-PFDoA	11729644.70	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.43	56870.16	0.138	364.0	True	13C2-PFDoA	11729644.70	5.000	PFDoA	0.146	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.71	427925.20	0.093	1052.8	True	13C2-PFTeDA	13345416.94	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.70	21669.01	0.101	277.6	True	13C2-PFTeDA	13345416.94	5.000	PFTTrDA	0.051	0.071	✓
PFTeDA_1	713.0 / 669.0	4.96	332867.21	0.039	435.4	True	13C2-PFTeDA	13345416.94	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.97	20696.28	0.099	275.4	True	13C2-PFTeDA	13345416.94	5.000	PFTeDA	0.062	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.96	49411.46	0.122	1983.6	False	d3-MeFOSAA	2766555.88	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.96	44562.35	0.121	120839.9	False	d3-MeFOSAA	2766555.88	5.000	NMeFOSAA	0.902	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.14	49023.94	0.130	2508399.3	False	d5-EtFOSAA	2437662.00	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.06	2215.34	0.019	956.0	True	d5-EtFOSAA	2437662.00	5.000	NEtFOSAA	0.045	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.27	145983.47	0.129	1067.3	False	13C3-HFPO-DA	5711471.27	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.27	3112.63	0.136	7604.9	False	13C3-HFPO-DA	5711471.27	5.000	HFPO-DA	0.021	0.024	✓
ADONA_1	377.0 / 251.0	2.60	403504.22	0.107	1460.8	False	13C8-PFOA	8957478.33	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.61	7601.13	0.130	375.7	False	13C8-PFOA	8957478.33	5.000	ADONA	0.019	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.60	297248.63	0.108	3432.6	False	13C8-PFOA	8957478.33	5.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.58	1081.62	0.155	23.5	True	13C8-PFOA	8957478.33	5.000	9CI-PF3ONS	0.004	0.008	
11CI-PF3OUdS_1	631.0 / 451.0	4.26	302905.74	0.127	9159.9	False	13C8-PFOA	8957478.33	5.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	4.28	1576.57	0.159	3457.0	False	13C8-PFOA	8957478.33	5.000	11CI-PF3OUdS	0.005	0.005	✓



Sample Name	LM34	Injection Vial	4
Sample ID	L2	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:12:15 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.80	227067.41	0.242	3528.4	False	13C3-PFBS	1541144.25	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.80	78793.14	0.261	746.3	False	13C3-PFBS	1541144.25	4.660	PFBS	0.347	0.339	✓
PFHxA_1	313.0 / 269.0	2.16	507696.52	0.244	906.2	False	13C5-PFHxA	8121663.85	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.16	33817.19	0.247	240.2	False	13C5-PFHxA	8121663.85	5.000	PFHxA	0.067	0.071	✓
PFHpA_1	363.0 / 319.0	2.57	543159.77	0.276	699.0	False	13C4-PFHpA	8924489.84	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.57	7786.27	0.246	164.9	False	13C4-PFHpA	8924489.84	5.000	PFHpA	0.014	0.018	✓
PFHxS_1	399.0 / 80.0	2.59	292633.49	0.272	1455.9	False	13C3-PFHxS	1401956.18	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.58	97931.26	0.303	278.8	False	13C3-PFHxS	1401956.18	4.740	PFHxS	0.335	0.293	✓
PFOA_1	413.0 / 369.0	2.99	555403.79	0.243	287.5	False	13C8-PFOA	9206559.77	5.000	PFOA			
PFOA_2	413.0 / 169.0	3.00	39618.68	0.249	102.9	False	13C8-PFOA	9206559.77	5.000	PFOA	0.071	0.072	✓
PFNA_1	463.0 / 419.0	3.40	534154.24	0.257	997.0	False	13C9-PFNA	9256359.29	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.40	160345.84	0.299	858.5	False	13C9-PFNA	9256359.29	5.000	PFNA	0.300	0.278	✓
PFOS_1	499.0 / 80.0	3.39	307078.44	0.258	852.9	False	13C8-PFOS	1350782.46	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.39	64260.04	0.277	408.7	False	13C8-PFOS	1350782.46	4.790	PFOS	0.209	0.188	✓
PFDA_1	513.0 / 469.0	3.78	617645.02	0.260	803.9	False	13C6-PFDA	10353876.08	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.78	26942.89	0.270	605.9	False	13C6-PFDA	10353876.08	5.000	PFDA	0.044	0.045	✓
PFUnA_1	563.0 / 519.0	4.12	656939.48	0.218	1352.3	False	13C7-PFUnA	12476409.78	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.12	30896.48	0.236	386.3	False	13C7-PFUnA	12476409.78	5.000	PFUnA	0.047	0.053	✓
PFDoA_1	613.0 / 569.0	4.44	683146.29	0.241	794.5	True	13C2-PFDoA	12869621.30	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.43	100554.94	0.248	907.4	True	13C2-PFDoA	12869621.30	5.000	PFDoA	0.147	0.156	✓
PFTeDA_1	663.0 / 619.0	4.71	703140.06	0.216	1576.9	True	13C2-PFTeDA	14056935.44	5.000	PFTeDA			
PFTeDA_2	663.0 / 169.0	4.70	46660.49	0.246	356.2	True	13C2-PFTeDA	14056935.44	5.000	PFTeDA	0.066	0.071	✓
PFTeDA_1	713.0 / 669.0	4.96	708338.94	0.189	793.1	True	13C2-PFTeDA	14056935.44	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.96	41322.43	0.235	509.6	True	13C2-PFTeDA	14056935.44	5.000	PFTeDA	0.058	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.96	122037.59	0.246	4314112.3	False	d3-MeFOSAA	3361091.03	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.96	85139.33	0.215	13963.1	False	d3-MeFOSAA	3361091.03	5.000	NMeFOSAA	0.698	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.13	105745.19	0.237	4297.5	True	d5-EtFOSAA	2899457.60	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.13	9905.03	0.297	5555.3	True	d5-EtFOSAA	2899457.60	5.000	NEtFOSAA	0.094	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.27	279265.37	0.245	1796.8	False	13C3-HFPO-DA	5827961.16	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.26	6901.97	0.270	240820.0	False	13C3-HFPO-DA	5827961.16	5.000	HFPO-DA	0.025	0.024	✓
ADONA_1	377.0 / 251.0	2.60	823065.66	0.238	2481.9	False	13C8-PFOA	9206559.77	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.60	11093.63	0.209	348.6	False	13C8-PFOA	9206559.77	5.000	ADONA	0.014	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.59	619795.04	0.234	4414.5	False	13C8-PFOA	9206559.77	5.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.59	5093.59	0.305	65.6	True	13C8-PFOA	9206559.77	5.000	9CI-PF3ONS	0.008	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	4.26	582357.59	0.243	13520.6	False	13C8-PFOA	9206559.77	5.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	4.27	3671.27	0.313	252.2	False	13C8-PFOA	9206559.77	5.000	11CI-PF3OUdS	0.006	0.005	✓

Sample Name	LM35	Injection Vial	5
Sample ID	L3	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:25:08 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.79	441238.74	0.474	8569.8	False	13C3-PFBS	1598844.07	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.79	144726.81	0.460	1125.2	False	13C3-PFBS	1598844.07	4.660	PFBS	0.328	0.339	✓
PFHxA_1	313.0 / 269.0	2.14	854557.31	0.495	1207.0	False	13C5-PFHxA	7686858.57	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.14	59273.47	0.488	444.7	False	13C5-PFHxA	7686858.57	5.000	PFHxA	0.069	0.071	✓
PFHpA_1	363.0 / 319.0	2.55	838424.31	0.474	995.9	False	13C4-PFHpA	8696369.82	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.56	17280.33	0.556	450.0	False	13C4-PFHpA	8696369.82	5.000	PFHpA	0.021	0.018	✓
PFHxS_1	399.0 / 80.0	2.57	549736.39	0.505	2612.1	False	13C3-PFHxS	1374784.82	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.57	168765.29	0.529	430.8	False	13C3-PFHxS	1374784.82	4.740	PFHxS	0.307	0.293	✓
PFOA_1	413.0 / 369.0	2.97	963370.12	0.516	476.3	False	13C8-PFOA	8649349.82	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.97	65038.15	0.481	170.1	False	13C8-PFOA	8649349.82	5.000	PFOA	0.068	0.072	✓
PFNA_1	463.0 / 419.0	3.38	954258.14	0.529	1803.4	False	13C9-PFNA	8899480.17	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.38	254239.20	0.507	1599.1	False	13C9-PFNA	8899480.17	5.000	PFNA	0.266	0.278	✓
PFOS_1	499.0 / 80.0	3.37	586964.62	0.488	1192.7	False	13C8-PFOS	1364780.77	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.37	110388.42	0.486	530.3	False	13C8-PFOS	1364780.77	4.790	PFOS	0.188	0.188	✓
PFDA_1	513.0 / 469.0	3.76	1075666.14	0.503	1237.5	False	13C6-PFDA	10394737.75	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.76	54306.93	0.572	1011.7	False	13C6-PFDA	10394737.75	5.000	PFDA	0.051	0.045	✓
PFUnA_1	563.0 / 519.0	4.10	1110887.94	0.517	2022.2	False	13C7-PFUnA	11137787.36	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.09	55981.78	0.505	2259.8	False	13C7-PFUnA	11137787.36	5.000	PFUnA	0.050	0.053	✓
PFDaA_1	613.0 / 569.0	4.41	1134717.52	0.495	1647.8	True	13C2-PFDaA	12088163.82	5.000	PFDaA			
PFDaA_2	613.0 / 319.0	4.41	181922.34	0.516	1578.9	True	13C2-PFDaA	12088163.82	5.000	PFDaA	0.160	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.68	1237068.99	0.533	2450.8	True	13C2-PFTeDA	12876204.32	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.68	83814.51	0.518	747.2	True	13C2-PFTeDA	12876204.32	5.000	PFTTrDA	0.068	0.071	✓
PFTeDA_1	713.0 / 669.0	4.93	1341269.26	0.505	1442.1	True	13C2-PFTeDA	12876204.32	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.92	74211.99	0.511	804.6	True	13C2-PFTeDA	12876204.32	5.000	PFTeDA	0.055	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.94	237572.49	0.537	11245.2	False	d3-MeFOSAA	2985485.86	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.94	169278.67	0.532	41954.1	False	d3-MeFOSAA	2985485.86	5.000	NMeFOSAA	0.713	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.11	198959.68	0.492	458458.1	True	d5-EtFOSAA	2622347.17	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.10	12593.81	0.450	4434.6	True	d5-EtFOSAA	2622347.17	5.000	NEtFOSAA	0.063	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.25	520677.17	0.469	2829.6	False	13C3-HFPO-DA	5711302.55	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.25	10400.49	0.404	145340.2	False	13C3-HFPO-DA	5711302.55	5.000	HFPO-DA	0.020	0.024	✓
ADONA_1	377.0 / 251.0	2.59	1560887.71	0.508	3602.9	False	13C8-PFOA	8649349.82	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.59	20452.95	0.466	927.7	False	13C8-PFOA	8649349.82	5.000	ADONA	0.013	0.014	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.58	1199311.96	0.497	8321.4	False	13C8-PFOA	8649349.82	5.000	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.57	6873.09	0.389	94.6	True	13C8-PFOA	8649349.82	5.000	9Cl-PF3ONS	0.006	0.008	✓
11Cl-PF3OUdS_1	631.0 / 451.0	4.23	1071993.56	0.482	14084.3	False	13C8-PFOA	8649349.82	5.000	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	4.22	4701.64	0.412	1210.7	True	13C8-PFOA	8649349.82	5.000	11Cl-PF3OUdS	0.004	0.005	✓



Sample Name	LM36	Injection Vial	6
Sample ID	L4	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:38:00 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.79	938695.36	1.093	12426.7	False	13C3-PFBS	1516957.50	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.79	294381.92	0.985	2165.2	False	13C3-PFBS	1516957.50	4.660	PFBS	0.314	0.339	✓
PFHxA_1	313.0 / 269.0	2.15	1786682.05	1.067	1692.3	False	13C5-PFHxA	8061518.30	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.15	126040.43	1.028	916.5	False	13C5-PFHxA	8061518.30	5.000	PFHxA	0.071	0.071	✓
PFHpA_1	363.0 / 319.0	2.56	1739464.06	1.021	1529.1	False	13C4-PFHpA	8943047.24	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.56	29203.87	0.912	1480.1	False	13C4-PFHpA	8943047.24	5.000	PFHpA	0.017	0.018	✓
PFHxS_1	399.0 / 80.0	2.58	1107589.21	0.913	4207.6	False	13C3-PFHxS	1506812.98	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.58	328588.16	0.935	761.9	False	13C3-PFHxS	1506812.98	4.740	PFHxS	0.297	0.293	✓
PFOA_1	413.0 / 369.0	2.98	1992674.00	1.146	1141.7	False	13C8-PFOA	8690338.17	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.98	143097.67	1.127	458.8	False	13C8-PFOA	8690338.17	5.000	PFOA	0.072	0.072	✓
PFNA_1	463.0 / 419.0	3.39	1708719.29	1.030	2052.5	False	13C9-PFNA	8622323.67	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.39	476751.08	1.003	2143.8	False	13C9-PFNA	8622323.67	5.000	PFNA	0.279	0.278	✓
PFOS_1	499.0 / 80.0	3.38	1221992.21	1.036	2102.0	False	13C8-PFOS	1336814.63	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.38	218966.10	1.007	2169.2	False	13C8-PFOS	1336814.63	4.790	PFOS	0.179	0.188	✓
PFDA_1	513.0 / 469.0	3.77	2148219.09	1.087	2041.9	False	13C6-PFDA	10301190.18	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.76	92514.55	1.004	36504503.7	False	13C6-PFDA	10301190.18	5.000	PFDA	0.043	0.045	✓
PFUnA_1	563.0 / 519.0	4.11	2222111.68	1.125	2576.1	False	13C7-PFUnA	11369378.54	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.11	122983.20	1.117	3372.6	False	13C7-PFUnA	11369378.54	5.000	PFUnA	0.055	0.053	✓
PFDoA_1	613.0 / 569.0	4.42	2133295.86	1.018	1769.0	True	13C2-PFDoA	11979168.24	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.42	320648.86	0.951	1988.0	True	13C2-PFDoA	11979168.24	5.000	PFDoA	0.150	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.69	2424188.60	1.133	2526.1	True	13C2-PFTeDA	13221395.32	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.69	182999.24	1.144	1495.3	True	13C2-PFTeDA	13221395.32	5.000	PFTTrDA	0.076	0.071	✓
PFTeDA_1	713.0 / 669.0	4.94	2770064.64	1.125	2701.2	True	13C2-PFTeDA	13221395.32	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.94	149652.43	1.055	1620.5	True	13C2-PFTeDA	13221395.32	5.000	PFTeDA	0.054	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.95	456224.88	0.965	853559.4	False	d3-MeFOSAA	3181979.54	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.95	347890.36	1.065	2403.4	False	d3-MeFOSAA	3181979.54	5.000	NMeFOSAA	0.763	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.12	433497.49	1.047	857630.2	True	d5-EtFOSAA	2683144.73	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.12	25194.55	0.958	788.6	True	d5-EtFOSAA	2683144.73	5.000	NEtFOSAA	0.058	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.26	1168993.66	1.071	5261.7	False	13C3-HFPO-DA	5637044.91	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.26	26728.45	1.016	744652.1	False	13C3-HFPO-DA	5637044.91	5.000	HFPO-DA	0.023	0.024	✓
ADONA_1	377.0 / 251.0	2.59	3291648.05	1.094	4637.1	False	13C8-PFOA	8690338.17	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.60	47560.55	1.157	3147.6	False	13C8-PFOA	8690338.17	5.000	ADONA	0.014	0.014	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.58	2511620.56	1.050	9972.4	False	13C8-PFOA	8690338.17	5.000	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.60	19268.99	0.882	257.5	False	13C8-PFOA	8690338.17	5.000	9Cl-PF3ONS	0.008	0.008	✓
11Cl-PF3OUdS_1	631.0 / 451.0	4.24	2235677.96	1.008	9537.6	False	13C8-PFOA	8690338.17	5.000	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	4.23	8714.50	0.729	2819.3	True	13C8-PFOA	8690338.17	5.000	11Cl-PF3OUdS	0.004	0.005	✓

Sample Name	LM37	Injection Vial	7
Sample ID	L5	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:50:52 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.80	2039489.43	2.471	16173.2	False	13C3-PFBS	1476049.57	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.80	644455.82	2.213	4855.6	False	13C3-PFBS	1476049.57	4.660	PFBS	0.316	0.339	✓
PFHxA_1	313.0 / 269.0	2.16	4057307.26	2.671	4104.0	False	13C5-PFHxA	7628964.82	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.16	278541.71	2.450	1979.5	False	13C5-PFHxA	7628964.82	5.000	PFHxA	0.069	0.071	✓
PFHpA_1	363.0 / 319.0	2.57	4076951.96	2.707	2665.2	False	13C4-PFHpA	8200936.46	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.57	75532.34	2.564	4651.8	False	13C4-PFHpA	8200936.46	5.000	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.59	2739208.40	2.365	5578.9	False	13C3-PFHxS	1422019.54	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.59	739102.87	2.222	1633.0	False	13C3-PFHxS	1422019.54	4.740	PFHxS	0.270	0.293	✓
PFOA_1	413.0 / 369.0	2.99	4312352.02	2.738	1639.5	False	13C8-PFOA	8182904.43	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.99	310477.23	2.676	730.1	False	13C8-PFOA	8182904.43	5.000	PFOA	0.072	0.072	✓
PFNA_1	463.0 / 419.0	3.40	4272611.78	2.609	5190.6	False	13C9-PFNA	8812277.99	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.40	1015025.89	2.114	4920.2	False	13C9-PFNA	8812277.99	5.000	PFNA	0.238	0.278	✓
PFOS_1	499.0 / 80.0	3.39	2740520.07	2.259	4349.0	False	13C8-PFOS	1373468.30	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.39	511141.78	2.314	2011.6	False	13C8-PFOS	1373468.30	4.790	PFOS	0.187	0.188	✓
PFDA_1	513.0 / 469.0	3.77	4700659.49	2.407	3862.1	False	13C6-PFDA	10536548.27	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.77	204323.04	2.201	4364.7	False	13C6-PFDA	10536548.27	5.000	PFDA	0.044	0.045	✓
PFUnA_1	563.0 / 519.0	4.12	5021810.36	2.663	5608.0	False	13C7-PFUnA	11482312.53	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.11	250631.09	2.280	3835.3	False	13C7-PFUnA	11482312.53	5.000	PFUnA	0.050	0.053	✓
PFDoA_1	613.0 / 569.0	4.42	5037867.04	2.519	3998.1	True	13C2-PFDoA	12015555.62	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.42	777775.31	2.360	3800.5	True	13C2-PFDoA	12015555.62	5.000	PFDoA	0.154	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.70	5389159.47	2.527	3656.3	True	13C2-PFTeDA	13953365.24	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.70	400499.53	2.412	2320.5	True	13C2-PFTeDA	13953365.24	5.000	PFTTrDA	0.074	0.071	✓
PFTeDA_1	713.0 / 669.0	4.95	6033474.95	2.437	4315.1	True	13C2-PFTeDA	13953365.24	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.94	349208.54	2.396	3241.5	True	13C2-PFTeDA	13953365.24	5.000	PFTeDA	0.058	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.96	1103404.11	2.399	164028.8	False	d3-MeFOSAA	3091309.40	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.95	784241.60	2.527	827418.9	False	d3-MeFOSAA	3091309.40	5.000	NMeFOSAA	0.711	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.13	1027110.42	2.433	137092.5	True	d5-EtFOSAA	2736106.70	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.12	57538.79	2.247	169570.0	True	d5-EtFOSAA	2736106.70	5.000	NEtFOSAA	0.056	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.27	2575231.88	2.408	6761.6	False	13C3-HFPO-DA	5535117.35	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.27	68345.66	2.611	7061.4	False	13C3-HFPO-DA	5535117.35	5.000	HFPO-DA	0.027	0.024	✓
ADONA_1	377.0 / 251.0	2.61	7588638.55	2.715	7771.8	False	13C8-PFOA	8182904.43	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.61	100413.23	2.668	5340.1	False	13C8-PFOA	8182904.43	5.000	ADONA	0.013	0.014	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.59	6205289.74	2.777	13327.0	False	13C8-PFOA	8182904.43	5.000	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.60	48712.19	2.177	861.4	False	13C8-PFOA	8182904.43	5.000	9Cl-PF3ONS	0.008	0.008	✓
11Cl-PF3OUdS_1	631.0 / 451.0	4.25	5364249.64	2.579	20704.0	False	13C8-PFOA	8182904.43	5.000	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	4.26	29587.07	2.532	23088.2	True	13C8-PFOA	8182904.43	5.000	11Cl-PF3OUdS	0.006	0.005	✓

Sample Name	LM38	Injection Vial	8
Sample ID	L6	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:03:45 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.78	8142703.96	10.428	39156.9	False	13C3-PFBS	1407169.89	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.78	2745151.82	9.883	9282.7	False	13C3-PFBS	1407169.89	4.660	PFBS	0.337	0.339	✓
PFHxA_1	313.0 / 269.0	2.13	14756609.12	10.439	6892.6	False	13C5-PFHxA	7255517.03	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.13	1122942.01	10.503	5505.8	False	13C5-PFHxA	7255517.03	5.000	PFHxA	0.076	0.071	✓
PFHpA_1	363.0 / 319.0	2.55	15452892.76	9.893	6092.5	False	13C4-PFHpA	8649408.02	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.55	286084.59	9.200	4541.0	False	13C4-PFHpA	8649408.02	5.000	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.56	10654424.44	9.796	13173.4	False	13C3-PFHxS	1327987.52	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.56	3101106.17	9.968	4936.3	False	13C3-PFHxS	1327987.52	4.740	PFHxS	0.291	0.293	✓
PFOA_1	413.0 / 369.0	2.97	17305387.89	10.741	3743.7	False	13C8-PFOA	8550633.93	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.97	1143312.69	9.586	2934.9	False	13C8-PFOA	8550633.93	5.000	PFOA	0.066	0.072	✓
PFNA_1	463.0 / 419.0	3.37	15775559.83	9.859	8080.2	False	13C9-PFNA	8756033.23	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.37	4429839.54	9.360	10844.8	False	13C9-PFNA	8756033.23	5.000	PFNA	0.281	0.278	✓
PFOS_1	499.0 / 80.0	3.36	11267047.93	9.534	9978.5	False	13C8-PFOS	1337658.52	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.36	2158410.50	10.103	4652.7	False	13C8-PFOS	1337658.52	4.790	PFOS	0.192	0.188	✓
PFDA_1	513.0 / 469.0	3.75	17732539.35	10.402	5489.2	False	13C6-PFDA	9408376.49	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.75	851998.54	10.385	9554.7	False	13C6-PFDA	9408376.49	5.000	PFDA	0.048	0.045	✓
PFUnA_1	563.0 / 519.0	4.09	17423370.29	10.480	6668.5	False	13C7-PFUnA	10453306.85	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.09	1002151.86	10.102	7642.4	False	13C7-PFUnA	10453306.85	5.000	PFUnA	0.058	0.053	✓
PFDoA_1	613.0 / 569.0	4.40	19632941.26	10.730	7118.8	True	13C2-PFDoA	11288139.43	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.40	2936807.31	9.611	7643.0	True	13C2-PFDoA	11288139.43	5.000	PFDoA	0.150	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.67	22382821.63	11.955	8197.8	True	13C2-PFTeDA	12731439.20	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.67	1605386.16	10.721	5059.1	True	13C2-PFTeDA	12731439.20	5.000	PFTTrDA	0.072	0.071	✓
PFTeDA_1	713.0 / 669.0	4.92	25141775.02	11.513	8797.6	True	13C2-PFTeDA	12731439.20	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.92	1375941.46	10.523	4339.5	True	13C2-PFTeDA	12731439.20	5.000	PFTeDA	0.055	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.93	4202816.59	10.616	8992.5	False	d3-MeFOSAA	2658551.71	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.93	2773778.99	10.522	10596.0	False	d3-MeFOSAA	2658551.71	5.000	NMeFOSAA	0.660	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.10	3569681.09	10.106	8122.1	True	d5-EtFOSAA	2288879.50	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.10	215461.64	10.340	378831.1	True	d5-EtFOSAA	2288879.50	5.000	NEtFOSAA	0.060	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.25	10859776.06	10.169	16752.5	False	13C3-HFPO-DA	5532992.05	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.25	246027.02	9.346	6144.9	False	13C3-HFPO-DA	5532992.05	5.000	HFPO-DA	0.023	0.024	✓
ADONA_1	377.0 / 251.0	2.58	29215179.00	10.072	13948.9	False	13C8-PFOA	8550633.93	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.58	375283.74	9.696	13942.4	False	13C8-PFOA	8550633.93	5.000	ADONA	0.013	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.57	23931144.57	10.287	17653.6	False	13C8-PFOA	8550633.93	5.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.57	249135.30	10.212	4098.0	False	13C8-PFOA	8550633.93	5.000	9CI-PF3ONS	0.010	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	4.22	21284704.41	9.809	23741.0	True	13C8-PFOA	8550633.93	5.000	11CI-PF3OUdS			
11CI-PF3OUdS_2	631.0 / 83.0	4.22	116583.66	9.446	11831.1	True	13C8-PFOA	8550633.93	5.000	11CI-PF3OUdS	0.006	0.005	✓



Sample Name	LM39	Injection Vial	9
Sample ID	L7	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:16:37 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.78	18887999.28	26.007	83573.7	False	13C3-PFBS	1310621.76	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.78	6562806.83	25.365	14834.6	False	13C3-PFBS	1310621.76	4.660	PFBS	0.348	0.339	✓
PFHxA_1	313.0 / 269.0	2.13	34297476.46	24.969	10878.6	False	13C5-PFHxA	7081255.42	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.13	2454837.75	23.570	9070.6	False	13C5-PFHxA	7081255.42	5.000	PFHxA	0.072	0.071	✓
PFHpA_1	363.0 / 319.0	2.55	34800468.62	24.994	8518.2	False	13C4-PFHpA	7739786.87	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.55	665036.18	23.894	18354.0	False	13C4-PFHpA	7739786.87	5.000	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.56	26234582.43	24.212	15859.5	False	13C3-PFHxS	1321517.06	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.56	7296231.44	23.562	6845.3	False	13C3-PFHxS	1321517.06	4.740	PFHxS	0.278	0.293	✓
PFOA_1	413.0 / 369.0	2.97	39076011.22	26.370	4628.9	False	13C8-PFOA	7899214.19	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.97	2737300.11	24.940	4068.3	False	13C8-PFOA	7899214.19	5.000	PFOA	0.070	0.072	✓
PFNA_1	463.0 / 419.0	3.37	33969152.96	24.954	9951.4	False	13C9-PFNA	7477335.49	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.37	10461041.31	25.924	18251.4	False	13C9-PFNA	7477335.49	5.000	PFNA	0.308	0.278	✓
PFOS_1	499.0 / 80.0	3.36	27436965.57	24.884	13769.8	False	13C8-PFOS	1247895.52	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.36	4972598.91	24.981	9847.8	False	13C8-PFOS	1247895.52	4.790	PFOS	0.181	0.188	✓
PFDA_1	513.0 / 469.0	3.75	43260362.25	27.111	7717.2	False	13C6-PFDA	8843877.97	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.75	1934235.25	25.123	20380.0	False	13C6-PFDA	8843877.97	5.000	PFDA	0.045	0.045	✓
PFUnA_1	563.0 / 519.0	4.09	39180121.18	26.759	8299.0	False	13C7-PFUnA	9268326.34	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.08	2166354.33	24.665	7821.6	False	13C7-PFUnA	9268326.34	5.000	PFUnA	0.055	0.053	✓
PFDoA_1	613.0 / 569.0	4.39	48189672.92	26.261	7665.6	True	13C2-PFDoA	11376656.92	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.39	7758117.39	25.260	9633.1	True	13C2-PFDoA	11376656.92	5.000	PFDoA	0.161	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.67	50165270.63	26.355	8398.2	True	13C2-PFTeDA	13018227.08	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.67	3836784.53	25.108	7813.1	True	13C2-PFTeDA	13018227.08	5.000	PFTTrDA	0.077	0.071	✓
PFTeDA_1	713.0 / 669.0	4.92	57167251.46	25.734	11073.5	True	13C2-PFTeDA	13018227.08	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.92	3221681.47	24.165	9676.9	True	13C2-PFTeDA	13018227.08	5.000	PFTeDA	0.056	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.93	8840988.93	24.352	9986.8	False	d3-MeFOSAA	2437624.84	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.93	5911109.16	24.511	9526.5	False	d3-MeFOSAA	2437624.84	5.000	NMeFOSAA	0.669	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.10	7209999.98	24.852	6030.8	True	d5-EtFOSAA	1879978.19	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.09	446415.39	26.208	1580.8	True	d5-EtFOSAA	1879978.19	5.000	NEtFOSAA	0.062	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.25	25806697.80	25.198	25504.8	False	13C3-HFPO-DA	5307392.70	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.25	651529.36	25.763	9352.6	False	13C3-HFPO-DA	5307392.70	5.000	HFPO-DA	0.025	0.024	✓
ADONA_1	377.0 / 251.0	2.58	65930601.99	24.641	22059.3	False	13C8-PFOA	7899214.19	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.58	892368.39	25.049	5921.8	False	13C8-PFOA	7899214.19	5.000	ADONA	0.014	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.57	56272531.18	26.205	29588.6	False	13C8-PFOA	7899214.19	5.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.57	545370.56	24.043	8337.8	False	13C8-PFOA	7899214.19	5.000	9CI-PF3ONS	0.010	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	4.22	52307096.76	26.103	28315.6	True	13C8-PFOA	7899214.19	5.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	4.22	258005.46	22.577	40233.8	True	13C8-PFOA	7899214.19	5.000	11CI-PF3OUdS	0.005	0.005	✓

