Navy_CLEAN_PFAS_FOIA_request_covers.indd

NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG B850056

Naval Air Station Cecil Field
Jacksonville, Florida

July 2019

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

N60200_009757
NAS CECIL FIELD, FL
SSIC 5000-33c

LABORATORY DATA PACKAGE B850056 NAS CECIL FIELD FL

03/29/2018

MAXXAM ANALYTICAL LABORATORIES

Approved for public release: distribution unlimited.



Prepared for: Earth Toxics Inc

Project: JM10 Cecil

Analytical Data Package
(Level IV)

Analysis: PFOS and PFOA in water (Method 537 mod.)

Maxxam Job #: B850056

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com



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Maxxam Analytics International
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I hereby certify that to the best of my knowledge all analytical data presented in this report:

- Has been checked for completeness.
- Is accurate, legible and error free.
- Has been conducted in accordance with approved SOP's and that all deviations are clearly listed in the Case Narrative.
- This report has been generated in .pdf format.

Review Performed By:

Project Manager

Maxxam
A Bureau Veritas Group Company

Stephanie Pollen
2018.03.29
09:31:18 -04'00'

Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
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1-800-668-0639
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Glossary of Terms

- ***Detection Limit (DL)*** this can also be called ***Method Detection Limit (MDL***): The lowest concentration or amount of the target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value. (Clarification): The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence. At the DL, the false positive rate (Type I error) is 1%.

- ***Limit of Detection (LOD*)**: An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. (Clarification): The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

- ***Limits of Quantitation (LOQ)*** this can also be called ***Reporting Detection Limit (RDL)***: The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. (Clarification): The lowest concentration that produces a quantitative result within specified limits of precision and bias. For DoD projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard.

- ***Acceptance Criteria*** are values used by the laboratory to determine that a process is in control.

- ***Accuracy*** is the degree of agreement of a measured value with the true or expected value.

- ***Calibration Standards*** are a set of solutions containing the analytes of interest at a specified concentration.

- ***Calibration Verification Standard*** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to access whether the initial calibration is still valid

- ***Certified Reference Material*** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.

- ***Internal Standard*** a deuterated or ^{13}C-labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variability.

- ***Isomer*** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.

- ***Method Blank*** is a laboratory control sample using reagents that are known to be free of contamination.

- ***Precision*** is the degree of agreement between the data generated from repetitive measurements under specific conditions.

- ***Quality Assurance*** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.

- ***Quality Control*** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.

- ***RSD*** is the relative standard deviation.

- ***Blank Spike*** is a laboratory control sample that has been fortified with native analytes of interest.

- ***Window Defining Mixture*** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.

- ***RPD*** or Relative Percent Difference. A measure used to compare duplicate sample analysis.

- ***EMPC/NDR –*** Peak detected does not meet ratio criteria and has resulted in a higher detection limit.



1.0 Project Narrative

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Maxxam Job: B850056

Sample Analysis

Samples were initially analyzed on QC batch 5437959 (2018/03/13-15).

The extracted internal standard analyte $^{13}C_2$-Perfluorotetradecanoic acid ($^{13}C_2$-PFTeDA) is used to quantify native Perfluorotridecanoic acid (PFTrDA) & Perfluorotetradecanoic acid (PFTeDA). The recovery observed for this extracted internal standard analyte was below the defined lower control limit (LCL) for the following sample:

GEZ792 *CEF-013-085-0318*

The sample was re-extracted and re-analyzed for the associated native analytes on QC batch 5447939 (2018/03/21), past the method defined hold time. Because of their chemical structures, per- and polyfluorinated alkyl substances (PFAS) are chemically and biologically stable in the environment and resist typical environmental degradation processes. This would suggest the hold time exceedance would not have a significant impact on the data quality. Acceptable $^{13}C_2$-PFTeDA recovery was obtained on re-analysis.

Data Qualifiers

U – Analyte was not detected and is reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.

J – The reported result is an estimated value (e.g., matrix interference was observed, or the analyte was detected at a concentration outside the calibration range).

Sin Chii Chia, B.Sc.
schia@maxxam.ca
Office 905 817 5700

PROJECT NARRATIVE

Maxxam Analytics
Client Project #: JM10 CECIL

Client: Earth Toxics Inc
Client Project: JM10 CECIL

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run	Initial Calibration
PFOS and PFOA in water by SPE/LCMS						
GEZ789	CEF-CS01AR-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15
GEZ790	FB-CEF-CS-030218	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15
GEZ791	CEF-CS10-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15
GEZ792	CEF-013-085-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15 & 2018/03/21
GEZ793	CEF-003-425-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

a) Hold Times: Due to rework requirements, sample GEZ792 was analyzed for PFTrDA and PFTeDA past hold time.

b) Instrument Calibration: all within control limits

c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.

d) All analytes requiring manual intergration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Steph Fallon

Project Manager- Site Assessment and Remediation/ Ultra Trace

2018/03/29
Date



2. Sample Management Records

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2.1 Sample Custody

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Tetra Tech, Inc. **AIR** CHAIN OF CUSTODY | NUMBER No. 3188 | PAGE 1 OF 1

PROJECT NO: JM10	FACILITY: Otata Cecil	PROJECT MANAGER: Megan Vell	PHONE NUMBER
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Dave Skeffer	PHONE NUMBER: 904.334.7260
STANDARD TAT ☒ RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day		CARRIER/WAYBILL NUMBER: Fed Ex 771721094282	

LABORATORY NAME AND CONTACT: Maxxam Analytical / Stephanie
ADDRESS: 6740 Campobello Rd
CITY, STATE: Mississauga Ontario, CA

DATE 2018 YEAR	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS PFOS	COMMENTS
3/2	1205	CEF-CS01AR-0318				GW		2	P	-	2	Cool 4°C
3/2	1220	FB-CEF-CS-030218				QC		2	P	-	2	
3/2	1240	CEF-SS10-0318				GW		2	P	-	2	
3/2	1053	CEF-013-065-0318				GW		2	P	-	2	
3/2	1248	CEF-003-425-0318				GW		2	P	-	2	

06-Mar-18 13:41
Gemarie Balatico
B850056
SEL ENV-1310

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	3-5-18	1600	1. RECEIVED BY Present / Present & Present	2018/03/06	13:41
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: 4.3 | 4.9 | 4.1

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) Custody Seal Present FORM NO. TINUS-001 4/02R



3. Analytical Results

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3.1 Summary Report

Maxxam Analytics International
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Maxxam
A Bureau Veritas Group Company

Your Project #: JM10 CECIL
Site#: JM10 CECIL
Site Location: JM10 CECIL
Your C.O.C. #: 3188

Attention: Rick Carr

Earth Toxics Inc
PO Box 3382
Logan, UT
USA 84321

Report Date: 2018/03/21
Report #: R5049576
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B850056
Received: 2018/03/06, 13:41

Sample Matrix: Ground Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water by SPE/LCMS (1)	4	2018/03/13	2018/03/15	CAM SOP-00894	EPA 537 m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
PFOS and PFOA in water by SPE/LCMS (1)	1	2018/03/13	2018/03/15	CAM SOP-00894	EPA 537 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.

Your Project #: JM10 CECIL
Site#: JM10 CECIL
Site Location: JM10 CECIL
Your C.O.C. #: 3188

Attention: Rick Carr

Earth Toxics Inc
PO Box 3382
Logan, UT
USA 84321

Report Date: 2018/03/21
Report #: R5049576
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B850056
Received: 2018/03/06, 13:41

Encryption Key

Please direct all questions regarding this Certific Project Manager.
Stephanie Pollen, Project Manager
Email: SPollen@maxxam.ca
Phone# (905) 817-5700

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

RESULTS OF ANALYSES OF GROUND WATER

Maxxam ID		GEZ789	GEZ791		GEZ792				
Sampling Date		2018/03/02 12:05	2018/03/02 12:40		2018/03/02 10:53				
COC Number		3188	3188		3188				
	UNITS	CEF-CS01AR-0318	CEF-CS10-0318	QC Batch	CEF-013-085-0318	DL	LOD	LOQ	QC Batch
Miscellaneous Parameters									
EtFOSAA	ng/L	10 U	10 U	5437959	10 U	3.3	10	20	5437959
MeFOSAA	ng/L	10 U	10 U	5437959	10 U	2.9	10	20	5437959
Perfluorobutane Sulfonate (PFBS)	ng/L	15 U	15 U	5437959	21	5.4	15	20	5437959
Perfluoroheptanoic Acid (PFHpA)	ng/L	15 U	15 U	5437959	19 J	7.4	15	20	5437959
Perfluorohexanoic Acid (PFHxA)	ng/L	10 U	10 U	5437959	93	3.5	10	20	5437959
Perfluorohexane Sulfonate (PFHxS)	ng/L	15 U	15 U	5437959	330	5.6	15	20	5437959
Perfluorononanoic Acid (PFNA)	ng/L	18 U	18 U	5437959	18 U	8.7	18	20	5437959
Perfluorotetradecanoic Acid	ng/L	10 U	10 U	5437959	10 U	2.7	10	20	5447939
Perfluorotridecanoic Acid	ng/L	10 U	10 U	5437959	10 U	3.8	10	20	5447939
Perfluoroundecanoic Acid (PFUnA)	ng/L	10 U	10 U	5437959	10 U	2.5	10	20	5437959
Perfluorodecanoic Acid (PFDA)	ng/L	15 U	15 U	5437959	15 U	6.1	15	20	5437959
Perfluorododecanoic Acid (PFDoA)	ng/L	10 U	10 U	5437959	10 U	5.0	10	20	5437959
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	10 U	10 U	5437959	120	3.3	10	20	5437959
Perfluorooctane Sulfonate (PFOS)	ng/L	15 U	15 U	5437959	62	6.0	15	20	5437959
Surrogate Recovery (%)									
13C2-Perfluorodecanoic acid	%	77	81	5437959	90				5437959
13C2-Perfluorododecanoic acid	%	74	76	5437959	66				5437959
13C2-Perfluorohexanoic acid	%	83	85	5437959	93				5437959
13C2-perfluorotetradecanoic acid	%	72	69	5437959	54				5447939
13C2-Perfluoroundecanoic acid	%	75	76	5437959	74				5437959
13C4-Perfluoroheptanoic acid	%	86	87	5437959	96				5437959
13C4-Perfluorooctanesulfonate	%	85	86	5437959	93				5437959
13C4-Perfluorooctanoic acid	%	87	84	5437959	94				5437959
13C5-Perfluorononanoic acid	%	83	81	5437959	97				5437959
18O2-Perfluorohexanesulfonate	%	87	91	5437959	101				5437959
D3-MeFOSAA	%	69	69	5437959	68				5437959
D5-EtFOSAA	%	70	67	5437959	66				5437959

DL = Detection Limit
LOD = Limit of Detection
LOQ = Limit of Quantitation
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Analytics

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

RESULTS OF ANALYSES OF GROUND WATER

Maxxam ID		GEZ793				
Sampling Date		2018/03/02 12:48				
COC Number		3188				
	UNITS	CEF-003-425-0318	DL	LOD	LOQ	QC Batch
Miscellaneous Parameters						
EtFOSAA	ng/L	10 U	3.3	10	20	5437959
MeFOSAA	ng/L	10 U	2.9	10	20	5437959
Perfluorobutane Sulfonate (PFBS)	ng/L	15 U	5.4	15	20	5437959
Perfluoroheptanoic Acid (PFHpA)	ng/L	15 U	7.4	15	20	5437959
Perfluorohexanoic Acid (PFHxA)	ng/L	10 U	3.5	10	20	5437959
Perfluorohexane Sulfonate (PFHxS)	ng/L	15 U	5.6	15	20	5437959
Perfluorononanoic Acid (PFNA)	ng/L	18 U	8.7	18	20	5437959
Perfluorotetradecanoic Acid	ng/L	10 U	2.7	10	20	5437959
Perfluorotridecanoic Acid	ng/L	10 U	3.8	10	20	5437959
Perfluoroundecanoic Acid (PFUnA)	ng/L	10 U	2.5	10	20	5437959
Perfluorodecanoic Acid (PFDA)	ng/L	15 U	6.1	15	20	5437959
Perfluorododecanoic Acid (PFDoA)	ng/L	10 U	5.0	10	20	5437959
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	10 U	3.3	10	20	5437959
Perfluorooctane Sulfonate (PFOS)	ng/L	15 U	6.0	15	20	5437959
Surrogate Recovery (%)						
13C2-Perfluorodecanoic acid	%	90				5437959
13C2-Perfluorododecanoic acid	%	76				5437959
13C2-Perfluorohexanoic acid	%	91				5437959
13C2-perfluorotetradecanoic acid	%	77				5437959
13C2-Perfluoroundecanoic acid	%	78				5437959
13C4-Perfluoroheptanoic acid	%	94				5437959
13C4-Perfluorooctanesulfonate	%	93				5437959
13C4-Perfluorooctanoic acid	%	94				5437959
13C5-Perfluorononanoic acid	%	96				5437959
18O2-Perfluorohexanesulfonate	%	91				5437959
D3-MeFOSAA	%	78				5437959
D5-EtFOSAA	%	73				5437959

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Maxxam Analytics

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

RESULTS OF ANALYSES OF WATER

Maxxam ID		GEZ790				
Sampling Date		2018/03/02 12:20				
COC Number		3188				
	UNITS	FB-CEF-CS-030218	DL	LOD	LOQ	QC Batch
Miscellaneous Parameters						
EtFOSAA	ng/L	10 U	3.3	10	20	5437959
MeFOSAA	ng/L	10 U	2.9	10	20	5437959
Perfluorobutane Sulfonate (PFBS)	ng/L	15 U	5.4	15	20	5437959
Perfluoroheptanoic Acid (PFHpA)	ng/L	15 U	7.4	15	20	5437959
Perfluorohexanoic Acid (PFHxA)	ng/L	10 U	3.5	10	20	5437959
Perfluorohexane Sulfonate (PFHxS)	ng/L	15 U	5.6	15	20	5437959
Perfluorononanoic Acid (PFNA)	ng/L	18 U	8.7	18	20	5437959
Perfluorotetradecanoic Acid	ng/L	10 U	2.7	10	20	5437959
Perfluorotridecanoic Acid	ng/L	10 U	3.8	10	20	5437959
Perfluoroundecanoic Acid (PFUnA)	ng/L	10 U	2.5	10	20	5437959
Perfluorodecanoic Acid (PFDA)	ng/L	15 U	6.1	15	20	5437959
Perfluorododecanoic Acid (PFDoA)	ng/L	10 U	5.0	10	20	5437959
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	10 U	3.3	10	20	5437959
Perfluorooctane Sulfonate (PFOS)	ng/L	15 U	6.0	15	20	5437959
Surrogate Recovery (%)						
13C2-Perfluorodecanoic acid	%	81				5437959
13C2-Perfluorododecanoic acid	%	77				5437959
13C2-Perfluorohexanoic acid	%	86				5437959
13C2-perfluorotetradecanoic acid	%	69				5437959
13C2-Perfluoroundecanoic acid	%	82				5437959
13C4-Perfluoroheptanoic acid	%	89				5437959
13C4-Perfluorooctanesulfonate	%	83				5437959
13C4-Perfluorooctanoic acid	%	85				5437959
13C5-Perfluorononanoic acid	%	90				5437959
18O2-Perfluorohexanesulfonate	%	85				5437959
D3-MeFOSAA	%	72				5437959
D5-EtFOSAA	%	76				5437959

DL = Detection Limit
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QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Analytics

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

TEST SUMMARY

Maxxam ID: GEZ789 **Collected:** 2018/03/02
Sample ID: CEF-CS01AR-0318 **Shipped:**
Matrix: Ground Water **Received:** 2018/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5437959	2018/03/13	2018/03/15	Marian Godax

Maxxam ID: GEZ790 **Collected:** 2018/03/02
Sample ID: FB-CEF-CS-030218 **Shipped:**
Matrix: Water **Received:** 2018/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5437959	2018/03/13	2018/03/15	Marian Godax

Maxxam ID: GEZ791 **Collected:** 2018/03/02
Sample ID: CEF-CS10-0318 **Shipped:**
Matrix: Ground Water **Received:** 2018/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5437959	2018/03/13	2018/03/15	Marian Godax

Maxxam ID: GEZ792 **Collected:** 2018/03/02
Sample ID: CEF-013-085-0318 **Shipped:**
Matrix: Ground Water **Received:** 2018/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5437959	2018/03/13	2018/03/15	Marian Godax

Maxxam ID: GEZ793 **Collected:** 2018/03/02
Sample ID: CEF-003-425-0318 **Shipped:**
Matrix: Ground Water **Received:** 2018/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFOS and PFOA in water by SPE/LCMS	LCMS	5437959	2018/03/13	2018/03/15	Marian Godax

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.4°C

Results reported in ng/L as per client request.

Sample GEZ792, PFOS and PFOA in water by SPE/LCMS: Test repeated.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5437959	M_G	Spiked Blank	13C2-Perfluorodecanoic acid	2018/03/15		91	%	50 - 150
			13C2-Perfluorododecanoic acid	2018/03/15		86	%	50 - 150
			13C2-Perfluorohexanoic acid	2018/03/15		93	%	50 - 150
			13C2-perfluorotetradecanoic acid	2018/03/15		87	%	50 - 150
			13C2-Perfluoroundecanoic acid	2018/03/15		94	%	50 - 150
			13C4-Perfluoroheptanoic acid	2018/03/15		95	%	50 - 150
			13C4-Perfluorooctanesulfonate	2018/03/15		102	%	50 - 150
			13C4-Perfluorooctanoic acid	2018/03/15		96	%	50 - 150
			13C5-Perfluorononanoic acid	2018/03/15		96	%	50 - 150
			18O2-Perfluorohexanesulfonate	2018/03/15		100	%	50 - 150
			D3-MeFOSAA	2018/03/15		82	%	50 - 150
			D5-EtFOSAA	2018/03/15		81	%	50 - 150
			EtFOSAA	2018/03/15		98	%	73 - 128
			MeFOSAA	2018/03/15		103	%	77 - 127
			Perfluorobutane Sulfonate (PFBS)	2018/03/15		100	%	65 - 135
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15		101	%	73 - 129
			Perfluorohexanoic Acid (PFHxA)	2018/03/15		102	%	74 - 129
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15		99	%	67 - 132
			Perfluorononanoic Acid (PFNA)	2018/03/15		102	%	72 - 131
			Perfluorotetradecanoic Acid	2018/03/15		98	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/15		98	%	67 - 143
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15		102	%	71 - 133
			Perfluorodecanoic Acid (PFDA)	2018/03/15		102	%	71 - 133
			Perfluorododecanoic Acid (PFDoA)	2018/03/15		100	%	71 - 131
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15		101	%	71 - 130
			Perfluorooctane Sulfonate (PFOS)	2018/03/15		94	%	72 - 131
5437959	M_G	Spiked Blank DUP	13C2-Perfluorodecanoic acid	2018/03/15		91	%	50 - 150
			13C2-Perfluorododecanoic acid	2018/03/15		86	%	50 - 150
			13C2-Perfluorohexanoic acid	2018/03/15		90	%	50 - 150
			13C2-perfluorotetradecanoic acid	2018/03/15		86	%	50 - 150
			13C2-Perfluoroundecanoic acid	2018/03/15		91	%	50 - 150
			13C4-Perfluoroheptanoic acid	2018/03/15		89	%	50 - 150
			13C4-Perfluorooctanesulfonate	2018/03/15		97	%	50 - 150
			13C4-Perfluorooctanoic acid	2018/03/15		93	%	50 - 150
			13C5-Perfluorononanoic acid	2018/03/15		92	%	50 - 150
			18O2-Perfluorohexanesulfonate	2018/03/15		92	%	50 - 150
			D3-MeFOSAA	2018/03/15		81	%	50 - 150
			D5-EtFOSAA	2018/03/15		81	%	50 - 150
			EtFOSAA	2018/03/15		92	%	73 - 128
			MeFOSAA	2018/03/15		95	%	77 - 127
			Perfluorobutane Sulfonate (PFBS)	2018/03/15		95	%	65 - 135
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15		98	%	73 - 129
			Perfluorohexanoic Acid (PFHxA)	2018/03/15		98	%	74 - 129
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15		96	%	67 - 132
			Perfluorononanoic Acid (PFNA)	2018/03/15		97	%	72 - 131
			Perfluorotetradecanoic Acid	2018/03/15		96	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/15		95	%	67 - 143
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15		97	%	71 - 133
			Perfluorodecanoic Acid (PFDA)	2018/03/15		96	%	71 - 133
			Perfluorododecanoic Acid (PFDoA)	2018/03/15		97	%	71 - 131
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15		93	%	71 - 130
			Perfluorooctane Sulfonate (PFOS)	2018/03/15		89	%	72 - 131
5437959	M_G	RPD	EtFOSAA	2018/03/15	6.4		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			MeFOSAA	2018/03/15	7.8		%	30
			Perfluorobutane Sulfonate (PFBS)	2018/03/15	4.8		%	30
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15	3.6		%	30
			Perfluorohexanoic Acid (PFHxA)	2018/03/15	4.2		%	30
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15	3.7		%	30
			Perfluorononanoic Acid (PFNA)	2018/03/15	4.9		%	30
			Perfluorotetradecanoic Acid	2018/03/15	2.0		%	30
			Perfluorotridecanoic Acid	2018/03/15	3.0		%	30
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15	4.7		%	30
			Perfluorodecanoic Acid (PFDA)	2018/03/15	5.2		%	30
			Perfluorododecanoic Acid (PFDoA)	2018/03/15	3.2		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15	8.0		%	30
			Perfluorooctane Sulfonate (PFOS)	2018/03/15	4.9		%	30
5437959	M_G	Method Blank	13C2-Perfluorodecanoic acid	2018/03/15		89	%	50 - 150
			13C2-Perfluorododecanoic acid	2018/03/15		79	%	50 - 150
			13C2-Perfluorohexanoic acid	2018/03/15		90	%	50 - 150
			13C2-perfluorotetradecanoic acid	2018/03/15		59	%	50 - 150
			13C2-Perfluoroundecanoic acid	2018/03/15		81	%	50 - 150
			13C4-Perfluoroheptanoic acid	2018/03/15		95	%	50 - 150
			13C4-Perfluorooctanesulfonate	2018/03/15		91	%	50 - 150
			13C4-Perfluorooctanoic acid	2018/03/15		91	%	50 - 150
			13C5-Perfluorononanoic acid	2018/03/15		95	%	50 - 150
			18O2-Perfluorohexanesulfonate	2018/03/15		93	%	50 - 150
			D3-MeFOSAA	2018/03/15		80	%	50 - 150
			D5-EtFOSAA	2018/03/15		79	%	50 - 150
			EtFOSAA	2018/03/15	10 U, LOD=10		ng/L	
			MeFOSAA	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorobutane Sulfonate (PFBS)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluorohexanoic Acid (PFHxA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluorononanoic Acid (PFNA)	2018/03/15	18 U, LOD=18		ng/L	
			Perfluorotetradecanoic Acid	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorotridecanoic Acid	2018/03/15	10 U, LOD=10		ng/L	
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorodecanoic Acid (PFDA)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluorododecanoic Acid (PFDoA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorooctane Sulfonate (PFOS)	2018/03/15	15 U, LOD=15		ng/L	

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Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5447939	DZU	Spiked Blank	13C2-perfluorotetradecanoic acid	2018/03/21		75	%	50 - 150
			Perfluorotetradecanoic Acid	2018/03/21		91	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/21		88	%	67 - 143
5447939	DZU	Spiked Blank DUP	13C2-perfluorotetradecanoic acid	2018/03/21		77	%	50 - 150
			Perfluorotetradecanoic Acid	2018/03/21		100	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/21		97	%	67 - 143
5447939	DZU	RPD	Perfluorotetradecanoic Acid	2018/03/21	10		%	30
			Perfluorotridecanoic Acid	2018/03/21	9.9		%	30
5447939	DZU	Method Blank	13C2-perfluorotetradecanoic acid	2018/03/21		80	%	50 - 150
			Perfluorotetradecanoic Acid	2018/03/21	10 U, LOD=10		ng/L	
			Perfluorotridecanoic Acid	2018/03/21	10 U, LOD=10		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Adam Robinson, Supervisor, LC/MS/MS

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



METHOD 537 Modified

DETERMINATION OF SELECTED PERFLUORINATED ALKYL ACIDS IN DRINKING WATER BY SOLID PHASE EXTRACTION AND LIQUID CHROMATOGRAPHY/TANDEM MASS SPECTROMETRY (LC/MS/MS)

Maxxam Analytics International
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3.2 Sample Chromatograms

Maxxam Analytics International
6740 Campobello Rd
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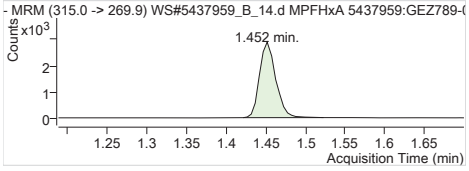
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

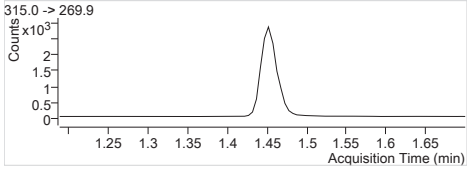
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:GEZ789-01**	**Instrument**	LCMS04
Data File	WS#5437959_B_14.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B4
Acq. Date	2018/03/15 5:47:29 PM	**Injection Volume**	Per Method
Sample Annotation	-		

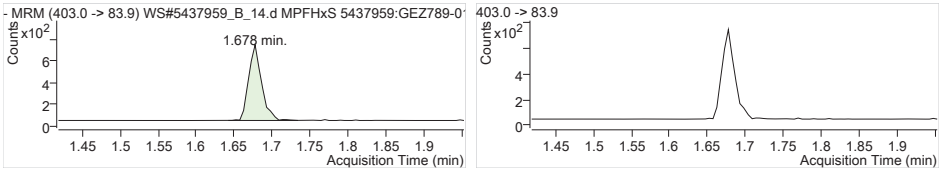
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	3943	1.45	1 µg/L		
MPFHxS	833	1.68	1 µg/L		
MPFHpA	4677	1.70	1 µg/L		
MPFOA	4964	1.89	1 µg/L		
MPFOS	985	1.97	1 µg/L		
MPFNA	4466	2.03	1 µg/L		
MPFDA	3723	2.14	1 µg/L		
MPFUnA	4476	2.24	1 µg/L		
MPFDoA	6299	2.33	1 µg/L		
MPFTeDA	6463	2.47	1 µg/L		
13C6-PFHxA IS	17359	1.45	1 µg/L		
13C9-PFDA IS	21374	2.14	1 µg/L		

Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1			-	ND	-
PFHxA 1			-	ND	-
PFHxS 1			-	ND	-
PFHpA 1			-	ND	-
PFOA 1			-	ND	-
PFOS 1			-	ND	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	3943	1.45	-	83.34 µg/L	-
18O2-PFHxS	833	1.68	-	86.89 µg/L	-
13C4-PFHpA	4677	1.70	-	85.64 µg/L	-
13C4-PFOA	4964	1.89	-	86.82 µg/L	-
13C4-PFOS	985	1.97	-	84.79 µg/L	-
13C5-PFNA	4543	2.03	-	82.77 µg/L	-
13C2-PFDA	3632	2.14	-	76.96 µg/L	-
13C2-PFUnA	4476	2.24	-	74.56 µg/L	-
13C2-PFDoA	6299	2.33	-	74.17 µg/L	-
13C2-PFTeDA	6433	2.47	-	71.53 µg/L	-
13C6-PFHxA	17359	1.45	-	2.25 µg/L	-
13C9-PFDA	21374	2.14	-	2.26 µg/L	-

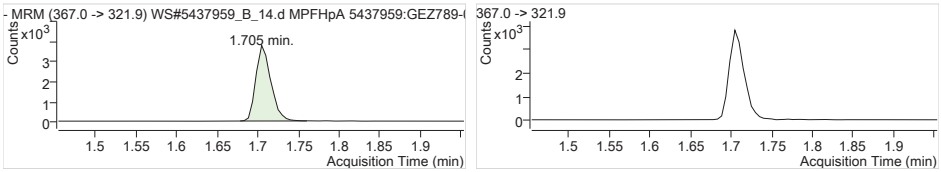




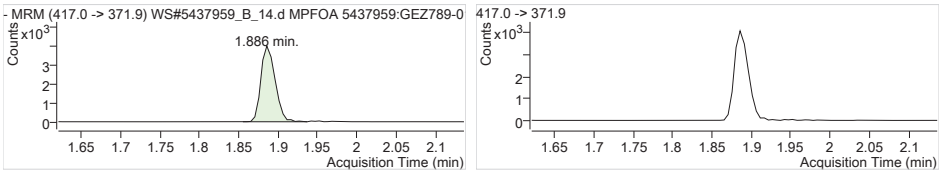
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



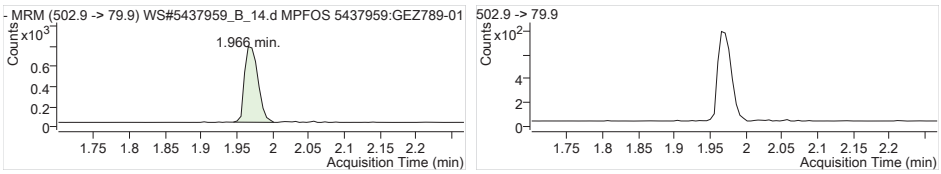
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Sample



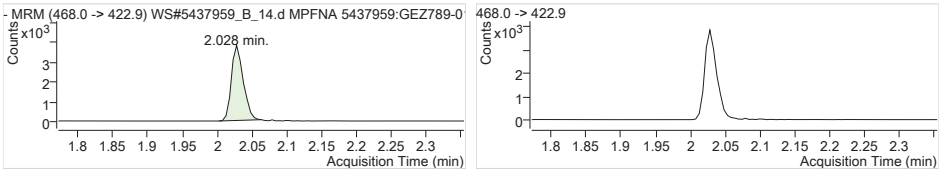
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Sample



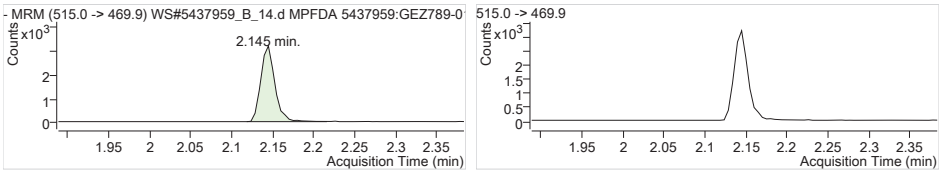
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Sample



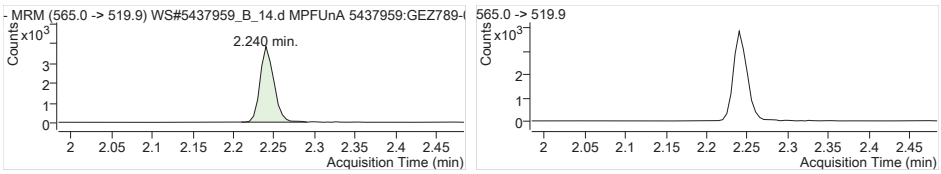
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: Sample



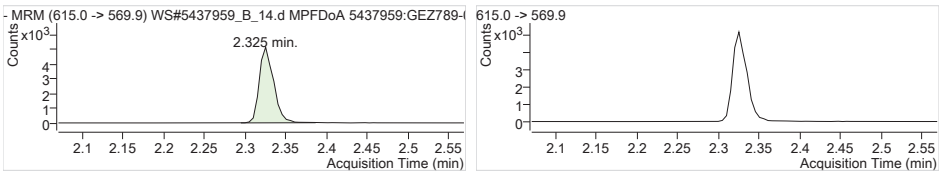
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Sample



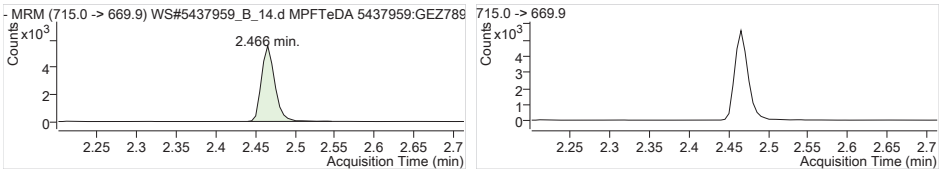
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Sample



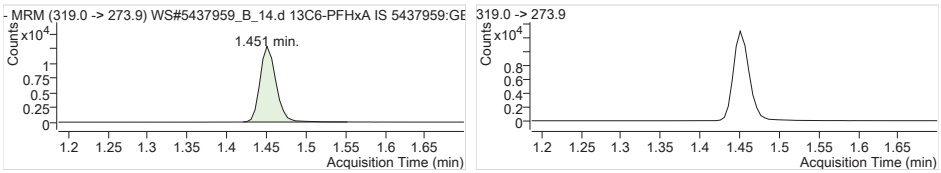
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Sample



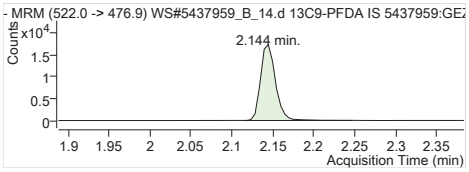
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Sample

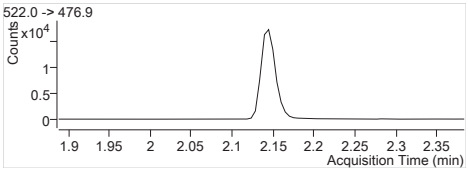


MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Sample

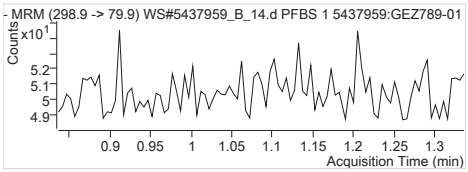


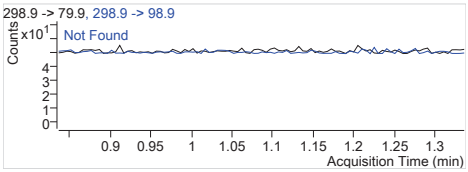
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Sample



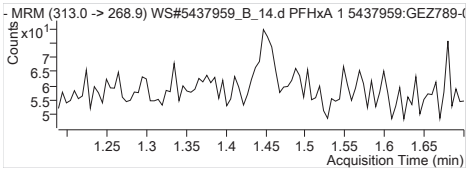


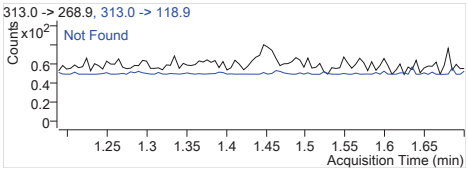
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Sample



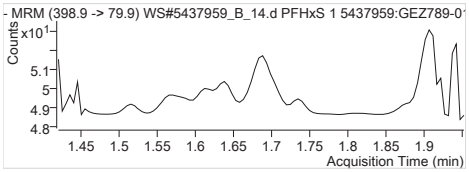


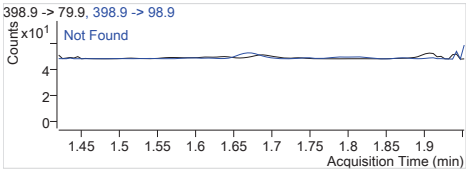
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 0.000 (1.107)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



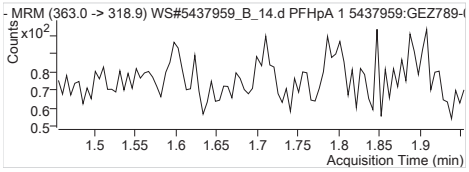


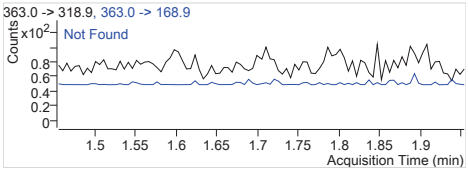
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 0.000 (1.452)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



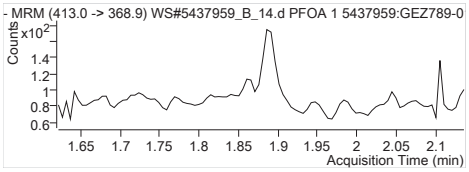


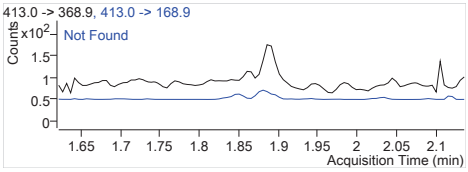
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 0.000 (1.678)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



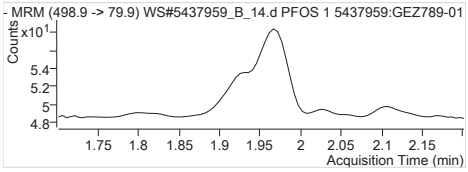


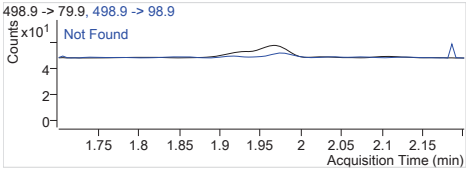
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 0.000 (1.705)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



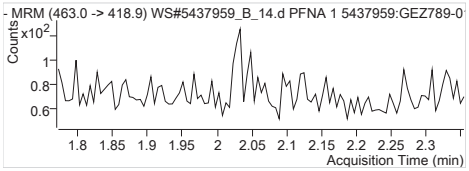


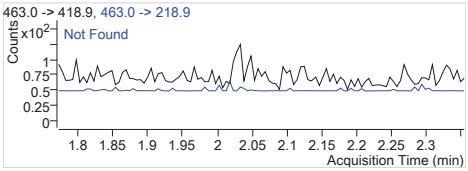
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 0.000 (1.886)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



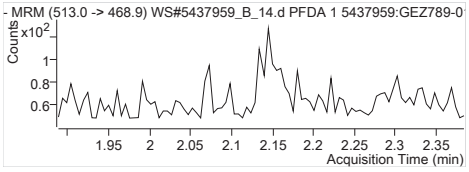


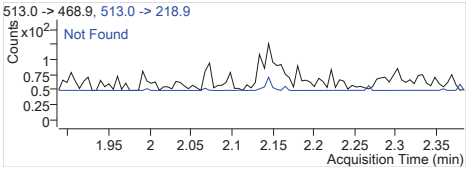
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 0.000 (1.971)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



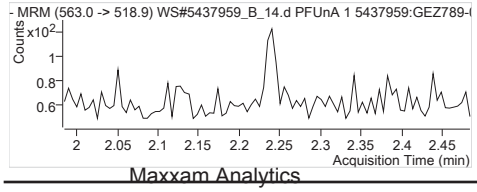


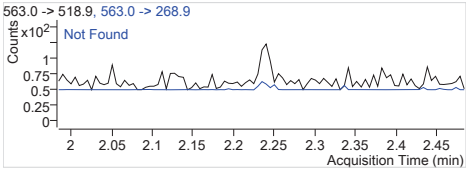
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 0.000 (2.028)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



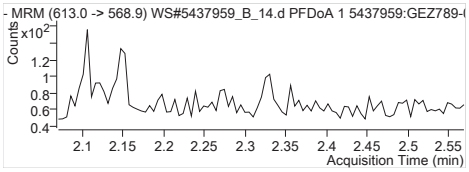


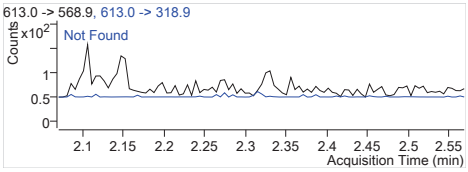
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 0.000 (2.145)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



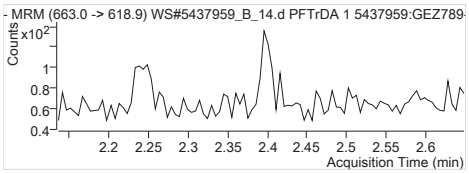


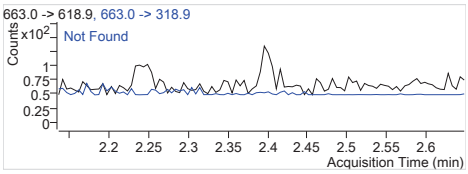
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 0.000 (2.240)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



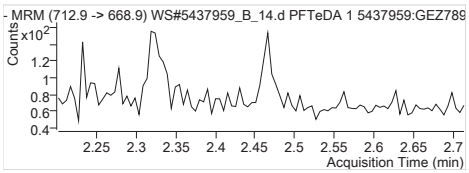


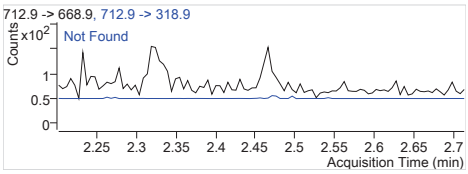
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 0.000 (2.325)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



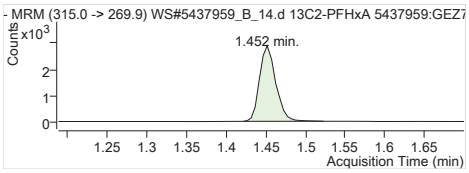


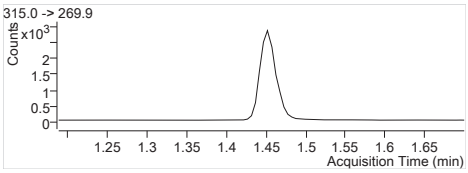
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 0.000 (2.401)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



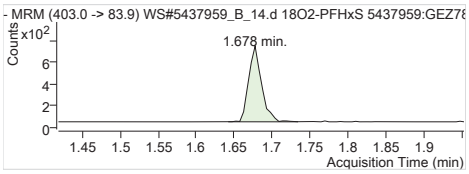


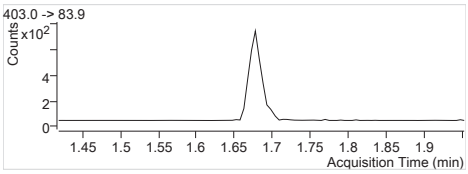
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 0.000 (2.466)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



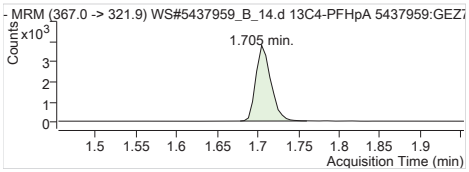


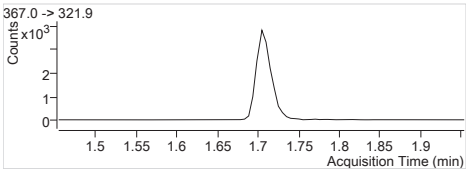
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 83.34 µg/L
Area ratio: 0.22714
Sample type: Sample



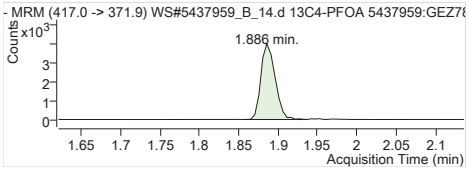


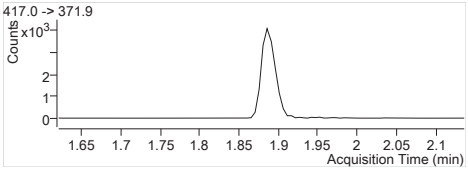
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 86.89 µg/L
Area ratio: 0.04799
Sample type: Sample



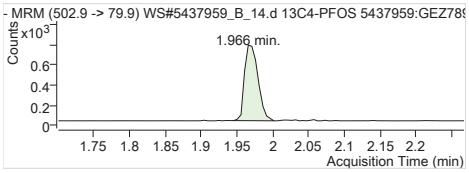


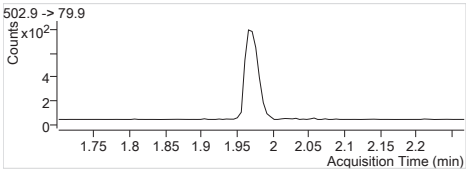
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 85.64 µg/L
Area ratio: 0.26943
Sample type: Sample



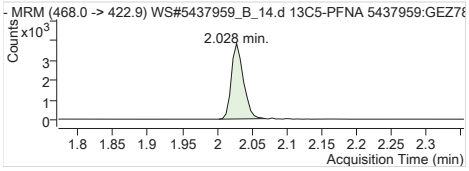


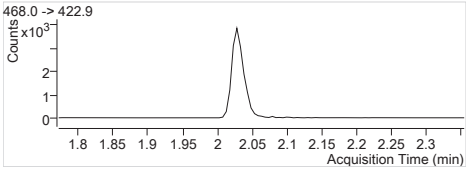
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 86.82 µg/L
Area ratio: 0.28596
Sample type: Sample



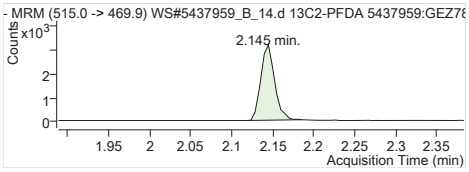


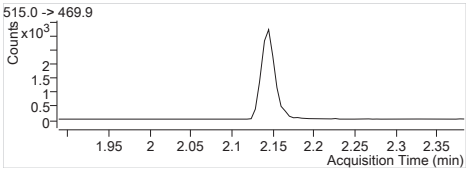
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 84.79 µg/L
Area ratio: 0.05674
Sample type: Sample



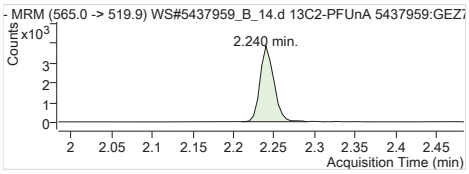


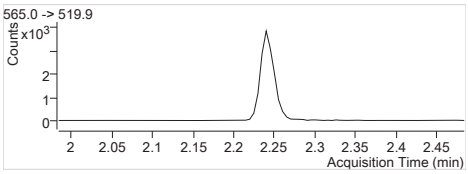
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 82.77 µg/L
Area ratio: 0.26171
Sample type: Sample



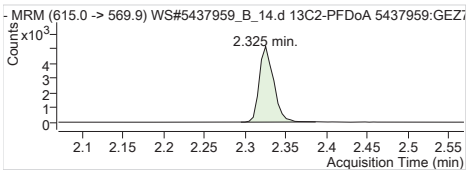


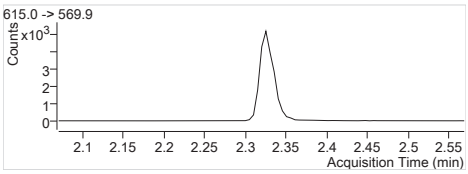
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 76.96 µg/L
Area ratio: 0.16993
Sample type: Sample



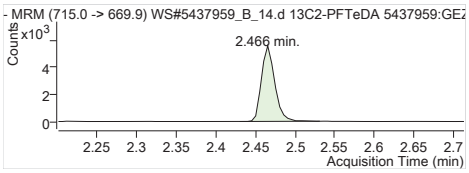


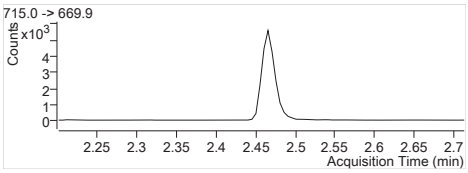
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 74.56 µg/L
Area ratio: 0.20941
Sample type: Sample



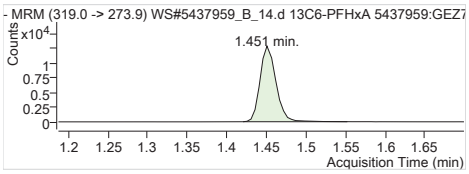


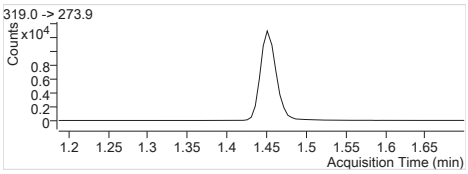
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 74.17 µg/L
Area ratio: 0.29470
Sample type: Sample



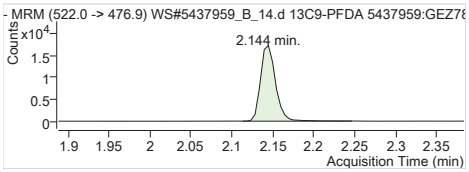


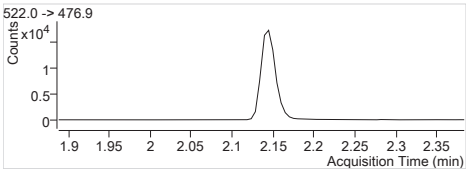
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 71.53 µg/L
Area ratio: 0.30097
Sample type: Sample





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 2.25 µg/L
Area ratio: 0
Sample type: Sample





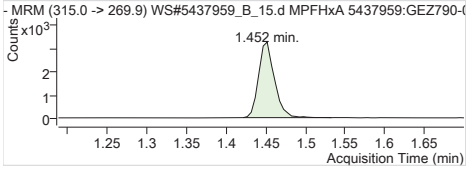
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 2.26 µg/L
Area ratio: 0
Sample type: Sample

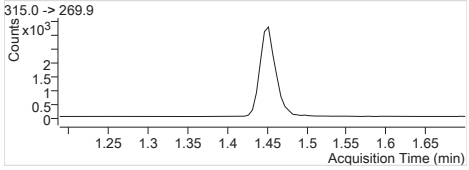
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:GEZ790-01**	**Instrument**	LCMS04
Data File	WS#5437959_B_15.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B5
Acq. Date	2018/03/15 5:52:27 PM	**Injection Volume**	Per Method
Sample Annotation	-		

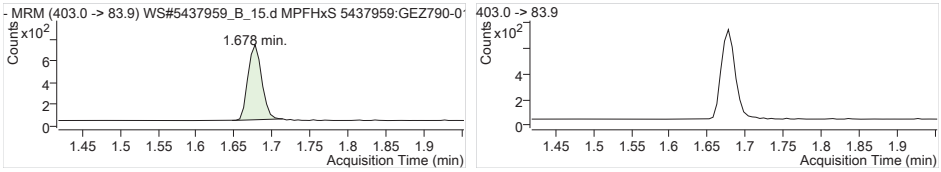
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4428	1.45	1 µg/L		
MPFHxS	883	1.68	1 µg/L		
MPFHpA	5292	1.70	1 µg/L		
MPFOA	5274	1.89	1 µg/L		
MPFOS	1052	1.97	1 µg/L		
MPFNA	5237	2.03	1 µg/L		
MPFDA	4283	2.14	1 µg/L		
MPFUnA	5318	2.24	1 µg/L		
MPFDoA	7043	2.33	1 µg/L		
MPFTeDA	6671	2.47	1 µg/L		
13C6-PFHxA IS	18834	1.45	1 µg/L		
13C9-PFDA IS	23025	2.14	1 µg/L		

Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1			-	ND	-
PFHxA 1			-	ND	-
PFHxS 1			-	ND	-
PFHpA 1			-	ND	-
PFOA 1			-	ND	-
PFOS 1			-	ND	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	4428	1.45	-	86.27 µg/L	-
18O2-PFHxS	883	1.68	-	84.89 µg/L	-
13C4-PFHpA	5292	1.70	-	89.31 µg/L	-
13C4-PFOA	5274	1.89	-	85.02 µg/L	-
13C4-PFOS	1052	1.97	-	83.46 µg/L	-
13C5-PFNA	5332	2.03	-	89.54 µg/L	-
13C2-PFDA	4135	2.14	-	81.33 µg/L	-
13C2-PFUnA	5318	2.24	-	82.23 µg/L	-
13C2-PFDoA	7043	2.33	-	76.98 µg/L	-
13C2-PFTeDA	6652	2.47	-	68.66 µg/L	-
13C6-PFHxA	18834	1.45	-	2.44 µg/L	-
13C9-PFDA	23025	2.14	-	2.44 µg/L	-

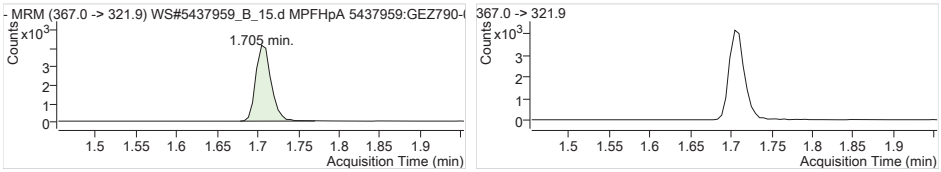




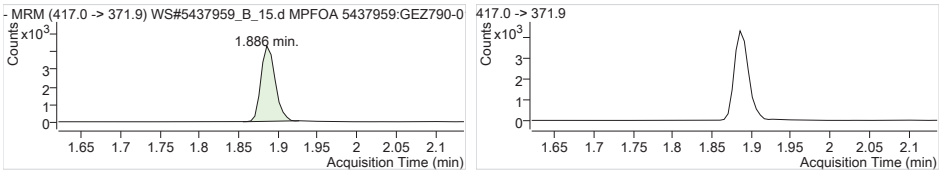
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



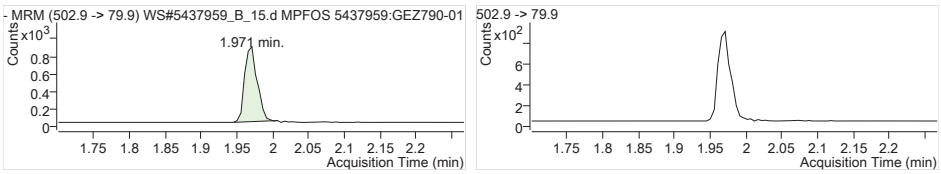
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Sample



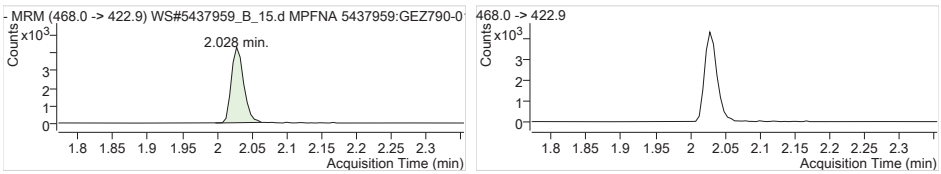
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Sample



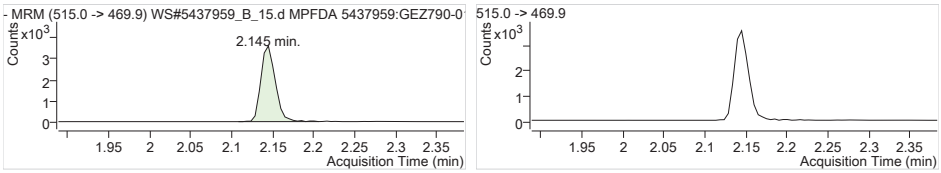
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Sample



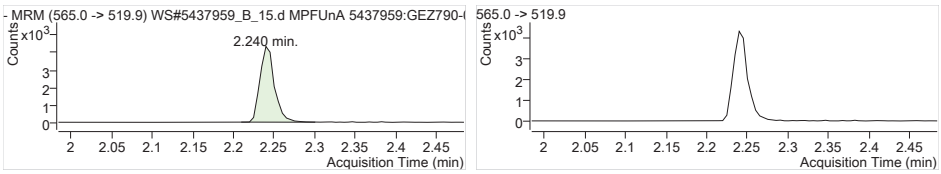
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Sample



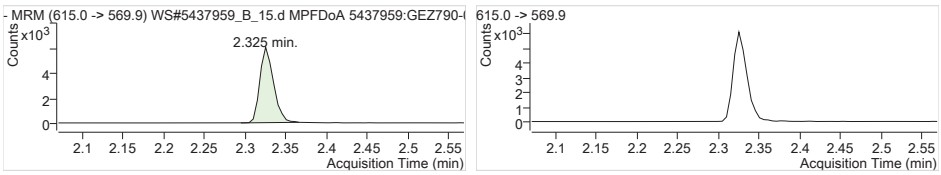
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Sample



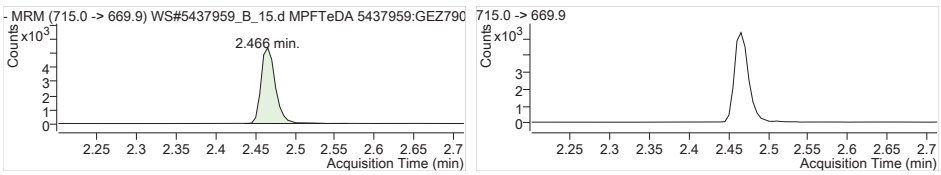
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Sample



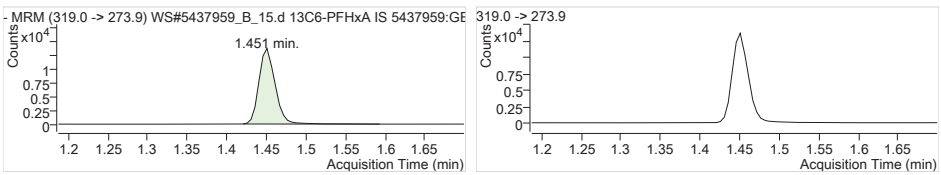
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Sample



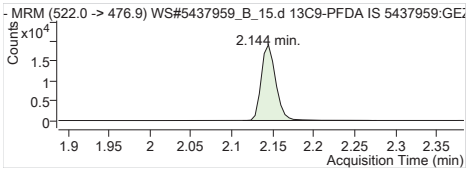
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Sample

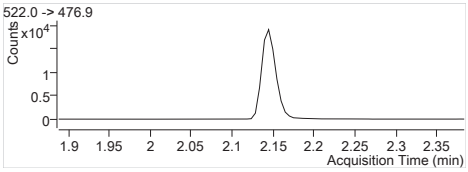


MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Sample

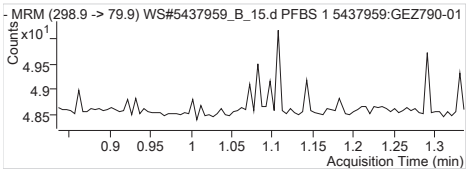


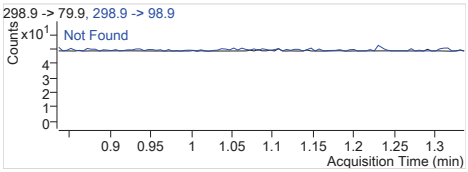
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Sample



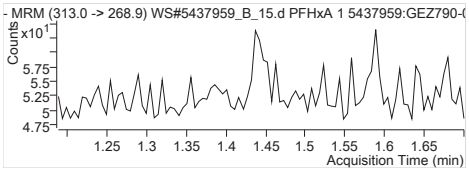


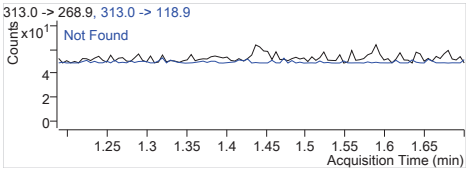
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Sample



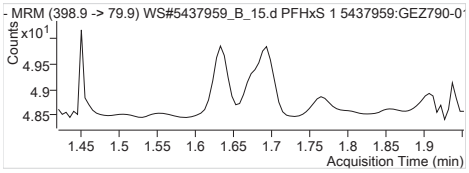


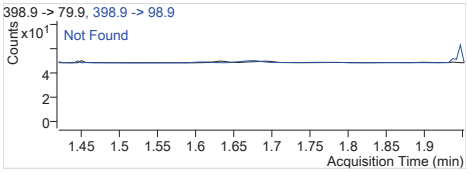
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 0.000 (1.107)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



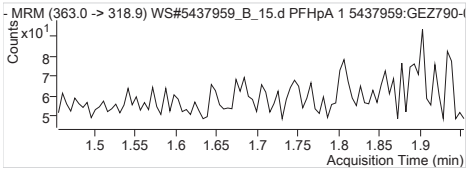


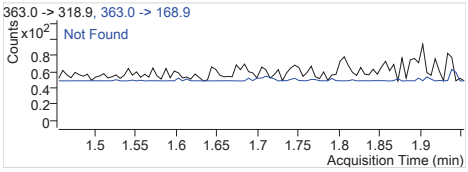
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 0.000 (1.452)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



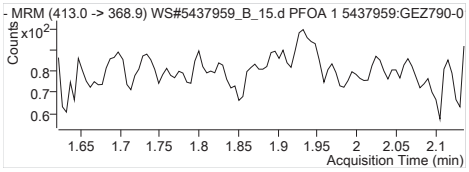


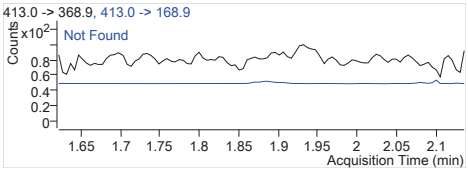
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 0.000 (1.678)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



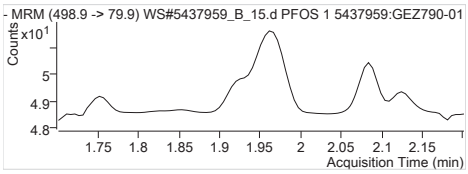


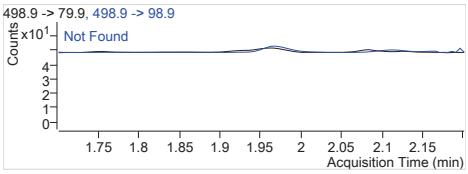
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 0.000 (1.705)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



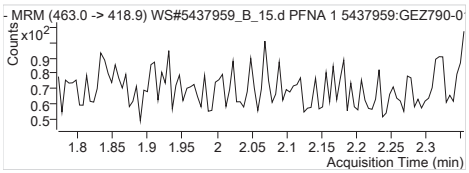


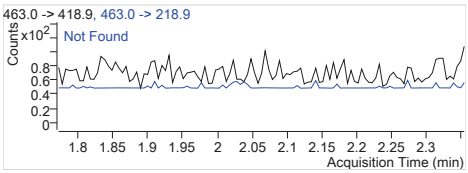
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 0.000 (1.886)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



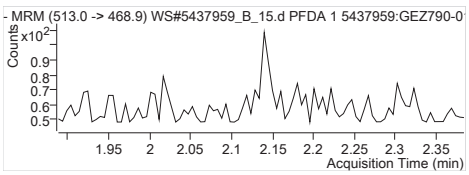


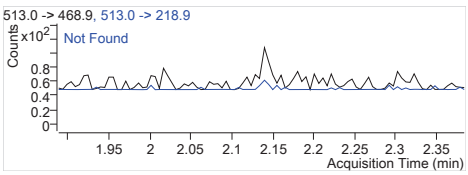
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 0.000 (1.971)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



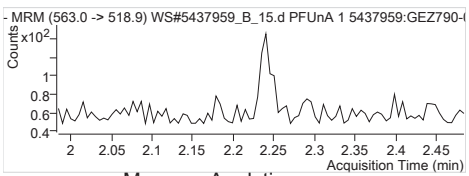


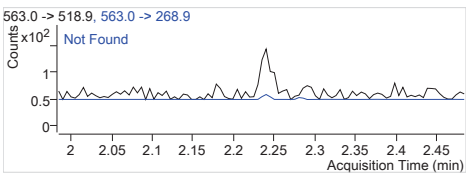
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 0.000 (2.028)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



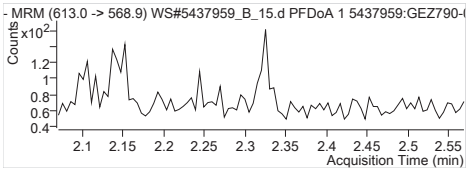


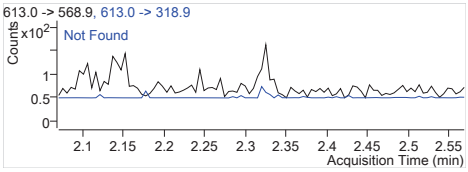
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 0.000 (2.145)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



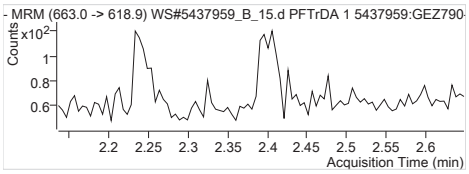


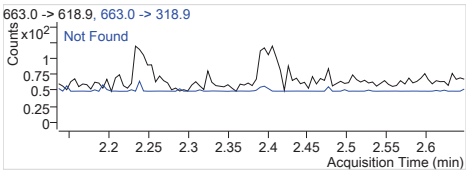
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 0.000 (2.240)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



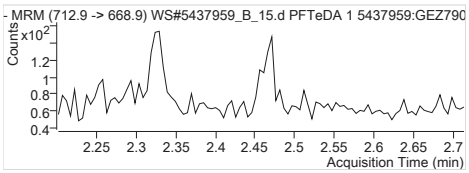


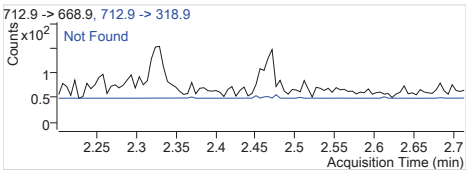
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	0.000 (2.325)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



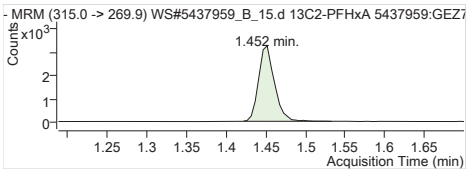


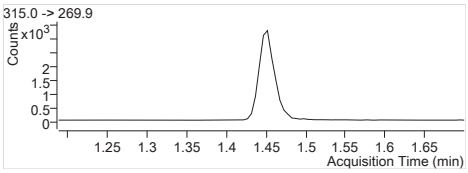
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	0.000 (2.401)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



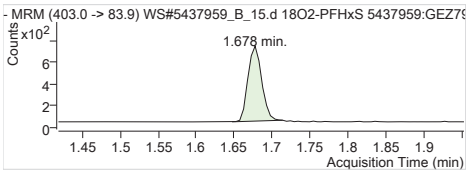


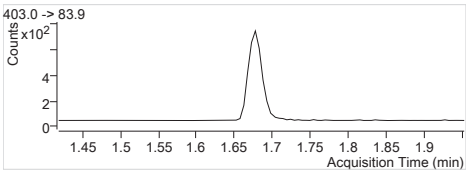
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	0.000 (2.466)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



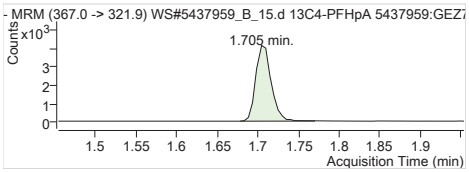


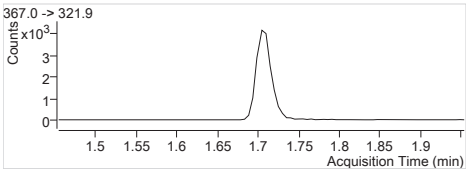
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.452 (1.452)
Calc. conc.	86.27 µg/L
Area ratio:	0.23511
Sample type:	Sample



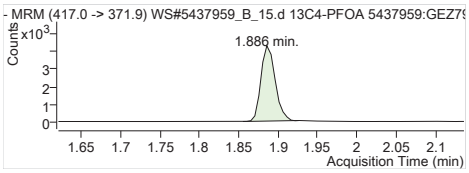


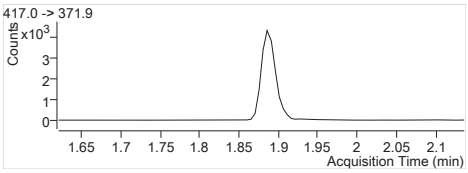
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	84.89 µg/L
Area ratio:	0.04688
Sample type:	Sample



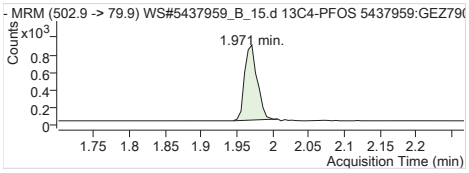


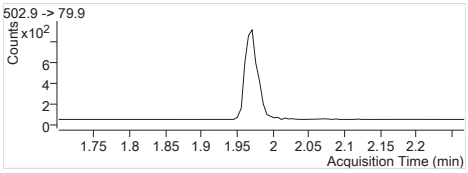
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	89.31 µg/L
Area ratio:	0.28098
Sample type:	Sample



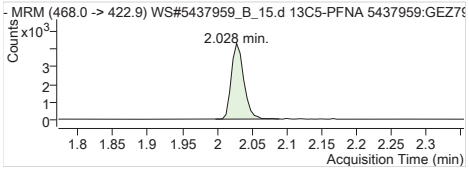


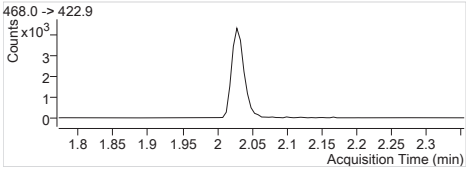
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	85.02 µg/L
Area ratio:	0.28003
Sample type:	Sample



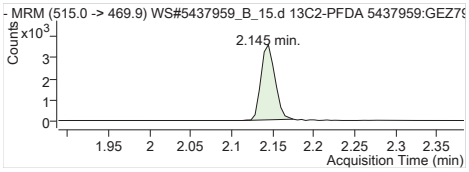


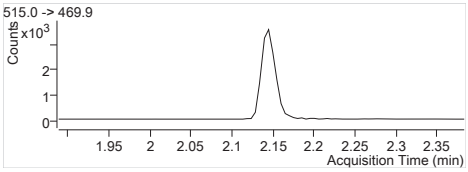
13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.971 (1.971)
Calc. conc.	83.46 µg/L
Area ratio:	0.05586
Sample type:	Sample



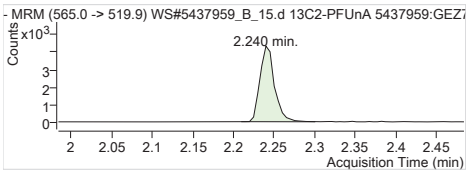


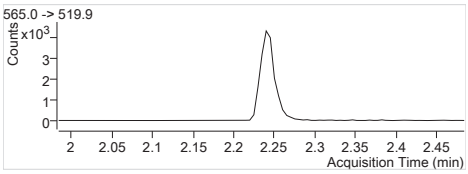
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	89.54 µg/L
Area ratio:	0.28311
Sample type:	Sample



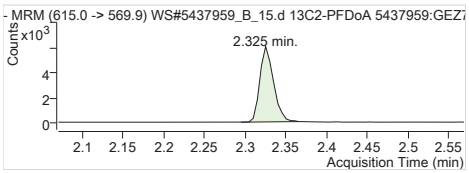


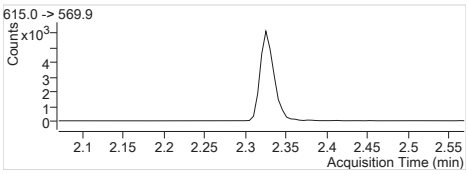
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 81.33 µg/L
Area ratio: 0.17959
Sample type: Sample



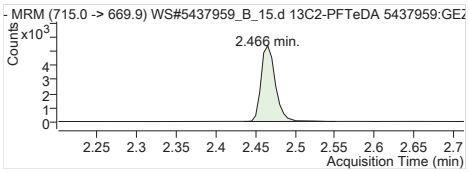


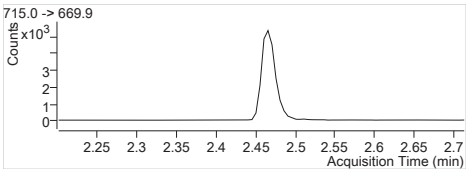
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 82.23 µg/L
Area ratio: 0.23097
Sample type: Sample



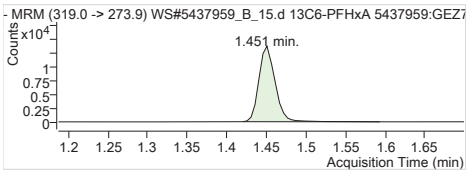


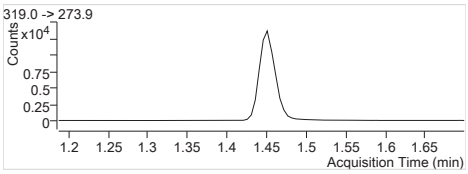
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 76.98 µg/L
Area ratio: 0.30588
Sample type: Sample



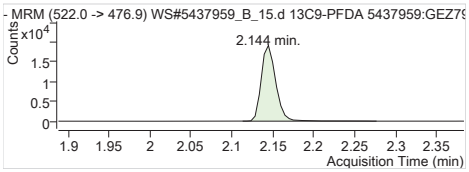


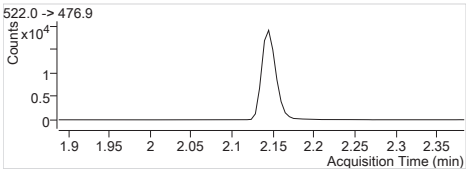
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 68.66 µg/L
Area ratio: 0.28890
Sample type: Sample





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 2.44 µg/L
Area ratio: 0
Sample type: Sample





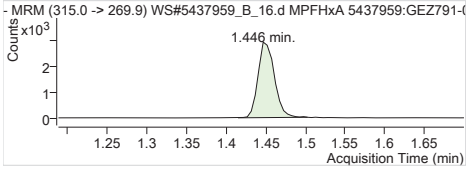
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 2.44 µg/L
Area ratio: 0
Sample type: Sample

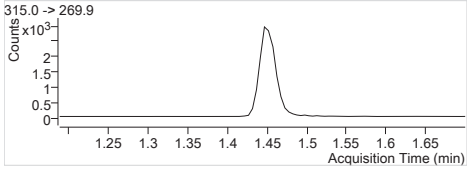
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:GEZ791-01**	**Instrument**	LCMS04
Data File	WS#5437959_B_16.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B6
Acq. Date	2018/03/15 5:57:24 PM	**Injection Volume**	Per Method
Sample Annotation	-		

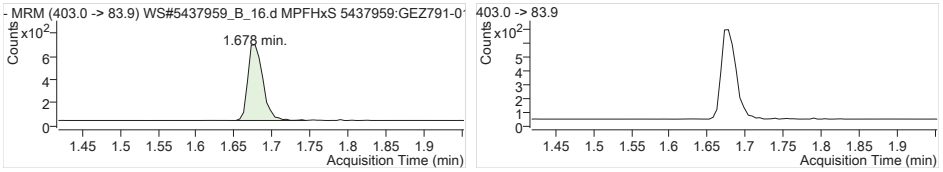
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4193	1.45	1 µg/L		
MPFHxS	907	1.68	1 µg/L		
MPFHpA	4973	1.70	1 µg/L		
MPFOA	4989	1.89	1 µg/L		
MPFOS	1040	1.97	1 µg/L		
MPFNA	4682	2.03	1 µg/L		
MPFDA	4006	2.14	1 µg/L		
MPFUnA	4705	2.24	1 µg/L		
MPFDoA	6612	2.33	1 µg/L		
MPFTeDA	6352	2.47	1 µg/L		
13C6-PFHxA IS	18096	1.45	1 µg/L		
13C9-PFDA IS	21997	2.14	1 µg/L		

Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1			-	ND	-
PFHxA 1			-	ND	-
PFHxS 1			-	ND	-
PFHpA 1			-	ND	-
PFOA 1			-	ND	-
PFOS 1			-	ND	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	4193	1.45	-	85.02 µg/L	-
18O2-PFHxS	907	1.68	-	90.75 µg/L	-
13C4-PFHpA	4973	1.70	-	87.35 µg/L	-
13C4-PFOA	4989	1.89	-	83.70 µg/L	-
13C4-PFOS	1040	1.97	-	85.87 µg/L	-
13C5-PFNA	4617	2.03	-	80.69 µg/L	-
13C2-PFDA	3922	2.14	-	80.75 µg/L	-
13C2-PFUnA	4705	2.24	-	76.16 µg/L	-
13C2-PFDoA	6612	2.33	-	75.65 µg/L	-
13C2-PFTeDA	6367	2.47	-	68.79 µg/L	-
13C6-PFHxA	18096	1.45	-	2.34 µg/L	-
13C9-PFDA	21997	2.14	-	2.33 µg/L	-

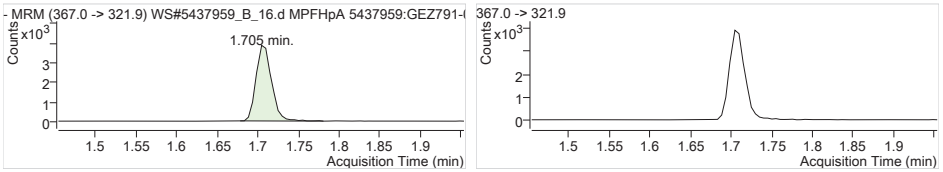




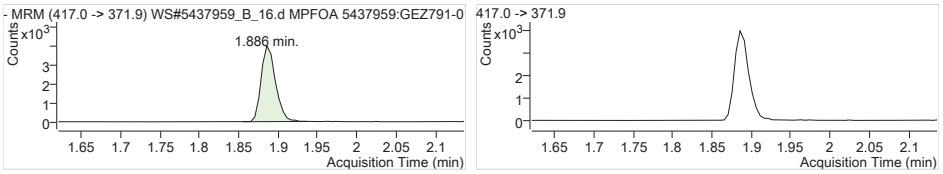
MPFHxA	Internal Standard
RT (Exp. RT):	1.446 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



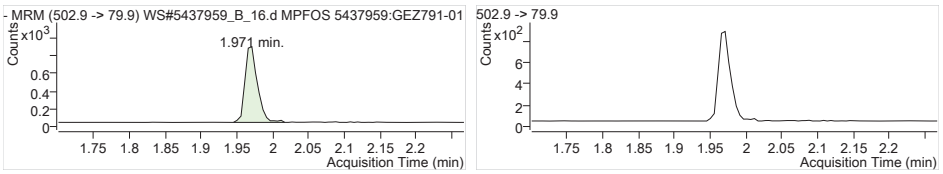
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Sample



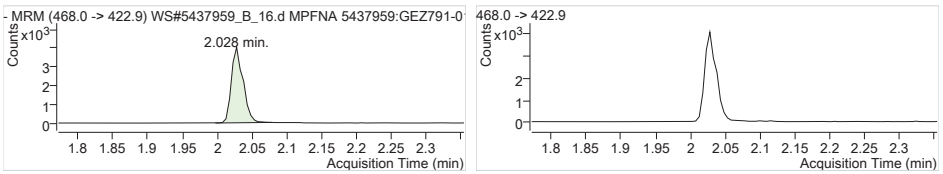
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Sample



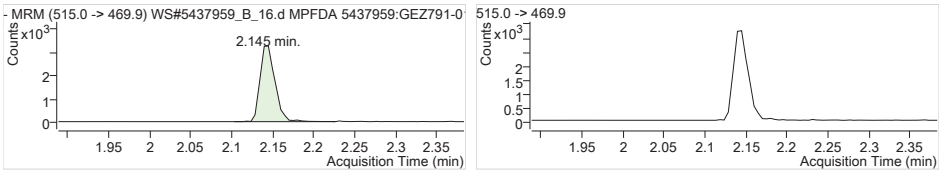
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Sample



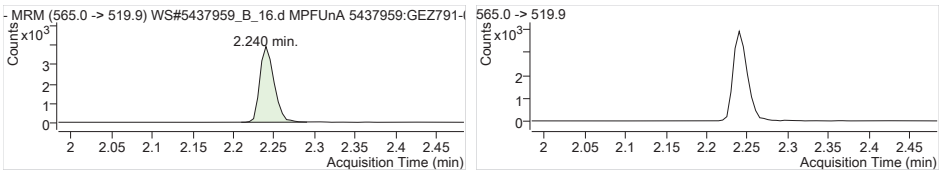
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Sample



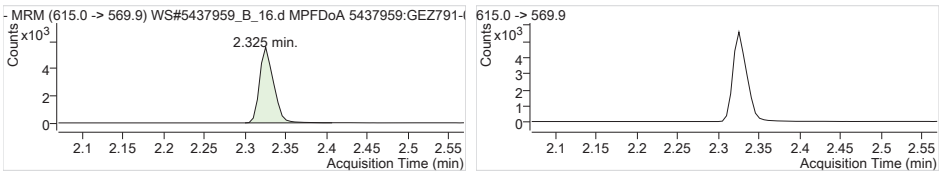
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Sample



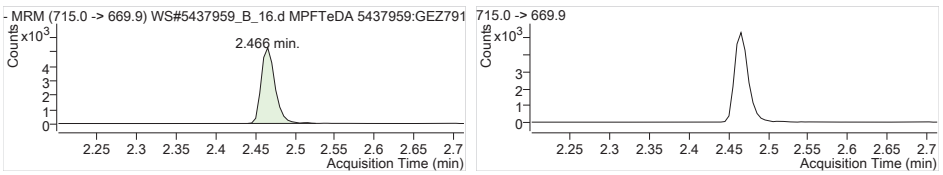
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Sample



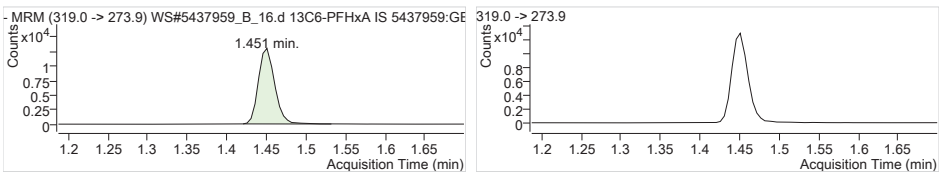
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Sample



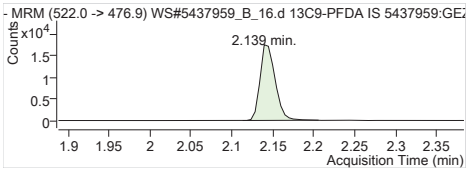
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Sample

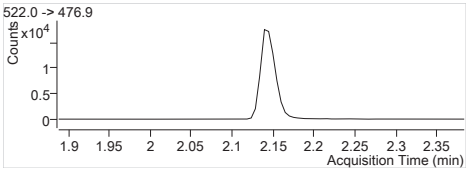


MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Sample

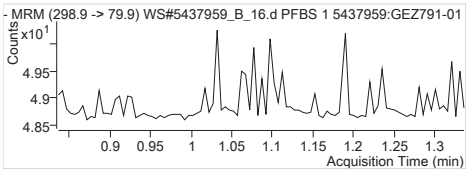


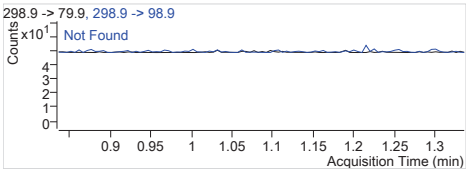
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Sample



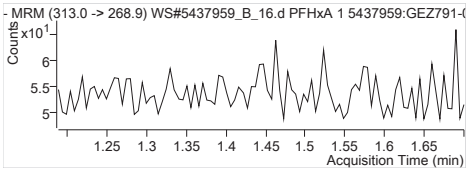


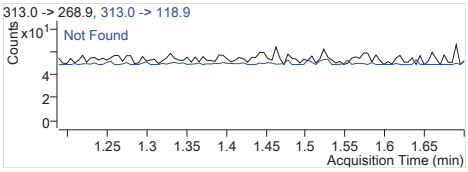
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.139 (2.144)
Concentration: 1 µg/L
Sample type: Sample



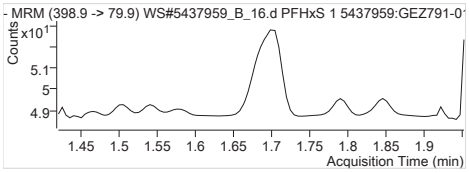


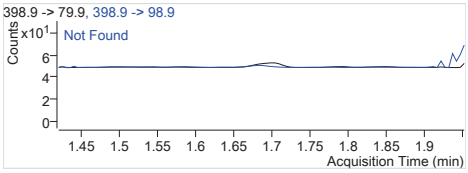
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 0.000 (1.107)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



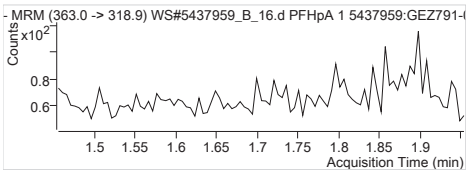


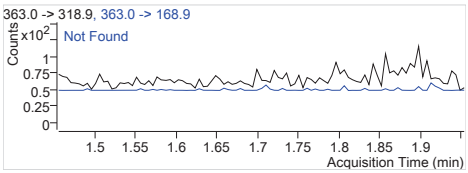
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 0.000 (1.452)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



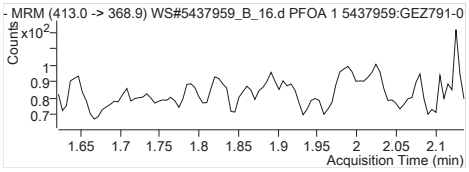


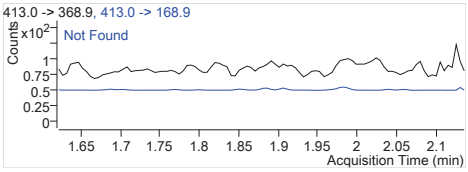
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 0.000 (1.678)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



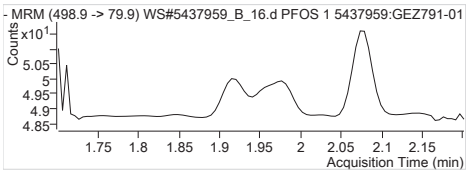


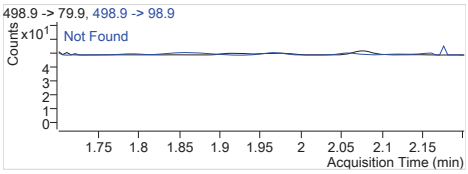
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 0.000 (1.705)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



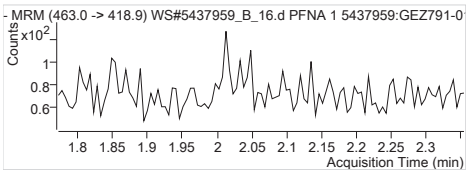


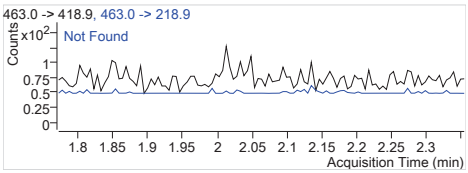
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 0.000 (1.886)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



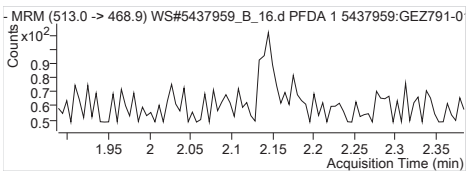


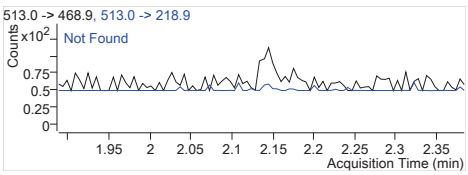
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 0.000 (1.971)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



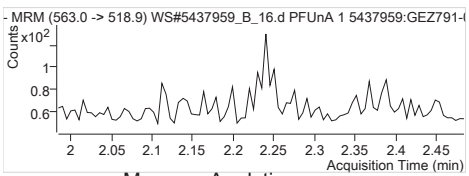


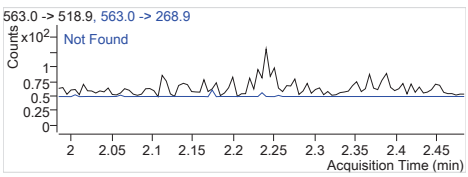
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 0.000 (2.028)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



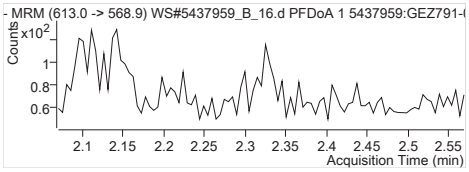


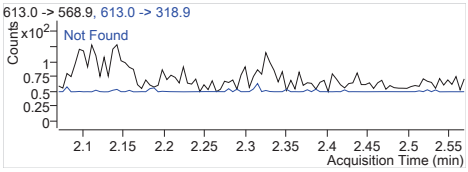
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 0.000 (2.145)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



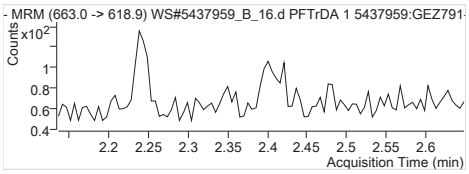


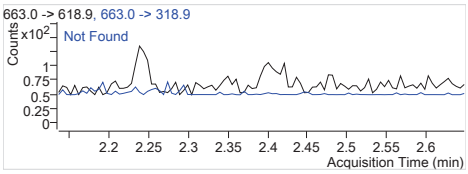
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 0.000 (2.240)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



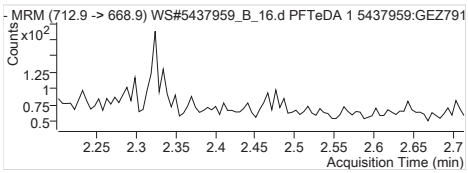


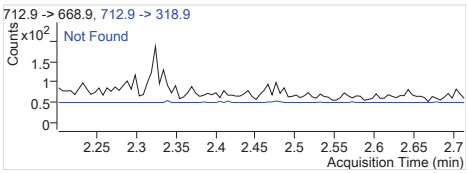
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	0.000 (2.325)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



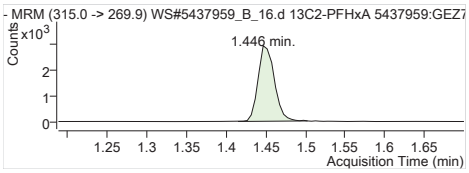


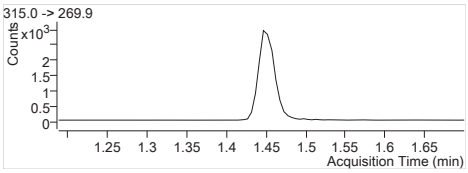
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	0.000 (2.401)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



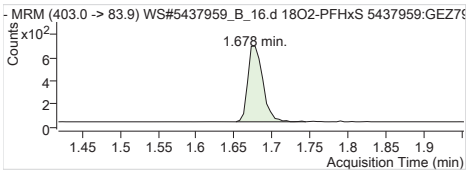


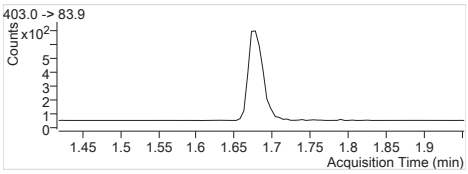
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	0.000 (2.466)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



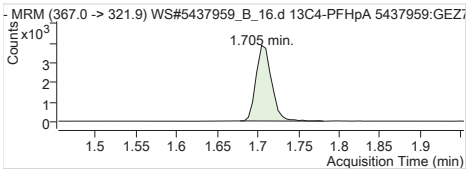


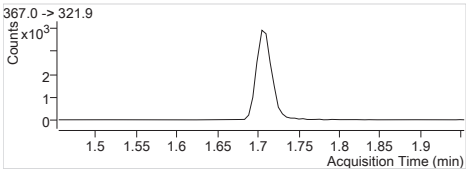
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.446 (1.452)
Calc. conc.	85.02 µg/L
Area ratio:	0.23171
Sample type:	Sample



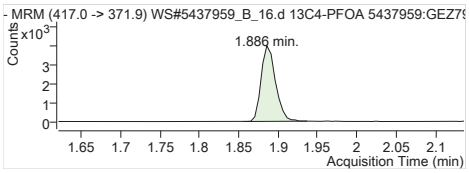


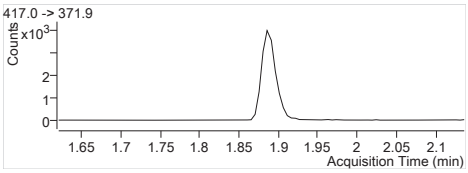
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	90.75 µg/L
Area ratio:	0.05012
Sample type:	Sample



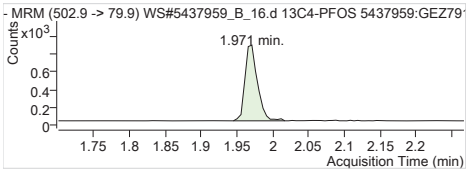


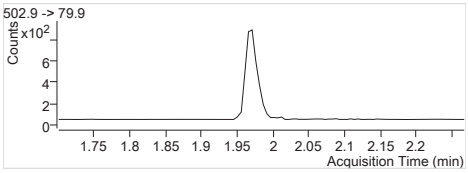
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	87.35 µg/L
Area ratio:	0.27481
Sample type:	Sample



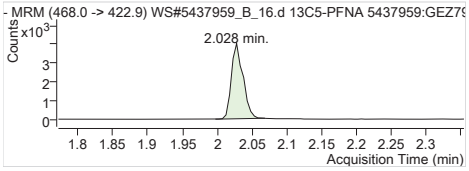


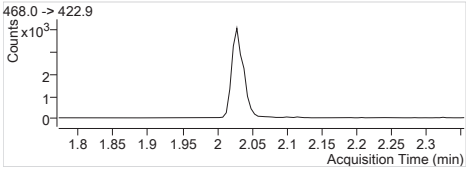
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	83.70 µg/L
Area ratio:	0.27570
Sample type:	Sample



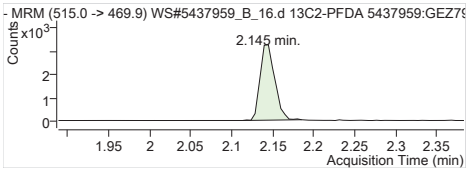


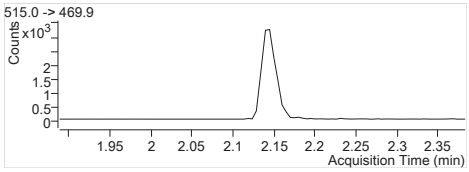
13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.971 (1.971)
Calc. conc.	85.87 µg/L
Area ratio:	0.05747
Sample type:	Sample



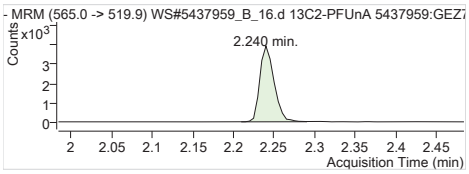


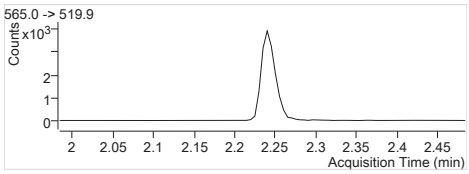
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	80.69 µg/L
Area ratio:	0.25514
Sample type:	Sample



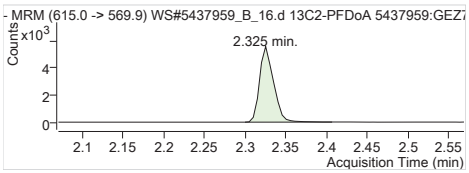


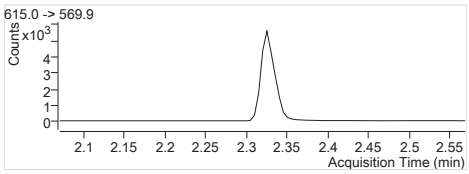
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 80.75 µg/L
Area ratio: 0.17830
Sample type: Sample



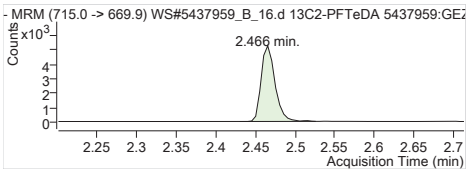


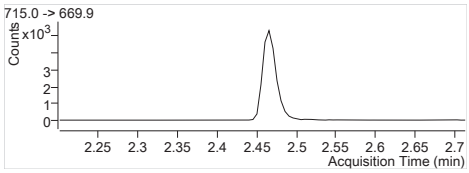
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 76.16 µg/L
Area ratio: 0.21389
Sample type: Sample



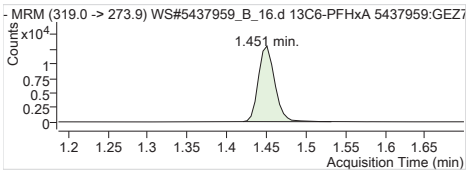


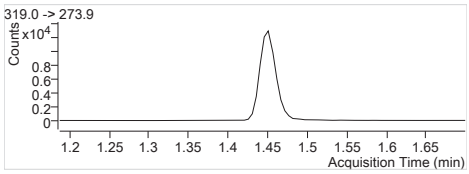
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 75.65 µg/L
Area ratio: 0.30059
Sample type: Sample



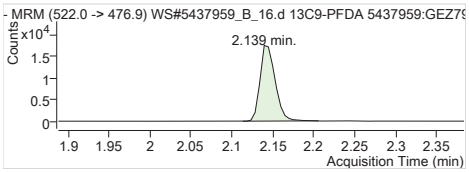


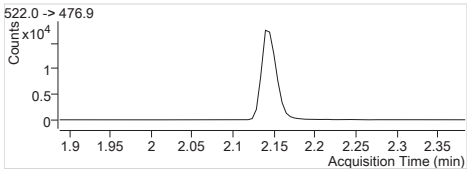
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 68.79 µg/L
Area ratio: 0.28945
Sample type: Sample





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 2.34 µg/L
Area ratio: 0
Sample type: Sample





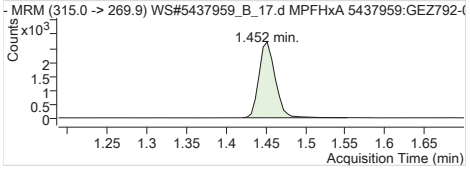
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.139 (2.144)
Calc. conc. 2.33 µg/L
Area ratio: 0
Sample type: Sample

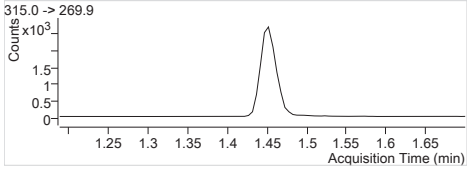
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:GEZ792-01**	**Instrument**	LCMS04
Data File	WS#5437959_B_17.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B7
Acq. Date	2018/03/15 6:02:20 PM	**Injection Volume**	Per Method
Sample Annotation	-		

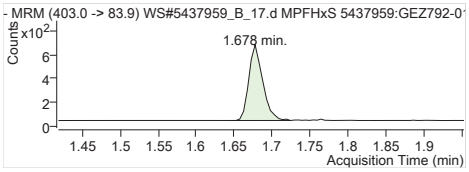
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	3729	1.45	1 µg/L		
MPFHxS	817	1.68	1 µg/L		
MPFHpA	4435	1.70	1 µg/L		
MPFOA	4542	1.89	1 µg/L		
MPFOS	912	1.97	1 µg/L		
MPFNA	4525	2.03	1 µg/L		
MPFDA	3733	2.14	1 µg/L		
MPFUnA	3831	2.24	1 µg/L		
MPFDoA	4862	2.33	1 µg/L		
MPFTeDA	3587	2.47	1 µg/L		
13C6-PFHxA IS	14658	1.45	1 µg/L		
13C9-PFDA IS	18420	2.14	1 µg/L		

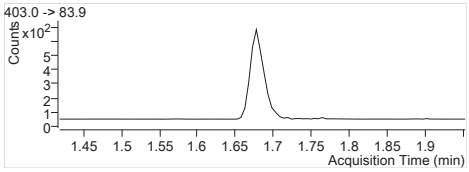
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	362	1.09	-	0.02 µg/L	-
PFHxA 1	5578	1.45	-	0.09 µg/L	-
PFHxS 1	4945	1.68	-	0.33 µg/L	-
PFHpA 1	1303	1.71	-	0.02 µg/L	-
PFOA 1	9646	1.89	-	0.12 µg/L	-
PFOS 1	973	1.93	-	0.06 µg/L	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	3729	1.45	-	93.34 µg/L	-
18O2-PFHxS	817	1.68	-	100.92 µg/L	-
13C4-PFHpA	4435	1.70	-	96.17 µg/L	-
13C4-PFOA	4542	1.89	-	94.08 µg/L	-
13C4-PFOS	912	1.97	-	92.97 µg/L	-
13C5-PFNA	4509	2.03	-	97.29 µg/L	-
13C2-PFDA	3661	2.14	-	90.01 µg/L	-
13C2-PFUnA	3831	2.24	-	74.05 µg/L	-
13C2-PFDoA	4862	2.33	-	66.43 µg/L	-
13C2-PFTeDA	3588	2.47	-	46.29 µg/L	-
13C6-PFHxA	14658	1.45	-	1.90 µg/L	-
13C9-PFDA	18420	2.14	-	1.95 µg/L	-



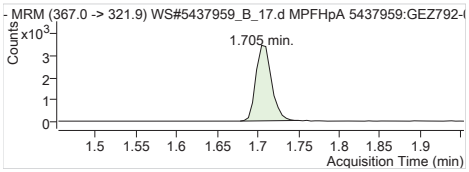


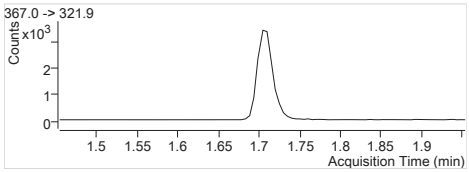
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



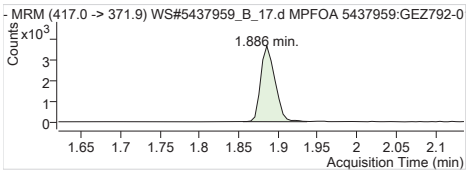


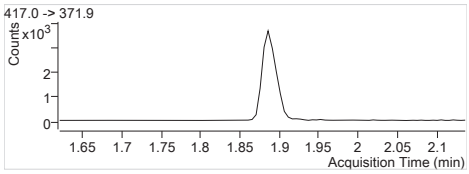
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Sample



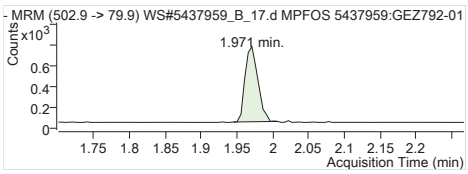


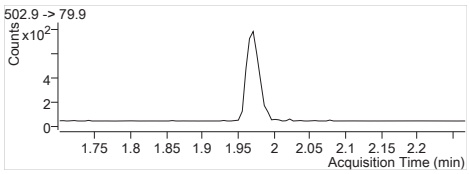
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Sample



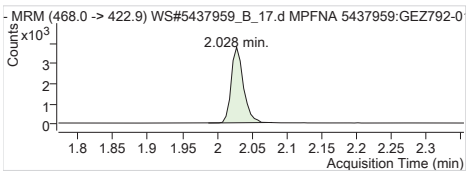


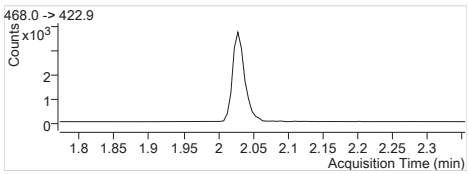
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Sample



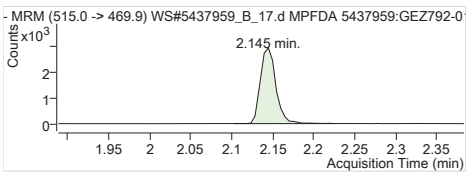


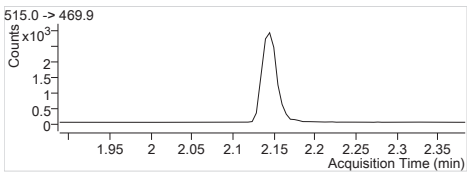
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Sample



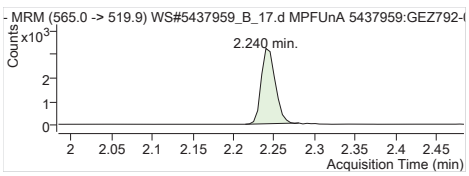


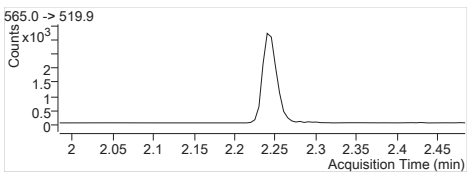
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Sample



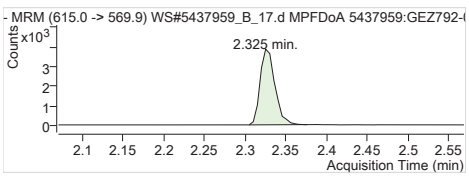


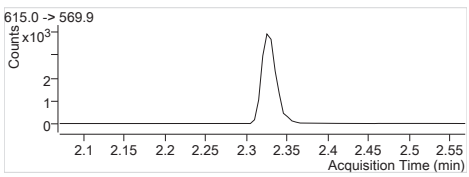
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Sample



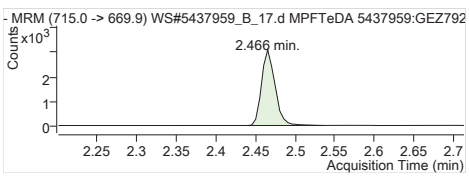


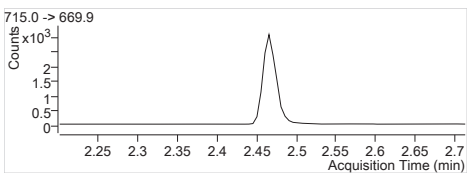
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Sample



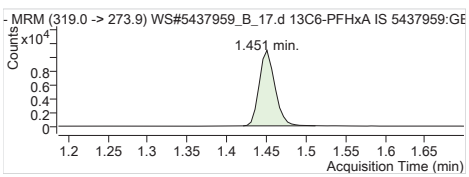


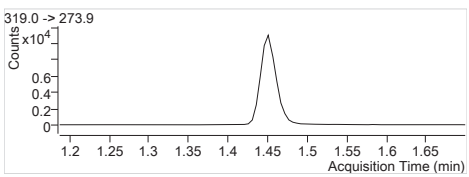
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Sample



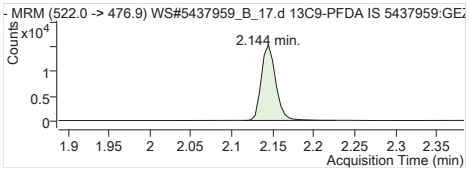


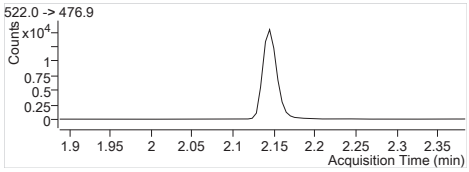
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Sample



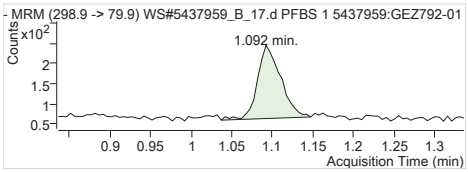


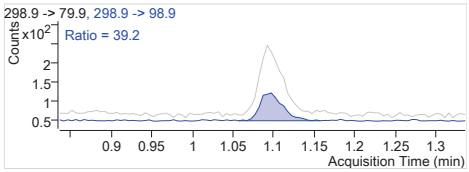
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Sample



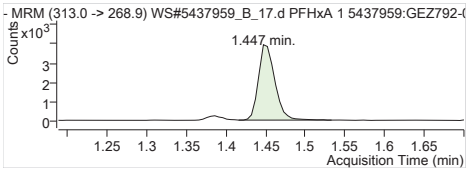


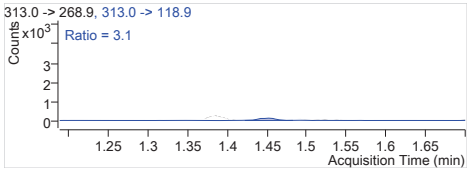
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Sample



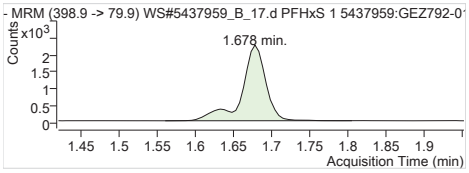


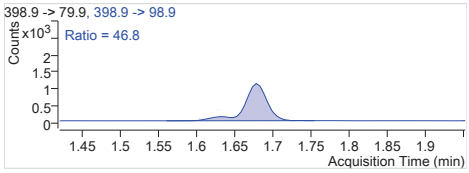
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.092 (1.107)
Calc. conc. 0.02 µg/L
Area ratio: 0.44308
Sample type: Sample



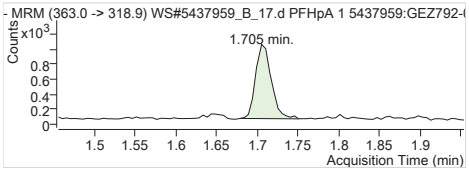


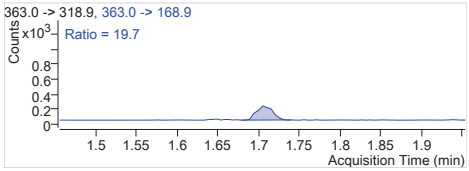
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.447 (1.452)
Calc. conc. 0.09 µg/L
Area ratio: 1.49584
Sample type: Sample



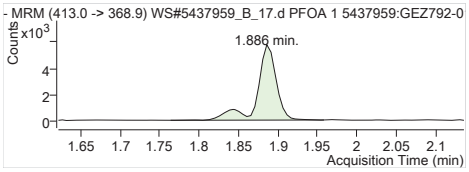


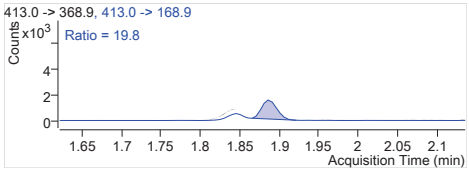
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 0.33 µg/L
Area ratio: 6.05263
Sample type: Sample



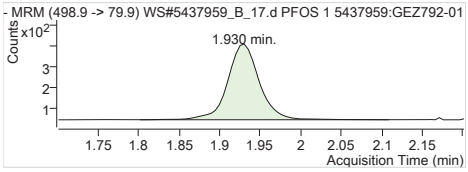


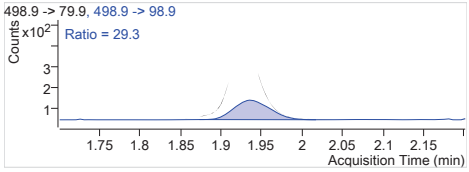
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 0.02 µg/L
Area ratio: 0.29380
Sample type: Sample



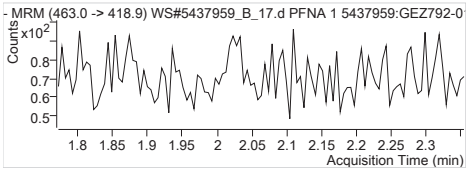


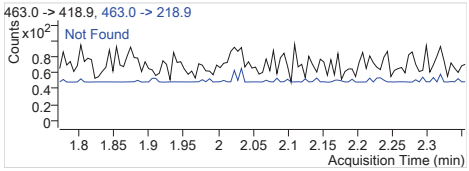
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 0.12 µg/L
Area ratio: 2.12373
Sample type: Sample



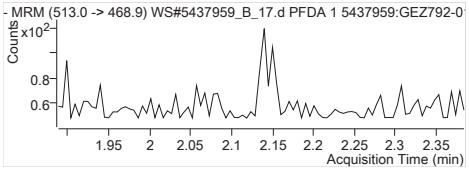


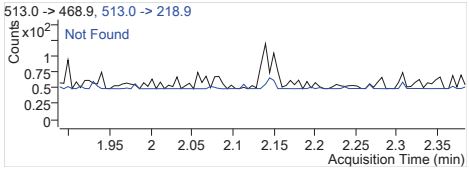
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.930 (1.971)
Calc. conc. 0.06 µg/L
Area ratio: 1.06689
Sample type: Sample



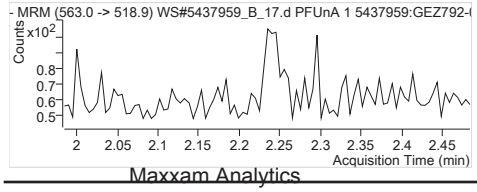


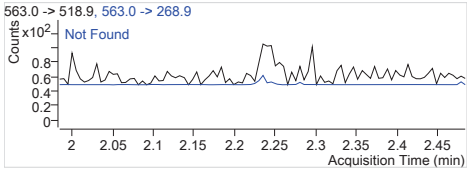
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 0.000 (2.028)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



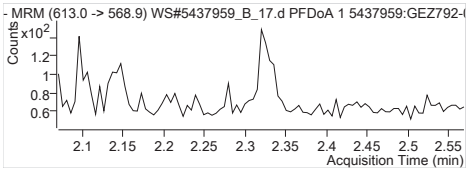


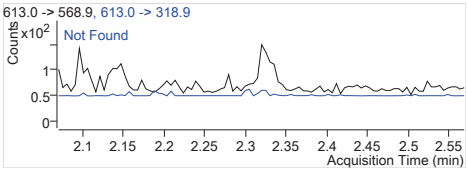
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 0.000 (2.145)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



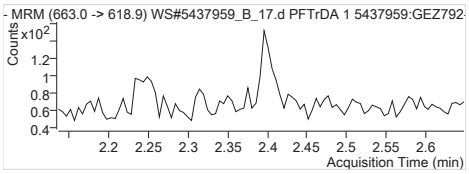


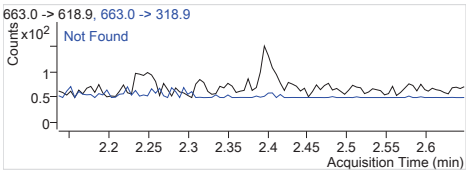
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 0.000 (2.240)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



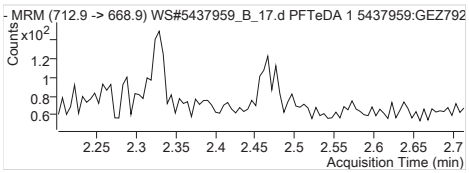


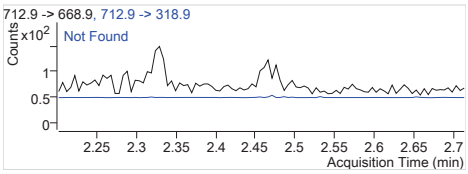
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	0.000 (2.325)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



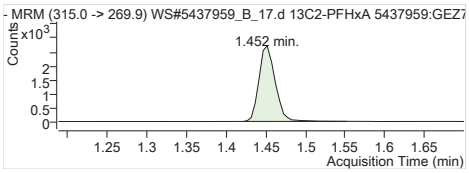


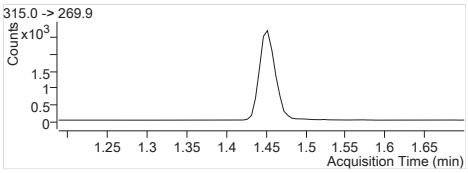
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	0.000 (2.401)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



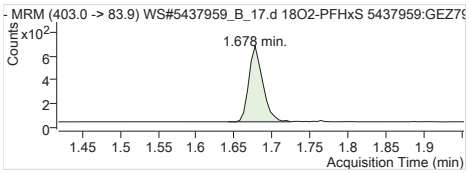


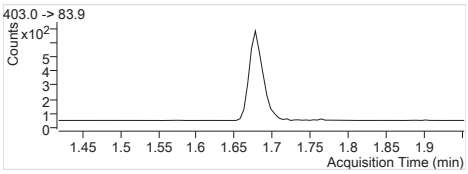
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	0.000 (2.466)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



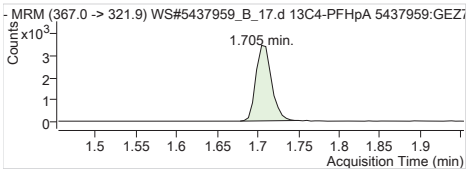


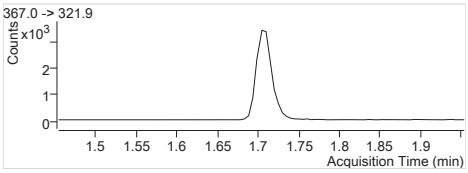
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.452 (1.452)
Calc. conc.	93.34 µg/L
Area ratio:	0.25440
Sample type:	Sample



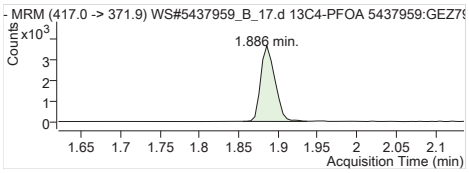


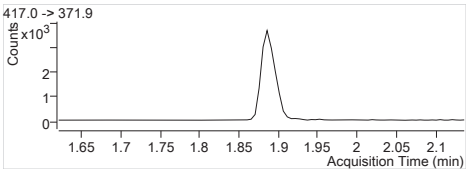
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	100.92 µg/L
Area ratio:	0.05574
Sample type:	Sample



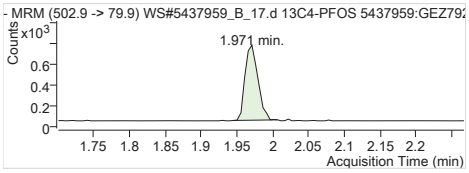


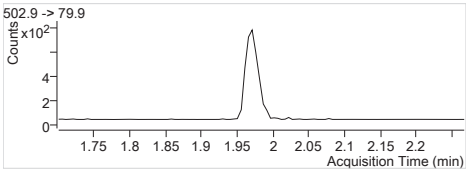
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	96.17 µg/L
Area ratio:	0.30257
Sample type:	Sample



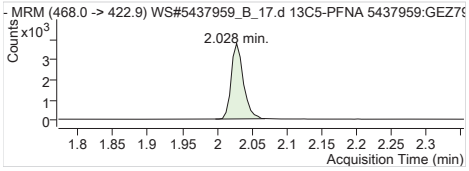


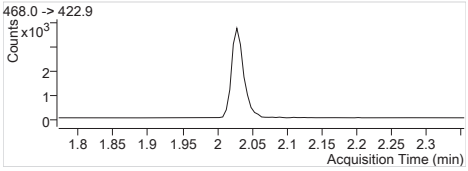
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	94.08 µg/L
Area ratio:	0.30986
Sample type:	Sample



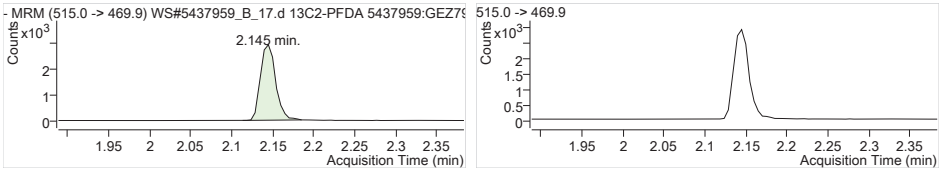


13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.971 (1.971)
Calc. conc.	92.97 µg/L
Area ratio:	0.06222
Sample type:	Sample

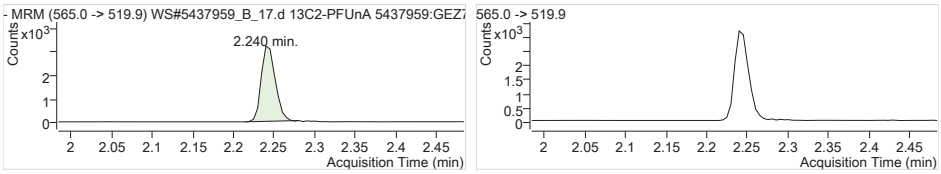




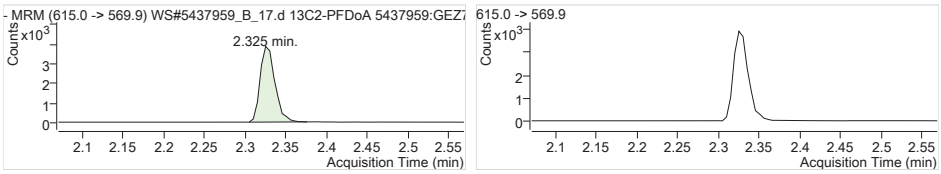
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	97.29 µg/L
Area ratio:	0.30761
Sample type:	Sample



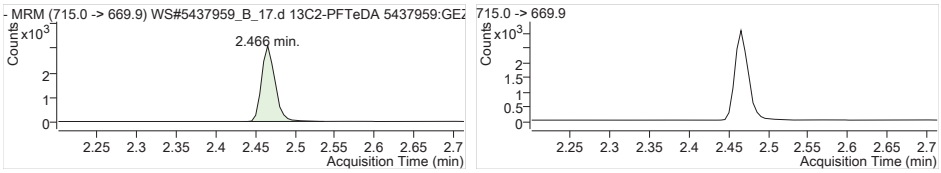
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 90.01 µg/L
Area ratio: 0.19875
Sample type: Sample



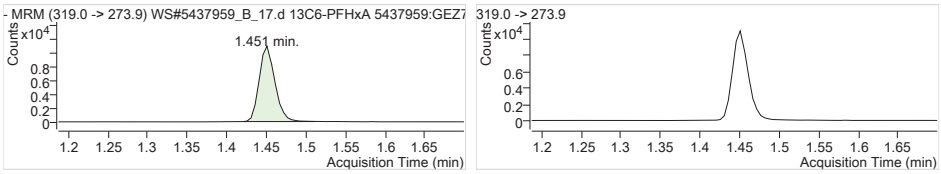
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 74.05 µg/L
Area ratio: 0.20798
Sample type: Sample



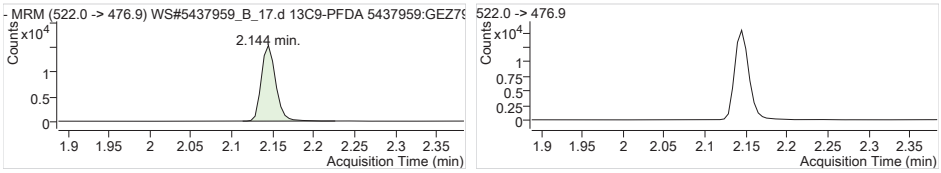
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 66.43 µg/L
Area ratio: 0.26395
Sample type: Sample



13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 46.29 µg/L
Area ratio: 0.19479
Sample type: Sample



13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 1.90 µg/L
Area ratio: 0
Sample type: Sample



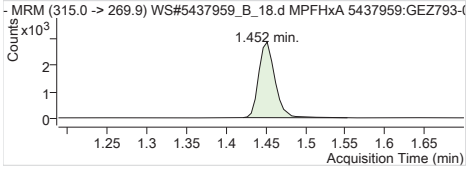
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 1.95 µg/L
Area ratio: 0
Sample type: Sample

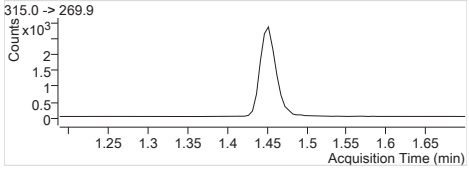
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:GEZ793-01**	**Instrument**	LCMS04
Data File	WS#5437959_B_18.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B8
Acq. Date	2018/03/15 6:07:17 PM	**Injection Volume**	Per Method
Sample Annotation	-		

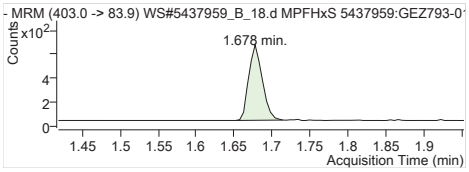
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	3893	1.45	1 µg/L		
MPFHxS	791	1.68	1 µg/L		
MPFHpA	4640	1.70	1 µg/L		
MPFOA	4876	1.89	1 µg/L		
MPFOS	974	1.97	1 µg/L		
MPFNA	4800	2.03	1 µg/L		
MPFDA	3829	2.14	1 µg/L		
MPFUnA	4175	2.24	1 µg/L		
MPFDoA	5788	2.33	1 µg/L		
MPFTeDA	6156	2.47	1 µg/L		
13C6-PFHxA IS	15732	1.45	1 µg/L		
13C9-PFDA IS	19114	2.14	1 µg/L		

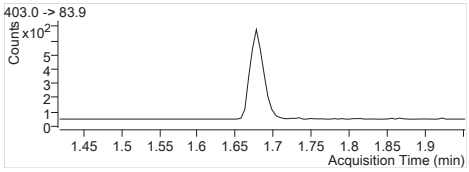
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1			-	ND	-
PFHxA 1			-	ND	-
PFHxS 1			-	ND	-
PFHpA 1			-	ND	-
PFOA 1			-	ND	-
PFOS 1			-	ND	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	3893	1.45	-	90.80 µg/L	-
18O2-PFHxS	791	1.68	-	91.04 µg/L	-
13C4-PFHpA	4640	1.70	-	93.75 µg/L	-
13C4-PFOA	4876	1.89	-	94.10 µg/L	-
13C4-PFOS	974	1.97	-	92.51 µg/L	-
13C5-PFNA	4774	2.03	-	95.97 µg/L	-
13C2-PFDA	3810	2.14	-	90.27 µg/L	-
13C2-PFUnA	4175	2.24	-	77.77 µg/L	-
13C2-PFDoA	5788	2.33	-	76.21 µg/L	-
13C2-PFTeDA	6173	2.47	-	76.75 µg/L	-
13C6-PFHxA	15732	1.45	-	2.04 µg/L	-
13C9-PFDA	19114	2.14	-	2.02 µg/L	-



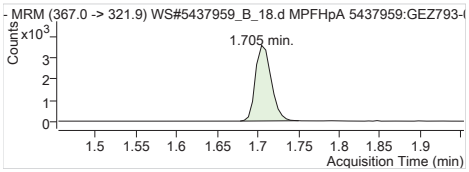


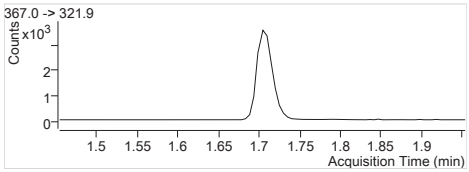
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



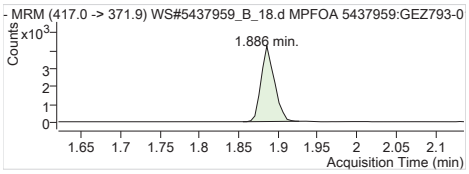


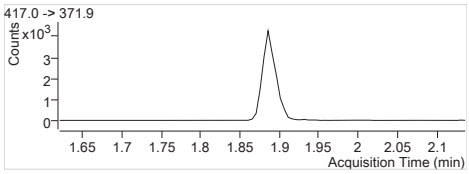
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Sample



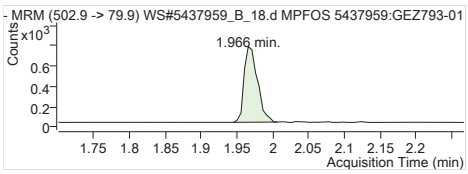


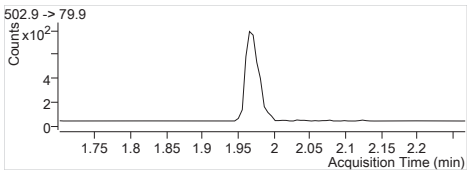
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Sample



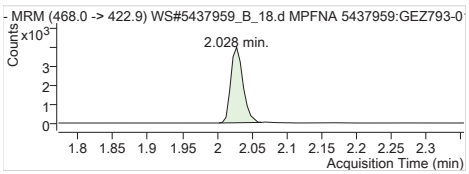


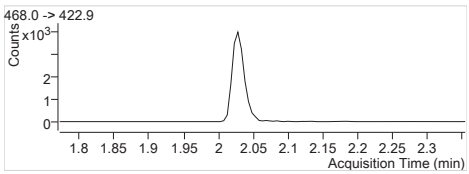
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Sample



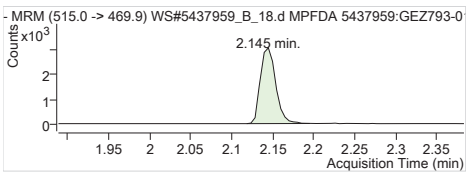


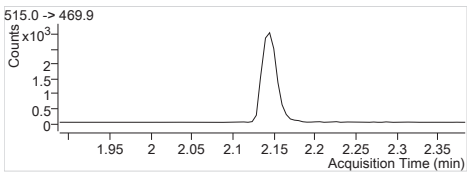
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: Sample



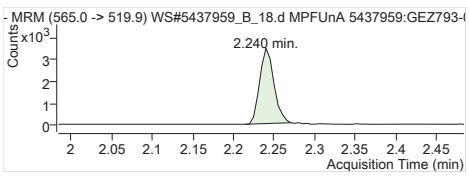


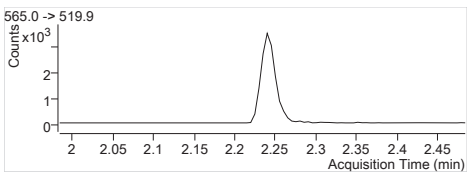
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Sample



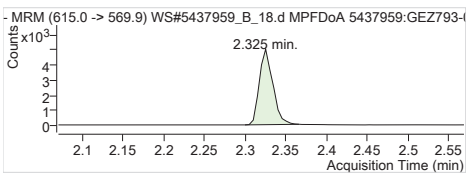


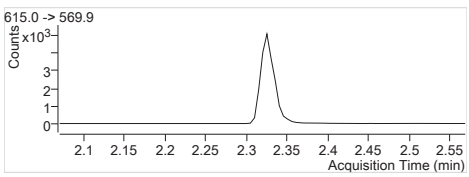
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Sample



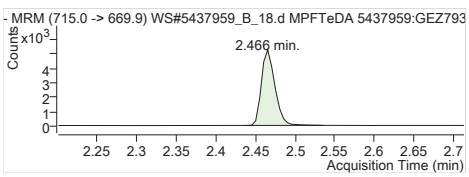


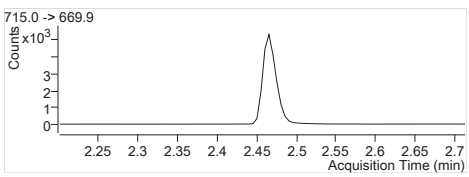
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Sample



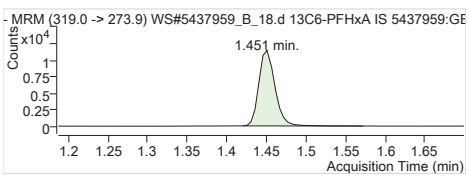


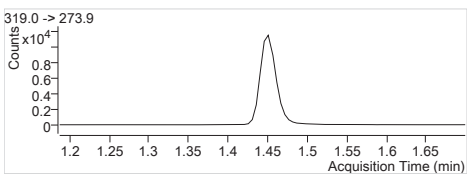
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Sample



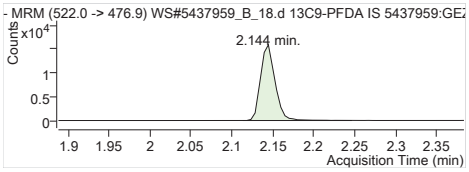


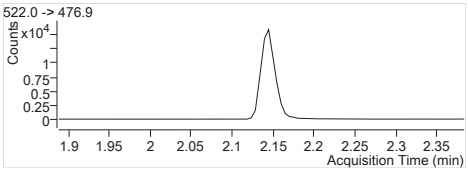
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Sample



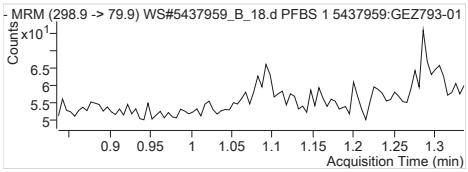


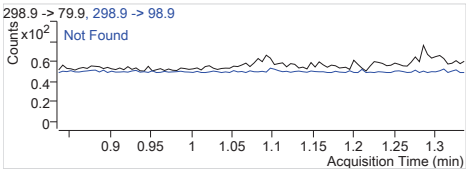
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Sample



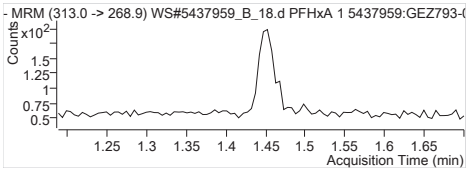


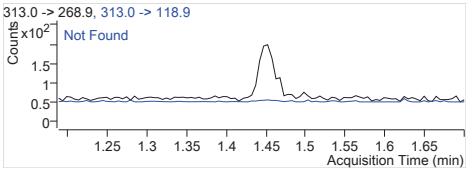
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Sample



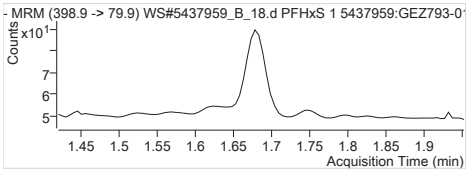


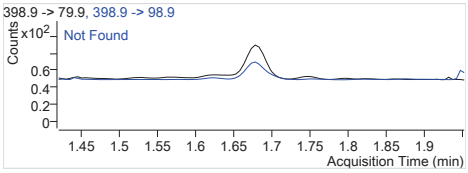
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 0.000 (1.107)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



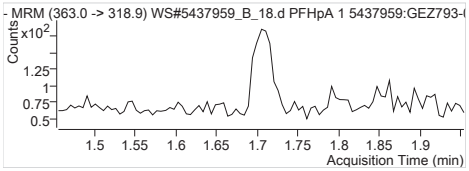


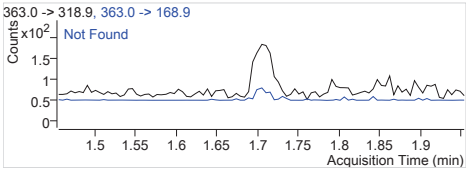
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 0.000 (1.452)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



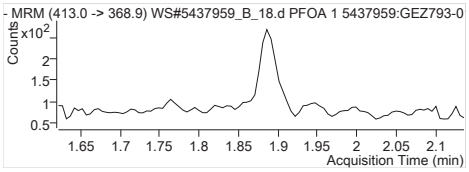


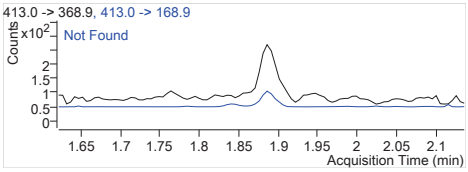
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 0.000 (1.678)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



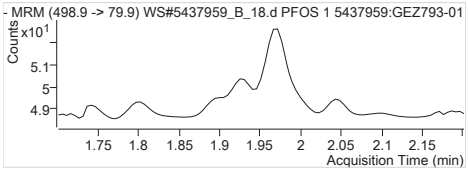


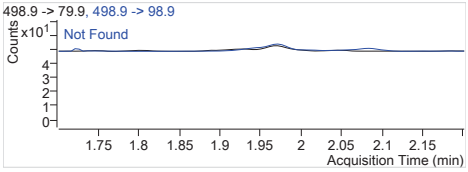
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 0.000 (1.705)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



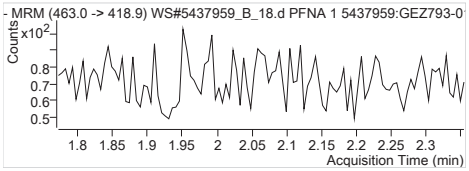


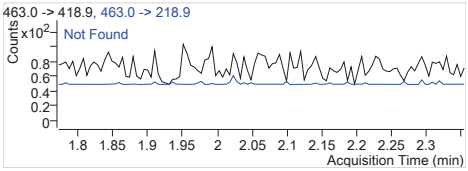
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 0.000 (1.886)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



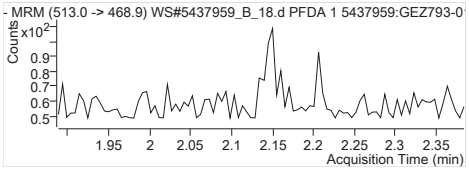


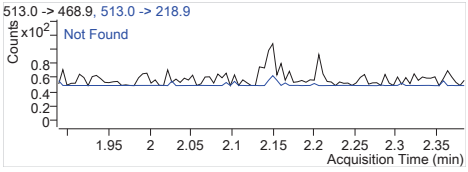
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 0.000 (1.971)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



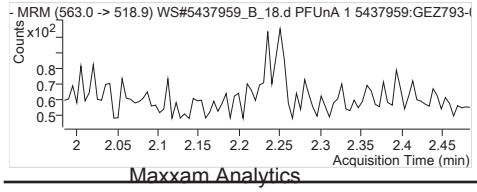


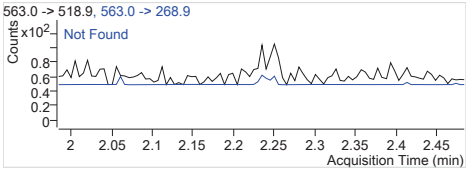
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 0.000 (2.028)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



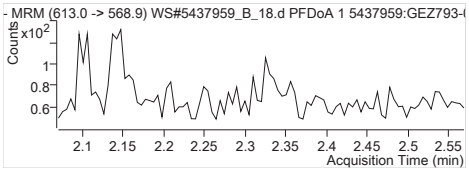


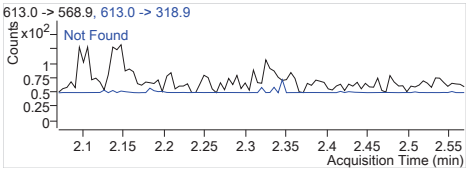
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 0.000 (2.145)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



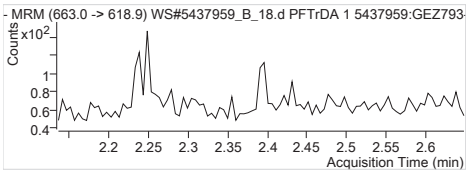


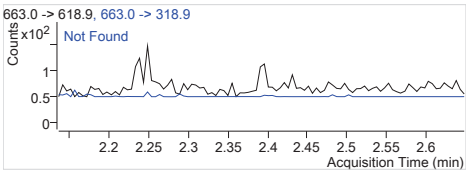
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 0.000 (2.240)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



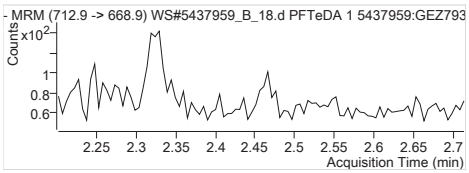


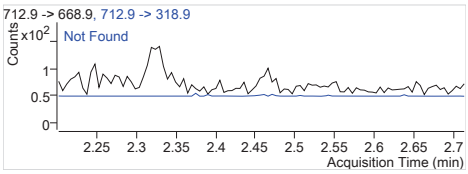
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	0.000 (2.325)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



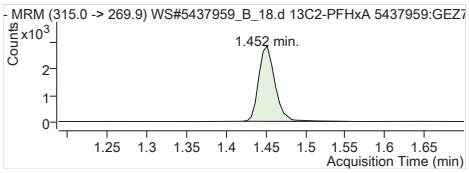


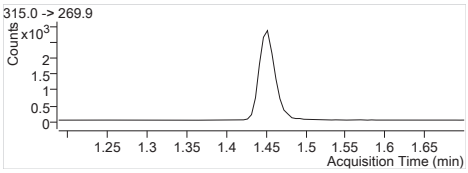
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	0.000 (2.401)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



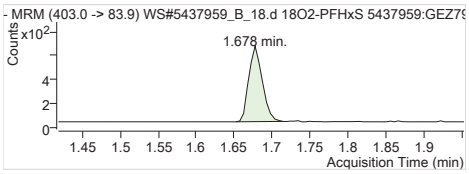


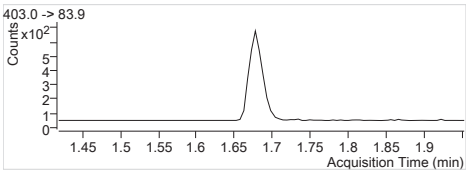
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	0.000 (2.466)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



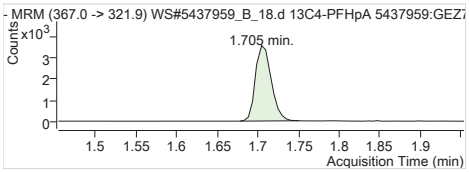


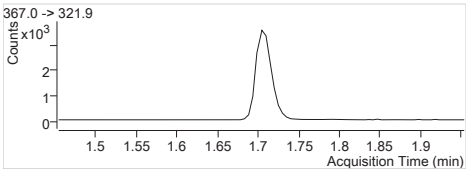
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.452 (1.452)
Calc. conc.	90.80 µg/L
Area ratio:	0.24746
Sample type:	Sample



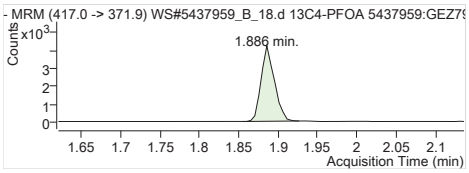


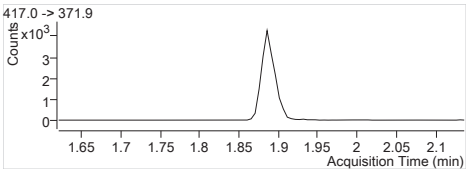
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	91.04 µg/L
Area ratio:	0.05028
Sample type:	Sample



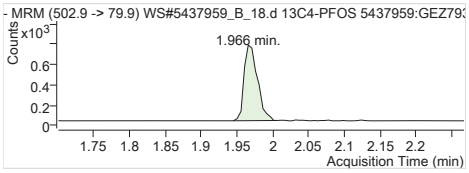


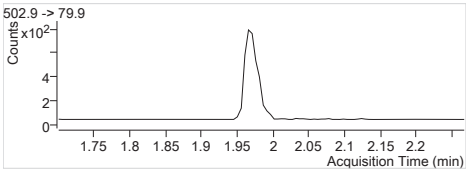
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	93.75 µg/L
Area ratio:	0.29494
Sample type:	Sample



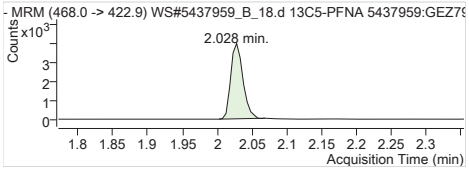


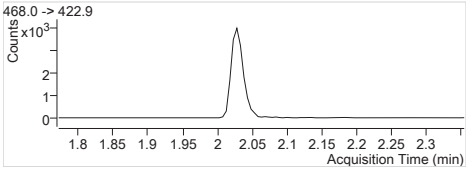
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	94.10 µg/L
Area ratio:	0.30994
Sample type:	Sample



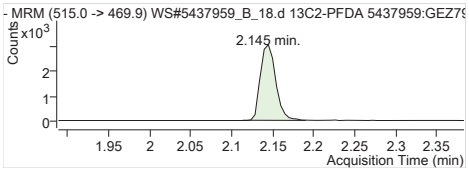


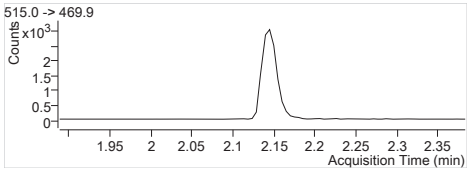
13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.966 (1.971)
Calc. conc.	92.51 µg/L
Area ratio:	0.06191
Sample type:	Sample



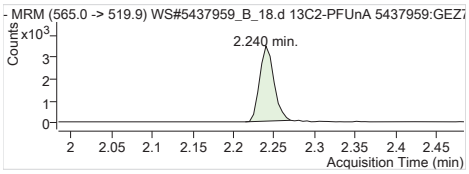


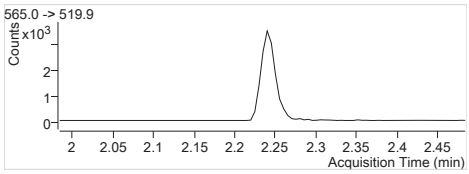
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	95.97 µg/L
Area ratio:	0.30346
Sample type:	Sample



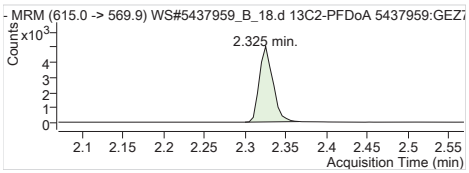


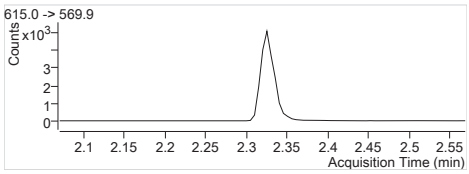
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 90.27 µg/L
Area ratio: 0.19933
Sample type: Sample



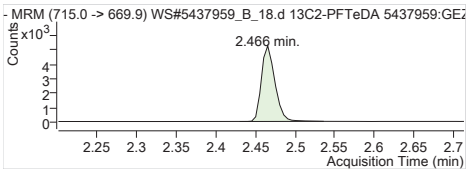


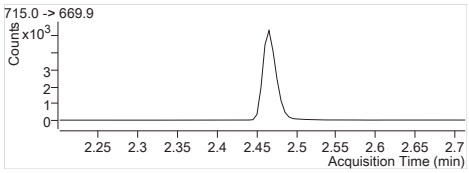
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 77.77 µg/L
Area ratio: 0.21843
Sample type: Sample



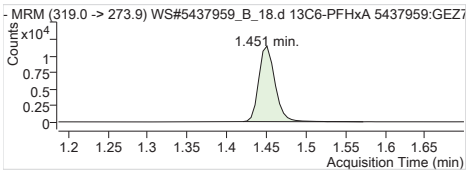


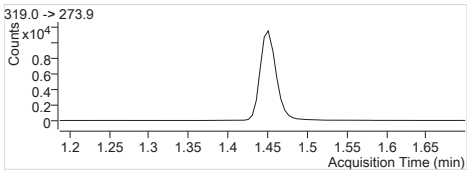
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 76.21 µg/L
Area ratio: 0.30281
Sample type: Sample



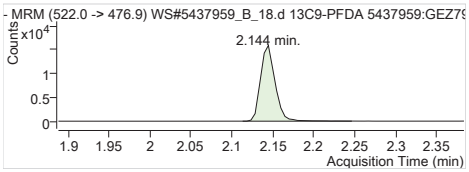


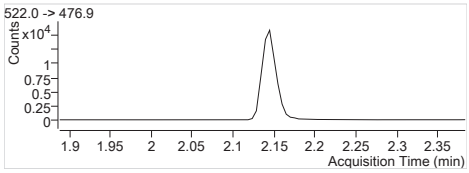
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 76.75 µg/L
Area ratio: 0.32296
Sample type: Sample





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 2.04 µg/L
Area ratio: 0
Sample type: Sample





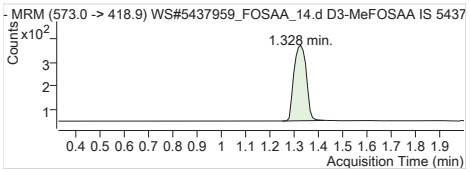
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 2.02 µg/L
Area ratio: 0
Sample type: Sample

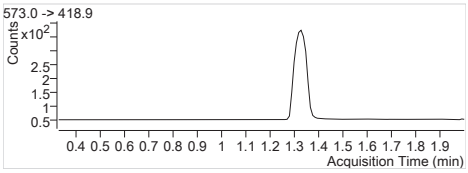
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:GEZ789-01**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_14.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B4
Acq. Date	2018/03/13 9:06:21 PM	**Injection Volume**	Per Method
Sample Annotation	-		

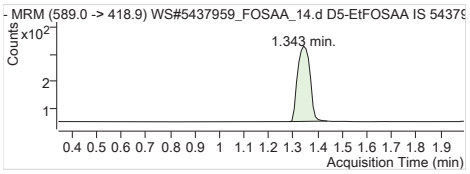
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1143	1.33	1 µg/L		
D5-EtFOSAA IS	990	1.34	1 µg/L		
13C9-PFDA IS	18981	0.94	1 µg/L		

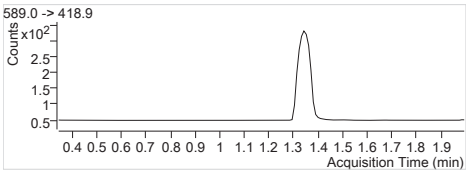
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1			-	ND	-
EtFOSAA 1			-	ND	-
D3-MeFOSAA	1148	1.33	-	68.67 µg/L	-
D5-EtFOSAA	998	1.34	-	69.81 µg/L	-
13C9-PFDA	18955	0.94	-	2.40 µg/L	-



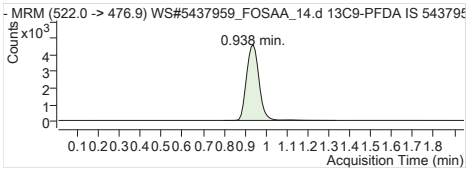


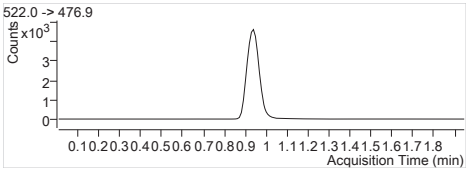
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Sample



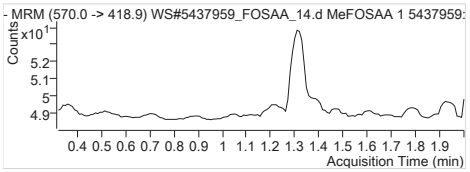


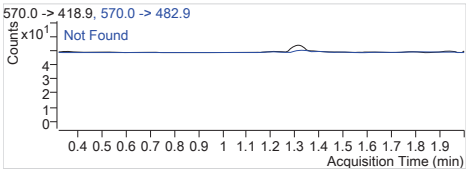
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Sample



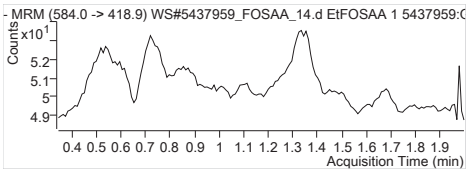


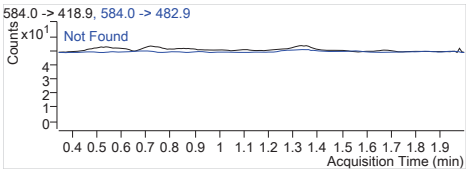
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.938 (0.948)
Concentration: 1 µg/L
Sample type: Sample



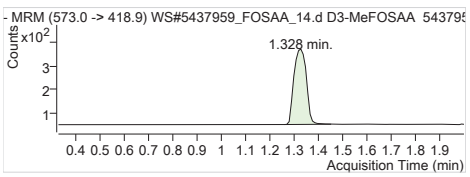


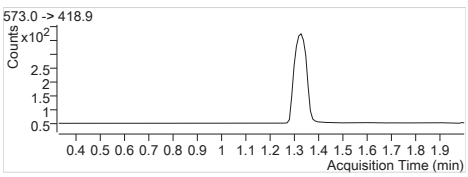
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 0.000 (1.319)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



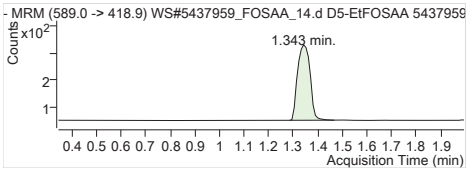


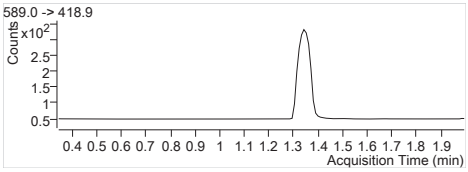
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 0.000 (1.344)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



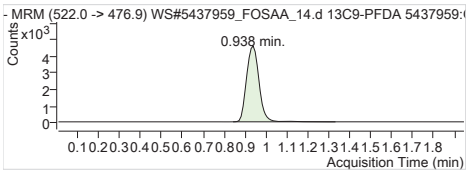


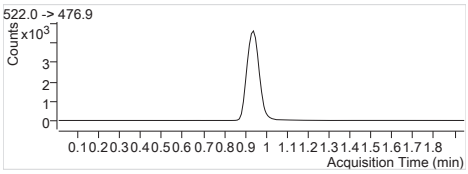
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 68.67 µg/L
Area ratio: 0.06048
Sample type: Sample





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	69.81 µg/L
Area ratio:	0.05258
Sample type:	Sample





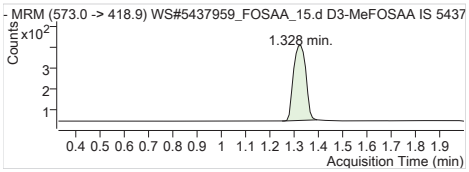
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.938 (0.948)
Calc. conc.	2.40 µg/L
Area ratio:	0
Sample type:	Sample

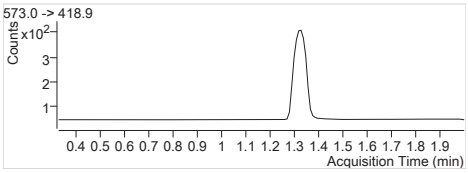
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:GEZ790-01**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_15.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B5
Acq. Date	2018/03/13 9:08:46 PM	**Injection Volume**	Per Method
Sample Annotation	-		

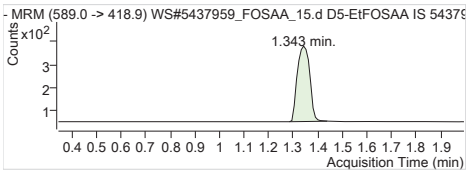
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1266	1.33	1 µg/L		
D5-EtFOSAA IS	1168	1.34	1 µg/L		
13C9-PFDA IS	20462	0.91	1 µg/L		

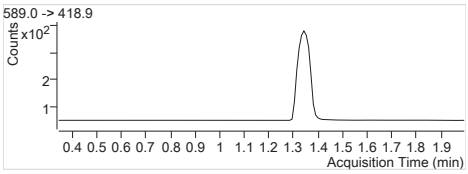
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1			-	ND	-
EtFOSAA 1			-	ND	-
D3-MeFOSAA	1292	1.33	-	71.69 µg/L	-
D5-EtFOSAA	1174	1.34	-	76.18 µg/L	-
13C9-PFDA	20478	0.91	-	2.59 µg/L	-



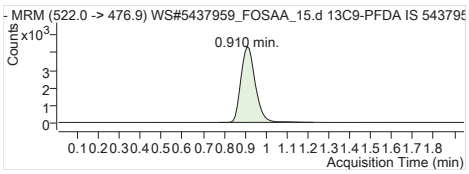


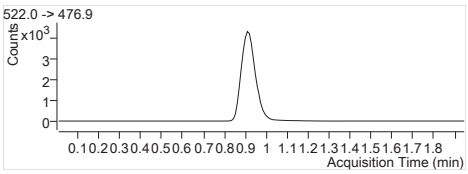
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Sample



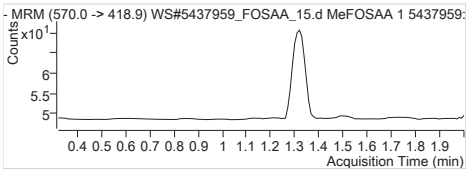


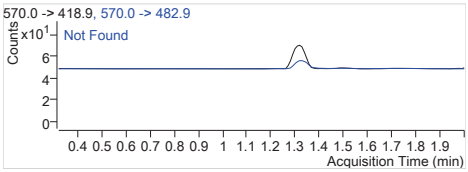
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Sample



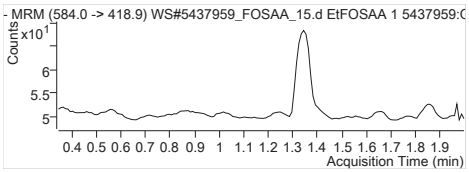


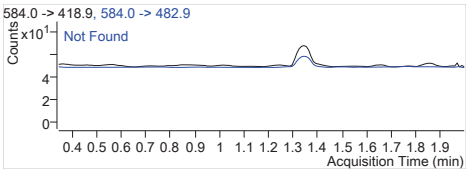
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.910 (0.948)
Concentration: 1 µg/L
Sample type: Sample



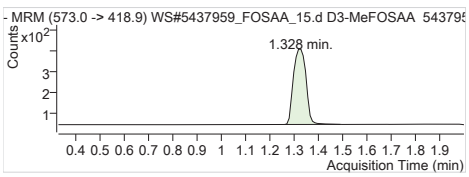


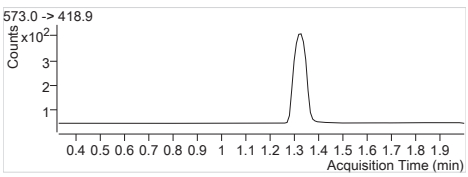
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 0.000 (1.319)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



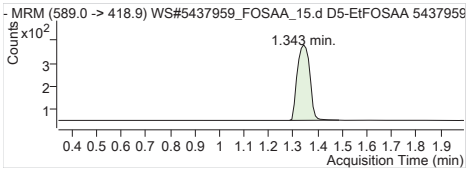


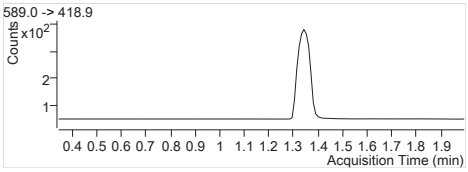
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 0.000 (1.344)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



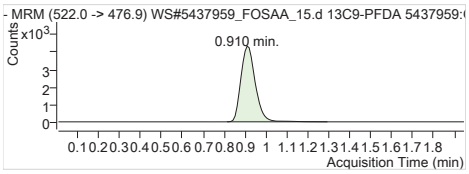


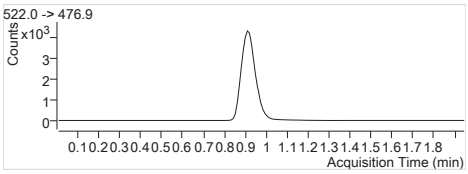
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 71.69 µg/L
Area ratio: 0.06314
Sample type: Sample





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	76.18 µg/L
Area ratio:	0.05737
Sample type:	Sample





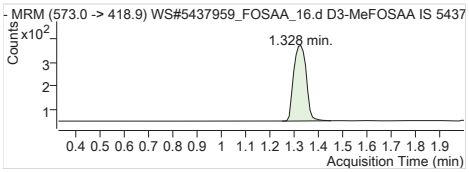
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.910 (0.948)
Calc. conc.	2.59 µg/L
Area ratio:	0
Sample type:	Sample