Sample Name	LM40	Injection Vial	10
Sample ID	L8	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:29:29 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.78	34234078.45	48.542	54991.2	False	13C3-PFBS	1273254.75	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.78	12584145.97	50.063	17692.2	False	13C3-PFBS	1273254.75	4.660	PFBS	0.368	0.339	✓
PFHxA_1	313.0 / 269.0	2.13	61784444.11	49.382	13690.3	False	13C5-PFHxA	6460248.07	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.13	4838162.10	50.962	11417.3	False	13C5-PFHxA	6460248.07	5.000	PFHxA	0.078	0.071	✓
PFHpA_1	363.0 / 319.0	2.54	60174511.25	49.902	9870.3	False	13C4-PFHpA	6711632.11	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.54	1252019.03	51.871	8779.9	False	13C4-PFHpA	6711632.11	5.000	PFHpA	0.021	0.018	✓
PFHxS_1	399.0 / 80.0	2.56	47467026.43	51.177	25496.0	False	13C3-PFHxS	1130797.32	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.56	13710800.90	51.739	10484.6	False	13C3-PFHxS	1130797.32	4.740	PFHxS	0.289	0.293	✓
PFOA_1	413.0 / 369.0	2.96	65411438.60	48.423	4818.8	False	13C8-PFOA	7210726.26	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.96	5112287.60	51.091	5680.3	False	13C8-PFOA	7210726.26	5.000	PFOA	0.078	0.072	✓
PFNA_1	463.0 / 419.0	3.37	63040087.89	50.030	13401.8	False	13C9-PFNA	6929697.70	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.36	18707913.98	50.046	19430.9	False	13C9-PFNA	6929697.70	5.000	PFNA	0.297	0.278	✓
PFOS_1	499.0 / 80.0	3.35	51256123.78	50.781	16061.9	False	13C8-PFOS	1142356.46	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.36	9122595.89	50.085	12539.6	False	13C8-PFOS	1142356.46	4.790	PFOS	0.178	0.188	✓
PFDA_1	513.0 / 469.0	3.74	68445756.51	47.501	12271.5	False	13C6-PFDA	7995242.35	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.74	3458342.98	49.715	12775.1	False	13C6-PFDA	7995242.35	5.000	PFDA	0.051	0.045	✓
PFUnA_1	563.0 / 519.0	4.08	65355932.19	47.509	11329.6	True	13C7-PFUnA	8724487.49	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.08	4160054.30	50.343	8425.3	False	13C7-PFUnA	8724487.49	5.000	PFUnA	0.064	0.053	✓
PFDoA_1	613.0 / 569.0	4.39	79378271.14	47.994	8857.3	True	13C2-PFDoA	10269632.27	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.39	13931479.88	50.291	11694.4	True	13C2-PFDoA	10269632.27	5.000	PFDoA	0.176	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.67	88050001.43	46.563	14361.4	True	13C2-PFTeDA	12960206.55	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.66	7467752.44	49.124	12429.7	True	13C2-PFTeDA	12960206.55	5.000	PFTTrDA	0.085	0.071	✓
PFTeDA_1	713.0 / 669.0	4.91	105390105.96	47.747	14232.7	True	13C2-PFTeDA	12960206.55	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.91	6677093.29	50.365	11136.5	True	13C2-PFTeDA	12960206.55	5.000	PFTeDA	0.063	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.92	16831294.43	50.138	15340.8	False	d3-MeFOSAA	2253886.32	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.92	11113384.21	49.882	11825.6	False	d3-MeFOSAA	2253886.32	5.000	NMeFOSAA	0.660	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.09	12671637.88	50.079	5753.6	True	d5-EtFOSAA	1639660.24	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.08	723209.08	48.751	48729.2	True	d5-EtFOSAA	1639660.24	5.000	NEtFOSAA	0.057	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.24	49200977.64	49.687	39707.1	False	13C3-HFPO-DA	5131909.54	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.24	1218973.42	49.829	296049.5	False	13C3-HFPO-DA	5131909.54	5.000	HFPO-DA	0.025	0.024	✓
ADONA_1	377.0 / 251.0	2.58	106036109.91	43.434	18279.1	False	13C8-PFOA	7210726.26	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.58	1658374.80	51.057	6709.2	False	13C8-PFOA	7210726.26	5.000	ADONA	0.016	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.56	94491087.46	48.216	34496.8	False	13C8-PFOA	7210726.26	5.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.56	1063083.80	51.212	5799.0	False	13C8-PFOA	7210726.26	5.000	9CI-PF3ONS	0.011	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	4.22	89662519.23	49.023	18946.6	True	13C8-PFOA	7210726.26	5.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	4.22	555573.96	53.206	11200.8	True	13C8-PFOA	7210726.26	5.000	11CI-PF3OUdS	0.006	0.005	✓



Sample Name	LM33	Injection Vial	3
Sample ID	L1	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.43	11729644.70	4.908	15980.4	False	13C2-PFDA	9722847.26	5.000				
d3-MeFOSAA	573.0 / 419.0	3.95	2766555.88	4.443	10504.6	False	13C4-PFOS	1462717.57	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.13	2437662.00	4.961	10024.5	False	13C2-PFOA	8922983.67	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.14	7469504.88	4.832	9724.9	False	13C2-PFOA	8922983.67	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.56	9234132.17	5.330	10668.1	False	13C2-PFOA	8922983.67	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.98	8957478.33	5.142	9234.1	False	13C2-PFOA	8922983.67	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.39	9786367.87	5.533	11147.9	False	13C2-PFOA	8922983.67	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.77	10659811.48	5.333	10310.0	False	13C2-PFDA	9722847.26	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.11	11092872.99	5.070	13028.4	False	13C2-PFDA	9722847.26	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.95	13345416.94	4.908	16942.7	False	13C2-PFDA	9722847.26	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.78	1343547.34	3.972	35820.2	False	13C4-PFOS	1462717.57	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.58	1362502.22	4.332	13415.4	False	13C4-PFOS	1462717.57	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.38	1319681.39	4.392	11460.5	False	13C4-PFOS	1462717.57	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.26	5711471.27	4.960	12462.0	False	13C2-PFOA	8922983.67	5.000		N/A	N/A	✓

Sample Name	LM34	Injection Vial	4
Sample ID	L2	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:12:15 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.43	12869621.30	5.142	17129.3	False	13C2-PFDA	10183164.21	5.000				
d3-MeFOSAA	573.0 / 419.0	3.95	3361091.03	5.332	9661.2	False	13C4-PFOS	1480604.42	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.13	2899457.60	5.425	9336.8	False	13C2-PFOA	9705544.27	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.14	8121663.85	4.830	10161.2	False	13C2-PFOA	9705544.27	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.56	8924489.84	4.736	9082.3	False	13C2-PFOA	9705544.27	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.98	9206559.77	4.859	8227.3	False	13C2-PFOA	9705544.27	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.39	9256359.29	4.811	9117.3	False	13C2-PFOA	9705544.27	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.77	10353876.08	4.946	9178.1	False	13C2-PFDA	10183164.21	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.11	12476409.78	5.444	14290.5	False	13C2-PFDA	10183164.21	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.95	14056935.44	4.936	16024.8	False	13C2-PFDA	10183164.21	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.78	1541144.25	4.501	132797.1	False	13C4-PFOS	1480604.42	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.58	1401956.18	4.404	10171.1	False	13C4-PFOS	1480604.42	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.38	1350782.46	4.442	13174.3	False	13C4-PFOS	1480604.42	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.27	5827961.16	4.653	12405.5	False	13C2-PFOA	9705544.27	5.000		N/A	N/A	✓

Sample Name	LM35	Injection Vial	5
Sample ID	L3	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:25:08 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.40	12088163.82	4.871	16068.1	False	13C2-PFDA	10095603.74	5.000				
d3-MeFOSAA	573.0 / 419.0	3.94	2985485.86	5.258	12608.9	False	13C4-PFOS	1333671.27	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.10	2622347.17	5.338	8973.8	False	13C2-PFOA	8920759.93	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.13	7686858.57	4.974	13013.1	False	13C2-PFOA	8920759.93	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.55	8696369.82	5.021	10051.1	False	13C2-PFOA	8920759.93	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.96	8649349.82	4.967	8938.9	False	13C2-PFOA	8920759.93	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.37	8899480.17	5.033	9745.3	False	13C2-PFOA	8920759.93	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.75	10394737.75	5.008	10112.2	False	13C2-PFDA	10095603.74	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.09	11137787.36	4.902	13548.3	False	13C2-PFDA	10095603.74	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.92	12876204.32	4.561	15701.8	False	13C2-PFDA	10095603.74	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.77	1598844.07	5.184	34332.2	False	13C4-PFOS	1333671.27	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.56	1374784.82	4.794	12032.5	False	13C4-PFOS	1333671.27	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.36	1364780.77	4.982	11851.2	False	13C4-PFOS	1333671.27	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.25	5711302.55	4.961	13771.2	False	13C2-PFOA	8920759.93	5.000		N/A	N/A	✓



Sample Name	LM36	Injection Vial	6
Sample ID	L4	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:38:00 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.41	11979168.24	4.878	15401.7	False	13C2-PFDA	9991158.53	5.000				
d3-MeFOSAA	573.0 / 419.0	3.94	3181979.54	5.784	8512.0	False	13C4-PFOS	1292252.15	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.11	2683144.73	5.240	9524.3	False	13C2-PFOA	9298370.16	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.14	8061518.30	5.005	10237.3	False	13C2-PFOA	9298370.16	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.55	8943047.24	4.954	8046.4	False	13C2-PFOA	9298370.16	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.97	8690338.17	4.788	7537.3	False	13C2-PFOA	9298370.16	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.38	8622323.67	4.678	13671.1	False	13C2-PFOA	9298370.16	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.76	10301190.18	5.015	13828.4	False	13C2-PFDA	9991158.53	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.10	11369378.54	5.057	15105.6	False	13C2-PFDA	9991158.53	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.93	13221395.32	4.732	17796.8	False	13C2-PFDA	9991158.53	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.78	1516957.50	5.076	214403.9	False	13C4-PFOS	1292252.15	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.57	1506812.98	5.423	16947.5	False	13C4-PFOS	1292252.15	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.37	1336814.63	5.036	7734.2	False	13C4-PFOS	1292252.15	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.26	5637044.91	4.698	11628.4	False	13C2-PFOA	9298370.16	5.000		N/A	N/A	✓

Sample Name	LM37	Injection Vial	7
Sample ID	L5	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:50:52 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.42	12015555.62	4.915	16990.7	False	13C2-PFDA	9945650.27	5.000				
d3-MeFOSAA	573.0 / 419.0	3.95	3091309.40	5.387	8126.4	False	13C4-PFOS	1347972.42	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.12	2736106.70	5.583	10880.4	False	13C2-PFOA	8899361.99	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.15	7628964.82	4.948	12003.9	False	13C2-PFOA	8899361.99	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.57	8200936.46	4.747	11416.1	False	13C2-PFOA	8899361.99	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.98	8182904.43	4.710	9349.1	False	13C2-PFOA	8899361.99	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.39	8812277.99	4.996	9470.2	False	13C2-PFOA	8899361.99	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.76	10536548.27	5.153	10345.3	False	13C2-PFDA	9945650.27	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.11	11482312.53	5.130	10723.5	False	13C2-PFDA	9945650.27	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.94	13953365.24	5.017	17530.3	False	13C2-PFDA	9945650.27	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.79	1476049.57	4.735	57872.6	False	13C4-PFOS	1347972.42	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.58	1422019.54	4.907	18198.6	False	13C4-PFOS	1347972.42	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.38	1373468.30	4.961	9008.2	False	13C4-PFOS	1347972.42	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.27	5535117.35	4.819	11828.3	False	13C2-PFOA	8899361.99	5.000		N/A	N/A	✓



Sample Name	LM38	Injection Vial	8
Sample ID	L6	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:03:45 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.40	11288139.43	4.895	14652.0	False	13C2-PFDA	9381826.23	5.000				
d3-MeFOSAA	573.0 / 419.0	3.92	2658551.71	4.617	7788.4	False	13C4-PFOS	1352452.35	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.10	2288879.50	4.891	9375.8	False	13C2-PFOA	8498192.86	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.12	7255517.03	4.928	8395.7	False	13C2-PFOA	8498192.86	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.54	8649408.02	5.243	9035.9	False	13C2-PFOA	8498192.86	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.95	8550633.93	5.154	7989.8	False	13C2-PFOA	8498192.86	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.36	8756033.23	5.198	11369.2	False	13C2-PFOA	8498192.86	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.74	9408376.49	4.878	10437.0	False	13C2-PFDA	9381826.23	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.08	10453306.85	4.951	14092.3	False	13C2-PFDA	9381826.23	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.92	12731439.20	4.853	19421.1	False	13C2-PFDA	9381826.23	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.77	1407169.89	4.499	29144.4	False	13C4-PFOS	1352452.35	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.55	1327987.52	4.567	10907.8	False	13C4-PFOS	1352452.35	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.35	1337658.52	4.815	9636.0	False	13C4-PFOS	1352452.35	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.25	5532992.05	5.045	13034.2	False	13C2-PFOA	8498192.86	5.000		N/A	N/A	✓

Sample Name	LM39	Injection Vial	9
Sample ID	L7	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:16:37 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.39	11376656.92	5.178	14790.2	False	13C2-PFDA	8938291.21	5.000				
d3-MeFOSAA	573.0 / 419.0	3.92	2437624.84	4.682	7805.9	False	13C4-PFOS	1223030.66	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.09	1879978.19	4.344	8180.3	False	13C2-PFOA	7859669.08	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.12	7081255.42	5.201	9653.6	False	13C2-PFOA	7859669.08	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.54	7739786.87	5.072	9495.7	False	13C2-PFOA	7859669.08	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.96	7899214.19	5.148	9980.7	False	13C2-PFOA	7859669.08	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.36	7477335.49	4.800	10821.2	False	13C2-PFOA	7859669.08	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.74	8843877.97	4.813	12923.7	False	13C2-PFDA	8938291.21	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.08	9268326.34	4.608	15729.9	False	13C2-PFDA	8938291.21	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.91	13018227.08	5.208	18184.0	False	13C2-PFDA	8938291.21	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.77	1310621.76	4.634	25580.8	False	13C4-PFOS	1223030.66	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.55	1321517.06	5.026	21787.5	False	13C4-PFOS	1223030.66	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.35	1247895.52	4.968	22395.1	False	13C4-PFOS	1223030.66	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.25	5307392.70	5.232	14426.5	False	13C2-PFOA	7859669.08	5.000		N/A	N/A	✓

Sample Name	LM40	Injection Vial	10
Sample ID	L8	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:29:29 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.39	10269632.27	5.214	13279.6	False	13C2-PFDA	8013566.24	5.000				
d3-MeFOSAA	573.0 / 419.0	3.92	2253886.32	4.497	11197.4	False	13C4-PFOS	1177416.65	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.08	1639660.24	4.217	7886.2	False	13C2-PFOA	7060471.49	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.12	6460248.07	5.282	9640.6	False	13C2-PFOA	7060471.49	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.53	6711632.11	4.896	8745.5	False	13C2-PFOA	7060471.49	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.95	7210726.26	5.232	6573.1	False	13C2-PFOA	7060471.49	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.35	6929697.70	4.951	9636.1	False	13C2-PFOA	7060471.49	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.73	7995242.35	4.853	11188.5	False	13C2-PFDA	8013566.24	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.07	8724487.49	4.838	10861.8	False	13C2-PFDA	8013566.24	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.90	12960206.55	5.784	23212.6	False	13C2-PFDA	8013566.24	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.77	1273254.75	4.677	31201.4	False	13C4-PFOS	1177416.65	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.55	1130797.32	4.467	10949.7	False	13C4-PFOS	1177416.65	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.34	1142356.46	4.724	9166.4	False	13C4-PFOS	1177416.65	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.24	5131909.54	5.632	14687.5	False	13C2-PFOA	7060471.49	5.000		N/A	N/A	✓

Sample Name	LM42 ICC	Injection Vial	12
Sample ID	ICC	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:55:17 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/mL)	Target Conc. (ng/mL)	Recovery (%)
PFBS 1	298.9 / 80.0	1.78	2.293	2.500	91.73
PFBS 2	298.9 / 99.0	1.78	2.302	2.500	92.08
PFHxA 1	313.0 / 269.0	2.13	2.642	2.500	105.68
PFHxA 2	313.0 / 119.0	2.13	2.524	2.500	100.95
PFHpA 1	363.0 / 319.0	2.54	2.675	2.500	106.98
PFHpA 2	363.0 / 169.0	2.54	2.655	2.500	106.18
PFHxS 1	399.0 / 80.0	2.56	2.536	2.500	101.43
PFHxS 2	399.0 / 99.0	2.56	2.445	2.500	97.80
PFOA 1	413.0 / 369.0	2.96	2.450	2.500	98.00
PFOA 2	413.0 / 169.0	2.95	2.290	2.500	91.58
PFNA 1	463.0 / 419.0	3.36	2.935	2.500	117.40
PFNA 2	463.0 / 219.0	3.36	2.636	2.500	105.46
PFOS 1	499.0 / 80.0	3.35	2.582	2.500	103.29
PFOS 2	499.0 / 99.0	3.35	2.593	2.500	103.73
PFDA 1	513.0 / 469.0	3.73	2.724	2.500	108.96
PFDA 2	513.0 / 219.0	3.73	2.570	2.500	102.81
PFUnA 1	563.0 / 519.0	4.07	2.703	2.500	108.10
PFUnA 2	563.0 / 269.0	4.08	2.284	2.500	91.37
PFDaA 1	613.0 / 569.0	4.38	2.852	2.500	114.06
PFDaA 2	613.0 / 319.0	4.38	2.590	2.500	103.61
PFTTrDA 1	663.0 / 619.0	4.66	2.776	2.500	111.03
PFTTrDA 2	663.0 / 169.0	4.66	2.702	2.500	108.07
PFTeDA 1	713.0 / 669.0	4.90	2.770	2.500	110.78
PFTeDA 2	713.0 / 169.0	4.90	2.493	2.500	99.72
NMeFOSAA 1	570.0 / 419.0	3.92	2.770	2.500	110.80
NMeFOSAA 2	570.0 / 512.0	3.92	2.858	2.500	114.33
NEtFOSAA 1	584.0 / 419.0	4.09	2.753	2.500	110.11
NEtFOSAA 2	584.0 / 483.0	4.07	2.682	2.500	107.28
HFPO-DA 1	285.0 / 169.0	2.24	2.814	2.500	112.55
HFPO-DA 2	285.0 / 118.8	2.24	3.084	2.500	123.37
ADONA 1	377.0 / 251.0	2.57	2.611	2.500	104.43
ADONA 2	377.0 / 85.0	2.57	2.440	2.500	97.62
9Cl-PF3ONS 1	531.0 / 351.0	3.55	2.510	2.500	100.39
9Cl-PF3ONS 2	531.0 / 83.0	3.56	2.916	2.500	116.65
11Cl-PF3OUdS 1	631.0 / 451.0	4.21	2.679	2.500	107.16
11Cl-pf3OUdS 2	631.0 / 83.0	4.21	2.698	2.500	107.92

Sample Name	LM34 CCV	Injection Vial	2
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 4:55:30 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/mL)	Target Conc. (ng/mL)	Recovery (%)
PFBS 1	298.9 / 80.0	1.82	0.239	0.250	95.72
PFBS 2	298.9 / 99.0	1.83	0.281	0.250	112.54
PFHxA 1	313.0 / 269.0	2.20	0.223	0.250	89.22
PFHxA 2	313.0 / 119.0	2.20	0.278	0.250	111.22
PFHpA 1	363.0 / 319.0	2.64	0.212	0.250	84.70
PFHpA 2	363.0 / 169.0	2.63	0.209	0.250	83.47
PFHxS 1	399.0 / 80.0	2.65	0.230	0.250	91.97
PFHxS 2	399.0 / 99.0	2.65	0.265	0.250	106.16
PFOA 1	413.0 / 369.0	3.07	0.242	0.253	95.80
PFOA 2	413.0 / 169.0	3.07	0.274	0.253	108.41
PFNA 1	463.0 / 419.0	3.50	0.257	0.250	102.62
PFNA 2	463.0 / 219.0	3.50	0.274	0.250	109.63
PFOS 1	499.0 / 80.0	3.48	0.259	0.250	103.51
PFOS 2	499.0 / 99.0	3.48	0.245	0.250	98.19
PFDA 1	513.0 / 469.0	3.88	0.264	0.250	105.53
PFDA 2	513.0 / 219.0	3.88	0.209	0.250	83.57
PFUnA 1	563.0 / 519.0	4.24	0.203	0.250	81.07
PFUnA 2	563.0 / 269.0	4.23	0.172	0.250	68.87
PFDoA 1	613.0 / 569.0	4.56	0.256	0.250	102.49
PFDoA 2	613.0 / 319.0	4.55	0.287	0.250	114.61
PFTDA 1	663.0 / 619.0	4.85	0.230	0.250	92.20
PFTDA 2	663.0 / 169.0	4.84	0.253	0.250	101.23
PFTeDA 1	713.0 / 669.0	5.11	0.181	0.250	72.55
PFTeDA 2	713.0 / 169.0	5.12	0.260	0.250	104.10
NMeFOSAA 1	570.0 / 419.0	4.07	0.280	0.250	111.95
NMeFOSAA 2	570.0 / 512.0	4.06	0.247	0.250	98.79
NEtFOSAA 1	584.0 / 419.0	4.25	0.216	0.250	86.54
NEtFOSAA 2	584.0 / 483.0	4.20	0.200	0.250	79.93
HFPO-DA 1	285.0 / 169.0	2.32	0.250	0.250	99.93
HFPO-DA 2	285.0 / 118.8	2.31	0.315	0.250	125.84
ADONA 1	377.0 / 251.0	2.67	0.232	0.250	92.74
ADONA 2	377.0 / 85.0	2.66	0.157	0.250	62.61
9Cl-PF3ONS 1	531.0 / 351.0	3.69	0.233	0.250	93.20
9Cl-PF3ONS 2	531.0 / 83.0	3.71	0.367	0.250	146.67
11Cl-PF3OUdS 1	631.0 / 451.0	4.38	0.245	0.250	98.15
11Cl-pf3OUdS 2	631.0 / 83.0	4.35	0.355	0.250	142.18

Sample Name	LM37 CCV	Injection Vial	7
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:51:22 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/mL)	Target Conc. (ng/mL)	Recovery (%)
PFBS 1	298.9 / 80.0	1.76	2.513	2.500	100.51
PFBS 2	298.9 / 99.0	1.76	2.654	2.500	106.18
PFHxA 1	313.0 / 269.0	2.11	2.611	2.500	104.45
PFHxA 2	313.0 / 119.0	2.11	2.445	2.500	97.80
PFHpA 1	363.0 / 319.0	2.53	2.608	2.500	104.30
PFHpA 2	363.0 / 169.0	2.53	2.460	2.500	98.41
PFHxS 1	399.0 / 80.0	2.55	2.430	2.500	97.22
PFHxS 2	399.0 / 99.0	2.55	2.630	2.500	105.21
PFOA 1	413.0 / 369.0	2.96	2.439	2.525	96.61
PFOA 2	413.0 / 169.0	2.96	2.453	2.525	97.13
PFNA 1	463.0 / 419.0	3.36	2.566	2.500	102.63
PFNA 2	463.0 / 219.0	3.36	2.363	2.500	94.51
PFOS 1	499.0 / 80.0	3.35	2.504	2.500	100.15
PFOS 2	499.0 / 99.0	3.35	2.355	2.500	94.19
PFDA 1	513.0 / 469.0	3.74	2.451	2.500	98.03
PFDA 2	513.0 / 219.0	3.74	2.388	2.500	95.53
PFUnA 1	563.0 / 519.0	4.08	2.690	2.500	107.62
PFUnA 2	563.0 / 269.0	4.08	2.563	2.500	102.52
PFDoA 1	613.0 / 569.0	4.39	2.364	2.500	94.57
PFDoA 2	613.0 / 319.0	4.39	2.282	2.500	91.28
PFTDA 1	663.0 / 619.0	4.66	2.501	2.500	100.05
PFTDA 2	663.0 / 169.0	4.66	2.484	2.500	99.35
PFTeDA 1	713.0 / 669.0	4.91	2.570	2.500	102.82
PFTeDA 2	713.0 / 169.0	4.91	2.344	2.500	93.76
NMeFOSAA 1	570.0 / 419.0	3.92	2.575	2.500	102.98
NMeFOSAA 2	570.0 / 512.0	3.92	2.679	2.500	107.17
NEtFOSAA 1	584.0 / 419.0	4.09	2.370	2.500	94.82
NEtFOSAA 2	584.0 / 483.0	4.08	2.329	2.500	93.15
HFPO-DA 1	285.0 / 169.0	2.23	2.370	2.500	94.78
HFPO-DA 2	285.0 / 118.8	2.23	2.283	2.500	91.32
ADONA 1	377.0 / 251.0	2.57	2.600	2.500	103.99
ADONA 2	377.0 / 85.0	2.57	2.456	2.500	98.26
9Cl-PF3ONS 1	531.0 / 351.0	3.56	2.433	2.500	97.30
9Cl-PF3ONS 2	531.0 / 83.0	3.57	2.038	2.500	81.52
11Cl-PF3OUdS 1	631.0 / 451.0	4.21	2.406	2.500	96.22
11Cl-pf3OUdS 2	631.0 / 83.0	4.22	2.219	2.500	88.74

Sample Name	LM42 ICC	Injection Vial	12
Sample ID	ICC	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:55:17 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/mL)	Target Conc. (ng/mL)	Recovery (%)
13C2-PFD _o A	615.0 / 570.0	4.38	4.595	5.000	91.90
d3-MeFOSAA	573.0 / 419.0	3.91	4.935	5.000	98.71
d5-EtFOSAA	589.0 / 419.0	4.08	4.934	5.000	98.68
13C5-PFH _x A	318.0 / 273.0	2.12	4.546	5.000	90.91
13C4-PFH _p A	367.0 / 322.0	2.53	4.706	5.000	94.12
13C8-PFOA	421.0 / 376.0	2.94	4.746	5.000	94.91
13C9-PFNA	472.0 / 427.0	3.35	4.330	5.000	86.59
13C6-PFDA	519.0 / 474.0	3.72	5.049	5.000	100.97
13C7-PFUnA	570.0 / 525.0	4.06	4.849	5.000	96.98
13C2-PFTeDA	715.0 / 670.0	4.90	4.821	5.000	96.42
13C3-PFBS	302.0 / 99.0	1.77	4.930	4.660	105.80
13C3-PFH _x S	402.0 / 99.0	2.55	4.756	4.740	100.34
13C8-PFOS	507.0 / 99.0	3.34	4.927	4.790	102.87
13C3-HFPO-DA	287.0 / 169.0	2.24	4.144	5.000	82.88

Sample Name	LM34 CCV	Injection Vial	2
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 4:55:30 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/mL)	Target Conc. (ng/mL)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	4.55	5.607	5.000	112.13
d3-MeFOSAA	573.0 / 419.0	4.06	4.095	5.000	81.90
d5-EtFOSAA	589.0 / 419.0	4.24	4.729	5.000	94.58
13C5-PFHxA	318.0 / 273.0	2.19	4.758	5.000	95.16
13C4-PFHpA	367.0 / 322.0	2.63	4.950	5.000	99.01
13C8-PFOA	421.0 / 376.0	3.06	4.897	5.000	97.95
13C9-PFNA	472.0 / 427.0	3.48	5.046	5.000	100.91
13C6-PFDA	519.0 / 474.0	3.88	5.354	5.000	107.09
13C7-PFUnA	570.0 / 525.0	4.22	5.478	5.000	109.56
13C2-PFTeDA	715.0 / 670.0	5.11	5.303	5.000	106.07
13C3-PFBS	302.0 / 99.0	1.81	4.894	4.660	105.03
13C3-PFHxS	402.0 / 99.0	2.64	4.794	4.740	101.14
13C8-PFOS	507.0 / 99.0	3.47	4.913	4.790	102.56
13C3-HFPO-DA	287.0 / 169.0	2.32	4.444	5.000	88.88

Sample Name	LM37 CCV	Injection Vial	7
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:51:22 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Conc. (ng/mL)	Target Conc. (ng/mL)	Recovery (%)
13C2-PFDoA	615.0 / 570.0	4.38	5.002	5.000	100.05
d3-MeFOSAA	573.0 / 419.0	3.91	5.094	5.000	101.89
d5-EtFOSAA	589.0 / 419.0	4.08	5.787	5.000	115.75
13C5-PFHxA	318.0 / 273.0	2.10	4.951	5.000	99.03
13C4-PFHpA	367.0 / 322.0	2.52	4.848	5.000	96.97
13C8-PFOA	421.0 / 376.0	2.95	5.197	5.000	103.95
13C9-PFNA	472.0 / 427.0	3.35	5.061	5.000	101.21
13C6-PFDA	519.0 / 474.0	3.73	4.996	5.000	99.91
13C7-PFUnA	570.0 / 525.0	4.07	4.870	5.000	97.40
13C2-PFTeDA	715.0 / 670.0	4.90	4.926	5.000	98.52
13C3-PFBS	302.0 / 99.0	1.75	4.508	4.660	96.73
13C3-PFHxS	402.0 / 99.0	2.54	4.779	4.740	100.83
13C8-PFOS	507.0 / 99.0	3.34	4.666	4.790	97.41
13C3-HFPO-DA	287.0 / 169.0	2.23	4.883	5.000	97.65



Sample Name	LM42 ICC	Injection Vial	12
Sample ID	ICC	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:55:17 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.78	1883928.09	2.293	11033.0	False	13C3-PFBS	1468183.40	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.78	666738.52	2.302	3586.5	False	13C3-PFBS	1468183.40	4.660	PFBS	0.354	0.339	✓
PFHxA_1	313.0 / 269.0	2.13	3828950.01	2.642	3188.1	False	13C5-PFHxA	7276143.79	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.13	273573.96	2.524	1766.0	False	13C5-PFHxA	7276143.79	5.000	PFHxA	0.071	0.071	✓
PFHpA_1	363.0 / 319.0	2.54	4147007.06	2.675	2660.7	False	13C4-PFHpA	8441949.90	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.54	80488.23	2.655	1855.7	False	13C4-PFHpA	8441949.90	5.000	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.56	2720877.21	2.536	7442.2	False	13C3-PFHxS	1316891.97	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.56	753182.77	2.445	1554.2	False	13C3-PFHxS	1316891.97	4.740	PFHxS	0.277	0.293	✓
PFOA_1	413.0 / 369.0	2.96	4050047.48	2.450	1464.9	False	13C8-PFOA	8560047.31	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.95	278885.15	2.290	763.1	False	13C8-PFOA	8560047.31	5.000	PFOA	0.069	0.072	✓
PFNA_1	463.0 / 419.0	3.36	4314499.78	2.935	5446.8	False	13C9-PFNA	7929727.53	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.36	1136806.56	2.636	5327.7	False	13C9-PFNA	7929727.53	5.000	PFNA	0.264	0.278	✓
PFOS_1	499.0 / 80.0	3.35	2972630.32	2.582	4032.4	False	13C8-PFOS	1303357.16	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.35	543070.93	2.593	4829.7	False	13C8-PFOS	1303357.16	4.790	PFOS	0.183	0.188	✓
PFDA_1	513.0 / 469.0	3.73	5116937.76	2.724	3828.8	False	13C6-PFDA	10170929.93	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.73	229909.63	2.570	5753.0	False	13C6-PFDA	10170929.93	5.000	PFDA	0.045	0.045	✓
PFUnA_1	563.0 / 519.0	4.07	4742429.97	2.703	4962.7	True	13C7-PFUnA	10692783.08	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.08	233792.53	2.284	3998.3	False	13C7-PFUnA	10692783.08	5.000	PFUnA	0.049	0.053	✓
PFDaA_1	613.0 / 569.0	4.38	5232667.38	2.852	3607.0	True	13C2-PFDaA	11068098.51	5.000	PFDaA			
PFDaA_2	613.0 / 319.0	4.38	785203.71	2.590	4508.0	True	13C2-PFDaA	11068098.51	5.000	PFDaA	0.150	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.66	5580196.36	2.776	5262.8	True	13C2-PFTeDA	13210191.24	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.66	424057.08	2.702	3821.5	True	13C2-PFTeDA	13210191.24	5.000	PFTTrDA	0.076	0.071	✓
PFTeDA_1	713.0 / 669.0	4.90	6459281.89	2.770	4902.3	True	13C2-PFTeDA	13210191.24	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.90	343669.70	2.493	3400.9	True	13C2-PFTeDA	13210191.24	5.000	PFTeDA	0.053	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.92	1115393.05	2.770	148227.5	False	d3-MeFOSAA	2705850.58	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.92	775042.81	2.858	6150.3	False	d3-MeFOSAA	2705850.58	5.000	NMeFOSAA	0.695	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.09	1066464.68	2.753	28451.6	True	d5-EtFOSAA	2510496.30	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.07	62668.69	2.682	2207.2	True	d5-EtFOSAA	2510496.30	5.000	NEtFOSAA	0.059	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.24	2686133.17	2.814	6291.6	False	13C3-HFPO-DA	4941361.04	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.24	72168.03	3.084	751750.9	False	13C3-HFPO-DA	4941361.04	5.000	HFPO-DA	0.027	0.024	✓
ADONA_1	377.0 / 251.0	2.57	7636477.79	2.611	6930.8	False	13C8-PFOA	8560047.31	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.57	96266.27	2.440	4559.3	False	13C8-PFOA	8560047.31	5.000	ADONA	0.013	0.014	✓
9Cl-PF3ONS_1	531.0 / 351.0	3.55	5868970.94	2.510	15988.6	False	13C8-PFOA	8560047.31	5.000	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	3.56	69221.03	2.916	2289.2	False	13C8-PFOA	8560047.31	5.000	9Cl-PF3ONS	0.012	0.008	✓
11Cl-PF3OUdS_1	631.0 / 451.0	4.21	5829333.13	2.679	23057.2	True	13C8-PFOA	8560047.31	5.000	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	4.21	33003.77	2.698	299709.4	True	13C8-PFOA	8560047.31	5.000	11Cl-PF3OUdS	0.006	0.005	✓



Sample Name	LM34 CCV	Injection Vial	2
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 4:55:30 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.82	216665.60	0.239	3434.9	False	13C3-PFBS	1482900.65	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.83	81869.85	0.281	512.5	False	13C3-PFBS	1482900.65	4.660	PFBS	0.378	0.339	✓
PFHxA_1	313.0 / 269.0	2.20	451888.04	0.223	626.3	False	13C5-PFHxA	7722017.13	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.20	35688.03	0.278	244.1	False	13C5-PFHxA	7722017.13	5.000	PFHxA	0.079	0.071	✓
PFHpA_1	363.0 / 319.0	2.64	444023.13	0.212	660.7	False	13C4-PFHpA	9004005.44	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.63	6642.28	0.209	199.7	False	13C4-PFHpA	9004005.44	5.000	PFHpA	0.015	0.018	✓
PFHxS_1	399.0 / 80.0	2.65	235343.09	0.230	1095.8	False	13C3-PFHxS	1350569.45	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.65	82487.17	0.265	228.1	False	13C3-PFHxS	1350569.45	4.740	PFHxS	0.351	0.293	✓
PFOA_1	413.0 / 369.0	3.07	539749.70	0.242	275.6	False	13C8-PFOA	8957076.64	5.000	PFOA			
PFOA_2	413.0 / 169.0	3.07	41632.95	0.274	125.5	False	13C8-PFOA	8957076.64	5.000	PFOA	0.077	0.072	✓
PFNA_1	463.0 / 419.0	3.50	540382.63	0.257	975.0	False	13C9-PFNA	9370120.07	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.50	149774.96	0.274	755.3	False	13C9-PFNA	9370120.07	5.000	PFNA	0.277	0.278	✓
PFOS_1	499.0 / 80.0	3.48	301167.69	0.259	861.8	False	13C8-PFOS	1322142.32	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.48	56194.13	0.245	254.4	False	13C8-PFOS	1322142.32	4.790	PFOS	0.187	0.188	✓
PFDA_1	513.0 / 469.0	3.88	636200.73	0.264	821.4	False	13C6-PFDA	10534780.39	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.88	21822.68	0.209	889.9	False	13C6-PFDA	10534780.39	5.000	PFDA	0.034	0.045	✓
PFUnA_1	563.0 / 519.0	4.24	593585.66	0.203	1106.5	False	13C7-PFUnA	11798041.11	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.23	22073.49	0.172	423.5	False	13C7-PFUnA	11798041.11	5.000	PFUnA	0.037	0.053	✓
PFDoA_1	613.0 / 569.0	4.56	732908.93	0.256	729.5	False	13C2-PFDoA	13189102.05	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.55	116773.59	0.287	897.1	False	13C2-PFDoA	13189102.05	5.000	PFDoA	0.159	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.85	739025.61	0.230	1265.5	True	13C2-PFTeDA	14192848.82	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.84	48268.80	0.253	388.1	True	13C2-PFTeDA	14192848.82	5.000	PFTTrDA	0.065	0.071	✓
PFTeDA_1	713.0 / 669.0	5.11	697723.88	0.181	955.9	True	13C2-PFTeDA	14192848.82	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	5.12	45432.50	0.260	505.2	True	13C2-PFTeDA	14192848.82	5.000	PFTeDA	0.065	0.057	✓
NMeFOSAA_1	570.0 / 419.0	4.07	94391.97	0.280	2955.1	False	d3-MeFOSAA	2284272.89	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	4.06	65145.16	0.247	139073.7	False	d3-MeFOSAA	2284272.89	5.000	NMeFOSAA	0.690	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.25	81389.15	0.216	4263787.8	False	d5-EtFOSAA	2439661.16	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.20	6203.47	0.200	16275.0	False	d5-EtFOSAA	2439661.16	5.000	NEtFOSAA	0.076	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.32	262757.31	0.250	1531.1	False	13C3-HFPO-DA	5372963.14	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.31	7500.19	0.315	3724.4	False	13C3-HFPO-DA	5372963.14	5.000	HFPO-DA	0.029	0.024	✓
ADONA_1	377.0 / 251.0	2.67	780802.21	0.232	2415.1	False	13C8-PFOA	8957076.64	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.66	8689.30	0.157	880.3	False	13C8-PFOA	8957076.64	5.000	ADONA	0.011	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.69	600282.17	0.233	4964.3	False	13C8-PFOA	8957076.64	5.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.71	6545.09	0.367	135.1	True	13C8-PFOA	8957076.64	5.000	9CI-PF3ONS	0.011	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	4.38	571509.15	0.245	8680.5	False	13C8-PFOA	8957076.64	5.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	4.35	4128.55	0.355	272722.7	True	13C8-PFOA	8957076.64	5.000	11CI-PF3OUdS	0.007	0.005	✓



Sample Name	LM37 CCV	Injection Vial	7
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:51:22 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.76	1862318.47	2.513	17933.6	False	13C3-PFBS	1325739.65	4.660	PFBS			
PFBS_2	298.9 / 99.0	1.76	694332.99	2.654	3355.4	False	13C3-PFBS	1325739.65	4.660	PFBS	0.373	0.339	✓
PFHxA_1	313.0 / 269.0	2.11	3724708.98	2.611	3439.9	False	13C5-PFHxA	7158878.06	5.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.11	260883.51	2.445	1773.4	False	13C5-PFHxA	7158878.06	5.000	PFHxA	0.070	0.071	✓
PFHpA_1	363.0 / 319.0	2.53	3764780.30	2.608	3120.6	False	13C4-PFHpA	7855860.84	5.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.53	69412.29	2.460	3541.4	False	13C4-PFHpA	7855860.84	5.000	PFHpA	0.018	0.018	✓
PFHxS_1	399.0 / 80.0	2.55	2587299.13	2.430	6134.1	False	13C3-PFHxS	1306891.94	4.740	PFHxS			
PFHxS_2	399.0 / 99.0	2.55	804147.05	2.630	1618.9	False	13C3-PFHxS	1306891.94	4.740	PFHxS	0.311	0.293	✓
PFOA_1	413.0 / 369.0	2.96	3989856.87	2.439	1433.5	False	13C8-PFOA	8467845.18	5.000	PFOA			
PFOA_2	413.0 / 169.0	2.96	295013.72	2.453	730.1	False	13C8-PFOA	8467845.18	5.000	PFOA	0.074	0.072	✓
PFNA_1	463.0 / 419.0	3.36	3994031.26	2.566	4214.3	False	13C9-PFNA	8372003.57	5.000	PFNA			
PFNA_2	463.0 / 219.0	3.36	1076674.80	2.363	4195.7	False	13C9-PFNA	8372003.57	5.000	PFNA	0.270	0.278	✓
PFOS_1	499.0 / 80.0	3.35	2695526.17	2.504	3561.1	False	13C8-PFOS	1218917.42	4.790	PFOS			
PFOS_2	499.0 / 99.0	3.35	461589.36	2.355	1983.8	False	13C8-PFOS	1218917.42	4.790	PFOS	0.171	0.188	✓
PFDA_1	513.0 / 469.0	3.74	4284055.40	2.451	3262.2	False	13C6-PFDA	9437894.85	5.000	PFDA			
PFDA_2	513.0 / 219.0	3.74	198409.99	2.388	26721.4	False	13C6-PFDA	9437894.85	5.000	PFDA	0.046	0.045	✓
PFUnA_1	563.0 / 519.0	4.08	4447876.55	2.690	4225.2	True	13C7-PFUnA	10071917.05	5.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.08	246808.70	2.563	1971.9	False	13C7-PFUnA	10071917.05	5.000	PFUnA	0.056	0.053	✓
PFDoA_1	613.0 / 569.0	4.39	4456796.22	2.364	2834.3	True	13C2-PFDoA	11299693.71	5.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.39	707785.80	2.282	2883.3	True	13C2-PFDoA	11299693.71	5.000	PFDoA	0.159	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.66	4842068.00	2.501	4806.4	True	13C2-PFTeDA	12659496.40	5.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.66	374054.55	2.484	2893.6	True	13C2-PFTeDA	12659496.40	5.000	PFTTrDA	0.077	0.071	✓
PFTeDA_1	713.0 / 669.0	4.91	5761658.84	2.570	4653.2	True	13C2-PFTeDA	12659496.40	5.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.91	310079.22	2.344	3225.2	True	13C2-PFTeDA	12659496.40	5.000	PFTeDA	0.054	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.92	1056778.38	2.575	1022485.4	False	d3-MeFOSAA	2758376.51	5.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.92	741325.05	2.679	124180.5	False	d3-MeFOSAA	2758376.51	5.000	NMeFOSAA	0.702	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.09	972933.34	2.370	933843.4	True	d5-EtFOSAA	2659826.98	5.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.08	57907.10	2.329	15456.4	True	d5-EtFOSAA	2659826.98	5.000	NEtFOSAA	0.060	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.23	2408053.77	2.370	7210.5	False	13C3-HFPO-DA	5258987.21	5.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.23	56711.03	2.283	2461.7	False	13C3-HFPO-DA	5258987.21	5.000	HFPO-DA	0.024	0.024	✓
ADONA_1	377.0 / 251.0	2.57	7522858.82	2.600	7698.1	False	13C8-PFOA	8467845.18	5.000	ADONA			
ADONA_2	377.0 / 85.0	2.57	95839.16	2.456	1657.4	False	13C8-PFOA	8467845.18	5.000	ADONA	0.013	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.56	5628169.65	2.433	13490.1	False	13C8-PFOA	8467845.18	5.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.57	47023.75	2.038	276.0	True	13C8-PFOA	8467845.18	5.000	9CI-PF3ONS	0.008	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	4.21	5179338.49	2.406	17954.5	True	13C8-PFOA	8467845.18	5.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	4.22	26765.80	2.219	1384.4	True	13C8-PFOA	8467845.18	5.000	11CI-PF3OUdS	0.005	0.005	✓



Sample Name	LM42 ICC	Injection Vial	12
Sample ID	ICC	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:55:17 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.38	11068098.51	4.595	20350.4	False	13C2-PFDA	9799347.68	5.000				
d3-MeFOSAA	573.0 / 419.0	3.91	2705850.58	4.935	10530.5	False	13C4-PFOS	1287831.06	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.08	2510496.30	4.934	8284.8	False	13C2-PFOA	9239757.88	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.12	7276143.79	4.546	9541.1	False	13C2-PFOA	9239757.88	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.53	8441949.90	4.706	9443.0	False	13C2-PFOA	9239757.88	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.94	8560047.31	4.746	8644.7	False	13C2-PFOA	9239757.88	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.35	7929727.53	4.330	9910.6	False	13C2-PFOA	9239757.88	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.72	10170929.93	5.049	9248.6	False	13C2-PFDA	9799347.68	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.06	10692783.08	4.849	12542.2	False	13C2-PFDA	9799347.68	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.90	13210191.24	4.821	12614.2	False	13C2-PFDA	9799347.68	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.77	1468183.40	4.930	66922.3	False	13C4-PFOS	1287831.06	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.55	1316891.97	4.756	16453.3	False	13C4-PFOS	1287831.06	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.34	1303357.16	4.927	45927.7	False	13C4-PFOS	1287831.06	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.24	4941361.04	4.144	11657.4	False	13C2-PFOA	9239757.88	5.000		N/A	N/A	✓



Sample Name	LM34 CCV	Injection Vial	2
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 4:55:30 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.55	13189102.05	5.607	21096.4	False	13C2-PFDA	9570386.31	5.000				
d3-MeFOSAA	573.0 / 419.0	4.06	2284272.89	4.095	9565.4	False	13C4-PFOS	1310265.41	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.24	2439661.16	4.729	8819.8	False	13C2-PFOA	9368749.47	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.19	7722017.13	4.758	11949.5	False	13C2-PFOA	9368749.47	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.63	9004005.44	4.950	12152.0	False	13C2-PFOA	9368749.47	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	3.06	8957076.64	4.897	7914.7	False	13C2-PFOA	9368749.47	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.48	9370120.07	5.046	14647.6	False	13C2-PFOA	9368749.47	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.88	10534780.39	5.354	14306.4	False	13C2-PFDA	9570386.31	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.22	11798041.11	5.478	13533.9	False	13C2-PFDA	9570386.31	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	5.11	14192848.82	5.303	18537.0	False	13C2-PFDA	9570386.31	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.81	1482900.65	4.894	14323.7	False	13C4-PFOS	1310265.41	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.64	1350569.45	4.794	31640.1	False	13C4-PFOS	1310265.41	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.47	1322142.32	4.913	9139.6	False	13C4-PFOS	1310265.41	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.32	5372963.14	4.444	15514.2	False	13C2-PFOA	9368749.47	5.000		N/A	N/A	✓



Sample Name	LM37 CCV	Injection Vial	7
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:51:22 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng/mL)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng/mL)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.38	11299693.71	5.002	13586.9	False	13C2-PFDA	9189844.84	5.000				
d3-MeFOSAA	573.0 / 419.0	3.91	2758376.51	5.094	11617.6	False	13C4-PFOS	1271853.33	4.790		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.08	2659826.98	5.787	10635.2	False	13C2-PFOA	8346031.75	5.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.10	7158878.06	4.951	10630.5	False	13C2-PFOA	8346031.75	5.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.52	7855860.84	4.848	8985.7	False	13C2-PFOA	8346031.75	5.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.95	8467845.18	5.197	8689.9	False	13C2-PFOA	8346031.75	5.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.35	8372003.57	5.061	11748.3	False	13C2-PFOA	8346031.75	5.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.73	9437894.85	4.996	13291.2	False	13C2-PFDA	9189844.84	5.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.07	10071917.05	4.870	13713.1	False	13C2-PFDA	9189844.84	5.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.90	12659496.40	4.926	16273.6	False	13C2-PFDA	9189844.84	5.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.75	1325739.65	4.508	26258.1	False	13C4-PFOS	1271853.33	4.790		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.54	1306891.94	4.779	10674.6	False	13C4-PFOS	1271853.33	4.790		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.34	1218917.42	4.666	18768.9	False	13C4-PFOS	1271853.33	4.790		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.23	5258987.21	4.883	13843.9	False	13C2-PFOA	8346031.75	5.000		N/A	N/A	✓

Raw Analytical Data



Sample Name	LM41 IB	Injection Vial	11
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:42:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	1518352.26	23.300	PFBS			
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	1518352.26	23.300	PFBS	N/A	0.339	✓
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	8053776.83	25.000	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	8053776.83	25.000	PFHxA	N/A	0.071	✓
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	8740760.41	25.000	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	8740760.41	25.000	PFHpA	N/A	0.018	✓
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	True	13C3-PFHxS	1416444.41	23.700	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	True	13C3-PFHxS	1416444.41	23.700	PFHxS	N/A	0.293	✓
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	PFOA			
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	PFOA	N/A	0.072	✓
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	8694998.61	25.000	PFNA			
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	8694998.61	25.000	PFNA	N/A	0.278	✓
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	True	13C8-PFOS	1320758.43	23.950	PFOS			
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	True	13C8-PFOS	1320758.43	23.950	PFOS	N/A	0.188	✓
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	10027667.02	25.000	PFDA			
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	10027667.02	25.000	PFDA	N/A	0.045	✓
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	11896542.72	25.000	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	11896542.72	25.000	PFUnA	N/A	0.053	✓
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	12021122.37	25.000	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	12021122.37	25.000	PFDoA	N/A	0.156	✓
PFTTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13767373.26	25.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13767373.26	25.000	PFTTrDA	N/A	0.071	✓
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13767373.26	25.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13767373.26	25.000	PFTeDA	N/A	0.057	✓
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	3138351.07	25.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	3138351.07	25.000	NMeFOSAA	N/A	0.722	✓
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	3030697.51	25.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	3030697.51	25.000	NEtFOSAA	N/A	0.064	✓
HFPO-DA_1	285.0 / 169.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	5569401.07	25.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	5569401.07	25.000	HFPO-DA	N/A	0.024	✓
ADONA_1	377.0 / 251.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	ADONA			
ADONA_2	377.0 / 85.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	ADONA	N/A	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	9CI-PF3ONS	N/A	0.008	✓
11Cl-PF3OUdS_1	631.0 / 451.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8669102.93	25.000	11Cl-PF3OUdS	N/A	0.005	✓



Sample Name	LM41 IB	Injection Vial	4
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:21:13 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	1462607.17	23.300	PFBS			
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	1462607.17	23.300	PFBS	N/A	0.339	✓
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	7766220.74	25.000	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	7766220.74	25.000	PFHxA	N/A	0.071	✓
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	8194796.49	25.000	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	8194796.49	25.000	PFHpA	N/A	0.018	✓
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	True	13C3-PFHxS	1360843.09	23.700	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	True	13C3-PFHxS	1360843.09	23.700	PFHxS	N/A	0.293	✓
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	PFOA			
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	PFOA	N/A	0.072	✓
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	8250771.84	25.000	PFNA			
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	8250771.84	25.000	PFNA	N/A	0.278	✓
PFOS_1	499.0 / 80.0	N/A	N/A	N/A	N/A	True	13C8-PFOS	1281400.39	23.950	PFOS			
PFOS_2	499.0 / 99.0	N/A	N/A	N/A	N/A	True	13C8-PFOS	1281400.39	23.950	PFOS	N/A	0.188	✓
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	9869908.61	25.000	PFDA			
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	9869908.61	25.000	PFDA	N/A	0.045	✓
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	10831011.42	25.000	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	10831011.42	25.000	PFUnA	N/A	0.053	✓
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	12166128.88	25.000	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	12166128.88	25.000	PFDoA	N/A	0.156	✓
PFTTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13202336.22	25.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13202336.22	25.000	PFTTrDA	N/A	0.071	✓
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13202336.22	25.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	13202336.22	25.000	PFTeDA	N/A	0.057	✓
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	2632247.06	25.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	2632247.06	25.000	NMeFOSAA	N/A	0.722	✓
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	2430719.95	25.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	2430719.95	25.000	NEtFOSAA	N/A	0.064	✓
HFPO-DA_1	285.0 / 169.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	5098108.31	25.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	5098108.31	25.000	HFPO-DA	N/A	0.024	✓
ADONA_1	377.0 / 251.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	ADONA			
ADONA_2	377.0 / 85.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	ADONA	N/A	0.014	✓
9Cl-PF3ONS_1	531.0 / 351.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	9Cl-PF3ONS			
9Cl-PF3ONS_2	531.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	9Cl-PF3ONS	N/A	0.008	✓
11Cl-PF3OUdS_1	631.0 / 451.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	11Cl-PF3OUdS			
11Cl-pf3OUdS_2	631.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	8420487.99	25.000	11Cl-PF3OUdS	N/A	0.005	✓



Sample Name	DF129PB-FS(0)	Injection Vial	3
Sample ID	Procedural Blank	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:59:51 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	901939.88	23.300	PFBS			
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	901939.88	23.300	PFBS	N/A	0.339	✓
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	4735849.61	25.000	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	4735849.61	25.000	PFHxA	N/A	0.071	✓
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	5346255.02	25.000	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	5346255.02	25.000	PFHpA	N/A	0.018	✓
PFHxS_1	399.0 / 80.0	N/A	N/A	N/A	N/A	True	13C3-PFHxS	906716.58	23.700	PFHxS			
PFHxS_2	399.0 / 99.0	N/A	N/A	N/A	N/A	True	13C3-PFHxS	906716.58	23.700	PFHxS	N/A	0.293	✓
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	PFOA			
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	PFOA	N/A	0.072	✓
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	5297698.81	25.000	PFNA			
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	5297698.81	25.000	PFNA	N/A	0.278	✓
PFOS_1	499.0 / 80.0	3.39	26764.11	0.187	94.8	True	13C8-PFOS	833862.49	23.950	PFOS			
PFOS_2	499.0 / 99.0	3.37	8369.44	0.209	95.0	False	13C8-PFOS	833862.49	23.950	PFOS	0.313	0.188	
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	5774171.06	25.000	PFDA			
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	5774171.06	25.000	PFDA	N/A	0.045	✓
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	6182813.82	25.000	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	6182813.82	25.000	PFUnA	N/A	0.053	✓
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	6651935.04	25.000	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	6651935.04	25.000	PFDoA	N/A	0.156	✓
PFTeDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	7705200.46	25.000	PFTeDA			
PFTeDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	7705200.46	25.000	PFTeDA	N/A	0.071	✓
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	7705200.46	25.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	7705200.46	25.000	PFTeDA	N/A	0.057	✓
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	1301610.78	25.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	1301610.78	25.000	NMeFOSAA	N/A	0.722	✓
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	1398229.13	25.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	1398229.13	25.000	NEtFOSAA	N/A	0.064	✓
HFPO-DA_1	285.0 / 169.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	3371793.51	25.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	3371793.51	25.000	HFPO-DA	N/A	0.024	✓
ADONA_1	377.0 / 251.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	ADONA			
ADONA_2	377.0 / 85.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	ADONA	N/A	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	9CI-PF3ONS	N/A	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	5014457.93	25.000	11CI-PF3OUdS	N/A	0.005	✓



PFAS Sample Quant Report

Created with Analyst Reporter
Printed: 27/09/2021 2:27:35 PM

Sample Name	DF130LCS-FS(0)	Injection Vial	4
Sample ID	Laboratory Control Sample	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:12:45 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	1.77	5161976.29	39.160	18364.2	False	13C3-PFBS	1186800.46	23.300	PFBS			
PFBS_2	298.9 / 99.0	1.77	1758651.04	37.537	5551.8	False	13C3-PFBS	1186800.46	23.300	PFBS	0.341	0.339	✓
PFHxA_1	313.0 / 269.0	2.13	8789167.93	34.818	5225.7	False	13C5-PFHxA	6453821.18	25.000	PFHxA			
PFHxA_2	313.0 / 119.0	2.13	639532.21	33.557	3848.2	False	13C5-PFHxA	6453821.18	25.000	PFHxA	0.073	0.071	✓
PFHpA_1	363.0 / 319.0	2.55	9864347.98	36.894	5234.0	False	13C4-PFHpA	7386972.27	25.000	PFHpA			
PFHpA_2	363.0 / 169.0	2.55	190217.13	35.816	5935.8	False	13C4-PFHpA	7386972.27	25.000	PFHpA	0.019	0.018	✓
PFHxS_1	399.0 / 80.0	2.56	6704677.20	34.287	7816.3	False	13C3-PFHxS	1194667.38	23.700	PFHxS			
PFHxS_2	399.0 / 99.0	2.57	1855669.30	33.162	3443.1	False	13C3-PFHxS	1194667.38	23.700	PFHxS	0.277	0.293	✓
PFOA_1	413.0 / 369.0	2.97	10425380.05	37.799	2582.1	False	13C8-PFOA	7296502.70	25.000	PFOA			
PFOA_2	413.0 / 169.0	2.97	748822.85	36.717	2257.7	False	13C8-PFOA	7296502.70	25.000	PFOA	0.072	0.072	✓
PFNA_1	463.0 / 419.0	3.38	10404671.03	41.616	8437.6	False	13C9-PFNA	6833182.18	25.000	PFNA			
PFNA_2	463.0 / 219.0	3.38	2693226.33	36.437	8444.7	False	13C9-PFNA	6833182.18	25.000	PFNA	0.259	0.278	✓
PFOS_1	499.0 / 80.0	3.37	7917659.61	40.268	6944.1	False	13C8-PFOS	1112758.40	23.950	PFOS			
PFOS_2	499.0 / 99.0	3.37	1483667.80	41.723	5676.9	False	13C8-PFOS	1112758.40	23.950	PFOS	0.187	0.188	✓
PFDA_1	513.0 / 469.0	3.76	10676893.04	37.427	4603.8	False	13C6-PFDA	7850984.92	25.000	PFDA			
PFDA_2	513.0 / 219.0	3.76	446620.49	32.564	9938.0	False	13C6-PFDA	7850984.92	25.000	PFDA	0.042	0.045	✓
PFUnA_1	563.0 / 519.0	4.10	10375953.69	39.063	7188.0	False	13C7-PFUnA	8318932.12	25.000	PFUnA			
PFUnA_2	563.0 / 269.0	4.10	549999.86	34.792	4320.3	False	13C7-PFUnA	8318932.12	25.000	PFUnA	0.053	0.053	✓
PFDoA_1	613.0 / 569.0	4.41	13031020.56	43.281	5248.9	True	13C2-PFDoA	9269068.16	25.000	PFDoA			
PFDoA_2	613.0 / 319.0	4.41	1982422.71	39.467	6647.7	True	13C2-PFDoA	9269068.16	25.000	PFDoA	0.152	0.156	✓
PFTTrDA_1	663.0 / 619.0	4.68	12785507.09	44.426	8745.6	True	13C2-PFTeDA	9749319.19	25.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	4.69	892624.28	38.872	5863.3	True	13C2-PFTeDA	9749319.19	25.000	PFTTrDA	0.070	0.071	✓
PFTeDA_1	713.0 / 669.0	4.93	11749067.98	34.920	6343.2	True	13C2-PFTeDA	9749319.19	25.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	4.93	683755.01	34.052	4869.2	True	13C2-PFTeDA	9749319.19	25.000	PFTeDA	0.058	0.057	✓
NMeFOSAA_1	570.0 / 419.0	3.94	1889113.03	36.662	2712.6	False	d3-MeFOSAA	1730288.71	25.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	3.94	1356121.26	39.468	22988.6	False	d3-MeFOSAA	1730288.71	25.000	NMeFOSAA	0.718	0.722	✓
NEtFOSAA_1	584.0 / 419.0	4.11	1826629.21	32.908	35134.9	False	d5-EtFOSAA	1798440.23	25.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	4.11	113049.11	34.388	1449.4	True	d5-EtFOSAA	1798440.23	25.000	NEtFOSAA	0.062	0.064	✓
HFPO-DA_1	285.0 / 169.0	2.24	6501451.24	34.314	14484.8	False	13C3-HFPO-DA	4907443.54	25.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	2.24	163051.82	34.944	276592.7	False	13C3-HFPO-DA	4907443.54	25.000	HFPO-DA	0.025	0.024	✓
ADONA_1	377.0 / 251.0	2.58	18244004.30	36.819	10681.0	False	13C8-PFOA	7296502.70	25.000	ADONA			
ADONA_2	377.0 / 85.0	2.58	242898.62	36.699	436322.1	False	13C8-PFOA	7296502.70	25.000	ADONA	0.013	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	3.58	14109151.63	35.516	18478.0	False	13C8-PFOA	7296502.70	25.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	3.57	133722.53	32.327	12384.8	False	13C8-PFOA	7296502.70	25.000	9CI-PF3ONS	0.010	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	4.24	13750120.26	37.121	23535.8	False	13C8-PFOA	7296502.70	25.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	4.24	71891.20	34.183	32781.0	False	13C8-PFOA	7296502.70	25.000	11CI-PF3OUdS	0.005	0.005	✓