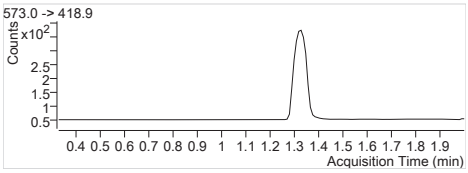
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:GEZ791-01**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_16.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B6
Acq. Date	2018/03/13 9:11:11 PM	**Injection Volume**	Per Method
Sample Annotation	-		

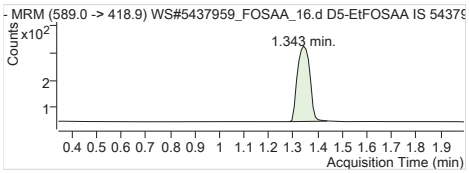
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1168	1.33	1 µg/L		
D5-EtFOSAA IS	967	1.34	1 µg/L		
13C9-PFDA IS	19294	0.91	1 µg/L		

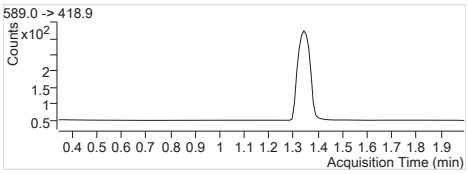
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1			-	ND	-
EtFOSAA 1			-	ND	-
D3-MeFOSAA	1165	1.33	-	68.55 µg/L	-
D5-EtFOSAA	973	1.34	-	66.96 µg/L	-
13C9-PFDA	19277	0.91	-	2.44 µg/L	-



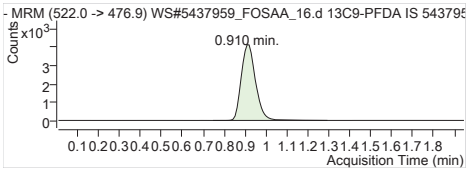


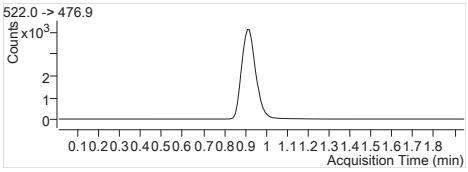
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Sample



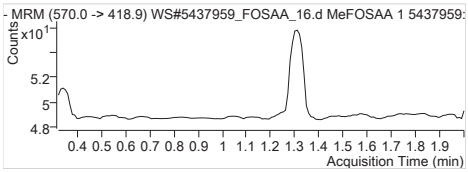


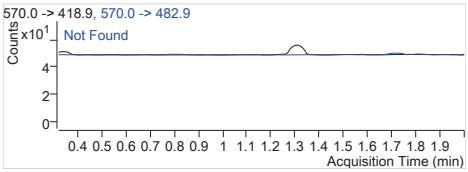
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Sample



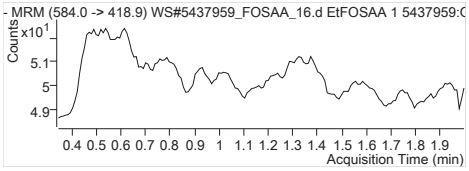


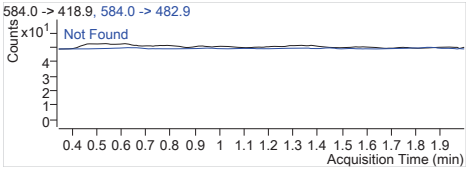
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.910 (0.948)
Concentration: 1 µg/L
Sample type: Sample



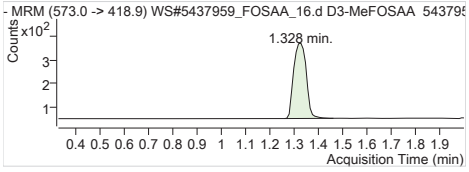


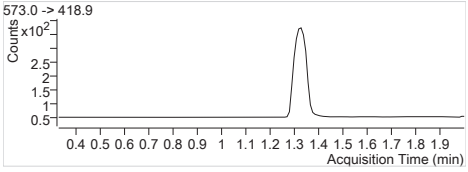
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 0.000 (1.319)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



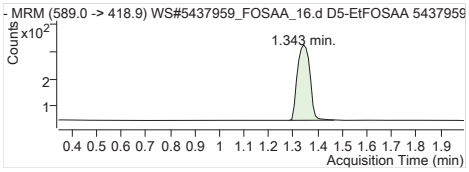


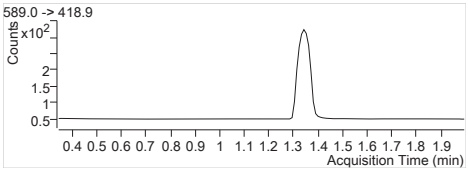
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 0.000 (1.344)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



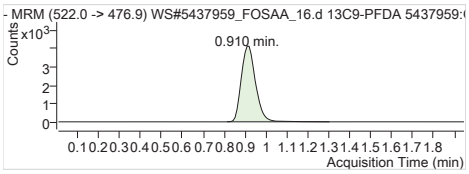


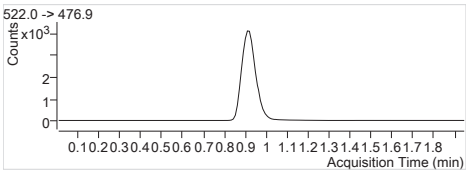
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 68.55 µg/L
Area ratio: 0.06038
Sample type: Sample





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	66.96 µg/L
Area ratio:	0.05043
Sample type:	Sample





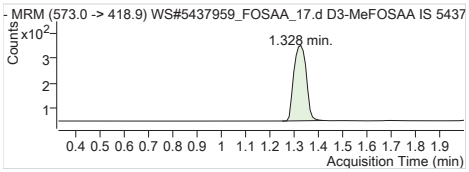
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.910 (0.948)
Calc. conc.	2.44 µg/L
Area ratio:	0
Sample type:	Sample

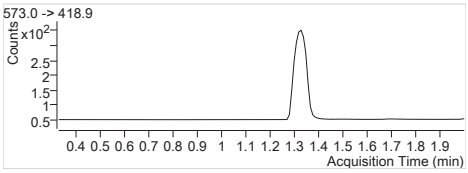
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:GEZ792-01**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_17.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B7
Acq. Date	2018/03/13 9:13:36 PM	**Injection Volume**	Per Method
Sample Annotation	-		

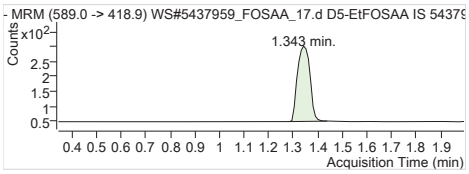
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1076	1.33	1 µg/L		
D5-EtFOSAA IS	889	1.34	1 µg/L		
13C9-PFDA IS	17976	0.93	1 µg/L		

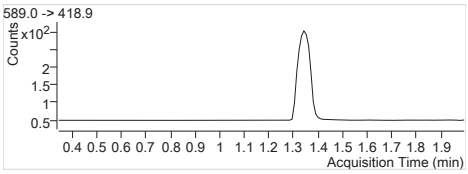
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1			-	ND	-
EtFOSAA 1			-	ND	-
D3-MeFOSAA	1082	1.33	-	68.34 µg/L	-
D5-EtFOSAA	891	1.34	-	65.81 µg/L	-
13C9-PFDA	17970	0.93	-	2.28 µg/L	-



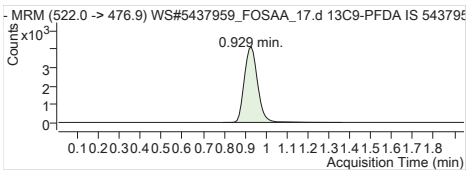


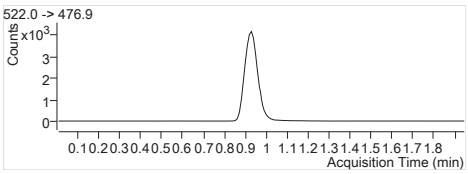
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Sample



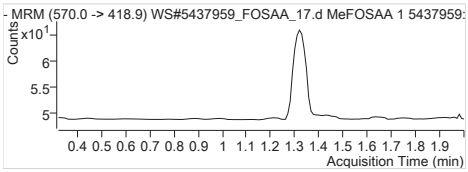


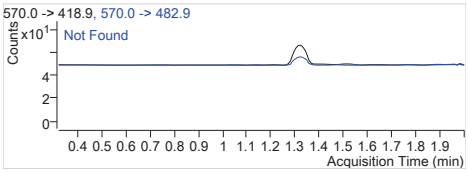
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Sample



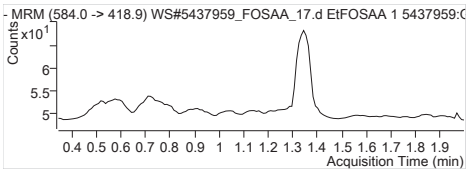


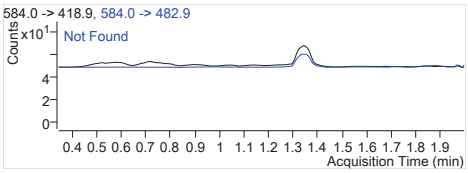
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.929 (0.948)
Concentration: 1 µg/L
Sample type: Sample



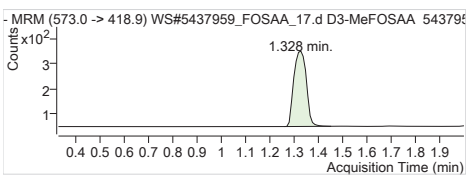


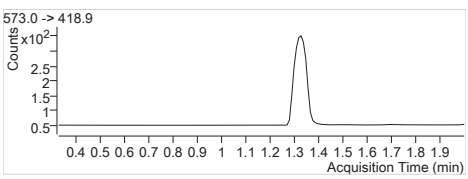
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 0.000 (1.319)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



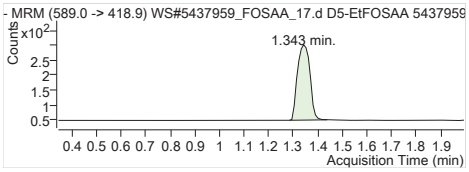


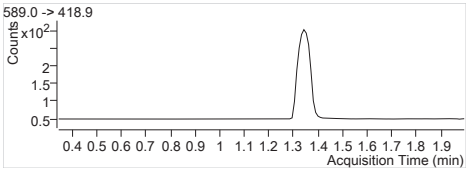
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 0.000 (1.344)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



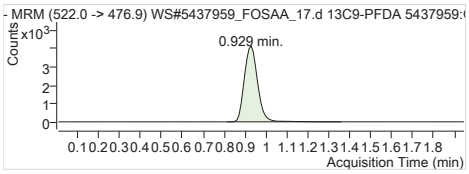


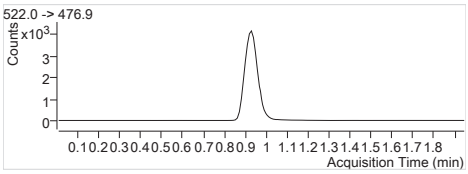
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 68.34 µg/L
Area ratio: 0.06019
Sample type: Sample





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	65.81 µg/L
Area ratio:	0.04957
Sample type:	Sample





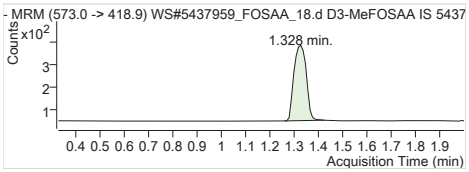
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.929 (0.948)
Calc. conc.	2.28 µg/L
Area ratio:	0
Sample type:	Sample

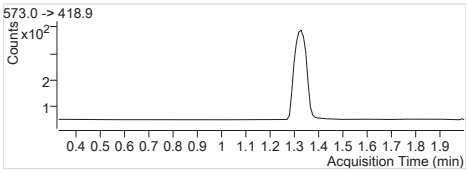
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:GEZ793-01**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_18.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B8
Acq. Date	2018/03/13 9:16:00 PM	**Injection Volume**	Per Method
Sample Annotation	-		

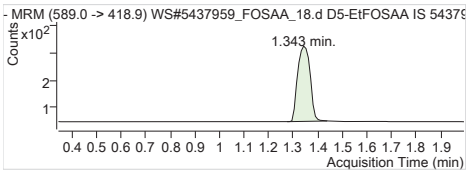
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1194	1.33	1 µg/L		
D5-EtFOSAA IS	963	1.34	1 µg/L		
13C9-PFDA IS	17700	0.93	1 µg/L		

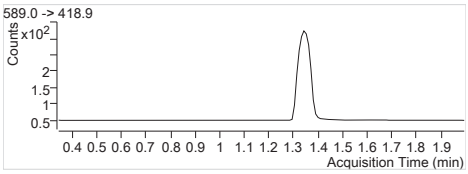
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1			-	ND	-
EtFOSAA 1			-	ND	-
D3-MeFOSAA	1211	1.33	-	77.68 µg/L	-
D5-EtFOSAA	976	1.34	-	73.22 µg/L	-
13C9-PFDA	17858	0.93	-	2.26 µg/L	-



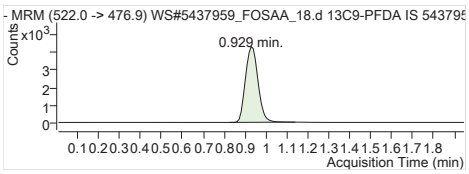


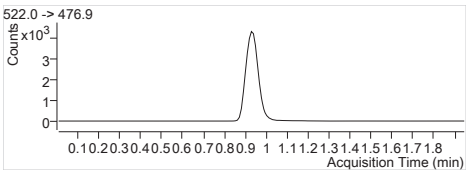
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Sample



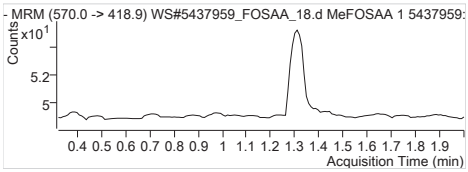


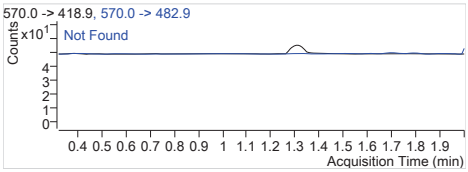
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Sample



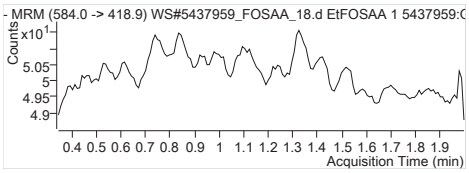


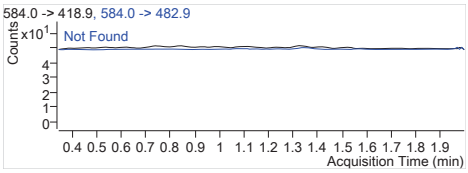
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.929 (0.948)
Concentration: 1 µg/L
Sample type: Sample



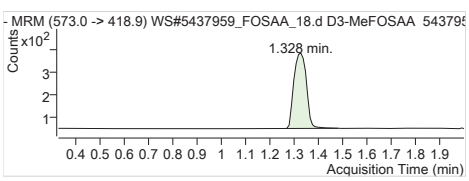


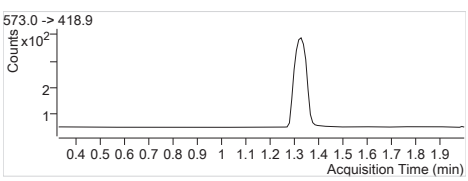
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 0.000 (1.319)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



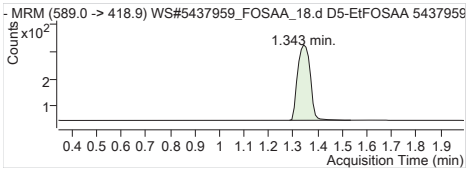


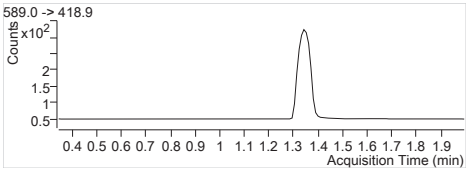
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 0.000 (1.344)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



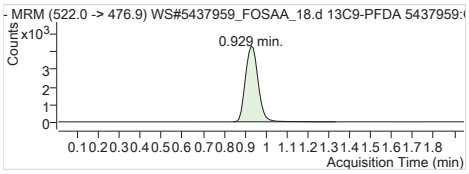


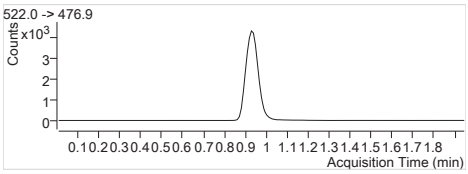
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 77.68 µg/L
Area ratio: 0.06842
Sample type: Sample





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	73.22 µg/L
Area ratio:	0.05514
Sample type:	Sample





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.929 (0.948)
Calc. conc.	2.26 µg/L
Area ratio:	0
Sample type:	Sample

Quantitation Results

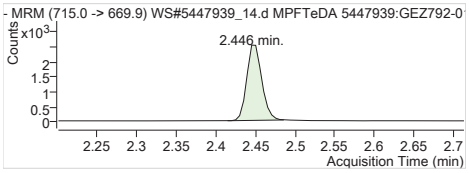
Agilent Technologies

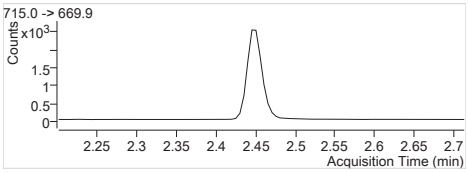
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**5447939:GEZ792-01**	**Instrument**	LCMS04
Data File	WS#5447939_14.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P1-B4
Acq. Date	2018/03/21 2:53:20 PM	**Injection Volume**	Per Method
Sample Annotation	Reported for PFTeDA, PFTrDA only.		

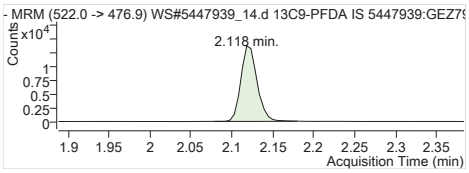
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	3286	2.45	1 µg/L		
13C9-PFDA IS	18804	2.12	1 µg/L		

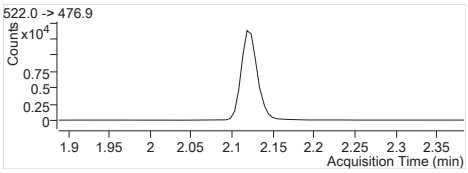
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFTeDA	3286	2.45	-	54.45 µg/L	-
13C9-PFDA	18804	2.12	-	2.16 µg/L	-



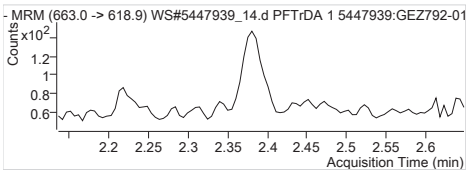


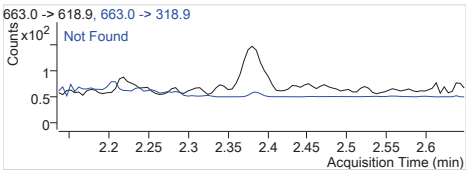
MPFTeDA Internal Standard
RT (Exp. RT): 2.446 (2.446)
Concentration: 1 µg/L
Sample type: Sample



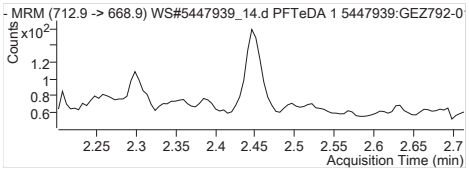


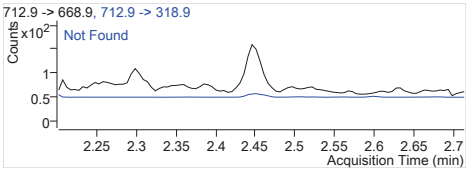
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.118 (2.118)
Concentration: 1 µg/L
Sample type: Sample



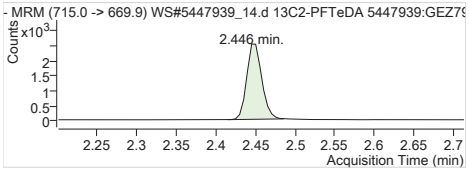


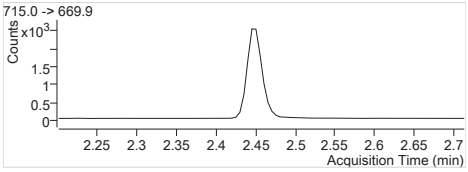
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 0.000 (2.381)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



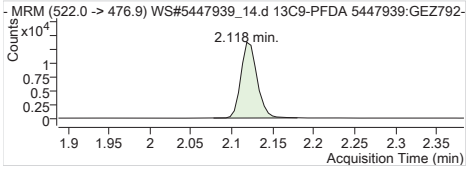


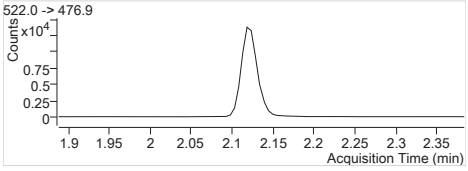
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 0.000 (2.446)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 54.45 µg/L
Area ratio: 0.17475
Sample type: Sample





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.118 (2.118)
Calc. conc. 2.16 µg/L
Area ratio: 0
Sample type: Sample



4. QA/QC Data

Maxxam Analytics International
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

Quantitation Results

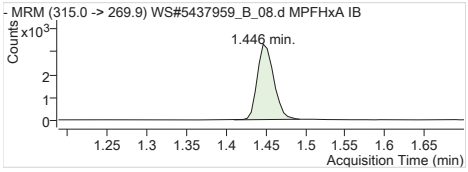
Agilent Technologies

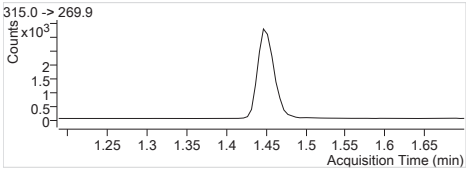
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**IB**	**Instrument**	LCMS04
Data File	WS#5437959_B_08.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-A8
Acq. Date	2018/03/15 5:16:11 PM	**Injection Volume**	Per Method
Sample Annotation	-		

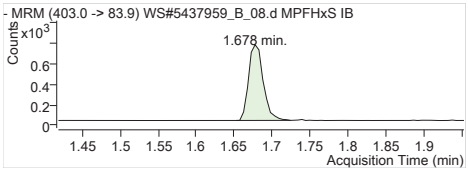
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4710	1.45	1 µg/L		
MPFHxS	998	1.68	1 µg/L		
MPFHpA	5717	1.70	1 µg/L		
MPFOA	5770	1.89	1 µg/L		
MPFOS	1282	1.97	1 µg/L		
MPFNA	5622	2.03	1 µg/L		
MPFDA	4727	2.14	1 µg/L		
MPFUnA	6004	2.24	1 µg/L		
MPFDoA	8534	2.33	1 µg/L		
MPFTeDA	8969	2.47	1 µg/L		
13C6-PFHxA IS	18272	1.45	1 µg/L		
13C9-PFDA IS	21328	2.14	1 µg/L		

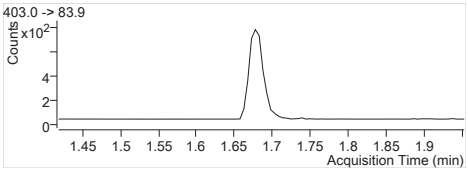
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1			-	ND	-
PFHxA 1			-	ND	-
PFHxS 1			-	ND	-
PFHpA 1			-	ND	-
PFOA 1			-	ND	-
PFOS 1			-	ND	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	4710	1.45	-	94.58 µg/L	-
18O2-PFHxS	998	1.68	-	98.90 µg/L	-
13C4-PFHpA	5717	1.70	-	99.45 µg/L	-
13C4-PFOA	5770	1.89	-	95.87 µg/L	-
13C4-PFOS	1282	1.97	-	104.84 µg/L	-
13C5-PFNA	5501	2.03	-	95.22 µg/L	-
13C2-PFDA	4742	2.14	-	100.69 µg/L	-
13C2-PFUnA	6004	2.24	-	100.23 µg/L	-
13C2-PFDoA	8534	2.33	-	100.70 µg/L	-
13C2-PFTeDA	9241	2.47	-	102.97 µg/L	-
13C6-PFHxA	18272	1.45	-	2.36 µg/L	-
13C9-PFDA	21328	2.14	-	2.26 µg/L	-



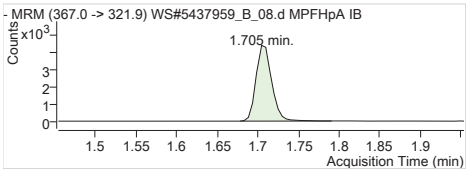


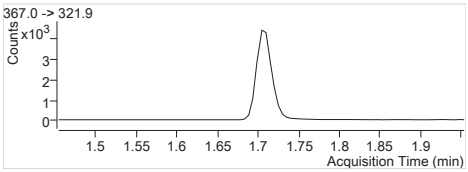
MPFHxA	Internal Standard
RT (Exp. RT):	1.446 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



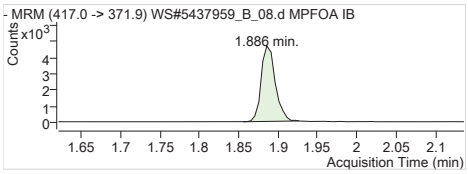


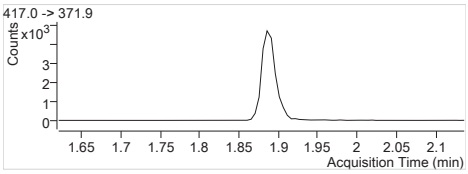
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Sample



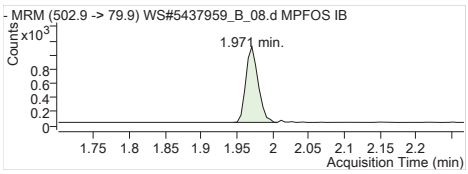


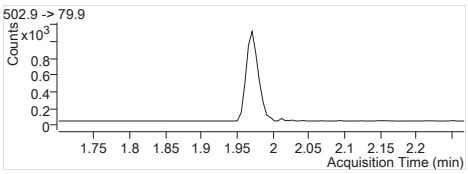
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Sample



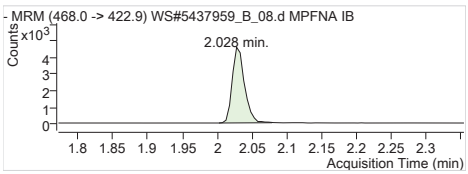


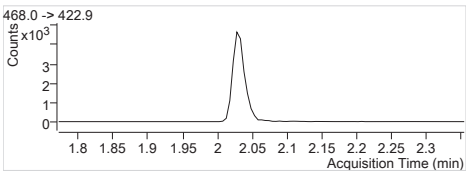
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Sample



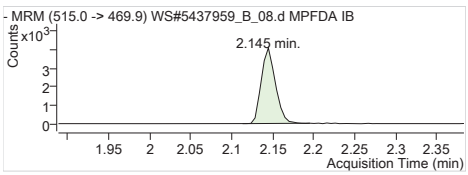


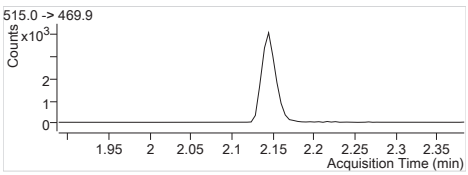
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Sample



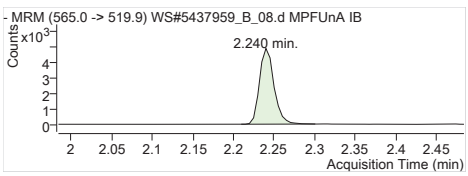


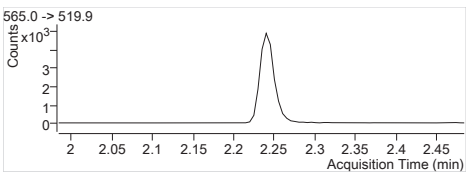
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Sample



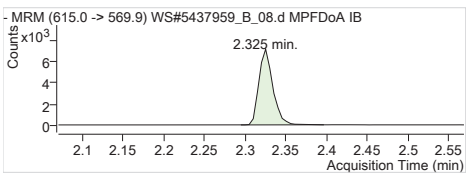


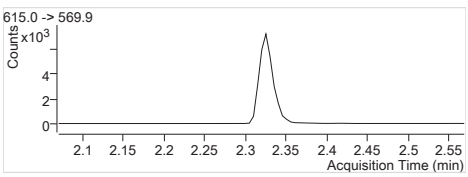
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Sample



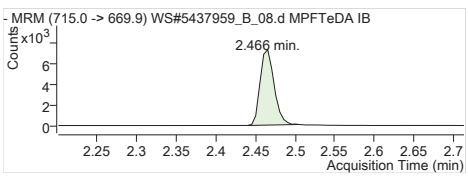


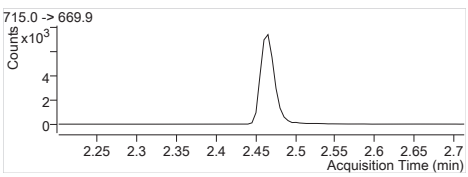
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Sample



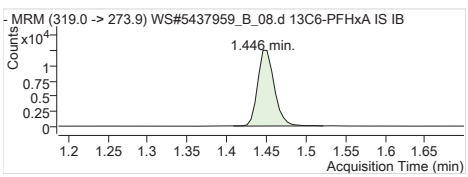


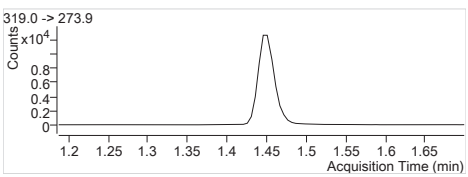
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Sample



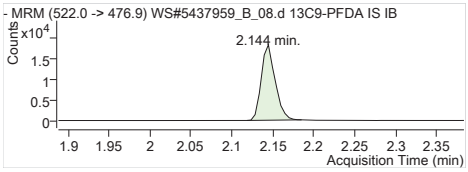


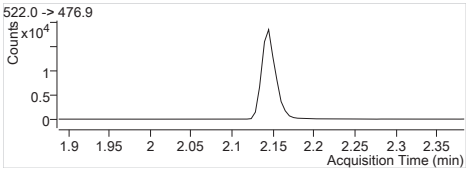
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Sample



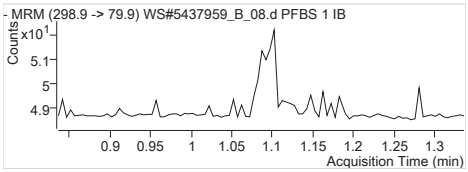


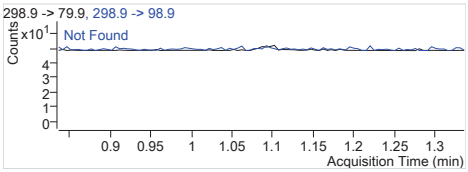
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.446 (1.451)
Concentration: 1 µg/L
Sample type: Sample



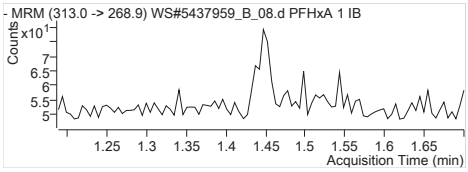


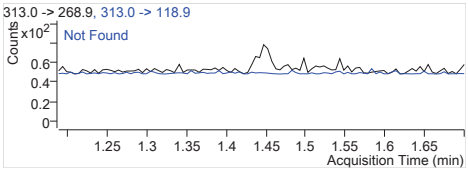
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Sample



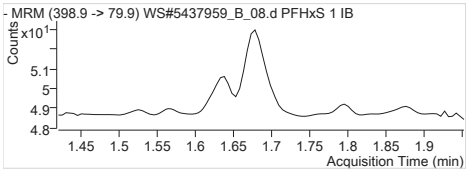


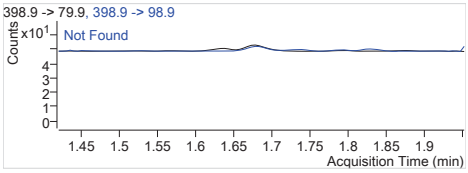
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 0.000 (1.107)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



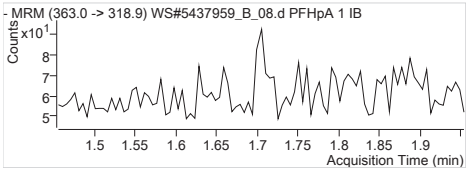


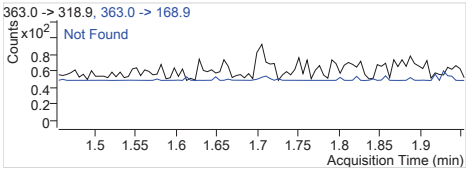
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 0.000 (1.452)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



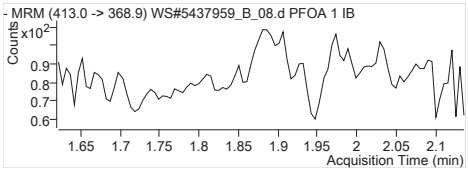


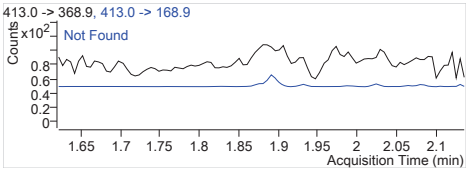
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 0.000 (1.678)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



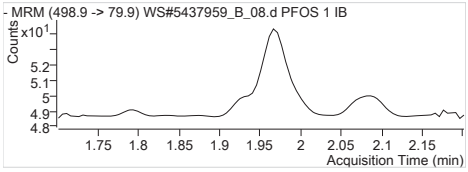


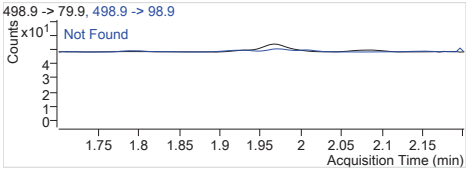
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 0.000 (1.705)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



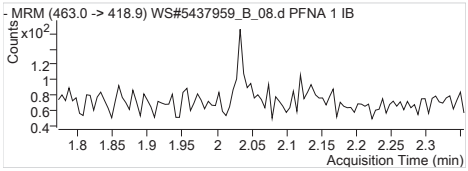


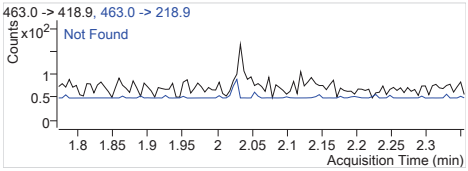
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 0.000 (1.886)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



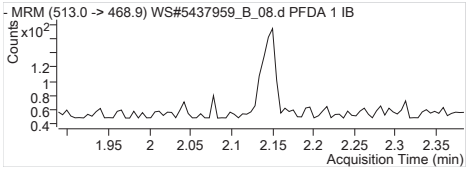


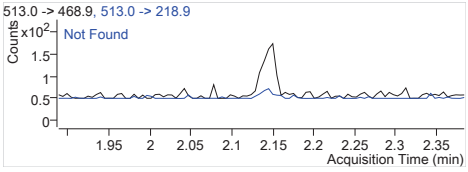
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 0.000 (1.971)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



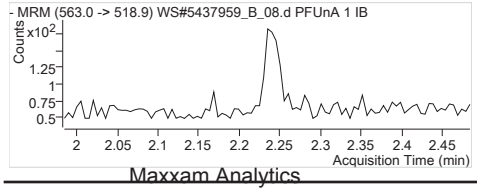


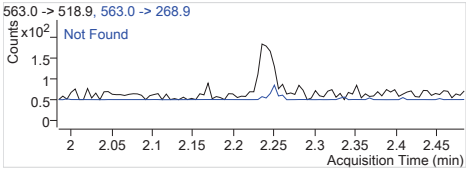
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 0.000 (2.028)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



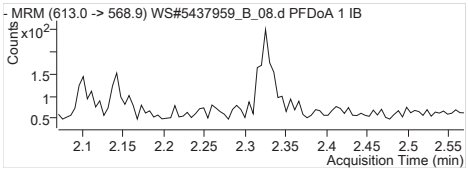


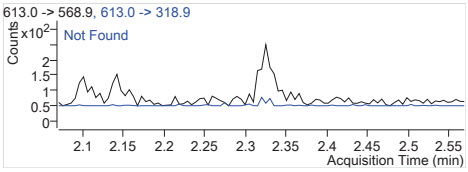
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 0.000 (2.145)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



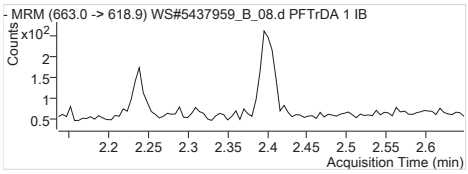


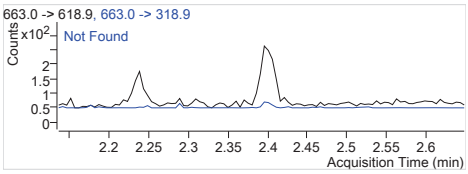
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 0.000 (2.240)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



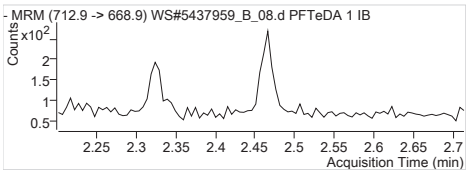


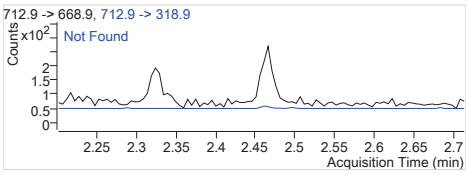
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	0.000 (2.325)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



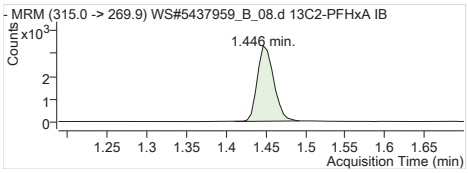


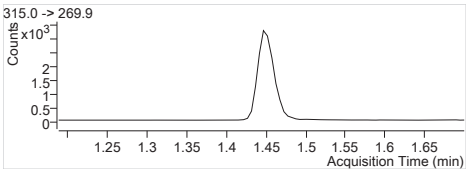
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	0.000 (2.401)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



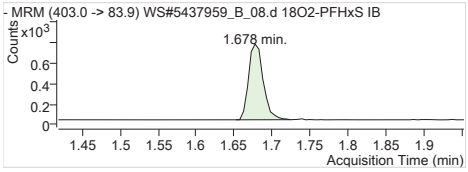


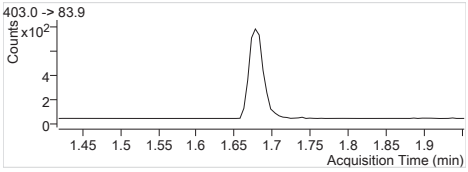
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	0.000 (2.466)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



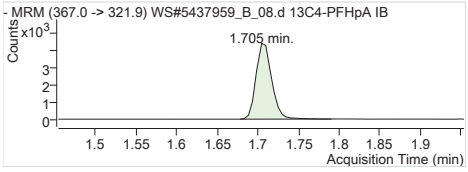


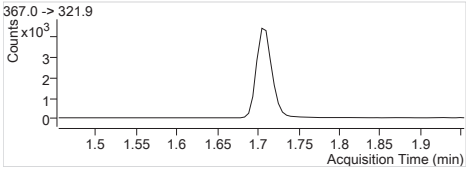
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.446 (1.452)
Calc. conc.	94.58 µg/L
Area ratio:	0.25777
Sample type:	Sample



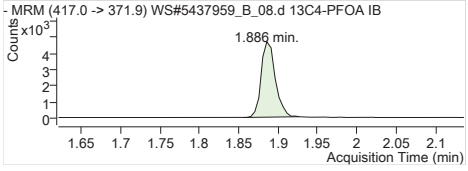


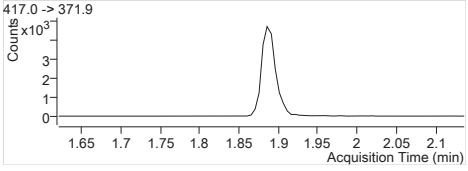
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	98.90 µg/L
Area ratio:	0.05462
Sample type:	Sample



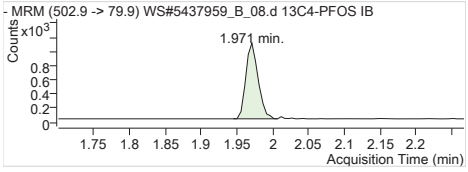


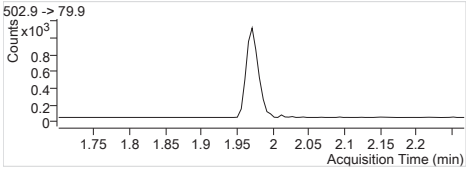
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	99.45 µg/L
Area ratio:	0.31288
Sample type:	Sample



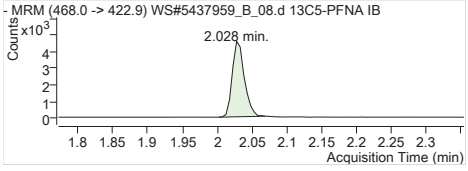


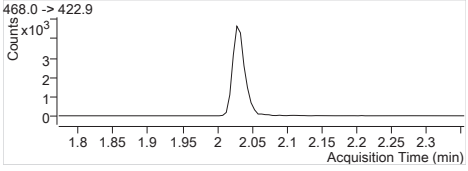
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	95.87 µg/L
Area ratio:	0.31578
Sample type:	Sample



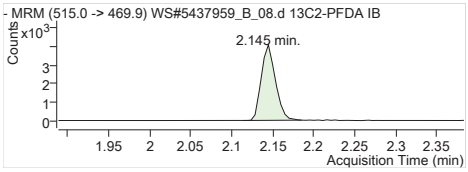


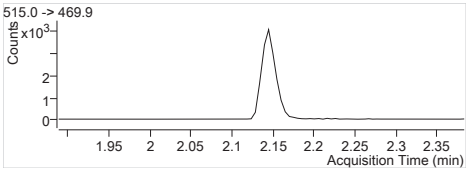
13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.971 (1.971)
Calc. conc.	104.84 µg/L
Area ratio:	0.07016
Sample type:	Sample



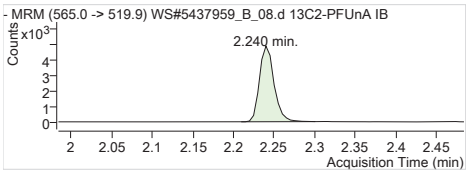


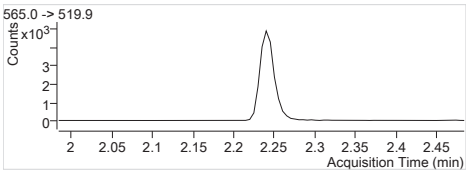
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	95.22 µg/L
Area ratio:	0.30106
Sample type:	Sample



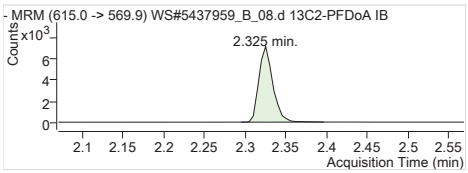


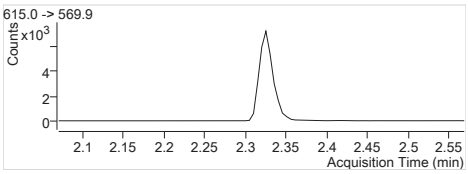
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 100.69 µg/L
Area ratio: 0.22234
Sample type: Sample



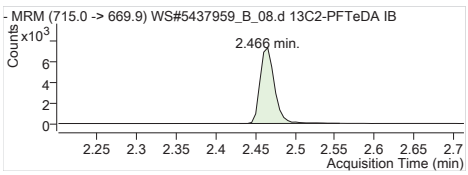


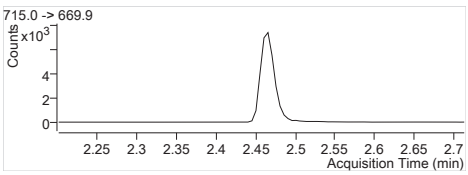
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 100.23 µg/L
Area ratio: 0.28151
Sample type: Sample



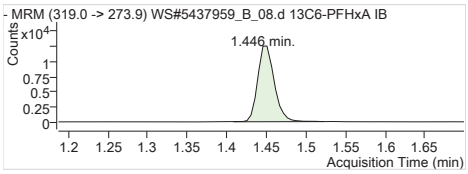


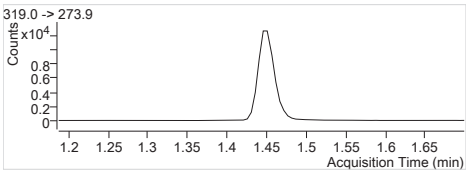
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 100.70 µg/L
Area ratio: 0.40013
Sample type: Sample



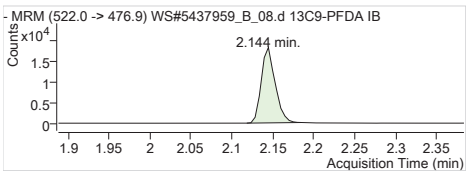


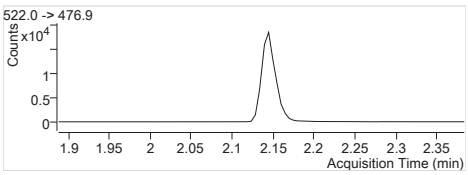
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 102.97 µg/L
Area ratio: 0.43328
Sample type: Sample





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.446 (1.451)
Calc. conc. 2.36 µg/L
Area ratio: 0
Sample type: Sample





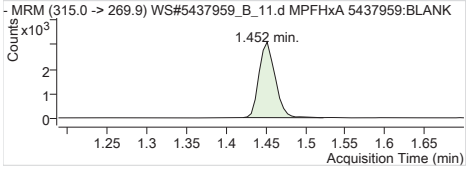
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 2.26 µg/L
Area ratio: 0
Sample type: Sample

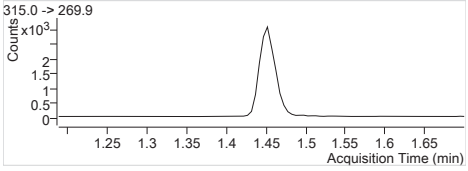
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:BLANK**	**Instrument**	LCMS04
Data File	WS#5437959_B_11.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B1
Acq. Date	2018/03/15 5:32:39 PM	**Injection Volume**	Per Method
Sample Annotation	-		

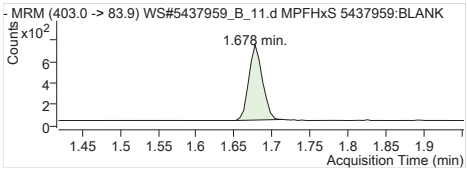
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4229	1.45	1 µg/L		
MPFHxS	885	1.68	1 µg/L		
MPFHpA	5158	1.70	1 µg/L		
MPFOA	5154	1.89	1 µg/L		
MPFOS	1050	1.97	1 µg/L		
MPFNA	5150	2.03	1 µg/L		
MPFDA	4150	2.14	1 µg/L		
MPFUnA	4803	2.24	1 µg/L		
MPFDoA	6604	2.33	1 µg/L		
MPFTeDA	5243	2.47	1 µg/L		
13C6-PFHxA IS	17191	1.45	1 µg/L		
13C9-PFDA IS	21109	2.14	1 µg/L		

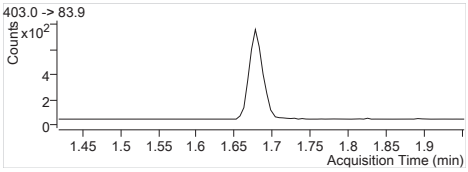
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1			-	ND	-
PFHxA 1			-	ND	-
PFHxS 1			-	ND	-
PFHpA 1			-	ND	-
PFOA 1			-	ND	-
PFOS 1			-	ND	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	4229	1.45	-	90.26 µg/L	-
18O2-PFHxS	885	1.68	-	93.21 µg/L	-
13C4-PFHpA	5158	1.70	-	95.37 µg/L	-
13C4-PFOA	5154	1.89	-	91.02 µg/L	-
13C4-PFOS	1050	1.97	-	91.26 µg/L	-
13C5-PFNA	5150	2.03	-	94.75 µg/L	-
13C2-PFDA	4151	2.14	-	89.06 µg/L	-
13C2-PFUnA	4803	2.24	-	81.01 µg/L	-
13C2-PFDoA	6604	2.33	-	78.73 µg/L	-
13C2-PFTeDA	5265	2.47	-	59.27 µg/L	-
13C6-PFHxA	17191	1.45	-	2.22 µg/L	-
13C9-PFDA	21109	2.14	-	2.23 µg/L	-



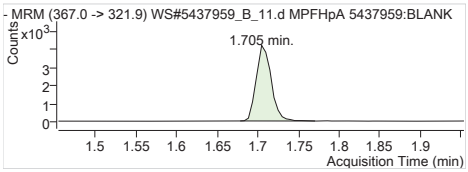


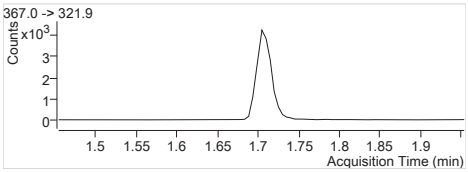
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



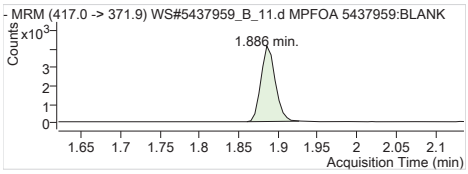


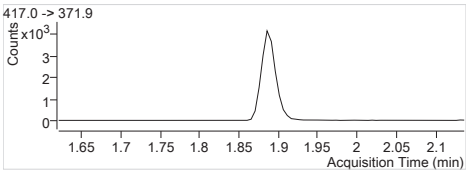
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Sample



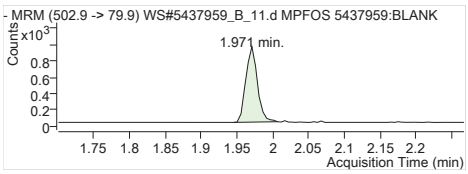


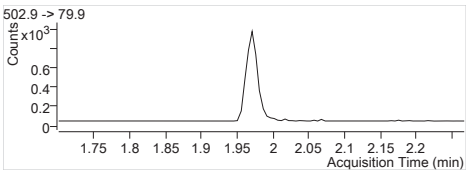
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Sample



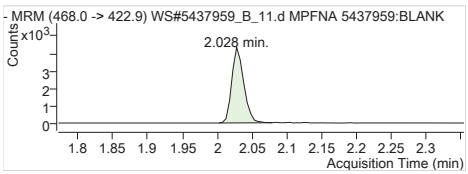


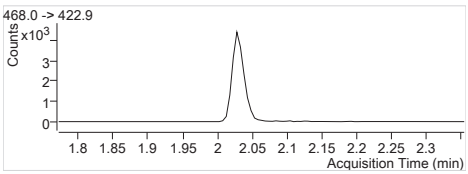
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Sample



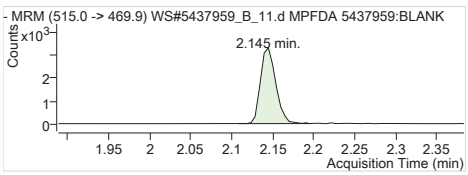


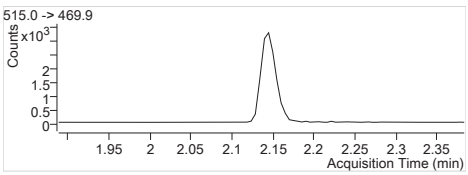
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Sample



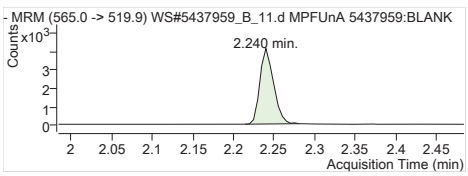


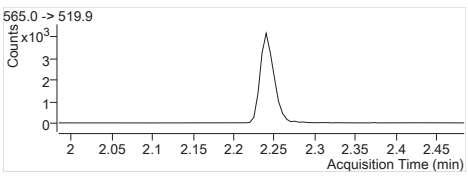
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Sample



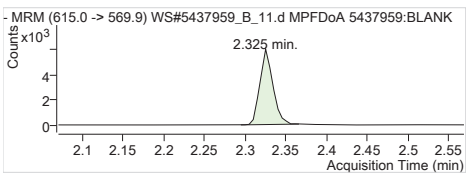


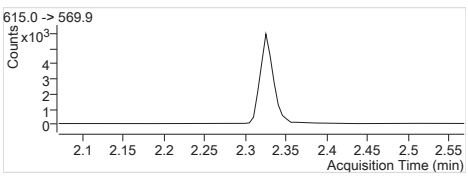
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Sample



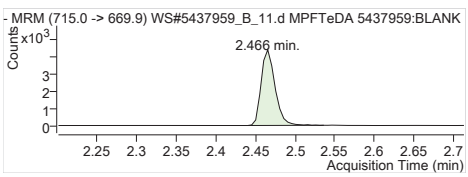


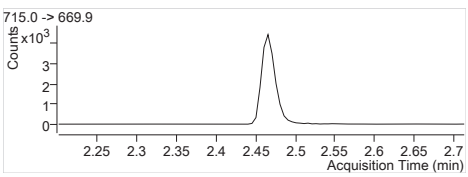
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Sample



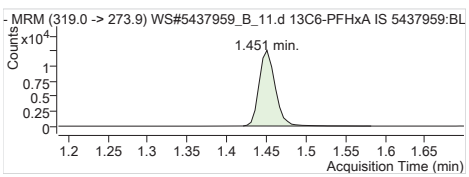


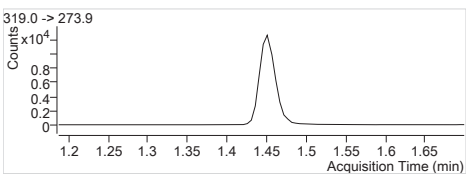
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Sample



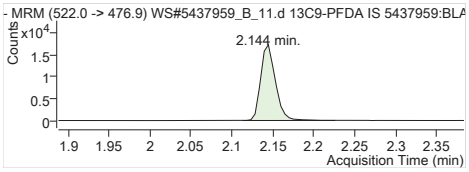


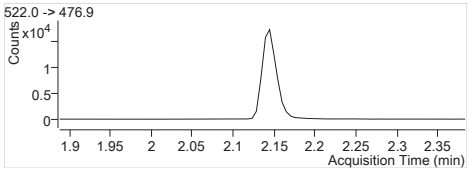
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Sample



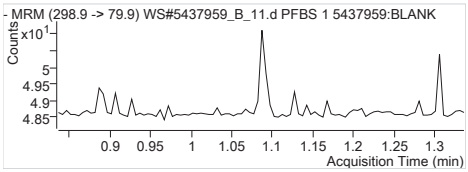


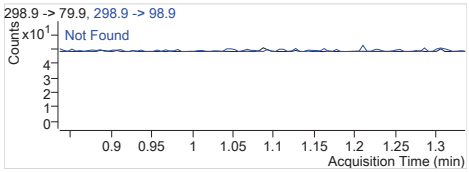
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Sample



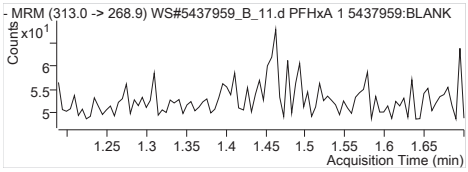


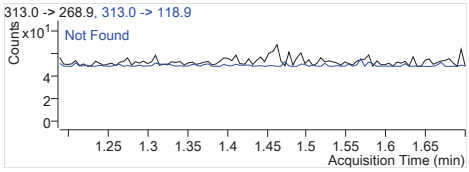
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Sample



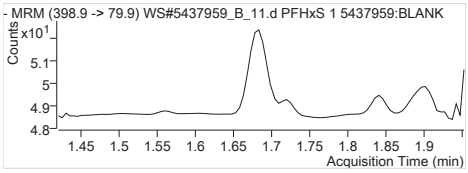


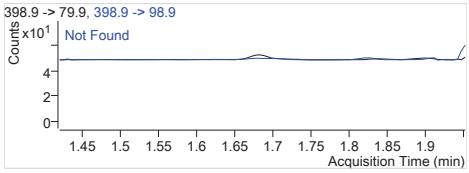
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 0.000 (1.107)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



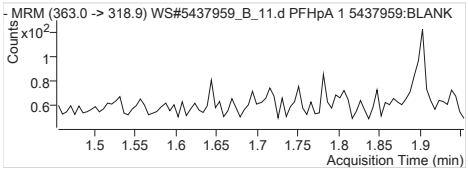


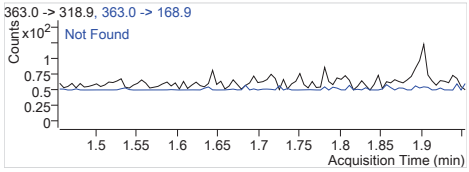
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 0.000 (1.452)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



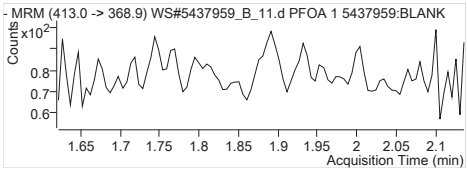


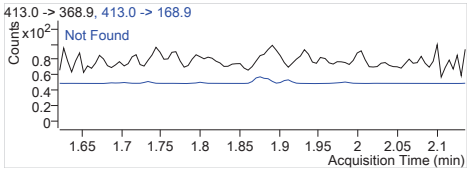
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 0.000 (1.678)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



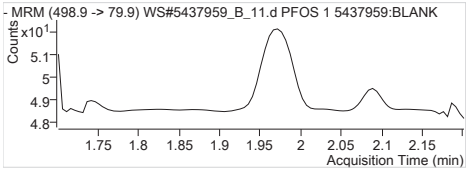


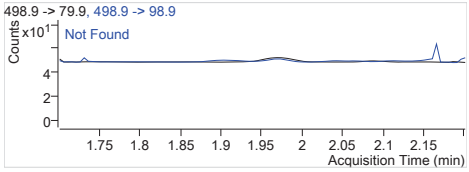
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 0.000 (1.705)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



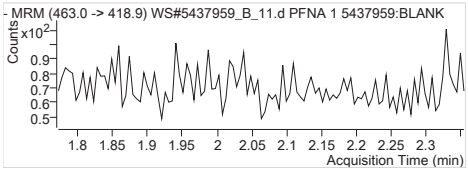


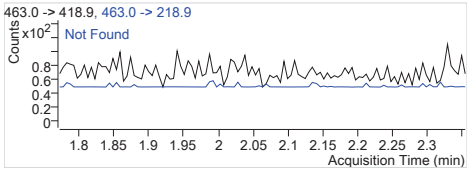
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 0.000 (1.886)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



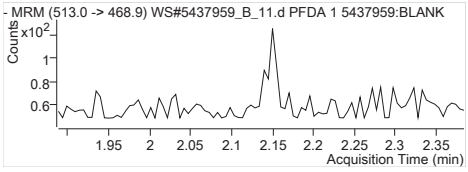


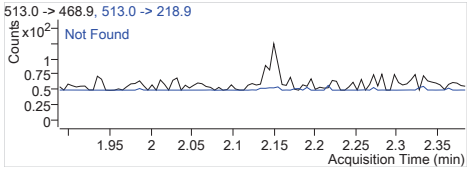
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 0.000 (1.971)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



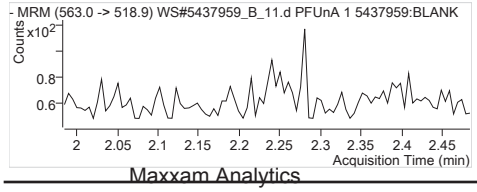


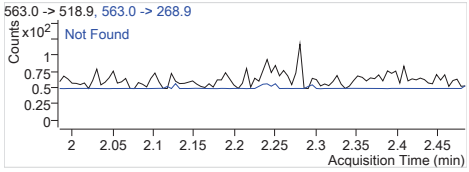
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 0.000 (2.028)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



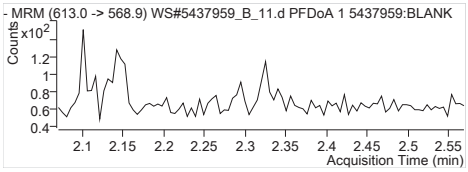


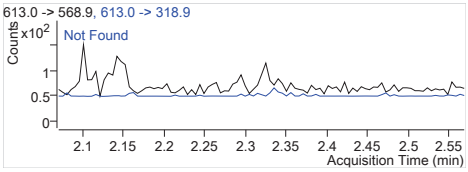
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 0.000 (2.145)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



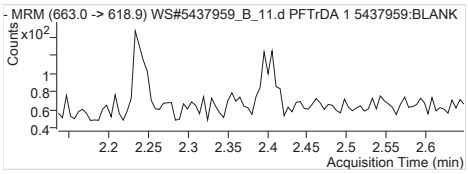


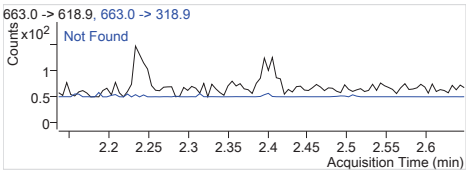
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 0.000 (2.240)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



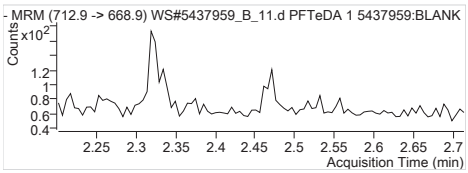


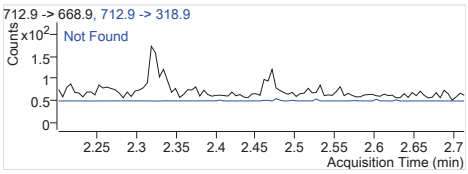
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	0.000 (2.325)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



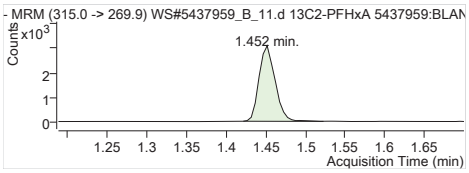


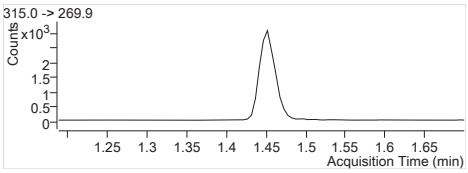
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	0.000 (2.401)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



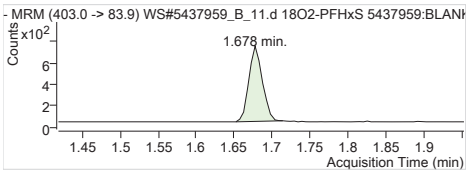


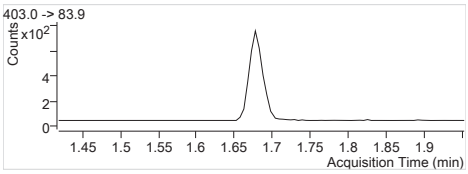
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	0.000 (2.466)
Calc. conc.	N.D.
Area ratio:	0
Sample type:	Sample



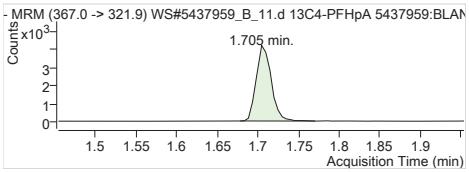


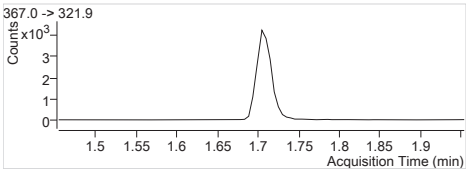
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.452 (1.452)
Calc. conc.	90.26 µg/L
Area ratio:	0.24600
Sample type:	Sample



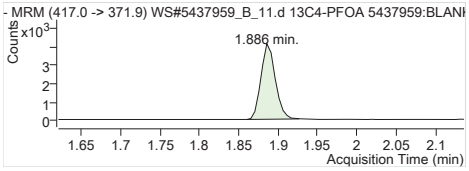


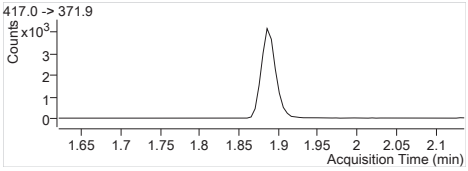
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	93.21 µg/L
Area ratio:	0.05148
Sample type:	Sample



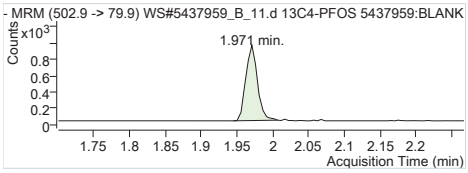


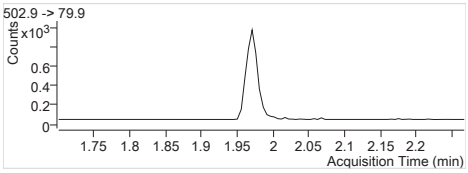
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	95.37 µg/L
Area ratio:	0.30004
Sample type:	Sample



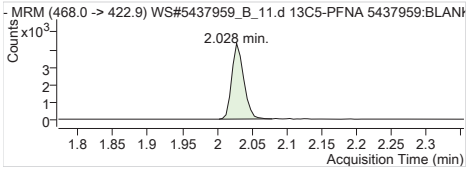


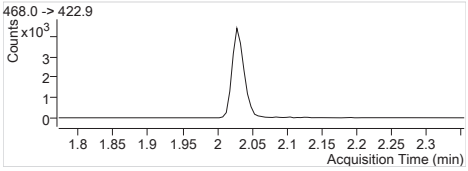
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	91.02 µg/L
Area ratio:	0.29981
Sample type:	Sample



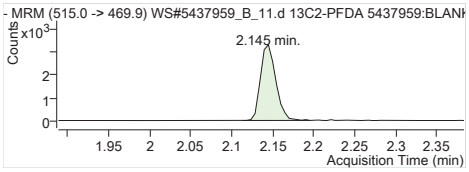


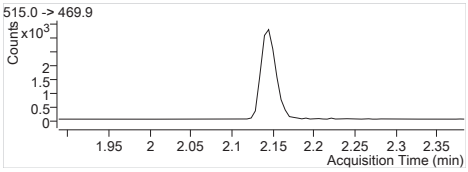
13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.971 (1.971)
Calc. conc.	91.26 µg/L
Area ratio:	0.06108
Sample type:	Sample



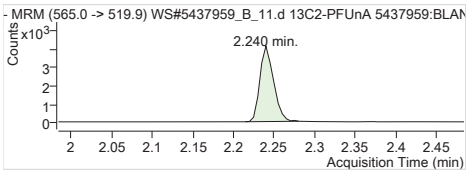


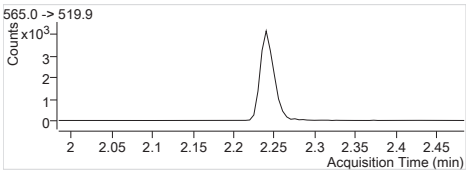
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	94.75 µg/L
Area ratio:	0.29958
Sample type:	Sample



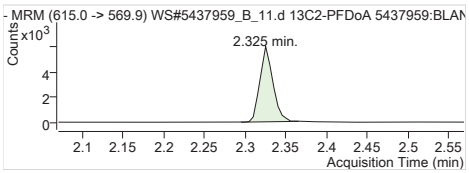


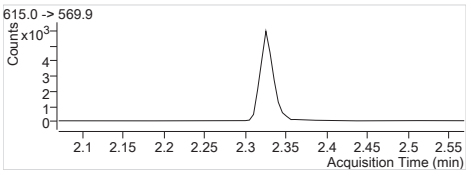
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 89.06 µg/L
Area ratio: 0.19665
Sample type: Sample



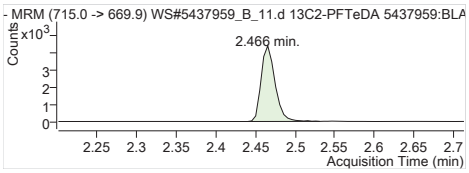


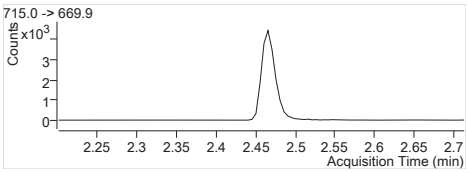
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 81.01 µg/L
Area ratio: 0.22753
Sample type: Sample



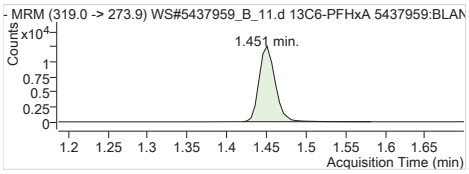


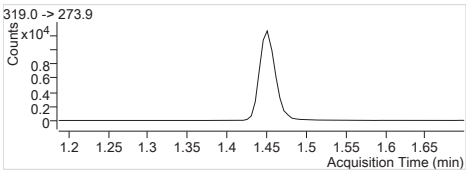
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 78.73 µg/L
Area ratio: 0.31285
Sample type: Sample



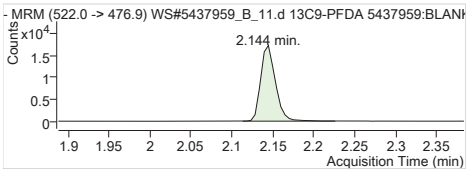


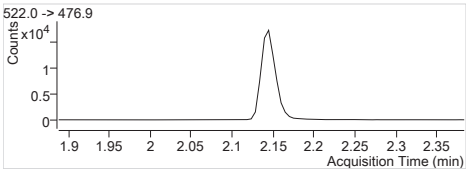
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 59.27 µg/L
Area ratio: 0.24942
Sample type: Sample





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 2.22 µg/L
Area ratio: 0
Sample type: Sample





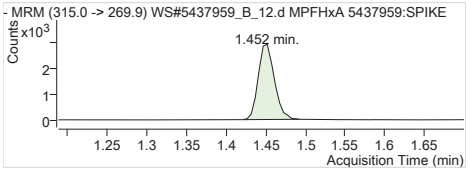
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 2.23 µg/L
Area ratio: 0
Sample type: Sample

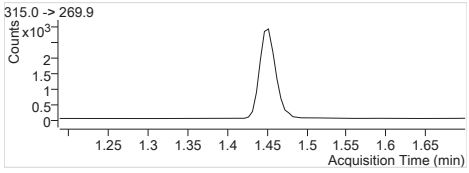
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:SPIKE**	**Instrument**	LCMS04
Data File	WS#5437959_B_12.d	**Operator**	
Sample Type	QC	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B2
Acq. Date	2018/03/15 5:37:36 PM	**Injection Volume**	Per Method
Sample Annotation	-		

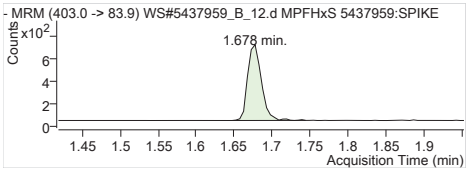
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4007	1.45	1 µg/L		
MPFHxS	866	1.68	1 µg/L		
MPFHpA	4686	1.70	1 µg/L		
MPFOA	4994	1.89	1 µg/L		
MPFOS	1070	1.97	1 µg/L		
MPFNA	4791	2.03	1 µg/L		
MPFDA	3917	2.14	1 µg/L		
MPFUnA	5027	2.24	1 µg/L		
MPFDoA	6513	2.33	1 µg/L		
MPFTeDA	7002	2.47	1 µg/L		
13C6-PFHxA IS	15747	1.45	1 µg/L		
13C9-PFDA IS	19090	2.14	1 µg/L		

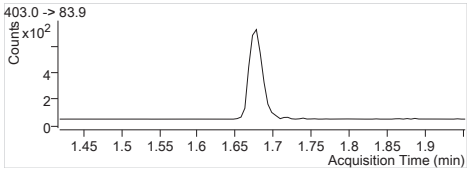
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	9026	1.09	20.80	0.50 µg/L	100.11
PFHxA 1	33265	1.45	20.80	0.51 µg/L	102.40
PFHxS 1	8019	1.68	20.80	0.50 µg/L	99.63
PFHpA 1	38031	1.71	20.80	0.51 µg/L	101.36
PFOA 1	45134	1.89	20.80	0.50 µg/L	100.99
PFOS 1	8755	1.97	20.80	0.47 µg/L	93.72
PFNA 1	38910	2.03	20.80	0.51 µg/L	102.08
PFDA 1	42249	2.14	20.80	0.51 µg/L	101.74
PFUnA 1	46518	2.24	20.80	0.51 µg/L	101.93
PFDoA 1	53747	2.33	20.80	0.50 µg/L	99.85
PFTrDA 1	60231	2.40	20.80	0.49 µg/L	97.98
PFTeDA 1	49937	2.47	20.80	0.49 µg/L	97.81
13C2-PFHxA	4007	1.45	100.00	93.37 µg/L	93.37
18O2-PFHxS	866	1.68	100.00	99.57 µg/L	99.57
13C4-PFHpA	4686	1.70	100.00	94.59 µg/L	94.59
13C4-PFOA	4994	1.89	100.00	96.29 µg/L	96.29
13C4-PFOS	1070	1.97	100.00	101.53 µg/L	101.53
13C5-PFNA	4790	2.03	100.00	96.20 µg/L	96.20
13C2-PFDA	3823	2.14	100.00	90.69 µg/L	90.69
13C2-PFUnA	5027	2.24	100.00	93.76 µg/L	93.76
13C2-PFDoA	6513	2.33	100.00	85.86 µg/L	85.86
13C2-PFTeDA	6986	2.47	100.00	86.97 µg/L	86.97
13C6-PFHxA	15747	1.45	100.00	2.04 µg/L	84.89
13C9-PFDA	19090	2.14	100.00	2.02 µg/L	84.19



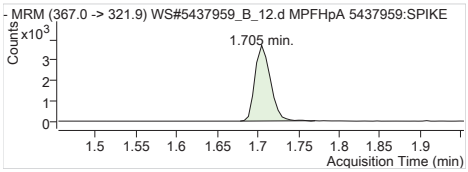


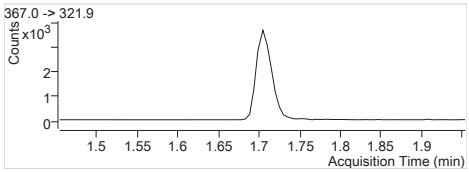
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	QC



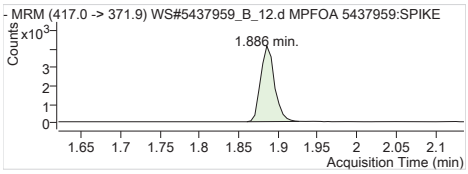


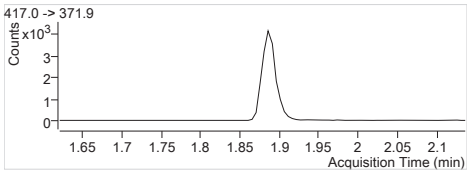
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: QC



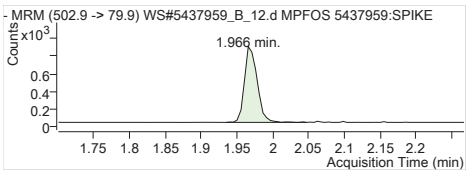


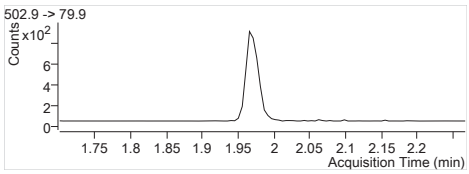
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: QC



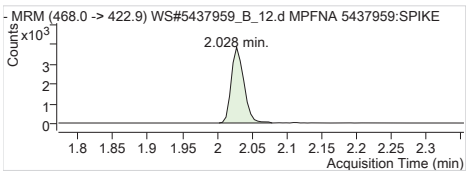


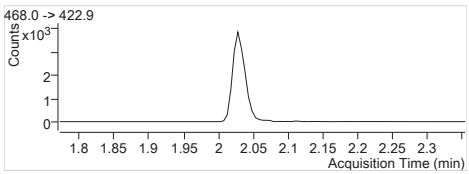
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: QC



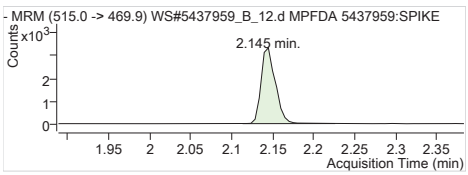


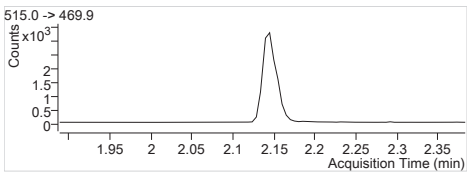
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: QC



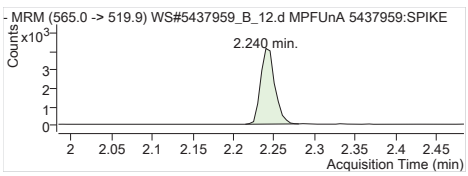


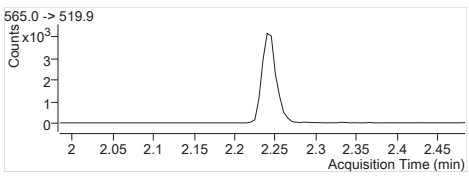
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: QC



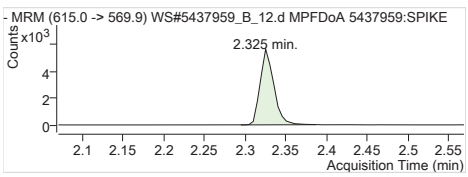


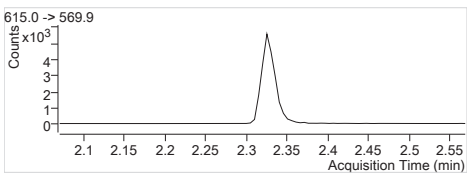
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: QC



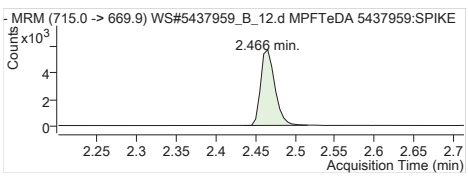


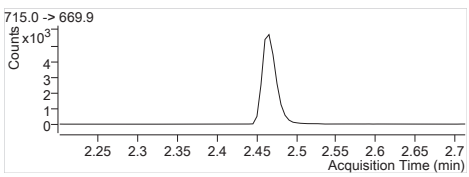
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: QC



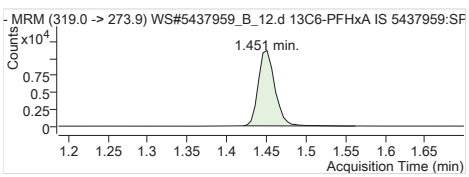


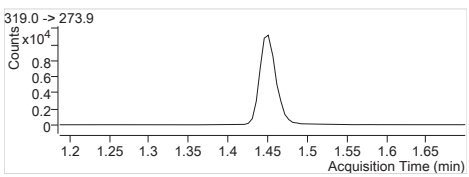
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: QC