Sample Name	F2834-FS(0)	Injection Vial	5
Sample ID	IR89-IDW-SO-091621	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:25:37 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
PFBS_1	298.9 / 80.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	1231290.53	23.300	PFBS			
PFBS_2	298.9 / 99.0	N/A	N/A	N/A	N/A	True	13C3-PFBS	1231290.53	23.300	PFBS	N/A	0.339	✓
PFHxA_1	313.0 / 269.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	6504510.88	25.000	PFHxA			
PFHxA_2	313.0 / 119.0	N/A	N/A	N/A	N/A	True	13C5-PFHxA	6504510.88	25.000	PFHxA	N/A	0.071	✓
PFHpA_1	363.0 / 319.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	7457213.38	25.000	PFHpA			
PFHpA_2	363.0 / 169.0	N/A	N/A	N/A	N/A	True	13C4-PFHpA	7457213.38	25.000	PFHpA	N/A	0.018	✓
PFHxS_1	399.0 / 80.0	2.55	16126.58	0.165	35.8	False	13C3-PFHxS	1265572.36	23.700	PFHxS			
PFHxS_2	399.0 / 99.0	2.56	8627.68	0.169	32.0	True	13C3-PFHxS	1265572.36	23.700	PFHxS	0.535	0.293	
PFOA_1	413.0 / 369.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	PFOA			
PFOA_2	413.0 / 169.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	PFOA	N/A	0.072	✓
PFNA_1	463.0 / 419.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	7560302.11	25.000	PFNA			
PFNA_2	463.0 / 219.0	N/A	N/A	N/A	N/A	True	13C9-PFNA	7560302.11	25.000	PFNA	N/A	0.278	✓
PFOS_1	499.0 / 80.0	3.35	48677.25	0.249	46.6	True	13C8-PFOS	1130395.56	23.950	PFOS			
PFOS_2	499.0 / 99.0	3.35	10080.87	0.174	70.7	False	13C8-PFOS	1130395.56	23.950	PFOS	0.207	0.188	✓
PFDA_1	513.0 / 469.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	8536772.42	25.000	PFDA			
PFDA_2	513.0 / 219.0	N/A	N/A	N/A	N/A	True	13C6-PFDA	8536772.42	25.000	PFDA	N/A	0.045	✓
PFUnA_1	563.0 / 519.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	8892403.79	25.000	PFUnA			
PFUnA_2	563.0 / 269.0	N/A	N/A	N/A	N/A	True	13C7-PFUnA	8892403.79	25.000	PFUnA	N/A	0.053	✓
PFDoA_1	613.0 / 569.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	9942475.88	25.000	PFDoA			
PFDoA_2	613.0 / 319.0	N/A	N/A	N/A	N/A	True	13C2-PFDoA	9942475.88	25.000	PFDoA	N/A	0.156	✓
PFTTrDA_1	663.0 / 619.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	9323600.63	25.000	PFTTrDA			
PFTTrDA_2	663.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	9323600.63	25.000	PFTTrDA	N/A	0.071	✓
PFTeDA_1	713.0 / 669.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	9323600.63	25.000	PFTeDA			
PFTeDA_2	713.0 / 169.0	N/A	N/A	N/A	N/A	True	13C2-PFTeDA	9323600.63	25.000	PFTeDA	N/A	0.057	✓
NMeFOSAA_1	570.0 / 419.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	2044147.95	25.000	NMeFOSAA			
NMeFOSAA_2	570.0 / 512.0	N/A	N/A	N/A	N/A	True	d3-MeFOSAA	2044147.95	25.000	NMeFOSAA	N/A	0.722	✓
NEtFOSAA_1	584.0 / 419.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	2283837.26	25.000	NEtFOSAA			
NEtFOSAA_2	584.0 / 483.0	N/A	N/A	N/A	N/A	True	d5-EtFOSAA	2283837.26	25.000	NEtFOSAA	N/A	0.064	✓
HFPO-DA_1	285.0 / 169.0	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	4858964.82	25.000	HFPO-DA			
HFPO-DA_2	285.0 / 118.8	N/A	N/A	N/A	N/A	True	13C3-HFPO-DA	4858964.82	25.000	HFPO-DA	N/A	0.024	✓
ADONA_1	377.0 / 251.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	ADONA			
ADONA_2	377.0 / 85.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	ADONA	N/A	0.014	✓
9CI-PF3ONS_1	531.0 / 351.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	9CI-PF3ONS			
9CI-PF3ONS_2	531.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	9CI-PF3ONS	N/A	0.008	✓
11CI-PF3OUdS_1	631.0 / 451.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	11CI-PF3OUdS			
11CI-pf3OUdS_2	631.0 / 83.0	N/A	N/A	N/A	N/A	True	13C8-PFOA	7501195.50	25.000	11CI-PF3OUdS	N/A	0.005	✓



Sample Name	LM41 IB	Injection Vial	11
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:42:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.39	12021122.37	25.173	12048.5	False	13C2-PFDA	9713825.94	25.000				
d3-MeFOSAA	573.0 / 419.0	3.92	3138351.07	27.187	10147.7	False	13C4-PFOS	1355790.66	23.950		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.09	3030697.51	30.285	10265.4	False	13C2-PFOA	9086483.51	25.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.13	8053776.83	25.582	11602.1	False	13C2-PFOA	9086483.51	25.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.54	8740760.41	24.774	9779.1	False	13C2-PFOA	9086483.51	25.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.95	8669102.93	24.436	8185.1	False	13C2-PFOA	9086483.51	25.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.36	8694998.61	24.138	12961.4	False	13C2-PFOA	9086483.51	25.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.74	10027667.02	25.107	12637.6	False	13C2-PFDA	9713825.94	25.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.08	11896542.72	27.211	15311.6	False	13C2-PFDA	9713825.94	25.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.91	13767373.26	25.342	19723.5	False	13C2-PFDA	9713825.94	25.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.78	1518352.26	24.215	18089.9	False	13C4-PFOS	1355790.66	23.950		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.55	1416444.41	24.296	21330.5	False	13C4-PFOS	1355790.66	23.950		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.35	1320758.43	23.714	7706.5	False	13C4-PFOS	1355790.66	23.950		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.25	5569401.07	23.747	12559.0	False	13C2-PFOA	9086483.51	25.000		N/A	N/A	✓



Sample Name	LM41 IB	Injection Vial	4
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:21:13 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.48	12166128.88	25.109	16182.8	False	13C2-PFDA	9856219.59	25.000				
d3-MeFOSAA	573.0 / 419.0	4.00	2632247.06	23.035	8776.1	False	13C4-PFOS	1342082.84	23.950		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.17	2430719.95	24.199	9102.6	False	13C2-PFOA	9120360.30	25.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.15	7766220.74	24.577	10872.5	False	13C2-PFOA	9120360.30	25.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.58	8194796.49	23.141	9685.1	False	13C2-PFOA	9120360.30	25.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	3.01	8420487.99	23.647	8400.5	False	13C2-PFOA	9120360.30	25.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.43	8250771.84	22.820	16101.3	False	13C2-PFOA	9120360.30	25.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.81	9869908.61	24.355	10071.9	False	13C2-PFDA	9856219.59	25.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.16	10831011.42	24.416	19278.9	False	13C2-PFDA	9856219.59	25.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	5.02	13202336.22	23.951	15571.8	False	13C2-PFDA	9856219.59	25.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.79	1462607.17	23.564	17866.2	False	13C4-PFOS	1342082.84	23.950		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.60	1360843.09	23.580	8587.7	False	13C4-PFOS	1342082.84	23.950		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.41	1281400.39	23.242	6427.8	False	13C4-PFOS	1342082.84	23.950		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.28	5098108.31	21.657	15251.7	False	13C2-PFOA	9120360.30	25.000		N/A	N/A	✓



Sample Name	DF129PB-FS(0)	Injection Vial	3
Sample ID	Procedural Blank	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:59:51 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.42	6651935.04	26.445	12752.4	False	13C2-PFDA	5116614.16	25.000				
d3-MeFOSAA	573.0 / 419.0	3.95	1301610.78	20.780	6345.6	False	13C4-PFOS	735674.88	23.950		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.12	1398229.13	26.692	10459.5	False	13C2-PFOA	4756478.34	25.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.13	4735849.61	28.737	8668.0	False	13C2-PFOA	4756478.34	25.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.55	5346255.02	28.948	7780.5	False	13C2-PFOA	4756478.34	25.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.97	5014457.93	27.002	7160.9	False	13C2-PFOA	4756478.34	25.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.38	5297698.81	28.095	8280.1	False	13C2-PFOA	4756478.34	25.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.76	5774171.06	27.447	9308.9	False	13C2-PFDA	5116614.16	25.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.11	6182813.82	26.848	9168.9	False	13C2-PFDA	5116614.16	25.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.95	7705200.46	26.926	14151.6	False	13C2-PFDA	5116614.16	25.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.77	901939.88	26.509	23208.6	False	13C4-PFOS	735674.88	23.950		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.56	906716.58	28.662	153890.5	False	13C4-PFOS	735674.88	23.950		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.37	833862.49	27.592	11893.9	False	13C4-PFOS	735674.88	23.950		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.25	3371793.51	27.464	8410.7	False	13C2-PFOA	4756478.34	25.000		N/A	N/A	✓



Sample Name	DF130LCS-FS(0)	Injection Vial	4
Sample ID	Laboratory Control Sample	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:12:45 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.40	9269068.16	23.504	14483.2	False	13C2-PFDA	8021977.50	25.000				
d3-MeFOSAA	573.0 / 419.0	3.93	1730288.71	17.355	8754.9	False	13C4-PFOS	1170976.13	23.950		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.10	1798440.23	20.883	6750.8	False	13C2-PFOA	7819429.95	25.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.12	6453821.18	23.821	9704.7	False	13C2-PFOA	7819429.95	25.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.54	7386972.27	24.330	8539.3	False	13C2-PFOA	7819429.95	25.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.96	7296502.70	23.900	7957.5	False	13C2-PFOA	7819429.95	25.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.37	6833182.18	22.043	9357.6	False	13C2-PFOA	7819429.95	25.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.75	7850984.92	23.803	8723.6	False	13C2-PFDA	8021977.50	25.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.09	8318932.12	23.041	12376.2	False	13C2-PFDA	8021977.50	25.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.92	9749319.19	21.730	14849.2	False	13C2-PFDA	8021977.50	25.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.76	1186800.46	21.915	23482.5	False	13C4-PFOS	1170976.13	23.950		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.55	1194667.38	23.726	10116.6	False	13C4-PFOS	1170976.13	23.950		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.36	1112758.40	23.133	13129.7	False	13C4-PFOS	1170976.13	23.950		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.24	4907443.54	24.315	11607.1	False	13C2-PFOA	7819429.95	25.000		N/A	N/A	✓



Sample Name	F2834-FS(0)	Injection Vial	5
Sample ID	IR89-IDW-SO-091621	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:25:37 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS
Sample Comment			

Results Summary

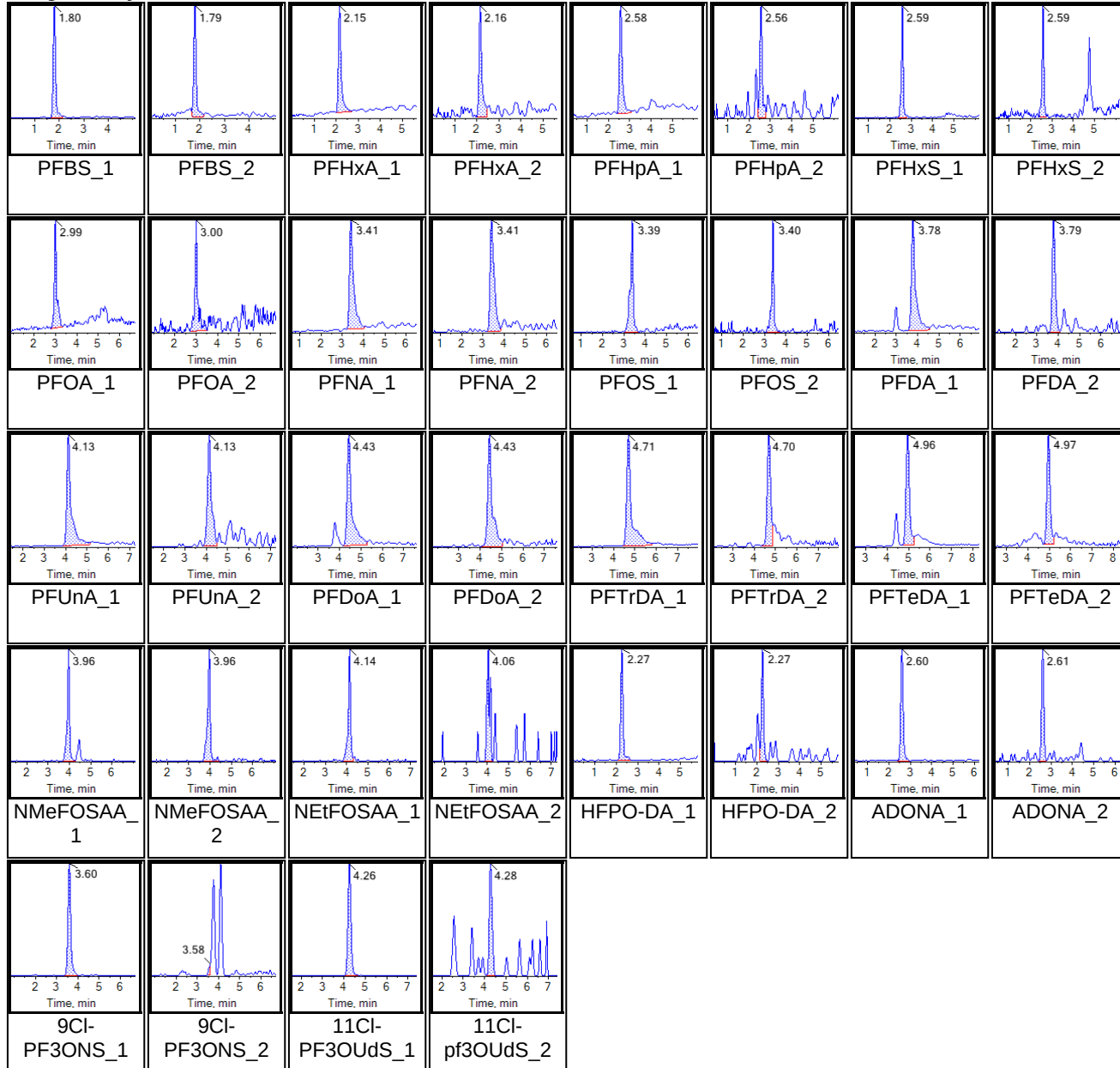
Analyte	MRM Transition	RT	Area	Conc. (ng)	S/N Ratio	Modified	IS	IS Area	IS Conc. (ng)	Ratio Group	Ion Ratio	Expected Ion Ratio	Ratio OK
13C2-PFDoA	615.0 / 570.0	4.40	9942475.88	21.022	14904.3	False	13C2-PFDA	9620654.31	25.000				
d3-MeFOSAA	573.0 / 419.0	3.92	2044147.95	16.796	9020.1	False	13C4-PFOS	1429360.32	23.950		N/A	N/A	✓
d5-EtFOSAA	589.0 / 419.0	4.09	2283837.26	22.122	7015.7	False	13C2-PFOA	9373840.80	25.000		N/A	N/A	✓
13C5-PFHxA	318.0 / 273.0	2.11	6504510.88	20.027	8791.8	False	13C2-PFOA	9373840.80	25.000		N/A	N/A	✓
13C4-PFHpA	367.0 / 322.0	2.53	7457213.38	20.488	9136.8	False	13C2-PFOA	9373840.80	25.000		N/A	N/A	✓
13C8-PFOA	421.0 / 376.0	2.95	7501195.50	20.496	6531.9	False	13C2-PFOA	9373840.80	25.000		N/A	N/A	✓
13C9-PFNA	472.0 / 427.0	3.36	7560302.11	20.344	14351.8	False	13C2-PFOA	9373840.80	25.000		N/A	N/A	✓
13C6-PFDA	519.0 / 474.0	3.74	8536772.42	21.581	11295.9	False	13C2-PFDA	9620654.31	25.000		N/A	N/A	✓
13C7-PFUnA	570.0 / 525.0	4.08	8892403.79	20.536	12968.0	False	13C2-PFDA	9620654.31	25.000		N/A	N/A	✓
13C2-PFTeDA	715.0 / 670.0	4.91	9323600.63	17.328	15347.5	False	13C2-PFDA	9620654.31	25.000		N/A	N/A	✓
13C3-PFBS	302.0 / 99.0	1.76	1231290.53	18.626	34454.5	False	13C4-PFOS	1429360.32	23.950		N/A	N/A	✓
13C3-PFHxS	402.0 / 99.0	2.55	1265572.36	20.590	13848.2	False	13C4-PFOS	1429360.32	23.950		N/A	N/A	✓
13C8-PFOS	507.0 / 99.0	3.35	1130395.56	19.251	8826.7	False	13C4-PFOS	1429360.32	23.950		N/A	N/A	✓
13C3-HFPO-DA	287.0 / 169.0	2.24	4858964.82	20.083	13069.3	False	13C2-PFOA	9373840.80	25.000		N/A	N/A	✓

Chromatograms

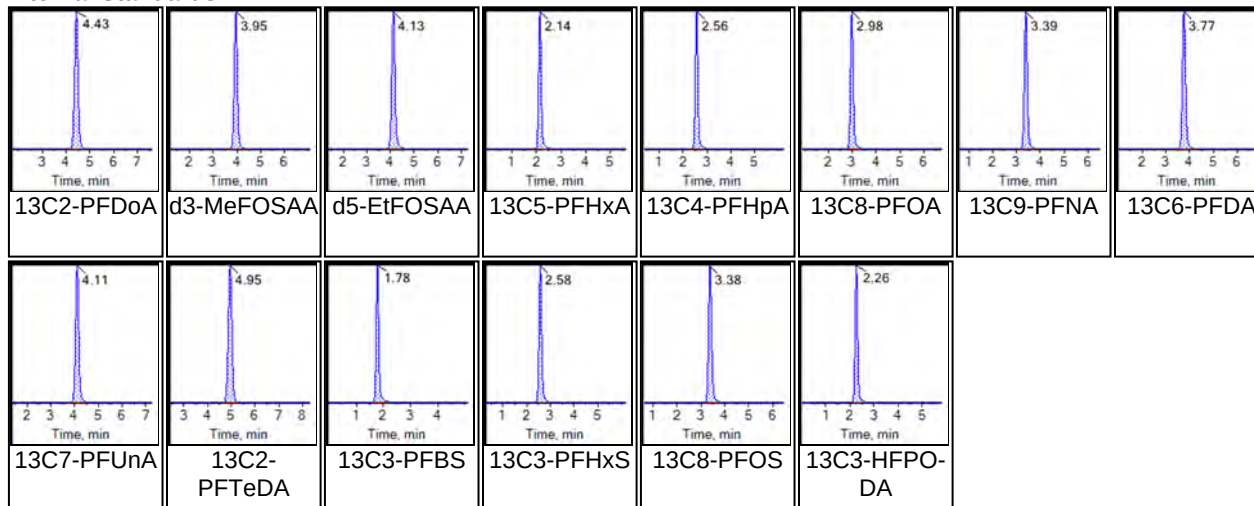
Sample Name	LM33	Injection Vial	3
Sample ID	L1	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



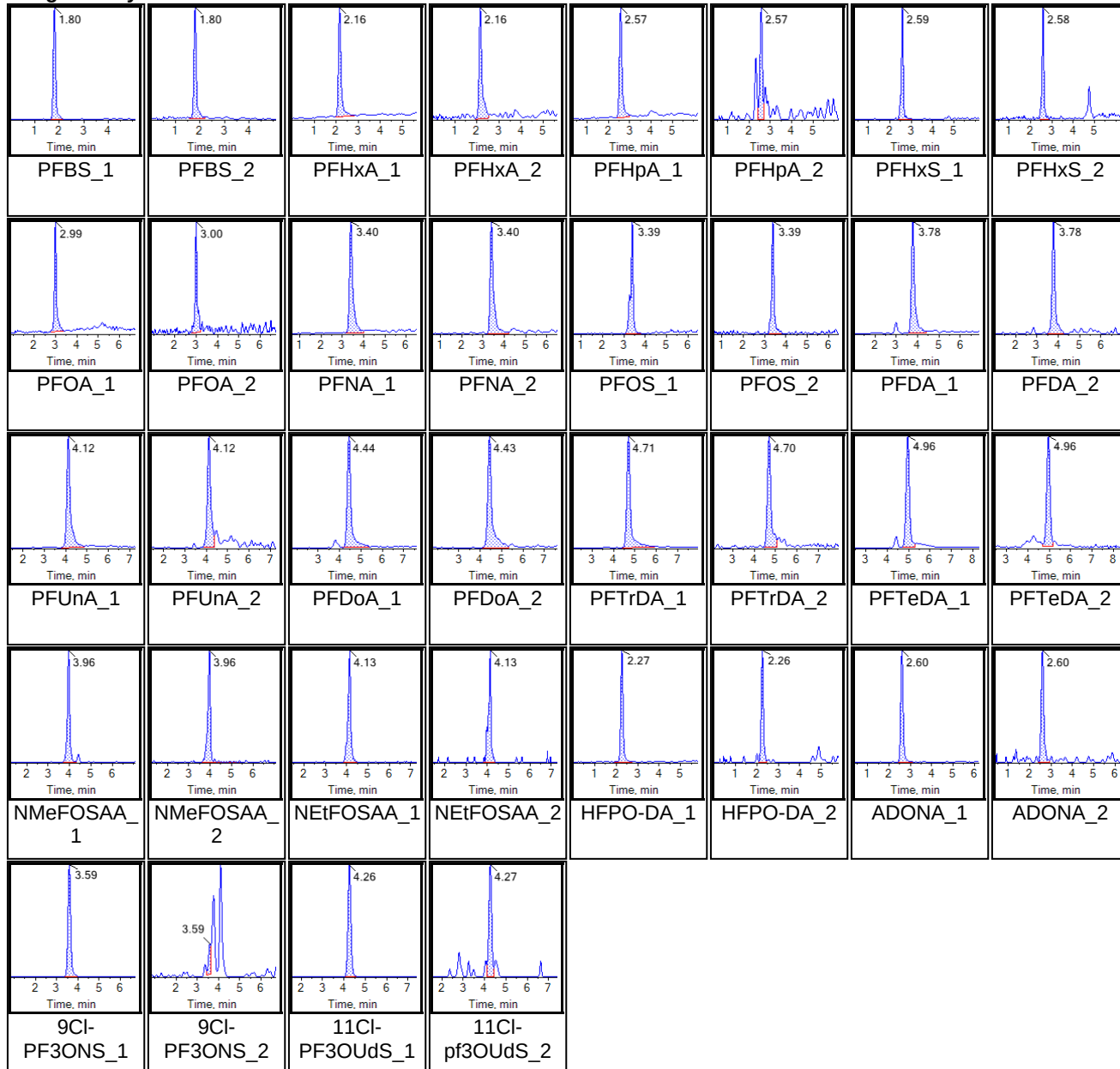
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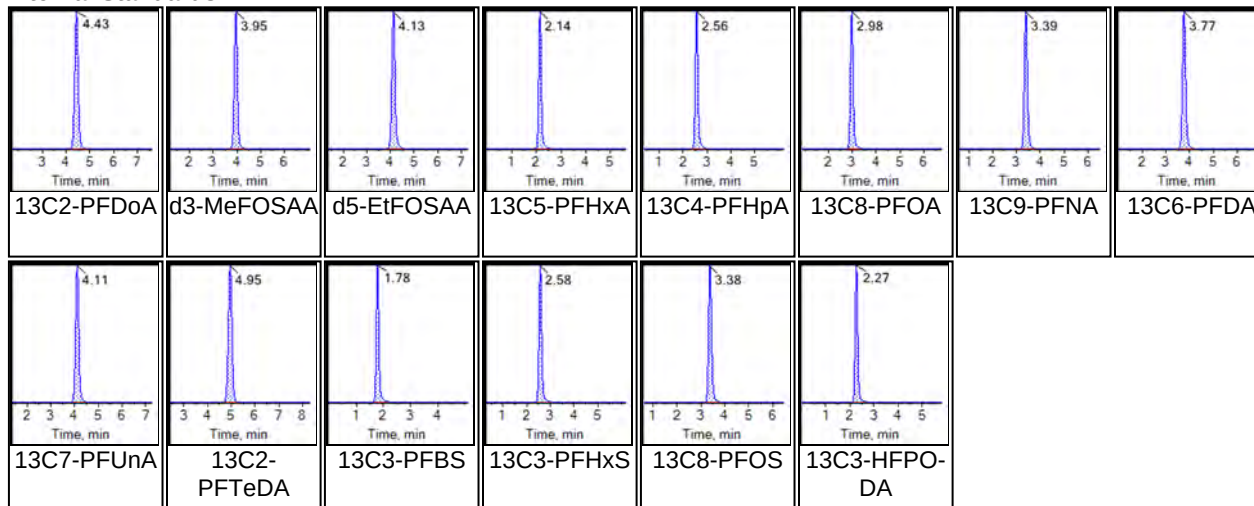
Sample Name	LM34	Injection Vial	4
Sample ID	L2	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:12:15 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



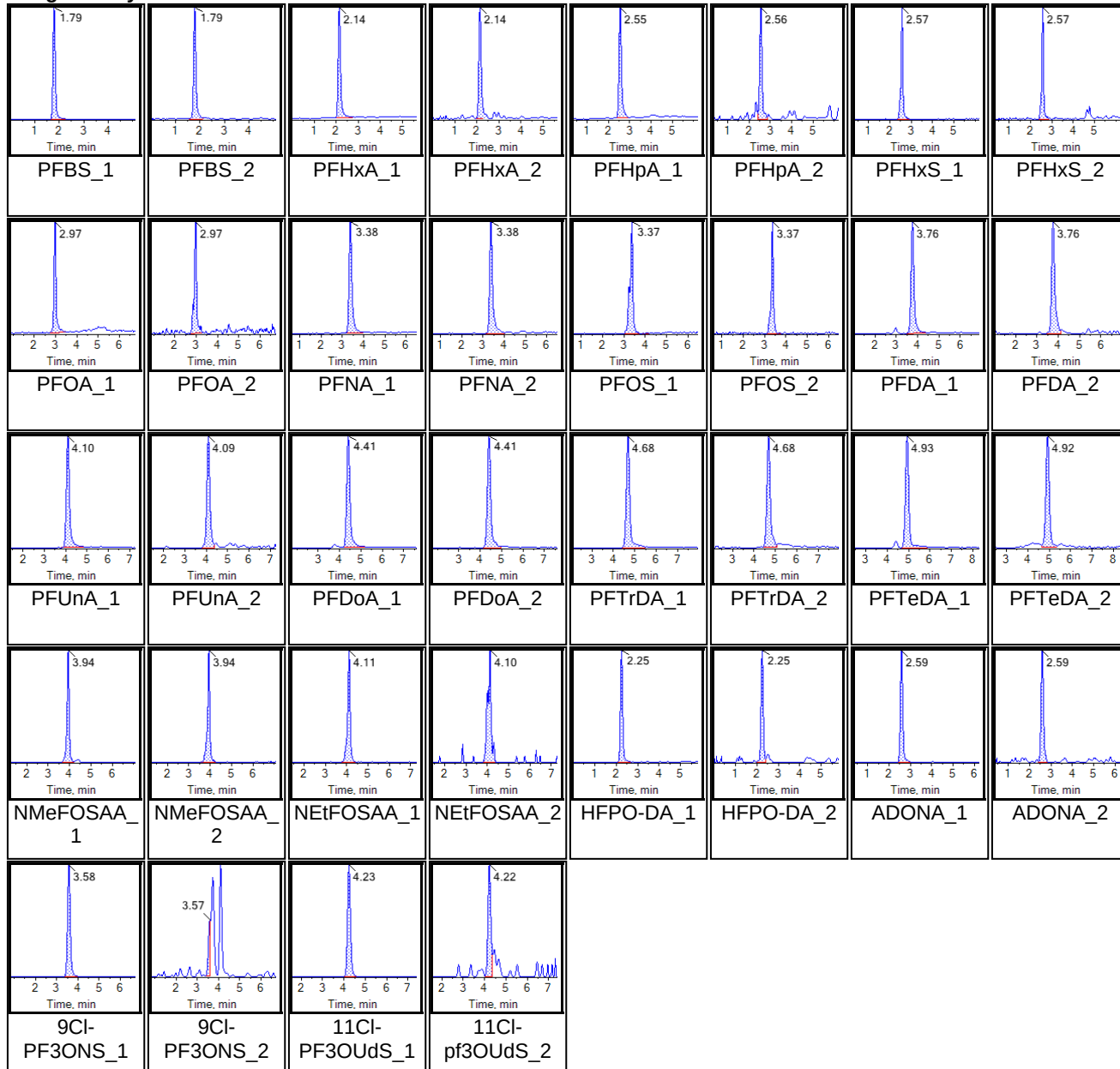
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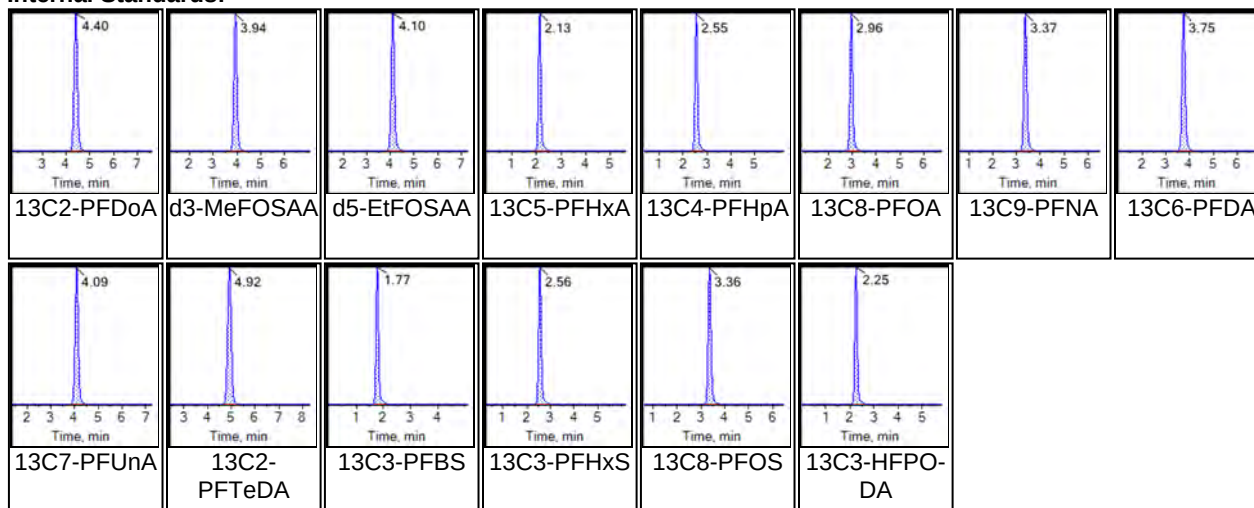
Sample Name	LM35	Injection Vial	5
Sample ID	L3	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:25:08 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



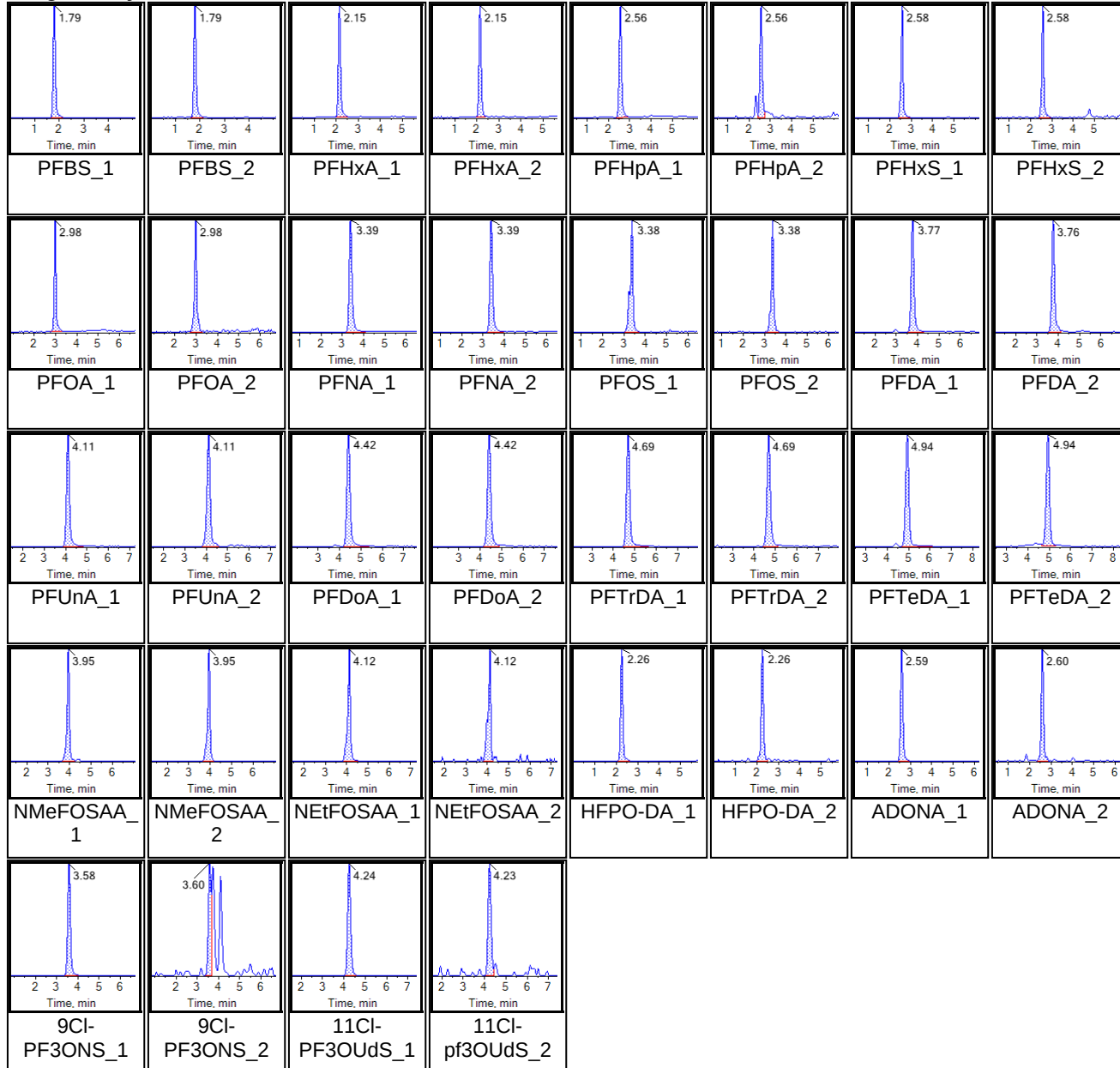
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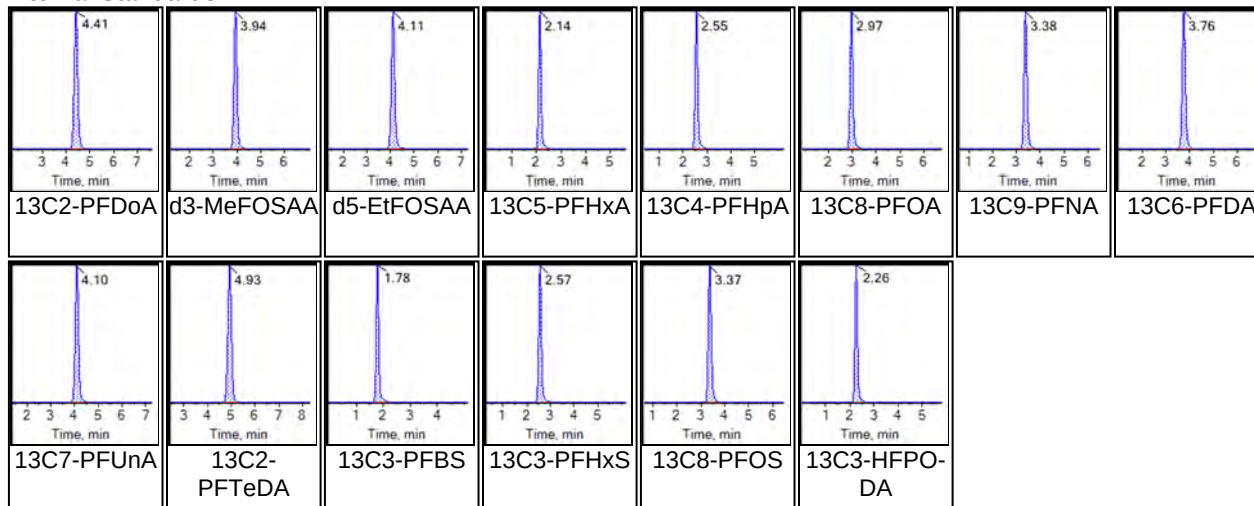
Sample Name	LM36	Injection Vial	6
Sample ID	L4	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:38:00 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



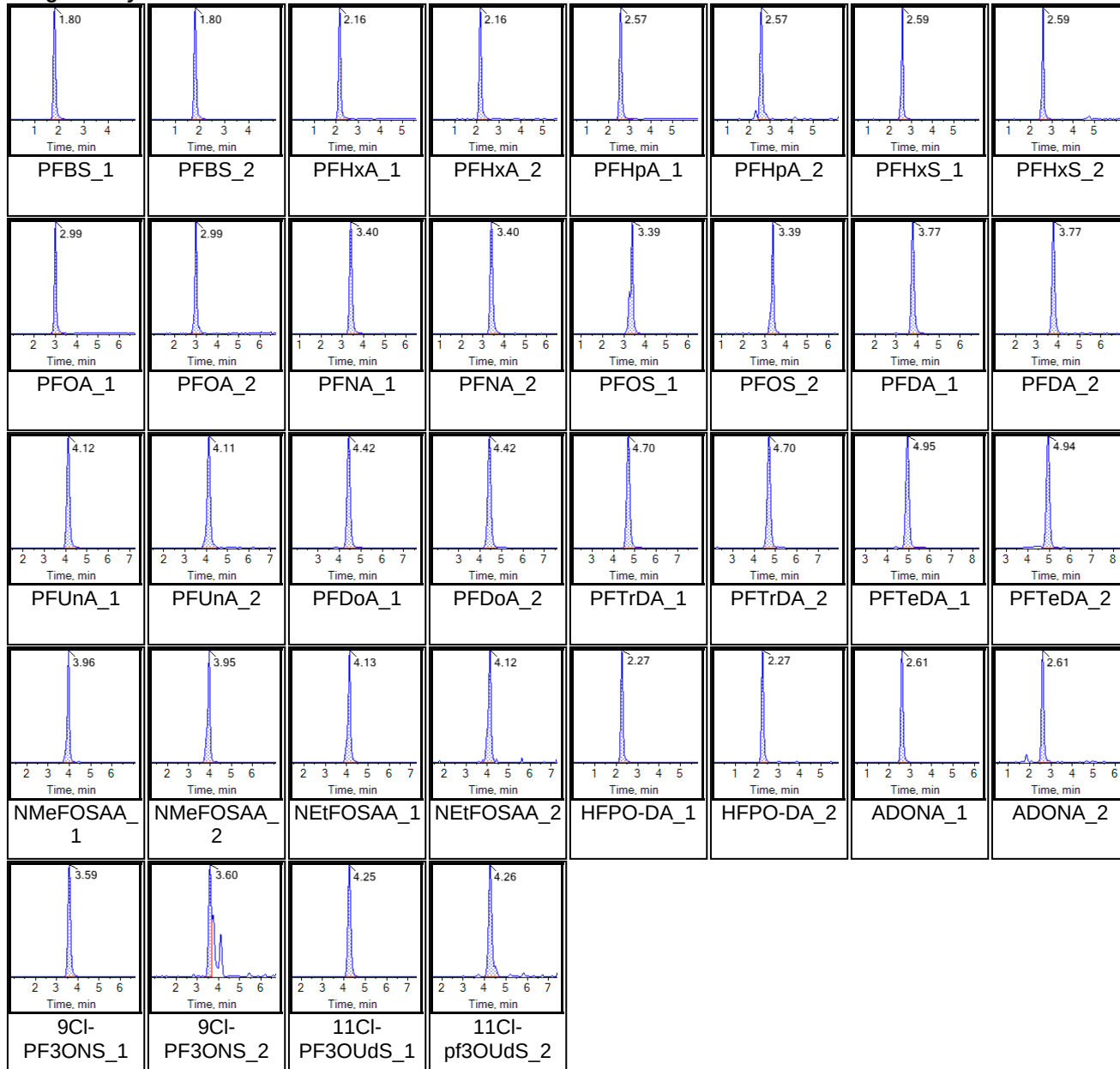
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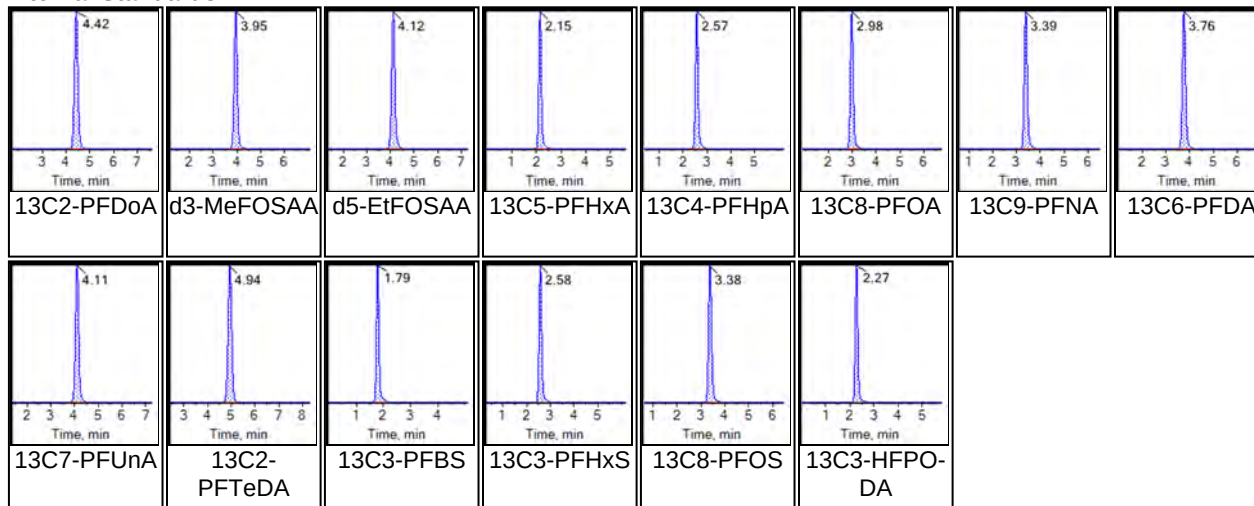
Sample Name	LM37	Injection Vial	7
Sample ID	L5	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:50:52 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

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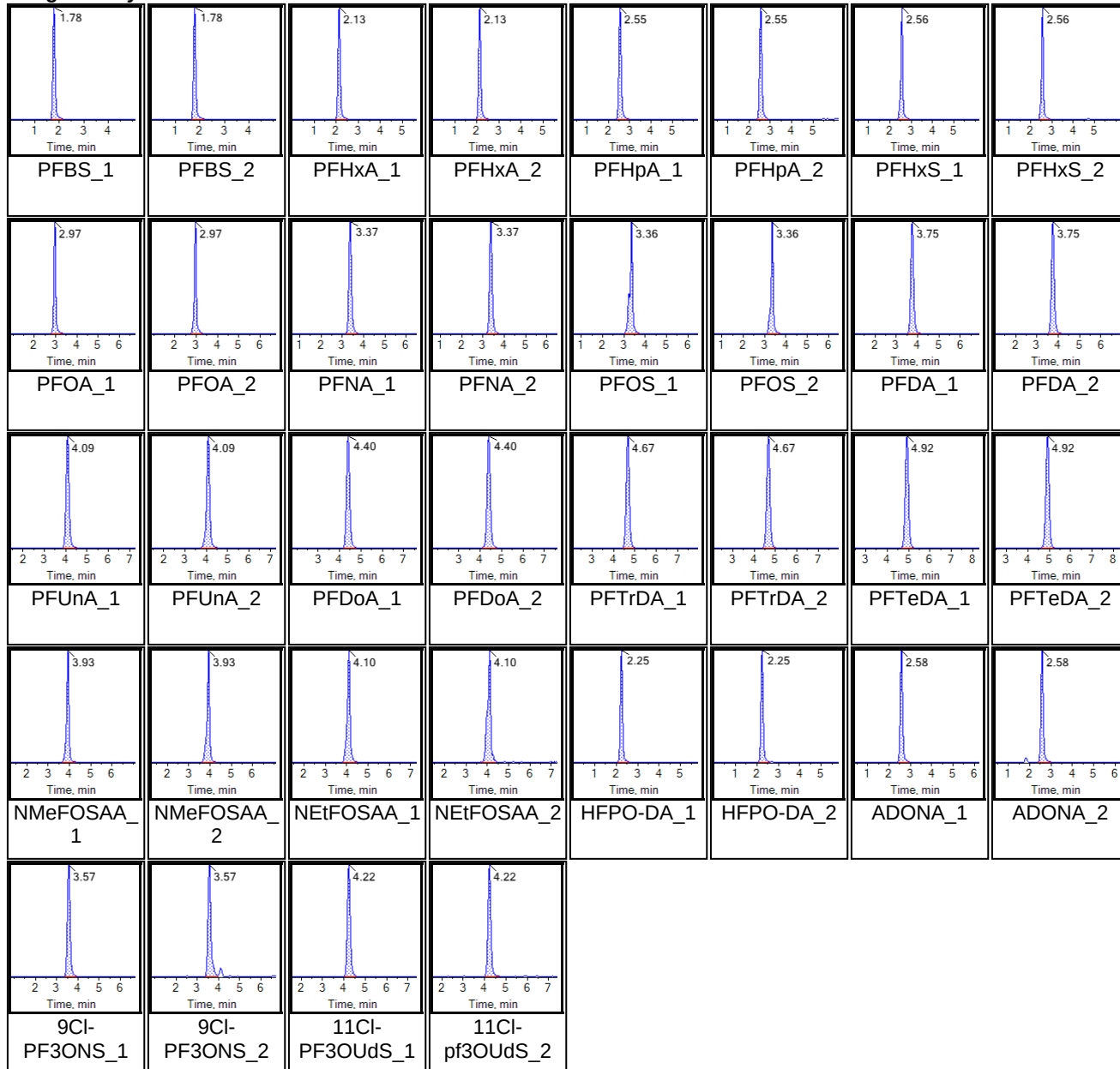
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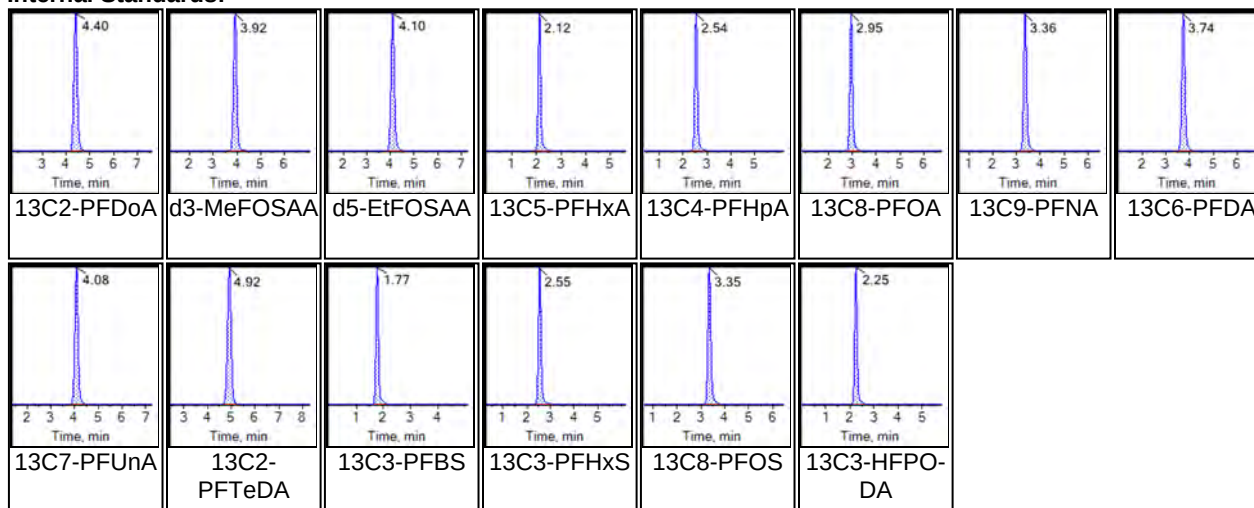
Sample Name	LM38	Injection Vial	8
Sample ID	L6	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:03:45 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



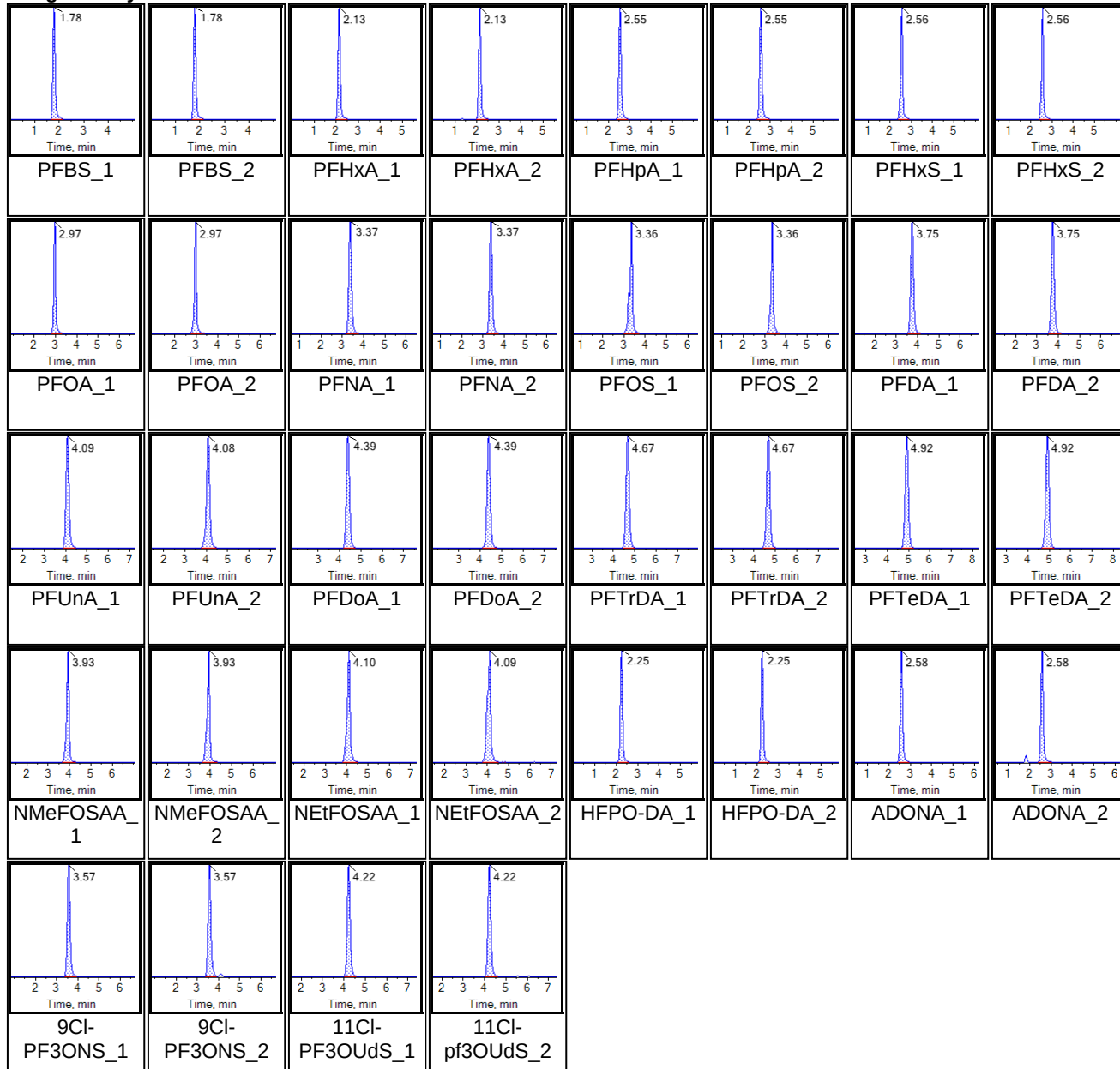
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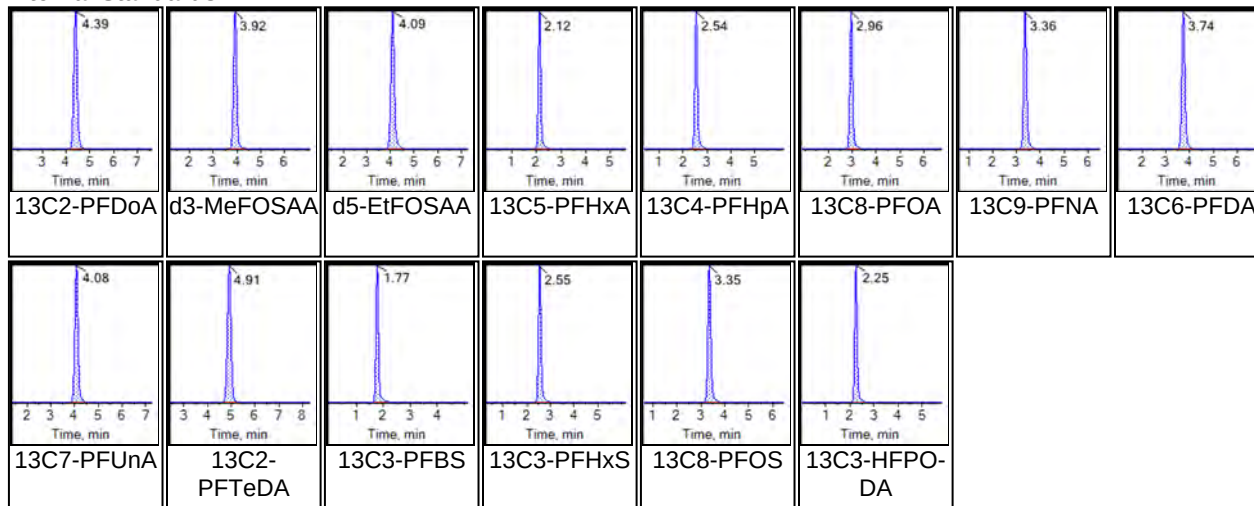
Sample Name	LM39	Injection Vial	9
Sample ID	L7	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:16:37 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

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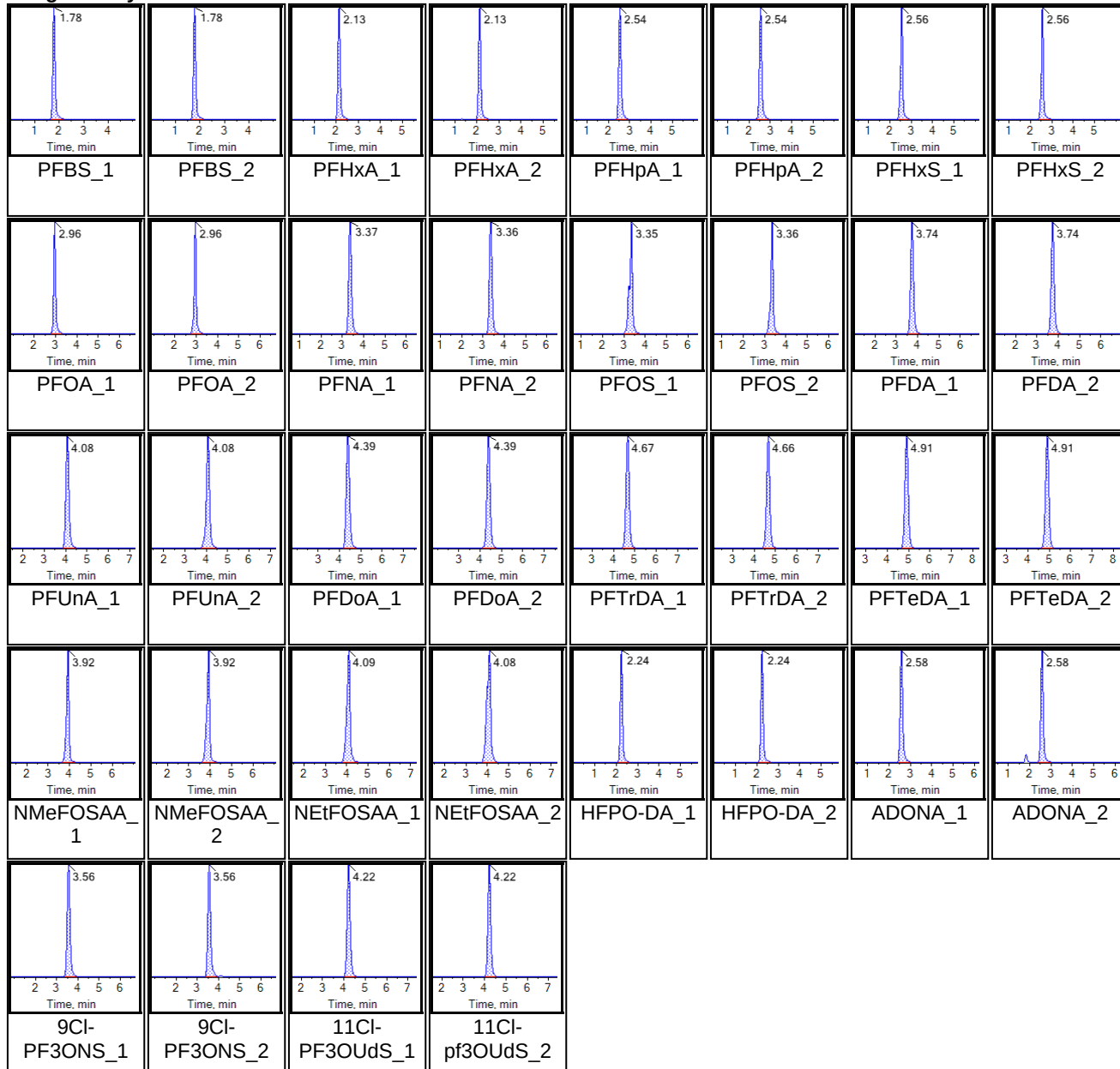
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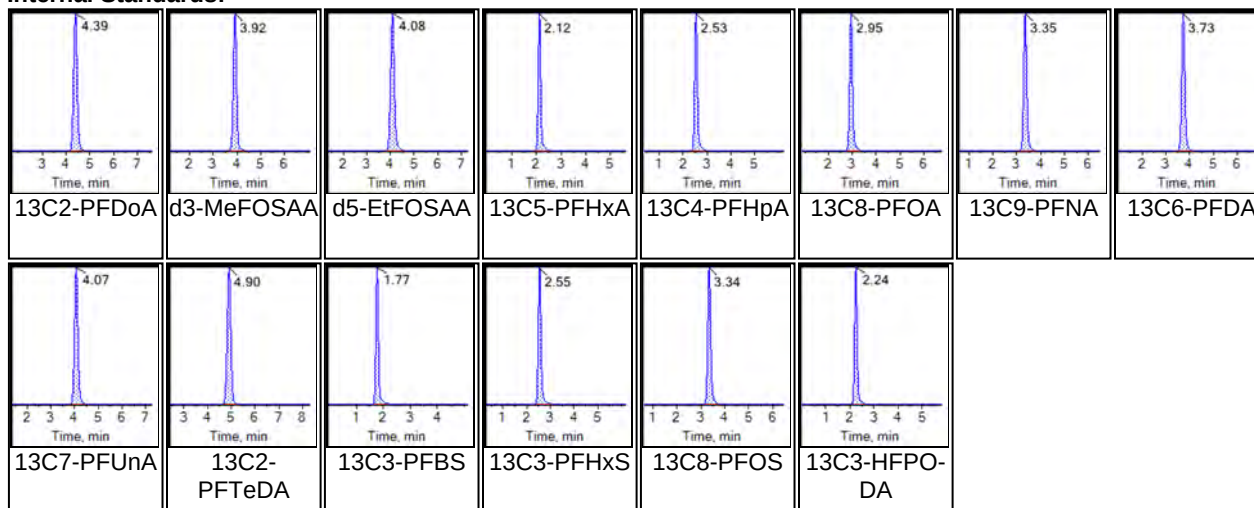
Sample Name	LM40	Injection Vial	10
Sample ID	L8	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:29:29 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