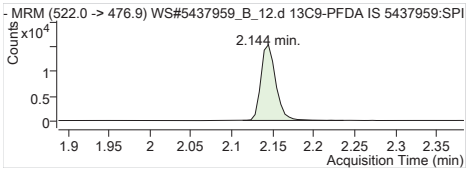


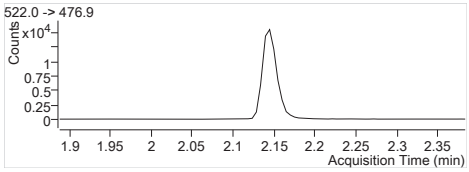
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: QC



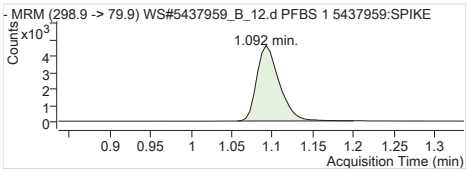


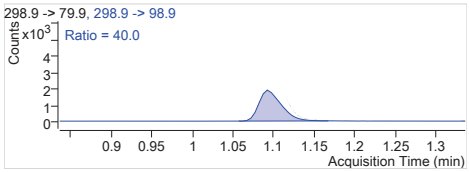
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: QC



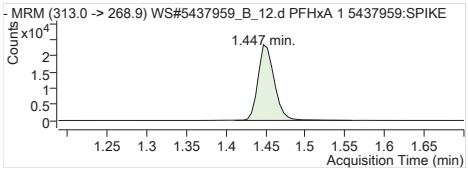


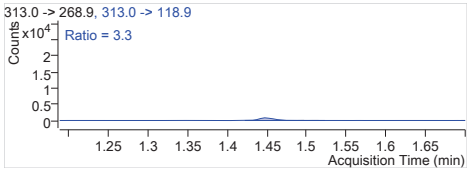
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: QC



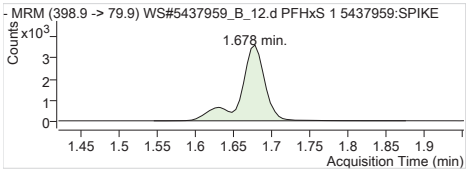


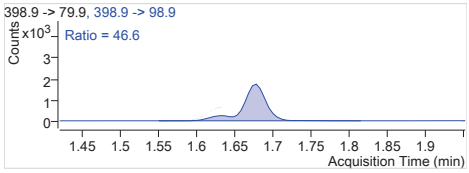
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.092 (1.107)
Calc. conc. 0.50 µg/L
Area ratio: 10.42263
Sample type: QC



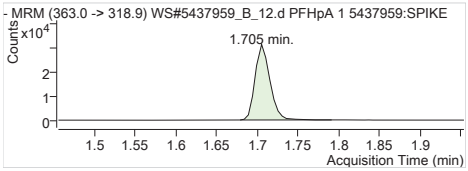


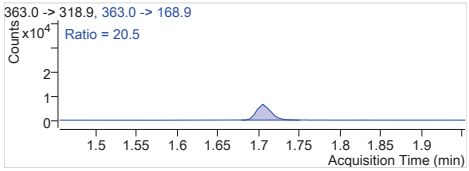
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.447 (1.452)
Calc. conc. 0.51 µg/L
Area ratio: 8.30172
Sample type: QC



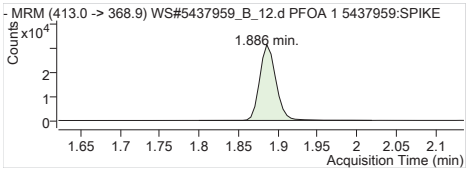


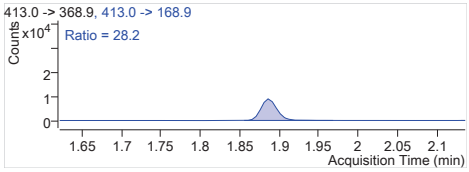
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 0.50 µg/L
Area ratio: 9.25982
Sample type: QC



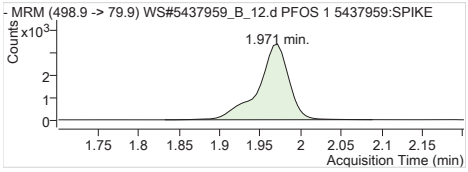


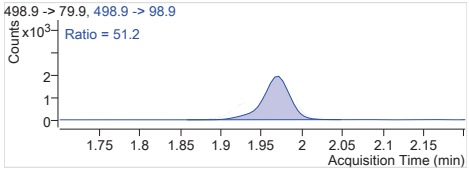
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 0.51 µg/L
Area ratio: 8.11588
Sample type: QC



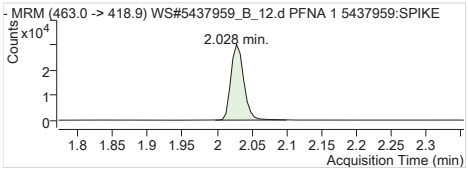


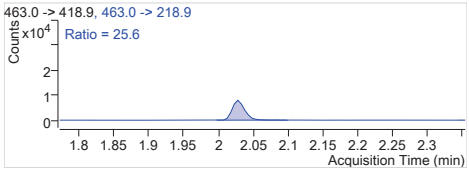
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 0.50 µg/L
Area ratio: 9.03765
Sample type: QC



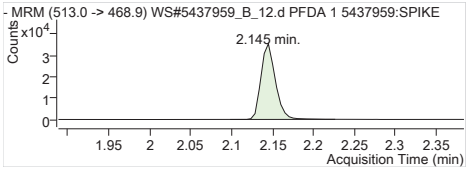


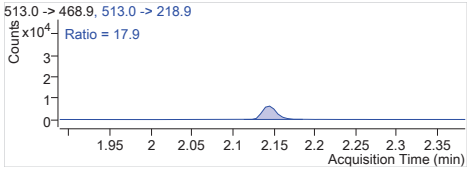
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 0.47 µg/L
Area ratio: 8.18224
Sample type: QC



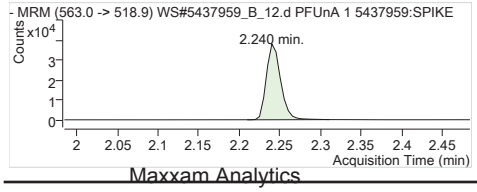


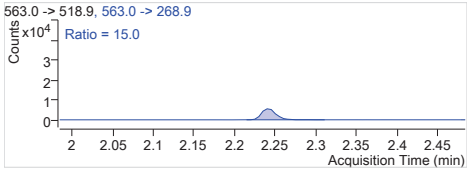
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 0.51 µg/L
Area ratio: 8.12148
Sample type: QC



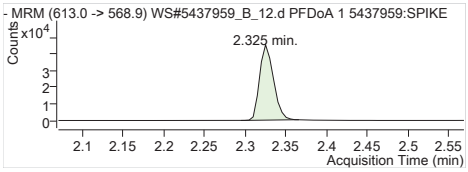


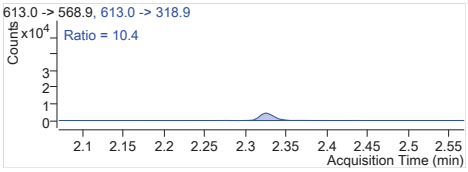
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 0.51 µg/L
Area ratio: 10.78606
Sample type: QC



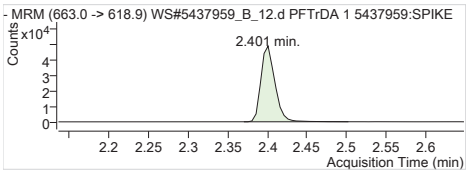


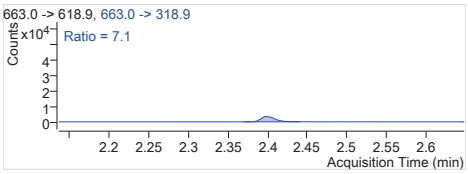
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 0.51 µg/L
Area ratio: 9.25363
Sample type: QC



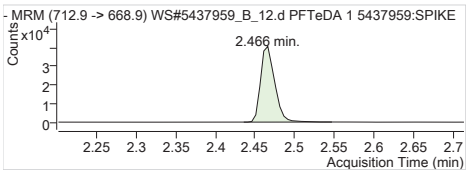


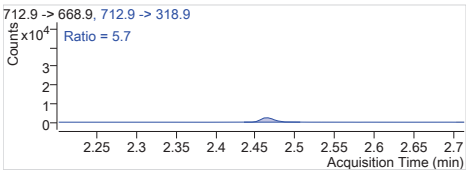
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	2.325 (2.325)
Calc. conc.	0.50 µg/L
Area ratio:	8.25226
Sample type:	QC



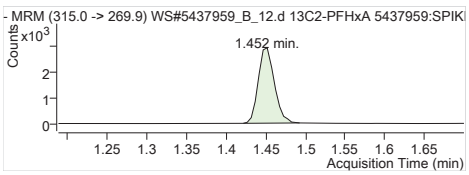


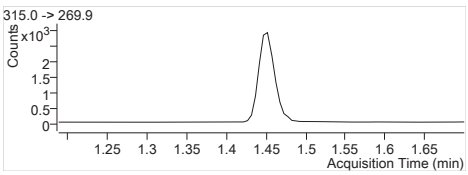
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	2.401 (2.401)
Calc. conc.	0.49 µg/L
Area ratio:	8.60197
Sample type:	QC



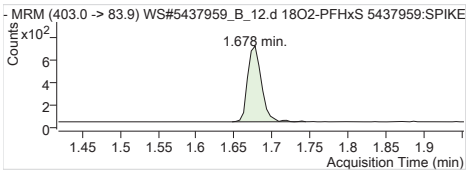


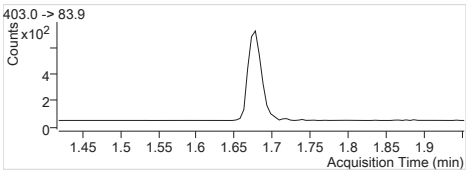
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	2.466 (2.466)
Calc. conc.	0.49 µg/L
Area ratio:	7.13182
Sample type:	QC



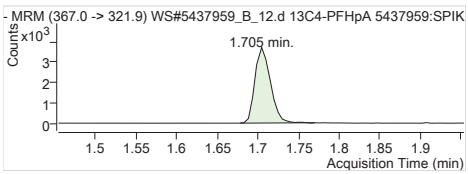


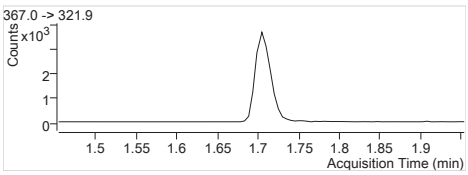
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.452 (1.452)
Calc. conc.	93.37 µg/L
Area ratio:	0.25446
Sample type:	QC



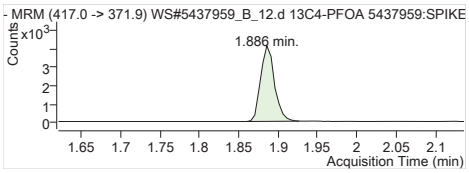


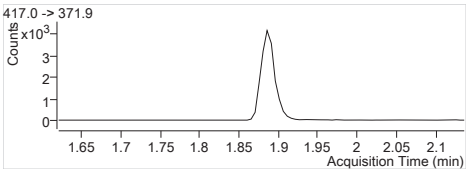
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	99.57 µg/L
Area ratio:	0.05499
Sample type:	QC



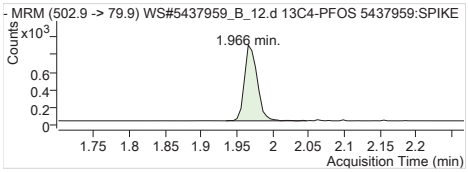


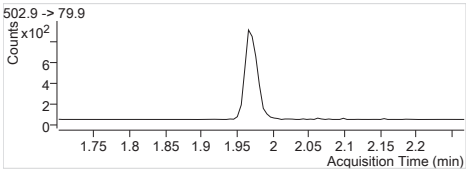
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	94.59 µg/L
Area ratio:	0.29758
Sample type:	QC



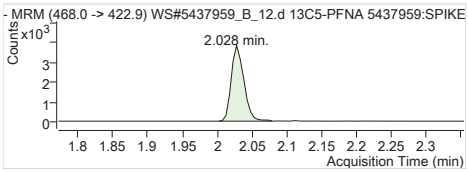


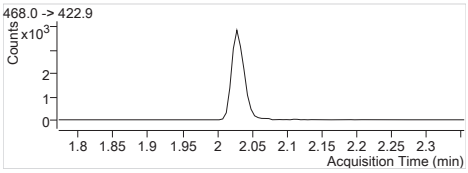
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	96.29 µg/L
Area ratio:	0.31714
Sample type:	QC



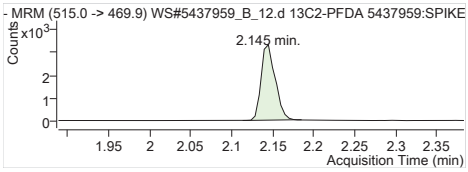


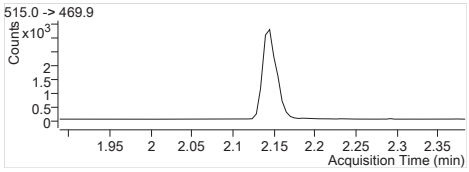
13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.966 (1.971)
Calc. conc.	101.53 µg/L
Area ratio:	0.06795
Sample type:	QC



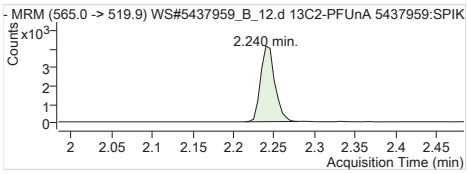


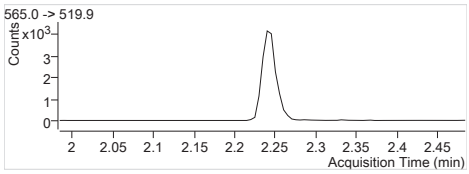
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	96.20 µg/L
Area ratio:	0.30418
Sample type:	QC



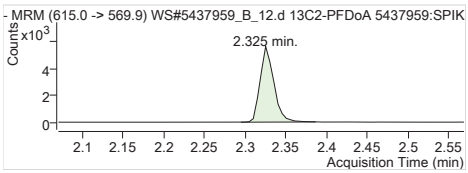


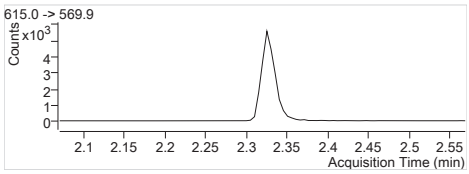
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 90.69 µg/L
Area ratio: 0.20026
Sample type: QC



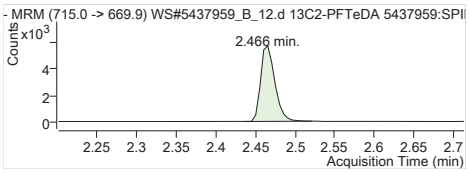


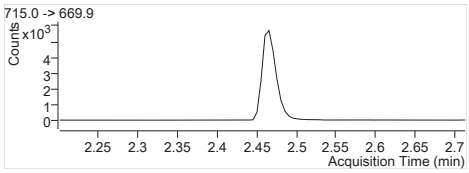
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 93.76 µg/L
Area ratio: 0.26333
Sample type: QC



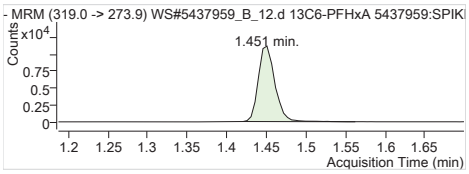


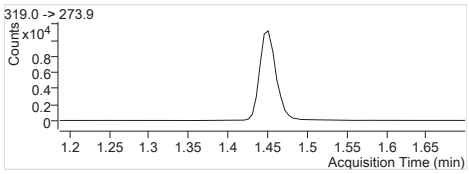
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 85.86 µg/L
Area ratio: 0.34117
Sample type: QC



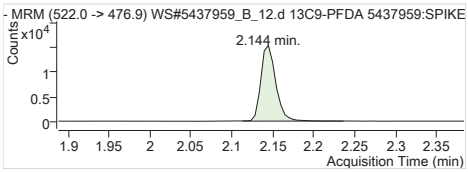


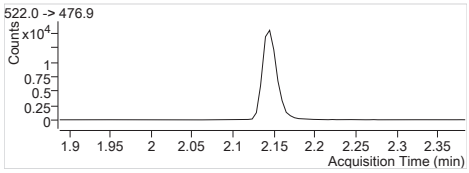
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 86.97 µg/L
Area ratio: 0.36595
Sample type: QC





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 2.04 µg/L
Area ratio: 0
Sample type: QC





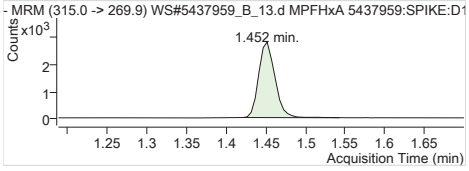
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 2.02 µg/L
Area ratio: 0
Sample type: QC

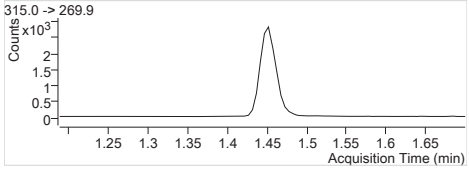
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**5437959:SPIKE:D1**	**Instrument**	LCMS04
Data File	WS#5437959_B_13.d	**Operator**	
Sample Type	QC	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B3
Acq. Date	2018/03/15 5:42:33 PM	**Injection Volume**	Per Method
Sample Annotation	-		

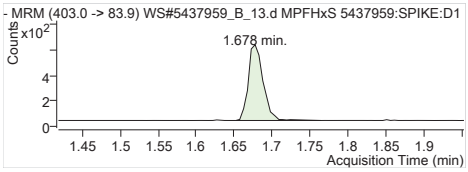
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	3878	1.45	1 µg/L		
MPFHxS	804	1.68	1 µg/L		
MPFHpA	4448	1.70	1 µg/L		
MPFOA	4873	1.89	1 µg/L		
MPFOS	1027	1.97	1 µg/L		
MPFNA	4646	2.03	1 µg/L		
MPFDA	3828	2.14	1 µg/L		
MPFUnA	4833	2.24	1 µg/L		
MPFDoA	6412	2.33	1 µg/L		
MPFTeDA	6824	2.47	1 µg/L		
13C6-PFHxA IS	15891	1.45	1 µg/L		
13C9-PFDA IS	18845	2.14	1 µg/L		

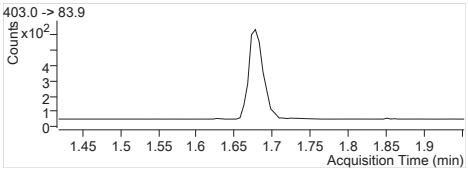
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	7985	1.09	20.80	0.48 µg/L	95.39
PFHxA 1	30871	1.45	20.80	0.49 µg/L	98.21
PFHxS 1	7172	1.68	20.80	0.48 µg/L	95.99
PFHpA 1	34838	1.71	20.80	0.49 µg/L	97.83
PFOA 1	40631	1.89	20.80	0.47 µg/L	93.20
PFOS 1	7999	1.97	20.80	0.45 µg/L	89.22
PFNA 1	35929	2.03	20.80	0.49 µg/L	97.19
PFDA 1	39177	2.14	20.80	0.48 µg/L	96.55
PFUnA 1	42642	2.24	20.80	0.49 µg/L	97.20
PFDoA 1	51244	2.33	20.80	0.48 µg/L	96.70
PFTrDA 1	56935	2.40	20.80	0.47 µg/L	95.04
PFTeDA 1	47701	2.47	20.80	0.48 µg/L	95.87
13C2-PFHxA	3878	1.45	100.00	89.54 µg/L	89.54
18O2-PFHxS	804	1.68	100.00	91.61 µg/L	91.61
13C4-PFHpA	4448	1.70	100.00	88.97 µg/L	88.97
13C4-PFOA	4873	1.89	100.00	93.10 µg/L	93.10
13C4-PFOS	1027	1.97	100.00	96.57 µg/L	96.57
13C5-PFNA	4637	2.03	100.00	92.29 µg/L	92.29
13C2-PFDA	3790	2.14	100.00	91.08 µg/L	91.08
13C2-PFUnA	4833	2.24	100.00	91.31 µg/L	91.31
13C2-PFDoA	6412	2.33	100.00	85.63 µg/L	85.63
13C2-PFTeDA	6824	2.47	100.00	86.06 µg/L	86.06
13C6-PFHxA	15891	1.45	100.00	2.06 µg/L	85.66
13C9-PFDA	18845	2.14	100.00	1.99 µg/L	83.11



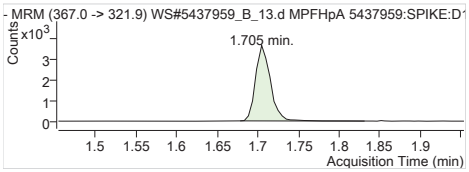


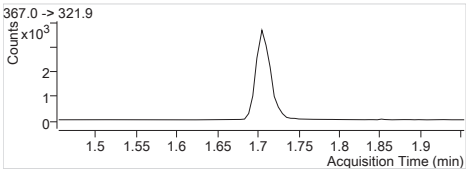
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	QC



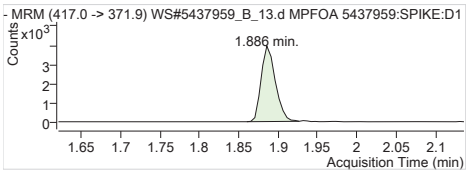


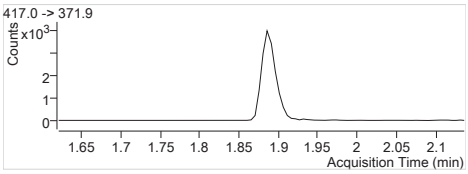
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: QC



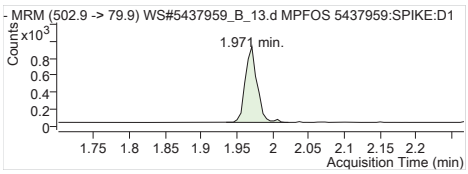


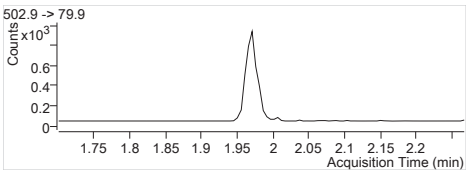
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: QC



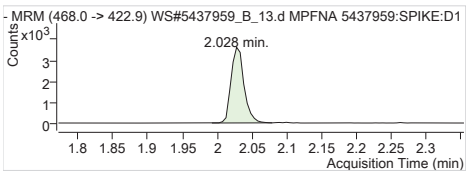


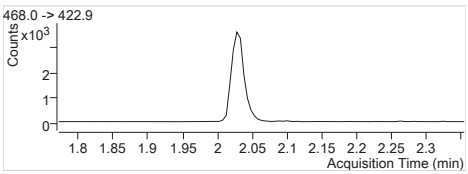
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: QC



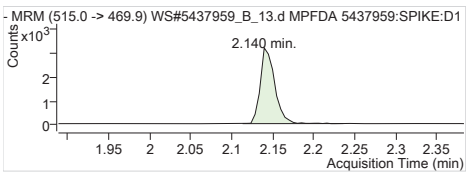


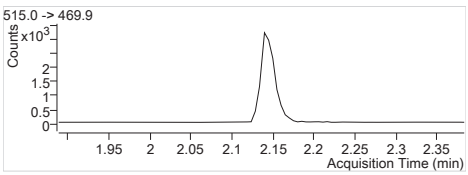
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: QC



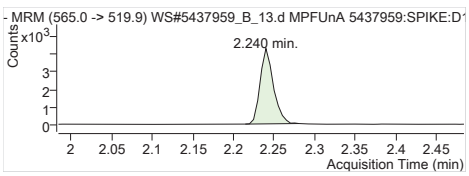


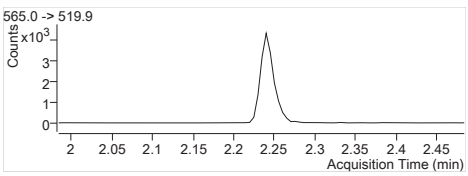
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: QC



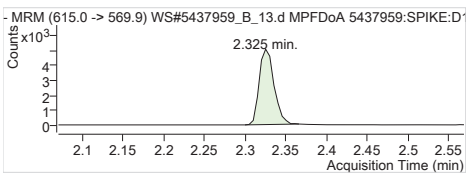


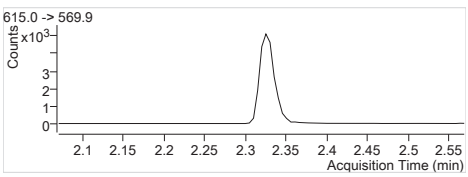
MPFDA Internal Standard
RT (Exp. RT): 2.140 (2.145)
Concentration: 1 µg/L
Sample type: QC



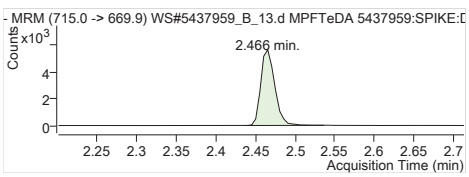


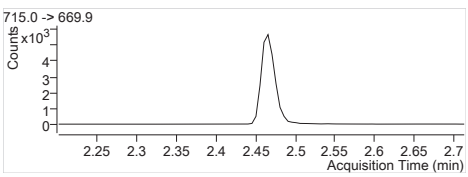
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: QC



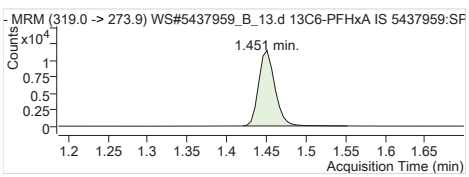


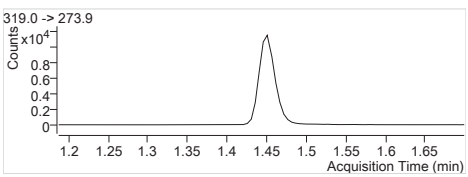
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: QC



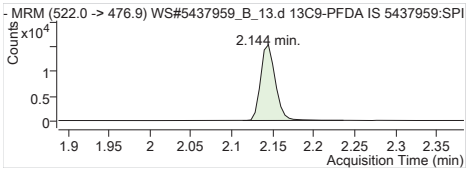


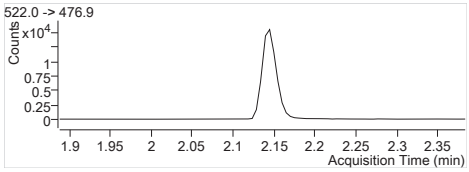
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: QC



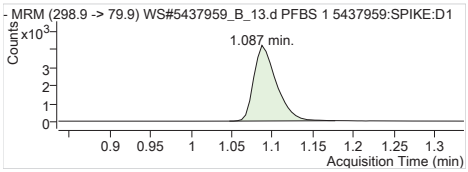


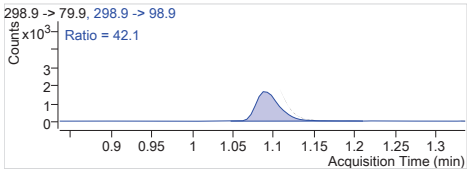
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: QC



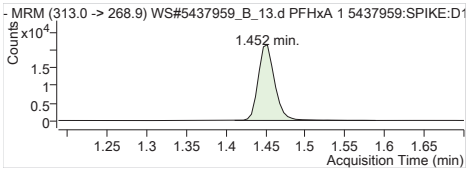


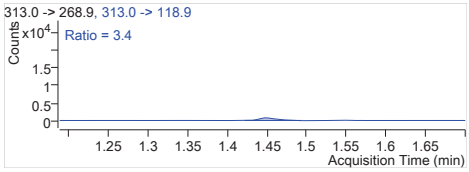
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: QC



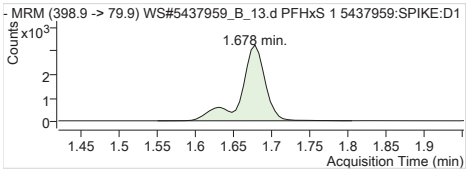


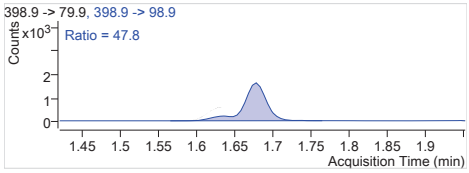
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.087 (1.107)
Calc. conc. 0.48 µg/L
Area ratio: 9.93159
Sample type: QC



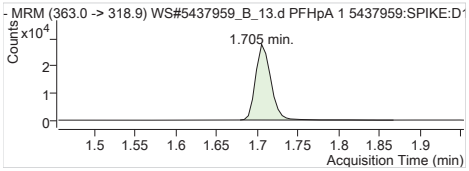


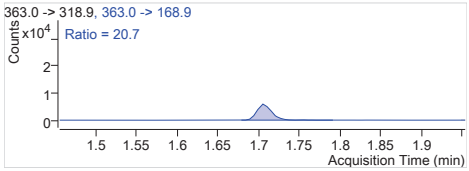
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 0.49 µg/L
Area ratio: 7.96055
Sample type: QC



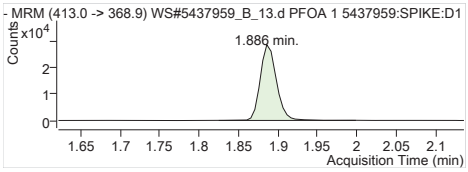


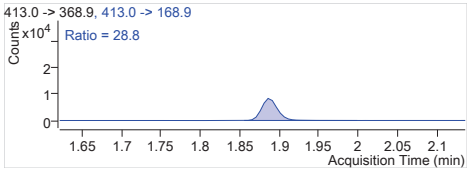
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 0.48 µg/L
Area ratio: 8.92040
Sample type: QC



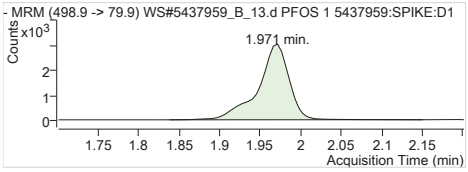


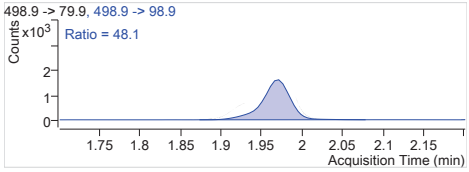
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 0.49 µg/L
Area ratio: 7.83228
Sample type: QC



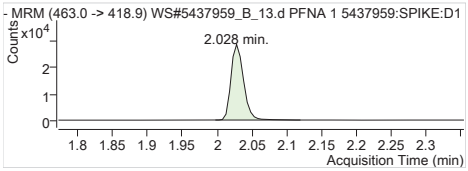


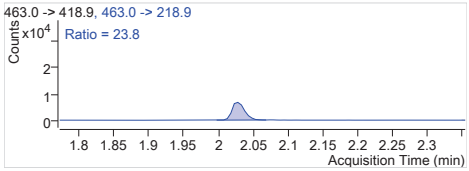
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 0.47 µg/L
Area ratio: 8.33798
Sample type: QC



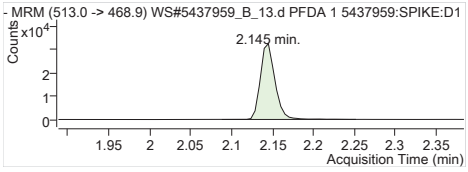


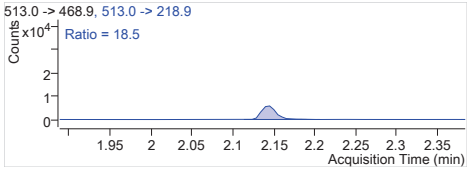
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 0.45 µg/L
Area ratio: 7.78870
Sample type: QC



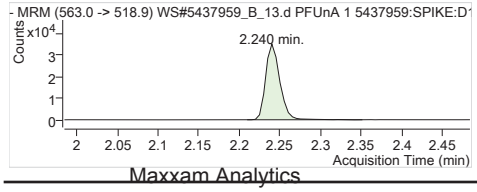


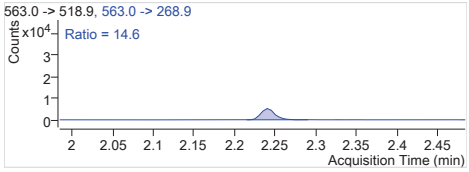
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 0.49 µg/L
Area ratio: 7.73332
Sample type: QC



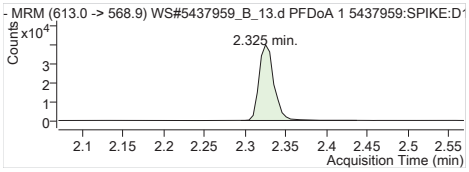


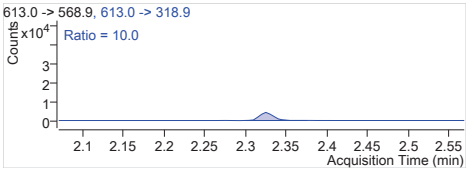
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 0.48 µg/L
Area ratio: 10.23433
Sample type: QC



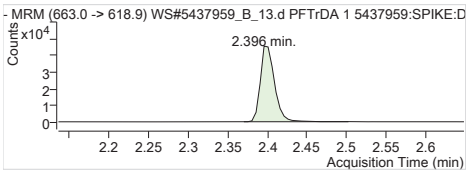


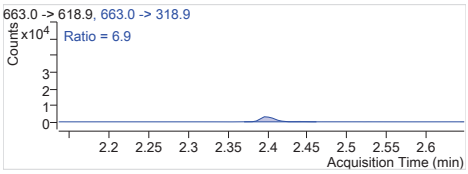
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 0.49 µg/L
Area ratio: 8.82309
Sample type: QC



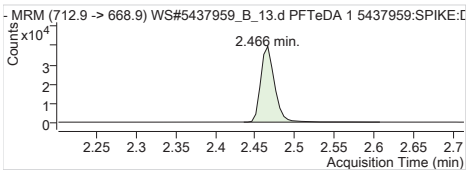


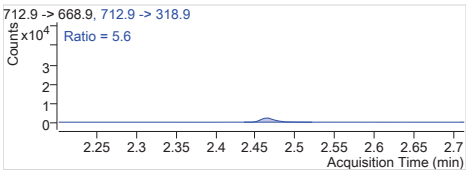
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 0.48 µg/L
Area ratio: 7.99189
Sample type: QC



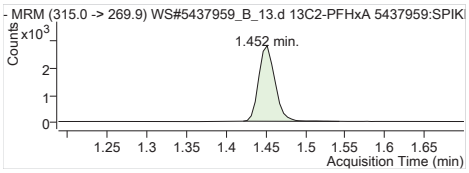


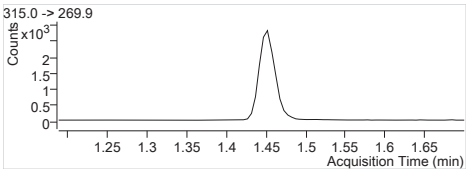
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.396 (2.401)
Calc. conc. 0.47 µg/L
Area ratio: 8.34335
Sample type: QC



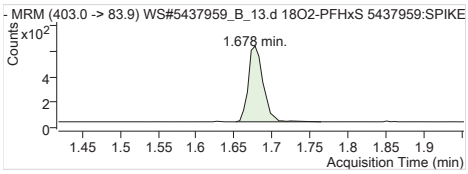


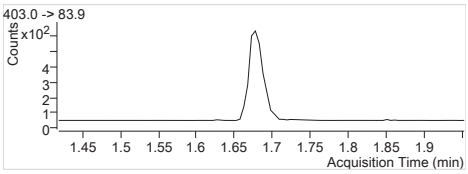
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 0.48 µg/L
Area ratio: 6.99018
Sample type: QC



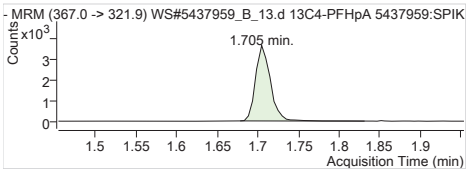


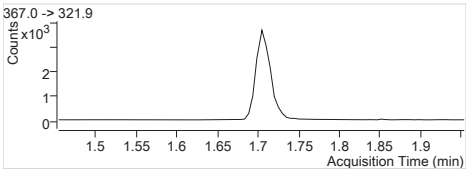
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 89.54 µg/L
Area ratio: 0.24404
Sample type: QC



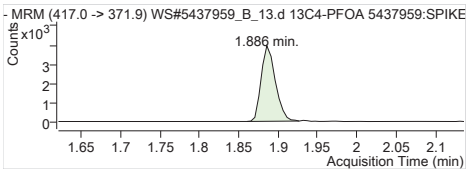


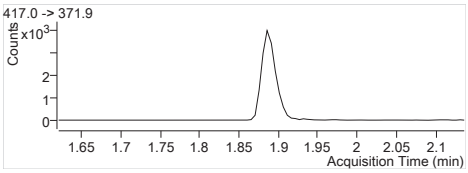
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 91.61 µg/L
Area ratio: 0.05059
Sample type: QC



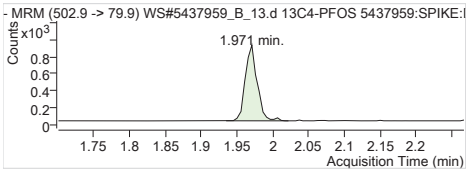


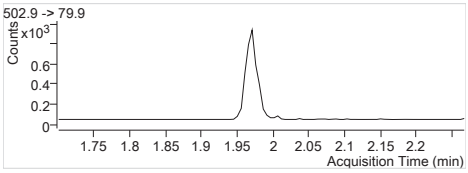
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 88.97 µg/L
Area ratio: 0.27991
Sample type: QC



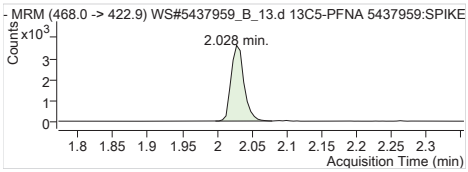


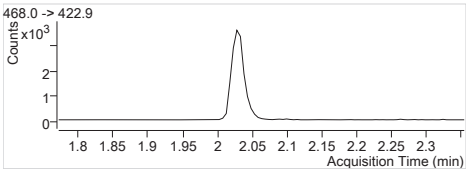
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 93.10 µg/L
Area ratio: 0.30665
Sample type: QC



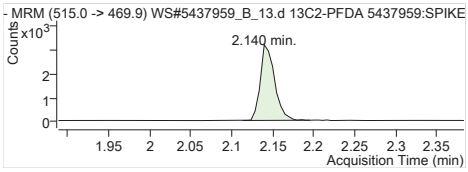


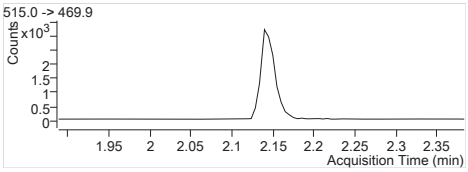
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 96.57 µg/L
Area ratio: 0.06463
Sample type: QC



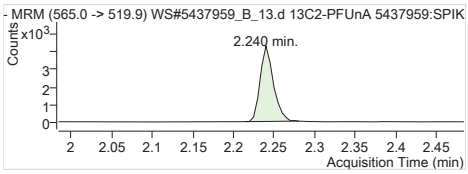


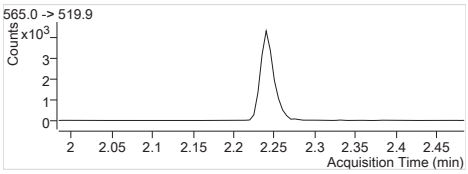
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 92.29 µg/L
Area ratio: 0.29180
Sample type: QC



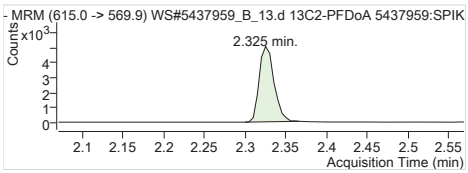


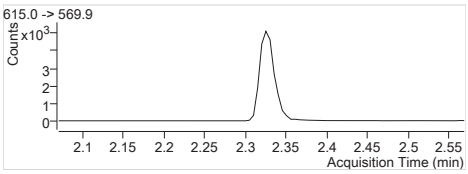
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.140 (2.145)
Calc. conc. 91.08 µg/L
Area ratio: 0.20111
Sample type: QC



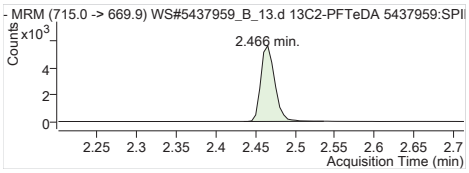


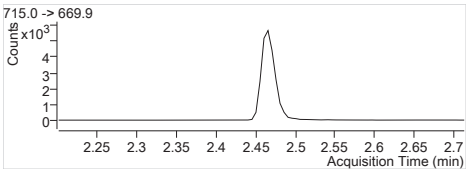
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 91.31 µg/L
Area ratio: 0.25646
Sample type: QC



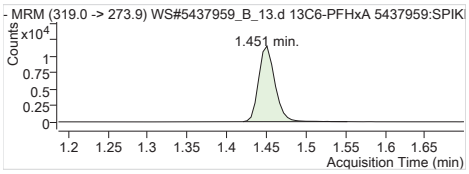


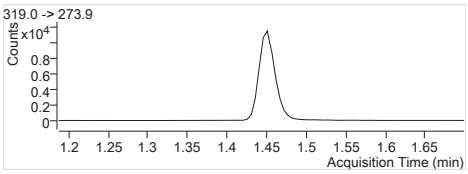
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 85.63 µg/L
Area ratio: 0.34025
Sample type: QC



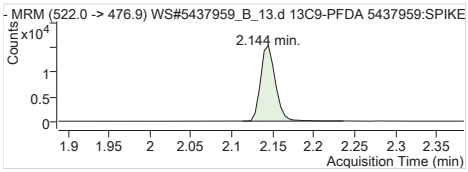


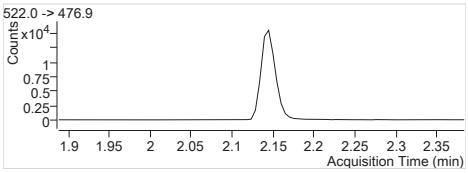
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 86.06 µg/L
Area ratio: 0.36211
Sample type: QC





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 2.06 µg/L
Area ratio: 0
Sample type: QC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 1.99 µg/L
Area ratio: 0
Sample type: QC

Quantitation Results

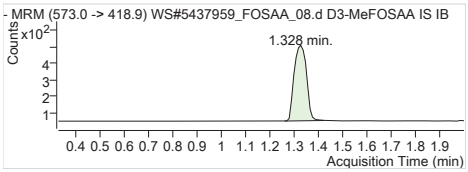
Agilent Technologies

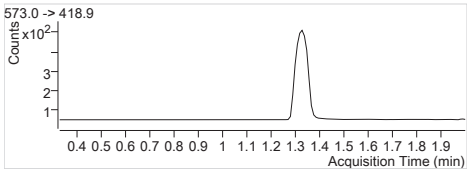
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**IB**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_08.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A8
Acq. Date	2018/03/13 8:51:52 PM	**Injection Volume**	Per Method
Sample Annotation	-		

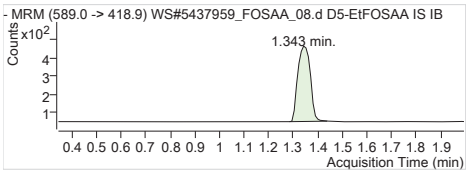
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1626	1.33	1 µg/L		
D5-EtFOSAA IS	1461	1.34	1 µg/L		
13C9-PFDA IS	19129	0.95	1 µg/L		

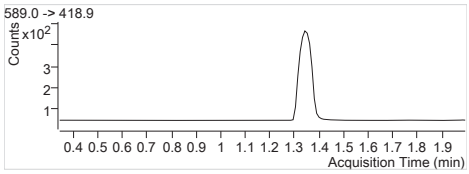
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1			-	ND	-
EtFOSAA 1			-	ND	-
D3-MeFOSAA	1638	1.33	-	97.22 µg/L	-
D5-EtFOSAA	1479	1.34	-	102.66 µg/L	-
13C9-PFDA	19279	0.95	-	2.44 µg/L	-



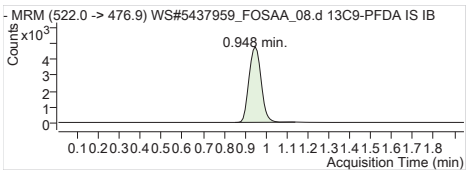


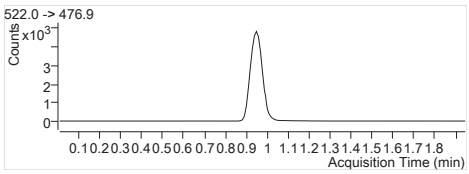
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Sample



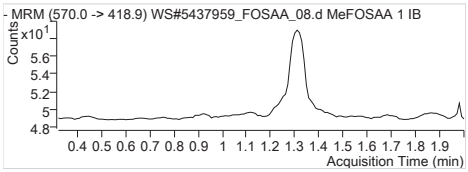


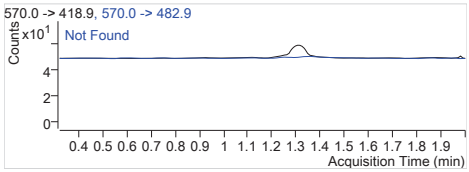
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Sample



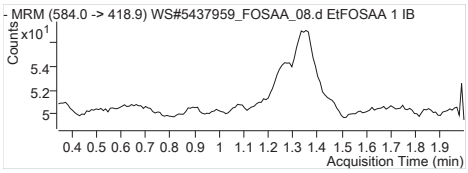


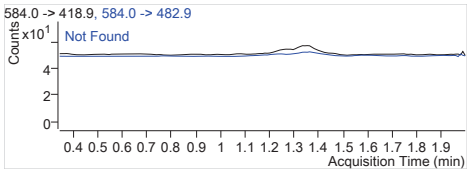
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: Sample



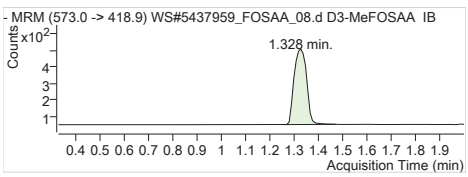


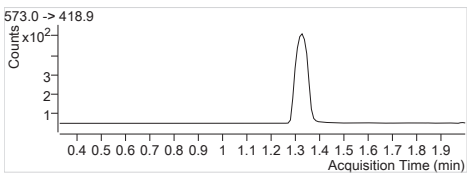
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 0.000 (1.319)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



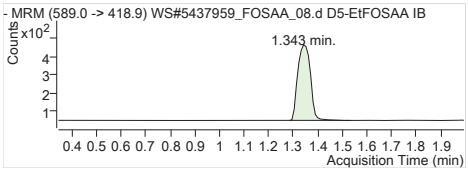


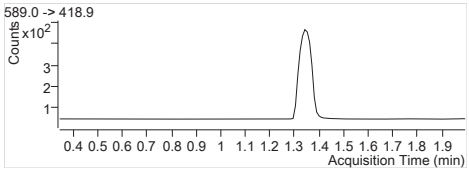
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 0.000 (1.344)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



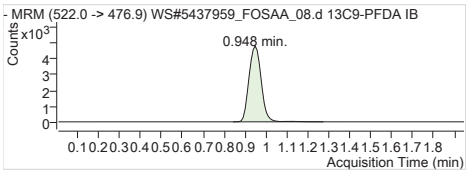


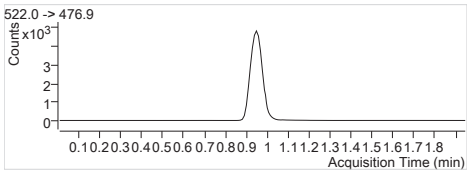
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 97.22 µg/L
Area ratio: 0.08563
Sample type: Sample





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	102.66 µg/L
Area ratio:	0.07732
Sample type:	Sample





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	2.44 µg/L
Area ratio:	0
Sample type:	Sample

Quantitation Results

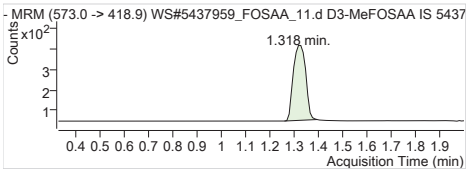
Agilent Technologies

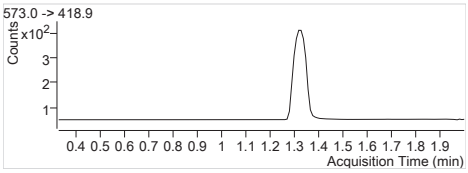
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:BLANK**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_11.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B1
Acq. Date	2018/03/13 8:59:06 PM	**Injection Volume**	Per Method
Sample Annotation	-		

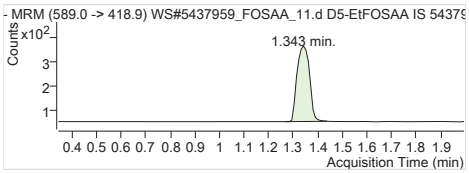
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1284	1.32	1 µg/L		
D5-EtFOSAA IS	1114	1.34	1 µg/L		
13C9-PFDA IS	18898	0.91	1 µg/L		

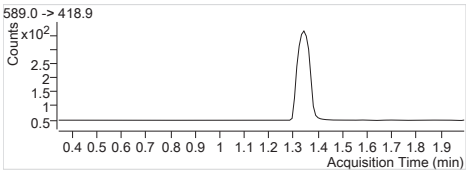
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1			-	ND	-
EtFOSAA 1			-	ND	-
D3-MeFOSAA	1324	1.32	-	79.54 µg/L	-
D5-EtFOSAA	1123	1.34	-	78.90 µg/L	-
13C9-PFDA	18846	0.91	-	2.39 µg/L	-



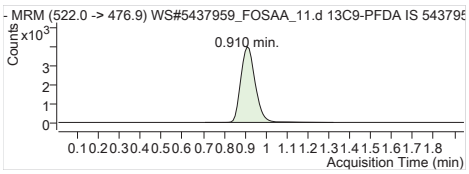


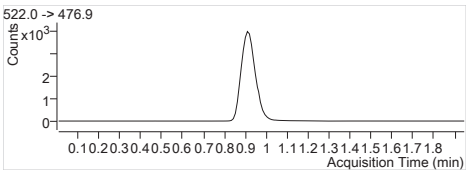
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.318 (1.328)
Concentration: 1 µg/L
Sample type: Sample



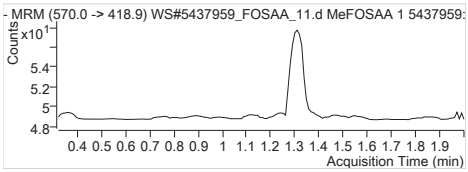


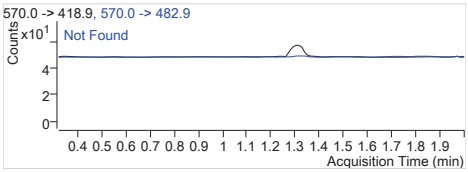
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Sample



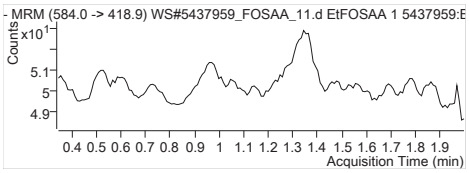


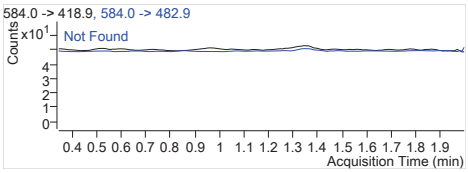
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.910 (0.948)
Concentration: 1 µg/L
Sample type: Sample



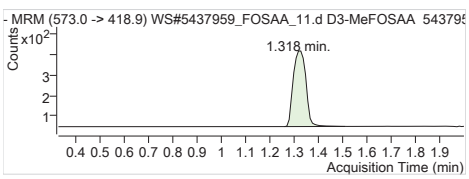


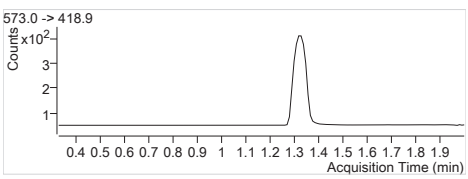
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 0.000 (1.319)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



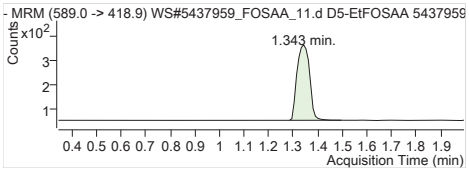


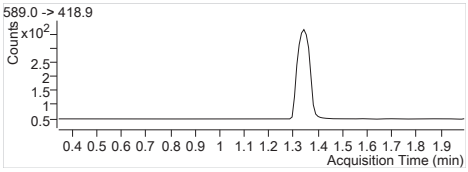
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 0.000 (1.344)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



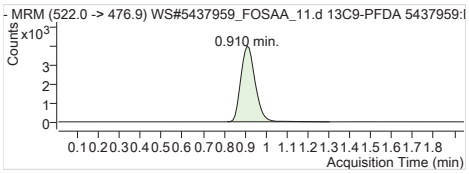


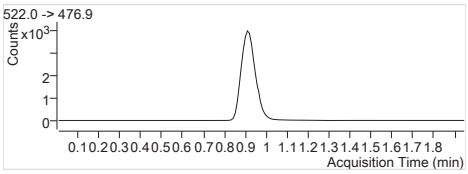
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.318 (1.328)
Calc. conc. 79.54 µg/L
Area ratio: 0.07006
Sample type: Sample





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	78.90 µg/L
Area ratio:	0.05942
Sample type:	Sample





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.910 (0.948)
Calc. conc.	2.39 µg/L
Area ratio:	0
Sample type:	Sample

Quantitation Results

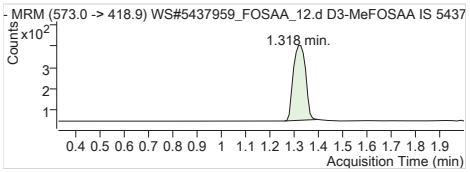
Agilent Technologies

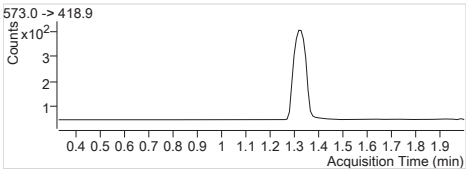
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:SPIKE**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_12.d	**Operator**	
Sample Type	QC	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B2
Acq. Date	2018/03/13 9:01:31 PM	**Injection Volume**	Per Method
Sample Annotation	-		

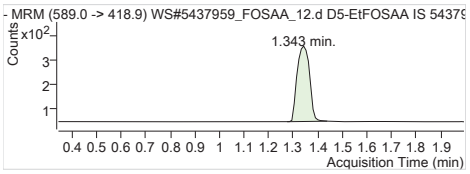
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1241	1.32	1 µg/L		
D5-EtFOSAA IS	1073	1.34	1 µg/L		
13C9-PFDA IS	17696	0.91	1 µg/L		

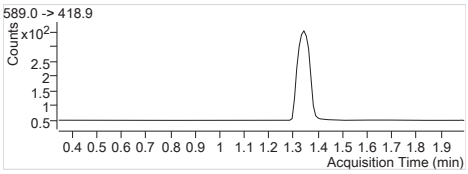
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	9221	1.32	20.80	0.51 µg/L	102.95
EtFOSAA 1	8889	1.34	20.80	0.49 µg/L	97.93
D3-MeFOSAA	1279	1.32	100.00	82.06 µg/L	82.06
D5-EtFOSAA	1079	1.34	100.00	80.96 µg/L	80.96
13C9-PFDA	17667	0.91	100.00	2.24 µg/L	93.28



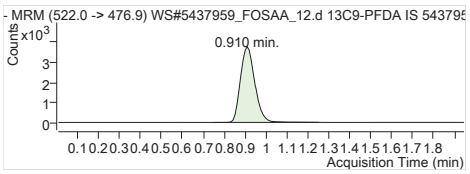


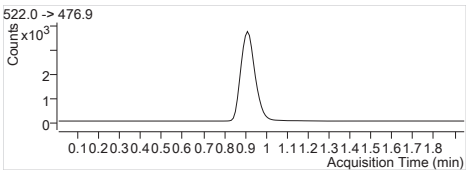
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.318 (1.328)
Concentration: 1 µg/L
Sample type: QC



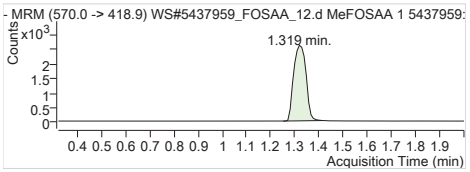


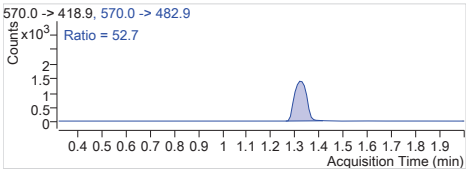
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: QC



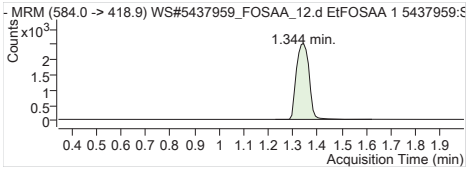


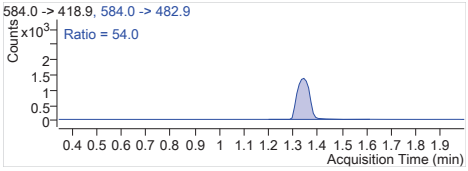
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.910 (0.948)
Concentration: 1 µg/L
Sample type: QC



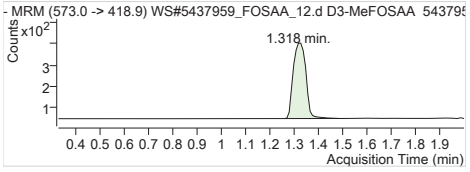


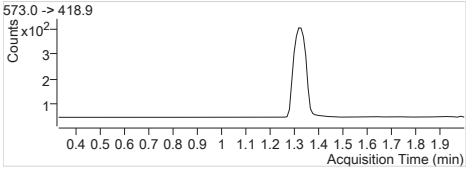
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.319 (1.319)
Calc. conc. 0.51 µg/L
Area ratio: 7.43030
Sample type: QC



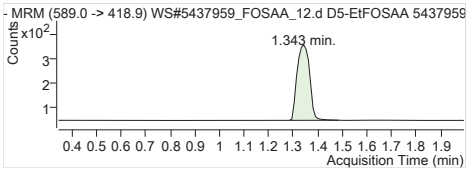


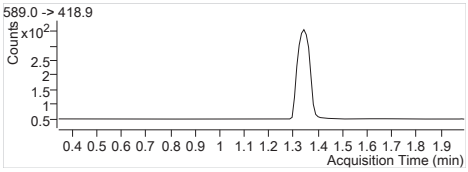
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 0.49 µg/L
Area ratio: 8.28425
Sample type: QC



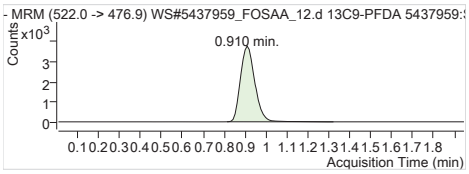


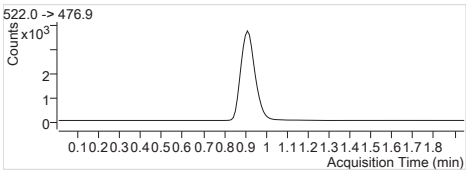
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.318 (1.328)
Calc. conc. 82.06 µg/L
Area ratio: 0.07228
Sample type: QC





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	80.96 µg/L
Area ratio:	0.06097
Sample type:	QC





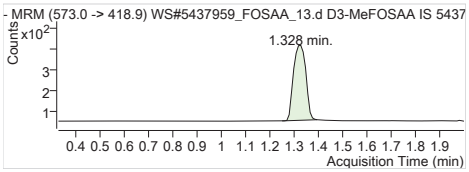
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.910 (0.948)
Calc. conc.	2.24 µg/L
Area ratio:	0
Sample type:	QC

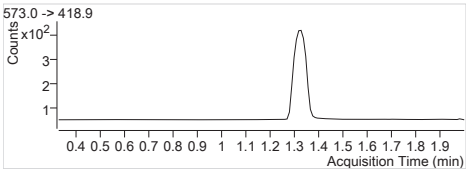
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**5437959:SPIKE:D1**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_13.d	**Operator**	
Sample Type	QC	**Dilution**	0.024
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-B3
Acq. Date	2018/03/13 9:03:56 PM	**Injection Volume**	Per Method
Sample Annotation	-		

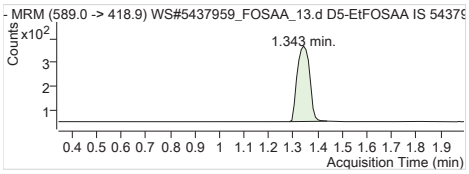
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1300	1.33	1 µg/L		
D5-EtFOSAA IS	1125	1.34	1 µg/L		
13C9-PFDA IS	18684	0.92	1 µg/L		

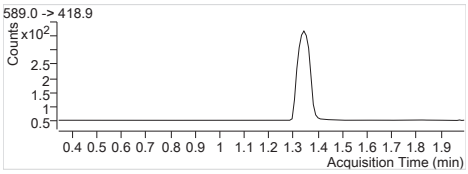
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	8939	1.32	20.80	0.48 µg/L	95.26
EtFOSAA 1	8746	1.34	20.80	0.46 µg/L	91.90
D3-MeFOSAA	1332	1.33	100.00	80.94 µg/L	80.94
D5-EtFOSAA	1140	1.34	100.00	81.01 µg/L	81.01
13C9-PFDA	18671	0.92	100.00	2.37 µg/L	98.58



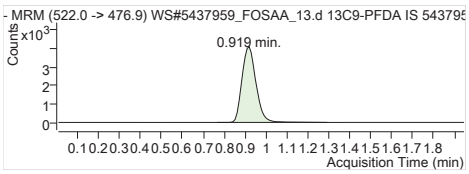


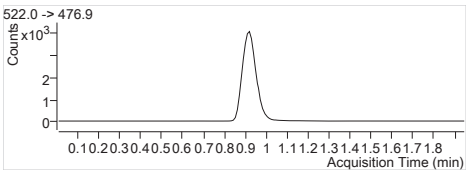
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: QC



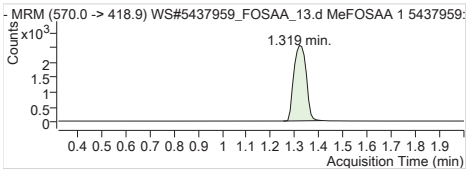


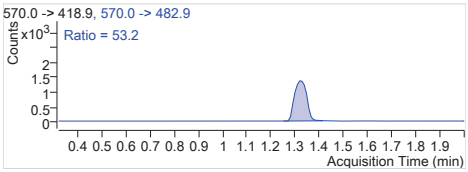
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: QC



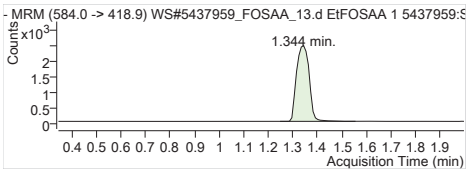


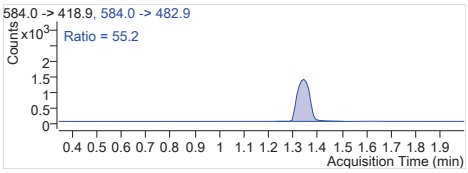
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.919 (0.948)
Concentration: 1 µg/L
Sample type: QC



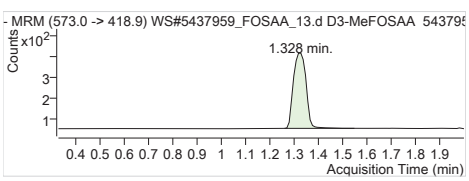


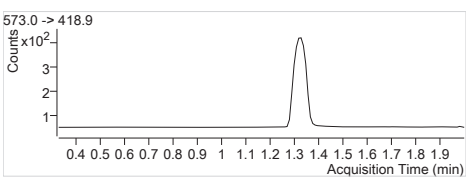
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.319 (1.319)
Calc. conc. 0.48 µg/L
Area ratio: 6.87615
Sample type: QC



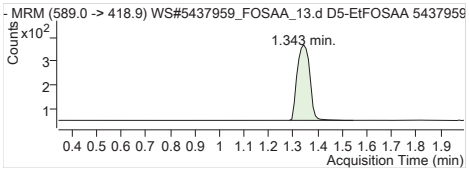


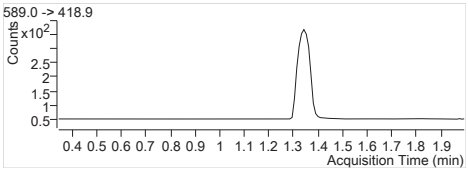
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 0.46 µg/L
Area ratio: 7.77422
Sample type: QC



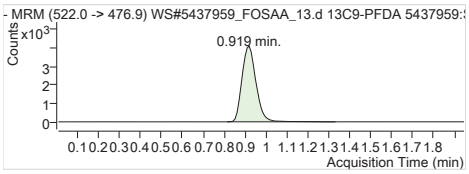


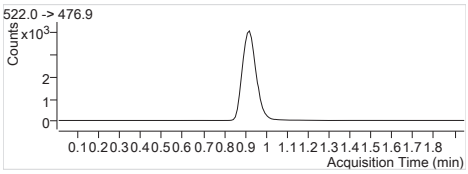
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 80.94 µg/L
Area ratio: 0.07129
Sample type: QC





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	81.01 µg/L
Area ratio:	0.06101
Sample type:	QC





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.919 (0.948)
Calc. conc.	2.37 µg/L
Area ratio:	0
Sample type:	QC

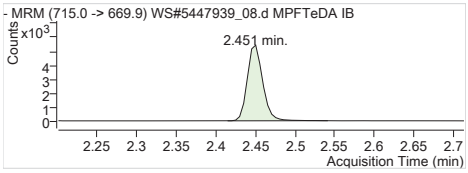
Quantitation Results

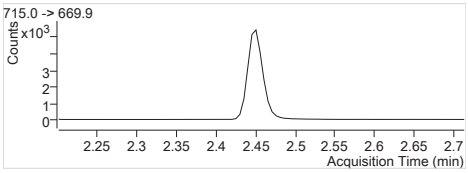
Agilent Technologies

Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics		
Sample Name	**IB**	**Instrument**	LCMS04
Data File	WS#5447939_08.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P1-A8
Acq. Date	2018/03/21 2:19:13 PM	**Injection Volume**	Per Method
Sample Annotation	-		

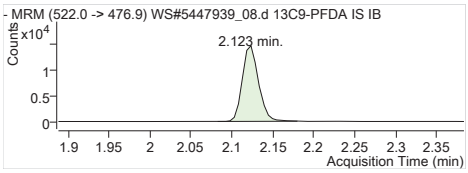
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	7257	2.45	1 µg/L		
13C9-PFDA IS	20095	2.12	1 µg/L		

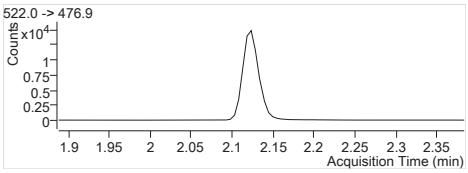
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFTeDA	7257	2.45	-	112.53 µg/L	-
13C9-PFDA	20095	2.12	-	2.31 µg/L	-



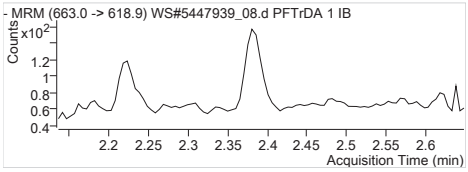


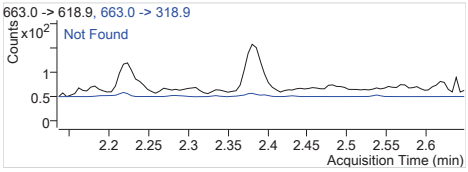
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: Sample



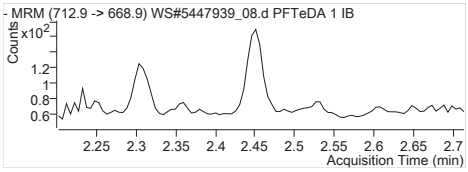


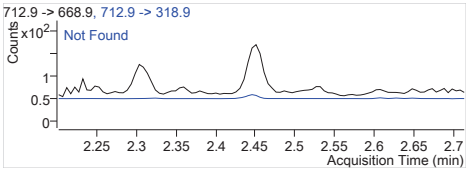
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Sample



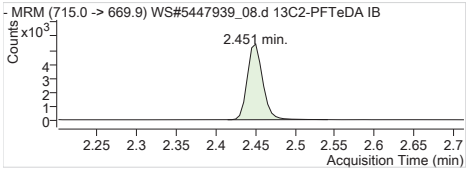


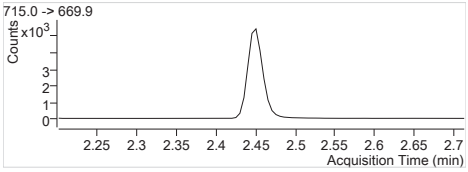
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 0.000 (2.381)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



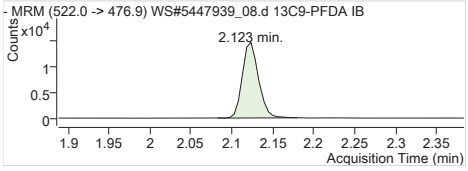


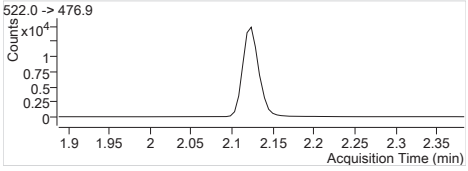
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 0.000 (2.446)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 112.53 µg/L
Area ratio: 0.36113
Sample type: Sample





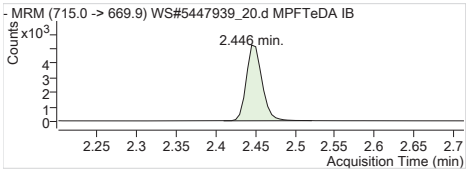
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 2.31 µg/L
Area ratio: 0
Sample type: Sample

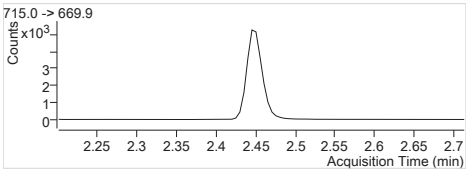
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**IB**	**Instrument**	LCMS04
Data File	WS#5447939_20.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P1-A8
Acq. Date	2018/03/21 3:22:57 PM	**Injection Volume**	Per Method
Sample Annotation	-		

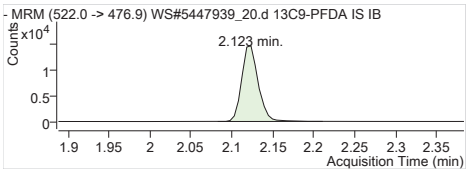
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	7139	2.45	1 µg/L		
13C9-PFDA IS	20632	2.12	1 µg/L		

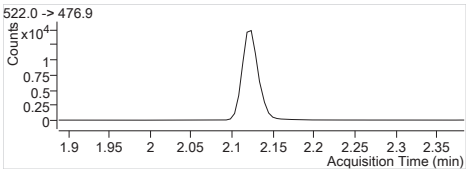
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFTeDA	7139	2.45	-	107.82 µg/L	-
13C9-PFDA	20632	2.12	-	2.37 µg/L	-



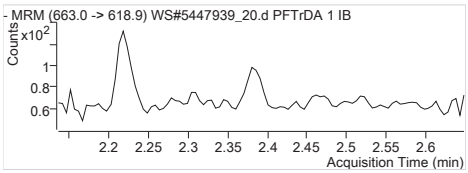


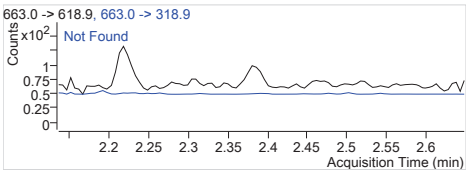
MPFTeDA Internal Standard
RT (Exp. RT): 2.446 (2.446)
Concentration: 1 µg/L
Sample type: Sample



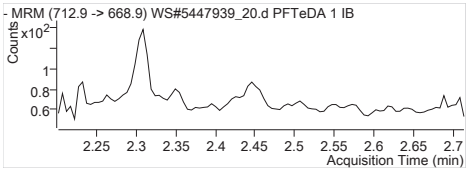


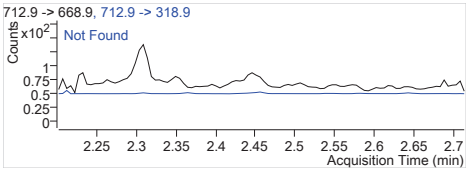
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Sample



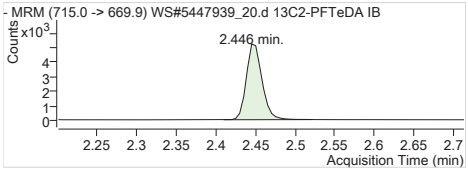


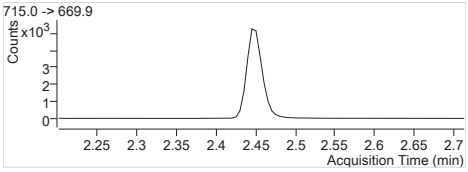
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 0.000 (2.381)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



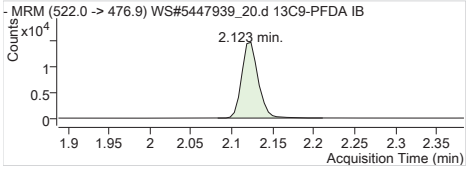


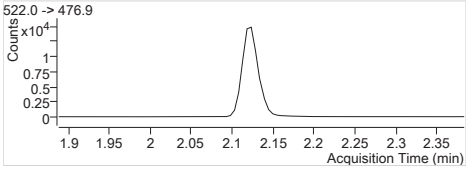
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 0.000 (2.446)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 107.82 µg/L
Area ratio: 0.34602
Sample type: Sample





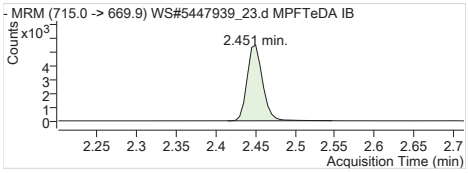
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 2.37 µg/L
Area ratio: 0
Sample type: Sample

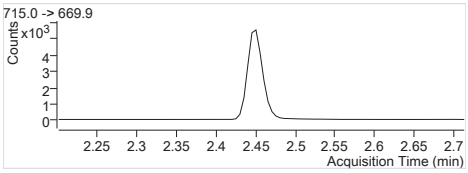
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**IB**	**Instrument**	LCMS04
Data File	WS#5447939_23.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P1-A8
Acq. Date	2018/03/21 3:37:44 PM	**Injection Volume**	Per Method
Sample Annotation	-		

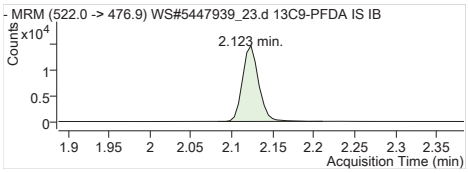
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	7437	2.45	1 µg/L		
13C9-PFDA IS	19955	2.12	1 µg/L		

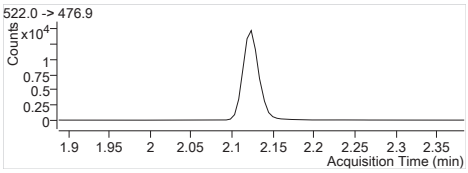
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFTeDA	7437	2.45	-	116.13 µg/L	-
13C9-PFDA	19955	2.12	-	2.29 µg/L	-



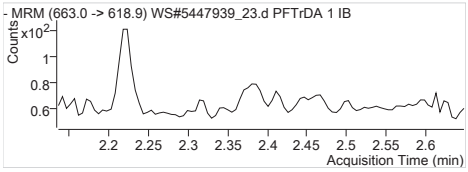


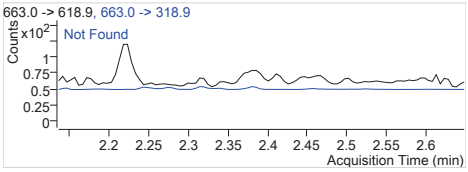
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: Sample



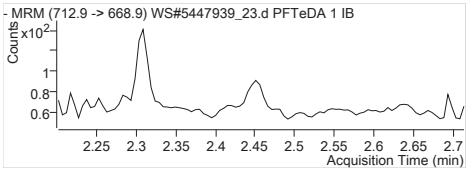


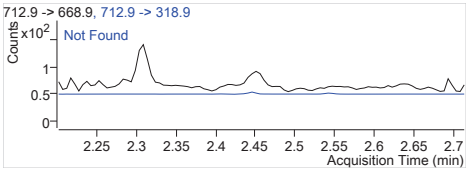
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Sample



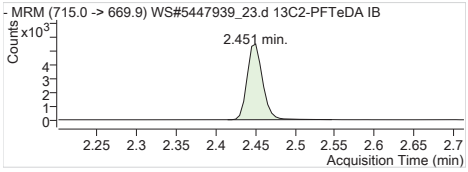


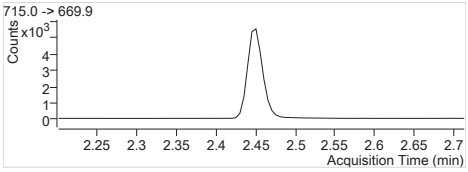
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 0.000 (2.381)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



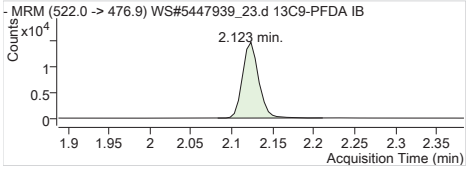


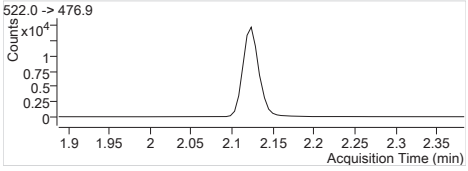
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 0.000 (2.446)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 116.13 µg/L
Area ratio: 0.37269
Sample type: Sample





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 2.29 µg/L
Area ratio: 0
Sample type: Sample

Quantitation Results

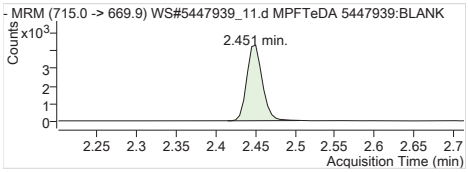
Agilent Technologies

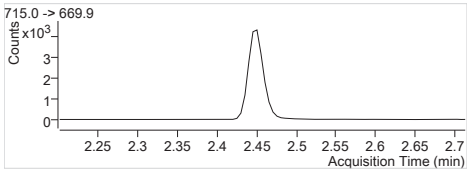
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**5447939:BLANK**	**Instrument**	LCMS04
Data File	WS#5447939_11.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P1-B1
Acq. Date	2018/03/21 2:34:01 PM	**Injection Volume**	Per Method
Sample Annotation	Reported for all except 6:2-FTS.		