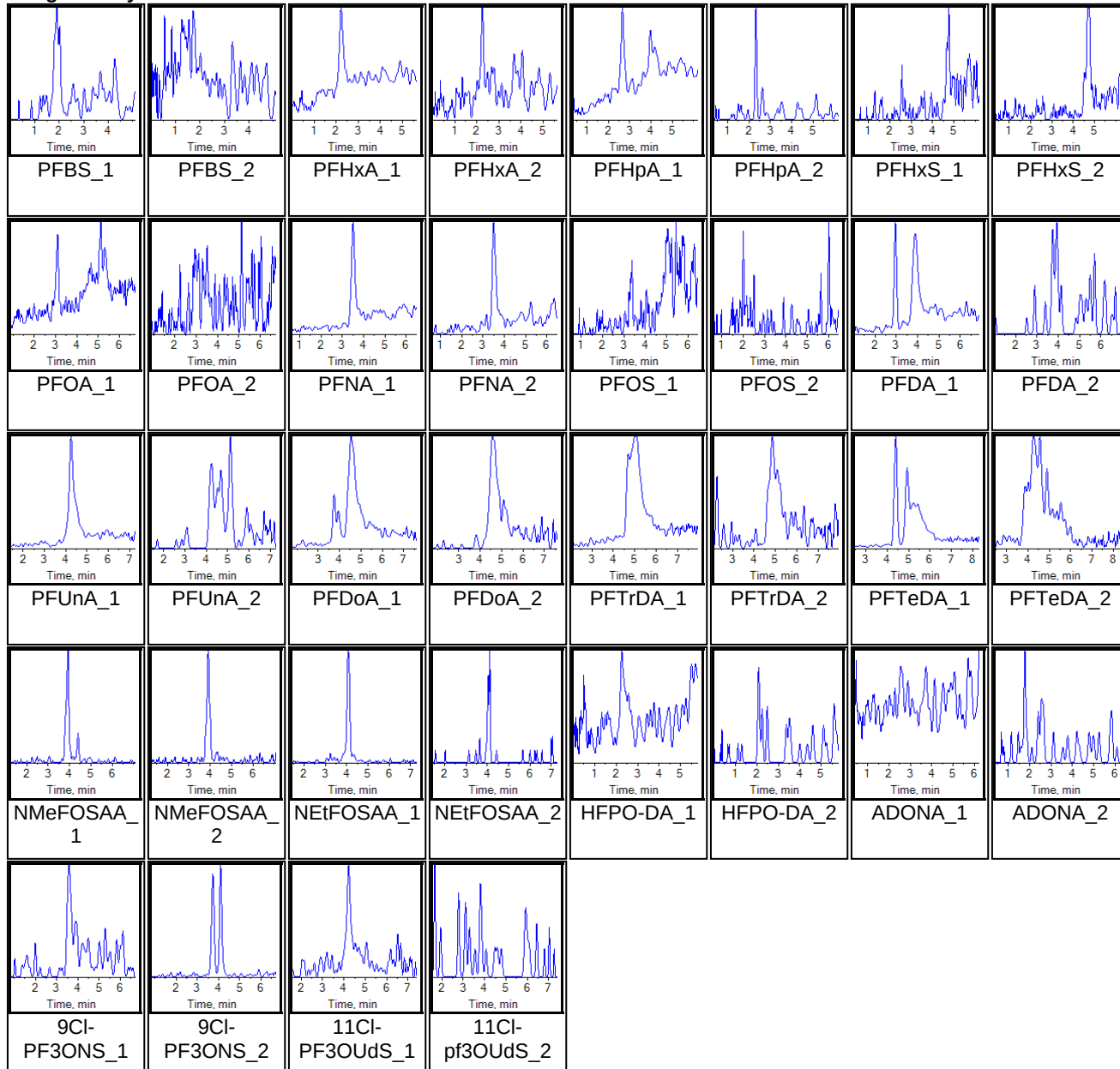
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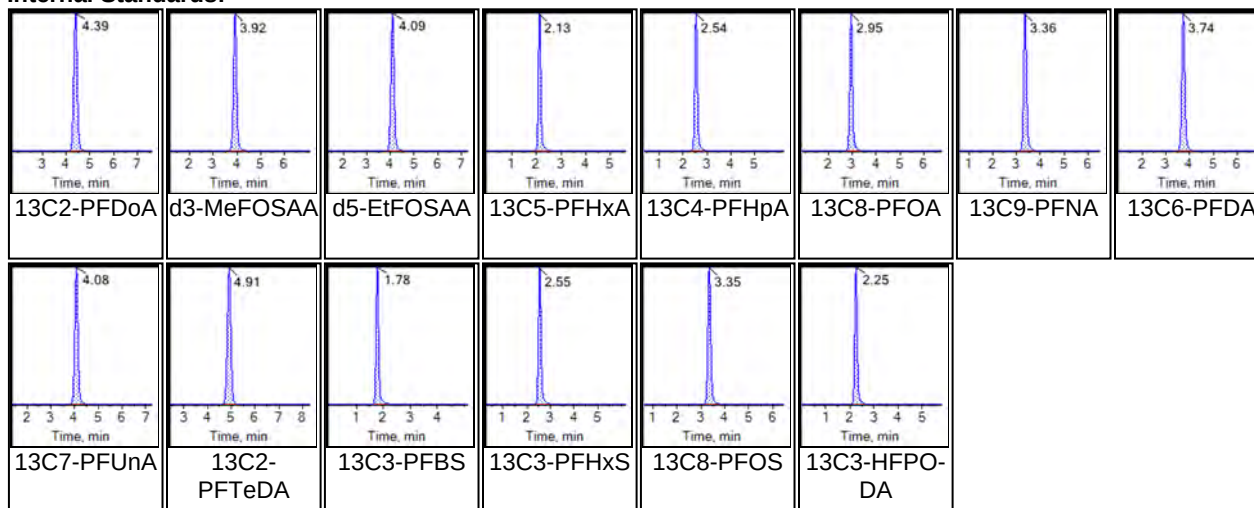
Sample Name	LM41 IB	Injection Vial	11
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:42:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



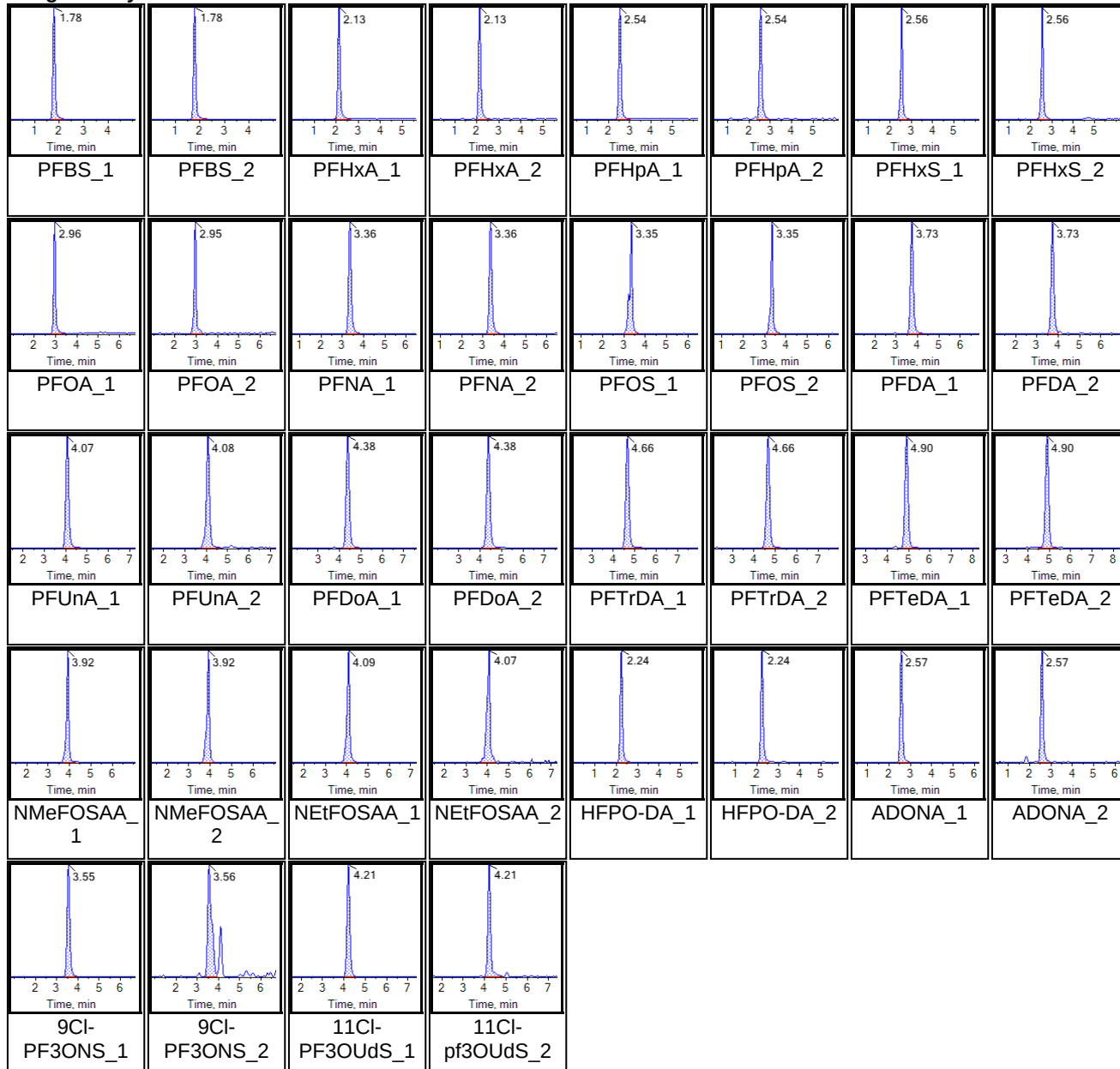
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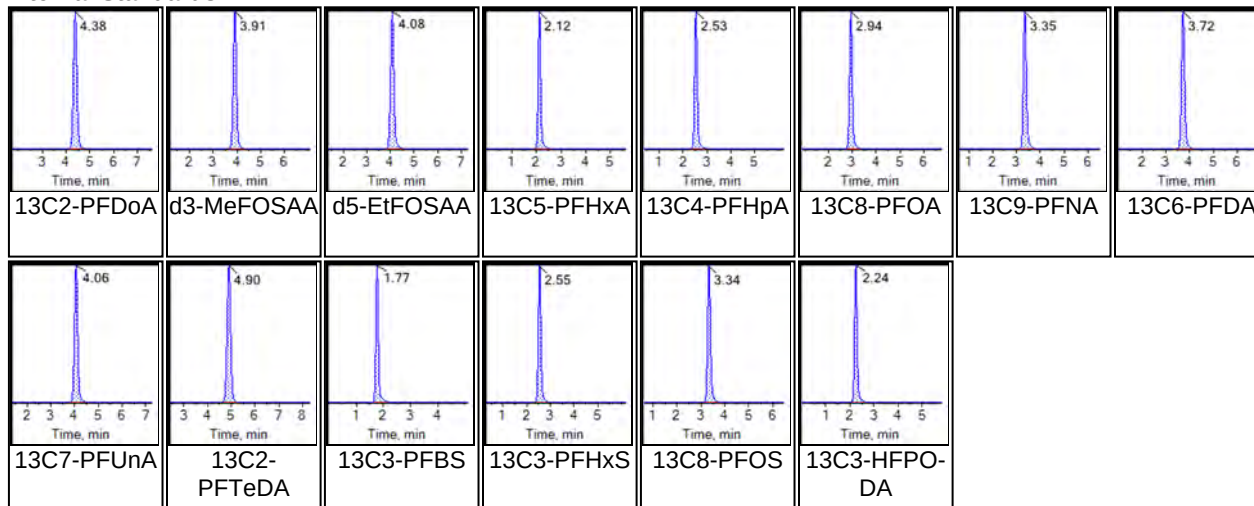
Sample Name	LM42 ICC	Injection Vial	12
Sample ID	ICC	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:55:17 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



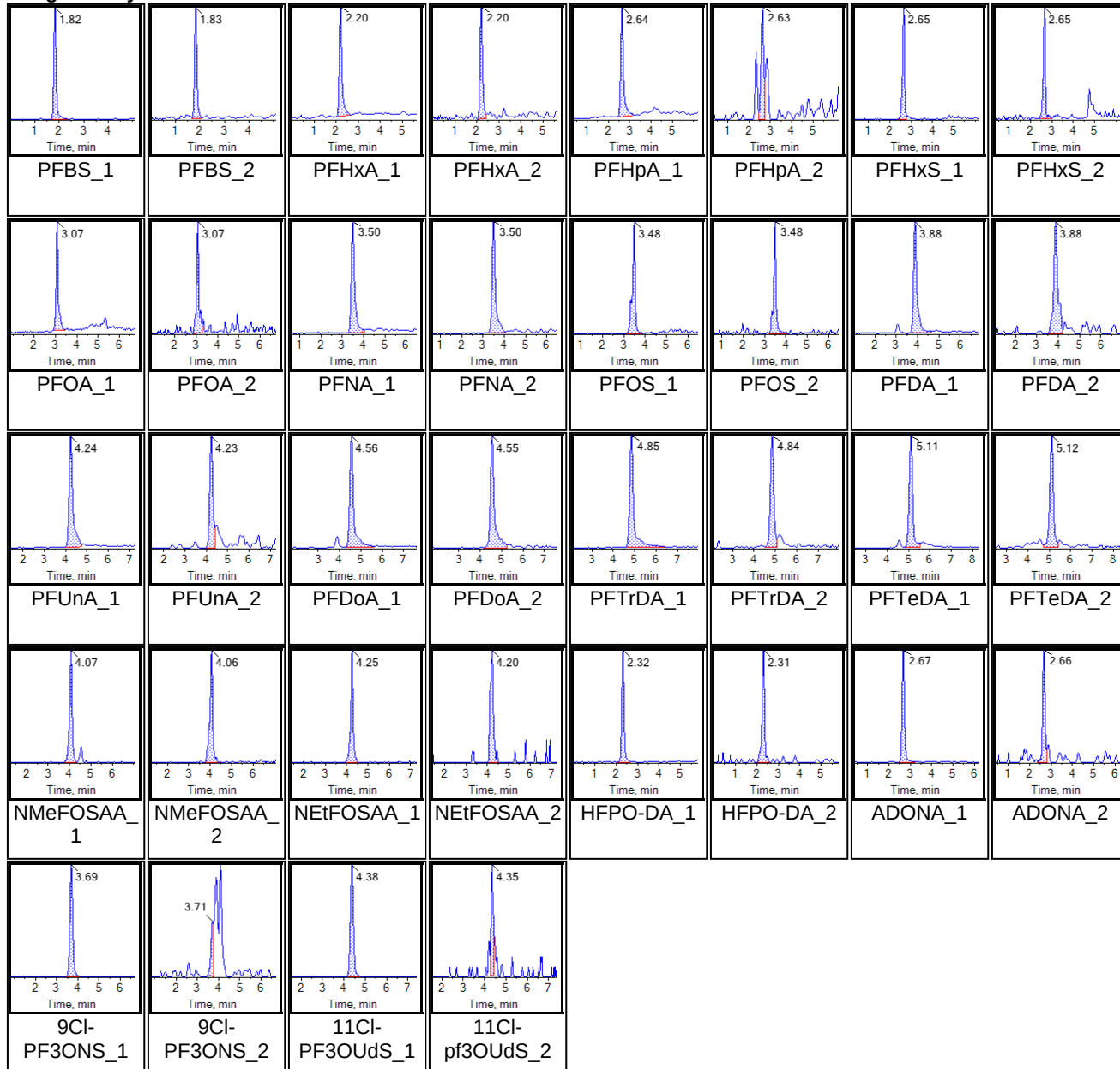
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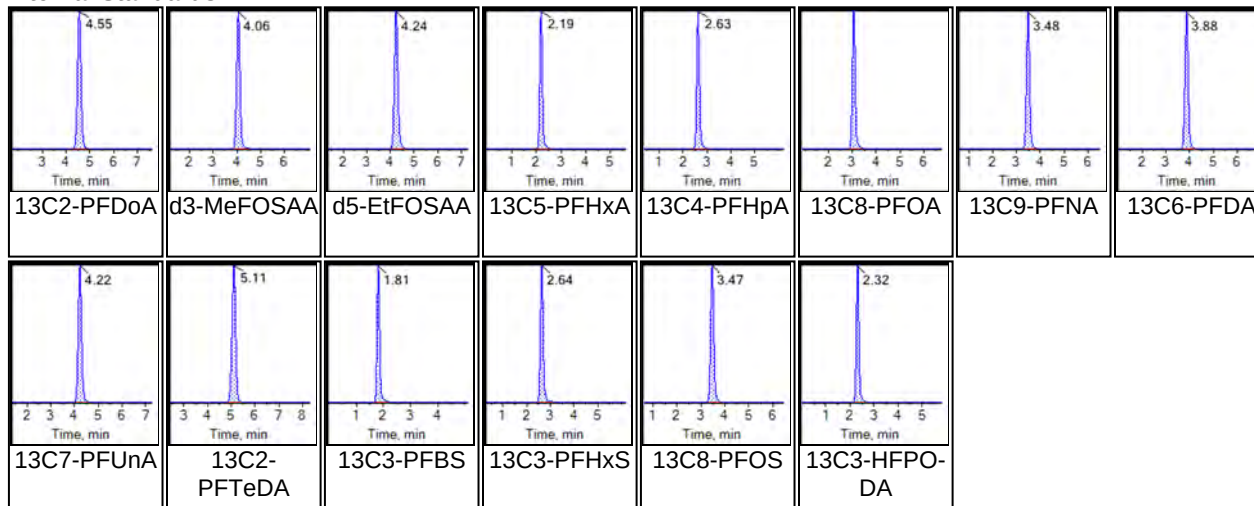
Sample Name	LM34 CCV	Injection Vial	2
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 4:55:30 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



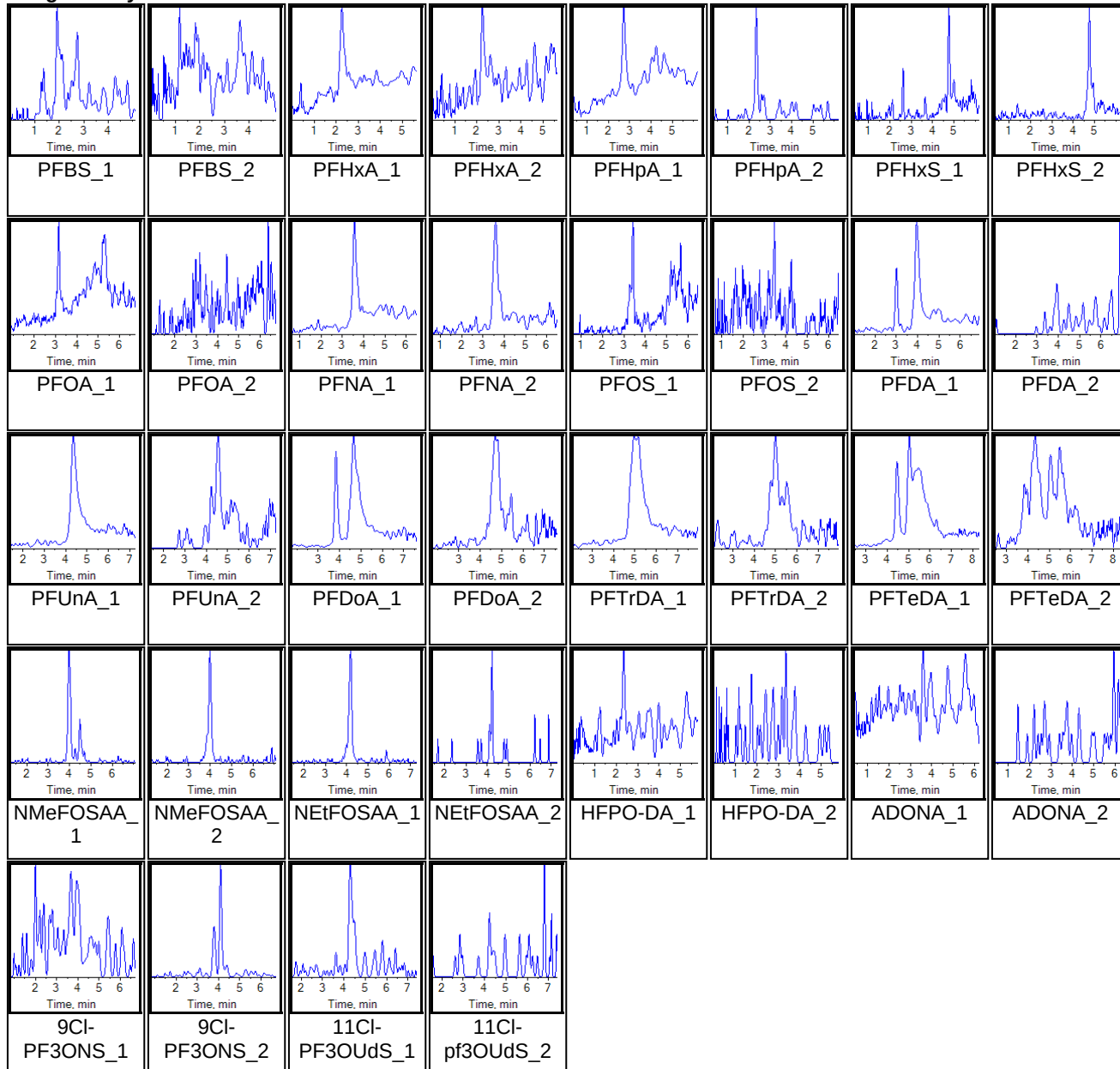
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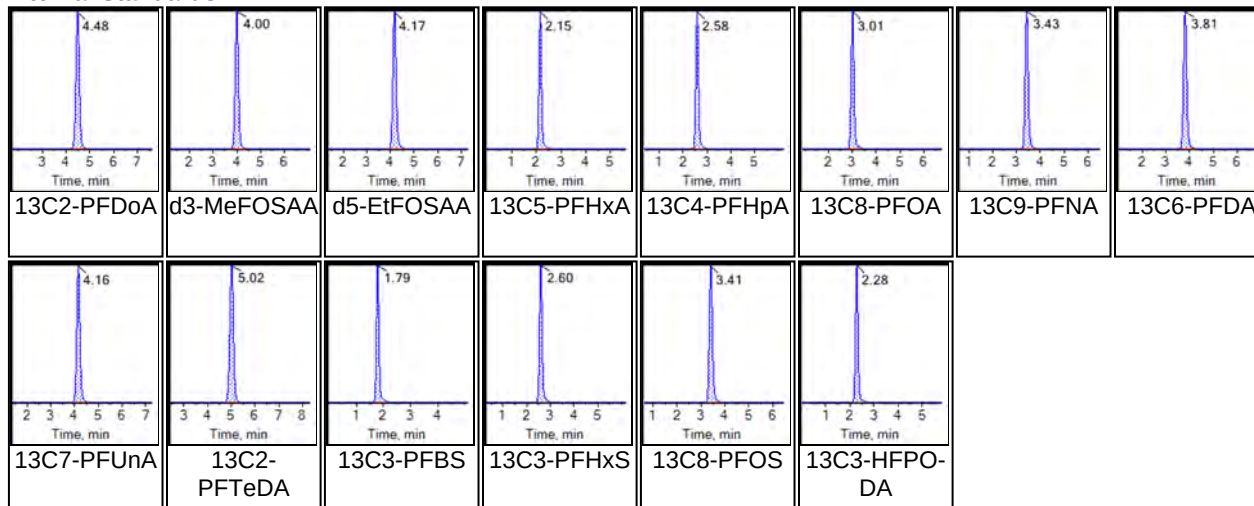
Sample Name	LM41 IB	Injection Vial	4
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:21:13 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



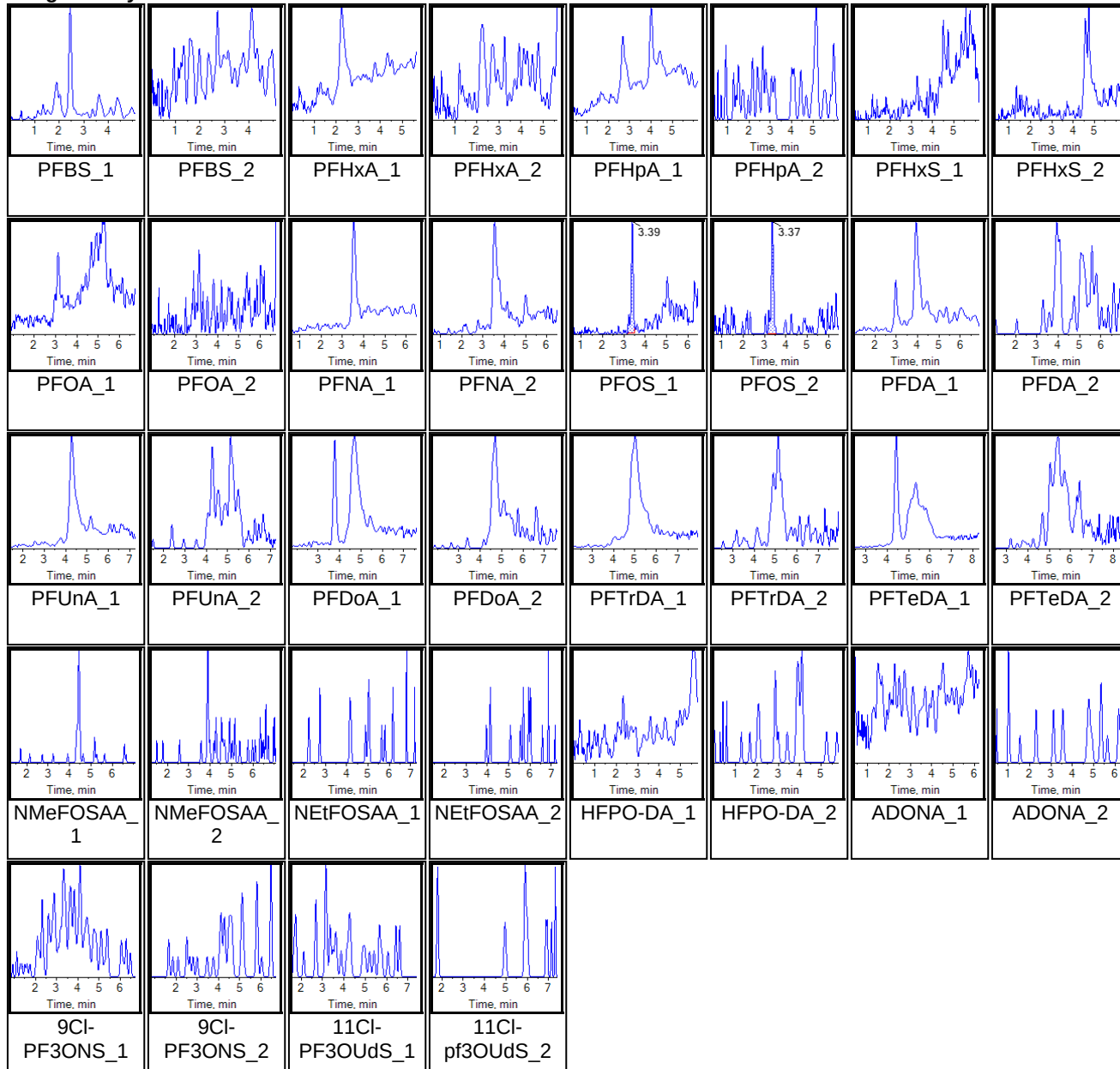
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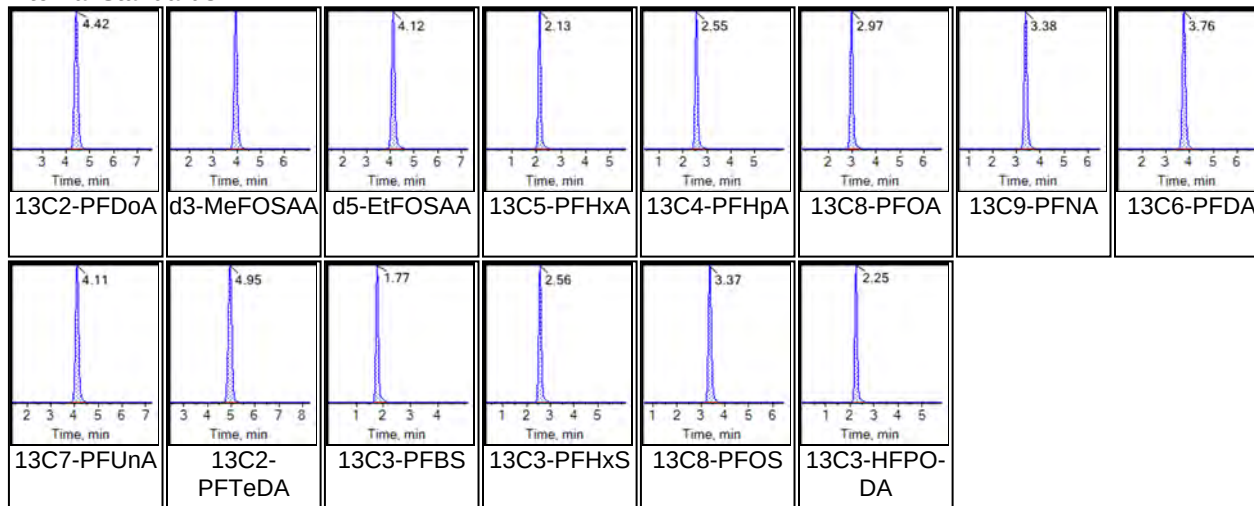
Sample Name	DF129PB-FS(0)	Injection Vial	3
Sample ID	Procedural Blank	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:59:51 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