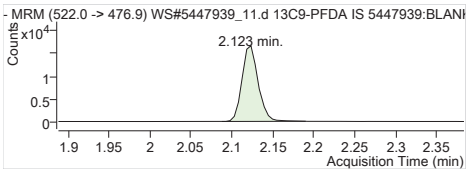
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	5795	2.45	1 µg/L		
13C9-PFDA IS	22686	2.12	1 µg/L		

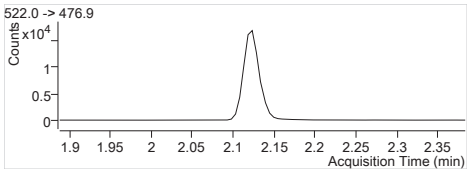
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFTeDA	5795	2.45	-	79.60 µg/L	-
13C9-PFDA	22686	2.12	-	2.60 µg/L	-



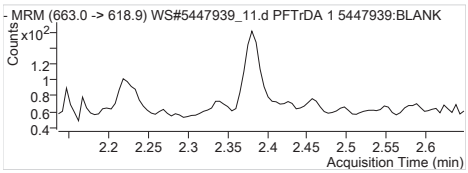


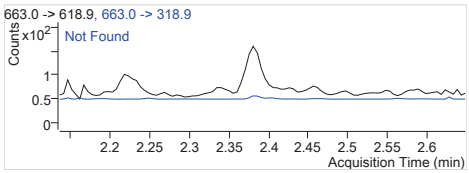
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: Sample



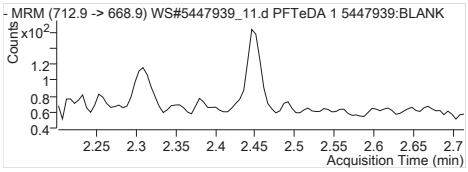


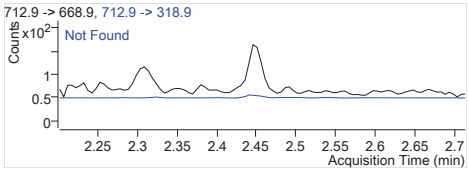
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Sample



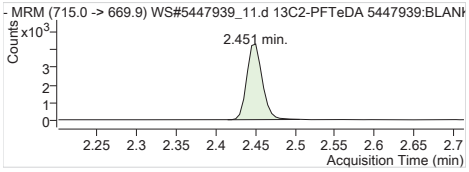


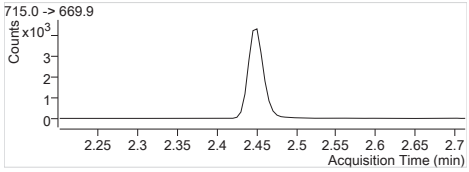
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 0.000 (2.381)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample



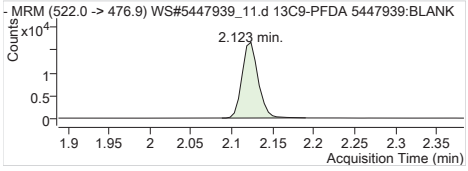


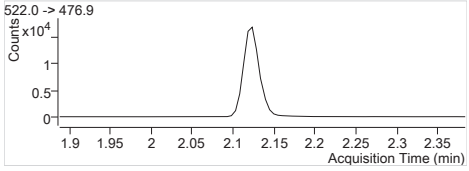
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 0.000 (2.446)
Calc. conc. N.D.
Area ratio: 0
Sample type: Sample





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 79.60 µg/L
Area ratio: 0.25544
Sample type: Sample





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 2.60 µg/L
Area ratio: 0
Sample type: Sample

Quantitation Results

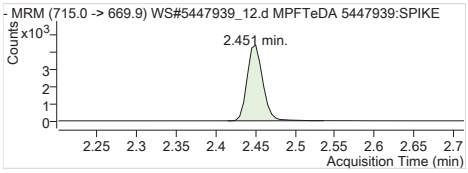
Agilent Technologies

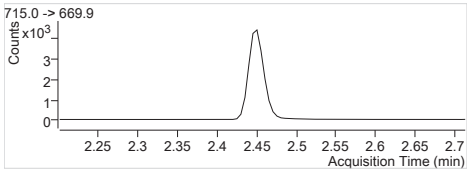
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**5447939:SPIKE**	**Instrument**	LCMS04
Data File	WS#5447939_12.d	**Operator**	
Sample Type	QC	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P1-B2
Acq. Date	2018/03/21 2:38:56 PM	**Injection Volume**	Per Method
Sample Annotation	Reported for all except 6:2-FTS.		

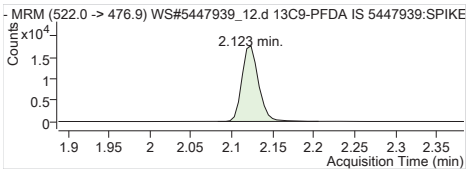
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6002	2.45	1 µg/L		
13C9-PFDA IS	24781	2.12	1 µg/L		

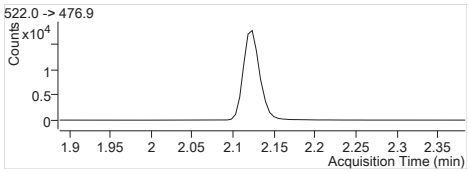
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	49436	2.38	20.80	0.44 µg/L	88.20
PFTeDA 1	43022	2.45	20.80	0.45 µg/L	90.69
13C2-PFTeDA	6002	2.45	100.00	75.47 µg/L	75.47
13C9-PFDA	24781	2.12	100.00	2.84 µg/L	118.50



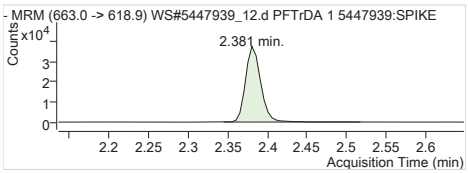


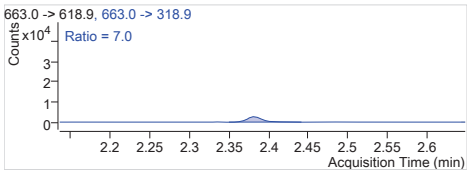
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: QC



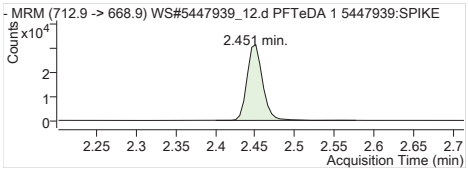


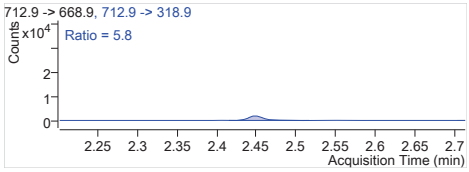
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: QC



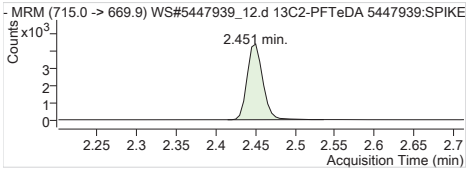


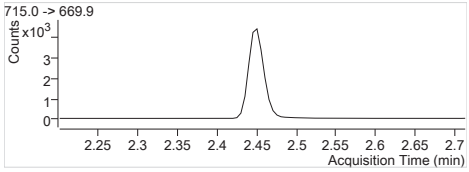
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 0.44 µg/L
Area ratio: 8.23659
Sample type: QC



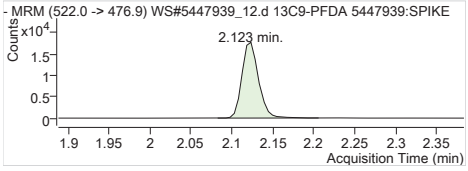


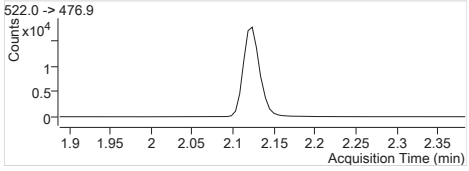
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 0.45 µg/L
Area ratio: 7.16794
Sample type: QC





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 75.47 µg/L
Area ratio: 0.24220
Sample type: QC





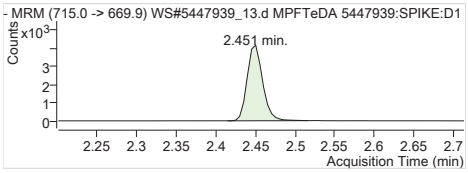
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 2.84 µg/L
Area ratio: 0
Sample type: QC

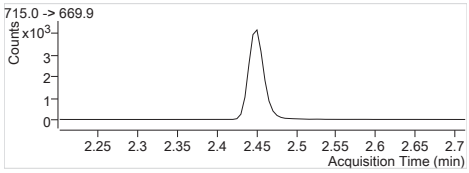
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**5447939:SPIKE:D1**	**Instrument**	LCMS04
Data File	WS#5447939_13.d	**Operator**	
Sample Type	QC	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P1-B3
Acq. Date	2018/03/21 2:43:51 PM	**Injection Volume**	Per Method
Sample Annotation	Reported for all except 6:2-FTS.		

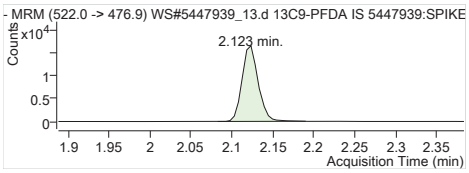
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	5551	2.45	1 µg/L		
13C9-PFDA IS	22342	2.12	1 µg/L		

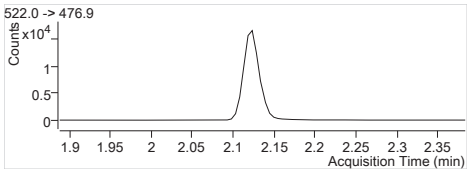
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	50454	2.38	20.80	0.49 µg/L	97.41
PFTeDA 1	43999	2.45	20.80	0.50 µg/L	100.38
13C2-PFTeDA	5551	2.45	100.00	77.42 µg/L	77.42
13C9-PFDA	22342	2.12	100.00	2.56 µg/L	106.84



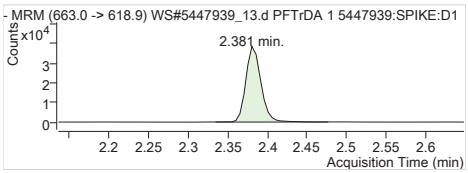


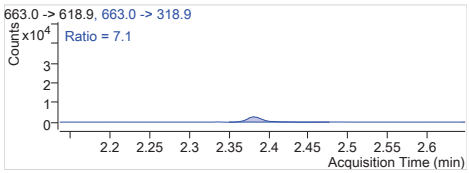
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: QC



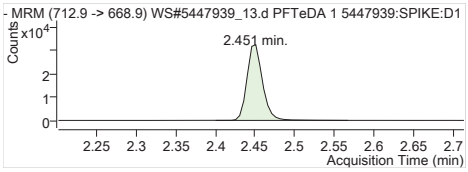


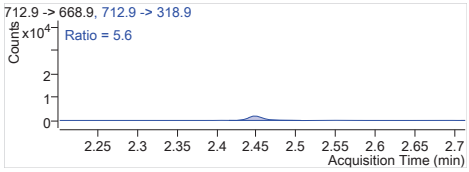
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: QC



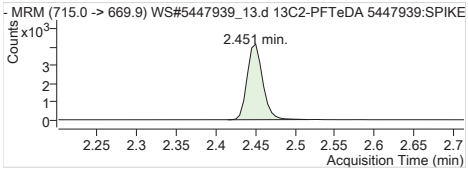


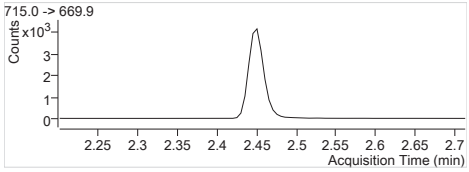
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 0.49 µg/L
Area ratio: 9.08917
Sample type: QC



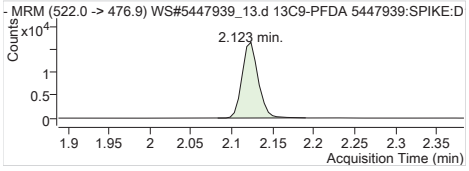


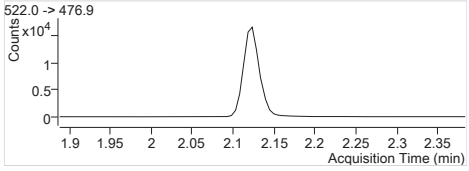
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 0.50 µg/L
Area ratio: 7.92632
Sample type: QC





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 77.42 µg/L
Area ratio: 0.24846
Sample type: QC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 2.56 µg/L
Area ratio: 0
Sample type: QC

DoD Projects - Internal Data Validation Checklist

Run date: 2018/03/15

Worksheet # (s): 5H37959

Analysis: PFOSALCM-W

	Primary review by the analyst - 1st 100 % analysis review	1st 100% review yes	no	n/a	*2nd 100% review
1	Sample analyses meet hold time criteria	✓			✓
2	Analysis set-up meets method criteria	✓			✓
3	Tuning and correct calibration used - criteria meets method criteria	✓			✓
4	SQC/Control Charts updated, analysis in statistical/method control	✓			✓
5	Internal area counts checked (if applicable)	✓			✓
6	LCS, SRM are within acceptance criteria	✓			✓
7	Surrogate Recovery(s) is within acceptance criteria	✓			✓
8	Method Blank meets acceptance criteria		✓		✓
9	Matrix Spike recovery(s) meets acceptance criteria	✓			✓
10	Duplicate precision meets acceptance criteria			✓	✓
11	QC is documented on the run logs	✓			✓
12	Runs checked for carryover	✓			✓
13	Prep log / worksheet(s) are present, signed / dated by a prep / instrument analysts	✓			✓
14	Initial weights, splits, impringer volumes (where applicable) are documented	✓			✓
15	Standards and reagents traceable to Certificates of Analysis	✓			✓
16	Samples above calibration range diluted and reanalyzed			✓	✓
17	Dilution factors (where justified) have been checked for correctness and entered			✓	✓
18	Analytical observations/anomalies documented in LIMS	✓			✓
19	Random calculation checked and in correct units	✓			✓
20	If corrective actions were applied they are documented, initialed & dated			✓	✓
21	Manual integration – before & after data with a reason included, initialed & dated			✓	✓
22	Transferred data is validated in LIMS for correctness	✓			✓
23	Data package assembled (where required)	✓			✓

Reviewed by: MCP Date: 2018/03/19

Comments:

	Secondary Supervisor/Qualified Data Review Staff - 2nd 100% verification review	yes	no	n/a
1	Repeats documented and referenced			✓
2	Method and sample deviations noted, anomalies described (if applicable)			✓
3	Data and QC validated in LIMS	✓		
4	Random calculation checked	✓		
5	Benchsheet (s) signed and dated	✓		
6	Data Package (if required) checked for completeness	✓		

Reviewed by: CM Date: 3/19/2018

Comments:

*Note: 2nd 100% verification review documented by secondary qualified data review
Primary and Secondary Internal Data Review Check must be performed by a different person

Worksheet Data Validation Checklist - Extractable Organics

Worksheet # 5437959 | Testcode: PFOSALCM-W

Sample Preparation		yes	no	n/a
1	Samples extracted within hold time	✓		
2	Client sample ID verified against Lab ID (waters & oils)	✓		
3	Parameter list and Client comments reviewed, (Spiking solutions matched to parameter list)	✓		
4	Height of sediment or if sample was decanted, recorded on worksheet	✓		
5	Method required QC processed with samples, maximum batch size = 20 client samples.	✓		
6	Sample, duplicate, matrix spike appear similar, initial sample as well as final extract			✓
7	Sample weight or initial volume and extract final volume, aliquot factor clearly recorded.	✓		
8	If performed any additional dilution clearly recorded			✓
9	Matrix spike / Duplicate performed on IOL samples if present			✓
10	Spiking solutions valid (haven't expired), ID and volume used clearly identified on worksheet	✓		
11	Spiking process witnessed and signed off	✓		
12	Extraction type recorded (N3A2B = neutral, 3 x acidic, 2 x basic)			✓
13	Sample prep deviations documented within CompliantPro as a Policy Deviation			✓
14	Job Remarks reviewed on 2nd page of worksheet.	✓		
15	Worksheet and reagent tracking record completed and authorized.	✓		

Reviewed by: DM3 | Date: 2018/03/13

Comments:

Worksheet Approval		yes	no	n/a
1	Verified the position of the vials in autosampler against sequence list; signed off sequence list			
2	Calibration and CCV standards valid (haven't expired)			
3	Initial calibration curve and DFTPP tune (if applicable) acceptable			
4	Continuing and Final CCV and DFTPP tune (if applicable) acceptable			
5	System performance check acceptable (if applicable)			
6	Internal standard responses acceptable			
7	Method blank meets acceptance criteria			
8	Lab Control Samples recoveries meets acceptance criteria			
9	Duplicate RPD meets acceptance criteria			
10	Matrix spike recoveries meets acceptance criteria			
11	Surrogate recoveries meets acceptance criteria			
12	Appropriate control charts updated			
13	Samples above calibration range diluted and reanalyzed			
14	Dilutions clearly documented on tracking record, inst file and verified during data upload			
15	Samples following high level samples checked for carryover.			
16	Mass spectra ion ratios acceptable for positive results, hardcopy in file.			
17	Analytical observations / anomalies documented			
18	DQW comments entered in LIMS, hardcopy in file			
19	Sample Prep section (above) reviewed and verified.			
20	WS Approval performed in LIMS			

Reviewed by: | Date:

Comments:

Refer to BRL-FCD-00002 2018/03/19 MP

Worksheet Validation		yes	no	n/a
1	Calibration, QC and sample results reviewed and determined acceptable			
2	Manual integrations verified			
3	Random calculation checked			
4	Data and QC validated in LIMS			
5	Comments reviewed for appropriateness			
6	Reworks / relogs documented in file			
7	Worksheet signed and dated,			
8	Worksheet approved and validated within LIMS			

Reviewed by: | Date:

Comments:

WS# : 5437959

Page #: 1/2

Report Name : Worksheet - (Liquids and Solids)

Assignment Date : Tuesday, March 13, 2018

Assigned to : Daniella McLean

Test Code : PFOSALCM-W

Instrument Id:

Test Description : PFOS and PFOA in water by LC-MS/MS

	Job Number	Sample Number	D	Sample ID	F	~~% Moisture~~ Sediments	Wt or Vol	Final Vol (mL)	DF or AF	# Cont	Expiry Date	Test DeadLine	Criteria	Extract Date	Envi (Acres (mg))
5,3		SPIKE	0	PFC-W		0	125	3	1X					2018/03/13	28
5,4		SPIKE	1	PFC-W		0	125	3	1X					2018/03/13	32
5,1		BLANK				0	125	3	1X					2018/03/13	35
5,6	B850056	*GEZ789-01R		CEF-CS01AR-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	33
5,8	B850056	*GEZ790-01R		FB-CEF-CS-030218		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	32
5,10	B850056	*GEZ791-01R		CEF-CS10-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	28
5,12	B850056	*GEZ792-01R		CEF-013-085-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	27
5,14	B850056	*GEZ793-01R		CEF-003-425-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	34
5,16	B851133	*GFF357-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	27
5,18	B851133	*GFF358-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	30
5,20	B851133	*GFF359-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	29
5,22	B851133	*GFF360-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	29

2018/03/20 DM3

Remarks:

Samples extracted by: Daniella McLean DM3 2018/03/20

Instrumentation performed by: [signature] Date: 2018/03/13

Calculations performed by: [signature] Date: 2018/03/19

Validated by: CM Date: 2018/03/20

Job No.	Rep	Client Name / Remarks	Contact	Client Tier	National
GB850056	SP8	Earth Toxics Inc	Rick Carr	Tier 5 (Enviro.)	
		nreg, PFOSALCM-W Level IV Package and TetraTech EDD required *PM report results in ng/L Project #: JM10 CECIL			
GB851133	[redacted]				

Job	Sample	Lab Comments
	SPIKE	
	SPIKE	
	BLANK	
B850056	GEZ789-01R	
B850056	GEZ790-01R	
B850056	GEZ791-01R	
B850056	GEZ792-01R	
B850056	GEZ793-01R	
B851133	GFF357-01R	
B851133	GFF358-01R	
B851133	GFF359-01R	
B851133	GFF360-01R	

S1 25
S2 50 } SK-7430
S3 150
S4 37.5
S5 75 } I-5315
S6 ~~6~~ 125
DMB 2018/03/13
ICV 62.5 ← I-5312
IB 2850µ MeOH + 150µ IS LL 2018/03/13

Folder: 2018/03/15

Batch re-integrated for PFOS & $^{13}C_4$ PFBA due to poor initial integration.
Results file: PFC_Water_Low_180315_WS#5437959_B_Re-integrated. 2018/03/15 WG
~~Folder: 20180313 WS# 5437959_A WS# 5437959_FOSAA KC 2018/03/15~~
SL 2018/03/20.

Worksheet Reagent Tracking Record Worksheet # 5437959

Surrogate/Spike solutions	√	Solution ID #	Conc.	Blk-Spk Volume (µL) Solid	Blk-Spk Liquid	MS Solid	MS Liquid	Samples Solid	Samples Liquid
DGT Spike			100 ug/mL	60	30	60	30	NA	NA
Diquat Dibromide			50 ug/mL	NA	350	NA	350	NA	NA
Explosives Spiking solution A			20 ug/mL	250	100	250	100	NA	NA
Explosives Spiking solution B			20/80 ug/mL	250	100	250	100	NA	NA
Formaldehyde Spike			100 ug/mL	25	25	25	25	NA	NA
Glyphosate Spike			25 ug/mL	500	20	500	20	NA	NA
Nonylphenol Ethoxylate Spike			100 ug/mL	100	100	100	100	NA	NA
Nonylphenol Spike			10 ug/mL	100	100	100	100	NA	NA
Paraquat Cl Tetrahydrate			20 ug/mL	NA	125	NA	125	NA	NA
Perchlorate Standard Spike			10 ng/mL	NA	100	NA	100	NA	NA
Perchlorate Standard Spike			500 ng/mL	40	NA	40	NA	NA	NA
Perchlorate O-18 Internal Standard			0.10 ng/uL	20	20	20	20	20	20
Morpholine Second Source Working Std			2500 ug/L	NA	80	NA	80	NA	NA
Morpholine-D8 Internal Standard			10 ug/mL	NA	50	NA	50	NA	50
Steril Second Source Spiking Solution			NA	20	NA	20	NA	NA	NA
Sterilants Comp. IS Working Solution			3 ug/mL	50	NA	50	NA	50	NA
Comp. PFC Working Solution A	✓	I-5312 (2/3)	1ug/mL	75	21 (62.5)	75	21 (62.5)	NA	NA
PFC Internal Standard Solution	✓	SE-6805 (4/4) LR	50/125 ng/mL	200	100 (150)	200	100 (150)	200	100 (150)
PFC Injection IS	✓	SE-6807 (1/4) LR ✓	400 ng/mL	20	(20)	20	20	20	(20)
ICV	✓	I-5312 (3/3)	1µg/mL		62.5				

Solvent/Reagent	√	Lot No.	Date Opened	Solvent/Reagent	√	Lot No.	Date Opened/ Prepared
DCM				50% NaOH			
Ottawa Sand				o-Phosphoric Acid			
Methanol	✓	SHBJ8485	2018/03/13	Borax			
2-Propanol (IPA)				Calcium Chloride			
Acetonitrile				EDTA			
Sodium Sulfate				Phosphate Buffer			
70:30 Methanol: Water				Sodium Thiosulphate			
60:40 Water: Methanol	✓	PRURE-108-414		DNPH			
DCM:Ethyl Ether (75:25)				FMOC			
Hexane:IPA (98:2)				5M Acetate Buffer			
2% Formic Acid	✓	PRURE-108-415		0.2% NH_4OH	✓	PRURE-108-423	
0.2% Formic Acid				Leachate Fluid			
0.05M KOH				Reagent Water	✓	57297	2018/03/09
0.05M HCl							

*Spiked by: DM3
Spike Date: 2018/03/13
Spike Syringe/Pipette ID#: G24390G
Int. Std Syringe/Pipette ID#: M41011F
*Spiking Witnessed by: LR
Final pH:

Equipment & ID	√	Equipment	ID#	√	Equipment	Lot #
Pipettor I47987G	✓	SPE Cartridge	0034377247A	✓	QC Balance ID	
	✓	Filter			Thermometer ID &Temp	
Dispenser		Centrifuge	42148683	✓		
		Sonicator				

Bottle Tracking
Bottle# 18801
Cap# 18778
Systems plus Lot#: 18-02-01

Comments: enviCARB lot# 96481
250mL cylinder #3026

* - SPIKING OF QC'S & SAMPLES MUST BE WITNESSED AT ALL TIMES.

Worksheet Number: **5437959**

PFOS and PFOA in water by SPE/LCMS - Water

ug/L

Parameter Name	Units	SPIKE	SPIKE Dup1	BLANK	DL	B850056 GEZ789	B850056 GEZ790
6:2 Fluorotelomer sulfonate	ug/L	100.87867	100.80428	0	0.02	N/A*******	N/A*******
8:2 Fluorotelomer sulfonate	ug/L	102.07965	94.16540	0	0.02	N/A*******	N/A*******
N-ethylperfluorooctane sulfonamide	ug/L	98.46314	96.71690	0	0.04	N/A*******	N/A*******
EtFOSAA	ug/L	97.77011	91.75203	0	0.02	0	0
N-ethylperfluorooctane sulfonamidoe	ug/L	93.52735	93.79681	0	0.04	N/A*******	N/A*******
N-methylperfluorooctane sulfonamide	ug/L	93.14423	89.07026	0	0.04	N/A*******	N/A*******
MeFOSAA	ug/L	102.78921	95.10310	0	0.02	0	0
N-methylperfluorooctanesulfonamidol	ug/L	97.55788	93.34723	0	0.04	N/A*******	N/A*******
Perfluorobutanoic acid	ug/L	101.84889	96.54625	0	0.02	N/A*******	N/A*******
Perfluorobutane Sulfonate (PFBS)	ug/L	99.94490	95.23645	0	0.02	0	0
Perfluorodecane Sulfonate	ug/L	95.49618	91.47724	0	0.02	N/A*******	N/A*******
Perfluoroheptanoic Acid (PFHpA)	ug/L	101.20211	97.66971	0	0.02	0	0
Perfluoroheptane sulfonate	ug/L	100.54555	95.77802	0	0.02	N/A*******	N/A*******
Perfluorohexanoic Acid (PFHxA)	ug/L	102.23774	98.04883	0	0.02	0	0
Perfluorohexane Sulfonate (PFHxS)	ug/L	99.47451	95.83218	0	0.02	0	0
Perfluorononanoic Acid (PFNA)	ug/L	101.91869	97.03890	0	0.02	0	0
Perfluorooctane Sulfonamide (PFOSA)	ug/L	100.62655	93.74168	0	0.02	N/A*******	N/A*******
Perfluoropentanoic Acid (PFPeA)	ug/L	100.60896	93.53667	0	0.02	N/A*******	N/A*******
Perfluorotetradecanoic Acid	ug/L	97.65608	95.71883	0	0.02	0	0
Perfluorotridecanoic Acid	ug/L	97.81869	94.88902	0	0.02	0	0
Perfluoroundecanoic Acid (PFUnA)	ug/L	101.76657	97.04860	0	0.02	0	0
Perfluorodecanoic Acid (PFDA)	ug/L	101.57911	96.39092	0	0.02	0	0
Perfluorododecanoic Acid (PFDoA)	ug/L	99.68566	96.54616	0	0.02	0	0
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	100.82601	93.04823	0	0.02	0	0
Perfluorooctane Sulfonate (PFOS)	ug/L	93.56564	89.07530	0	0.02	0	0
13C2-6:2 Fluorotelomer sulfonate	ug/L	90.2394233	86.3739676	98.1844315		N/A*******	N/A*******
13C2-8:2 Fluorotelomer sulfonate	ug/L	93.6886438	91.7616061	100.063590		N/A*******	N/A*******
13C2-perfluorotetradecanoic acid	ug/L	86.9683168	86.0560262	59.2746676		71.5263656	68.6579787
13C4-Perfluorobutanoic acid	ug/L	94.7046166	89.8906169	92.9082723		79.1202093	87.6579322
D3-MeFOSAA	ug/L	82.0579643	80.9393422	79.5421718		68.6670046	71.6868896
D5-EtFOSAA	ug/L	80.9608075	81.0146367	78.9027987		69.8135863	76.1813234
N-methyl-d3-perfluorooctane sulfona	ug/L	81.6762038	81.2085707	80.2362533		N/A*******	N/A*******
N-ethyl-d5-perfluorooctane sulfonam	ug/L	79.1690924	79.5350091	73.7879893		N/A*******	N/A*******
13C2-Perfluorodecanoic acid	ug/L	90.6935769	91.0796240	89.0560102		76.9552398	81.3306112
13C2-Perfluorododecanoic acid	ug/L	85.8620249	85.6294883	78.7345557		74.1671823	76.9810847
13C2-Perfluorohexanoic acid	ug/L	93.3665648	89.5419282	90.2623030		83.3435392	86.2650565
13C2-Perfluoroundecanoic acid	ug/L	93.7582768	91.3118860	81.0124165		74.5608641	82.2347457
13C4-Perfluoroheptanoic acid	ug/L	94.5889622	88.9712218	95.3709703		85.6403967	89.3127112
13C5-Perfluorononanoic acid	ug/L	96.2047478	92.2878838	94.7468779		82.7707429	89.5377948
13C4-Perfluorooctanoic acid	ug/L	96.2861022	93.1018004	91.0240530		86.8200367	85.0179160
13C4-Perfluorooctanesulfonate	ug/L	101.530310	96.5670537	91.2636689		84.7854428	83.4608760
13C5-Perfluoropentanoic acid	ug/L	95.0326155	90.9540704	92.8172540		N/A*******	N/A*******
13C8-Perfluorooctane Sulfonamide	ug/L	83.3326156	84.8790351	78.1523843		N/A*******	N/A*******
18O2-Perfluorohexanesulfonate	ug/L	99.5749928	91.6083456	93.2121122		86.8861427	84.8884017

Worksheet Number: **5437959**

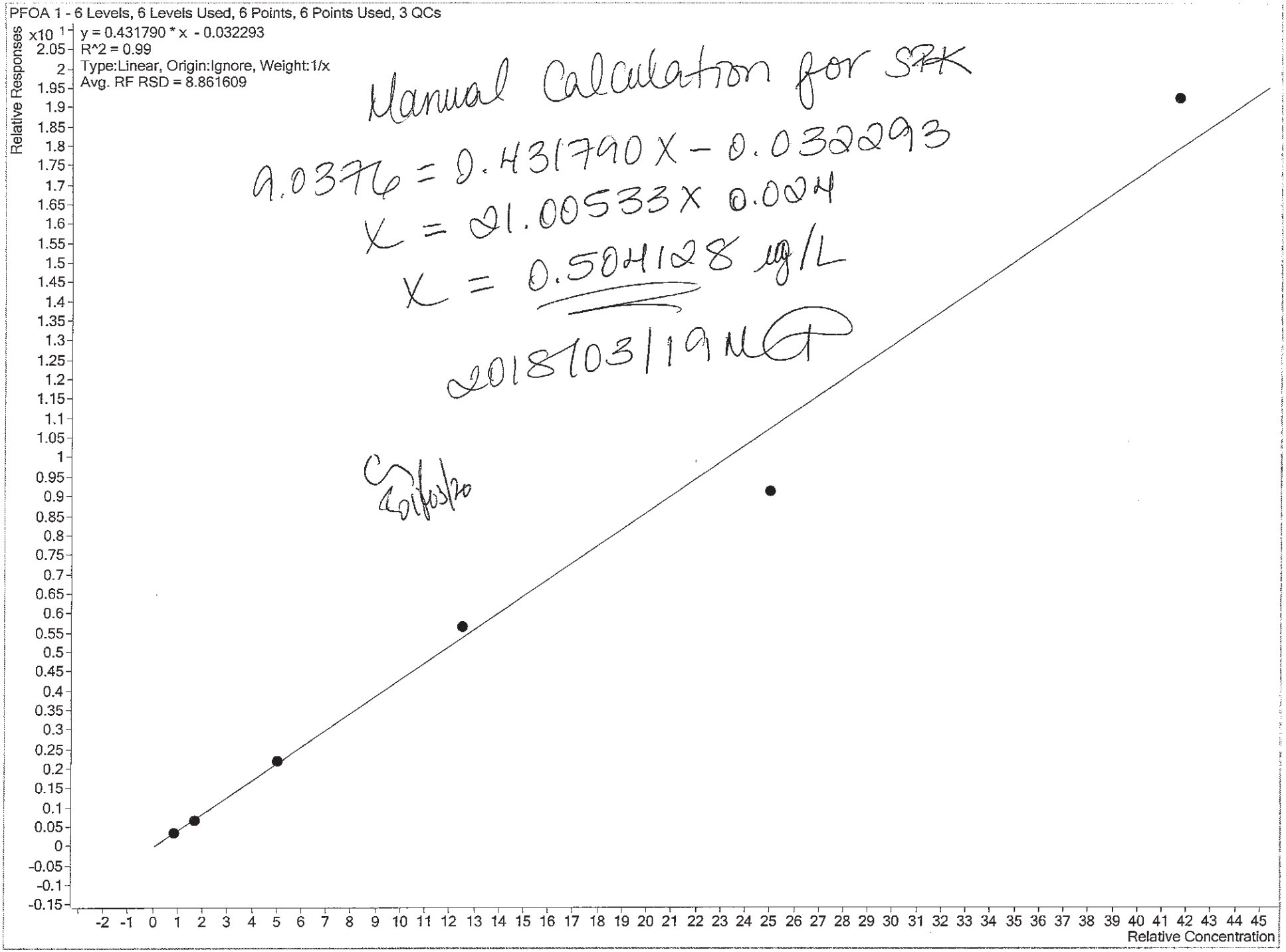
PFOS and PFOA in water by SPE/LCMS - Water

ug/L

Parameter Name	B850056 GEZ791	B850056 GEZ792	B850056 GEZ793	DL	B851133 GFF357	B851133 GFF358	B851133 GFF359
6:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
8:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
N-ethylperfluorooctane sulfonamide	N/A*******	N/A*******	N/A*******	0.02	0	0	0
EtFOSAA	0	0	0	0.02	N/A*******	N/A*******	N/A*******
N-ethylperfluorooctane sulfonamidoe	N/A*******	N/A*******	N/A*******	0.02	0	0	0
N-methylperfluorooctane sulfonamide	N/A*******	N/A*******	N/A*******	0.02	0	0	0
MeFOSAA	0	0	0	0.02	N/A*******	N/A*******	N/A*******
N-methylperfluorooctanesulfonamidol	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluorobutanoic acid	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluorobutane Sulfonate (PFBS)	0	0.02126936	0	0.02	0.01804501	0	0
Perfluorodecane Sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluoroheptanoic Acid (PFHpA)	0	0.01885637	0	0.02	0	0	0
Perfluoroheptane sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluorohexanoic Acid (PFHxA)	0	0.09338009	0	0.02	0	0.02182360	0
Perfluorohexane Sulfonate (PFHxS)	0	0.32528917	0	0.02	0	0.07125338	0
Perfluorononanoic Acid (PFNA)	0	0	0	0.02	0	0	0
Perfluorooctane Sulfonamide (PFOSA)	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluoropentanoic Acid (PFPeA)	N/A*******	N/A*******	N/A*******	0.02	0	0.02169510	0
Perfluorotetradecanoic Acid	0	0	0	0.02	0	0	0
Perfluorotridecanoic Acid	0	0	0	0.02	0	0	0
Perfluoroundecanoic Acid (PFUnA)	0	0	0	0.02	0	0	0
Perfluorodecanoic Acid (PFDA)	0	0	0	0.02	0	0	0
Perfluorododecanoic Acid (PFDoA)	0	0	0	0.02	0	0	0
Perfluoro-n-Octanoic Acid (PFOA)	0	0.11983741	0	0.02	0	0.01911887	0
Perfluorooctane Sulfonate (PFOS)	0	0.06189031	0	0.02	0	0.02652927	0
13C2-6:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******		79.7383287	93.2919108	92.9184083
13C2-8:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******		66.0640414	80.7656884	82.1673337
13C2-perfluorotetradecanoic acid	68.7875445	!! 46.2914	76.7508346		63.6090427	71.6815585	76.0321377
13C4-Perfluorobutanoic acid	81.0171398	77.9559777	89.4584289		72.5423765	80.0199670	78.1004746
D3-MeFOSAA	68.5533931	68.3375659	77.6776684		N/A*******	N/A*******	N/A*******
D5-EtFOSAA	66.9605577	65.8132201	73.2158397		N/A*******	N/A*******	N/A*******
N-methyl-d3-perfluorooctane sulfona	N/A*******	N/A*******	N/A*******		60.8151491	72.6738516	68.3404037
N-ethyl-d5-perfluorooctane sulfonam	N/A*******	N/A*******	N/A*******		61.8743264	69.7410306	71.8603892
13C2-Perfluorodecanoic acid	80.7462376	90.0094824	90.2716863		71.9636201	83.5609029	80.7504463
13C2-Perfluorododecanoic acid	75.6476370	66.4280196	76.2084129		66.1130751	73.9369925	71.6944349
13C2-Perfluorohexanoic acid	85.0182458	93.3442415	90.7967558		74.3319169	79.9593627	80.4168961
13C2-Perfluoroundecanoic acid	76.1557734	74.0507030	77.7699031		70.4512785	74.8681137	70.5071124
13C4-Perfluoroheptanoic acid	87.3518034	96.1733869	93.7497345		73.2439125	81.2774396	83.1996851
13C5-Perfluorononanoic acid	80.6930454	97.2891340	95.9748178		71.4752853	83.6609242	85.5771409
13C4-Perfluorooctanoic acid	83.7035374	94.0774004	94.1006568		74.8959021	81.9147215	82.3509335
13C4-Perfluorooctanesulfonate	85.8737675	92.9672289	92.5091700		73.5204571	84.3746769	82.5352698
13C5-Perfluoropentanoic acid	N/A*******	N/A*******	N/A*******		73.8716699	81.1975001	80.9698015
13C8-Perfluorooctane Sulfonamide	N/A*******	N/A*******	N/A*******		66.7083930	76.3442056	77.0898995
18O2-Perfluorohexanesulfonate	90.7517312	100.920073	91.0380119		77.8673676	84.9045760	84.1405076

PFOS and PFOA in water by SPE/LCMS - Water
ug/L

Parameter Name	B851133 GFF360	DL	RDL	MDL	IDL		
6:2 Fluorotelomer sulfonate	0	0.02	0.02	0.0066	0		
8:2 Fluorotelomer sulfonate	0	0.02	0.02	0.0066	0		
N-ethylperfluorooctane sulfonamide	0	0.04	0.02	0.01	0		
EtFOSAA	N/A*******	0.02	0.02	0.0033	0		
N-ethylperfluorooctane sulfonamidoe	0	0.04	0.02	0.0079	0		
N-methylperfluorooctane sulfonamide	0	0.04	0.02	0.013	0		
MeFOSAA	N/A*******	0.02	0.02	0.0029	0		
N-methylperfluorooctanesulfonamidol	0	0.04	0.02	0.012	0		
Perfluorobutanoic acid	0	0.02	0.02	0.0055	0		
Perfluorobutane Sulfonate (PFBS)	0	0.02	0.02	0.0054	0		
Perfluorodecane Sulfonate	0	0.02	0.02	0.006	0		
Perfluoroheptanoic Acid (PFHpA)	0	0.02	0.02	0.0074	0		
Perfluoroheptane sulfonate	0	0.02	0.02	0.008	0		
Perfluorohexanoic Acid (PFHxA)	0	0.02	0.02	0.0035	0		
Perfluorohexane Sulfonate (PFHxS)	0.02021588	0.02	0.02	0.0056	0		
Perfluorononanoic Acid (PFNA)	0	0.02	0.02	0.0087	0		
Perfluorooctane Sulfonamide (PFOSA)	0	0.02	0.02	0.0034	0		
Perfluoropentanoic Acid (PFPeA)	0	0.02	0.02	0.0075	0		
Perfluorotetradecanoic Acid	0	0.02	0.02	0.0027	0		
Perfluorotridecanoic Acid	0	0.02	0.02	0.0038	0		
Perfluoroundecanoic Acid (PFUnA)	0	0.02	0.02	0.0025	0		
Perfluorodecanoic Acid (PFDA)	0	0.02	0.02	0.0061	0		
Perfluorododecanoic Acid (PFDoA)	0	0.02	0.02	0.005	0		
Perfluoro-n-Octanoic Acid (PFOA)	0	0.02	0.02	0.0033	0		
Perfluorooctane Sulfonate (PFOS)	0.01260828	0.02	0.02	0.006	0		
13C2-6:2 Fluorotelomer sulfonate	81.7035621						
13C2-8:2 Fluorotelomer sulfonate	79.3307548						
13C2-perfluorotetradecanoic acid	76.4182250						
13C4-Perfluorobutanoic acid	79.4947002						
D3-MeFOSAA	N/A*******						
D5-EtFOSAA	N/A*******						
N-methyl-d3-perfluorooctane sulfona	79.7424109						
N-ethyl-d5-perfluorooctane sulfonam	77.3132198						
13C2-Perfluorodecanoic acid	82.9234288						
13C2-Perfluorododecanoic acid	77.5529557						
13C2-Perfluorohexanoic acid	82.6226887						
13C2-Perfluoroundecanoic acid	79.8239358						
13C4-Perfluoroheptanoic acid	86.4092676						
13C5-Perfluorononanoic acid	88.8968101						
13C4-Perfluorooctanoic acid	82.9646903						
13C4-Perfluorooctanesulfonate	82.9313860						
13C5-Perfluoropentanoic acid	84.8030678						
13C8-Perfluorooctane Sulfonamide	77.0144639						
18O2-Perfluorohexanesulfonate	86.6502881						



Manual Calculation for SPK

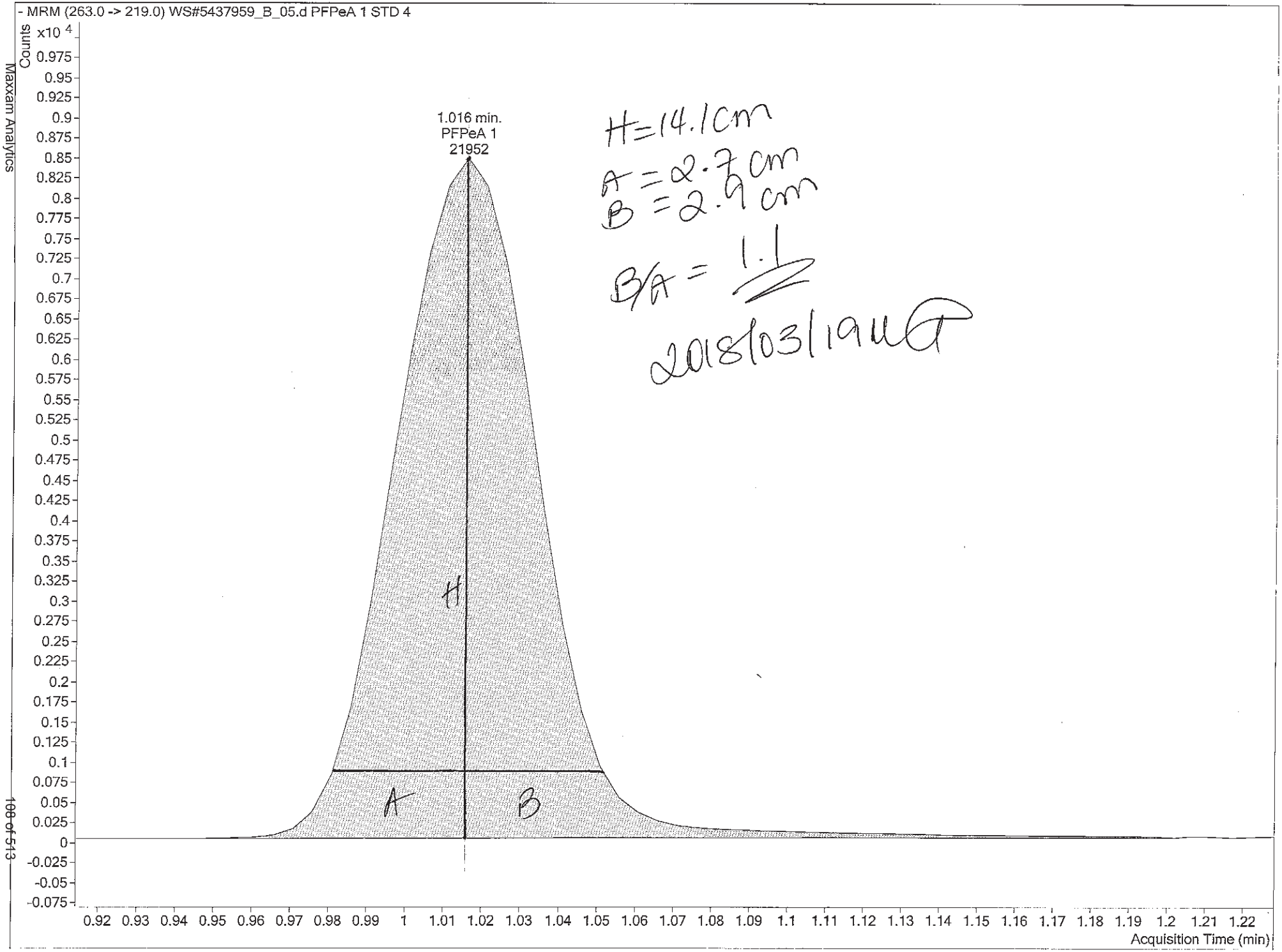
$9.0376 = 0.431790X - 0.032293$

$X = 21.00533 \times 0.024$

$X = \underline{0.504128}$ ug/L

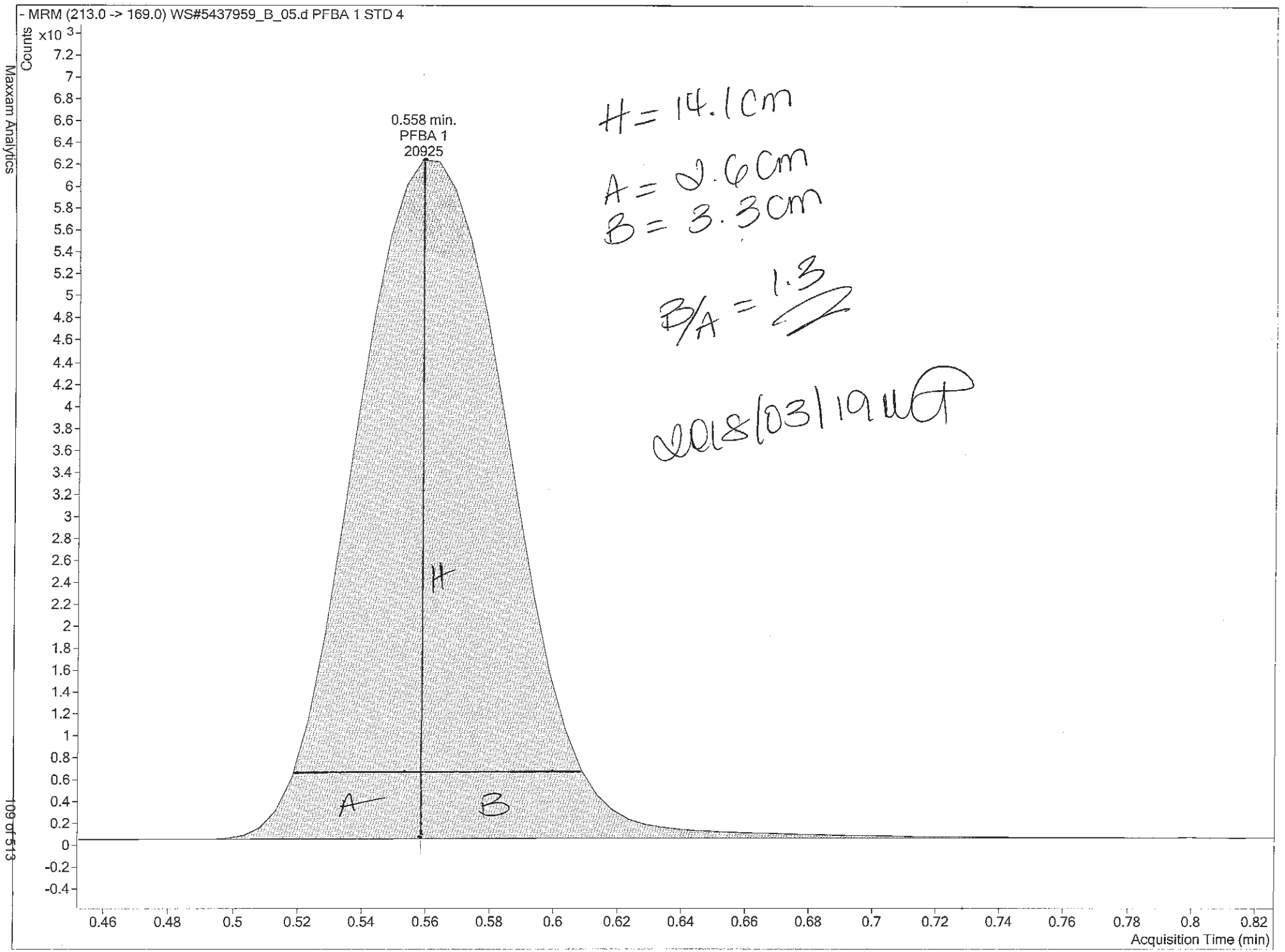
2018/03/19 MG

C 01/03/20



H=14.1cm
A=2.7cm
B=2.9cm
B/A = 1.1

2018/03/19 MT



H = 14.1 cm

A = 9.6 cm

B = 3.3 cm

B/A = 1.3

2018/03/19

Report Name: Worksheet - Parameter Lists

Report Date: 2018/03/13

Test Code: **PFOSALCM-W**

Worksheet Number: **5437959**

Sample Number	Parameter Code	Parameter	
GEZ789-01	ETFOSAA	EtFOSAA	*
GEZ790-01	MEFOSAA	MeFOSAA	*
GEZ791-01	PFBS	Perfluorobutane Sulfonate (PFBS)	
GEZ792-01	PFHPA	Perfluoroheptanoic Acid (PFHpA)	
GEZ793-01	PFHXA	Perfluorohexanoic Acid (PFHxA)	
	PFHXS	Perfluorohexane Sulfonate (PFHxS)	
	PFNA	Perfluorononanoic Acid (PFNA)	
	PFTEDA	Perfluorotetradecanoic Acid	
	PFTRDA	Perfluorotridecanoic Acid	
	PFUNA	Perfluoroundecanoic Acid (PFUnA)	
	PFDA	Perfluorodecanoic Acid (PFDA)	
	PFDOA	Perfluorododecanoic Acid (PFDoA)	
	PFOA	Perfluoro-n-Octanoic Acid (PFOA)	
	PFOS	Perfluorooctane Sulfonate (PFOS)	
GFF357-01	6:2FTS	6:2 Fluorotelomer sulfonate	*
GFF358-01	8:2FTS	8:2 Fluorotelomer sulfonate	*
GFF359-01	ETFOSA	N-ethylperfluorooctane sulfonamide	*
GFF360-01	ETFOSE	N-ethylperfluorooctane sulfonamidoe	*
	MEFOSA	N-methylperfluorooctane sulfonamide	*
	MEFOSE	N-methylperfluorooctanesulfonamidol	*
	PFBA	Perfluorobutanoic acid	
	PFBS	Perfluorobutane Sulfonate (PFBS)	
	PFDS	Perfluorodecane Sulfonate	
	PFHPA	Perfluoroheptanoic Acid (PFHpA)	

* - This parameter is usually off, but will be reported for this group of samples!

Report Name: Worksheet - Parameter Lists
Report Date: 2018/03/13

Test Code: **PFOSALCM-W**
Worksheet Number: **5437959**

Sample Number	Parameter Code	Parameter
	PFHPS	Perfluoroheptane sulfonate
	PFHXA	Perfluorohexanoic Acid (PFHxA)
	PFHXS	Perfluorohexane Sulfonate (PFHxS)
	PFNA	Perfluorononanoic Acid (PFNA)
	PFOSA	Perfluorooctane Sulfonamide (PFOSA)
	PFPEA	Perfluoropentanoic Acid (PFPeA)
	PFTEDA	Perfluorotetradecanoic Acid
	PFTRDA	Perfluorotridecanoic Acid
	PFUNA	Perfluoroundecanoic Acid (PFUnA)
	PFDA	Perfluorodecanoic Acid (PFDA)
	PFDOA	Perfluorododecanoic Acid (PFDoA)
	PFOA	Perfluoro-n-Octanoic Acid (PFOA)
	PFOS	Perfluorooctane Sulfonate (PFOS)

* - This parameter is usually off, but will be reported for this group of samples!

WorkSheet 5437959 Instrument Sequences

1.	5437959:SPIKE	SPIKE
2.	5437959:SPIKE:D1	SPIKE :D1
3.	5437959:BLANK	BLANK
4.	5437959:GEZ789-01	CEF-CS01AR-0318
5.	5437959:GEZ790-01	FB-CEF-CS-030218
6.	5437959:GEZ791-01	CEF-CS10-0318
7.	5437959:GEZ792-01	CEF-013-085-0318
8.	5437959:GEZ793-01	CEF-003-425-0318
9.	5437959:GFF357-01	[redacted]
10.	5437959:GFF358-01	[redacted]
11.	5437959:GFF359-01	[redacted]
12.	5437959:GFF360-01	[redacted]

Worklist Report

Agilent Technologies

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFC_180313_Low.wkl

Waxman Analytics

Operator Name: ---
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\Data\PFC\20180313\WS#5437959
Pre-Worklist Script: ---
Post-Worklist Script: SCP_InstrumentStandby(){MH_Acq_Scripts.exe}
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: Column #209
MP A1: Solution# 296 (FSRE18)
MP B1: Methanol lot# SHBJ8485, Sigma

2018/03/13 MG
verified SV 2018/03/13

Plate Barcode: None

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
1	Solvent	P2-A1	PFC_Water_Low.m	WS#5437959_01.d	Sample		As Method	-
2	STD 1	P2-A2	PFC_Water_Low.m	WS#5437959_02.d	Calibration	STD 1	As Method	-
3	STD 2	P2-A3	PFC_Water_Low.m	WS#5437959_03.d	Calibration	STD 2	As Method	-
4	STD 3	P2-A4	PFC_Water_Low.m	WS#5437959_04.d	Calibration	STD 3	As Method	-
5	STD 4	P2-A5	PFC_Water_Low.m	WS#5437959_05.d	Calibration	STD 4	As Method	-
6	STD 5	P2-A6	PFC_Water_Low.m	WS#5437959_06.d	Calibration	STD 5	As Method	-
7	STD 6	P2-A7	PFC_Water_Low.m	WS#5437959_07.d	Calibration	STD 6	As Method	-

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Worklist Report

Agilent Technologies

Maxxam Analytics

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
8	IB	P2-A8	PFC_Water_Low.m	WS#5437959_08.d	Sample		As Method	-
9	ICV	P2-A9	PFC_Water_Low.m	WS#5437959_09.d	QC	ICV	As Method	-
10	ISC	P2-A2	PFC_Water_Low.m	WS#5437959_10.d	ConCal	STD 1	As Method	-
11	5437959:BLANK	P2-B1	PFC_Water_Low.m	WS#5437959_11.d	Sample		As Method	-
12	5437959:SPIKE	P2-B2	PFC_Water_Low.m	WS#5437959_12.d	QC	ICV	As Method	-
13	5437959:SPIKE:D1	P2-B3	PFC_Water_Low.m	WS#5437959_13.d	QC	ICV	As Method	-
14	5437959:GEZ789-01	P2-B4	PFC_Water_Low.m	WS#5437959_14.d	Sample		As Method	-
15	5437959:GEZ790-01	P2-B5	PFC_Water_Low.m	WS#5437959_15.d	Sample		As Method	-
16	5437959:GEZ791-01	P2-B6	PFC_Water_Low.m	WS#5437959_16.d	Sample		As Method	-
17	5437959:GEZ792-01	P2-B7	PFC_Water_Low.m	WS#5437959_17.d	Sample		As Method	-
18	5437959:GEZ793-01	P2-B8	PFC_Water_Low.m	WS#5437959_18.d	Sample		As Method	-
19	5437959:GFF357-01	P2-B9	PFC_Water_Low.m	WS#5437959_19.d	Sample		As Method	-
20	5437959:GFF358-01	P2-C1	PFC_Water_Low.m	WS#5437959_20.d	Sample		As Method	-
21	5437959:GFF359-01	P2-C2	PFC_Water_Low.m	WS#5437959_21.d	Sample		As Method	-
22	5437959:GFF360-01	P2-C3	PFC_Water_Low.m	WS#5437959_22.d	Sample		As Method	-
23	CCV	P2-A5	PFC_Water_Low.m	WS#5437959_23.d	ConCal	STD 4	As Method	-

Worklist Report

Agilent Technologies

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFC_180313_Low_FOSAA.wkl

Waxman Analytics

Operator Name: ---
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\Data\PFC\20180313\WS#5437959_FOSAA
Pre-Worklist Script: ---
Post-Worklist Script: SCP_InstrumentStandby(){MH_Acq_Scripts.exe}
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: Column #209
MP A1: Solution# 296 (FSRE18)
MP B2: Solution# 300 (FSRE18)

20180313134

Plate Barcode:

Plate	Barcode
P2	

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
1	Solvent	P2-A1	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_01.d	Sample		As Method	-
2	STD 1	P2-A2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_02.d	Calibration	STD 1	As Method	-
3	STD 2	P2-A3	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_03.d	Calibration	STD 2	As Method	-
4	STD 3	P2-A4	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_04.d	Calibration	STD 3	As Method	-
5	STD 4	P2-A5	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_05.d	Calibration	STD 4	As Method	-
6	STD 5	P2-A6	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_06.d	Calibration	STD 5	As Method	-
7	STD 6	P2-A7	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_07.d	Calibration	STD 6	As Method	-
8	IB	P2-A8	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_08.d	Sample		As Method	-

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Worklist Report

Agilent Technologies

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
9	ICV	P2-A9	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_09.d	QC	ICV	As Method	-
10	ISC	P2-A2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_10.d	ConCal	STD 1	As Method	-
11	5437959:BLANK	P2-B1	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_11.d	Sample		As Method	-
12	5437959:SPIKE	P2-B2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_12.d	QC	ICV	As Method	-
13	5437959:SPIKE:D1	P2-B3	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_13.d	QC	ICV	As Method	-
14	5437959:GEZ789-01	P2-B4	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_14.d	Sample		As Method	-
15	5437959:GEZ790-01	P2-B5	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_15.d	Sample		As Method	-
16	5437959:GEZ791-01	P2-B6	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_16.d	Sample		As Method	-
17	5437959:GEZ792-01	P2-B7	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_17.d	Sample		As Method	-
18	5437959:GEZ793-01	P2-B8	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_18.d	Sample		As Method	-
19	5437959:GFF357-01	P2-B9	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_19.d	Sample		As Method	-
20	5437959:GFF358-01	P2-C1	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_20.d	Sample		As Method	-
21	5437959:GFF359-01	P2-C2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_21.d	Sample		As Method	-
22	5437959:GFF360-01	P2-C3	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_22.d	Sample		As Method	-
23	CCV	P2-A5	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_23.d	ConCal	STD 4	As Method	-

FINAL INJECTION SEQUENCE

Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
STD 1	-	2018/03/15 4:46 PM	PFC_Water_Low.m	WS#5437959_B_02.d	P2-A2
STD 2	-	2018/03/15 4:51 PM	PFC_Water_Low.m	WS#5437959_B_03.d	P2-A3
STD 3	-	2018/03/15 4:56 PM	PFC_Water_Low.m	WS#5437959_B_04.d	P2-A4
STD 4	-	2018/03/15 5:01 PM	PFC_Water_Low.m	WS#5437959_B_05.d	P2-A5
STD 5	-	2018/03/15 5:06 PM	PFC_Water_Low.m	WS#5437959_B_06.d	P2-A6
STD 6	-	2018/03/15 5:11 PM	PFC_Water_Low.m	WS#5437959_B_07.d	P2-A7
IB	-	2018/03/15 5:16 PM	PFC_Water_Low.m	WS#5437959_B_08.d	P2-A8
ICV	-	2018/03/15 5:21 PM	PFC_Water_Low.m	WS#5437959_B_09.d	P2-A9
ISC	-	2018/03/15 5:27 PM	PFC_Water_Low.m	WS#5437959_B_10.d	P2-A2
5437959:BLANK	-	2018/03/15 5:32 PM	PFC_Water_Low.m	WS#5437959_B_11.d	P2-B1
5437959:SPIKE	-	2018/03/15 5:37 PM	PFC_Water_Low.m	WS#5437959_B_12.d	P2-B2
5437959:SPIKE:D1	-	2018/03/15 5:42 PM	PFC_Water_Low.m	WS#5437959_B_13.d	P2-B3
5437959:GEZ789-01	-	2018/03/15 5:47 PM	PFC_Water_Low.m	WS#5437959_B_14.d	P2-B4
5437959:GEZ790-01	-	2018/03/15 5:52 PM	PFC_Water_Low.m	WS#5437959_B_15.d	P2-B5
5437959:GEZ791-01	-	2018/03/15 5:57 PM	PFC_Water_Low.m	WS#5437959_B_16.d	P2-B6
5437959:GEZ792-01	-	2018/03/15 6:02 PM	PFC_Water_Low.m	WS#5437959_B_17.d	P2-B7
5437959:GEZ793-01	-	2018/03/15 6:07 PM	PFC_Water_Low.m	WS#5437959_B_18.d	P2-B8
5437959:GFF357-01	-	2018/03/15 6:12 PM	PFC_Water_Low.m	WS#5437959_B_19.d	P2-B9
5437959:GFF358-01	-	2018/03/15 6:17 PM	PFC_Water_Low.m	WS#5437959_B_20.d	P2-C1
5437959:GFF359-01	-	2018/03/15 6:22 PM	PFC_Water_Low.m	WS#5437959_B_21.d	P2-C2
5437959:GFF360-01	-	2018/03/15 6:27 PM	PFC_Water_Low.m	WS#5437959_B_22.d	P2-C3
CCV	-	2018/03/15 6:32 PM	PFC_Water_Low.m	WS#5437959_B_23.d	P2-A5

FINAL INJECTION SEQUENCE

Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
STD 1	-	2018/03/13 8:37 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_02.d	P2-A2
STD 2	-	2018/03/13 8:39 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_03.d	P2-A3
STD 3	-	2018/03/13 8:42 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_04.d	P2-A4
STD 4	-	2018/03/13 8:44 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_05.d	P2-A5
STD 5	-	2018/03/13 8:47 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_06.d	P2-A6
STD 6	-	2018/03/13 8:49 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_07.d	P2-A7
IB	-	2018/03/13 8:51 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_08.d	P2-A8
ICV	-	2018/03/13 8:54 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_09.d	P2-A9
ISC	-	2018/03/13 8:56 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_10.d	P2-A2
5437959:BLANK	-	2018/03/13 8:59 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_11.d	P2-B1
5437959:SPIKE	-	2018/03/13 9:01 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_12.d	P2-B2
5437959:SPIKE:D1	-	2018/03/13 9:03 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_13.d	P2-B3
5437959:GEZ789-01	-	2018/03/13 9:06 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_14.d	P2-B4
5437959:GEZ790-01	-	2018/03/13 9:08 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_15.d	P2-B5
5437959:GEZ791-01	-	2018/03/13 9:11 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_16.d	P2-B6
5437959:GEZ792-01	-	2018/03/13 9:13 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_17.d	P2-B7
5437959:GEZ793-01	-	2018/03/13 9:16 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_18.d	P2-B8
5437959:GFF357-01	-	2018/03/13 9:18 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_19.d	P2-B9
5437959:GFF358-01	-	2018/03/13 9:20 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_20.d	P2-C1
5437959:GFF359-01	-	2018/03/13 9:23 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_21.d	P2-C2
5437959:GFF360-01	-	2018/03/13 9:25 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_22.d	P2-C3
CCV	-	2018/03/13 9:28 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_23.d	P2-A5

DoD Projects - Internal Data Validation Checklist

Run date: 2018/03/21

Worksheet # (s): 5447939

Analysis: PFOSALCM-W

	Primary review by the analyst - 1st 100 % analysis review	1st 100% review yes	no	n/a	*2nd 100% review
1	Sample analyses meet hold time criteria		✓		
2	Analysis set-up meets method criteria	✓			
3	Tuning and correct calibration used - criteria meets method criteria	✓			
4	SQC/Control Charts updated, analysis in statistical/method control	✓			
5	Internal area counts checked (if applicable)	✓			
6	LCS, SRM are within acceptance criteria	✓			
7	Surrogate Recovery(s) is within acceptance criteria		✓		
8	Method Blank meets acceptance criteria	✓			
9	Matrix Spike recovery(s) meets acceptance criteria			✓	
10	Duplicate precision meets acceptance criteria	✓			
11	QC is documented on the run logs	✓			
12	Runs checked for carryover	✓			
13	Prep log / worksheet(s) are present, signed / dated by a prep / instrument analysts	✓			
14	Initial weights, splits, impringer volumes (where applicable) are documented	✓			
15	Standards and reagents traceable to Certificates of Analysis	✓			
16	Samples above calibration range diluted and reanalyzed	✓			
17	Dilution factors (where justified) have been checked for correctness and entered	✓			
18	Analytical observations/anomalies documented in LIMS	✓			
19	Random calculation checked and in correct units	✓			
20	If corrective actions were applied they are documented, initialed & dated			✓	
21	Manual integration – before & after data with a reason included, initialed & dated			✓	
22	Transferred data is validated in LIMS for correctness	✓			
23	Data package assembled (where required)	✓			

Reviewed by: [signature] Date: 2018/03/21

Comments:

	Secondary Supervisor/Qualified Data Review Staff - 2nd 100% verification review	yes	no	n/a
1	Repeats documented and referenced	✓		
2	Method and sample deviations noted, anomalies described (if applicable)			✓
3	Data and QC validated in LIMS	✓		
4	Random calculation checked	✓		
5	Benchsheet (s) signed and dated	✓		
6	Data Package (if required) checked for completeness	✓		

Reviewed by: [signature] Date: 2018/03/26

Comments: Sample GGT114 was re-analyzed due to low recovery of the extracted internal standard.

[signature] 2018/03/26

*Note: 2nd 100% verification review documented by secondary qualified data review

Primary and Secondary Internal Data Review Check must be performed by a different person

Worksheet Data Validation Checklist - Extractable Organics

Worksheet # 5447938 Testcode: PFOSALCM-W

Sample Preparation		yes	no	n/a
1	Samples extracted within hold time	✓		
2	Client sample ID verified against Lab ID (waters & oils)	✓		
3	Parameter list and Client comments reviewed, (Spiking solutions matched to parameter list)	✓		
4	Height of sediment or if sample was decanted, recorded on worksheet	✓		
5	Method required QC processed with samples, maximum batch size = 20 client samples.	✓		
6	Sample, duplicate, matrix spike appear similar, initial sample as well as final extract	✓		
7	Sample weight or initial volume and extract final volume, aliquot factor clearly recorded.	✓		
8	If performed any additional dilution clearly recorded	✓		
9	Matrix spike / Duplicate performed on IOL samples if present			✓
10	Spiking solutions valid (haven't expired), ID and volume used clearly identified on worksheet	✓		
11	Spiking process witnessed and signed off	✓		
12	Extraction type recorded (N3A2B = neutral, 3 x acidic, 2 x basic)			✓
13	Sample prep deviations documented within CompliantPro as a Policy Deviation			✓
14	Job Remarks reviewed on 2nd page of worksheet.	✓		
15	Worksheet and reagent tracking record completed and authorized.	✓		

Reviewed by: [signature] Date: 2018/3/20

Comments:

Worksheet Approval		yes	no	n/a
1	Verified the position of the vials in autosampler against sequence list; signed off sequence list			
2	Calibration and CCV standards valid (haven't expired)			
3	Initial calibration curve and DFTPP tune (if applicable) acceptable			
4	Continuing and Final CCV and DFTPP tune (if applicable) acceptable			
5	System performance check acceptable (if applicable)			
6	Internal standard responses acceptable			
7	Method blank meets acceptance criteria			
8	Lab Control Samples recoveries meets acceptance criteria			
9	Duplicate RPD meets acceptance criteria			
10	Matrix spike recoveries meets acceptance criteria			
11	Surrogate recoveries meets acceptance criteria			
12	Appropriate control charts updated			
13	Samples above calibration range diluted and reanalyzed			
14	Dilutions clearly documented on tracking record, inst file and verified during data upload			
15	Samples following high level samples checked for carryover.			
16	Mass spectra ion ratios acceptable for positive results, hardcopy in file.			
17	Analytical observations / anomalies documented			
18	DQW comments entered in LIMS, hardcopy in file			
19	Sample Prep section (above) reviewed and verified.			
20	WS Approval performed in LIMS			

Reviewed by: Date:

Comments:

Worksheet Validation		yes	no	n/a
1	Calibration, QC and sample results reviewed and determined acceptable			
2	Manual integrations verified			
3	Random calculation checked			
4	Data and QC validated in LIMS			
5	Comments reviewed for appropriateness			
6	Reworks / relogs documented in file			
7	Worksheet signed and dated,			
8	Worksheet approved and validated within LIMS			

Reviewed by: Date:

Comments:

WS# : 5447939

Page #: 1/2

Report Name : Worksheet - (Liquids and Solids)

Assignment Date : Tuesday, March 20, 2018

Assigned to : Shahbaz Ahmad

Test Code : PFOSALCM-W

Instrument Id:

Test Description : PFOS and PFOA in water by LC-MS/MS

Sediment ml ml ml SAD 2018/3/20

Job Number	Sample Number	D	Sample ID	F	% Moisture	Wt or Vol	Final Vol	DF or AF	# Cont	Expiry Date	Test DeadLine	Criteria	Extract Date	
6,3		SPIKE	0	PFOS		0	125	3	1X					2018/03/20	31.2
6,5		SPIKE	1	PFOS		0	125	3	1X					2018/03/20	31.5
6,1		BLANK				0	125	3	1X	SAD 2018/3/20				2018/03/20	28.7
6,7	B850056	*GEZ792-01R		CEF-013-085-0318	-	0	125	3	1X	21	2018/03/16	2018/03/19 23:00	DOD	2018/03/20	29.7
6,9	B857382	*GGI852-01R		[redacted]	-	0	125	3	1X	2	2018/03/26	2018/03/27 23:00	DOD	2018/03/20	30.0
6,11	B859762	*GGT090-01R		[redacted]	-	0	125	3	1X	2	2018/03/28	2018/03/29 23:00	DOD	2018/03/20	31.2
6,13	B859762	*GGT091-01R		[redacted]	-	0	125	3	1X	2	2018/03/28	2018/03/29 23:00	DOD	2018/03/20	31.4
6,15	B859770	*GGT113-01R		[redacted]	-	20.1	125	3	2X/20X	2	2018/03/29	2018/03/29 23:00	DOD	2018/03/20	31.8
6,17	B859770	*GGT114-01R		[redacted]	-	20.1	125	3	2X/20X	2	2018/03/29	2018/03/29 23:00	DOD	2018/03/20	32.6

SAD 2018/3/20

Remarks:

Samples extracted by: Shahbaz Ahmad SAD 2018/3/20

Instrumentation performed by: DT Date: 2018/03/21

Calculations performed by: Date: 2018/03/01

Validated by: Date: 2018/03/26

Job No.	Rep / Client Name / Remarks	Contact	Client Tier	National
GB850056	SP8 Earth Toxics Inc	Rick Carr	Tier 5 (Enviro.)	
GB857382	nreg, PFOSALCM-W Level IV Package and TetraTech EDD required *PM report results in ng/L Project #: JM10 CECIL			
GB859762	[redacted]			
GB859770				

SAD 2018/3/20

Job	Sample	Lab Comments
	SPIKE	
	SPIKE	
	BLANK	
B850056	GEZ792-01R	
B857382	GGI852-01R	
B859762	GGT090-01R	
B859762	GGT091-01R	
B859770	GGT113-01R	
B859770	GGT114-01R	

S1	2825	25	SR 7430 1/3
S2	2800	50	
S3	2700	150	
S4	2813	37.5	I-5315 2/3
S5	2775	75	
S6	2725	125	
IC4	2788	625	— I-5312 2/3
IB	2850	—	

Folder 20180321 — 2018/3/21

SAD 2018/3/20

Folder ~~20180321~~ 20180326 20180321\WS# 5447939. SAD 20180326

Worksheet Reagent Tracking Record Worksheet # 5447939

Surrogate/Spike solutions	√	Solution ID #	Conc.	Blk-Spk Volume (µL) Solid	Blk-Spk Liquid	MS Solid	MS Liquid	Samples Solid	Samples Liquid
DGT Spike			100 ug/mL	60	30	60	30	NA	NA
Diquat Dibromide			50 ug/mL	NA	350	NA	350	NA	NA
Explosives Spiking solution A			20 ug/mL	250	100	250	100	NA	NA
Explosives Spiking solution B			20/80 ug/mL	250	100	250	100	NA	NA
Formaldehyde Spike			100 ug/mL	25	25	25	25	NA	NA
Glyphosate Spike			25 ug/mL	500	20	500	20	NA	NA
Nonylphenol Ethoxylate Spike			100 ug/mL	100	100	100	100	NA	NA
Nonylphenol Spike			10 ug/mL	100	100	100	100	NA	NA
Paraquat Cl Tetrahydrate			20 ug/mL	NA	125	NA	125	NA	NA
Perchlorate Standard Spike			10 ng/mL	NA	100	NA	100	NA	NA
Perchlorate Standard Spike			500 ng/mL	40	NA	40	NA	NA	NA
Perchlorate O-18 Internal Standard			0.10 ng/uL	20	20	20	20	20	20
Morpholine Second Source Working Std			2500 ug/L	NA	80	NA	80	NA	NA
Morpholine-D8 Internal Standard			10 ug/mL	NA	50	NA	50	NA	50
Steril Second Source Spiking Solution			NA	20	NA	20	NA	NA	NA
Sterilants Comp. IS Working Solution			3 ug/mL	50	NA	50	NA	50	NA
Comp. PFC Working Solution A	✓	I 5312 2/3	1ug/mL	75	21 (62.5)	75	21 62.5	NA	NA
PFC Internal Standard Solution	✓	SI 6819 2/4	50/125 ng/mL	200	100 (150)	200	100 150	200	100/(150)
PFC Injection IS	✓	SI 6807 1/4	400 ng/mL	20	(20)	20	20	20	(20)
ICV	✓	I 5312 2/3							

Solvent/Reagent	√	Lot No.	Date Opened	Solvent/Reagent	√	Lot No.	Date Opened/ Prepared
DCM				50% NaOH			
Ottawa Sand				o-Phosphoric Acid			
Methanol	✓	SHBUB5	2018/3/20	Borax			
2-Propanol (IPA)				Calcium Chloride			
Acetonitrile				EDTA			
Sodium Sulfate				Phosphate Buffer			
70:30 Methanol: Water				Sodium Thiosulphate			
60:40 Water: Methanol	✓	PRURE	108-433	DNPH			
DCM:Ethyl Ether (75:25)				FMOC			
Hexane:IPA (98:2)				5M Acetate Buffer			
2% Formic Acid	✓	PRURE	108-434	0.2% NH_4OH	✓	PRURE	108-439
0.2% Formic Acid				Leachate Fluid			
0.05M KOH				Reagent Water	✓	SBOOM	2018/8/18
0.05M HCl							

*Spiked by: SHD

Spike Date: 2018/3/20

Spike Syringe/Pipette ID#: G2H3906

Int. Std Syringe/Pipette ID#: K19609D

*Spiking Witnessed by: EGI

Final pH:

Equipment & ID	√	Equipment	ID#	√	Equipment	Lot #
Pipettor G2H3906 K19609D	✓	SPE Cartridge	6034372447A		QC Balance ID	
		Filter			Thermometer ID &Temp	
Dispenser	✓	Centrifuge	42148683			
		Sonicator				

Bottle Tracking SHD 2018/3/20

Bottle# 18778 18801

Cap# 18778

Systems plus Lot#: 18-02-01

Comments: Env Cond 96489

* - SPIKING OF QC's & SAMPLES MUST BE WITNESSED AT ALL TIMES.

Worksheet Number: **5447939**

PFOS and PFOA in water by SPE/LCMS - Water

ug/L

Parameter Name	Units	SPIKE	SPIKE Dup1	BLANK	B850056 GEZ792 ReWork	B857382 GGI852	B859762 GGT090
6:2 Fluorotelomer sulfonate	ug/L	86.66952	96.74749	0	N/A*******	0	0
8:2 Fluorotelomer sulfonate	ug/L	86.87542	90.50406	0	N/A*******	0	0
N-ethylperfluorooctane sulfonamide	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
EtFOSAA	ug/L	84.62853	91.23744	0	N/A*******	0	0
N-ethylperfluorooctane sulfonamidoe	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
N-methylperfluorooctane sulfonamide	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
MeFOSAA	ug/L	89.67789	92.52755	0	N/A*******	0	0
N-methylperfluorooctanesulfonamidol	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
Perfluorobutanoic acid	ug/L	93.86159	97.96831	0	N/A*******	0	0
Perfluorobutane Sulfonate (PFBS)	ug/L	93.47805	88.14246	0	N/A*******	0	0
Perfluorodecane Sulfonate	ug/L	85.94943	86.31201	0	N/A*******	0	0
Perfluoroheptanoic Acid (PFHpA)	ug/L	92.81191	98.92247	0	N/A*******	0	0
Perfluoroheptane sulfonate	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
Perfluorohexanoic Acid (PFHxA)	ug/L	91.66486	95.16917	0	N/A*******	0	0
Perfluorohexane Sulfonate (PFHxS)	ug/L	93.20178	92.44287	0	N/A*******	0	0
Perfluorononanoic Acid (PFNA)	ug/L	87.49701	94.88860	0	N/A*******	0	0
Perfluorooctane Sulfonamide (PFOSA)	ug/L	88.95696	96.46715	0	N/A*******	0	0
Perfluoropentanoic Acid (PFPeA)	ug/L	87.22543	93.15077	0	N/A*******	0	0
Perfluorotetradecanoic Acid	ug/L	90.54473	100.21490	0	0	0	0
Perfluorotridecanoic Acid	ug/L	88.06048	97.25393	0	0	0	0
Perfluoroundecanoic Acid (PFUnA)	ug/L	93.98135	97.33334	0	N/A*******	0	0
Perfluorodecanoic Acid (PFDA)	ug/L	89.33317	95.51003	0	N/A*******	0	0
Perfluorododecanoic Acid (PFDoA)	ug/L	87.60730	96.59563	0	N/A*******	0	0
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	94.79802	100.32860	0	N/A*******	0	0
Perfluorooctane Sulfonate (PFOS)	ug/L	94.47106	98.24379	0	N/A*******	0	0
13C2-6:2 Fluorotelomer sulfonate	ug/L	97.1375389	98.3827465	111.397265	N/A*******	111.281186	112.448451
13C2-8:2 Fluorotelomer sulfonate	ug/L	80.7118401	88.6072659	92.3028145	N/A*******	88.8315113	97.1426468
13C2-perfluorotetradecanoic acid	ug/L	75.4702371	77.4190309	79.5965168	54.4522547	66.3884418	81.9508801
13C4-Perfluorobutanoic acid	ug/L	83.8402360	89.4870741	92.1022358	N/A*******	89.7758531	87.6972968
D3-MeFOSAA	ug/L	68.9232393	69.6778090	75.0111093	N/A*******	73.5326972	75.3636349
D5-EtFOSAA	ug/L	69.2657445	71.1308849	75.5805992	N/A*******	71.5740836	73.7589094
N-methyl-d3-perfluorooctane sulfona	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
N-ethyl-d5-perfluorooctane sulfonam	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
13C2-Perfluorodecanoic acid	ug/L	82.5487873	90.3631495	89.5311882	N/A*******	84.9620722	96.0341897
13C2-Perfluorododecanoic acid	ug/L	79.3704986	81.5400846	83.3359674	N/A*******	76.5194296	84.8788083
13C2-Perfluorohexanoic acid	ug/L	82.7650921	90.7728364	90.1398797	N/A*******	88.1590040	92.4239075
13C2-Perfluoroundecanoic acid	ug/L	78.4711461	87.2657465	79.0172446	N/A*******	78.1022872	91.8516048
13C4-Perfluoroheptanoic acid	ug/L	81.9706712	86.9198492	92.1021832	N/A*******	88.2773346	96.0346305
13C5-Perfluorononanoic acid	ug/L	84.2352294	88.1139115	88.7884568	N/A*******	86.5456625	95.9542502
13C4-Perfluorooctanoic acid	ug/L	80.4532625	86.3358616	91.2040445	N/A*******	87.3384685	95.0174548
13C4-Perfluorooctanesulfonate	ug/L	78.6642232	86.2751974	79.5847148	N/A*******	78.3266267	88.1091365
13C5-Perfluoropentanoic acid	ug/L	84.7831519	90.4276669	93.2562419	N/A*******	89.9170139	92.8194762
13C8-Perfluorooctane Sulfonamide	ug/L	76.9507024	83.7908590	85.6916357	N/A*******	81.7616578	88.7283988
18O2-Perfluorohexanesulfonate	ug/L	81.5824737	89.7187500	87.5476956	N/A*******	89.5606393	84.6439768

Worksheet Number: **5447939**

PFOS and PFOA in water by SPE/LCMS - Water

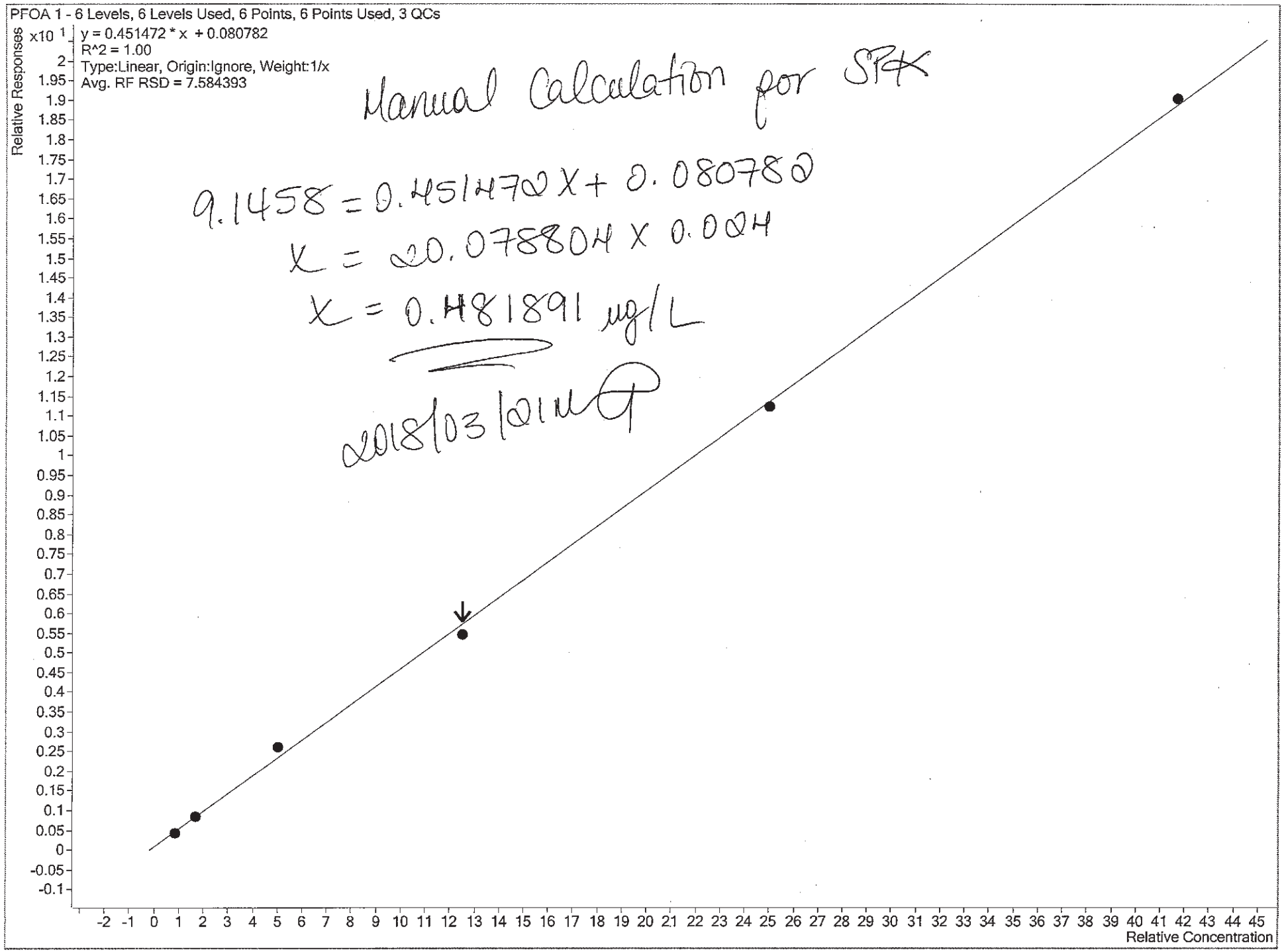
ug/L

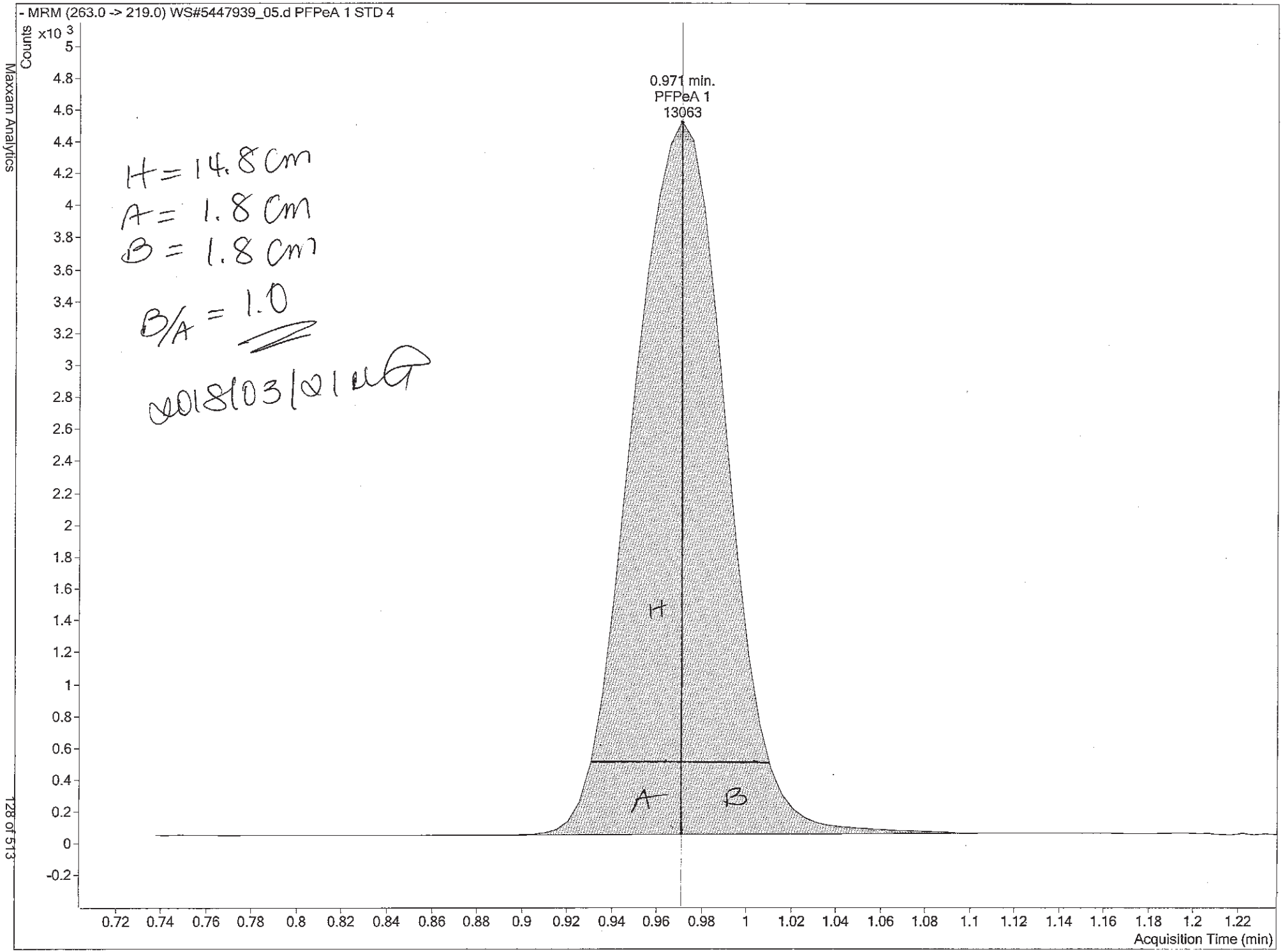
Parameter Name	B859762 GGT091	DL	B859770 GGT113	DL	B859770 GGT114	DL	RDL
6:2 Fluorotelomer sulfonate	0.00045260	0.02	1.72652684	0.04	2.42603428	0.4	0.02
8:2 Fluorotelomer sulfonate	0	0.02	0.24902161	0.04	0.16887924	0.04	0.02
N-ethylperfluorooctane sulfonamide	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
EtFOSAA	0	0.02	0	0.04	0	0.04	0.02
N-ethylperfluorooctane sulfonamidoe	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
N-methylperfluorooctane sulfonamide	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
MeFOSAA	0	0.02	0	0.04	0	0.04	0.02
N-methylperfluorooctanesulfonamidol	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
Perfluorobutanoic acid	0	0.02	0.37052172	0.04	0.68308683	0.04	0.02
Perfluorobutane Sulfonate (PFBS)	0	0.02	0.61624511	0.04	1.52525342	0.04	0.02
Perfluorodecane Sulfonate	0	0.02	0	0.04	0	0.04	0.02
Perfluoroheptanoic Acid (PFHpA)	0	0.02	0.38058931	0.04	0.74685532	0.04	0.02
Perfluoroheptane sulfonate	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
Perfluorohexanoic Acid (PFHxA)	0	0.02	1.90971467	0.04	3.71468595	0.4	0.02
Perfluorohexane Sulfonate (PFHxS)	0	0.02	5.16394589	0.4	8.49835173	0.4	0.02
Perfluorononanoic Acid (PFNA)	0	0.02	0.03812041	0.04	0	0.04	0.02
Perfluorooctane Sulfonamide (PFOSA)	0	0.02	0.05641908	0.04	0.00659638	0.04	0.02
Perfluoropentanoic Acid (PFPeA)	0	0.02	0.83662200	0.04	1.78169736	0.04	0.02
Perfluorotetradecanoic Acid	0	0.02	0	0.04	0	0.04	0.02
Perfluorotridecanoic Acid	0	0.02	0	0.04	0	0.04	0.02
Perfluoroundecanoic Acid (PFUnA)	0	0.02	0	0.04	0	0.04	0.02
Perfluorodecanoic Acid (PFDA)	0	0.02	0	0.04	0	0.04	0.02
Perfluorododecanoic Acid (PFDoA)	0	0.02	0	0.04	0	0.04	0.02
Perfluoro-n-Octanoic Acid (PFOA)	0	0.02	1.00464788	0.04	2.50060767	0.4	0.02
Perfluorooctane Sulfonate (PFOS)	0.00009326	0.02	10.4223255	0.4	5.70900648	0.4	0.02
13C2-6:2 Fluorotelomer sulfonate	113.861691		90.7861834		137.431611		
13C2-8:2 Fluorotelomer sulfonate	95.5202639		85.8231915		112.606411		
13C2-perfluorotetradecanoic acid	77.0870854		80.3028407		108.455845		
13C4-Perfluorobutanoic acid	94.5564481		91.8194118		110.624512		
D3-MeFOSAA	83.4468888		77.9364793		125.158719		
D5-EtFOSAA	82.7982545		82.5061906		133.294302		
N-methyl-d3-perfluorooctane sulfona	N/A*******		N/A*******		N/A*******		
N-ethyl-d5-perfluorooctane sulfonam	N/A*******		N/A*******		N/A*******		
13C2-Perfluorodecanoic acid	89.8824940		90.5547144		118.128232		
13C2-Perfluorododecanoic acid	82.0296333		80.5612934		114.974697		
13C2-Perfluorohexanoic acid	94.6865820		92.2951662		122.115769		
13C2-Perfluoroundecanoic acid	82.9571122		82.5161819		117.882043		
13C4-Perfluoroheptanoic acid	92.7965325		92.7014884		117.310048		
13C5-Perfluorononanoic acid	89.4148982		98.7996036		130.0671		
13C4-Perfluorooctanoic acid	95.4403752		95.4485686		102.489814		
13C4-Perfluorooctanesulfonate	86.8762937		91.4191632		118.719268		
13C5-Perfluoropentanoic acid	94.2345806		96.1939176		114.929700		
13C8-Perfluorooctane Sulfonamide	86.8943392		80.6449334		112.657011		
18O2-Perfluorohexanesulfonate	92.7783560		95.7160676		121.606767		

PFOS and PFOA in water by SPE/LCMS - Water

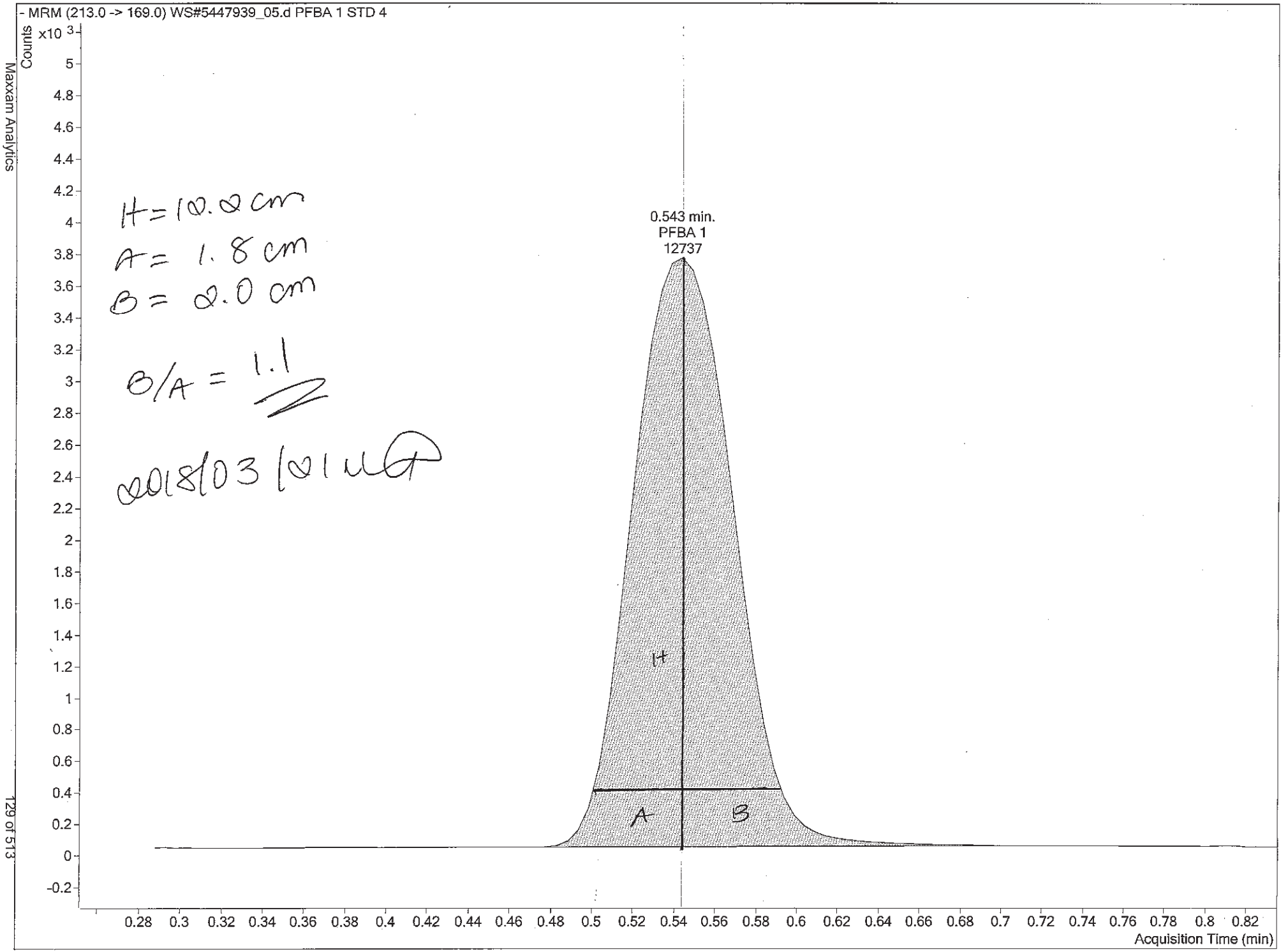
ug/L

Parameter Name	MDL	IDL					
6:2 Fluorotelomer sulfonate	0.0066	0					
8:2 Fluorotelomer sulfonate	0.0066	0					
N-ethylperfluorooctane sulfonamide	0.01	0					
EtFOSAA	0.0033	0					
N-ethylperfluorooctane sulfonamidoe	0.0079	0					
N-methylperfluorooctane sulfonamide	0.013	0					
MeFOSAA	0.0029	0					
N-methylperfluorooctanesulfonamidol	0.012	0					
Perfluorobutanoic acid	0.0055	0					
Perfluorobutane Sulfonate (PFBS)	0.0054	0					
Perfluorodecane Sulfonate	0.006	0					
Perfluoroheptanoic Acid (PFHpA)	0.0074	0					
Perfluoroheptane sulfonate	0.008	0					
Perfluorohexanoic Acid (PFHxA)	0.0035	0					
Perfluorohexane Sulfonate (PFHxS)	0.0056	0					
Perfluorononanoic Acid (PFNA)	0.0087	0					
Perfluorooctane Sulfonamide (PFOSA)	0.0034	0					
Perfluoropentanoic Acid (PFPeA)	0.0075	0					
Perfluorotetradecanoic Acid	0.0027	0					
Perfluorotridecanoic Acid	0.0038	0					
Perfluoroundecanoic Acid (PFUnA)	0.0025	0					
Perfluorodecanoic Acid (PFDA)	0.0061	0					
Perfluorododecanoic Acid (PFDoA)	0.005	0					
Perfluoro-n-Octanoic Acid (PFOA)	0.0033	0					
Perfluorooctane Sulfonate (PFOS)	0.006	0					
13C2-6:2 Fluorotelomer sulfonate							
13C2-8:2 Fluorotelomer sulfonate							
13C2-perfluorotetradecanoic acid							
13C4-Perfluorobutanoic acid							
D3-MeFOSAA							
D5-EtFOSAA							
N-methyl-d3-perfluorooctane sulfona							
N-ethyl-d5-perfluorooctane sulfonam							
13C2-Perfluorodecanoic acid							
13C2-Perfluorododecanoic acid							
13C2-Perfluorohexanoic acid							
13C2-Perfluoroundecanoic acid							
13C4-Perfluoroheptanoic acid							
13C5-Perfluorononanoic acid							
13C4-Perfluorooctanoic acid							
13C4-Perfluorooctanesulfonate							
13C5-Perfluoropentanoic acid							
13C8-Perfluorooctane Sulfonamide							
18O2-Perfluorohexanesulfonate							


PFOA 1 - 6 Levels, 6 Levels Used, 6 Points, 6 Points Used, 3 QCs
y = 0.451472 * x + 0.080782
R^2 = 1.00
Type:Linear, Origin:Ignore, Weight:1/x
Avg. RF RSD = 7.584393
Relative Responses
x10 1
Relative Concentration
Manual Calculation for SPK
9.1458 = 0.451472X + 0.080782
X = 20.078804 X 0.004
X = 0.481891 ug/L
2018/03/21



Maxxam Analytics



H = 10.0 cm

A = 1.8 cm

B = 2.0 cm

B/A = 1.1

20180301 01 uL

Report Name: Worksheet - Parameter Lists

Report Date: 2018/03/20

Test Code: **PFOSALCM-W**

Worksheet Number: **5447939**

Sample Number	Parameter Code	Parameter	
GEZ792-01	PFTEDA	Perfluorotetradecanoic Acid	
	PFTRDA	Perfluorotridecanoic Acid	
GGI852-01	6:2FTS	6:2 Fluorotelomer sulfonate	*
GGT090-01	8:2FTS	8:2 Fluorotelomer sulfonate	*
GGT091-01	ETFOSAA	EtFOSAA	*
GGT113-01	MEFOSAA	MeFOSAA	*
GGT114-01	PFBA	Perfluorobutanoic acid	
	PFBS	Perfluorobutane Sulfonate (PFBS)	
	PFDS	Perfluorodecane Sulfonate	
	PFHPA	Perfluoroheptanoic Acid (PFHpA)	
	PFHXA	Perfluorohexanoic Acid (PFHxA)	
	PFHXS	Perfluorohexane Sulfonate (PFHxS)	
	PFNA	Perfluorononanoic Acid (PFNA)	
	PFOSA	Perfluorooctane Sulfonamide (PFOSA)	
	PFPEA	Perfluoropentanoic Acid (PFPeA)	
	PFTEDA	Perfluorotetradecanoic Acid	
	PFTRDA	Perfluorotridecanoic Acid	
	PFUNA	Perfluoroundecanoic Acid (PFUnA)	
	PFDA	Perfluorodecanoic Acid (PFDA)	
	PFDOA	Perfluorododecanoic Acid (PFDoA)	
	PFOA	Perfluoro-n-Octanoic Acid (PFOA)	
	PFOS	Perfluorooctane Sulfonate (PFOS)	

SAD
2018/3/20

* - This parameter is usually off, but will be reported for this group of samples!

WorkSheet 5447939 Instrument Sequences

1.	5447939:SPIKE	SPIKE
2.	5447939:SPIKE:D1	SPIKE :D1
3.	5447939:BLANK	BLANK
4.	5447939:GEZ792-01	CEF-013-085-0318
5.	5447939:GGI852-01	[redacted]
6.	5447939:GGT090-01	[redacted]
7.	5447939:GGT091-01	[redacted]
8.	5447939:GGT113-01	[redacted]
9.	5447939:GGT114-01	[redacted]

SAD
2018/3/30

Worklist Report

Agilent Technologies

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFC_180321_Low.wkl

Maxxam Analytics

Operator Name: ---
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\Data\PFC\20180321\WS#5447939
Pre-Worklist Script: ---
Post-Worklist Script: SCP_InstrumentStandby(){MH_Acq_Scripts.exe}
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: Column #209
MP A1: Solution# 308 (FSRE18)
MP B1: Methanol (Lot# SHBJ8485), Sigma

2018/03/21

Verified by
AD
2018/03/21

Plate Barcode:

Plate	Barcode
P3	
P1	

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
1	Solvent	P1-A1	PFC_Water_Low.m	WS#5447939_01.d	Sample		As Method	-
2	STD 1	P1-A2	PFC_Water_Low.m	WS#5447939_02.d	Calibration	STD 1	As Method	-
3	STD 2	P1-A3	PFC_Water_Low.m	WS#5447939_03.d	Calibration	STD 2	As Method	-
4	STD 3	P1-A4	PFC_Water_Low.m	WS#5447939_04.d	Calibration	STD 3	As Method	-
5	STD 4	P1-A5	PFC_Water_Low.m	WS#5447939_05.d	Calibration	STD 4	As Method	-
6	STD 5	P1-A6	PFC_Water_Low.m	WS#5447939_06.d	Calibration	STD 5	As Method	-

132 of 513

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
7	STD 6	P1-A7	PFC_Water_Low.m	WS#5447939_07.d	Calibration	STD 6	As Method	-
8	IB	P1-A8	PFC_Water_Low.m	WS#5447939_08.d	Sample		As Method	-
9	ICV	P1-A9	PFC_Water_Low.m	WS#5447939_09.d	QC	ICV	As Method	-
10	ISC	P1-A2	PFC_Water_Low.m	WS#5447939_10.d	ConCal	STD 1	As Method	-
11	5447939:BLANK	P1-B1	PFC_Water_Low.m	WS#5447939_11.d	Sample		As Method	-
12	5447939:SPIKE	P1-B2	PFC_Water_Low.m	WS#5447939_12.d	QC	ICV	As Method	-
13	5447939:SPIKE:D1	P1-B3	PFC_Water_Low.m	WS#5447939_13.d	QC	ICV	As Method	-
14	5447939:GEZ792-01	P1-B4	PFC_Water_Low.m	WS#5447939_14.d	Sample		As Method	-
15	5447939:GGI852-01	P1-B5	PFC_Water_Low.m	WS#5447939_15.d	Sample		As Method	-
16	5447939:GGT090-01	P1-B6	PFC_Water_Low.m	WS#5447939_16.d	Sample		As Method	-
17	5447939:GGT091-01	P1-B7	PFC_Water_Low.m	WS#5447939_17.d	Sample		As Method	-
18	5447939:GGT113-01:20x	P1-B8	PFC_Water_Low.m	WS#5447939_18.d	Sample		As Method	-
19	5447939:GGT113-01:2x	P1-B9	PFC_Water_Low.m	WS#5447939_19.d	Sample		As Method	-
20	IB	P1-A8	PFC_Water_Low.m	WS#5447939_20.d	Sample		As Method	-
21	5447939:GGT114-01:20x	P1-C1	PFC_Water_Low.m	WS#5447939_21.d	Sample		As Method	-
22	5447939:GGT114-01:2x	P1-C2	PFC_Water_Low.m	WS#5447939_22.d	Sample		As Method	-
23	IB	P1-A8	PFC_Water_Low.m	WS#5447939_23.d	Sample		As Method	-
24	CCV	P1-A5	PFC_Water_Low.m	WS#5447939_24.d	ConCal	STD 4	As Method	-

FINAL INJECTION SEQUENCE

Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
STD 1	-	2018/03/21 1:49 PM	PFC_Water_Low.m	WS#5447939_02.d	P1-A2
STD 2	-	2018/03/21 1:54 PM	PFC_Water_Low.m	WS#5447939_03.d	P1-A3
STD 3	-	2018/03/21 1:59 PM	PFC_Water_Low.m	WS#5447939_04.d	P1-A4
STD 4	-	2018/03/21 2:04 PM	PFC_Water_Low.m	WS#5447939_05.d	P1-A5
STD 5	-	2018/03/21 2:09 PM	PFC_Water_Low.m	WS#5447939_06.d	P1-A6
STD 6	-	2018/03/21 2:14 PM	PFC_Water_Low.m	WS#5447939_07.d	P1-A7
IB	-	2018/03/21 2:19 PM	PFC_Water_Low.m	WS#5447939_08.d	P1-A8
ICV	-	2018/03/21 2:24 PM	PFC_Water_Low.m	WS#5447939_09.d	P1-A9
ISC	-	2018/03/21 2:29 PM	PFC_Water_Low.m	WS#5447939_10.d	P1-A2
5447939:BLANK	Reported for all except 6:2-FTS.	2018/03/21 2:34 PM	PFC_Water_Low.m	WS#5447939_11.d	P1-B1
5447939:SPIKE	Reported for all except 6:2-FTS.	2018/03/21 2:38 PM	PFC_Water_Low.m	WS#5447939_12.d	P1-B2
5447939:SPIKE:D1	Reported for all except 6:2-FTS.	2018/03/21 2:43 PM	PFC_Water_Low.m	WS#5447939_13.d	P1-B3
5447939:GEZ792-01	Reported for PFTeDA, PFTrDA only.	2018/03/21 2:53 PM	PFC_Water_Low.m	WS#5447939_14.d	P1-B4
5447939:GGI852-01	Reported for all except 6:2-FTS.	2018/03/21 2:58 PM	PFC_Water_Low.m	WS#5447939_15.d	P1-B5
5447939:GGT090-01	Reported for all except 6:2-FTS.	2018/03/21 3:03 PM	PFC_Water_Low.m	WS#5447939_16.d	P1-B6
5447939:GGT091-01	Reported for all except 6:2-FTS.	2018/03/21 3:08 PM	PFC_Water_Low.m	WS#5447939_17.d	P1-B7
5447939:GGT113-01:20x	Reported for PFHxS, PFOS only.	2018/03/21 3:13 PM	PFC_Water_Low.m	WS#5447939_18.d	P1-B8
5447939:GGT113-01:2x	Reported for all except 6:2-FTS, PFHxS, PFOS.	2018/03/21 3:18 PM	PFC_Water_Low.m	WS#5447939_19.d	P1-B9
IB	-	2018/03/21 3:22 PM	PFC_Water_Low.m	WS#5447939_20.d	P1-A8
5447939:GGT114-01:20x	Reported for PFHxA, PFHxS, PFOA, PFOS only.	2018/03/21 3:27 PM	PFC_Water_Low.m	WS#5447939_21.d	P1-C1
5447939:GGT114-01:2x	Reported for all except 6:2-FTS, PFHxA, PFHxS, PF	2018/03/21 3:32 PM	PFC_Water_Low.m	WS#5447939_22.d	P1-C2
IB	-	2018/03/21 3:37 PM	PFC_Water_Low.m	WS#5447939_23.d	P1-A8
CCV	-	2018/03/21 3:42 PM	PFC_Water_Low.m	WS#5447939_24.d	P1-A5
STD 6	-	2018/03/21 5:41 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_07.d	P1-A7
IB	-	2018/03/21 5:46 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_08.d	P1-A8
ISC	-	2018/03/21 5:56 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_10.d	P1-A2
5447939:BLANK	Reported for 6:2FTS only	2018/03/21 6:01 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_11.d	P1-B1
5447939:SPIKE	Reported for 6:2FTS only	2018/03/21 6:06 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_12.d	P1-B2
5447939:SPIKE:D1	Reported for 6:2FTS only	2018/03/21 6:11 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_13.d	P1-B3
5447939:GEZ792-01	Reported for 6:2FTS only	2018/03/21 6:15 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_14.d	P1-B4
5447939:GGI852-01	Reported for 6:2FTS only	2018/03/21 6:20 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_15.d	P1-B5
5447939:GGT090-01	Reported for 6:2FTS only	2018/03/21 6:25 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_16.d	P1-B6
5447939:GGT091-01	Reported for 6:2FTS only	2018/03/21 6:30 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_17.d	P1-B7

FINAL INJECTION SEQUENCE

Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
5447939:GGT113-01:20x	Not used	2018/03/21 6:35 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_18.d	P1-B8
5447939:GGT113-01:2x	Reported for 6:2FTS only	2018/03/21 6:40 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_19.d	P1-B9
IB	-	2018/03/21 6:45 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_20.d	P1-A8
5447939:GGT114-01:20x	Reported for 6:2FTS only	2018/03/21 6:50 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_21.d	P1-C1
5447939:GGT114-01:2x	Not used	2018/03/21 6:55 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_22.d	P1-C2
IB	-	2018/03/21 7:00 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_23.d	P1-A8
CCV	-	2018/03/21 7:05 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_24.d	P1-A5

INJECTION INTERNAL STANDARD PEAK AREAS

Sample Name	Analyte	13C6-PFHxA	13C9-PFDA
	Mass labeled IS	STD 4	STD 4
	IS Area	19324	23266
		IS Peak Area	IS Peak Area
STD 1		17689	22238
STD 2		18251	22909
STD 3		18391	22150
STD 4		19324	23266
STD 5		18922	23282
STD 6		18727	22205
IB		18272	21328
ICV		18442	22875
ISC		18281	21247
5437959:BLANK		17191	21109
5437959:SPIKE		15747	19090
5437959:SPIKE:D1		15891	18845
5437959:GEZ789-01		17359	21374
5437959:GEZ790-01		18834	23025
5437959:GEZ791-01		18096	21997
5437959:GEZ792-01		14658	18420
5437959:GEZ793-01		15732	19114
5437959:GFF357-01		20974	26022
5437959:GFF358-01		17231	20416
5437959:GFF359-01		15171	18457
5437959:GFF360-01		17657	21343
CCV		19946	22645

INJECTION INTERNAL STANDARD PEAK AREAS

Sample Name	Analyte	13C9-PFDA
	Mass labeled IS	STD 4
	IS Area	18363
		IS Peak Area
STD 1		19181
STD 2		18460
STD 3		19960
STD 4		18363
STD 5		19119
STD 6		18419
IB		19129
ICV		18394
ISC		18861
5437959:BLANK		18898
5437959:SPIKE		17696
5437959:SPIKE:D1		18684
5437959:GEZ789-01		18981
5437959:GEZ790-01		20462
5437959:GEZ791-01		19294
5437959:GEZ792-01		17976
5437959:GEZ793-01		17700
5437959:GFF357-01		22960
5437959:GFF358-01		18903
5437959:GFF359-01		18513
5437959:GFF360-01		18892
CCV		18284

INJECTION INTERNAL STANDARD PEAK AREAS

Sample Name	Analyte	13C9-PFDA	13C9-PFDA
	Mass labeled IS	STD 4	ISC/CCV
	IS Area	19572	14411
		IS Peak Area	IS Peak Area
STD 1		20769	
STD 2		22773	
STD 3		22560	
STD 4		19572	
STD 5		20426	
STD 6		19370	
IB		20095	
ICV		22356	
ISC		21333	
5447939:BLANK		22686	
5447939:SPIKE		24781	
5447939:SPIKE:D1		22342	
5447939:GEZ792-01		18804	
5447939:GGI852-01		23468	
5447939:GGT090-01		21943	
5447939:GGT091-01		23089	
5447939:GGT113-01:20x		21212	
5447939:GGT113-01:2x		23701	
IB		20632	
5447939:GGT114-01:20x		19261	
5447939:GGT114-01:2x		20054	
IB		19955	
CCV		21028	
STD 6		13527	
IB		13139	
ISC			14411
5447939:BLANK			16265
5447939:SPIKE			18136
5447939:SPIKE:D1			16521
5447939:GEZ792-01			15959
5447939:GGI852-01			17276
5447939:GGT090-01			16883
5447939:GGT091-01			16793
5447939:GGT113-01:20x			16343
5447939:GGT113-01:2x			18151
IB			15397
5447939:GGT114-01:20x			14997
5447939:GGT114-01:2x			14708
IB			15716
CCV			16586

LOV 2018/02/16
8 x 4L

SIGMA-ALDRICH®

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Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Methanol - for HPLC, ≥99.9%

CH_3OH

Product Number:	**34860**
Batch Number:	**SHBJ8485**
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days	----------	----------

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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Website: www.sigmaaldrich.com
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Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

REAGENT PREPARATION FORM

Reagent # 375 Replaced Reagent # 374 Analyst: DM3

Reagent Name: 0.2% NH_4OH Preparation date: 2018/02/22 Expiry date: daily

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: 0.2 : 99.8 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: I479876 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH_4OH	2mL	2018/01/09	2018/01/25	Fisher	172996	2020/07/31
MeOH	998mL	2018/02/16	2018/02/22	Sigma	SHBJ8485	2022/12/30
	2018/02/22 DM3					

NOTES: 2 1L cylinder # 5553

Reagent # 376 Replaced Reagent # 359 Analyst: GSZ

Reagent Name: 0.3% NH_4OH in MeOH Preparation date: 2018/02/22 Expiry date: Daily

Final Volume: 500mL Oven No. : — Temp. : — Final Conc.: 0.3 : 99.7 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: J434346 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH_4OH	1.5mL	2018/01/09	2018/01/25	Fisher	172996	2020/07/31
MeOH	498.5mL	2018/02/16	2018/02/22	Sigma	SHBJ8485	2022/12/30
		GSZ, 2018/02/22				

NOTES: 500mL Class A Vol. Cylinder (3026)

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Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific Quality Systems has been found to conform to Quality Management System Standard ANSI/ISO 9001:2008 accredited by SAI Global Certificate Number CERT-0000716

This is to certify that units of this lot number have been tested and found to comply with the specifications of this grade listed. Certain data have been supplied by third parties. Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (pharmaceuticals, reagents) are sold for use in food, drug, or medical device manufacturing. Please note our claim regulatory coverage under 21 CFR as restricted GMP's with the FDA. The following are the actual analytical results obtained.

Catalog Number	A669	Quality Test / Release Date	6/24/2017
Lot Number	172996	Expiration Date	Aug/2020
Description	AMMONIUM HYDROXIDE, CERTIFIED A.C.S. PLUS		
Country of Origin	United States		
Chemical Origin	Inorganic-iron animal		

BSE/TSE Comment	This product does not contain and is not manufactured with raw material ingredients derived from any animal products, including countries where Bovine Spongiform Encephalopathy (BSE) is known to exist.
Chemical Comment	This product is free from genetically modified substances and is gluten free.

Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	COLORLESS AND FREE FROM SUSPENDED MATTER
ALUMINUM	ppm	=< 5.3	0.002
ARSENIC AND ANTIMONY	ppm	=< 5.05	<0.050
ASSAY	Wt. %	Inclusive Between 28.0 - 30.0	29.2
BORON (B)	ppm	=< 5.1	0.001
CALCIUM (Ca)	ppm	=< 5.3	0.003
CARBON DIOXIDE	%	=< 5.002	<0.0020
CHLORIDE	ppm	=< 5.5	<0.50
CHROMIUM (Cr)	ppm	=< 5.2	0.001
COPPER (Cu)	ppm	=< 5.1	0.001
GOLD (Au)	ppm	=< 5.3	0.001
HEAVY METALS (as Pb)	ppm	=< 5.5	<5.5
IRON (Fe)	ppm	=< 5.1	0.001
LEAD (Pb)	ppm	=< 5.2	0.001
MAGNESIUM (Mg)	ppm	=< 5.3	0.001
MANGANESE (Mn)	ppm	=< 5.2	0.001
NICKEL (Ni)	ppm	=< 5.1	0.001
NITRATE (NO3)	ppm	=< 2	<2.0
PHOSPHATE (PO4)	ppm	=< 5.4	<0.40
POTASSIUM (K)	ppm	=< 5.3	0.002
RESIDUE AFTER IGNITION	ppm	=< 3	<3.00
SODIUM (Na)	ppm	= Report	0.005
SUBSTANCES REDUCING KMNO4	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	ppm	=< 2	<2.0
TIN (Sn)	ppm	=< 5.3	0.001
TITANIUM (Ti)	ppm	=< 5.3	0.001
ZINC (Zn)	ppm	=< 5.3	0.003

Quality Assurance Specialist - Certificate of Analysis BPF

Note: The data listed is valid for all package sizes of this lot of this product, except where a subversion of this catalog number is listed above. If there are any questions with this certificate, please call Technical Services at (800) 926-6101. Please ask requested storage condition.

Date Received: 2017/12/28-RAZ-P2B
Date Received: 2018/01/09-lov-HPLC 1X500ml

LOV 2018/02/16
8 x 4L

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Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Methanol - for HPLC, ≥99.9%

Product Number:	**34860**
Batch Number:	**SHBJ8486**
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

CH_3OH

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days		

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1

REAGENT PREPARATION FORM

Reagent # 385 Replaced Reagent # 382 Analyst: SAD

Reagent Name: 0.2% NH4OH Preparation date: 2018/2/26 Expiry date: Daily

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: 0.2 : 99.8 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: M397325 Storage: Shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
MeOH	998 ml	2018/2/16	2018/2/22	Sigma	SHBJ8485	2022/12/30
NH4OH	2 ml	2018/01/13	2018/01/25	Fisher	172996	2020/07/31
			SAD 2018/2/26			

NOTES:

Reagent # 386 Replaced Reagent # 376 Analyst: _____

Reagent Name: 0.3% NH4OH in MeOH Preparation date: 2018/02/26 Expiry date: Daily

Final Volume: 100ml Oven No. : — Temp. : — Final Conc.: 0.3 : 99.7 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: J434346 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH4OH	0.3 ml	2018/01/09	2018/01/25	Fisher	172996	2020/07/31
MeOH	99.7 ml	2018/02/16	2018/02/28	Sigma	SHBJ8485	2022/12/30
			GSZ 2018/02/26			

NOTES: 100ml Class A Vol. Cylinder (6394)

DO NOT WRITE BENEATH ANY INSERTS OR PLACE ANY INSERTS ON TOP OF ANY RAW DATA ENTERED ON THIS PAGE. INITIAL AND DATE ALL ENTRIES, CORRECTIONS AND INSERTS. INCLUDE ALL RELEVANT TRACEABLE REFERENCES ON ALL INSERTS.
ONLY CLASS A GLASSWARE IS USED FOR THE PREPARATION OF REAGENTS WHEN APPLICABLE.

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific Quality Systems have been certified conformant to Quality Management System Standard ISO/IEC 9001:2008 standards by SAI Global Certificate Number QEAR1 - 0010816

This is to certify that units of this lot number below were tested and found to comply with the specifications of the grade listed. Quality data have been reviewed by Fisher Scientific in accordance with its procedures, maintained on file/data, including the analytical methodology and limits for a particular purpose. Contains Package Insert(s) and/or MSDS where applicable are sold for use in food, drug, or medical device manufacturing. Please note that no responsible coverage under 21 CFR can reasonably exist within this. The Scientific and the refined analytical results addressed

Catalog Number	A669	Quality Test / Release Date	6/24/2017
Lot Number	172596	Expiration Date	Aug/2020
Description	AMMONIUM HYDROXIDE, CERTIFIED A.C.S. PLUS		
Country of Origin	United States		
Chemical Origin	Inorganic-iron animal		
BSE/TSE Comment	This product does not contain and is not manufactured with raw material ingredients derived from any animal products, including countries where Bovine Spongiform Encephalopathy (BSE) is known to exist.		
Chemical Comment	This product is free from genetically modified substances and is gluten free.		

Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	COLORLESS AND FREE FROM SUSPENDED MATTER
ALUMINUM	ppm	=< 5.3	0.002
ARSENIC AND ANTIMONY	ppm	=< 0.05	<0.050
ASSAY	Wt/ %	Inclusive Between 28.0 - 30.0	29.2
BORON (B)	ppm	=< 5.1	0.001
CALCIUM (Ca)	ppm	=< 5.3	0.008
CARBON DIOXIDE	%	=< 0.052	<0.0020
CHLORIDE	ppm	=< 5.5	<0.50
CHROMIUM (Cr)	ppm	=< 5.2	0.001
COPPER (Cu)	ppm	=< 5.1	0.001
GOLD (Au)	ppm	=< 5.3	0.001
HEAVY METALS (as Pb)	ppm	=< 5.5	<0.5
IRON (Fe)	ppm	=< 5.1	0.001
LEAD (Pb)	ppm	=< 5.2	0.001
MAGNESIUM (Mg)	ppm	=< 5.3	0.001
MANGANESE (Mn)	ppm	=< 5.2	0.001
NICKEL (Ni)	ppm	=< 5.1	0.001
NITRATE (NO3)	ppm	=< 2	<2.0
PHOSPHATE (PO4)	ppm	=< 5.4	<0.40
POTASSIUM (K)	ppm	=< 5.3	0.002
RESIDUE AFTER IGNITION	ppm	=< 3	<3.00
SODIUM (Na)	ppm	= Report	0.005
SUBSTANCES REDUCING KMNO4	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	ppm	=< 2	<2.0
TIN (Sn)	ppm	=< 5.3	0.001
TITANIUM (Ti)	ppm	=< 5.3	0.001
ZINC (Zn)	ppm	=< 5.3	0.003

Quality Assurance Specialist - Certificate of Analysis EPF

Note: The data listed is valid for all package sizes of this lot of this product, unless noted in a reference of the catalog number listed above. If there are any questions with this certificate, please call Customer Services at (800)225-8761
*Revised for suggested storage conditions

Date Received: 2017/12/28-RAZ-P2B
Date Received: 2018/01/09-lov-HPLC 1X500ml

LOV 2018/02/16
8 X 4L

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Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Methanol - for HPLC, ≥99.9%

Product Number:	**34860**
Batch Number:	**SHBJ8486**
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

CH_3OH

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days		

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1

SIGMA-ALDRICH®

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1

REAGENT PREPARATION FORM

Reagent # 387 Replaced Reagent # 386 Analyst: lr

Reagent Name: 0.3% NH4OH in MeOH Preparation date: 2018/02/27 Expiry date: Daily

Final Volume: 100 ml Oven No. : — Temp. : — Final Conc.: 0.3 : 99.7 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: W314776 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH4OH	0.3 ml	2018/01/09	2018/01/25	Fisher	172996	2020/08/31
MeOH	99.7ml	2018/02/16	2018/02/27	Sigma Aldrich	SHBJ 8485	2022/12/31
			2018/02/27 lr			

NOTES: 100 ml Class A volumetric cylinder (6394)

Reagent # 388 Replaced Reagent # 385 Analyst: DMB

Reagent Name: 0.2% NH4OH Preparation date: 2018/02/27 Expiry date: daily

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: 0.2 : 99.8 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: I47987G Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH4OH	2 mL	2018/01/09	2018/01/25	Fisher	172996	2020/08/31
MeOH	998 mL	2018/02/16	2018/02/27	Sigma	SHBJ 8485	2022/12/31
			2018/02/27 DMB			

NOTES: 1L cylinder # 5553

DO NOT WRITE BENEATH ANY INSERTS OR PLACE ANY INSERTS ON TOP OF ANY RAW DATA ENTERED ON THIS PAGE. INITIAL AND DATE ALL ENTRIES, CORRECTIONS AND INSERTS. INCLUDE ALL RELEVANT TRACEABLE REFERENCES ON ALL INSERTS.
ONLY CLASS A GLASSWARE IS USED FOR THE PREPARATION OF REAGENTS WHEN AVAILABLE

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific Quality Systems has been found to conform to Quality Management System Standard ISO/IEC 17025:2005 standard by SAI Global Certification Number QEAR1 - 0004618

This is to certify that units of the following listed lot number have been tested and found to comply with the specifications of the grade listed. Quality data have been established by Fisher Scientific. Fisher Scientific disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (reagents, chemicals, solvents) are sold for use in food, drug, or medical device manufacturing. Fisher does not claim responsibility or coverage under 21 CFR nor maintain GMP's with the FDA. This laboratory was not inspected, results validated

Catalog Number	A563	Quality Test / Release Date	8/24/2017
Lot Number	172596	Expiration Date	Aug/2020
Description	AMMONIUM HYDROXIDE, CERTIFIED A.C.S. PLUS		
Country of Origin	United States		
Chemical Origin	Inorganic-non animal		
BSE/TSE Comment	This product does not contain and is not manufactured with raw material ingredients derived from any animal products, including countries where Bovine Spongiform Encephalopathy (BSE) is known to exist.		
Chemical Comment	This product is free from genetically modified substances and is gluten free.		

Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	COLORLESS AND FREE FROM SUSPENDED MATTER
ALUMINUM	ppm	=< 0.3	0.002
ARSENIC AND ANTIMONY	ppm	=< 0.05	<0.050
ASSAY	Wt %	Inclusive Between 28.0 - 30.0	29.2
BORON (B)	ppm	=< 0.1	0.001
CALCIUM (Ca)	ppm	=< 0.3	0.008
CARBON DIOXIDE	%	=< 0.052	<0.0020
CHLORIDE	ppm	=< 0.5	<0.50
CHROMIUM (Cr)	ppm	=< 0.2	0.001
COPPER (Cu)	ppm	=< 0.1	0.001
GOLD (Au)	ppm	=< 0.3	0.001
HEAVY METALS (as Pb)	ppm	=< 0.5	<0.5
IRON (Fe)	ppm	=< 0.1	0.001
LEAD (Pb)	ppm	=< 0.2	0.001
MAGNESIUM (Mg)	ppm	=< 0.3	0.001
MANGANESE (Mn)	ppm	=< 0.2	0.001
NICKEL (Ni)	ppm	=< 0.1	0.001
NITRATE (NO3)	ppm	=< 2	<2.0
PHOSPHATE (PO4)	ppm	=< 0.4	<0.40
POTASSIUM (K)	ppm	=< 0.3	0.002
RESIDUE AFTER IGNITION	ppm	=< 3	<3.00
SODIUM (Na)	ppm	= Report	0.005
SUBSTANCES REDUCING KMNO4	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	ppm	=< 2	<2.0
TIN (Sn)	ppm	=< 0.3	0.001
TITANIUM (Ti)	ppm	=< 0.3	0.001
ZINC (Zn)	ppm	=< 0.3	0.003

Certified By

Quality Assurance Specialist - Certificate of Analysis BPF

Note: This data listed is valid for all packages done of this lot and this product, except as to a difference in the catalog number listed above. If there are any questions with this certificate, please call Customer Services at 1-800-926-4191
Stored as supplied at ambient conditions

Date Received: 2017/12/28-RAZ-P2B
Date Received: 2018/01/09-lov-HPLC 1X500ml

LOV 2018/02/16
8 x 4L

SIGMA-ALDRICH®

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Methanol - for HPLC, ≥99.9%

Product Number:	**34860**
Batch Number:	**SHBJ6486**
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

CH_3OH

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days		

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Version Number: 1

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sigma-aldrich.com

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Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

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REAGENT PREPARATION FORM

Reagent # 405 Replaced Reagent # 387 Analyst: GSZ

Reagent Name: 0.3% NH_4OH in MeOH Preparation date: 2018/03/05 Expiry date: Daily

Final Volume: 250ml Oven No. : — Temp. : — Final Conc.: 0.3 : 99.7 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: J434346 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH_4OH	0.75 ml	2018/01/09	2018/01/25	Fisher	172996	2020/08/31
MeOH	249.25 ml	2018/03/05	2018/03/05	Sigma	SHBJ8485	2022/12/31
		GSZ, 2018/03/05				

NOTES: 250 ml Class A Vol. Cylinder (3026)

Reagent # 406 Replaced Reagent # 405 Analyst: LR

Reagent Name: 0.3% NH_4OH in MeOH Preparation date: 2018/03/06 Expiry date: Daily

Final Volume: 100 ml Oven No. : — Temp. : — Final Conc.: 0.3 : 99.7 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: N31477F Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH_4OH	0.3 ml	2018/01/09	2018/01/25	Fisher	172996	2020/08/31
MeOH	99.7 ml	2018/03/05	2018/03/05	Aldrich	SHBJ 8485	2022/12/31
			2018/03/06 LR			

NOTES: 100 ml Class A cylinder (#6394)

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific Quality System has been found to conform to Quality Management System Standard ISO/IEC 2008 standard by SAI Global Certification Number CERT - 0004616

This is to certify that units of the lot number below have been tested in accordance with the specifications of the grade listed. Certain data have been supplied by third parties. Fisher Scientific expressly disclaims all warranties, conditions or liability, including the implied warranties of merchantability and fitness for a particular purpose. Certain products [redacted] are sold for use in vitro, only, in medical device manufacturing. These items are not manufactured in accordance with 21 CFR 820 nor intended UNF's with the MDR. The following are the tested analytical results obtained.

Catalog Number	A669	Quality Test / Release Date	6/24/2017
Lot Number	172396	Expiration Date	Aug/2020
Description	AMMONIUM HYDROXIDE, CERTIFIED A.C.S. PLUS		
Country of Origin	United States		
Chemical Origin	Inorganic-iron animal		

BSE/TSE Comment	This product does not contain and is not manufactured with raw material ingredients derived from any animal products, including countries where Bovine Spongiform Encephalopathy (BSE) is known to exist.
Chemical Comment	This product is free from genetically modified substances and is gluten free.

Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	COLORLESS AND FREE FROM SUSPENDED MATTER
ALUMINUM	ppm	<= 5.3	0.002
ARSENIC AND ANTIMONY	ppm	<= 5.05	<0.050
ASSAY	wt/ %	Inclusive Between 28.0 - 30.0	29.2
BORON (B)	ppm	<= 5.1	0.001
CALCIUM (Ca)	ppm	<= 5.3	0.008
CARBON DIOXIDE	%	<= 5.052	<0.0020
CHLORIDE	ppm	<= 5.5	<0.50
CHROMIUM (Cr)	ppm	<= 5.2	0.001
COPPER (Cu)	ppm	<= 5.1	0.001
GOLD (Au)	ppm	<= 5.3	0.001
HEAVY METALS (as Pb)	ppm	<= 5.5	<0.5
IRON (Fe)	ppm	<= 5.1	0.001
LEAD (Pb)	ppm	<= 5.2	0.001
MAGNESIUM (Mg)	ppm	<= 5.3	0.001
MANGANESE (Mn)	ppm	<= 5.2	0.001
NICKEL (Ni)	ppm	<= 5.1	0.001
NITRATE (NO3)	ppm	<= 2	<2.0
PHOSPHATE (PO4)	ppm	<= 5.4	<0.40
POTASSIUM (K)	ppm	<= 5.3	0.002
RESIDUE AFTER IGNITION	ppm	<= 2	<3.00
SODIUM (Na)	ppm	= Report	0.005
SUBSTANCES REDUCING KMNO4	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	ppm	<= 2	<2.0
TIN (Sn)	ppm	<= 5.3	0.001
TITANIUM (Ti)	ppm	<= 5.3	0.001
ZINC (Zn)	ppm	<= 5.3	0.003

Quality Assurance Specialist - Certificate of Analysis SPF

Note: The data listed is valid for all package sizes of Part Id of this product, manufactured to a tolerance of the catalog number listed above. If there are any questions with this certificate, please call Customer Service at (800) 766-7000
Issued on supported storage conditions

Date Received: 2017/12/28-RAZ-P2B
Date Received: 2018/01/09-lov-HPLC 1X500ml

SIGMA-ALDRICH

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3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
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Outside USA: eurtechserv@sial.com

Certificate of Analysis

Rec'd: 2018/02/28
By: [illegible]
4x4L
HPLC-M.L.

Product Name:
Methanol - for HPLC, ≥99.9%

CH_3OH

Product Number:	34860
Batch Number:	SHBJ8485
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days		

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

SIGMA-ALDRICH

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: customerservice@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Melissa Grady, Manager
Quality Control
Sheboygan Falls, WI US

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Date Received: 2018.02.16 - 4 x 4L - HPLC
Date Received: 2018.02.27 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.05 - 4 x 4L - HPLC

REAGENT PREPARATION FORM

Reagent # 413 Replaced Reagent # 409 Analyst: SAD

Reagent Name: DNPH Solution Preparation date: 2018/03/08 Expiry date: Daily

Final Volume: 10ml Oven No. : — Temp. : — Final Conc.: —

Balance ID: FC-1 Pipette/Syringe/Cylinder ID: K55191G Storage: Shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
DNPH	0.050	2016/07/15	2016/07/15	Spectrum	ZEK 0212	2022/7/31
ACN	10ml	~~2018/02/12~~ 2018/02/12 SAD 2018/03/08	2018/02/12	Fisher	176083	2022/09/31
				SAD 2018/03/08		

NOTES:

Reagent # 414 Replaced Reagent # 395 Analyst: LV

Reagent Name: 60:40 (H_2O:MeOH) Preparation date: 2018/03/08 Expiry date: 2018/05/08

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: —

Balance ID: — Pipette/Syringe/Cylinder ID: 5553 Storage: Shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
MeOH	400	2018/03/03	2018/03/08	Sigma	SHBJ 8485	2022/12/31
H_2O	600ml	2017/12/06	2018/03/06	Omni Sol	57297	2018/10/31
			2018/03/08 LV			

NOTES:

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Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Rec'd: 2018/02/28
By: [illegible]
4x4L
HPLC-M.L.-

Product Name:
Methanol - for HPLC. ≥99.9%

CH_3OH

Product Number:	34860
Batch Number:	SHBJ8485
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days	----------	----------

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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Website: www.sigmaaldrich.com
Email USA: techsere@sial.com
Outside USA: cuttechsere@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Date Received: 2018.02.16 - 4 x 4L - HPLC
Date Received: 2018.02.27 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.05 - 4 x 4L - HPLC

Certificate of Analysis

MilliporeSigma

Date of Release: 10/27/2017

Name: Water
Chromasolv® For LC/MS

Item No: WX0001-1, WX0001-6, WX0001-951

Lot / Batch No: 57297

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
Recheck date			31-OCT-2019	
Evaporation residue		1	< 0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.22	mAU
Gradient at 254 nm		0.5	0.09	mAU
LC/MS Purity (6-methylquinoline)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Particle, suitable for LC/MS			Conforms	
UV Abs. at 200 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.009	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400-280 nm		0.005	< 0.001	AU
UV Cut-off		190	< 190	nm

Dr. Oliver Schrimpf
Quality Control Manager
This document has been produced electronically and is valid without a signature.

EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
290 Concord Road
Billerica, MA 01821
USA
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Date Received: 2017/12/01 1 x 4L LCMS
Date Received: 2017/12/04 4 x 4L LCMS
Date Received: 2017/12/06 4 x 4L LCMS
Date Received: 2017/12/07 4 x 4L LCMS
Date Received: 2017/12/10 4 x 4L LCMS
Date Received: 2017/12/19 4 x 4L LCMS
Date Received: 2017.12.28 - 8 x 4L - HPLC
Date Received: 2017.12.29 - 8 x 4L - HPLC
Date Received: 2018.01.04 - 8 x 4L - HPLC
Date Received: 2018.01.19 - 8 x 4L - HPLC
Date Received: 2018.01.31 - 8 x 4L - HPLC
Date Received: 2018.02.07 - 4 x 4L - HPLC
Date Received: 2018.02.07 - 4 x 4L - HPLC
Date Received: 2018/02/12 4 x 4L LCMS KC
Date Received: 2018.02.14 - 4 x 4L - HPLC

REAGENT PREPARATION FORM

Reagent # 415 Replaced Reagent # 397 Analyst: SSV

Reagent Name: 2% formic acid Preparation date: 2018/03/08 Expiry date: 2018/05/08

Final Volume: 1L Oven No. : _____ Temp. : _____ Final Conc.: 2:98 v/v

Balance ID: — Pipette/Syringe/Cylinder ID: K551916 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
formic acid	20 mL	2017/08/25	2017/12/07	sigma	SHBJ 1624	2018/05/31
LCMS H_2O	980 mL	2018/02/27	2018/03/08	OMNI	58004	2019/01/31
		2018/03/08		SSV		

NOTES: 1L volumetric cylinder # 3026

Reagent # 416 Replaced Reagent # 373 Analyst: LR

Reagent Name: 96:4 MeOH:H_2O Preparation date: 2018/03/09 Expiry date: 2018/05/09

Final Volume: 100 mL Oven No. : — Temp. : — Final Conc.: 96:4

Balance ID: _____ Pipette/Syringe/Cylinder ID: K39732F Storage: Shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
MeOH	96 mL	2018/03/08	2018/03/09	Sigma Aldrich	SHBJ 8485	2022/12/7
LCMS H_2O	4 mL	2018/02/23	2018/03/07	OMNI SOLV	58004	2019/01/31
			2018/03/09	LR		

NOTES: 100 mL Class A Cylinder # 6394

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SIGMA-ALDRICH

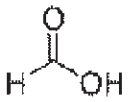
sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Formic acid - reagent grade, ≥95%

Product Number:	F0507
Batch Number:	SHBJ1624
Brand:	SIGALD
CAS Number:	64-18-6
MDL Number:	MFCD00003297
Formula:	CH2O2
Formula Weight:	46.03 g/mol
Quality Release Date:	24 MAY 2017
Expiration Date:	MAY 2018



Test	Specification	Result
Appearance (Turbidity)	Clear	Clear
Appearance (Color)	Colorless to Very Faint Yellow	Very Faint Yellow
Appearance (Form)	Liquid	Liquid
Proton NMR Spectrum	Conforms to Structure	Conforms
Solvent Content Acetic Acid by NMR	≤ 1.0 %	< 0.1 %
Water (by Karl Fischer)	2.0 - 2.5 %	2.1 %
Titration with NaOH	≥ 95.0 %	97.2 %
Expiration Date Period 1 Year	----------	----------

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Date Received:2017/08/11-SSB-1 bottle-P2A
Date Received:2017/08/25 -SSB-1 bottle-P2A
Date Received:2017/08/29-SSB-1 bottle-P2A
Date Received:2017/12/07-SSB-1 bottle-P2A

Certificate of Analysis

MilliporeSigma

Date of Release: 1/4/2018

Name: Water
OmniSolv®, For LC/MS

Item No: WX0001-1, WX0001-6, WX0001-991

Lot / Batch No: 58004

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
#Expiration date			31-JAN-2019	
Evaporation residue		1	<0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.33	mAU
Gradient at 254 nm		0.5	0.06	mAU
LC/MS Purity (p-nitrophenol)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Metals, suitable for LC/MS			Conforms	
UV Abs. at 200 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.005	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400-260 nm		0.005	< 0.001	AU
UV Cut-off		190	<190	nm

Dr. Oliver Schramel

Quality Control Manager
This document has been produced electronically and is valid without a signature.

EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
290 Concord Road
Billerica, MA 01821
U.S.A
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Received 2018/02/15 TASLIMA AKTAR
4 bottles (4U1 Rack)

Date Received: 2018.02.27 - 5 bottles - HPLC
Date Received: 2018.03.13 - 5 bottles - HPLC

REAGENT PREPARATION FORM

Reagent # 423 Replaced Reagent # 421 Analyst: DM3

Reagent Name: 0.2% NH4OH Preparation date: 2018/03/13 Expiry date: daily

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: 0.2 : 99.8

Balance ID: — Pipette/Syringe/Cylinder ID: — Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH4OH	2mL	2018/01/29	2018/01/31	Fisher	172996	2020/08/31
MeOH 998mL	~~2018/03/03~~ DM3 2018/03/13	2018/03/03	2018/03/13	Sigma	SHBJ8485	2022/12/31
	2018/03/13 DM3					

NOTES:

1L cylinder # 5553

Reagent # 424 Replaced Reagent # 418 Analyst: SAD

Reagent Name: FMOC Preparation date: 2018/03/13 Expiry date: Daily

Final Volume: 50mL Oven No. : — Temp. : — Final Conc.: —

Balance ID: FC1 Pipette/Syringe/Cylinder ID: — Storage: Shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
FMOC	0.0750	2017/09/06	2018/01/09	Aldrich	MKBL3138V	2022/09/06
ACN	50mL	2018/02/12	2018/2/12	Fisher	176083	2022/9/31
		SAD 2018/3/13				

NOTES:

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ONLY CLASS A GLASSWARE IS USED FOR THE PREPARATION OF REAGENTS WHEN APPLICABLE.

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO/IEC 17025:2005 issued by SAI Global Certificate Number CERT - 00001916

This is to certify that each of the lot number listed below was tested and found to comply with the specifications of the grade listed. Unless otherwise noted, all tests have been conducted by Fisher Scientific in accordance with instructions, methods and limits in effect, including the stated expiration or retest date. Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products SUBJECT TO EAR OR ITAR CONTROLS are NOT for use in Libya, Syria, or any other destination prohibited by the U.S. Government. Fisher does not claim responsible coverage under 21 CFR not validated GMP's with this P/N. The following are the stated analytical results obtained:

Catalog Number	A469	Quality Test / Release Date	8/24/2017
Lot Number	172396	Expiration Date	Aug/2020
Description	AMMONIUM HYDROXIDE, CERTIFIED A.C.S. PLUS		
Country of Origin	United States		
Chemical Origin	Inorganic-non animal		
BSE/TSE Comment	This product does not contain and is not manufactured with raw material ingredients derived from any animal products, including countries where Bovine Spongiform Encephalopathy (BSE) is known to exist.		
Chemical Comment	This product is free from genetically modified substances and is gluten free.		

Result name	Units	Specifications	Test Value
APPEARANCE		REPORT	COLORLESS AND FREE FROM SUSPENDED MATTER
ALUMINUM	ppm	-= 5.3	0.302
ARSENIC AND ANTIMONY	ppm	-= 5.05	<0.050
ASSAY	wt/ %	Inclusive Between 28.0 - 30.0	29.2
BORON (B)	ppm	-= 5.1	0.001
CALCIUM (Ca)	ppm	-= 5.3	0.008
CARBON DIOXIDE	%	-= 5.052	<0.0020
CHLORIDE	ppm	-= 5.5	<0.50
CHROMIUM (Cr)	ppm	-= 5.2	0.001
COPPER (Cu)	ppm	-= 5.1	0.001
GOLD (Au)	ppm	-= 5.3	0.001
HEAVY METALS (as Pb)	ppm	-= 5.5	<5.5
IRON (Fe)	ppm	-= 5.1	0.001
LEAD (Pb)	ppm	-= 5.2	0.001
MAGNESIUM (Mg)	ppm	-= 5.3	0.001
MANGANESE (Mn)	ppm	-= 5.2	0.001
NICKEL (Ni)	ppm	-= 5.1	0.001
NITRATE (NO3)	ppm	-= 2	<2.0
PHOSPHATE (PO4)	ppm	-= 5.4	<0.40
POTASSIUM (K)	ppm	-= 5.3	0.002
RESIDUE AFTER IGNITION	ppm	-= 3	<3.00
SODIUM (Na)	ppm	= Report	0.005
SUBSTANCES REDUCING KMNO4	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	ppm	-= 2	<2.0
TIN (Sn)	ppm	-= 5.3	0.001
TITANIUM (Ti)	ppm	-= 5.3	0.001
ZINC (Zn)	ppm	-= 5.3	0.003

Quality Assurance Specialist - Certificate of Analysis SPF

Note: This data listed is valid for all package sizes of this lot unless otherwise noted, reconstitution or extension of the existing number listed above. If there are any questions with this certificate, please call Chemical Services at (800) 937-4701
*Stored at suggested storage conditions

Date Received: 2017/12/28-RAZ-P2B
Date Received: 2018/01/09-lov-HPLC 1X500ml
Date Received: 2018/01/19-lov-HPLC 1X500ml

SIGMA-ALDRICH

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Rec'd: 2018102128
By: [illegible]
4x4L
HPLC-M.L.-

Product Name:
Methanol - for HPLC, ≥99.9%

CH_3OH

Product Number:	34860
Batch Number:	SHBJ6485
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days	----------	----------

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1

SIGMA-ALDRICH

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Date Received: 2018.02.16 - 4 x 4L - HPLC
Date Received: 2018.02.27 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.05 - 4 x 4L - HPLC
Date Received: 2018.03.13 - 4 x 4L - HPLC
Date Received: 2018.03.19 - 4 x 4L - HPLC

REAGENT PREPARATION FORM

Reagent # 433 Replaced Reagent # 415 Analyst: SAD

Reagent Name: 60:40 (H2O:MeOH) Preparation date: 2018/3/16 Expiry date: 2018/5/16

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: —

Balance ID: — Pipette/Syringe/Cylinder ID: 5553 Storage: Shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
MeOH	400 mL	2018/3/15	2018/3/16	Sigma	STHB7 8485	2022/12/31
Water	600 mL	2018/2/23	2018/3/15	Omni	58004	2019/01/31
		SAD	2018/3/16			

NOTES:

Reagent # 434 Replaced Reagent # 415 Analyst: SAD

Reagent Name: 2% Formic Acid Preparation date: 2018/3/16 Expiry date: 2018/5/16

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: 2.98 %/v

Balance ID: — Pipette/Syringe/Cylinder ID: K551916 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Formic Acid	20mL	2017/8/25	2017/11/07	Sigma	STHB7 1624	2018/5/31
SAD & LCMS H2O	980mL	2018/2/23	2018/3/15	Omni	58004	2019/01/31
2018/3/16						
		SAD	2018/3/16			

NOTES:

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SIGMA-ALDRICH

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3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Rec'd: 2018102128
By: [illegible]
4x4L
HPLC-M.L.

Product Name:
Methanol - for HPLC, ≥99.9%

CH_3OH

Product Number:	34860
Batch Number:	SHBJ8485
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.80	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days		

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1

SIGMA-ALDRICH

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34660
Batch Number: SHBJ6485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Date Received: 2018.02.16 - 4 x 4L - HPLC
Date Received: 2018.02.27 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.05 - 4 x 4L - HPLC
Date Received: 2018.03.13 - 4 x 4L - HPLC
Date Received: 2018.03.15 - 4 x 4L - HPLC
Date Received: 2018.03.19 - 4 x 4L - HPLC
Date Received: 2018.03.22 - 4 x 4L - HPLC

Certificate of Analysis

MilliporeSigma

Date of Release: 1/4/2019

Name: Water
OmniSolv®, For LC/MS

Item No: WX0001-1, WX0001-6, WX0001-901

Lot / Batch No: 58004

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
#Expiration date			31-JAN-2019	
Evaporation residue		1	<0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.33	mAU
Gradient at 254 nm		0.5	0.06	mAU
LC/MS Purity (p-nitrophenol)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Metals, suitable for LC/MS			Conforms	
UV Abs. at 200 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.005	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400-250 nm		0.005	< 0.001	AU
UV Cut-off		190	<190	nm

Dr. Oliver Schramel

Quality Control Manager
This document has been produced electronically and is valid without a signature.

EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
290 Concord Road
Billerica, MA 01821
U.S.A
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Received 2018/02/15 TASLIMA AKTAR
4 bottles (4 Lit each)

1/1

Date Received: 2018.02.23 - 5 bottles - HPLC
Date Received: 2018.02.27 - 5 bottles - HPLC
Date Received: 2018.03.13 - 5 bottles - HPLC
Date Received: 2018.03.15 - 1 bottle - P12
Date Received: 2018.03.22 - 4 bottles - HPLC

REAGENT PREPARATION FORM

Reagent # 433 Replaced Reagent # 412 Analyst: SAD

Reagent Name: 60:40 (H2O:MeOH) Preparation date: 2018/3/16 Expiry date: 2018/5/16

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: —

Balance ID: — Pipette/Syringe/Cylinder ID: 5553 Storage: Shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
MeOH	400 mL	2018/3/15	2018/3/16	Sigma	SHBJ 8485	2022/12/31
Water	600 mL	2018/2/23	2018/3/15	Omni	58004	2019/01/31
		SAD	2018/3/16			

NOTES:

Reagent # 434 Replaced Reagent # 415 Analyst: SAD

Reagent Name: 2% Formic Acid Preparation date: 2018/3/16 Expiry date: 2018/5/16

Final Volume: 1L Oven No. : — Temp. : — Final Conc.: 2.88 %v/v

Balance ID: — Pipette/Syringe/Cylinder ID: K551916 Storage: —

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Formic Acid	20mL	2017/8/25	2017/11/07	Sigma	SHBJ 1624	2018/5/31
SAD * LCMS H2O 2018/3/16	980mL	2018/2/23	2018/3/15	Omni	58004	2019/01/31
		SAD	2018/3/16			

NOTES:

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SIGMA-ALDRICH

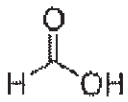
sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:
Formic acid - reagent grade, ≥95%

Product Number:	F0507
Batch Number:	SHBJ1624
Brand:	SIGALD
CAS Number:	64-18-6
MDL Number:	MFCD00003297
Formula:	CH2O2
Formula Weight:	46.03 g/mol
Quality Release Date:	24 MAY 2017
Expiration Date:	MAY 2018



Test	Specification	Result
Appearance (Turbidity)	Clear	Clear
Appearance (Color)	Colorless to Very Faint Yellow	Very Faint Yellow
Appearance (Form)	Liquid	Liquid
Proton NMR Spectrum	Conforms to Structure	Conforms
Solvent Content Acetic Acid by NMR	≤ 1.0 %	< 0.1 %
Water (by Karl Fischer)	2.0 - 2.5 %	2.1 %
Titration with NaOH	≥ 95.0 %	97.2 %
Expiration Date Period 1 Year	----------	----------

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Date Received:2017/08/11-SSB-1 bottle-P2A
Date Received:2017/08/25 -SSB-1 bottle-P2A
Date Received:2017/08/29-SSB-1 bottle-P2A
Date Received:2017/12/07-SSB-1 bottle-P2A

Certificate of Analysis

MilliporeSigma

Date of Release: 1/4/2019

Name: Water
OmniSolv®, For LC/MS

Item No: WX0001-1, WX0001-6, WX0001-901

Lot / Batch No: 58004

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
#Expiration date			31-JAN-2019	
Evaporation residue		1	<0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.33	mAU
Gradient at 254 nm		0.5	0.06	mAU
LC/MS Purity (p-nitrophenol)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Metals, suitable for LC/MS			Conforms	
UV Abs. at 200 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.005	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400-280 nm		0.005	< 0.001	AU
UV Cut-off		190	<190	nm

Dr. Oliver Schramel

Quality Control Manager
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EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
290 Concord Road
Billerica, MA 01821
U.S.A.
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Received 2018/02/15 TASLIMA AKTAR 4 bottles (4th batch)

1/1

Date Received: 2018.02.23 - 5 bottles - HPLC
Date Received: 2018.02.27 - 5 bottles - HPLC
Date Received: 2018.03.13 - 5 bottles - HPLC
Date Received: 2018.03.15 - 1 bottle - P12
Date Received: 2018.03.22 - 4 bottles - HPLC

REAGENT PREPARATION FORM

Reagent # 439 Replaced Reagent # 436 Analyst: EGI

Reagent Name: 0.2% NH_4OH Preparation date: 20180320 Expiry date: Daily

Final Volume: 1L Oven No. : - Temp. : - Final Conc.: 0.2%

Balance ID: - Pipette/Syringe/Cylinder ID: 553 Storage: shelf

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
MeOH	998 ml	2018/01/13	2018/03/20	Sigma	SHBJ5485	2022/12/31
NH_4OH	2 ml	2018/01/09	2018/01/25	Fisher	172996	2020/08/31
		2018/03/20 EGI				

NOTES: pipette K39732F

Reagent # 440 Replaced Reagent # 406 Analyst: GSZ

Reagent Name: 0.3% NH_4OH in MeOH Preparation date: 2018/03/20 Expiry date: Daily

Final Volume: 250ml Oven No. : - Temp. : - Final Conc.: 0.3 : 99.7 v/v

Balance ID: - Pipette/Syringe/Cylinder ID: J434346 Storage: -

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
NH_4OH	0.75 ml	2018/01/09	2018/01/25	Fisher	172996	2020/08/31
MeOH	249.25ml	2018/03/13	2018/03/20	Sigma	SHBJ8485	2022/12/31
		2018/03/20 GSZ				

NOTES: Solvent class A Vol. Cylinder (3076)

DO NOT WRITE BENEATH ANY INSERTS OR PLACE ANY INSERTS ON TOP OF ANY RAW DATA ENTERED ON THIS PAGE. INITIAL AND DATE ALL ENTRIES, CORRECTIONS AND INSERTS. INCLUDE ALL RELEVANT TRACEABLE REFERENCES ON ALL INSERTS.

SIGMA-ALDRICH

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Rec'd: 2018102128
By: [illegible]
4x4L
HPLC-M.L.

Product Name:
Methanol – for HPLC, ≥99.9%

CH_3OH

Product Number:	34860
Batch Number:	SHBJ8485
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004596
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days	----------	----------

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1

SIGMA-ALDRICH
sigma-aldrich.com
3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8486

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Date Received: 2018.02.16 - 4 x 4L - HPLC
Date Received: 2018.02.27 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.05 - 4 x 4L - HPLC
Date Received: 2018.03.13 - 4 x 4L - HPLC
Date Received: 2018.03.15 - 4 x 4L - HPLC
Date Received: 2018.03.19 - 4 x 4L - HPLC
Date Received: 2018.03.22 - 4 x 4L - HPLC

Fisher Scientific

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific Quality System has been found to conform to Quality Management System Standard ISO/IEC 17025 standards by SAI Global Certificate Number CERT - [illegible]

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been submitted by third parties. Fisher Scientific expressly disclaims all warranties, conditions or indicia, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (MSPF/CA/PIP/PIP/IP) (Fisher) are sold for use in food, drug, or medical device manufacturing. Fisher does not claim regulatory warranty under 21 CFR nor maintain DMF's with the FDA. The Fisher/IP are the actual analytical results obtained.

Catalog Number	A669	Quality Test / Release Date	8/24/2017
Lot Number	172396	Expiration Date	Aug/2020
Description	AMMONIUM HYDROXIDE, CERTIFIED A.C.S. PLUS		
Country of Origin	United States		
Chemical Origin	Inorganic-non animal		

BSE/TSE Comment	This product does not contain and is not manufactured with raw material ingredients derived from any animal products, including countries where Bovine Spongiform Encephalopathy (BSE) is known to exist.
Chemical Comment	This product is free from genetically modified substances and is gluten free.

Parameters	Units	Specifications	Test Value
APPEARANCE		REPORT	COLORLESS AND FREE FROM SUSPENDED MATTER
ALUMINUM	ppm	<= 5.3	0.002
ARSENIC AND ANTIMONY	ppm	<= 5.05	-0.050
ASSAY	w/w %	Inclusive Between 25.0 - 30.0	29.2
BORON (B)	ppm	<= 5.1	0.001
CALCIUM (Ca)	ppm	<= 5.3	0.008
CARBON DIOXIDE	%	<= 5.052	-0.0020
CHLORIDE	ppm	<= 5.5	-0.50
CHROMIUM (Cr)	ppm	<= 5.2	0.001
COPPER (Cu)	ppm	<= 5.1	0.001
GOLD (Au)	ppm	<= 5.3	0.001
HEAVY METALS (as Pb)	ppm	<= 5.5	-0.5
IRON (Fe)	ppm	<= 5.1	0.001
LEAD (Pb)	ppm	<= 5.2	0.001
MAGNESIUM (Mg)	ppm	<= 5.3	0.001
MANGANESE (Mn)	ppm	<= 5.2	0.001
NICKEL (Ni)	ppm	<= 5.1	0.001
NITRATE (NO3)	ppm	<= 2	-2.0
PHOSPHATE (PO4)	ppm	<= 5.4	-0.40
POTASSIUM (K)	ppm	<= 5.3	0.002
RESIDUE AFTER IGNITION	ppm	<= 3	-3.00
SODIUM (Na)	ppm	= Report	0.005
SUBSTANCES REDUCING KMNO4	PASS/FAIL	= PASS TEST	PASS TEST
SULFATE (SO4)	ppm	<= 2	-2.0
TIN (Sn)	ppm	<= 5.3	0.001
TITANIUM (Ti)	ppm	<= 5.3	0.001
ZINC (Zn)	ppm	<= 5.3	0.003

Terra Bailey-Wyche

Quality Assurance Specialist - Certificate of Analysis BPF

Note: The data listed is valid for all package sizes of this lot of this product, assumed as a reference of the catalog number listed above. If there are any questions with this certificate, please use Chemical Services at (800) 222-6301.
Tested on suggested storage condition.