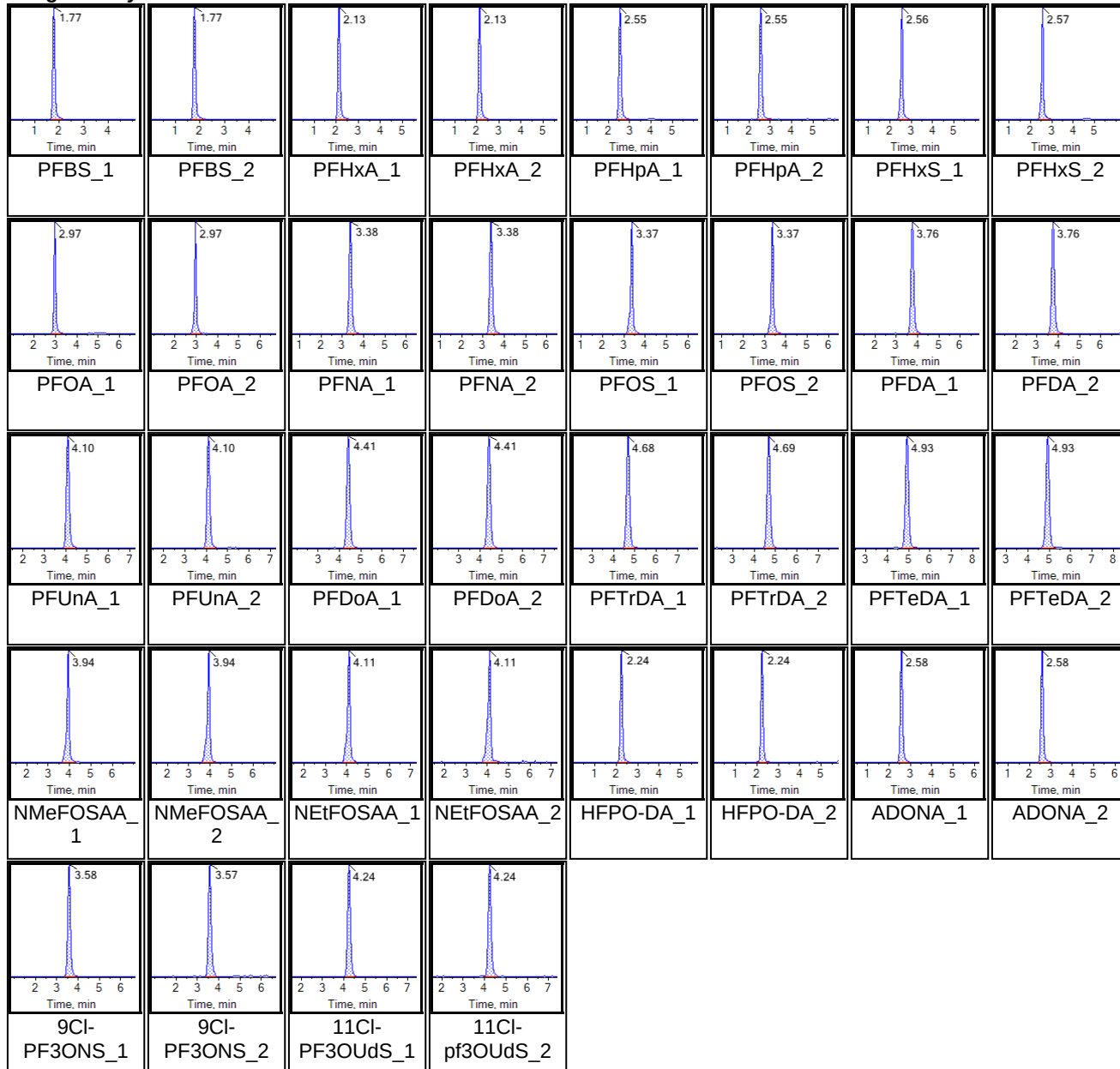
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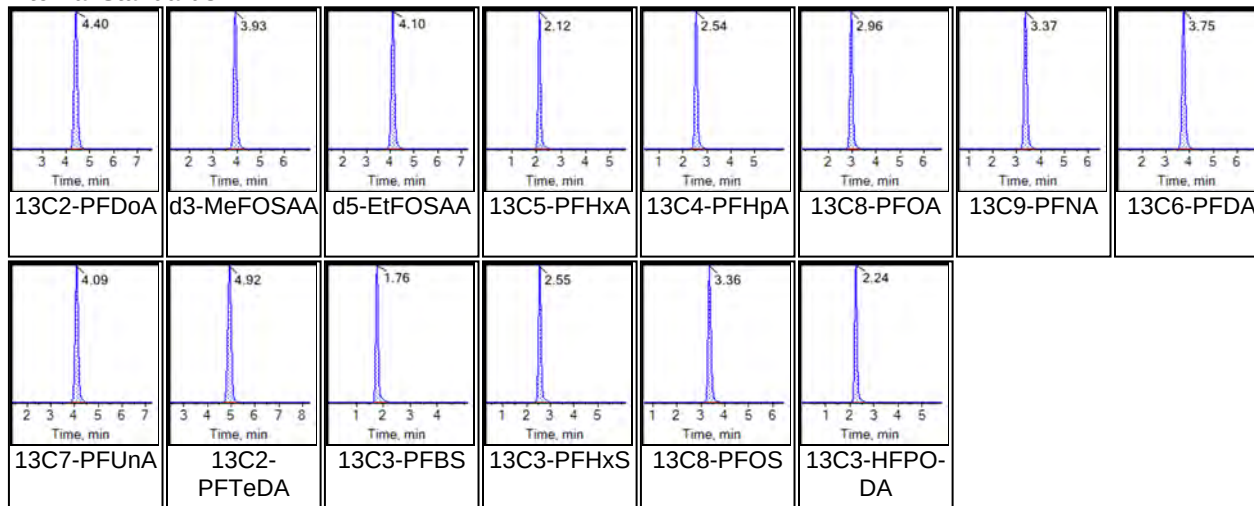
Sample Name	DF130LCS-FS(0)	Injection Vial	4
Sample ID	Laboratory Control Sample	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:12:45 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



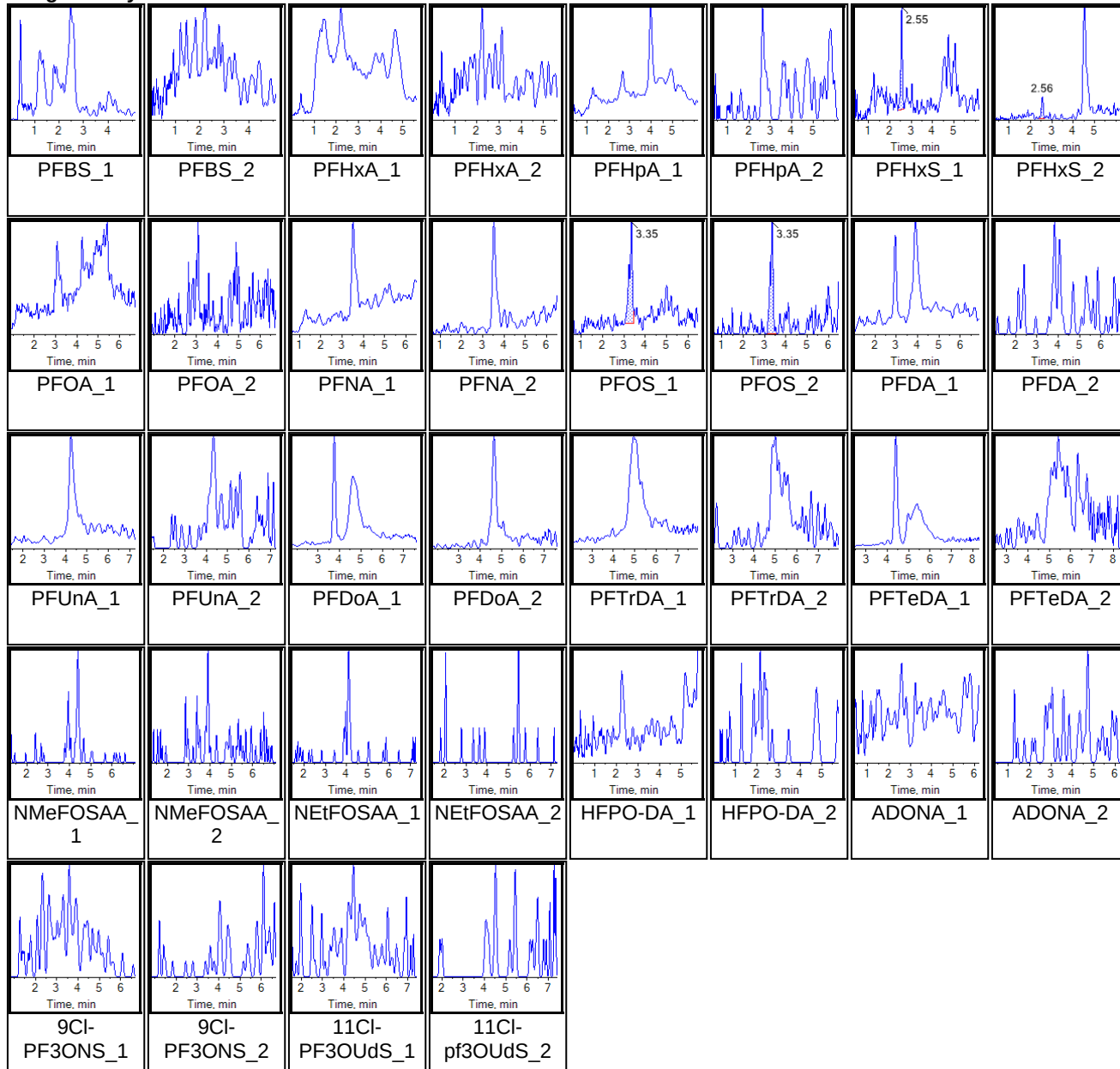
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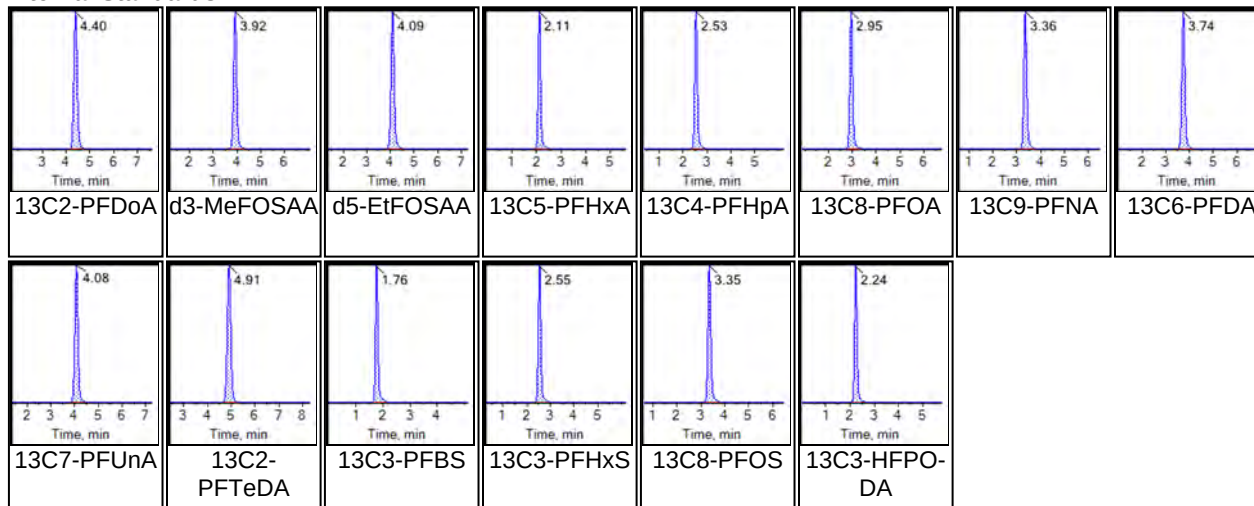
Sample Name	F2834-FS(0)	Injection Vial	5
Sample ID	IR89-IDW-SO-091621	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:25:37 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



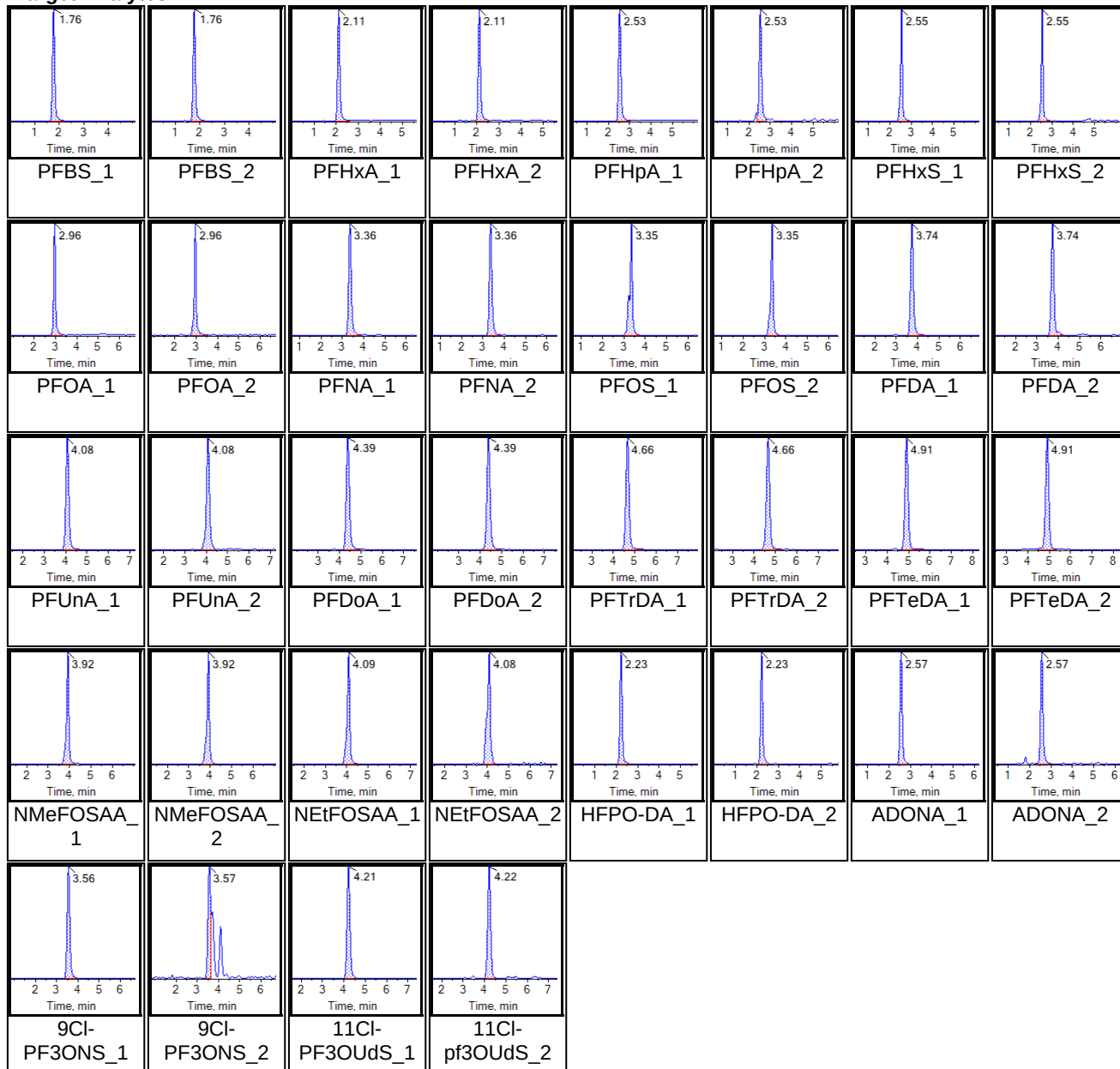
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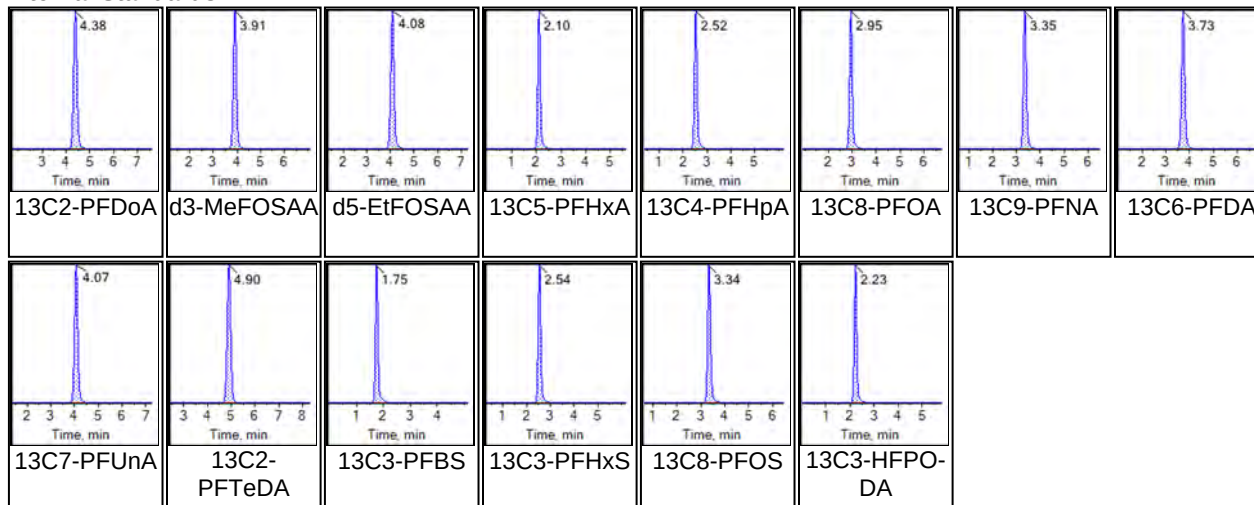
Sample Name	LM37 CCV	Injection Vial	7
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:51:22 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182

Chromatograms

Target Analytes:



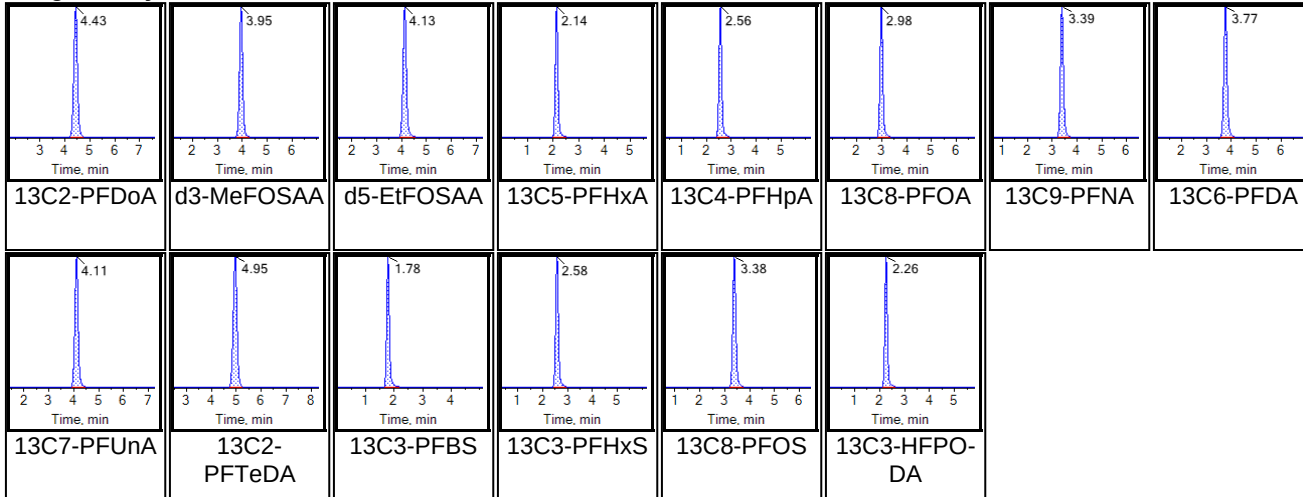
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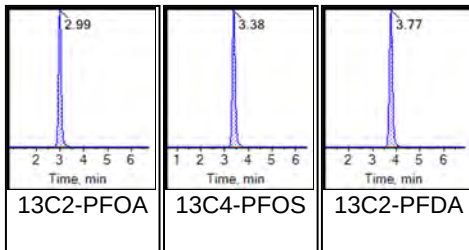
Sample Name	LM33	Injection Vial	3
Sample ID	L1	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 8:59:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



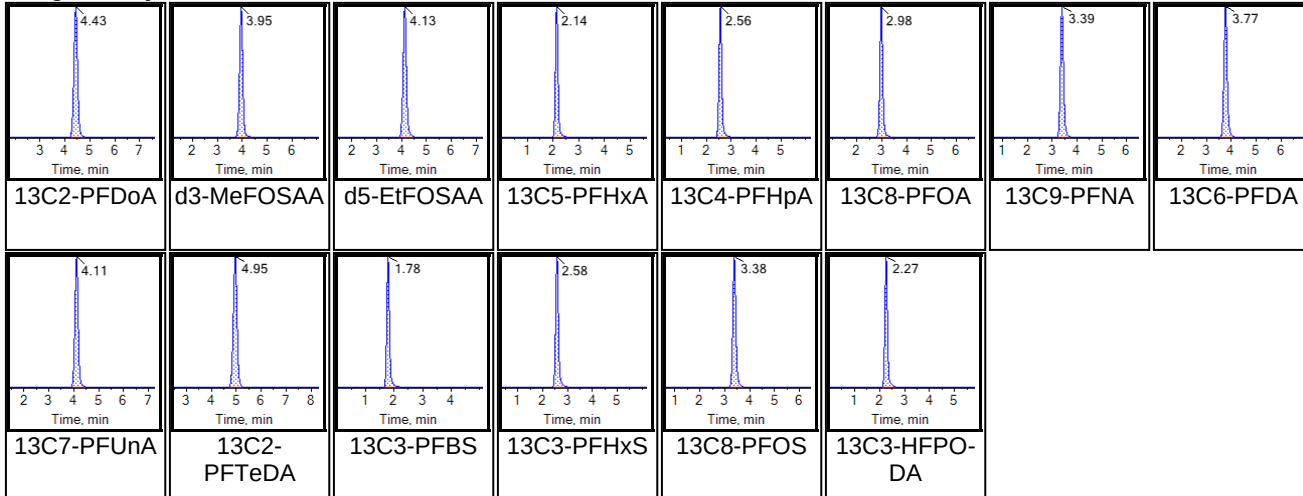
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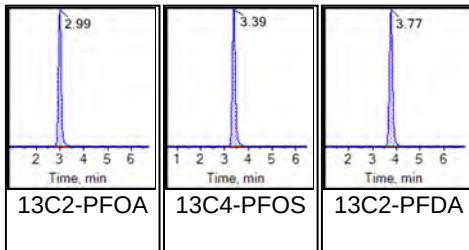
Sample Name	LM34	Injection Vial	4
Sample ID	L2	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:12:15 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



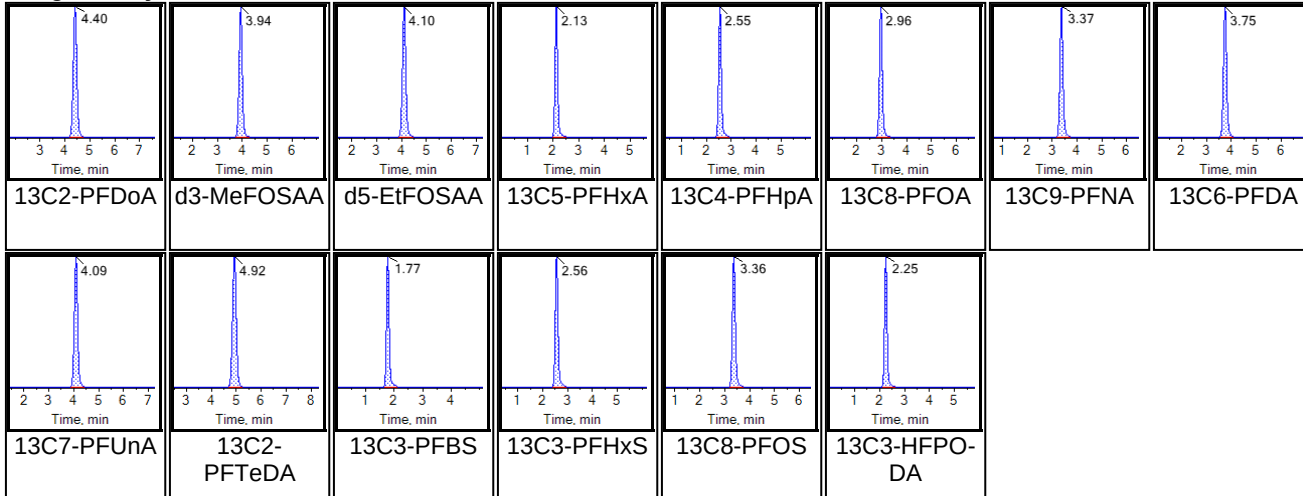
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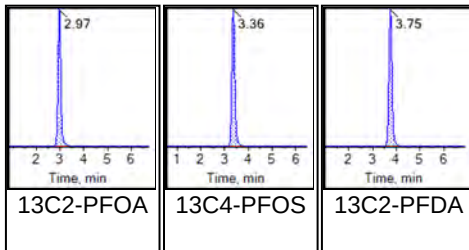
Sample Name	LM35	Injection Vial	5
Sample ID	L3	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:25:08 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

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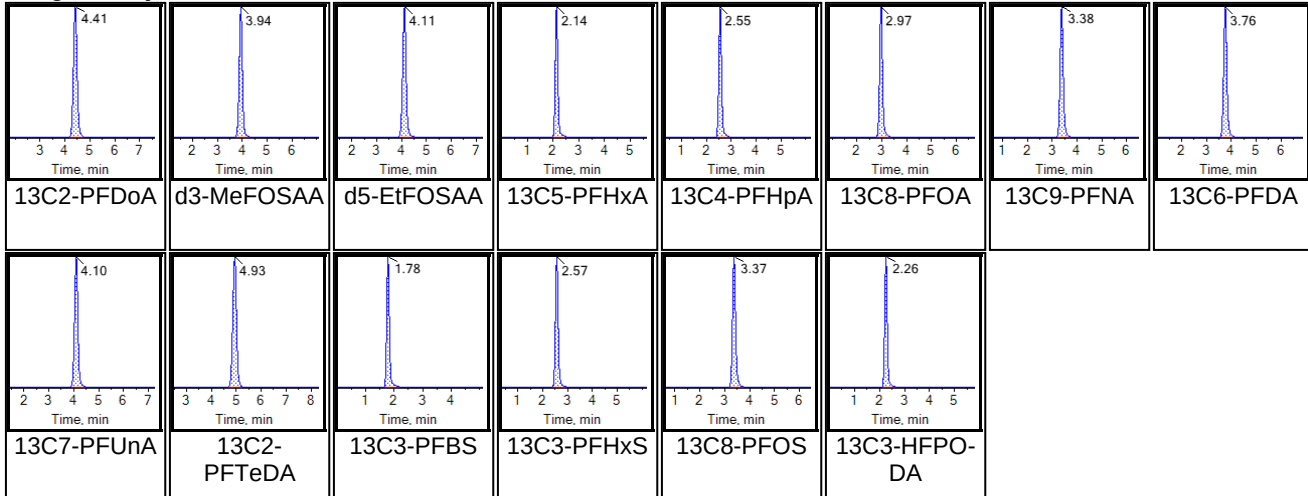
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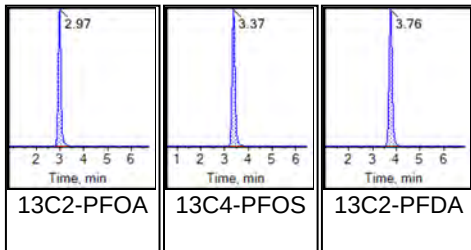
Sample Name	LM36	Injection Vial	6
Sample ID	L4	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:38:00 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