Date Received: 2017/12/28-RAZ-P2B
Date Received: 2018/01/09-lov-HPLC 1X500ml
Date Received: 2018/01/19-lov-HPLC 1X500ml

REAGENT PREPARATION FORM

SOLUTION # 296 REAGENT NAME: 20 mM Ammonium acetate

ANALYST: KC DATE PREPARED: 2018/02/28 EXPIRY DATE: 2018/04/28

STORAGE: RT BALANCE ID: MS 2045 PIPET/SYRINGE ID: -

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Ammonium acetate	6.1610g	2017/08/03	2017/09/18	Sigma	BCBT4732	2019/01/30
Water	4L	2018/02/12	2018/02/28	Millipore	57297	2018/10/31
			KC 2018/04/28			

NOTES:

SOLUTION # 297 REAGENT NAME: 50:50 MeOH: H2O

ANALYST: LKH DATE PREPARED: 2018/03/05 EXPIRY DATE: 2018/05/05

STORAGE: RT BALANCE ID: - PIPET/SYRINGE ID: -

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Methanol	100 mL	2018/01/15	2018/02/21	Fisher	173206 TF	2022/12/31
RO+I water	100mL	-	-	in-hous	-	-
				LKH 2018/03/05		

NOTES:

ONLY CLASS A GLASSWARE IS USED FOR THE PREPARATION OF REAGENTS WHEN APPLICABLE.
RT = Room Temperature

SIGMA-ALDRICH

3050 Spruce Street, Saint Louis, MO 63103 USA
Email USA: techserv@sial.com Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:	AMMONIUM ACETATE reagent grade, >= 98 %
Product Number:	A7262
Batch Number:	BCBT4732
Brand:	Sigma-Aldrich
CAS Number:	631-61-8
Formula:	$CH_3CO_2NH_4$
Formula Weight:	77.08
Storage Temperature:	2-8 C
Quality Release Date:	16 JAN 2017
Recommended Retest Date:	JAN 2019

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE	WHITE
APPEARANCE (FORM)	MOIST CRYSTALS	MOIST CRYSTALS
TITRATION	≥ 98 %	99.6 %
TITRATION (METHOD)	TITRATION WITH NAOH	TITRATION WITH NAOH
SOLUBILITY (COLOR)	COLORLESS	COLORLESS
SOLUBILITY (TURBIDITY)	CLEAR	CLEAR
SOLUBILITY (METHOD)	1 G/ML, H2O	1 G/ML, H2O

Claudia Geitner

Dr. Claudia Geitner
Manager Quality Control
Buchs, Switzerland

Rec'd: j
20 17/08/03
1 x 500 g
LC group
Storage: FD

Sigma-Aldrich warrants that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Certificate of Analysis

MilliporeSigma

Date of Release: 10/27/2017

Name: Water
CimeSelect: For LC/MS

Item No: WX0001-1, WX0001-6, WX0001-901

Lot / Batch No: 57297

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
#Expiration date			31-OCT-2018	
Evaporative residue		1	< 0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.22	mAU
Gradient at 254 nm		0.5	0.09	mAU
LC/MS Purity (n-nitrosohonol)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Metals, suitable for LC/MS			Conforms	
UV Abs. at 200 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.005	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400-280 nm		0.005	< 0.005	AU
UV Cut-off		180	< 180	nm

Dr. Oliver Schrainer

Quality Control Manager
This document has been produced electronically and is valid without a signature.

EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
200 Concord Road
Billerica, MA 01821
U.S.A
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Date Received: 2017/12/01 1 x 4L LCMS
Date Received: 2017/12/04 4 x 4L LCMS
Date Received: 2017/12/06 4 x 4L LCMS
Date Received: 2017/12/07 4 x 4L LCMS
Date Received: 2017/12/10 4 x 4L LCMS
Date Received: 2017/12/19 4 x 4L LCMS
Date Received: 2017.12.28 - 8 x 4L - HPLC
Date Received: 2017.12.29 - 8 x 4L - HPLC
Date Received: 2018.01.04 - 8 x 4L - HPLC
Date Received: 2018.01.19 - 8 x 4L - HPLC
Date Received: 2018.01.31 - 8 x 4L - HPLC
Date Received: 2018.02.07 - 4 x 4L - HPLC
Date Received: 2018.02.07 - 4 x 4L - HPLC
Date Received: 2018/02/12 4 x 4L LCMS KC
Date Received: 2018.02.14 - 4 x 4L - HPLC

Maxxam

CAM FCD-00595/1
FSRE: 18 PG: 150

REAGENT PREPARATION FORM

SOLUTION # 300 REAGENT NAME: 50:50 MeOH : ACN

ANALYST: KC DATE PREPARED: 2018/03/09 EXPIRY DATE: 2018/05/09

STORAGE: RT BALANCE ID: - PIPET/SYRINGE ID: -

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Methanol	500 mL	2018/01/09	2018/01/30	Fisher	171027	2022/05/31
Acetonitrile	500 mL	2018/03/05	2018/03/07	Fisher	178723	2022/11/30
		KC 2018/03/09				

NOTES:

SOLUTION # 301 REAGENT NAME: 1M HNO_3

ANALYST: PBE DATE PREPARED: 2018/03/12 EXPIRY DATE: 2018/05/12

STORAGE: Shelf BALANCE ID: AB02 PIPET/SYRINGE ID: 036

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Concentrated Trace Metal HNO_3	6.5 mL PBE 2018/03/12	2018/01/25	2018/03/09	Fisher	111700	2019/10/20
RODI H_2O (In-house) 2018/02	100 mL	Obtained 2018/03/12	—	—	—	—

NOTES:

ONLY CLASS A GLASSWARE IS USED FOR THE PREPARATION OF REAGENTS WHEN APPLICABLE.
RT = Room Temperature

Fisher Scientific

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2008 standard by SAI Global Certificate Number CERT - 0000910

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (USP/FCC/NF/EP/BP/JP grades) are sold for use in food, drug, or medical device manufacturing. Fisher does not claim regulatory coverage under 21 CFR nor maintain DMF's with the FDA. The following are the actual analytical results obtained:

Catalog Number	A454	Quality Test / Release Date	5/16/2017
Lot Number	171027		
Description	METHANOL, OPTIMA, A.C.S.		
Country of Origin	Trinidad	¹ Suggested Retest Date	May-2022
Chemical Origin	Organic - synthetic		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

Recd: 8
2017/08/21
4x4L

Result name	Units	Specifications	Test Value
APPEARANCE		REPORT	CLEAR, COLORLESS LIQUID
ASSAY	%	>= 99.9	99.9
CARBONYL COMPOUNDS	%	<= 0.001	0.0006
COLOR	APHA	<= 5	5
EVAPORATION RESIDUE	ppm	<= 1	0.4
FLUORESCENCE BACKGROUND	ppb	<= 1	<1
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
LC GRADIENT SUITABILITY	PASS/FAIL	= PASS TEST	PASS TEST
OPTICAL ABS AT 205 NM	ABSORBANCE UNITS	<= 1.00	0.83
OPTICAL ABS AT 220 NM	ABSORBANCE UNITS	<= 0.28	0.28
OPTICAL ABS AT 230 NM	ABSORBANCE UNITS	<= 0.11	0.10
OPTICAL ABS AT 254 NM	ABSORBANCE UNITS	<= 0.01	0.010
REFRACTIVE INDEX @ 25 DEG C		Inclusive Between 1.3260 - 1.3300	1.3264
SOLUBILITY IN WATER	PASS/FAIL	= PASS TEST	PASS TEST
SUBSTANCES DARKENED BY H2SO4	PASS/FAIL	= PASS TEST	PASS TEST
SUBSTANCES REDUCING KMNO4	PASS/FAIL	= PASS TEST	PASS TEST
TITRATABLE ACID	mEq/g	<= 0.0003	0.00020
TITRATABLE BASE	mEq/g	<= 0.0002	0.00003
WATER (H2O)	%	<= 0.07	0.01



Teresa Bailey-Wojcik

Quality Assurance Specialist - Certificate of Analysis BPF

Note: The data listed is valid for all package sizes of this lot of this product, expressed as a extension of this catalog number listed above. If there are any questions with this certificate, please call Customer Service at (800) 227-5701.
¹Based on suggested storage condition.

Date Received: 2017.09.01- 4 bottles - P2A
Date Received:2017/10/17-4 x 4L - LC
Date Received: 2017/10/19-JT- 2 bottles-P1
Date Received: 2017/11/23-PBE-1x4L
Date Received: 2018/01/09-ML-4x4L
Date Received: 2018.01.10 - 4 x 4L - HPLC Main Lab

ThermoFisher SCIENTIFIC

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2008 standard by SAI Global Certificate Number CERT - 0005818

Rec'd: 20180305
By: CK
UxCC
HPLC-ML

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Catalog Number	A998	Quality Test / Release Date	11/29/2017
Lot Number	176723		
Description	ACETONITRILE, OPTIMA		
Country of Origin	United States	* Suggested Retest Date	Nov-2022
Chemical Origin	Organic - non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

Test Name	Units	Specification	Test Value
APPEARANCE		REPORT	CLEAR, COLORLESS LIQUID
ASSAY	%	>= 99.9	99.9
COLOR	APHA	<= 5	<5
DENSITY AT 25 DEGREES C	GM/ML	Inclusive Between 0.775 - 0.789	0.777
EVAPORATION RESIDUE	ppm	<= 0.8	<0.1
FLUORESCENCE BACKGROUND	ppb	<= 1	<1
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
LC GRADIENT SUITABILITY	PASS/FAIL	= PASS TEST	PASS TEST
OPTICAL ABS AT 190 NM	ABS. UNITS	<= 1.00	0.55
OPTICAL ABS AT 195 NM	ABS. UNITS	<= 0.15	0.06
OPTICAL ABS AT 200 NM	ABS. UNITS	<= 0.07	<0.01
OPTICAL ABS AT 205 NM	ABS. UNITS	<= 0.05	<0.01
OPTICAL ABS AT 210 NM	ABS. UNITS	<= 0.04	<0.01
OPTICAL ABS AT 230 NM	ABS. UNITS	<= 0.02	<0.002
OPTICAL ABS AT 254 NM	ABS. UNITS	<= 0.005	<0.001
PESTICIDE RESIDUE ANALYSIS	NGL	<= 10	<10
REFRACTIVE INDEX @ 25 DEG C		Inclusive Between 1.3405 - 1.3425	1.3414
TITRATABLE ACID	mEq/g	<= 0.000	<0.001
TITRATABLE BASE	mEq/g	<= 0.0000	<0.0001
WATER (H2O)	%	<= 0.01	<0.001

Teresa Bailey-Wyche

Quality Assurance Specialist - Certificate of Analysis BPF

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of the catalog number listed above. If there are any questions with this certificate, please call (800) 227-6701.
*Based on suggested storage conditions.

REAGENT PREPARATION FORM

SOLUTION # 308 REAGENT NAME: 10mM Ammonium Acetate

ANALYST: MC DATE PREPARED: 2018/03/14 EXPIRY DATE: 2018/05/14

STORAGE: RT BALANCE ID: _____ PIPET/SYRINGE ID: _____

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
LCMS Grade Water	HL	2018/02/12	2018/03/14	Omnisolv	57297	2018/10/31
Ammonium Acetate	6.1751g	2017/08/03	2017/09/18	Sigma	BCBT4732	2019/01/30
	2018/03/14 MC					

NOTES:

SOLUTION # 309 REAGENT NAME: 0.02% Ammonium Hydroxide in RODI W

ANALYST: LKH DATE PREPARED: 2018/03/15 EXPIRY DATE: 2018/05/15

STORAGE: RT BALANCE ID: AB-02 PIPET/SYRINGE ID: FE-P-78

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Ammonium Hydroxide	0.4mL	2017/08/04	2017/11/22	Fisher	166631	2020/01/31
RODI water	up to 500mL	–	–	in-house	–	–
				LKH		
				2018/03/15		

NOTES:

ONLY CLASS A GLASSWARE IS USED FOR THE PREPARATION OF REAGENTS WHEN APPLICABLE.
RT = Room Temperature

Certificate of Analysis

MILLIPORE SIGMA

Date of Release: 10/27/2017

Name: Water
OmniSolvent, For LC/MS

Item No: WX0001-1, WX0001-6, WX0001-901

Lot / Batch No: 57297

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
#Expiration date			31-OCT-2018	
Evaporation residue		1	< 0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.22	mAU
Gradient at 254 nm		0.3	0.09	mAU
LC/MS Purity (p-nitrophenol)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Metals, suitable for LC/MS			Conforms	
UV Abs. at 205 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.005	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400-280 nm		0.005	< 0.005	AU
UV Cut-off		190	< 190	nm

Dr. Oliver Schramel
Quality Control Manager
This document has been produced electronically and is valid without a signature.

EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
290 Concord Road
Billerica, MA 01821
U.S.A
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Date Received: 2017/12/01 1 x 4L LCMS
Date Received: 2017/12/04 4 x 4L LCMS
Date Received: 2017/12/06 4 x 4L LCMS
Date Received: 2017/12/07 4 x 4L LCMS
Date Received: 2017/12/10 4 x 4L LCMS
Date Received: 2017/12/19 4 x 4L LCMS
Date Received: 2017.12.28 - 8 x 4L - HPLC
Date Received: 2017.12.29 - 8 x 4L - HPLC
Date Received: 2018.01.04 - 8 x 4L - HPLC
Date Received: 2018.01.19 - 8 x 4L - HPLC
Date Received: 2018.01.31 - 8 x 4L - HPLC
Date Received: 2018.02.07 - 4 x 4L - HPLC
Date Received: 2018.02.07 - 4 x 4L - HPLC
Date Received: 2018/02/12 4 x 4L LCMS KC
Date Received: 2018.02.14 - 4 x 4L - HPLC

SIGMA-ALDRICH

3050 Spruce Street, Saint Louis, MO 63103 USA
Email USA: techserv@sial.com Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Name:	AMMONIUM ACETATE reagent grade, >= 98 %
Product Number:	A7262
Batch Number:	BCBT4732
Brand:	Sigma-Aldrich
CAS Number:	631-61-8
Formula:	$CH_3CO_2NH_4$
Formula Weight:	77.08
Storage Temperature:	2-8 C
Quality Release Date:	16 JAN 2017
Recommended Retest Date:	JAN 2019

TEST	SPECIFICATION	RESULT
APPEARANCE (COLOR)	WHITE	WHITE
APPEARANCE (FORM)	MOIST CRYSTALS	MOIST CRYSTALS
TITRATION	≥ 98 %	99.6 %
TITRATION (METHOD)	TITRATION WITH NAOH	TITRATION WITH NAOH
SOLUBILITY (COLOR)	COLORLESS	COLORLESS
SOLUBILITY (TURBIDITY)	CLEAR	CLEAR
SOLUBILITY (METHOD)	1 G/ML, H2O	1 G/ML, H2O

Claudia Geilner

Dr. Claudia Geilner
Manager Quality Control
Buchs, Switzerland

Rec'd: j
20 17/08/03
1 X 500 g
LC group
Storage: FD

Sigma-Aldrich warrants that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Maxxam

CAM FCD-00595/1 6
FSRE: 18 PG: 157
2018/03/22

REAGENT PREPARATION FORM

SOLUTION # 312 REAGENT NAME: 20mM Ammonium Acetate

ANALYST: AD DATE PREPARED: 2018/03/21 EXPIRY DATE: 2018/05/21

STORAGE: RT BALANCE ID: MS2045 PIPET/SYRINGE ID: -

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Ammonium Acetate	3.0854g	2017/08/03	2017/09/18	Sigma	BCB74732	2019/01/30
Water	2 L	2017/12/28	2018/02/09	Omnisolv	57297	2018/10/31
		AD	2018/03/21			

NOTES:

SOLUTION # 313 REAGENT NAME: 50:50 MeOH/ACN

ANALYST: MA DATE PREPARED: 2018/03/21 EXPIRY DATE: 2018/05/21

STORAGE: RT BALANCE ID: _____ PIPET/SYRINGE ID: _____

CHEMICAL NAME	VOLUME/ WEIGHT	DATE RECEIVED	DATE OPENED	SUPPLIER	LOT NUMBER	EXPIRY DATE
Methanol	500mL	2018/03/15	2018/03/15	Sigma	SHBJ8485	2022/12/31
Acetonitrile	500mL	2018/03/12	2018/03/19	Fisher	178723	2022/11/30
		2018/03/21 MA				

NOTES:

ONLY CLASS A GLASSWARE IS USED FOR THE PREPARATION OF REAGENTS WHEN APPLICABLE.
RT = Room Temperature

SIGMA-ALDRICH

sigma-aldrich.com

3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Rec'd: 2018102128
By: [illegible]
4x4L
HPLC-M.C.

Product Name:
Methanol – for HPLC, ≥99.9%

CH_3OH

Product Number:	34860
Batch Number:	SHBJ8405
Brand:	SIGALD
CAS Number:	67-56-1
MDL Number:	MFCD00004595
Formula:	CH4O
Formula Weight:	32.04 g/mol
Quality Release Date:	23 JAN 2018
Expiration Date:	DEC 2022

Test	Specification	Result
Appearance (Color)	Colorless	Colorless
Appearance (Form)	Liquid	Liquid
UV Absorbance 400nm	≤ 0.01	< 0.01
UV Absorbance 280nm	≤ 0.01	< 0.01
UV Absorbance 260nm	≤ 0.04	0.01
UV Absorbance 240nm	≤ 0.10	0.03
UV Absorbance 235nm	≤ 0.10	0.04
UV Absorbance 230nm	≤ 0.20	0.06
UV Absorbance 220nm	≤ 0.30	0.14
UV Absorbance 210nm	≤ 0.60	0.31
UV Absorbance 205nm	≤ 1.00	0.62
Fluorescence 254nm	≤ 1.0 ppb	< 0.1 ppb
Fluorescence 365nm	≤ 1.0 ppb	< 0.1 ppb
Purity (GC)	≥ 99.90 %	100.00 %
Color Test	≤ 10 APHA	< 5 APHA
Water (by Karl Fischer)	≤ 0.03 %	< 0.01 %
Residue on Evaporation	≤ 0.0005 %	< 0.0001 %
Expiration Date Period 1800 Days	----------	----------

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

SIGMA-ALDRICH
sigma-aldrich.com
3050 Spruce Street, Saint Louis, MO 63103, USA
Website: www.sigmaaldrich.com
Email USA: techserv@sial.com
Outside USA: eurtechserv@sial.com

Certificate of Analysis

Product Number: 34860
Batch Number: SHBJ8485

Michael Grady, Manager
Quality Control
Sheboygan Falls, WI US

Sigma-Aldrich warrants, that at the time of the quality release or subsequent retest date this product conformed to the information contained in this publication. The current Specification sheet may be available at Sigma-Aldrich.com. For further inquiries, please contact Technical Service. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice or packing slip for additional terms and conditions of sale.

Version Number: 1 Page 2 of 2

Date Received: 2018.02.16 - 4 x 4L - HPLC
Date Received: 2018.02.27 - 4 x 4L - HPLC
Date Received: 2018.03.03 - 4 x 4L - HPLC
Date Received: 2018.03.05 - 4 x 4L - HPLC
Date Received: 2018.03.13 - 4 x 4L - HPLC
Date Received: 2018.03.15 - 4 x 4L - HPLC
Date Received: 2018.03.19 - 4 x 4L - HPLC
Date Received: 2018.03.22 - 4 x 4L - HPLC

ThermoFisher SCIENTIFIC

1 Reagent Lane
Fair Lawn, NJ 07410
201.796.7100 tel
201.796.1329 fax

Certificate of Analysis

Thermo Fisher Scientific's Quality System has been found to conform to Quality Management System Standard ISO9001:2000 standard by SAI Global Certificate Number CERT - 0000016

Rec'd: 2018203105
By: [illegible]
4X4 L
HPLC-ML

This is to certify that units of the lot number below were tested and found to comply with the specifications of the grade listed. Certain data have been supplied by third parties. Thermo Fisher Scientific expressly disclaims all warranties, expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose. Certain products (USP/FCCINF/EP/BP/JP grades) are sold for use in food, drug, or medical device manufacturing. Fisher does not maintain DMF's with the FDA. The following are the actual analytical results obtained:

Catalog Number	A996	Quality Test / Release Date	11/29/2017
Lot Number	178723		
Description	ACETONITRILE, OPTIMA		
Country of Origin	United States	* Suggested Retest Date	Nov-2022
Chemical Origin	Organic - non animal		
BSE/TSE Comment	No animal products are used as starting raw material ingredients, or used in processing, including lubricants, processing aids, or any other material that might migrate to the finished product.		

Result Name	Units	Specifications	Test Value
APPEARANCE		REPORT	CLEAR, COLORLESS LIQUID
ASSAY	%	>= 99.9	99.9
COLOR	APHA	<= 5	<5
DENSITY AT 25 DEGREES C	GM/ML	Inclusive Between 0.775 - 0.780	0.777
EVAPORATION RESIDUE	ppm	<= 0.9	<0.1
FLUORESCENCE BACKGROUND	ppb	<= 1	<1
IDENTIFICATION	PASS/FAIL	= PASS TEST	PASS TEST
LC GRADIENT SUITABILITY	PASS/FAIL	= PASS TEST	PASS TEST
OPTICAL ABS AT 190 NM	ABS. UNITS	<= 1.00	0.53
OPTICAL ABS AT 195 NM	ABS. UNITS	<= 0.15	0.05
OPTICAL ABS AT 200 NM	ABS. UNITS	<= 0.07	<0.01
OPTICAL ABS AT 205 NM	ABS. UNITS	<= 0.05	<0.01
OPTICAL ABS AT 210 NM	ABS. UNITS	<= 0.04	<0.01
OPTICAL ABS AT 220 NM	ABS. UNITS	<= 0.02	<0.002
OPTICAL ABS AT 254 NM	ABS. UNITS	<= 0.005	<0.001
PESTICIDE RESIDUE ANALYSIS	NG/L	<= 10	<10
REFRACTIVE INDEX @ 25 DEG C		Inclusive Between 1.3405 - 1.3425	1.3414
TITRATABLE ACID	mEq/g	<= 0.008	<0.001
TITRATABLE BASE	mEq/g	<= 0.0006	<0.0001
WATER (H2O)	%	<= 0.01	<0.001

Teresa Bailey-Wyche

Quality Assurance Specialist - Certificate of Analysis BPF

Note: The data listed is valid for all package sizes of this lot of this product, expressed as an extension of this catalog number listed above. If there are any questions with this certificate, please call (800) 227-0701.
*Based on suggested storage condition.

Date received: 2018.03.12 4X4 L HPLC

Certificate of Analysis

Date of Release: 10/27/2017

Name: Water
OmniSolv®, For LC/MS

Item No: WX0001...1, WX0001...6, WX0001...901

Lot / Batch No: 57297

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
#Expiration date			31-OCT-2019	
Evaporative residue		1	< 0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.22	mAU
Gradient at 254 nm		0.5	0.09	mAU
LC/MS Purity (p-nitrophenol)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Metals, suitable for LC/MS			Conforms	
UV Abs. at 200 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.005	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400–250 nm		0.005	< 0.001	AU
UV Cut-off		190	<190	nm

Dr. Oliver Schrunk

Quality Control Manager
This document has been produced electronically and is valid without a signature.

EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
290 Concord Road
Billerica, MA 01821
U.S.A.
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Date Received: 2017/12/01 1 x 4L LCMS
Date Received: 2017/12/06 4 x 4L LCMS

Certificate of Analysis

MilliporeSigma

Date of Release: 1/4/2018

Name: Water
OmniSolv®, For LC/MS

Item No: WX0001-1, WX0001-6, WX0001-901

Lot / Batch No: 58004

Country of Origin: USA

Characteristic	Requirement		Results	Units
	Min.	Max.		
#Expiration date			31-JAN-2019	
Evaporation residue		1	<0.5	ppm
Filtered through 0.2 µm filter			Passes test	
Fluorescence as quinine at 254 nm		1	< 1	ppb
Fluorescence as quinine at 365 nm		1	< 1	ppb
Gradient at 210 nm		2	0.33	mAU
Gradient at 254 nm		0.5	0.06	mAU
LC/MS Purity (p-nitrophenol)		50	<50	ppb
LC/MS Purity (reserpine)		50	<50	ppb
Metals, suitable for LC/MS			Conforms	
UV Abs. at 200 nm		0.01	< 0.001	AU
UV Abs. at 210 nm		0.01	< 0.001	AU
UV Abs. at 220 nm		0.01	< 0.001	AU
UV Abs. at 230 nm		0.01	< 0.001	AU
UV Abs. at 240 nm		0.01	< 0.001	AU
UV Abs. at 250 nm		0.005	< 0.001	AU
UV Abs. at 270 nm		0.005	< 0.001	AU
UV Abs. at 400-280 nm		0.005	< 0.001	AU
UV Cut-off		190	<190	nm

Dr. Oliver Schramel

Quality Control Manager
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EMD Millipore Corporation, an affiliate of Merck KGaA, Darmstadt, Germany
290 Concord Road
Billerica, MA 01821
U.S.A
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Received 2018/02/15 TASLIMA AKTAR
4 bottles (4th Batch)

1/1

Date Received: 2018.02.27 - 5 bottles - HPLC
Date Received: 2018.03.13 - 5 bottles - HPLC

PREPARATION OF STANDARDS OF INTERMEDIARY CONCENTRATION

Solution No.: I-5312 Date: 2018/02/26 Expiry Date: 2019/02/26 Discard Date: _____

Replaces Solution No.: I-5299 Replaced by Solution: _____ Chemist: GSZ

Compound(s)/Solution Name: PFC SECOND SOURCE SPIKING SOLUTION A

Number of Parent Solution(s): See attached sheet

Concentration of Parent Solution(s): See attached sheet (mg, ug)/mL

Aliquot of Parent Solution(s): See attached sheet mL / uL

Pippette/Syringe ID J434346 (1mL)

Dilution Solvent: 0.3% NH4OH in MeOH Dilution Volume: 25 mL

Final Concentration(s): 1.0 (mg, (ug)/mL

Solution derivatized (as methyl ester): - As Other (specify): -

Solution Contains Surrogate Compounds: - For mix refer to table on page: -

Solution used for: PFC Volumetric Flask: 25mL CloseA (5040)
(identify by serial number or other unique ID)

Solvent Supplier: See PRLRE 108-386 Lot No.: See PRLRE 108-386

Date Opened: See PRLRE 108-386

Storage Location: FZ11 One time Use, Not Stored: -

Ampule Supplier: Wellington Date Opened: See attached sheet

Mix Name: -

Catalogue No.: - Ampule expiry Date: See attached sheet

Lot No.: See attached sheet

Date Received: See attached sheet

Notes/Comments:

I-5312 (PRLST 142 pg. 182)

Compound Name	ID#	Conc. (ug/mL)	Vol.. of Stock standard (uL)	Final Conc. (ug/mL)	Exp. date
PFBA	S4301-1	50	500	1	2022/05/29
L-PFBS	S4301-2	44.2	565	1	2022/09/21
PFPeA	S4301-3	50	500	1	2022/06/14
PFHxA	S4301-4	50	500	1	2022/09/27
br-PFHxSk	S4301-5	45.5	549	1	2022/01/04
PFHpA	S4301-6	50	500	1	2022/09/27
L-PFHpS	S4301-7	47.6	525	1	2022/09/01
PFOA	S4301-8	50	500	1	2022/09/27
brPFOSK	S4301-9	46.4	540	1	2022/01/12
PFNA	S4301-10	50	500	1	2022/07/20
PFDA	S4301-11	50	500	1	2022/05/29
L-PFDS	S4301-12	48.2	518	1	2022/11/08
PFUdA	S4301-13	50	500	1	2022/09/21
PFDoA	S4301-14	50	500	1	2022/09/21
PFTrDA	S4301-15	50	500	1	2022/05/02
PFTeDA	S4301-16	50	500	1	2022/09/21
PFOSA (FOSA-I)	S4301-17	50	500	1	2022/09/01
N-MeFOSA-M	S4301-18	50	500	1	2022/07/05
N-EtFOSA-M	S4301-19	50	500	1	2022/07/05
N-MeFOSE-M	S4301-20	50	500	1	2022/04/24
N-EtFOSE-M	S4301-21	50	500	1	2022/04/24
N-MeFOSAA	S4301-22	50	500	1	2022/01/11
N-EtFOSAA	S4301-23	50	500	1	2022/01/11
6:2FTS	S4301-24	47.4	528	1	2022/04/20
8:2FTS	S4301-25	47.9	522	1	2021/12/12

No writing on bottom page.

GSZ, 2018/02/26

PRLST 133 PG 170

PREPARATION OF CONCENTRATED STOCK STANDARDS

Solution No.: S-4301 Date: 2018/02/26 Expiry Date: See Below Discard Date: _____

Replaces Solution: _____ Replaced by Solution: _____ Chemist: GSZ

S-4301 (PRLST 133 pg. 170)

Solution ID#	Compound Name	Lot#	Received date	Exp. date	Replaces Solution	Replaced by Solution	Conc. (ug/mL)	Solvent	Storage
S4301-1	PFBA	PFBA0517	2017/12/27	2022/05/29	S4261-1		50	MeOH	FZ-11
S4301-2	L-PFBS	LPFBS0917	2017/12/27	2022/09/21	S4261-2		44.2	MeOH	FZ-11
S4301-3	PFPeA	PFPeA0617	2017/12/27	2022/06/14	S4261-3		50	MeOH	FZ-11
S4301-4	PFHxA	PFHxA0917	2017/12/27	2022/09/27	S4261-4		50	MeOH	FZ-11
S4301-5	br-PFHxSk	brPFHxSK0117	2017/12/27	2022/01/04	S4261-5		45.5	MeOH	FZ-11
S4301-6	PFHpA	PFHpA0917	2017/12/27	2022/09/27	S4261-6		50	MeOH	FZ-11
S4301-7	L-PFHpS	LPFHpS0817	2017/12/27	2022/09/01	S4261-7		47.6	MeOH	FZ-11
S4301-8	PFOA GSZ 2018/03/08	PFOA0~~217~~ 917	2017/12/27	2022/09/27	S4261-8		50	MeOH	FZ-11
S4301-9	brPFOSK	brPFOSK0117	2017/12/27	2022/01/12	S4261-9		46.4	MeOH	FZ-11
S4301-10	PFNA	PFNA0717	2017/12/27	2022/07/20	S4261-10		50	MeOH	FZ-11
S4301-11	PFDA	PFDA0517	2017/12/27	2022/05/29	S4261-11		50	MeOH	FZ-11
S4301-12	L-PFDS	LPFDS1117	2017/12/27	2022/11/08	S4261-12		48.2	MeOH	FZ-11
S4301-13	PFUdA	PFUdA0917	2017/12/27	2022/09/21	S4261-13		50	MeOH	FZ-11
S4301-14	PFDoA GSZ 2018/03/08	PFDoA0~~917~~ 517	2017/12/27	2022/~~09/21~~ 05/29	S4261-14	GSZ 2018/03/08	50	MeOH	FZ-11
S4301-15	PFTrDA	PFTrDA0517	2017/12/27	2022/05/02	S4261-15		50	MeOH	FZ-11
S4301-16	PFTeDA	PFTeDA0917	2017/12/27	2022/09/21	S4261-16		50	MeOH	FZ-11
S4301-17	PFOSA (FOSA-I)	FOSA08171	2017/12/27	2022/09/01	S4261-17		50	IPA	FD-59
S4301-18	N-MeFOSA-M	NMeFOSA0717M	2017/12/27	2022/07/05	S4261-18		50	MeOH	FZ-11
S4301-19	N-EtFOSA-M	NEtFOSA0717M	2017/12/27	2022/07/05	S4261-19		50	MeOH	FZ-11
S4301-20	N-MeFOSE-M	NMeFOSE0417M	2017/12/27	2022/04/24	S4261-20		50	MeOH	FZ-11
S4301-21	N-EtFOSE-M	NEtFOSE0417M	2017/12/27	2022/04/24	S4261-21		50	MeOH	FZ-11
S4301-22	N-MeFOSAA	NMeFOSAA0117	2017/12/27	2022/01/11	S4261-22		50	MeOH	FD-59
S4301-23	N-EtFOSAA	NEtFOSAA0117	2017/12/27	2022/01/11	S4261-23		50	MeOH	FD-59
S4301-24	6:2FTS	62FTS0417	2017/12/27	2022/04/20	S4261-24		47.4	MeOH	FD-59
S4301-25	8:2FTS	82FTS1216	2017/12/27	2021/12/12	S4261-25		47.9	MeOH	FD-59
Date Opened (All compounds): 2018/02/26			Supplier (All compounds) : Wellington				Chemist: GSZ		

No writing on bottom page.

GSZ 2018/02/26

Solvent Used: _____

Solvent Supplier: _____ Lot No(s).: _____

Date Opened: _____

Storage Location / Conditions: _____ (GSZ) 2018/02/26

Notes/Comments _____

652 2017/12/27
2 ampules

WELLINGTON LABORATORIES

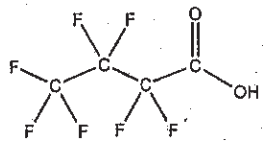
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid

LOT NUMBER: PFBA0517

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

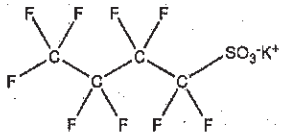
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

NDB 2017/12/27
2 ampules

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	L-PFBS	**LOT NUMBER:**	LPFBS0917
COMPOUND:	Potassium perfluoro-1-butanesulfonate		
STRUCTURE:		**CAS #:**	29420-49-3



MOLECULAR FORMULA:	$C_4F_9SO_3K$	**MOLECULAR WEIGHT:**	338.19
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt) 44.2 ± 2.2 µg/ml (PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/21/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/21/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/22/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

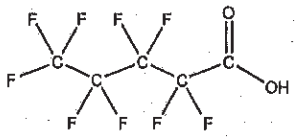
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

NB 2017/12/27
2 ampoules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFPeA	**LOT NUMBER:**	PFPeA0617
COMPOUND:	Perfluoro-n-pentanoic acid		
STRUCTURE:		**CAS #:**	2706-90-3



MOLECULAR FORMULA:	$C_5HF_9O_2$	**MOLECULAR WEIGHT:**	264.05
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	06/14/2017		
EXPIRY DATE: (mm/dd/yyyy)	06/14/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_6H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 06/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

NPB 2017/12/27

2 Ampules.

WELLINGTON LABORATORIES

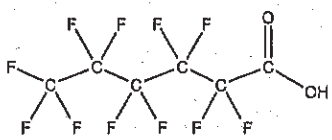
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA0917

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 1.0% of branched isomers.

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Certified By: _____ **Date:** 11/01/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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NDB 2017/12/27
2 ampules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0117
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/03/2017
LAST TESTED: (mm/dd/yyyy)	01/04/2017
EXPIRY DATE: (mm/dd/yyyy)	01/04/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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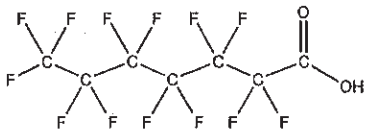
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid
LOT NUMBER: PFHpA0917

STRUCTURE:
CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
MOLECULAR WEIGHT: 364.06
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 09/29/2017 (mm/dd/yyyy)
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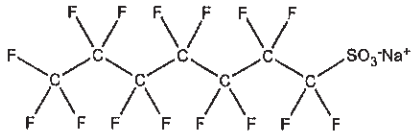
ND 2017/12/27
2 ampules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS0817

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/01/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

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Certified By: _____ **Date:** 09/07/2017 (mm/dd/yyyy)
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2 Ampules

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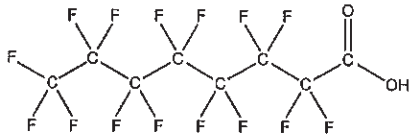
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA0917

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/28/2017
(mm/dd/yyyy)
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NDB 2017/12/27

2 ampules

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0117
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/09/2017
LAST TESTED: (mm/dd/yyyy)	01/12/2017
EXPIRY DATE: (mm/dd/yyyy)	01/12/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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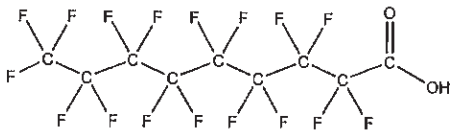
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA0717

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

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Certified By: B.G. Chittim, General Manager **Date:** 07/24/2017 (mm/dd/yyyy)

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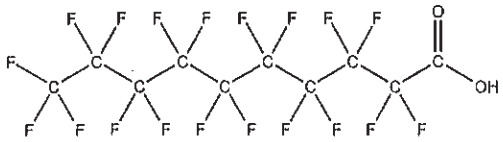
NDB 2017/12/27

2 ampules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	PFDA	**LOT NUMBER:**	PFDA0517
COMPOUND:	Perfluoro-n-decanoic acid		
STRUCTURE:		**CAS #:**	335-76-2



MOLECULAR FORMULA:	$C_{10}HF_{19}O_2$	**MOLECULAR WEIGHT:**	514.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/29/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/29/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)

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2 ampules.

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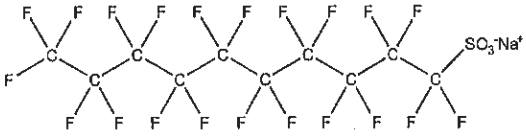
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS1117
COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:
CAS #: 2806-15-7



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/08/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

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Certified By: _____ **Date:** 11/16/2017 (mm/dd/yyyy)
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NDB 2017/12/29

2 Ampules.

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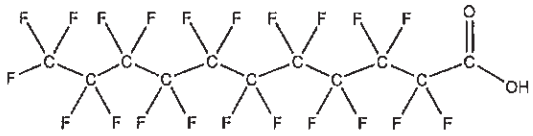
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFUdA	**LOT NUMBER:**	PFUdA0917
COMPOUND:	Perfluoro-n-undecanoic acid		
STRUCTURE:		**CAS #:**	2058-94-8



MOLECULAR FORMULA:	$C_{11}HF_{21}O_2$	**MOLECULAR WEIGHT:**	564.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/21/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/21/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/22/2017 (mm/dd/yyyy)

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2 Ampules.

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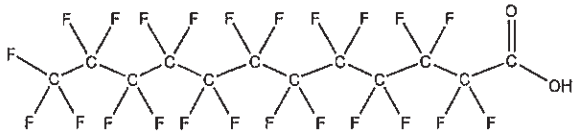
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDoA	**LOT NUMBER:**	PFDoA0517
COMPOUND:	Perfluoro-n-dodecanoic acid		
STRUCTURE:		**CAS #:**	307-55-1



MOLECULAR FORMULA:	$C_{12}HF_{23}O_2$	**MOLECULAR WEIGHT:**	614.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/29/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/29/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)

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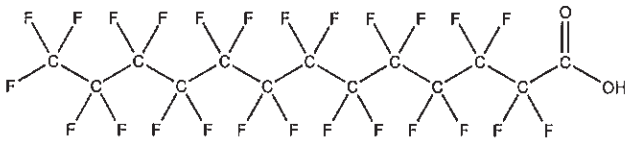
NPB 2017/12/27

2 Ampules

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFTrDA	**LOT NUMBER:**	PFTrDA0517
COMPOUND:	Perfluoro-n-tridecanoic acid		
STRUCTURE:		**CAS #:**	72629-94-8



MOLECULAR FORMULA:	$C_{13}HF_{25}O_2$	**MOLECULAR WEIGHT:**	664.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/02/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/02/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

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Certified By: _____ **Date:** 05/04/2017 (mm/dd/yyyy)

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2 Ampules.

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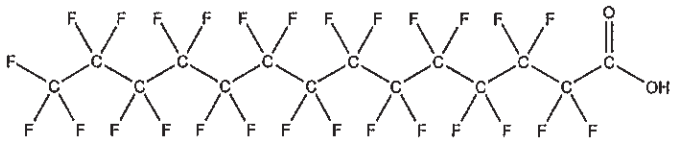
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0917
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/21/2017
EXPIRY DATE: (mm/dd/yyyy) 09/21/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

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Certified By: _____ **Date:** 09/21/2017 (mm/dd/yyyy)
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2 ampules.

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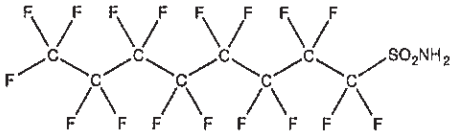
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	FOSA-I	**LOT NUMBER:**	FOSA0817I
COMPOUND:	Perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/01/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/14/2017 (mm/dd/yyyy)

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2 ampules.

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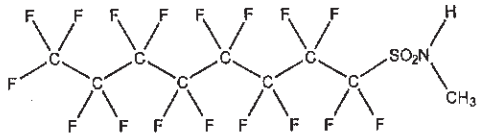
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide
LOT NUMBER: NMeFOSA0717M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/10/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

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

ND 2017/12/27

2 ampules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

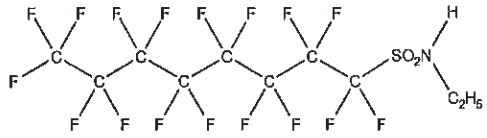
PRODUCT CODE: N-EtFOSA-M

COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0717M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: $C_{10}H_6F_{17}NO_2S$

CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 07/05/2017

EXPIRY DATE: (mm/dd/yyyy) 07/05/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager

Date: 07/18/2017 (mm/dd/yyyy)

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NPB 2017/12/29

2 ampules.

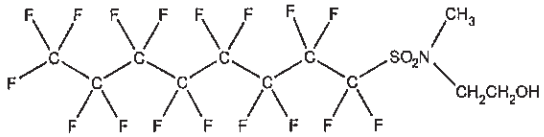
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0417M

COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

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



MOLECULAR FORMULA:	$C_{11}H_8F_{17}NO_3S$	**MOLECULAR WEIGHT:**	557.22
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/24/2017 (HRGC/LRMS) 04/21/2017 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	04/24/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/05/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

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

ND 2017/12/27
2 ampules.

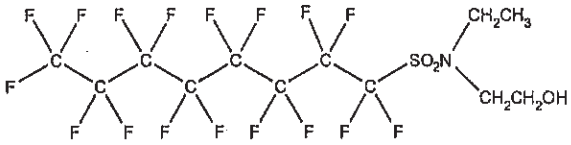
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0417M

COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 1691-99-2



MOLECULAR FORMULA:	$C_{12}H_{10}F_{17}NO_3S$	**MOLECULAR WEIGHT:**	571.25
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/24/2017 (HRGC/LRMS) 04/21/2017 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	04/24/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/26/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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NPB 2017/12/27
examples

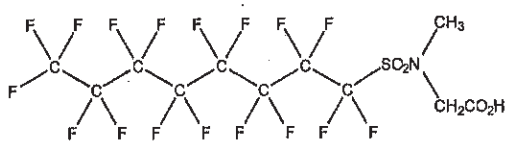
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA
LOT NUMBER: NMeFOSAA0117
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #: 2355-31-9



MOLECULAR FORMULA: $C_{11}H_5F_{17}NO_4S$
MOLECULAR WEIGHT: 571.21
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/11/2017
EXPIRY DATE: (mm/dd/yyyy) 01/11/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/12/2017 (mm/dd/yyyy)

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NPB 2017/12/24

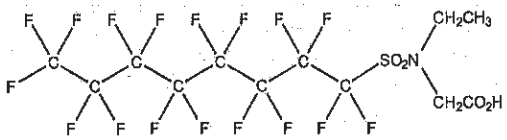
2-Ampules

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSAA
LOT NUMBER: NEtFOSAA0117
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:
CAS #: 2991-50-6



MOLECULAR FORMULA: $C_{12}H_5F_{17}NO_4S$
MOLECULAR WEIGHT: 585.23
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/11/2017
EXPIRY DATE: (mm/dd/yyyy) 01/11/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/12/2017 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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NDB 2017/12/27

2 ampules

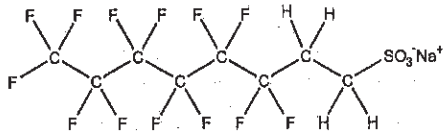
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0417

COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_8H_4F_{13}SO_3Na$ **MOLECULAR WEIGHT:** 450.15

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol

47.4 ± 2.4 µg/ml (6:2FTS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 04/20/2017

EXPIRY DATE: (mm/dd/yyyy) 04/20/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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NDB 2017/12/27

2 ampules

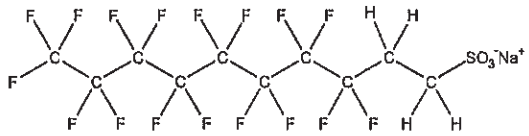
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1216

COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 550.16

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (8:2FTS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 12/12/2016

EXPIRY DATE: (mm/dd/yyyy) 12/12/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/21/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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PREPARATION OF STANDARDS OF INTERMEDIARY CONCENTRATION

Solution No.: I-5315 Date: 2018/02/27 Expiry Date: 2019/02/27 Discard Date: —
Replaces Solution No.: I-5297 Replaced by Solution: _____ Chemist: LV
Compound(s)/Solution Name: Comb. PFC working sol. A
Number of Parent Solution(s): See attached sheet
Concentration of Parent Solution(s): See attached sheet (mg, ug)/mL
Aliquot of Parent Solution(s): See attached sheet mL / uL
Pippette/Syringe ID J43436
Dilution Solvent: 0.3% NH4OH in MeOH Dilution Volume: 25 mL
Final Concentration(s): 1.0 (mg, ug)/mL
Solution derivatized (as methyl ester): — As Other (specify): —
Solution Contains Surrogate Compounds: — For mix refer to table on page: —
Solution used for: PFC Volumetric Flask: 25 mL Class A 5640
(identify by serial number or other unique ID)
Solvent Supplier: See PRLRE108-387 Lot No.: See PRLRE108-387
Date Opened: See PRLRE108-387
Storage Location: F2-11 One time Use, Not Stored: —
Ampule Supplier: Wellington Date Opened: See attached sheet
Mix Name: —
Catalogue No.: — Ampule expiry Date: See attached sheet
Lot No.: See attached sheet
Date Received: See attached sheet

I-5315 (PRLST 142 pg. 184)

Compound Name	ID#	Conc. (ug/mL)	Vol.. of Stock standard (uL)	Final Conc. (ug/mL)	Exp. date
PFBA	S4299-1	50	500	1	2022/05/29
L-PFBS	S4299-2	44.2	565	1	2022/09/21
PFPeA	S4299-3	50	500	1	2022/06/14
PFHxA	S4299-4	50	500	1	2022/09/27
br-PFHxSk	S4299-5	45.5	549	1	2022/01/04
PFHpA	S4299-6	50	500	1	2022/09/27
L-PFHpS	S4299-7	47.6	525	1	2022/09/01
PFOA	S4299-8	50	500	1	2022/09/27
brPFOSK	S4299-9	46.4	540	1	2022/01/12
PFNA	S4299-10	50	500	1	2022/07/20
PFDA	S4299-11	50	500	1	2022/05/29
L-PFDS	S4299-12	48.2	518	1	2022/11/08
PFUdA	S4299-13	50	500	1	2022/09/21
PFDoA	S4299-14	50	500	1	2022/09/21
PFTrDA	S4299-15	50	500	1	2022/05/02
PFTeDA	S4299-16	50	500	1	2022/09/21
PFOSA (FOSA-I)	S4299-17	50	500	1	2022/09/01
N-MeFOSA-M	S4299-18	50	500	1	2022/07/05
N-EtFOSA-M	S4299-19	50	500	1	2022/07/05
N-MeFOSE-M	S4299-20	50	500	1	2022/04/24
N-EtFOSE-M	S4299-21	50	500	1	2022/04/24
N-MeFOSAA	S4299-22	50	500	1	2022/01/11
N-EtFOSAA	S4299-23	50	500	1	2022/01/11
6:2FTS	S4299-24	47.4	528	1	2022/04/20
8:2FTS	S4299-25	47.9	522	1	2021/12/12

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LV, 2018/02/27

PRLST 133 PG 168

PREPARATION OF CONCENTRATED STOCK STANDARDS

Solution No.: S-4299 Date: 2018/02/26 Expiry Date: See Below Discard Date: _____

Replaces Solution: _____ Replaced by Solution: _____ Chemist: La

Purity

Compound:
S-4299
(PRLST 133 p. 168

Solution ID#	Compound Name	Lot#	Received date	Exp. date	Replaces Solution	Replaced by Solution	Conc. (ug/mL)	Solvent	Storage
S4299-1	PFBA	PFBA0517	2017/12/27	2022/05/29	S4269-1		50	MeOH	FZ-11
S4299-2	L-PFBS	LPFBS0917	2017/12/27	2022/09/21	S4269-2		44.2	MeOH	FZ-11
S4299-3	PFPeA	PFPeA0617	2017/12/27	2022/06/14	S4269-3		50	MeOH	FZ-11
S4299-4	PFHxA	PFHxA0917	2017/12/27	2022/09/27	S4269-4		50	MeOH	FZ-11
S4299-5	br-PFHxSk	brPFHxSK0117	2017/12/27	2022/01/04	S4269-5		45.5	MeOH	FZ-11
S4299-6	PFHpA	PFHpA0917	2017/12/27	2022/09/27	S4269-6		50	MeOH	FZ-11
S4299-7	L-PFHpS	LPFHpS0817	2017/12/27	2022/09/01	S4269-7		47.6	MeOH	FZ-11
S4299-8	PFOA 2018/03/08 La	PFOA~~0217~~ 0917	2017/12/27	2022/09/27	S4269-8		50	MeOH	FZ-11
S4299-9	brPFOSK	brPFOSK0117	2017/12/27	2022/01/12	S4269-9		46.4	MeOH	FZ-11
S4299-10	PFNA	PFNA0717	2017/12/27	2022/07/20	S4269-10		50	MeOH	FZ-11
S4299-11	PFDA	PFDA0517	2017/12/27	2022/05/29	S4269-11		50	MeOH	FZ-11
S4299-12	L-PFDS	LPFDS1117	2017/12/27	2022/11/08	S4269-12		48.2	MeOH	FZ-11
S4299-13	PFUdA	PFUdA0917	2017/12/27	2022/09/21	S4269-13		50	MeOH	FZ-11
S4299-14	PFDoA La 2018/03/08	PFDoA~~0917~~ 0517	2017/12/27	2022/~~09/21~~ 05/29	S4269-14	La 2018/03/08	50	MeOH	FZ-11
S4299-15	PFTrDA	PFTrDA0517	2017/12/27	2022/05/02	S4269-15		50	MeOH	FZ-11
S4299-16	PFTeDA	PFTeDA0917	2017/12/27	2022/09/21	S4269-16		50	MeOH	FZ-11
S4299-17	PFOSA (FOSA-I)	FOSA08171	2017/12/27	2022/09/01	S4269-17		50	IPA	FD-59
S4299-18	N-MeFOSA-M	NMeFOSA0717M	2017/12/27	2022/07/05	S4269-18		50	MeOH	FZ-11
S4299-19	N-EtFOSA-M	NEtFOSA0717M	2017/12/27	2022/07/05	S4269-19		50	MeOH	FZ-11
S4299-20	N-MeFOSE-M	NMeFOSE0417M	2017/12/27	2022/04/24	S4269-20		50	MeOH	FZ-11
S4299-21	N-EtFOSE-M	NEtFOSE0417M	2017/12/27	2022/04/24	S4269-21		50	MeOH	FZ-11
S4299-22	N-MeFOSAA	NMeFOSAA0117	2017/12/27	2022/01/11	S4269-22		50	MeOH	FD-59
S4299-23	N-EtFOSAA	NEtFOSAA0117	2017/12/27	2022/01/11	S4269-23		50	MeOH	FD-59
S4299-24	6:2FTS	62FTS0417	2017/12/27	2022/04/20	S4269-24		47.4	MeOH	FD-59
S4299-25	8:2FTS	82FTS1216	2017/12/27	2021/12/12	S4269-25		47.9	MeOH	FD-59
Date Opened (All compounds):			Supplier (All compounds) : Wellington				Chemist: La		

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La, 2018/02/26

Balance Used: _____
(specify model and serial no.)

Solvent Used: _____

Solvent Supplier: _____ Lot No(s).: _____

Date Opened: _____

Storage Location / Conditions: _____

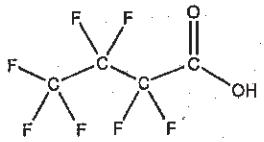
Notes/Comments _____

652 2017/12/27
2 ampules

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFBA	**LOT NUMBER:**	PFBA0517
COMPOUND:	Perfluoro-n-butanoic acid		
STRUCTURE:		**CAS #:**	375-22-4



MOLECULAR FORMULA:	$C_4HF_7O_2$	**MOLECULAR WEIGHT:**	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/29/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/29/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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NDB 2017/12/29
2 ampules

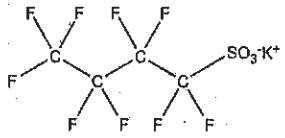
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFBS
COMPOUND: Potassium perfluoro-1-butanesulfonate
LOT NUMBER: LPFBS0917

STRUCTURE:

CAS #: 29420-49-3



MOLECULAR FORMULA:	$C_4F_9SO_3K$	**MOLECULAR WEIGHT:**	338.19
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt) 44.2 ± 2.2 µg/ml (PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/21/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/21/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/22/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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NB 2021/12/27
2 ampules

WELLINGTON LABORATORIES

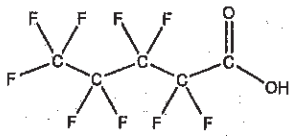
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid

LOT NUMBER: PFPeA0617

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 264.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/14/2017
EXPIRY DATE: (mm/dd/yyyy) 06/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_6H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

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Certified By: B.G. Chittim, General Manager **Date:** 06/16/2017 (mm/dd/yyyy)

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NPB 2017/12/27

2 Ampules.

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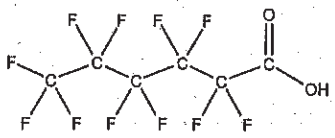
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA

COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA0917

STRUCTURE:



CAS #: 307-24-4

MOLECULAR FORMULA: $C_6HF_{11}O_2$

CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 314.05

SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 09/27/2017

EXPIRY DATE: (mm/dd/yyyy) 09/27/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 1.0% of branched isomers.

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Certified By: B.G. Chittim, General Manager

Date: 11/01/2017 (mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0117
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/03/2017
LAST TESTED: (mm/dd/yyyy)	01/04/2017
EXPIRY DATE: (mm/dd/yyyy)	01/04/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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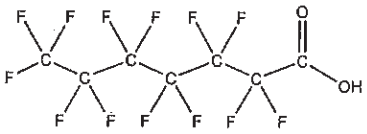
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0917

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 09/29/2017 (mm/dd/yyyy)
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2 ampules.

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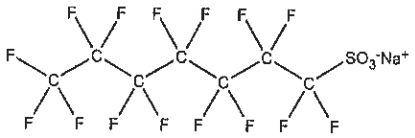
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate

LOT NUMBER: LPFHpS0817

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_7F_{15}SO_3Na$
MOLECULAR WEIGHT: 472.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.6 ± 2.4 µg/ml (PFHpS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/01/2017
EXPIRY DATE: (mm/dd/yyyy) 09/01/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

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Certified By: _____ **Date:** 09/07/2017 (mm/dd/yyyy)
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2291 of 3513

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2 Ampules

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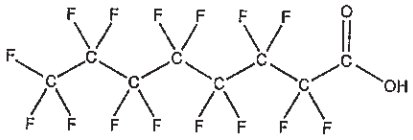
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFOA	**LOT NUMBER:**	PFOA0917
COMPOUND:	Perfluoro-n-octanoic acid		
STRUCTURE:		**CAS #:**	335-67-1



MOLECULAR FORMULA:	$C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	414.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/27/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/27/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 09/28/2017 (mm/dd/yyyy)

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NDB 2017/12/27

2 ampules

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0117
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/09/2017
LAST TESTED: (mm/dd/yyyy)	01/12/2017
EXPIRY DATE: (mm/dd/yyyy)	01/12/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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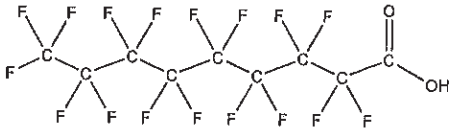
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA0717

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

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Certified By: _____ **Date:** 07/24/2017 (mm/dd/yyyy)
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NP13 2017/12/27

2 ampules.

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

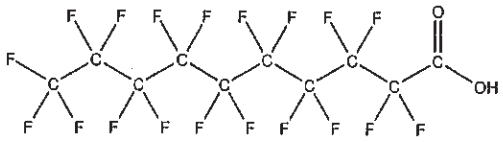
PRODUCT CODE: PFDA

COMPOUND: Perfluoro-n-decanoic acid

LOT NUMBER: PFDA0517

STRUCTURE:

CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$

CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 514.08

SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 05/29/2017

EXPIRY DATE: (mm/dd/yyyy) 05/29/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim, General Manager

Date: 05/30/2017 (mm/dd/yyyy)

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2 ampules.

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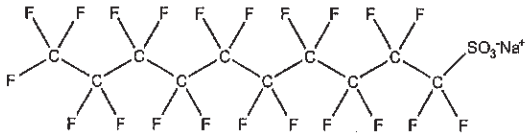
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFDS
COMPOUND: Sodium perfluoro-1-decanesulfonate
LOT NUMBER: LPFDS1117

STRUCTURE:

CAS #: 2806-15-7



MOLECULAR FORMULA:	$C_{10}F_{21}SO_3Na$	**MOLECULAR WEIGHT:**	622.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/08/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

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Certified By: _____ **Date:** 11/16/2017 (mm/dd/yyyy)
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2 Ampules.

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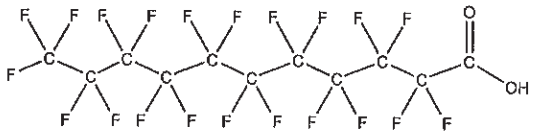
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid

LOT NUMBER: PFUdA0917

STRUCTURE:

CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 564.09
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/21/2017
EXPIRY DATE: (mm/dd/yyyy) 09/21/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/22/2017 (mm/dd/yyyy)
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2 Ampules.

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

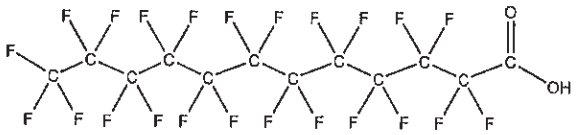
PRODUCT CODE: PFDoA

COMPOUND: Perfluoro-n-dodecanoic acid

LOT NUMBER: PFDoA0517

STRUCTURE:

CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$

CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 614.10

SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 05/29/2017

EXPIRY DATE: (mm/dd/yyyy) 05/29/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim, General Manager

Date: 05/30/2017 (mm/dd/yyyy)

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2 Ampules

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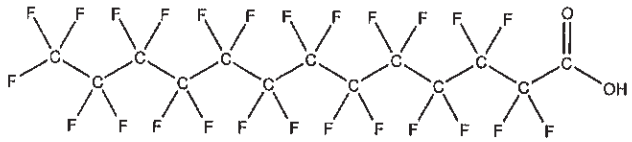
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid

LOT NUMBER: PFTrDA0517

STRUCTURE:

CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 664.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager

Date: 05/04/2017 (mm/dd/yyyy)

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2 Ampules.

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

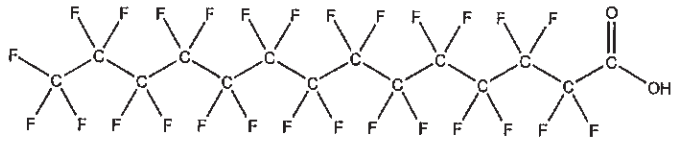
PRODUCT CODE: PFTeDA

COMPOUND: Perfluoro-n-tetradecanoic acid

LOT NUMBER: PFTeDA0917

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$

CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 714.11

SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 09/21/2017

EXPIRY DATE: (mm/dd/yyyy) 09/21/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

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Certified By: B.G. Chittim, General Manager

Date: 09/21/2017 (mm/dd/yyyy)

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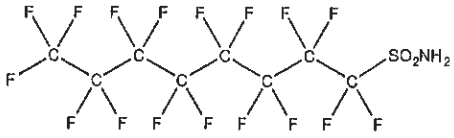
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	FOSA-I	**LOT NUMBER:**	FOSA0817I
COMPOUND:	Perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/01/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/14/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

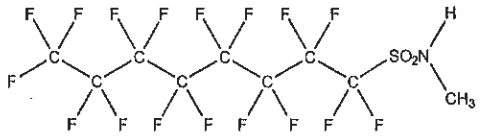
NPB 2017/12/27

2 ampules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	N-MeFOSA-M	**LOT NUMBER:**	NMeFOSA0717M
COMPOUND:	N-methylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/10/2017 (mm/dd/yyyy)

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ND 2017/12/27

2 ampules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

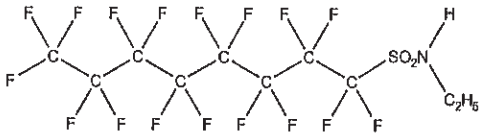
PRODUCT CODE: N-EtFOSA-M

COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0717M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: $C_{10}H_6F_{17}NO_2S$

CONCENTRATION: 50 ± 2.5 µg/ml

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 07/05/2017

EXPIRY DATE: (mm/dd/yyyy) 07/05/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim, General Manager

Date: 07/18/2017 (mm/dd/yyyy)

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NPB 2017/12/29

2 ampules.

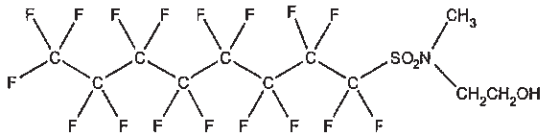
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSE-M **LOT NUMBER:** NMeFOSE0417M

COMPOUND: 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

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



MOLECULAR FORMULA:	$C_{11}H_8F_{17}NO_3S$	**MOLECULAR WEIGHT:**	557.22
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/24/2017 (HRGC/LRMS) 04/21/2017 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	04/24/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: _____ **Date:** 05/05/2017 (mm/dd/yyyy)

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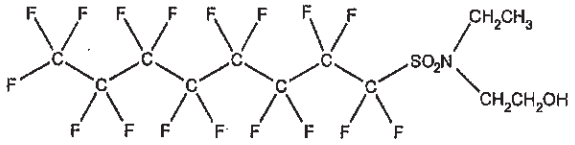
ND 2017/12/27
2 ampules.

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSE-M **LOT NUMBER:** NEtFOSE0417M
COMPOUND: 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

STRUCTURE: **CAS #:** 1691-99-2



MOLECULAR FORMULA:	$C_{12}H_{10}F_{17}NO_3S$	**MOLECULAR WEIGHT:**	571.25
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	04/24/2017 (HRGC/LRMS) 04/21/2017 (LC/MS)		
EXPIRY DATE: (mm/dd/yyyy)	04/24/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/26/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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NPB 2017/12/27

2 ampules

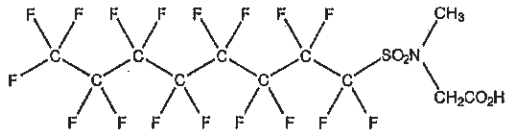
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0117

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA:	$C_{11}H_6F_{17}NO_4S$	**MOLECULAR WEIGHT:**	571.21
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	01/11/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/12/2017 (mm/dd/yyyy)

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NDB 2017/12/24

2-Ampoules

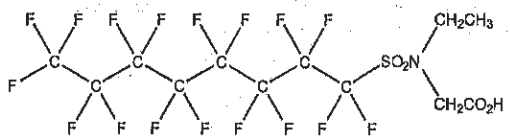
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0117

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/11/2017

EXPIRY DATE: (mm/dd/yyyy) 01/11/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/12/2017 (mm/dd/yyyy)

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NDB 2017/12/27

2 ampules

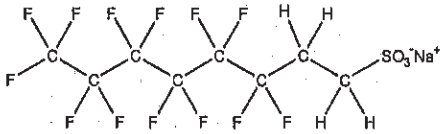
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0417

COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_8H_4F_{13}SO_3Na$ **MOLECULAR WEIGHT:** 450.15

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.4 ± 2.4 µg/ml (6:2FTS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 04/20/2017

EXPIRY DATE: (mm/dd/yyyy) 04/20/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: _____ **Date:** 04/24/2017 (mm/dd/yyyy)
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NDB 2017/12/27

2 ampules

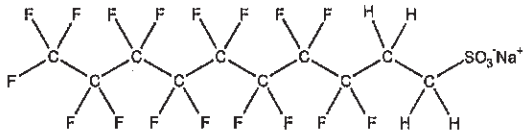
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1216

COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{10}H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	550.16
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (8:2FTS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	12/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	12/12/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/21/2016 (mm/dd/yyyy)

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144 PG 117

PREPARATION OF SURROGATE / INTERNAL STANDARD SPIKING SOLUTION

Solution No.: SI-6805 Prep'n Date: 2018/02/22 Expiry Date: 2021/09/30 Discard Date: _____
Replaces Solution No.: SI-6801 Replaced by Solution: SI-6819 Chemist: GSZ
Sol'n. Name: PFC INTERNAL STD SPIKING SOLUTION
Solution Used As: Internal Std: ✓ Surrogate Spike: _____
Spike Volume: — uL or mL (for I.S. uL per mL) For Instrument/Analysis: LCMS/MS
Solvent(s): 0.3% NH4OH in MeOH Supplier(s): See PRLRE 108-376 Lot No(s).: See PRLRE 108-376
Date Solvent Opened: See PRLRE 108-376
Volumetric Flask Used: 200mL Class A (5640) Syringe ID: Hamilton M4101IF / J434346
Storage Location and Conditions: FZ11
Ampule supplier; Mix Name; Catalogue No.; Lot No.; Date Rec'd.; Date Opened, Ampule Expiry Date: See attached sheet.

SI-6805 (PRLST 144 p. 117)

Compound Name	ID#	Conc. (ug/mL)	Vol.. of Stock standard (uL)	Dilution volume (mL)	Final Conc. (ng/mL)	Exp. date
MPFBA	S4290-1	50	200	200	50	2022/04/12
M5PFPeA	S4290-2	50	200	200	50	2022/07/20
MPFHxA	S4290-3	50	200	200	50	2022/10/27
MPFHxS	S4290-4	50	200	200	50	2022/02/17
M4PFHpA	S4290-5	50	200	200	50	2022/05/03
MPFOA	S4290-6	50	200	200	50	2022/10/17
MPFOS	S4290-7	50	200	200	50	2022/10/17
MPFNA	S4290-8	50	200	200	50	2021/09/30
MPFDA	S4290-9	50	200	200	50	2022/07/13
MPFUdA	S4290-10	50	200	200	50	2021/11/22
MPFDoA	S4290-11	50	200	200	50	2022/05/23
M2PFTeDA	S4290-12	50	200	200	50	2022/11/30
MPFOSA	S4290-13	50	200	200	50	2022/10/11
D3-N-MeFOSAA	S4290-14	50	200	200	50	2022/05/19
D5-N-EtFOSAA	S4290-15	50	200	200	50	2021/11/22
D-N-MeFOSA-M	S4290-16	50	500	200	125	2022/04/20
D-N-EtFOSA-M	S4290-17	50	500	200	125	2022/10/11
D7-N-MeFOSE-M	S4290-18	50	500	200	125	2022/10/13
D9-N-EtFOSE-M	S4290-19	50	500	200	125	2022/10/13
M2-6:2FTS	S4290-20	50	500	200	125	2022/02/17
M2-8:2FTS	S4290-21	50	500	200	125	2022/07/05

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GSZ, 2018/02/22

Notes:

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PRLST 133 PG 163

PREPARATION OF CONCENTRATED STOCK STANDARDS

Solution No.: S-4290 Date: 2018/02/12 Expiry Date: See Below Discard Date: _____

Replaces Solution: _____ Replaced by Solution: _____ Chemist: GSZ

S-4290 (PRLST 133 pg. 163)

Solution ID#	Compound Name	Lot#	Received date	Exp. date	Replaces Solution	Replaced by Solution	Conc (ug/mL)	Solvent	Storage
S4290-1	MPFBA	MPFBA0417	2017/12/06	2022/04/12	S4250-1		50	MeOH	FZ-11
S4290-2	M5PFPeA	M5PFPeA0717	2017/12/06	2022/07/20	S4250-2		50	MeOH	FZ-11
S4290-3	MPFHxA	MPFHxA1017	2017/12/06	2022/10/27	S4255-1		50	MeOH	FZ11
S4290-4	MPFHxS	MPFHxS0217	2017/12/06	2022/02/17	S4250-3		50	MeOH	FZ-11
S4290-5	M4PFHpA	M4PFHpA0517	2017/12/06	2022/05/03	S4250-4		50	MeOH	FZ-11
S4290-6	MPFOA	MPFOA1017	2017/12/06	2022/10/17	S4250-5		50	MeOH	FZ-11
S4290-7	MPFOS	MPFOS1017	2017/12/06	2022/10/17	S4250-6		50	MeOH	FZ-11
S4290-8	MPFNA	MPFNA0916	2017/12/06	2021/09/30	S4250-7		50	MeOH	FZ-11
S4290-9	MPFDA	MPFDA0717	2017/12/06	2022/07/13	S4250-8		50	MeOH	FZ-11
S4290-10	MPFUdA	MPFUdA1116	2017/12/06	2021/11/22	S4242-1		50	MeOH	FZ11
S4290-11	MPFDoA	MPFDoA0517	2017/12/06	2022/05/23	S4250-9		50	MeOH	FZ-11
S4290-12	M2PFTeDA	M2PFTeDA1117	2017/12/06	2022/11/30	S4250-10		50	MeOH	FZ-11
S4290-13	MPFOSA	M8FOSA1017I	2017/12/06	2022/10/11	S4250-11		50	IPA	FD-59
S4290-14	D3-N-MeFOSAA	d3NMeFOSAA0517	2017/10/25	2022/05/19	S4260-1		50	MeOH	FD59
S4290-15	D5-N-EtFOSAA	d5NEtFOSAA1116 *	2017/10/25	2021/11/22	S4260-2		50	MeOH	FD59
S4290-16	D-N-MeFOSA-M	dNMeFOSA0417M	2017/12/06	2022/04/20	S4255-2		50	MeOH	FZ11
S4290-17	D-N-EtFOSA-M	dNEtFOSA1017M	2017/12/06	2022/10/11	S4255-3		50	MeOH	FZ11
S4290-18	D7-N-MeFOSE-M	d7NMeFOSE1017M	2017/12/06	2022/10/13	S4255-4		50	MeOH	FZ11
S4290-19	D9-N-EtFOSE-M	d9NEtFOSE1017M	2017/12/06	2022/10/13	S4255-5		50	MeOH	FZ11
S4290-20	M2-6:2FTS	M262FTS0217	2017/12/06	2022/02/17	S4255-6		50	MeOH	FD59
S4290-21	M2-8:2FTS	M282FTS0717	2017/12/06	2022/07/05	S4255-7		50	MeOH	FD59
Date opened (All compounds): 2018/02/12			Supplier: Wellington			Chemist: GSZ			

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* d5NEtFOSAA1116 GSZ 2018/02/16

GSZ, 2018/02/12

Solution No.: _____ Date: _____ Expiry Date: _____ Discard Date: _____

Replaces Solution: _____ Replaced by Solution: _____ Chemist: _____

Compound: _____ Purity: _____

Date Received: _____ Expiry Date: _____ Lot No.: _____

Supplier: _____

Date Opened: _____

Final Gross Weight: _____ g/mg Dilution Volume: _____ mL

Tare Weight* : _____ g/mg Volumetric Flask: _____

Net Weight: _____ g/mg **Concentration:** _____ ug/mL

Adjusted Net Weight** : _____ mg Solvent(s): _____

Balance Used: _____

(specify model and serial no.)

Solvent Used: _____

Solvent Supplier: _____ Lot No(s).: _____

Date Opened: _____

Storage Location / Conditions: _____

Notes/Comments

CKD 2018/02/13

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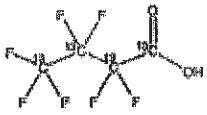
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFBA	**LOT NUMBER:**	MPFBA0417
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	04/12/2017		
EXPIRY DATE: (mm/dd/yyyy)	04/12/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

1 ampoule
2017/10/25 GSA

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Date Received: 2017.09.07 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC

Date Received: 2018.01.16 - 1 ampoule - HPLC

Date received: 2017/09/07 RW Ampoule: 1

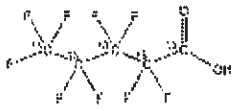
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}C_5$]pentanoic acid

LOT NUMBER: M5PFPeA0717

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $^{13}C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: 07/20/2017
EXPIRY DATE: 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥98% ^{13}C ($^{13}C_5$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 07/26/2017
B.G. Chittim, General Manager

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

Date Received: 2017.10.25 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule -HPLC

Maxxam Analytics 251 of 513

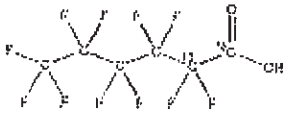
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA1017

STRUCTURE:



CAS #: Not available

2018/01/16
1 ampoule
E.G

MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: 10/27/2017
EXPIRY DATE: 10/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/30/2017
B.G. Chittim, General Manager

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

Form#17, Issued 2001-11-10
Revision#4, Revised 2017-03-06

Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

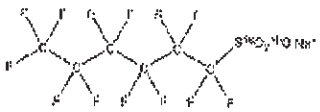
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS

COMPOUND: Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate

LOT NUMBER: MPFHxS0217

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $C_6F_{13}S^{18}O_2{}^{18}ONa$

CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt)
47.3 ± 2.4 µg/mL (MPFHxS anion)

CHEMICAL PURITY: >98%

LAST TESTED: 02/17/2017

EXPIRY DATE: 02/17/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 425.10

SOLVENT(S): Methanol

ISOTOPIC PURITY: >94% ($^{18}O_2$)

F2
1 ampoule
HPLC
2017/05/02
JPB3

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

Certified By: B.O. Chittim **Date:** 03/02/2017

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2649 • info@well-labs.com

[illegible]

Date received 2017/09/07 1 ampoule HPLC
Date received 2017/10/25 1 ampoule HPLC
Date Received: 2017.10.25 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

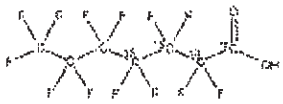
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid

LOT NUMBER: M4PFHpA0517

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_3HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: 05/03/2017
EXPIRY DATE: 05/03/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥98% ^{13}C (1,2,3,4-$^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

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

1 ampoule
2017/10/26 [illegible]

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: [signature] B.G. Chittim, General Manager **Date:** 05/11/2017

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

Date Received: 2017.09.07 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

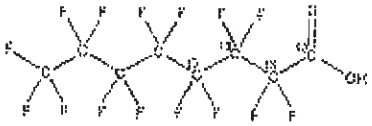
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid

LOT NUMBER: MPFOA1017

STRUCTURE:



CAS #: Not available

2018/01/16
9 -- 0 - 12
S. G

MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4HF_{15}O_2$	**MOLECULAR WEIGHT:**	418.04
CONCENTRATION:	50 ± 2.5 µg/mL	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED:	10/17/2017		
EXPIRY DATE:	10/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/19/2017
B.G. Chittim, General Manager

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

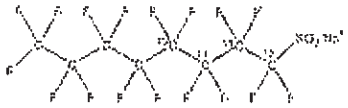
Form#27, Issued 1996-11-26
Revised 6, Revised 2017-03-16

Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFOS	LOT NUMBER:	MPFOS1017
COMPOUND:	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate		
STRUCTURE:		CAS #:	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	MOLECULAR WEIGHT:	526.08
CONCENTRATION:	50.0 ± 2.5 ug/ml (Na salt) 47.8 ± 2.4 ug/ml (MPFOS anion)	SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥98% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED:	10/17/2017		
EXPIRY DATE:	10/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

1 ampoule
2017/12/06 GS

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.4% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 10/18/2017
B.G Chittim, General Manager

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

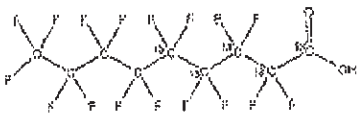
Date Received: 2017.12.06 - 1 ampoule - HPLC

Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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



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

Received 2mL
2016-12-12
1x1.2 mL
F2-11

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

Received date: 2017/02/22 2x1.2 mL MZ
Received date: 2017/05/02 1x1.2 mL ssv
Received date: 2017/05/31 2x1.2 mL ssv
Received date: 2017/09/07 2x1.2 mL TRW
Received date: 2017/10/25 2x1.2 mL
Date Received: 2017.12.06 - 1 ampoule - HPLC

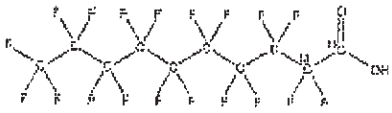
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFDA0717

STRUCTURE:



CAS #: Not available

2018/01/16
1 ampoule
E.G

MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_2$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form# 27, Issued 2016-12-16
Revisions, Revised 2017-03-05

Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFUdA
LOT NUMBER: MPFUdA1116
COMPOUND: Perfluoro-n-(1,2-$^{13}C_2$)undecanoic acid

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $^{13}C_2{}^{13}C_9HF_{21}O_2$
MOLECULAR WEIGHT: 566.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: 11/22/2016
EXPIRY DATE: 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

Received 2017/07/22
1 x 1.2 mL (TZ-4)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_2$-PFUdA (~1%; see Figure 2), 2-$^{13}C_2$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim Date: 12/07/2016

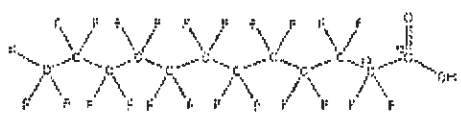
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Received 2017/05/02 2x1.2 mL HPLC
Date Received: 2017.05.02 - 1 x 1.2ml - HPLC
Date Received: 2017.06.29 - 1 x 1.2ml - HPLC
Date Received: 2017.09/07 - 1 x 1.2ml - HPLC
Date Received: 2017.02/22 - 1 x 1.2ml - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFDoA	**LOT NUMBER:**	MPFDoA0517
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED:	05/23/2017		
EXPIRY DATE:	05/23/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

1 ampoule
2017/10/25, 692

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 05/26/2017
S.G. Chittim, General Manager

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

Form 27, issued 2004-11-10
Revised 1, Revised 2017-03-06

Date Received: 2017.09.07 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

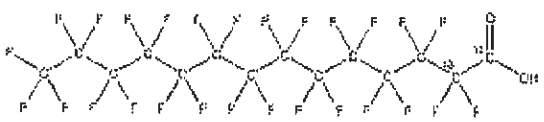
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid
LOT NUMBER: M2PFTeDA1117

STRUCTURE:

CAS #: Not available



2018/03/16
1 ampoule
2.6

MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{12}HF_{27}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 716.10
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: 11/30/2017
EXPIRY DATE: 11/30/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 12/01/2017
B.G. Chittim, General Manager

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

Form# 77, Issued 2004-11-18
Revision# 4, Revised 2017-03-06

M2PFTeDA1117 (1 of 4)
rev0

Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

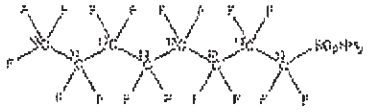
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: M8FOSA1017I

STRUCTURE:

CAS #: Not available



20181016
1 ampoule
G. G

MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	10/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.1% of perfluoro-1-[$^{13}C_8$]octanesulfonamide and ~ 0.01% of perfluoro-1-[$^{13}C_7$]heptanesulfonamide.

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/20/2017 (mm/dd/yyyy)
G.G. Childs, General Manager

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

Date Received: 2017.12.06 - 1 ampoule - HPLC

Ampoule: 1 Teal
Date received: 2017/10/25

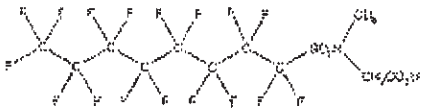
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	d3-N-MeFOSAA	**LOT NUMBER:**	d3NMeFOSAA0517
COMPOUND:	N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid		

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_{11}D_3H_2F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/mL	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	05/19/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/19/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/31/2017 (mm/dd/yyyy)
R.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2435 • Fax: 519-822-2849 • info@well-labs.com

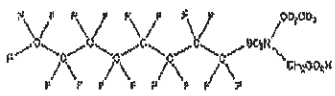
Date Received: 2017.10.25 - 1 ampoules - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $C_{10}D_4H_5F_{17}NO_4S$
MOLECULAR WEIGHT: 590.29
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥98% $^{2}H_{4}$
LAST TESTED: 11/22/2016
EXPIRY DATE: 11/22/2021
RECOMMENDED STORAGE: Refrigerate ampoule

Received [illegible] 2016/12/16 [illegible] FD-59

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

Certified By: [signature] B.G. Chittim
Date: 12/01/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2840 • info@well-labs.com

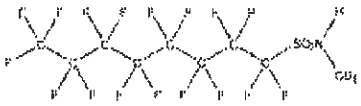
Form 22, Issued 2004-07-10
Revision 0, Revised 2016-03-14
d5NEtFOSAA1116 (1 of 4)

Date Received: 2017/10/25 2x1.2 ml

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	d-N-MeFOSA-M	**LOT NUMBER:**	dNMeFOSA0417M
COMPOUND:	N-methyl-d_3-perfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_9D_3HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	518.19
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/yyyy)	04/2017		
EXPIRY DATE: (mm/yyyy)	04/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

Fz
2 ampoule
HPLC
2017/06/29
DPS

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

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

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

Received date 2017/07/21 2 x 1.2mL HPLC
Received date 2017/08/09 1 x 1.2mL HPLC
Received date 2017/09/07 1 x 1.2mL HPLC
RECEIVED: 2017/09/27 1X2 AMPULES HPLC
Date Received: 2017.10.25 - 1 ampoule - HPLC
RECEIVED: 2017/11/07 1 x 1.2ml HPLC
RECEIVED: 2017/11/07 1 x 1.2ml HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

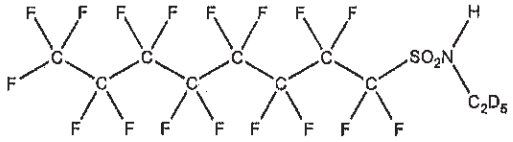
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d_5-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA1017M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_{10}D_5HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	532.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	10/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

Date received
2017/12/06
2 Ampules

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/06/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

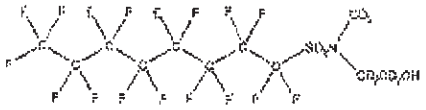
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d7-N-MeFOSE-M **LOT NUMBER:** d7NMeFOSE1617M
COMPOUND: 2-(N-methyl-d3-perfluoro-1-octanesulfonamido)ethan-d4-ol

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_7HF_{17}NO_3S$	**MOLECULAR WEIGHT:**	564.27
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_7$
LAST TESTED: mm/dd/yyyy	10/13/2017 (HRGC/LRMS)		
	10/12/2017 (LC/MS)		
EXPIRY DATE: mm/dd/yyyy	10/13/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

1 ampoule HPLC 2017/11/07

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/03/2017
B.G. Chittim, Senior's Manager mm/dd/yyyy

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

Issued: 2011.11.16
Updated: Revised 2017-08-25

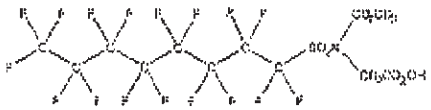
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d9-N-EtFOSE-M **LOT NUMBER:** d9NEtFOSE1017M
COMPOUND: 2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)ethan-d4-ol

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{10}D_4HF_{17}NO_3S$ **MOLECULAR WEIGHT:** 580.31
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_4$
LAST TESTED: (mm/dd/yyyy) 10/13/2017 (HRGC/LRMS)
10/12/2017 (LC/MS)
EXPIRY DATE: (mm/dd/yyyy) 10/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

1 ampoule
HPLC
2017/11/07

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.
- Contains ~ 1.2% of N-ethyl-d5-perfluoro-1-octanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

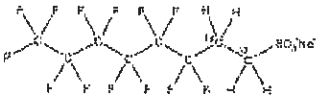
Certified By: _____ **Date:** 10/18/2017 (mm/dd/yyyy)
S.G. Chalim, General Manager

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

Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	M2-6:2FTS	**LOT NUMBER:**	M262FTS0717
COMPOUND:	Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate		
STRUCTURE:		**CAS #:**	Not available
MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.5 ± 2.4 µg/ml (M2-6:2FTS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED:	02/17/2017		
EXPIRY DATE:	02/17/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

HPLC 2017/05/31 2x1.2mL

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2017

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

Date Recieved:2017/05/02 2x1.2ml HPLC
Date Recieved:2017/06/29 2x1.2ml HPLC
Received date 2017/07/21 2 x 1.2mL HPLC
Received date 2017/09/07 1 x 1.2mL HPLC
Received date:2017/09/27 1x2 ampules HPLC
Received date:2017/10/25 1x2 ampules HPLC
Received date:2017/11/07 1x2 ampules HPLC
Date Received: 2017.11.07 - 1 ampule - HPLC
Date Received: 2017.12.06 - 2 ampoule - HPLC
Date Received: 2018.01.16 -1 ampoule - HPLC

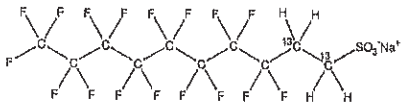
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0717

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

2 ampules x 1.2 mL
HPLC
2017/07/21
803

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

Date Recieved: 2017/07/21 2x1.2ml HPLC
Date Recieved: 2017/09/07 1x1.2ml HPLC
Received date: 2017/09/27 1x2 ampules HPLC
Received date: 2017/10/25 1x2 ampules HPLC
Date Received: 2017.11.07 - 1 ampule - HPLC
Date Received: 2018.01.16 -1 ampoule- HPLC
Date Received: 2017.12.06 - 2 ampoules - HPLC

144 PG 118

PREPARATION OF SURROGATE / INTERNAL STANDARD SPIKING SOLUTION

SMI 2018.02.22 SMI 2018.02.22

Solution No.: SI.6806 Prep'n Date: 2018.02.22 Expiry Date: 2018.03.01 Discard Date: N/A
Replaces Solution No.: SI-6802 Replaced by Solution: SI.6818 Chemist: SMI
Sol'n. Name: Hexanes O terphenyl
Solution Used As: Internal Std: N/A Surrogate Spike: Yes
Spike Volume: 5.0 uL or mL (for I.S. uL per mL) For Instrument/Analysis:
Solvent(s): Hexanes Supplier(s): Fisher Lot No(s).: 176771
Date Solvent Opened: 2018.02.22
Volumetric Flask Used: Class A Syringe ID: 10ml pipette lot# 2017.04.27
Storage Location and Conditions: FD.65
Ampule supplier; Mix Name; Catalogue No.; Lot No.; Date Rec'd.; Date Opened, Ampule Expiry Date:

Compound	Parent Solution No.	Parent Solution Conc'n. (ug/mL)	Aliquot Volume (mL /uL)	Dilution Volume (mL)	Final Conc'n. (ug/mL)	Absolute Amount Spiked (ug / ng)
O-terphenyl	PH.I.157	100mg/mL	4	4000	100	N/A

SMI 2018.02.22

Notes: Retested on 2018/03/01 and the expiry date extended to 2018/03/08. WMM 2018/03/01

Solution No.: SI-6807 Prep'n Date: 2018/02/22 Expiry Date: 2018/06/20 Discard Date:
Replaces Solution No.: SI-6770 Replaced by Solution: Chemist: GSZ
Sol'n. Name: FNI. I.S.
Solution Used As: Internal Std: / Surrogate Spike:
Spike Volume: 20 (uL) or mL (for I.S. uL per mL) For Instrument/Analysis: LCMS/MS
Solvent(s): 0.3% NH4OH in MeOH Supplier(s): See PRLRE 108-376 Lot No(s).: See PRLRE 108-376
Date Solvent Opened: See PRLRE 108-376
Volumetric Flask Used: 200ml Class A (5640) Syringe ID: Pipette 1434346
Storage Location and Conditions: FZ11
Ampule supplier; Mix Name; Catalogue No.; Lot No.; Date Rec'd.; Date Opened, Ampule Expiry Date:

Compound	Parent Solution No.	Parent Solution Conc'n. (ug/mL)	Aliquot Volume (mL (uL))	Dilution Volume (mL)	Final Conc'n. ng/mL (ug/mL)	Absolute Amount Spiked (ug / ng)
13C4 PFBA	S-4297	50	400	200	100	-
13C6 PFHxA	S-4298	50	400	200	100	-

GSZ, 2018/02/22

Notes:

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PRLST 133 PG 167

PREPARATION OF CONCENTRATED STOCK STANDARDS

Solution No.: S-4297 Date: 2018/02/22 Expiry Date: 2018/06/20 Discard Date: _____

Replaces Solution: S-4194 Replaced by Solution: _____ Chemist: GSZ

Compound: $^{13}C_9$ PFDA Purity: _____

Date Received: 2017/07/25 Expiry Date: 2018/06/20 Lot No.: SCID-014

Supplier: CIL

Date Opened: 2018/02/22

Final Gross Weight: – g/mg Dilution Volume: – mL

Tare Weight* : – g/mg Volumetric Flask: –

Net Weight: – g/mg **Concentration:** 50 (ug/mL), mg/mL

Adjusted Net Weight** : – mg Solvent(s): MeOH

Balance Used: –
(specify model and serial no.)

Solvent Used: –

Solvent Supplier: – Lot No(s).: –

Date Opened: –

Storage Location / Conditions: FZ 11

Notes/Comments Received as solution in ampule.

Solution No.: S-4298 Date: 2018/02/22 Expiry Date: 2020/09/30 Discard Date: _____

Replaces Solution: S-4195 Replaced by Solution: _____ Chemist: GSZ

Compound: $^{13}C_6$ PFHxA Purity: _____

Date Received: 2017/07/25 Expiry Date: 2020/09/30 Lot No.: SDAA-004

Supplier: CIL

Date Opened: 2018/02/22

Final Gross Weight: – g/mg Dilution Volume: – mL

Tare Weight* : – g/mg Volumetric Flask: –

Net Weight: – g/mg **Concentration:** 50 ug/mL

Adjusted Net Weight** : – mg Solvent(s): MeOH

Balance Used: _____
(specify model and serial no.)

Solvent Used: –

Solvent Supplier: – Lot No(s).: –

Date Opened: –

Storage Location / Conditions: FZ 11

Notes/Comments Received as solution in ampule.

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Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

Product Name: PERFLUORODECANOIC ACID
(Isotopic Label & Enrichment Specification) (13C9, 99%) 50 UG/ML IN METHANOL

Lot Number: SCID-014

Catalog Number: CLM-8172-S

Product Information

Chemical Purity Specification:	≥ 98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	335-76-2
MW*:	523.02
Chemical Formula:	CF3(*CF2)8*CO2H
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are insured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NCSL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -1.0, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Bakenley

Timothy J. Bakenley, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	06/20/2008
Expiration Date	06/20/2018
Concentration Based on Gravimetry	50.0 µg/mL
Chemical Purity of Neat Material(s)	>98%
LC/MS for Concentration	46.2 ± 6.4 µg/mL (k=2)

Received MMN 25 Jul 01/15 1x 1.2mL HPLC RT

50 Frontage Road, Andover, MA 01810-5413 USA • 1 800 322.1174 (North America) • 1.978 749.8000 (International) • isotope.com

Date Received:2016.8.17 - 1 x 1.2mL - HPLC
Date Received: 2016.09.14 -HPLC - 1 x 1.2ml
Date Received: 2016/11/22 1x 1.2ml MMN HPLC
Date Received:2017.02.15 - 1 x 1mL - HPLC (MMN)
Date received: 2017/06/09 - 1x1.2ml - HPLC
Date received: 2017/07/25 - 1x1.2ml - HPLC

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

Product Name: (Isotopic Label & Enrichment Specification)	PERFLUOROHEXANOIC ACID, SODIUM SALT (13C6, 99%) 50 UG/ML IN METHANOL
Lot Number:	SDAA-004
Catalog Number:	CLM-8340-S

Product Information

Chemical Purity Specification:	≥ 98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	307-24-4
MW*:	320.00
Chemical Formula:	*CF3(*CF2)4*COOH
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number . Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product*

Approved by: T. J. Esterley

Timothy J. Esterley, Ph.D., Quality Review

Quality Control Tests and Results

QC Release Date	9/30/2010
Expiration Date	9/30/2020
Concentration Based on Gravimetry	50.4 µg/mL
Chemical Purity of Neat Material(s)	99.2%
LC/MS for Concentration	47.1 ± 2.6 µg/mL (k=2)

Received 2017/07/13
1X1.2mL

50 Frontage Road, Andover, MA 01810-5413 USA • 1.800.322.1174 (North America) • 1.978 749 8000 (International) • isotope.com

Date Received: 2017.07.25 - 1 ampoule -HPLC

144 PG 125

PREPARATION OF SURROGATE / INTERNAL STANDARD SPIKING SOLUTION

Solution No.: SI-6819 Prep'n Date: 2018/03/05 Expiry Date: 2021/09/30 Discard Date: _____
Replaces Solution No.: SI-6805 Replaced by Solution: SI-6833 Chemist: GSZ
Sol'n. Name: PFC INTERNAL STD SPIKING SOLUTION
Solution Used As: Internal Std: / Surrogate Spike: _____
Spike Volume: — uL or mL (for I.S. uL per mL) For Instrument/Analysis: LCMS/MS
Solvent(s): 0.3% NH4OH in MeOH Supplier(s): See PRLRE 108-405 Lot No(s).: See PRLRE 108-405
Date Solvent Opened: See PRLRE 108-405
Volumetric Flask Used: 200ml class A (5640) Syringe ID: Piggotte M4101F/ J434346
Storage Location and Conditions: FZ11
Ampule supplier; Mix Name; Catalogue No.; Lot No.; Date Rec'd.; Date Opened, Ampule Expiry Date: See attached sheet.

SI-6819 (PRLST 144 p. 125)

Compound Name	ID#	Conc. (ug/mL)	Vol.. of Stock standard (uL)	Dilution volume (mL)	Final Conc. (ng/mL)	Exp. date
MPFBA	S4290-1	50	200	200	50	2022/04/12
M5PFPeA	S4290-2	50	200	200	50	2022/07/20
MPFHxA	S4290-3	50	200	200	50	2022/10/27
MPFHxS	S4290-4	50	200	200	50	2022/02/17
M4PFHpA	S4290-5	50	200	200	50	2022/05/03
MPFOA	S4290-6	50	200	200	50	2022/10/17
MPFOS	S4290-7	50	200	200	50	2022/10/17
MPFNA	S4290-8	50	200	200	50	2021/09/30
MPFDA	S4290-9	50	200	200	50	2022/07/13
MPFUdA	S4290-10	50	200	200	50	2021/11/22
MPFDoA	S4290-11	50	200	200	50	2022/05/23
M2PFTeDA	S4290-12	50	200	200	50	2022/11/30
MPFOSA	S4290-13	50	200	200	50	2022/10/11
D3-N-MeFOSAA	S4290-14	50	200	200	50	2022/05/19
D5-N-EtFOSAA	S4290-15	50	200	200	50	2021/11/22
D-N-MeFOSA-M	S4305-1	50	500	200	125	2022/11/08
D-N-EtFOSA-M	S4305-2	50	500	200	125	2022/10/11
D7-N-MeFOSE-M	S4305-3	50	500	200	125	2022/10/13
D9-N-EtFOSE-M	S4305-4	50	500	200	125	2022/10/13
M2-6:2FTS	S4305-5	50	500	200	125	2022/02/17
M2-8:2FTS	S4305-6	50	500	200	125	2022/07/05

No writing on bottom page.

GSZ, 2018/03/05

Notes:

DO NOT WRITE BENEATH ANY INSERTS ON THIS PAGE. DO NOT PLACE ANY INSERTS ON TOP OF ANY RAW DATA ENTERED ON THIS PAGE. INITIAL AND DATE ALL INSERTS. LOGBOOK, PAGE AND APPROPRIATE SOLUTION NUMBER REFERENCES MUST BE WRITTEN ON ALL INSERTS.

PRLST 133 PG 163

PREPARATION OF CONCENTRATED STOCK STANDARDS

Solution No.: S-4290 Date: 2018/02/12 Expiry Date: See Below Discard Date: _____

Replaces Solution: _____ Replaced by Solution: _____ Chemist: GSZ

S-4290 (PRLST 133 pg. 163)

Solution ID#	Compound Name	Lot#	Received date	Exp. date	Replaces Solution	Replaced by Solution	Conc (ug/mL)	Solvent	Storage
S4290-1	MPFBA	MPFBA0417	2017/12/06	2022/04/12	S4250-1		50	MeOH	FZ-11
S4290-2	M5PFPeA	M5PFPeA0717	2017/12/06	2022/07/20	S4250-2		50	MeOH	FZ-11
S4290-3	MPFHxA	MPFHxA1017	2017/12/06	2022/10/27	S4255-1		50	MeOH	FZ11
S4290-4	MPFHxS	MPFHxS0217	2017/12/06	2022/02/17	S4250-3		50	MeOH	FZ-11
S4290-5	M4PFHpA	M4PFHpA0517	2017/12/06	2022/05/03	S4250-4		50	MeOH	FZ-11
S4290-6	MPFOA	MPFOA1017	2017/12/06	2022/10/17	S4250-5		50	MeOH	FZ-11
S4290-7	MPFOS	MPFOS1017	2017/12/06	2022/10/17	S4250-6		50	MeOH	FZ-11
S4290-8	MPFNA	MPFNA0916	2017/12/06	2021/09/30	S4250-7		50	MeOH	FZ-11
S4290-9	MPFDA	MPFDA0717	2017/12/06	2022/07/13	S4250-8		50	MeOH	FZ-11
S4290-10	MPFUdA	MPFUdA1116	2017/12/06	2021/11/22	S4242-1		50	MeOH	FZ11
S4290-11	MPFDoA	MPFDoA0517	2017/12/06	2022/05/23	S4250-9		50	MeOH	FZ-11
S4290-12	M2PFTeDA	M2PFTeDA1117	2017/12/06	2022/11/30	S4250-10		50	MeOH	FZ-11
S4290-13	MPFOSA	M8FOSA1017I	2017/12/06	2022/10/11	S4250-11		50	IPA	FD-59
S4290-14	D3-N-MeFOSAA	d3NMeFOSAA0517	2017/10/25	2022/05/19	S4260-1		50	MeOH	FD59
S4290-15	D5-N-EtFOSAA	d5NEtFOSAA1116 *	2017/10/25	2021/11/22	S4260-2		50	MeOH	FD59
S4290-16	D-N-MeFOSA-M	dNMeFOSA0417M	2017/12/06	2022/04/20	S4255-2		50	MeOH	FZ11
S4290-17	D-N-EtFOSA-M	dNEtFOSA1017M	2017/12/06	2022/10/11	S4255-3		50	MeOH	FZ11
S4290-18	D7-N-MeFOSE-M	d7NMeFOSE1017M	2017/12/06	2022/10/13	S4255-4		50	MeOH	FZ11
S4290-19	D9-N-EtFOSE-M	d9NEtFOSE1017M	2017/12/06	2022/10/13	S4255-5		50	MeOH	FZ11
S4290-20	M2-6:2FTS	M262FTS0217	2017/12/06	2022/02/17	S4255-6		50	MeOH	FD59
S4290-21	M2-8:2FTS	M282FTS0717	2017/12/06	2022/07/05	S4255-7		50	MeOH	FD59
Date opened (All compounds): 2018/02/12			Supplier: Wellington			Chemist: GSZ			

No writing on bottom page. * d5NEtFOSAA1116 GSZ 2018/02/16

GSZ, 2018/02/12

Solution No.: _____ Date: _____ Expiry Date: _____ Discard Date: _____

Replaces Solution: _____ Replaced by Solution: _____ Chemist: _____

Compound: _____ Purity: _____

Date Received: _____ Expiry Date: _____ Lot No.: _____

Supplier: _____

Date Opened: _____

Final Gross Weight: _____ g/mg Dilution Volume: _____ mL

Tare Weight* : _____ g/mg Volumetric Flask: _____

Net Weight: _____ g/mg **Concentration:** _____ ug/mL

Adjusted Net Weight** : _____ mg Solvent(s): _____

Balance Used: _____

(specify model and serial no.)

Solvent Used: _____

Solvent Supplier: _____ Lot No(s).: _____

Date Opened: _____

Storage Location / Conditions: _____

Notes/Comments

QC GSZ 2018/02/16

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PRLST 133 PG 172

PREPARATION OF CONCENTRATED STOCK STANDARDS

Solution No.: S-4304 Date: 2018/02/28 Expiry Date: 2018/03/28 Discard Date: ____

Replaces Solution: S-4276 Replaced by Solution: ____ Chemist: GSZ

Compound: MORPHOLINE STOCK STD Purity: 99.9

Date Received: 2016/09/07 Expiry Date: 2020/01/31 Lot No.: SHBC2192V

Supplier: Sigma-aldrich

Date Opened: 2016/09/08

Final Gross Weight: 0.0105 (g) mg Dilution Volume: 10 mL

Tare Weight*: ____ g/mg Volumetric Flask: 10mL Class A (5630)

Net Weight: ____ g/mg Concentration: 1049 (ug/mL), mg/mL

Adjusted Net Weight**: 0.01049 g mg Solvent(s): DI H2O

Balance Used: FC-1
(specify model and serial no.)

Solvent Used: DI H2O

Solvent Supplier: — Lot No(s).: —

Date Opened: —

Storage Location / Conditions: FD59

Notes/Comments: Liquid in a bottle.

Solution No.: S-4305 Date: 2018/03/05 Expiry Date: See Below Discard Date: ____

Replaces Solution: ____ Replaced by Solution: ____ Chemist: GSZ

S-4305 (PRLST 133 g. 172)

Solution ID#	Compound Name	Lot#	Received date	Exp. date	Replaces Solution	Replaced by Solution	Conc (ug/mL)	Solvent	Storage
S4305-1	D-N-MeFOSA-M	dNMeFOSA1117M	2018/01/16	2022/11/08	S4290-16		50	MeOH	FZ11
S4305-2	D-N-EtFOSA-M	dNEtFOSA1017M	2018/01/16	2022/10/11	S4290-17		50	MeOH	FZ11
S4305-3	D7-N-MeFOSE-M	d7NMeFOSE1017M	2018/01/16	2022/10/13	S4290-18		50	MeOH	FZ11
S4305-4	D9-N-EtFOSE-M	d9NEtFOSE1017M	2018/01/16	2022/10/13	S4290-19		50	MeOH	FZ11
S4305-5	M2-6:2FTS	M262FTS0217	2018/01/16	2022/02/17	S4290-20		50	MeOH	FD59
S4305-6	M2-8:2FTS	M282FTS0717	2018/01/16	2022/07/05	S4290-21		50	MeOH	FD59
Date opened (All compounds):			Supplier: Wellington			Chemist:			

No writing on bottom page.

GSZ, 2018/03/05

Notes/Comments

WELLINGTON LABORATORIES

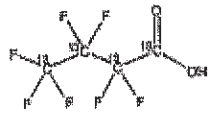
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFBA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid

LOT NUMBER: MPFBA0417

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED:	04/12/2017		
EXPIRY DATE:	04/12/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

1 ampoule
2017/10/25 GSA

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/20/2017
B.G. Chittim, General Manager

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

Form#:27, Issued 2004-11-10
Revision#:4, Revised 2017-03-09

Date Received: 2017.09.07 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC

Date Received: 2018.01.16 - 1 ampoule - HPLC

Date received: 2017/09/07 RW Ampoule: 1

WELLINGTON LABORATORIES

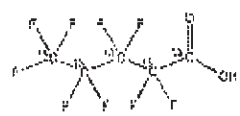
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}C_5$]pentanoic acid

LOT NUMBER: M5PFPeA0717

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: 07/20/2017
EXPIRY DATE: 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C ($^{13}C_5$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 07/26/2017
B.G. Chittim, General Manager

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

Form 27 Issued 2004-11-10
Revised 4 Revised 2017-09-08

M5PFPeA0717 (1 of 6)
RHO

Date Received: 2017.10.25 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule -HPLC

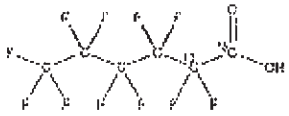
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFHxA1017

STRUCTURE:



CAS #: Not available

2018/01/16
1 ampoule
E.G

MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: 10/27/2017
EXPIRY DATE: 10/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/30/2017
B.G. Chittim, General Manager

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

Form#17, Issued 2001-11-10
Revision#4, Revised 2017-05-06

MPFHxA1017 (1 of 4)

Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

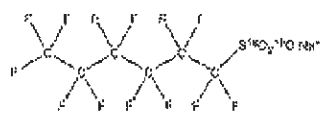
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS

LOT NUMBER: MPFHxS0217

COMPOUND: Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $C_6F_{13}S^{18}O_2{}^{18}ONa$

MOLECULAR WEIGHT: 425.10

CONCENTRATION: 50.0 ± 2.5 µg/mt (Na salt)
47.3 ± 2.4 µg/mt (MPFHxS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: >94% ($^{18}O_2$)

LAST TESTED: 02/17/2017

EXPIRY DATE: 02/17/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

F2
1 ampoule
HPLC
2017/05/02
JPB3

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

Certified By: B.O. Chittim **Date:** 03/02/2017

Wellington Laboratories Inc., 348 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

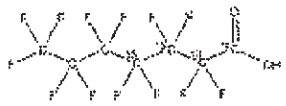
Date received 2017/09/07 1 ampoule HPLC
Date received 2017/10/25 1 ampoule HPLC
Date Received: 2017.10.25 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-(1,2,3,4-$^{13}C_4$)heptanoic acid
LOT NUMBER: M4PFHpA0517

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $^{13}C_4{}^{12}C_3HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: 05/03/2017
EXPIRY DATE: 05/03/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥98% ^{13}C (1,2,3,4-$^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

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

1 ampoule
2017/10/26 [illegible]

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: [signature] Date: 05/11/2017
E.G. Chittim, General Manager

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

Date Received: 2017.09.07 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

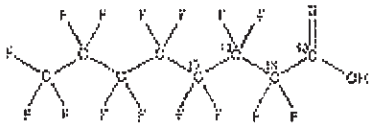
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-(1,2,3,4-$^{13}C_4$)octanoic acid

LOT NUMBER: MPFOA1017

STRUCTURE:



CAS #: Not available

2018/01/16
1 ampoule
S.G

MOLECULAR FORMULA: $^{13}C_4{}^{12}C_4HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: 10/17/2017
EXPIRY DATE: 10/17/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2,3,4-$^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/19/2017
B.G. Chittim, General Manager

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

Format 27, Issued 2004-12-16
Revision 4, Revised 2017-03-06

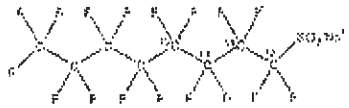
MPFOA1017 (1 of 4)

Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFOS	**LOT NUMBER:**	MPFOS1017
COMPOUND:	Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED:	10/17/2017		
EXPIRY DATE:	10/17/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

Tanguay 2017/10/25 692

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.4% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

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Certified By: _____ **Date:** 10/18/2017
B.G Chittim, General Manager

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Date Received: 2017.12.06 - 1 ampoule - HPLC

Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

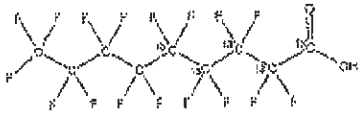
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid

LOT NUMBER: MPFNA0916

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_5{}^{12}C_4HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 469.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: 09/30/2016
EXPIRY DATE: 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99%^{13}C (1,2,3,4,5-$^{13}C_5$)

Received
2016-12-12
1x1.2 mL
F2-11

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim Date: 10/11/2016

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Form#27, Issued 2004-11-10
Revised/3, Revised 2015-03-24

MPFNA0916 (1 of 1)
rev0

Received date: 2017/02/22 2x1.2 mL MZ
Received date: 2017/05/02 1x1.2 mL ssv
Received date: 2017/05/31 2x1.2 mL ssv
Received date: 2017/09/07 2x1.2 mL TRW
Received date: 2017/10/25 2x1.2 mL
Date Received: 2017.12.06 - 1 ampoule - HPLC

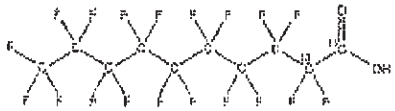
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: MPFDA0717

STRUCTURE:



CAS #: Not available

2018/01/16
1 ampoule
8.6

MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 518.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_2$-^{13}FNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Form# 21, Issued 2016-11-30
Revision#4, Revised 2017-03-08

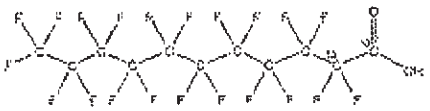
MPFDA0717 (1 of 4)
rev3

Date Received: 2017.12.06 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFUdA	LOT NUMBER:	MPFUdA1116
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid		
STRUCTURE:		CAS #:	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	MOLECULAR WEIGHT:	568.08
CONCENTRATION:	50 ± 2.5 pg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ^{13}C ($1,2-^{13}C_2$)
LAST TESTED:	11/22/2016		
EXPIRY DATE:	11/22/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

Received 2017/12/22
2 x 1.2 mL (TZ-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.
- Presence of $1-^{13}C_1$-PFUdA (~1%; see Figure 2), $2-^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

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Certified By: B.G. Chittim Date: 12/07/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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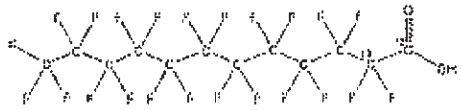
Received 2017/05/02 2x1.2 mL HPLC
Date Received: 2017.05.02 - 1 x 1.2ml - HPLC
Date Received: 2017.06.29 - 1 x 1.2ml - HPLC
Date Received: 2017.09/07 - 1 x 1.2ml - HPLC
Date Received: 2017.02/22 - 1 x 1.2ml - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFDoA	**LOT NUMBER:**	MPFDoA0617
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{10}HF_{23}O_2$	**MOLECULAR WEIGHT:**	616.08
CONCENTRATION:	50 ± 2.5 µg/mL	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED:	05/23/2017		
EXPIRY DATE:	05/23/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 05/26/2017
S.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr, Guelph ON N1G 3M5 CANADA
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Date Received: 2017.09.07 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

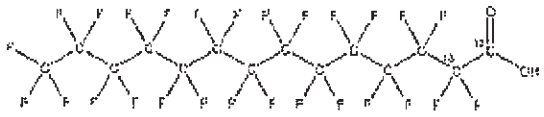
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFTeDA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid

LOT NUMBER: M2PFTeDA1117

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	11/30/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/30/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 12/01/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Date Received: 2017.12.06 - 1 ampoule - HPLC

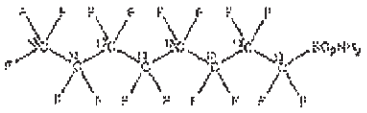
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[$^{13}C_4$]octanesulfonamide

LOT NUMBER: M8FOSA1017I

STRUCTURE:



CAS #: Not available

2018/01/16
1 ampoule
4.6

MOLECULAR FORMULA: $^{13}C_4H_2F_{17}NO_2S$
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: 10/11/2017
EXPIRY DATE: 10/11/2022
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09
SOLVENT(S): Isopropanol
ISOTOPIC PURITY: ≥99% ^{13}C ($^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 10/20/2017
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Form 22 Issued 2004-11-10
Revised 4, Revised 2017-03-08

Date Received: 2017.12.06 - 1 ampoule - HPLC

Ampoule: 1 TRW
Date received: 2017/09/12

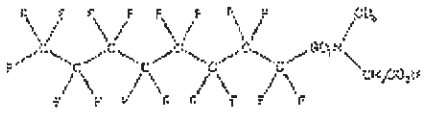
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA
LOT NUMBER: d3NMeFOSAA0517
COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_{11}D_3H_2F_{17}NO_4S$
MOLECULAR WEIGHT: 574.23
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥98% $^{2}H_{3}$
LAST TESTED: 05/19/2017
EXPIRY DATE: 05/19/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 05/31/2017
B G Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Revision 3, Issued 2014-11-10
Revision 4, Revised 2017-03-10

Date Received: 2017.10.25 - 1 ampoules - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $C_{10}D_4H_5F_{17}NO_4S$
MOLECULAR WEIGHT: 690.29
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥98% $^2H_4$
LAST TESTED: 11/22/2016
EXPIRY DATE: 11/22/2021
RECOMMENDED STORAGE: Refrigerate ampoule

Received 2016/12/16 1 x 1.2 ml FD-59

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim Date: 12/01/2016

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Form 627, Issued 2016-11-19
Form 627, Revised 2016-03-24
d5NEtFOSAA1116 (1 of 4)

Date Received: 2017/10/25 2x1.2 ml

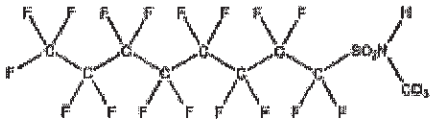
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
COMPOUND: N-methyl-d_3-perfluoro-1-octanesulfonamide

LOT NUMBER: dNMeFOSA1117M

STRUCTURE:



CAS #: Not available

2018/01/16
1 ampoule
2.6

MOLECULAR FORMULA:	$C_9D_3HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	516.19
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	11/08/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/08/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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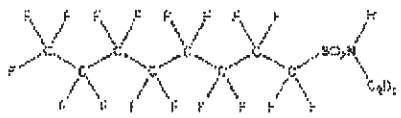
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d_5-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA1017M

STRUCTURE:



CAS #: Not available

HPLC
2018/10/30 B
2x ampoules
E.G

MOLECULAR FORMULA:	$C_{10}D_5HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	532.23
CONCENTRATION:	50 ± 2.5 µg/mL	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED:	10/11/2017		
EXPIRY DATE:	10/11/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY; NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 11/06/2017
B.G. Chittim, General Manager

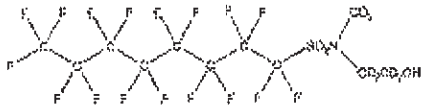
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

Date Received: 2017.11.07 - 1 ampoule - HPLC
Date Received: 2017.12.06 - 2 ampoules - HPLC
Date Received: 2018.03.08 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	d7-N-MeFOSE-M	**LOT NUMBER:**	d7NMeFOSE1617M
COMPOUND:	2-(N-methyl-d3-perfluoro-1-octanesulfonamido)ethan-d4-ol		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_{13}D_7HF_{17}NO_3S$	**MOLECULAR WEIGHT:**	564.27
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_7$
LAST TESTED:	10/13/2017 (HRGC/LRMS)		
	10/12/2017 (LC/MS)		
EXPIRY DATE:	10/13/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

1 ampoule
HPLC
2017/11/07

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ Date: 11/03/2017
B.C. Childs, General Manager

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

Date Received: 2017.12.06 - 1 ampoule – HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

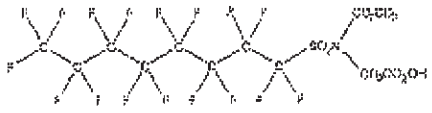
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d9-N-EtFOSE-M **LOT NUMBER:** d9NEtFOSE1017M

COMPOUND: 2-(N-ethyl-d5-perfluoro-1-octanesulfonamido)ethan-d4-ol

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{10}D_4HF_{17}NO_3S$ **MOLECULAR WEIGHT:** 580.31

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_4$

LAST TESTED: (mm/dd/yyyy) 10/13/2017 (HRGC/LRMS)
10/12/2017 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy) 10/13/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

1 ampoule
HPLC
2017/11/07

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.
- Contains ~ 1.2% of N-ethyl-d5-perfluoro-1-octanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: [signature] **Date:** 10/18/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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

Form 24, Issued 2014-11-10
Reviewed & Revised 2017-03-04

d9NEtFOSE1017M (1 of 9)
rev0

Date Received: 2017.12.06 - 1 ampoule - HPLC
Date Received: 2018.01.16 - 1 ampoule - HPLC

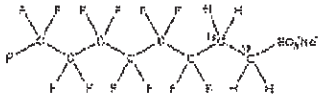
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_6H_4F_{12}SO_3Na$ **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 anion)

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ^{13}C (1,2-$^{13}C_2$)

LAST TESTED: 02/17/2017

EXPIRY DATE: 02/17/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

HPLC 2017/05/31 2x1.2 ml

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ^{13}S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

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Certified By: B.G. Chittim **Date:** 02/24/2017

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

Revised 2017-05-02 2x1.2ml HPLC
Date Recieved:2017/06/29 2x1.2ml HPLC
Received date 2017/07/21 2 x 1.2mL HPLC
Received date 2017/09/07 1 x 1.2mL HPLC
Received date:2017/09/27 1x2 ampules HPLC
Received date:2017/10/25 1x2 ampules HPLC
Received date:2017/11/07 1x2 ampules HPLC
Date Received: 2017.11.07 - 1 ampule - HPLC
Date Received: 2017.12.06 - 2 ampoule - HPLC
Date Received: 2018.01.16 -1 ampoule - HPLC

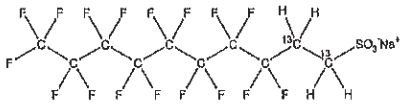
Maxxam Analytics 297 of 513

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0717
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/05/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

2 ampules x 1.2 mL
HPLC
2017-07-21
803

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

Date Recieved: 2017/07/21 2x1.2ml HPLC
Date Recieved: 2017/09/07 1x1.2ml HPLC
Received date: 2017/09/27 1x2 ampules HPLC
Received date: 2017/10/25 1x2 ampules HPLC
Date Received: 2017.11.07 - 1 ampule - HPLC
Date Received: 2018.01.16 -1 ampoule- HPLC
Date Received: 2017.12.06 - 2 ampoules - HPLC

PREPARATION OF SPIKING STANDARD SOLUTION

Solution No.: SK-7429 Prep'n Date: 2018/02/26 Expiry Date: 2018/03/26 Discard Date: _____

Replaces Solution No.: SK-7360 Replaced by Solution: _____ Chemist: GSZ

Solution Name: PERCHLORATE ICV WORKING STD Solvent(s): DI H2O

Solvent Supplier(s): – Solvent Lot No(s): –

Date Opened: –

Volumetric Flask Used: 100mL Class A (5640) Volume: 100 mL **Spike Volume:** – uL / mL *

Syringe ID: Pipette K39732F

Storage Location and Conditions: FD59

For extended mix of compounds, refer to table on: –

Compound	Parent Solution No.	Parent Solution Conc'n. (ug/mL)	Aliquot Volume (uL (mL) *	Final Conc'n. (ug/mL)	Absolute Amount Spiked (ug ng) *
PERCHLORATE ICV INTERMEDIATE STD	I-5314	500 ug/L	2	10 mg/L	–
		GSZ, 2018/02/26			

Notes:

2018/02/27 LR 2018/02/27 2019/02/27 LR 2018/02/27

Solution No.: SK-7430 Prep'n Date: ~~2018/02/26~~ Expiry Date: ~~2019~~/02/26 Discard Date: –

Replaces Solution No.: SK-7377 Replaced by Solution: _____ Chemist: LAV

Solution Name: Comp. PFC working Soln C Solvent(s): _____

Solvent Supplier(s): Aldrich Solvent Lot No(s): See PRLRE108-387

Date Opened: See PRLRE108-387

Volumetric Flask Used: 25 mL Class A (5640) Volume: 25 mL **Spike Volume:** – uL / mL *

Syringe ID: ~~Pipette K39732F~~ Pipette K39732F, K39732F LR 2018/02/26 27 LR

Storage Location and Conditions: F2-11

For extended mix of compounds, refer to table on: –

Compound	Parent Solution No.	Parent Solution Conc'n. (ug/mL)	Aliquot Volume (uL (mL) *	Final Conc'n. (ug/mL)	Absolute Amount Spiked (ug ng) *
Comp. PFC working Soln A	I-5315	1 ug/mL	2.5	100 ng/mL	–
			2018/02/27 LR		

Notes:

* = Specify Units

Do not write beneath any inserts or place any inserts on top of any raw data entered on this page. Initial and date all entries.

TUNE CHECK

Instrument: Agilent 6470 LC/MS/MS

Instrument Serial Number: SG1611G001

Maxxam Instrument Identification: LCMS04

Mass Calibration Performed: July 7, 2017

Tune Check Performed: July 10 & 11, 2017

Mass Assignment Reference Table_____Page 2

Analyte Precursor Ion Verification_____Page 4

Analyte Product Ion Verification_____Page 31

Extracted and Injection Internal Standard Precursor Ion Verification_____Page 59

Extracted and Injection Internal Standard Product Ion Verification_____Page 83

Reviewed by:

Adam Robinson, Supervisor – Liquid Chromatography

July 12 /2017
Date

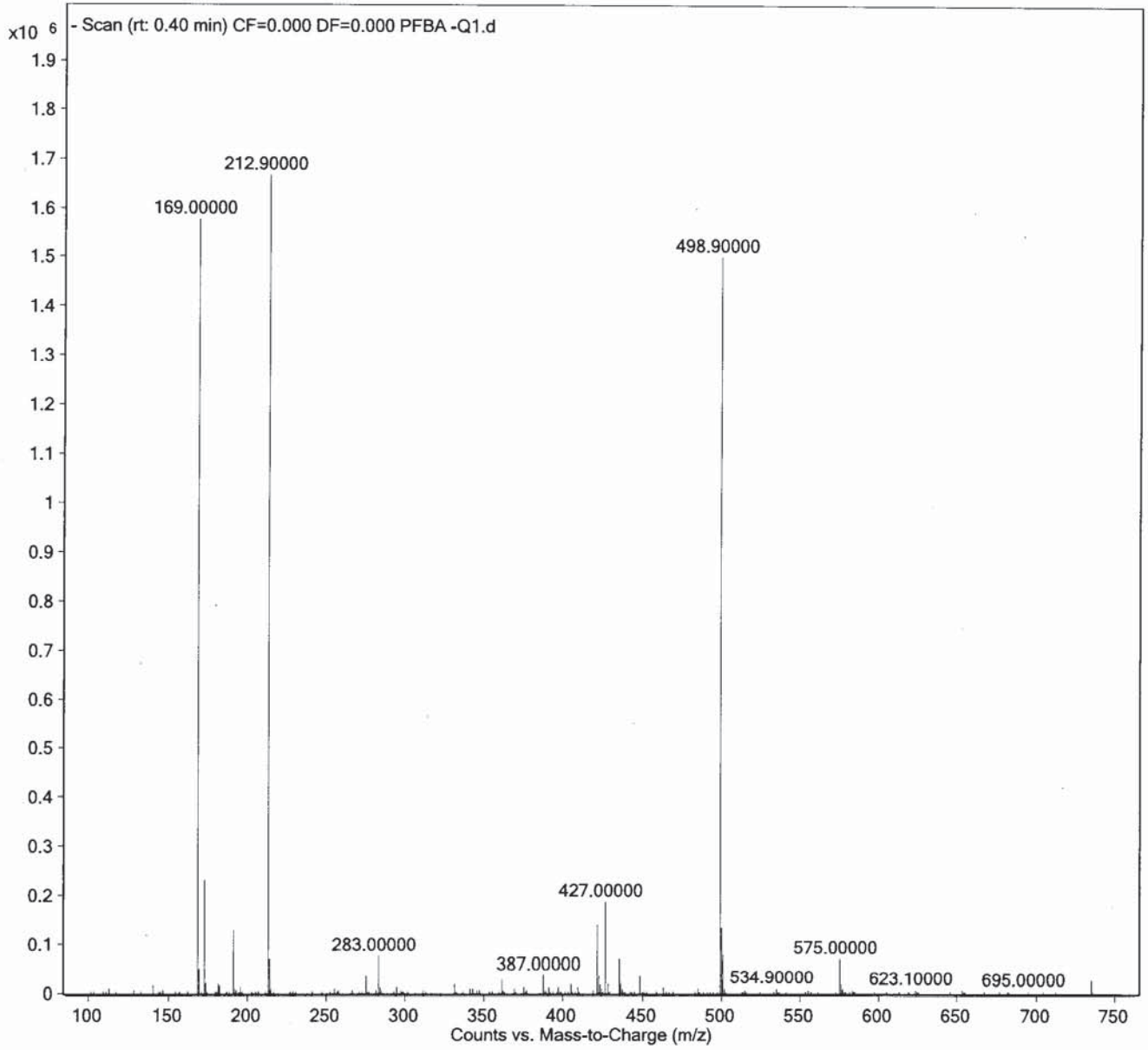
Mass Assignments – Analytes, Extracted Internal Standards and Injection Internal Standards

Compound	Abbreviation	Precursor Ion (m/z)	Precursor Ion Formula	Quant Ion (m/z)	Quantitation Ion Formula	Confirmation Ion (m/z)	Confirmation Ion Formula
Native Analytes							
Perfluorobutanoic acid	PFBA	212.9	$[CF_3(CF_2)_2CO_2]^-$	169.0	$[CF_3(CF_2)_2]^-$	[1] N/A	N/A
Perfluorobutanesulfonate	PFBS	298.9	$[CF_3(CF_2)_3SO_3]^-$	79.9	$[SO_3]^-$	98.9	$[FSO_3]^-$
Perfluoropentanoic acid	PFPeA	262.9	$[CF_3(CF_2)_3CO_2]^-$	218.9	$[CF_3(CF_2)_3]^-$	[1] N/A	N/A
Perfluorohexanoic acid	PFHxA	313.0	$[CF_3(CF_2)_4CO_2]^-$	269.0	$[CF_3(CF_2)_4]^-$	119.0	$[CF_3(CF_2)]^-$
Perfluorohexanesulfonate	PFHxS	398.9	$[CF_3(CF_2)_5SO_3]^-$	79.9	$[SO_3]^-$	98.9	$[FSO_3]^-$
Perfluoroheptanoic acid	PFHpA	363.0	$[CF_3(CF_2)_5CO_2]^-$	319.0	$[CF_3(CF_2)_5]^-$	169.2	$[CF_3(CF_2)_2]^-$
Perfluoroheptanesulfonate	PFHpS	448.9	$[CF_3(CF_2)_6SO_3]^-$	79.9	$[SO_3]^-$	99.0	$[FSO_3]^-$
Perfluorooctanoic acid	PFOA	413.1	$[CF_3(CF_2)_6CO_2]^-$	369.0	$[CF_3(CF_2)_6]^-$	169.0	$[CF_3(CF_2)_2]^-$
Perfluorooctanesulfonate	PFOS	498.8	$[CF_3(CF_2)_7SO_3]^-$	79.9	$[SO_3]^-$	98.9	$[FSO_3]^-$
Perfluorononanoic acid	PFNA	462.9	$[CF_3(CF_2)_7CO_2]^-$	419.0	$[CF_3(CF_2)_7]^-$	219.1	$[CF_3(CF_2)_3]^-$
Perfluorodecanoic acid	PFDA	513.0	$[CF_3(CF_2)_8CO_2]^-$	469.1	$[CF_3(CF_2)_8]^-$	218.9	$[CF_3(CF_2)_3]^-$
Perfluorodecanesulfonate	PFDS	598.9	$[CF_3(CF_2)_9SO_3]$-	79.9	$[SO_3]^-$	98.8	$[FSO_3]^-$
Perfluoroundecanoic acid	PFUnA	562.9	$[CF_3(CF_2)_9CO_2]^-$	519.0	$[CF_3(CF_2)_9]^-$	269.2	$[CF_3(CF_2)_4]^-$
Perfluorododecanoic acid	PFDoA	612.9	$[CF_3(CF_2)_{10}CO_2]^-$	569.0	$[CF_3(CF_2)_{10}]^-$	319.0	$[CF_3(CF_2)_5]^-$
Perfluorotridecanoic acid	PFTrDA	663.0	$[CF_3(CF_2)_{11}CO_2]^-$	619.0	$[CF_3(CF_2)_{11}]^-$	318.9	$[CF_3(CF_2)_5]^-$
Perfluorotetradecanoic acid	PFTeDA	713.0	$[CF_3(CF_2)_{12}CO_2]^-$	669.0	$[CF_3(CF_2)_{12}]^-$	319.2	$[CF_3(CF_2)_5]^-$
Perfluorooctane sulfonamide	PFOSA	497.9	$[CF_3(CF_2)_7SO_2NH]^-$	78.0	$[SO_2N]^-$	478.0	$[(CF_2)_8SO_2N]^-$
N-methylperfluorooctane sulfonamide	MeFOSA	511.9	$[CF_3(CF_2)_7SO_2N(CH_3)]^-$	169.0	$[CF_3(CF_2)_2]^-$	219.0	$[CF_3(CF_2)_3]^-$
N-ethylperfluorooctane sulfonamide	EtFOSA	526.0	$[CF_3(CF_2)_7SO_2N(C_2H_5)]^-$	169.0	$[CF_3(CF_2)_2]^-$	219.0	$[CF_3(CF_2)_3]^-$
N-methylperfluorooctane sulfonamidoethanol	MeFOSE	616.0	$[CF_3(CF_2)_7SO_2N(CH_3)C_2H_4OH{\cdot}CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	[1] N/A	N/A
N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	630.0	$[CF_3(CF_2)_7SO_2N(C_2H_5)C_2H_4OH{\cdot}CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	[1] N/A	N/A
N-methylperfluorooctanesufonamidoacetic acid	MeFOSAA	570.1	$[CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2]^-$	419.1	$[CF_3(CF_2)_7]^-$	483.0	$[CF_3(CF_2)_7SO_2]^-$
N-ethylperfluorooctanesufonamidoacetic acid	EtFOSAA	584.1	$[CF_3(CF_2)_7SO_2N(CH_2CH_3)CH_2CO_2]^-$	419.1	$[CF_3(CF_2)_7]^-$	483.0	$[CF_3(CF_2)_7SO_2]^-$
6:2 Fluorotelomersulfonate	6:2FTS	427.0	$[CF_3(CF_2)_5CH_2CH_2SO_3]^-$	407.0	$[CF_3(CF_2)_4CFCHCH_2SO_3]^-$	80.9	$[SO_2OH]^-$
8:2 Fluorotelomersulfonate	8:2FTS	526.9	$[CF_3(CF_2)_7CH_2CH_2SO_3]^-$	507.0	$[CF_3(CF_2)_6CFCHCH_2SO_3]^-$	80.9	$[SO_2OH]^-$
Mass-labeled Extracted Internal Standards							
$^{13}C_4$-Perfluorobutanoic acid	MPFBA	216.9	$[^{13}CF_3(^{13}CF_2)_2{}^{13}CO_2]^-$	172.0	$[^{13}CF_3(^{13}CF_2)_2]^-$	N/A	N/A

Compound	Abbreviation	Precursor Ion (m/z)	Precursor Ion Formula	Quant Ion (m/z)	Quantitation Ion Formula	Confirmation Ion (m/z)	Confirmation Ion Formula
$^{13}C_5$-Perfluoropentanoic acid	MPFPeA	267.9	$[^{13}CF_3(^{13}CF_2)_3{}^{13}CO_2]^-$	223.0	$[^{13}CF_3(^{13}CF_2)_3]^-$	N/A	N/A
$^{13}C_2$-Perfluorohexanoic acid	MPFHxA	314.9	$[CF_3(CF_2)_3(^{13}CF_2){}^{13}CO_2]^-$	270.0	$[CF_3(CF_2)_3{}^{13}CF_2]^-$	N/A	N/A
$^{18}O_2$-Perfluorohexanesulfonate	MPFHxS	402.9	$[CF_3(CF_2)_5S(^{18}O)_2O]^-$	84.0	$[S(^{18}O)_2O]^-$	N/A	N/A
$^{13}C_4$-Perfluoroheptanoic acid	MPFHpA	366.9	$[CF_3CF_2(^{13}CF_2)_3{}^{13}CO_2]^-$	322.0	$[CF_3CF_2(^{13}CF_2)_4]^-$	N/A	N/A
$^{13}C_4$-Perfluorooctanoic acid	MPFOA	416.9	$[CF_3(CF_2)_3(^{13}CF_2)_3{}^{13}CO_2]^-$	372.0	$[CF_3(CF_2)_3(^{13}CF_2)_3]^-$	N/A	N/A
$^{13}C_4$-Perfluorooctanesulfonate	MPFOS	502.9	$[CF_3(CF_2)_3(^{13}CF_2)_4SO_3]^-$	79.9	$[SO_3]^-$	N/A	N/A
$^{13}C_5$-Perfluorononanoic acid	MPFNA	467.9	$[CF_3(CF_2)_3(^{13}CF_2)_4{}^{13}CO_2]^-$	423.0	$[CF_3(CF_2)_3(^{13}CF_2)_4]^-$	N/A	N/A
$^{13}C_2$-Perfluorodecanoic acid	MPFDA	514.9	$[CF_3(CF_2)_7(^{13}CF_2){}^{13}CO_2]^-$	470.0	$[CF_3(CF_2)_7{}^{13}CF_2]^-$	N/A	N/A
$^{13}C_2$-Perfluoroundecanoic acid	MPFUnA	564.9	$[CF_3(CF_2)_8(^{13}CF_2){}^{13}CO_2]^-$	520.0	$[CF_3(CF_2)_8{}^{13}CF_2]^-$	N/A	N/A
$^{13}C_2$-Perfluorododecanoic acid	MPFDoA	614.9	$[CF_3(CF_2)_9(^{13}CF_2){}^{13}CO_2]^-$	570.0	$[CF_3(CF_2)_9{}^{13}CF_2]^-$	N/A	N/A
$^{13}C_2$-Perfluorotetradecanoic acid	MPFTeDA	714.9	$[CF_3(CF_2)_{12}(^{13}CF_2){}^{13}CO_2]^-$	669.9	$[CF_3(CF_2)_{12}]^-$	N/A	N/A
$^{13}C_8$-Perfluorooctane sulfonamide	MPFOSA	505.8	$[^{13}CF_3(^{13}CF_2)_7SO_2NH]^-$	77.9	$[SO_2N]^-$	N/A	N/A
N-methyl-d_3-perfluorooctanesulfonamide	D_3-MeFOSA	514.9	$[CF_3(CF_2)_7SO_2N(CD_3)]^-$	168.9	$[CF_3(CF_2)_2]^-$	N/A	N/A
N-ethyl-d_5-perfluorooctanesulfonamide	D_5-EtFOSA	531.0	$[CF_3(CF_2)_7SO_2N(C_2D_5)]^-$	168.9	$[CF_3(CF_2)_2]^-$	N/A	N/A
N-methyl-d_3-perfluorooctanesulfonamidoethanol-d_4	D_7-MeFOSE	623.1	$[CF_3(CF_2)_7SO_2N(CD_3)CD_2CD_2OH \cdot CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	N/A	N/A
N-ethyl-d_5-perfluorooctanesulfonamidoethanol-d_4	D_9-EtFOSE	639.1	$[CF_3(CF_2)_7SO_2N(CD_2CD_3)CD_2CD_2OH \cdot CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	N/A	N/A
N-methyl-d_3-perfluorooctanesulfonamidoacetic acid	D_3-MeFOSAA	573.1	$[CF_3(CF_2)_7SO_2N(CD_3)CH_2CO_2]^-$	419.1	$[CF_3(CF_2)_7]^-$	N/A	N/A
N-ethyl-d_5-perfluorooctanesulfonamidoacetic acid	D_5-EtFOSAA	589.2	$[CF_3(CF_2)_7SO_2N(CD_2CD_3)CH_2CO_2]^-$	419.0	$[CF_3(CF_2)_7]^-$	N/A	N/A
$^{13}C_2$-Fluorotelomersulfonate (6:2)	M2-6:2FTS	429.0	$[CF_3(CF_2)_5(^{13}CH_2)_2SO_3]^-$	80.9	$[SO_2OH]^-$	N/A	N/A
$^{13}C_2$-Fluorotelomersulfonate (8:2)	M2-8:2FTS	528.9	$[CF_3(CF_2)_7(^{13}CH_2)_2SO_3]^-$	80.9	$[SO_2OH]^-$	N/A	N/A
Injection Internal Standards							
$^{13}C_6$-Perfluorohexanoic acid	$^{13}C_6$-PFHxA	318.9	$[^{13}CF_3(^{13}CF_2)_4{}^{13}CO_2]^-$	274.0	$[^{13}CF_3(^{13}CF_2)_4]^-$	N/A	N/A
$^{13}C_9$-Perfluorodecanoic acid	$^{13}C_9$-PFDA	521.9	$[CF_3(^{13}CF_2)_8{}^{13}CO_2]^-$	477.1	$[CF_3(^{13}CF_2)_8]^-$	N/A	N/A

Analyte Precursor Ion Verification

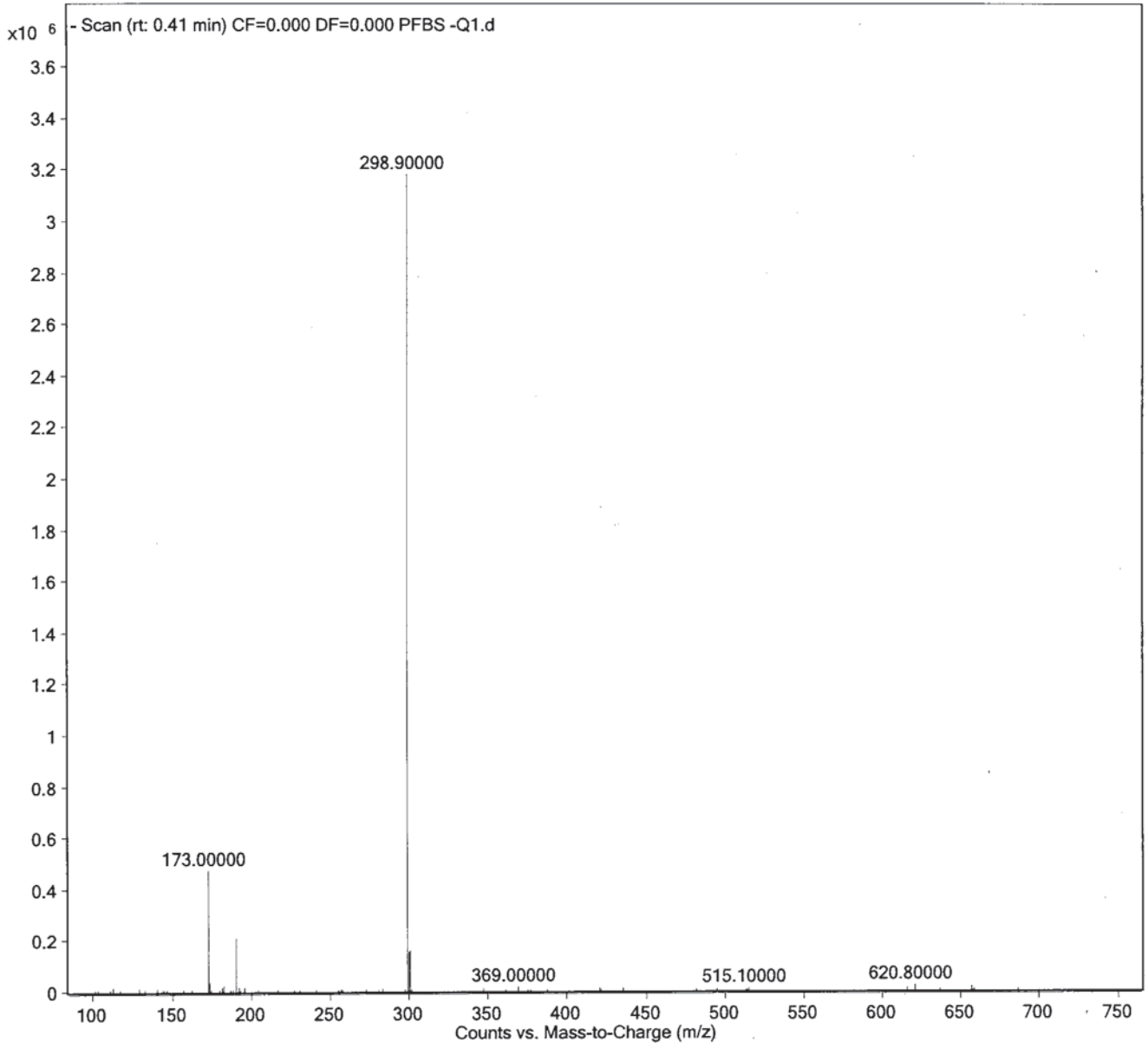
Sample Name	PFBA -Q1	**Position**	P1-A1	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFBA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 4:37:04 PM



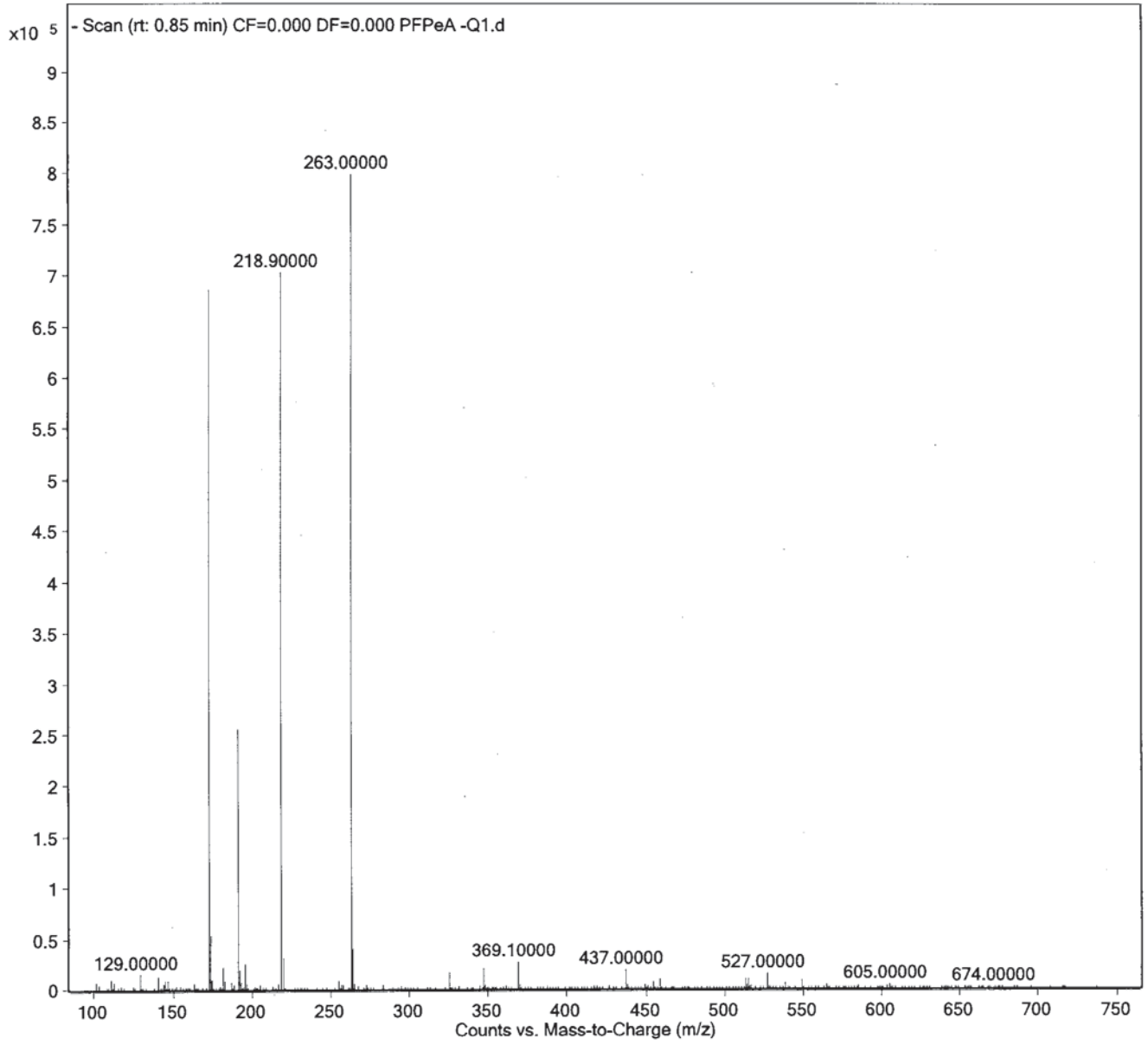
MaxXam Analytics

Sample Name	PFBS -Q1	**Position**	P1-A2	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFBS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 4:42:36 PM

SGS AXYS Analytics

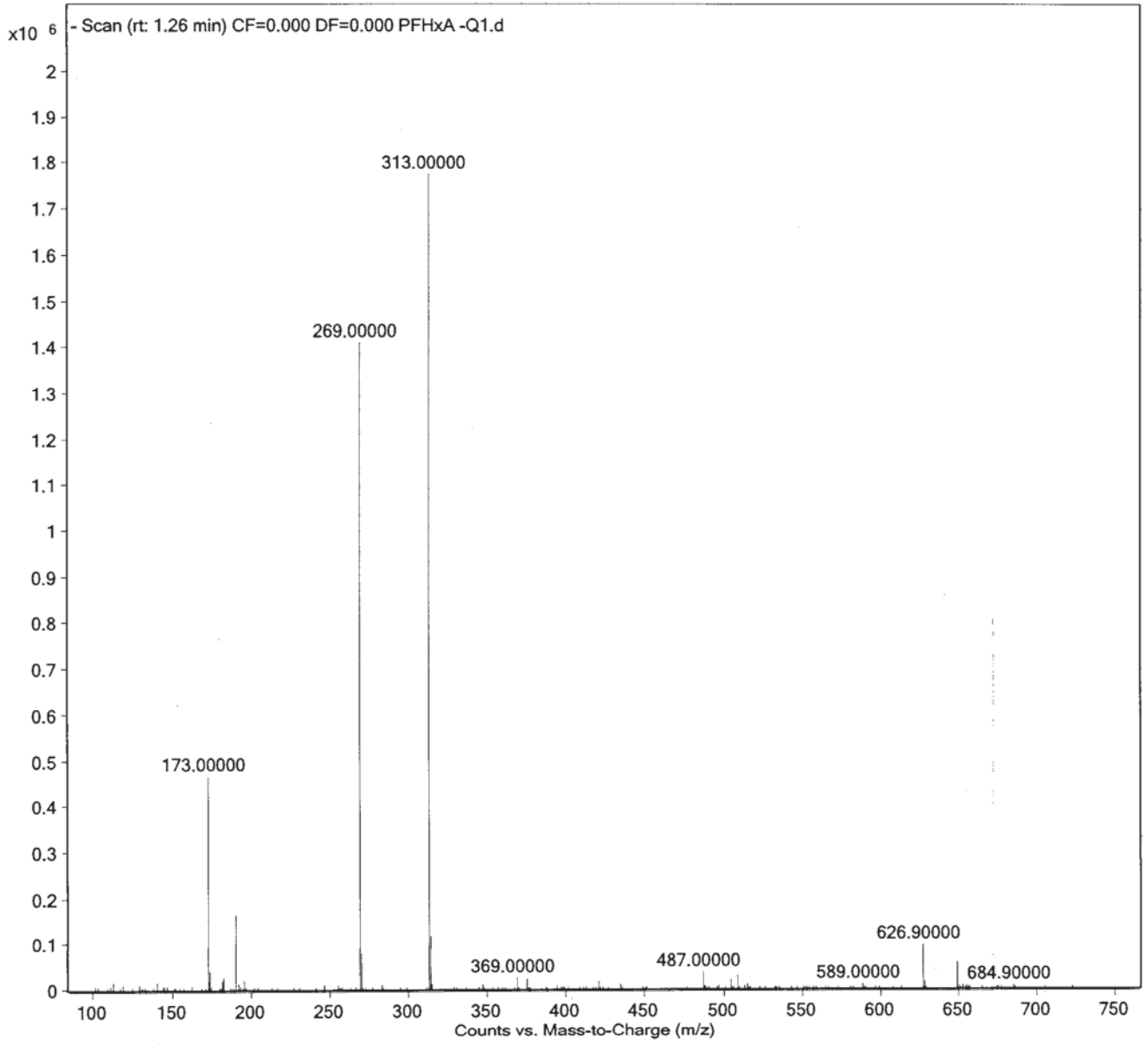


Sample Name	PFPeA -Q1	**Position**	P1-A3	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFPeA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 4:48:06 PM



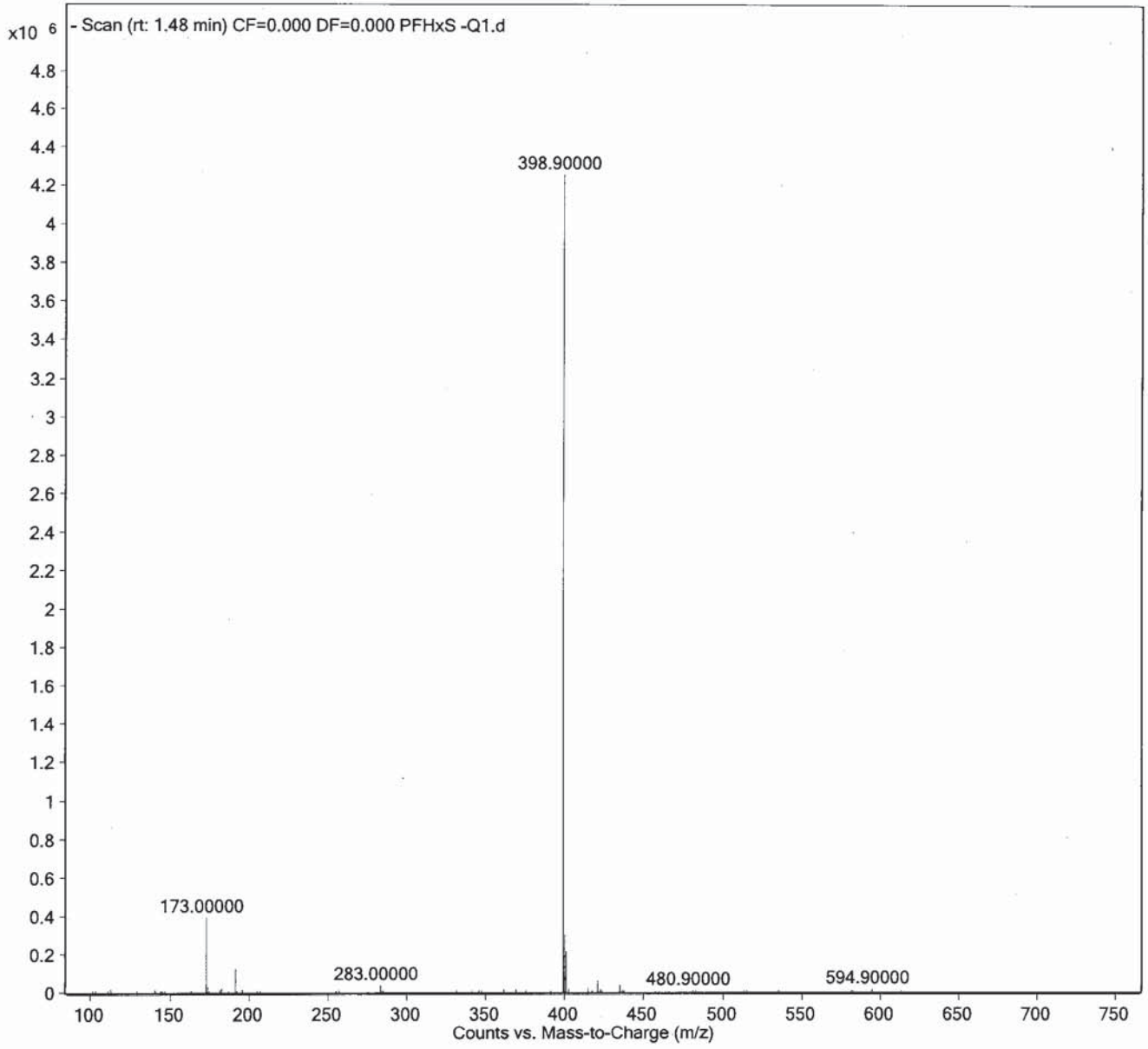
MaxXam Analytics

Sample Name	PFHxA -Q1	**Position**	P1-A4	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHxA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 4:53:36 PM



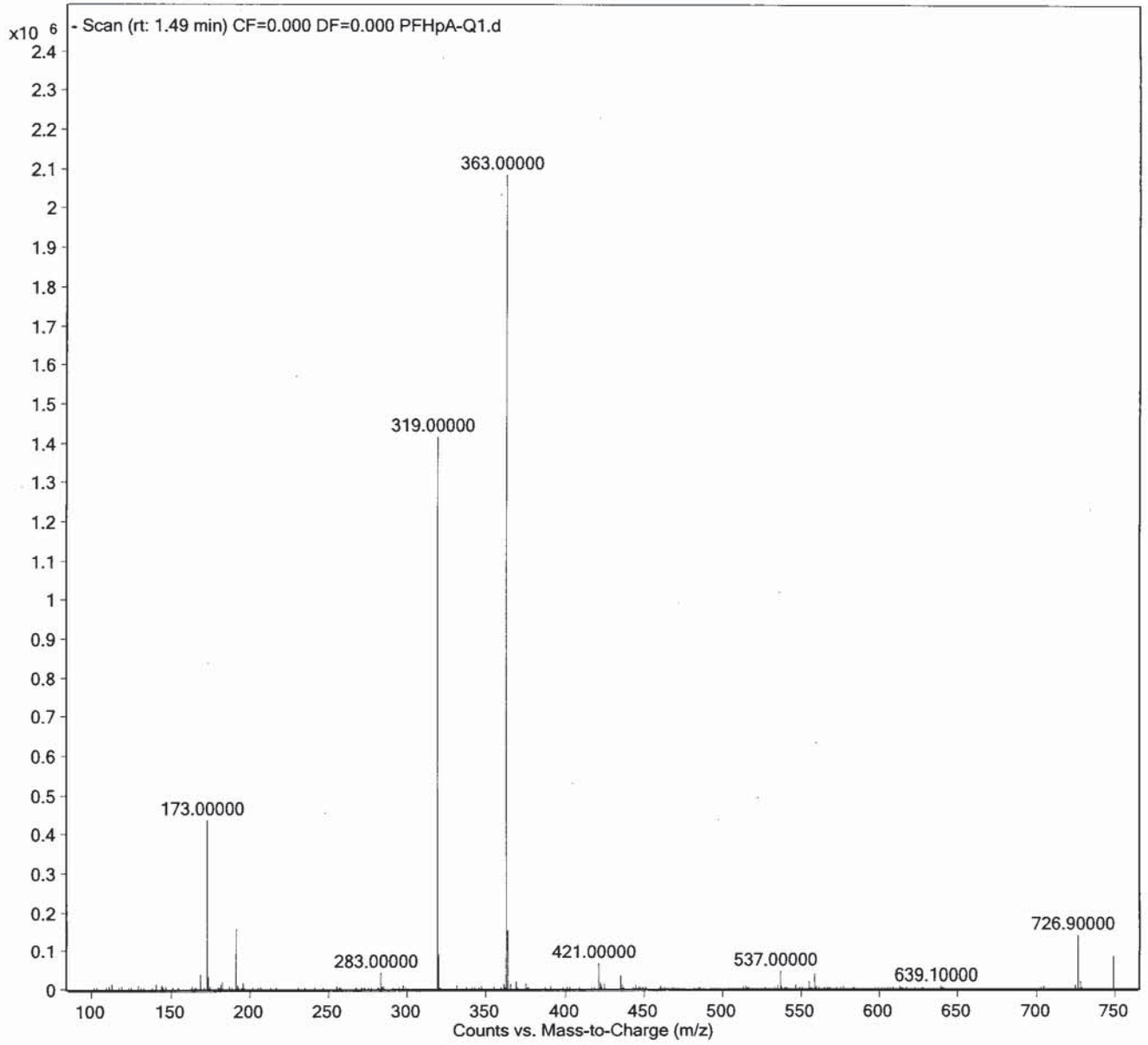
Maxxam Analytics

Sample Name	PFHxS -Q1	**Position**	P1-A5	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHxS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 4:59:06 PM



Maxxam Analytics

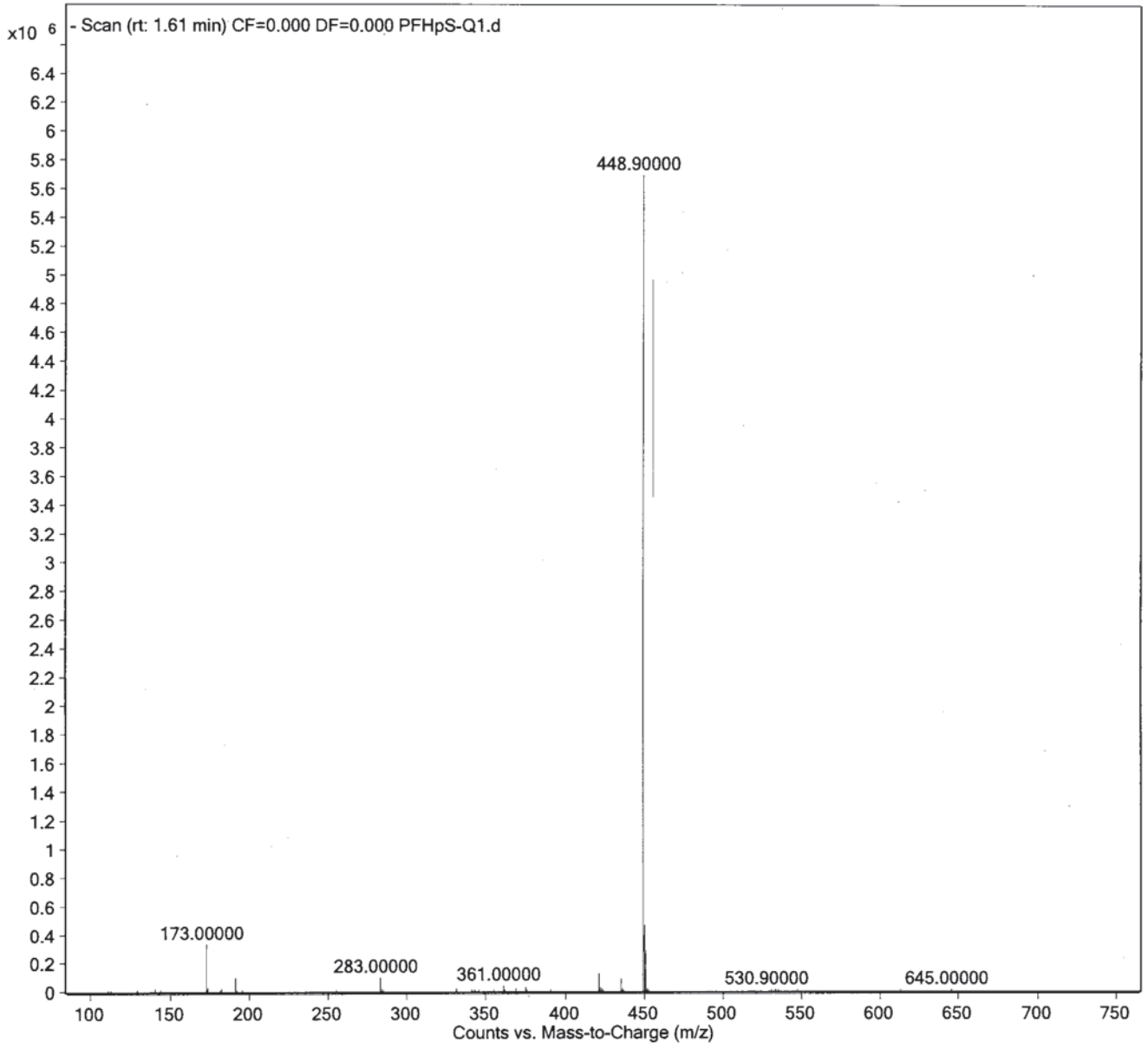
Sample Name	PFHpA-Q1	**Position**	P1-A6	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHpA-Q1.d
CQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:04:36 PM