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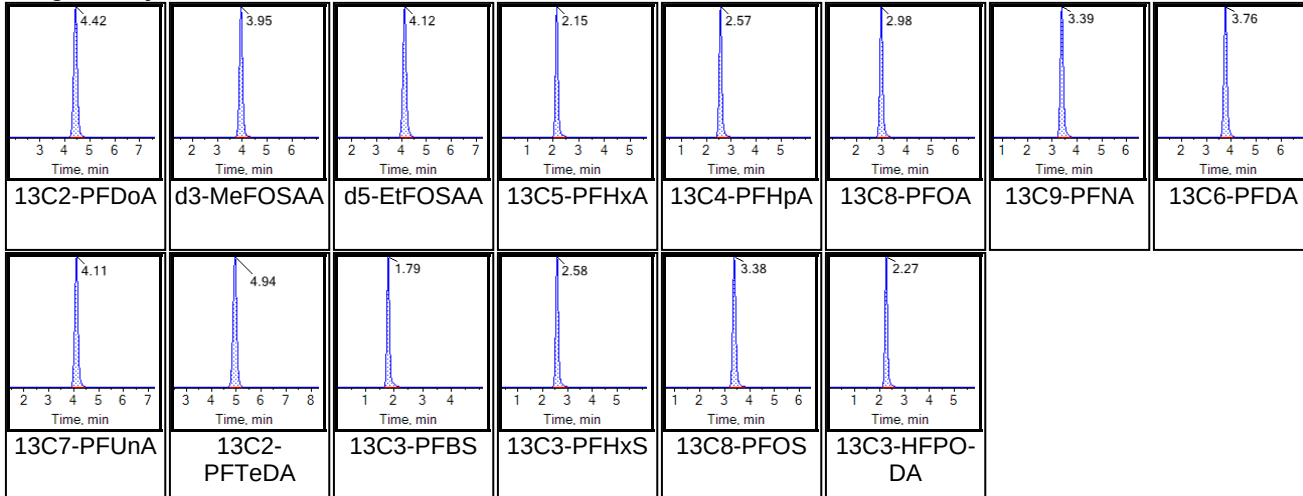
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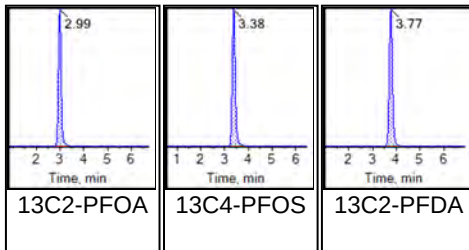
Sample Name	LM37	Injection Vial	7
Sample ID	L5	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 9:50:52 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

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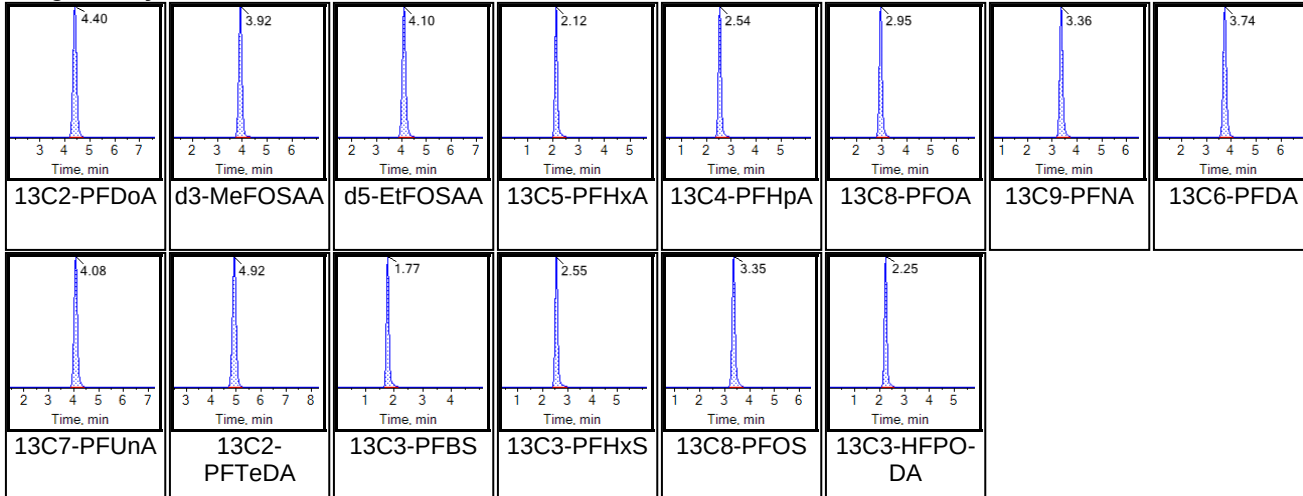
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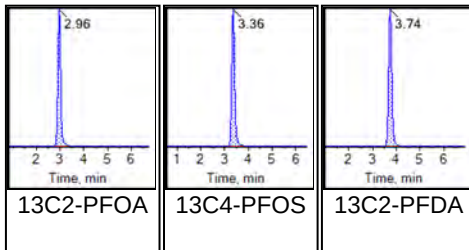
Sample Name	LM38	Injection Vial	8
Sample ID	L6	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:03:45 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



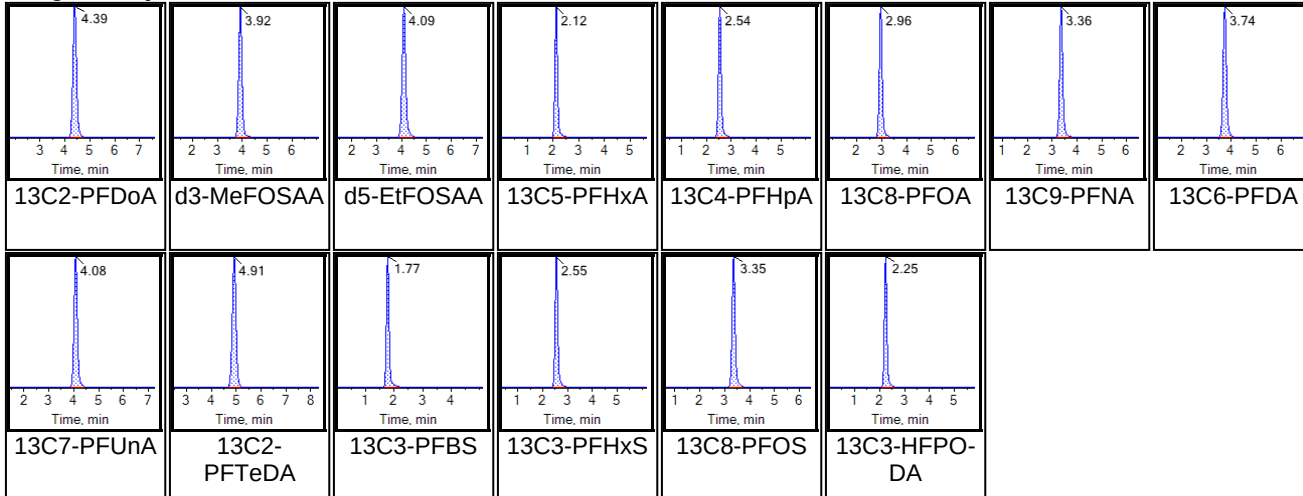
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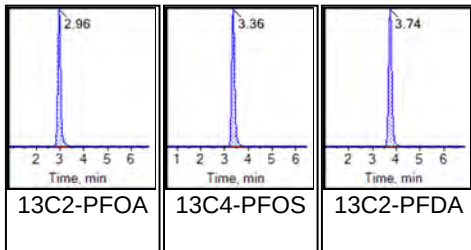
Sample Name	LM39	Injection Vial	9
Sample ID	L7	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:16:37 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



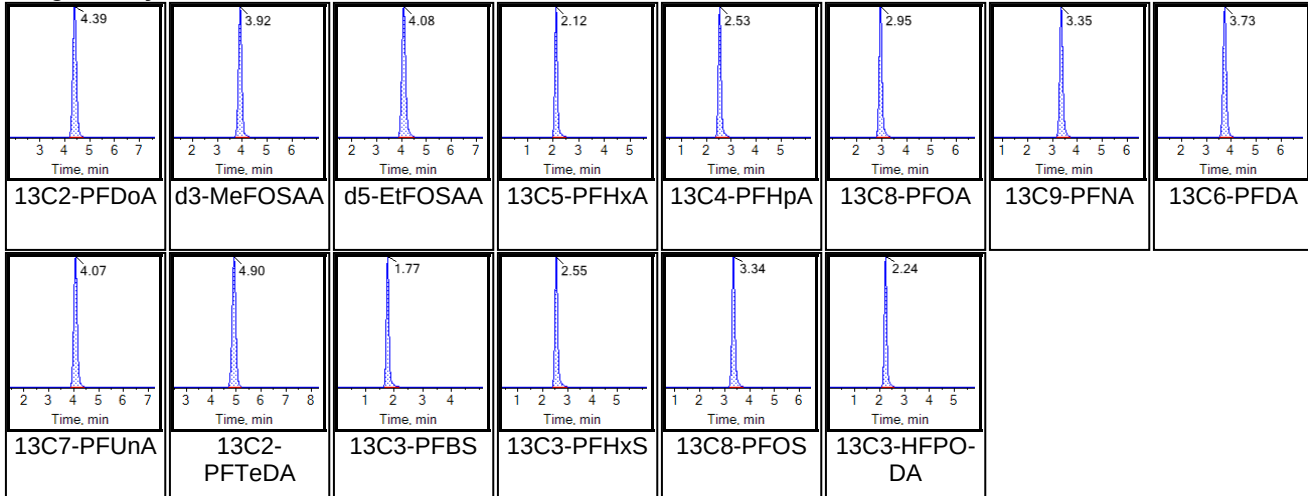
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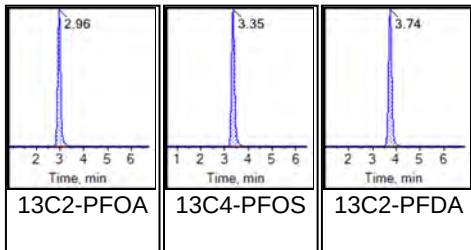
Sample Name	LM40	Injection Vial	10
Sample ID	L8	Injection Volume	10.00
Sample Type	Standard	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:29:29 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



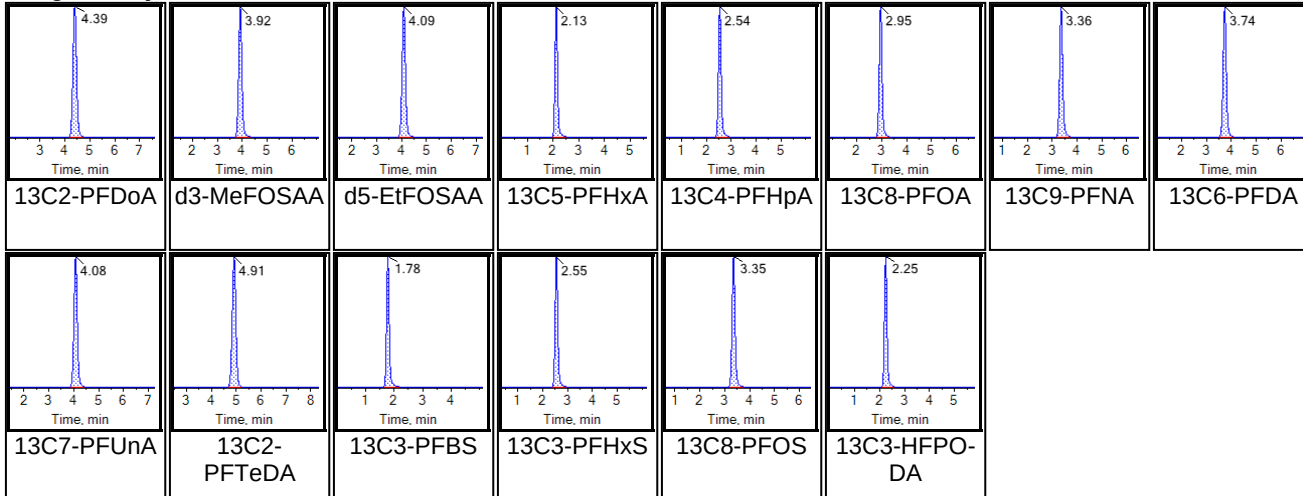
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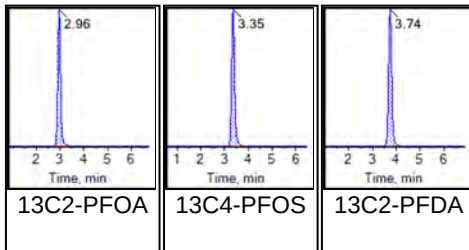
Sample Name	LM41 IB	Injection Vial	11
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:42:24 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



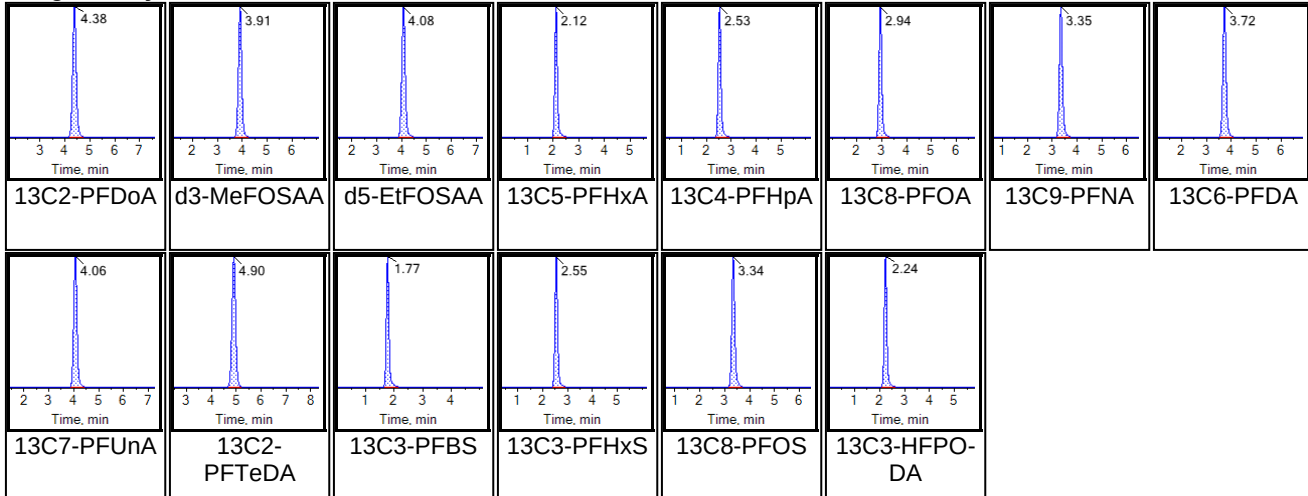
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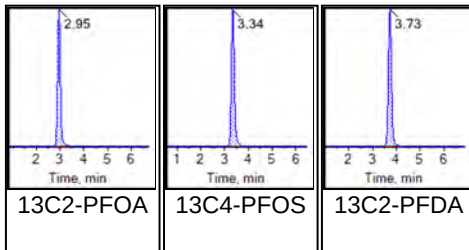
Sample Name	LM42 ICC	Injection Vial	12
Sample ID	ICC	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/22/2021 10:55:17 PM	Data File	AC_09222021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



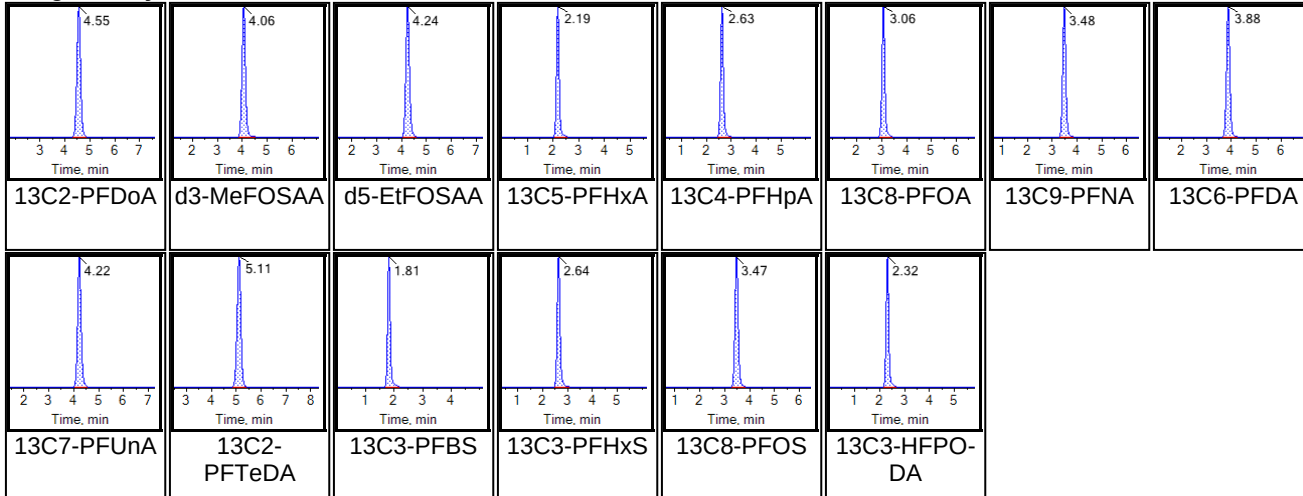
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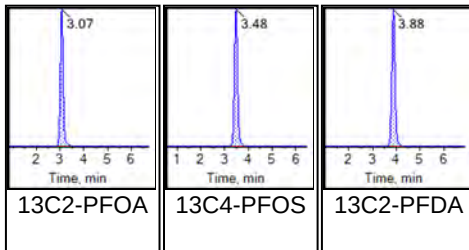
Sample Name	LM34 CCV	Injection Vial	2
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 4:55:30 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



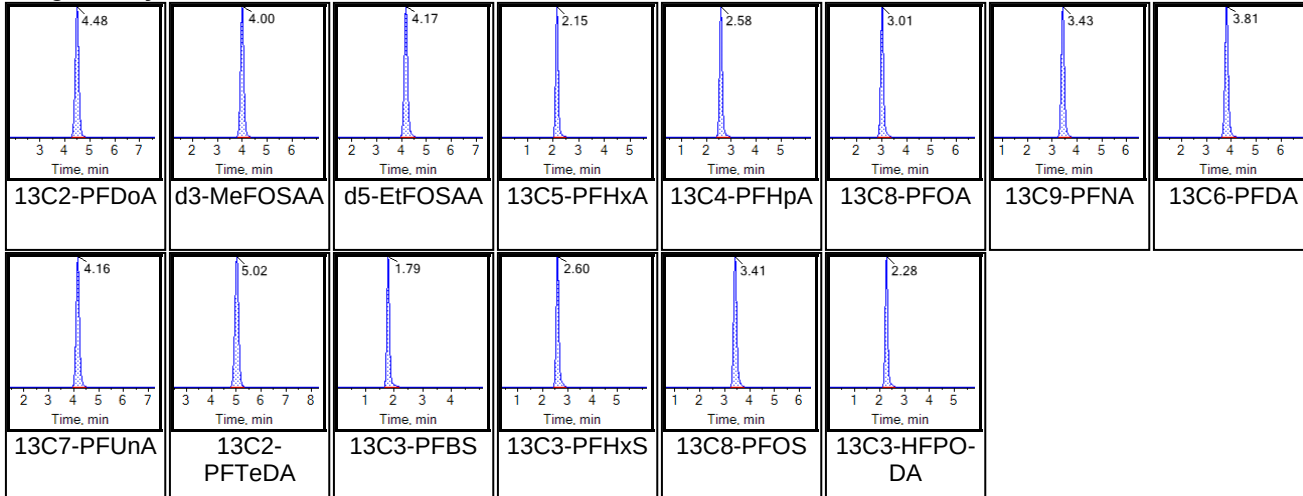
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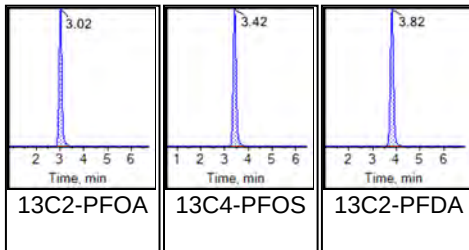
Sample Name	LM41 IB	Injection Vial	4
Sample ID	IB	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:21:13 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

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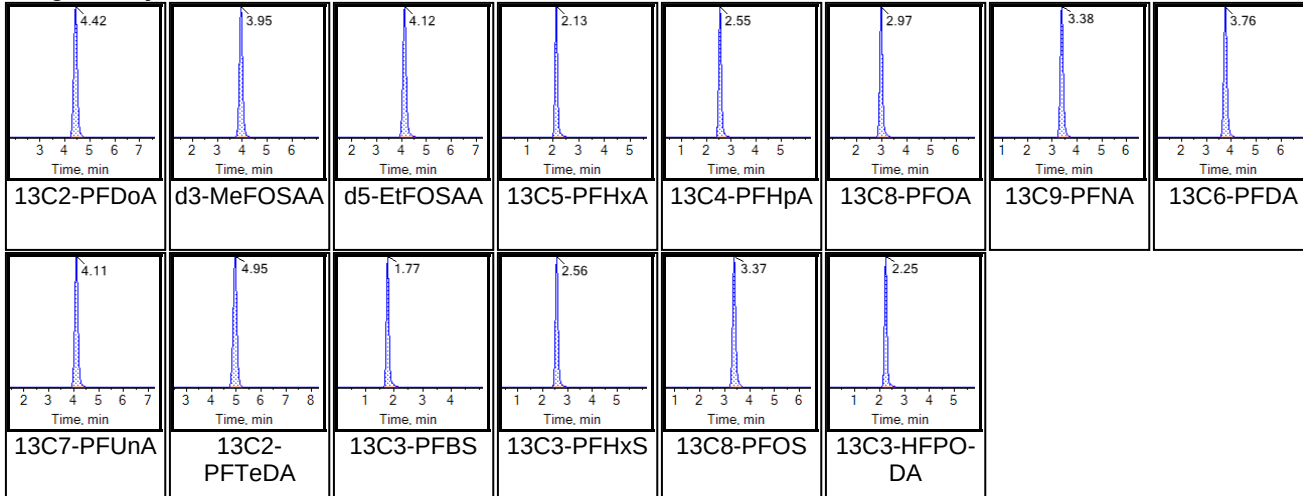
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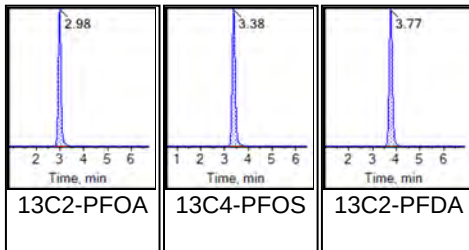
Sample Name	DF129PB-FS(0)	Injection Vial	3
Sample ID	Procedural Blank	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 5:59:51 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



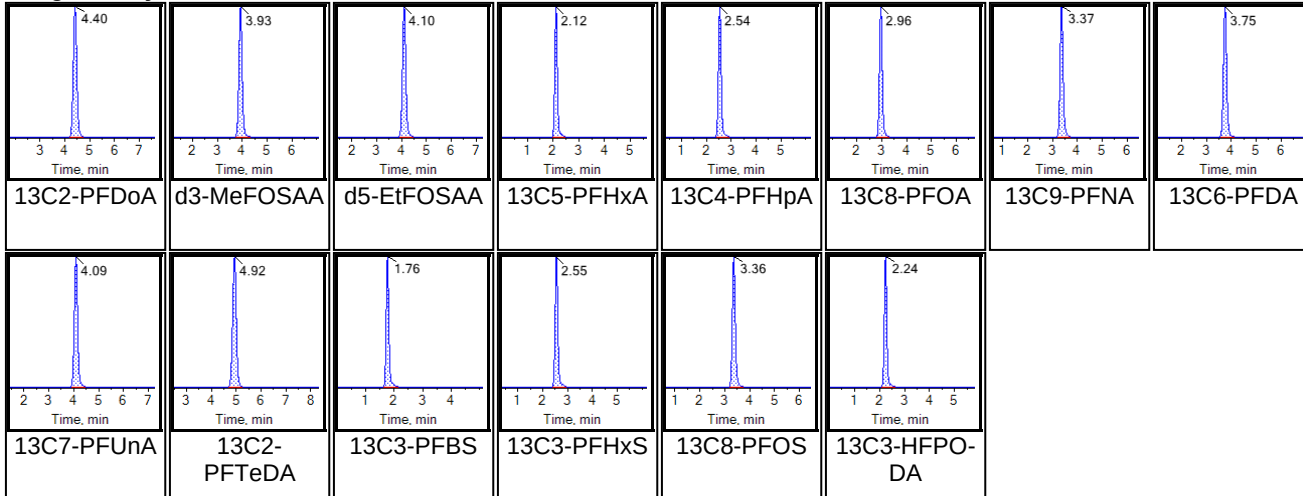
Internal Standards:



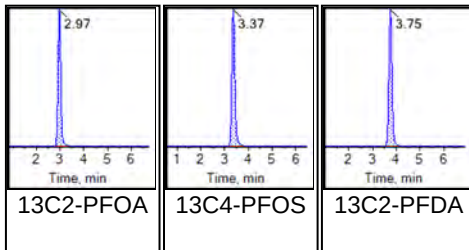
Sample Name	DF130LCS-FS(0)	Injection Vial	4
Sample ID	Laboratory Control Sample	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:12:45 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



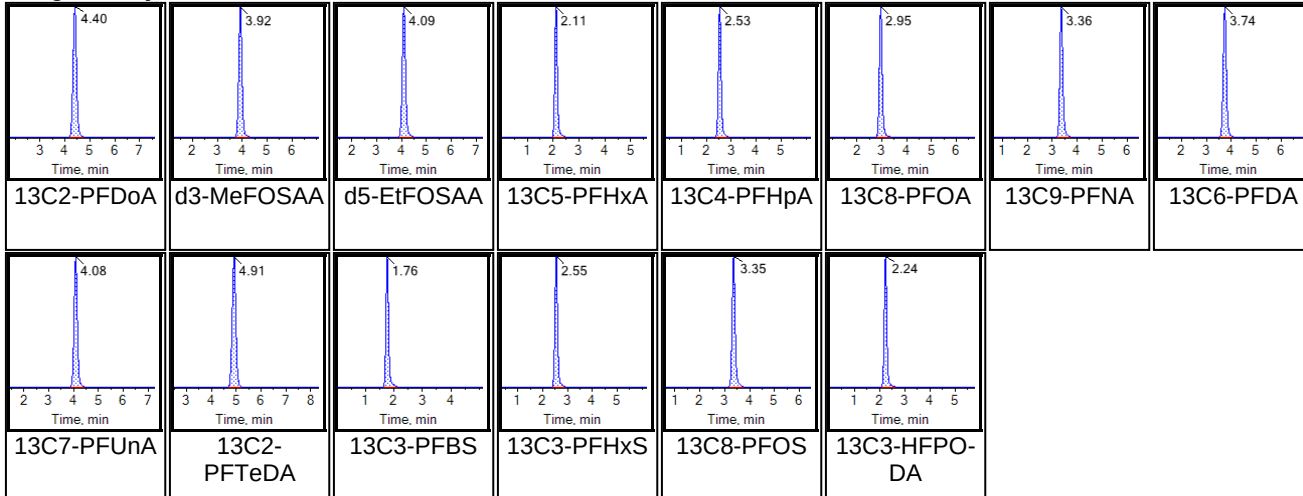
Internal Standards:



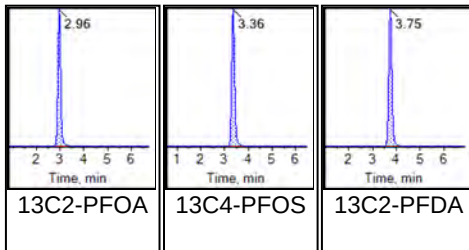
Sample Name	F2834-FS(0)	Injection Vial	5
Sample ID	IR89-IDW-SO-091621	Injection Volume	10.00
Sample Type	Unknown	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:25:37 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



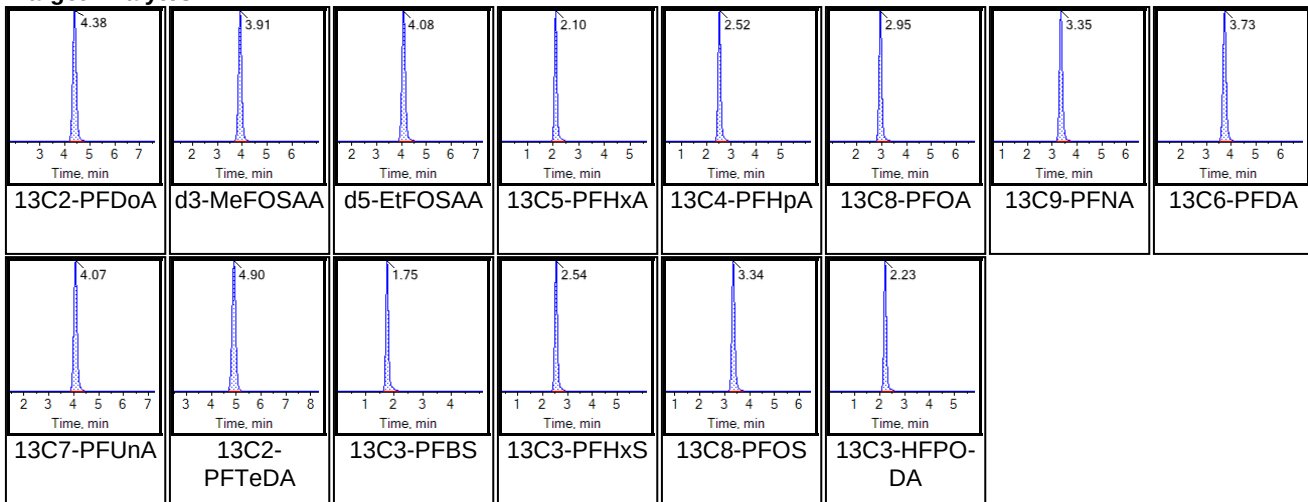
Internal Standards:



Sample Name	LM37 CCV	Injection Vial	7
Sample ID	CCV	Injection Volume	10.00
Sample Type	Quality Control	Instrument Name	QTRAP 5500
Acquisition Date	9/23/2021 6:51:22 PM	Data File	AC_09232021_5-369.wiff
Acquisition Method	5-0369_REV.dam	Result Table	21-1182_SIS

Chromatograms

Target Analytes:



Internal Standards:

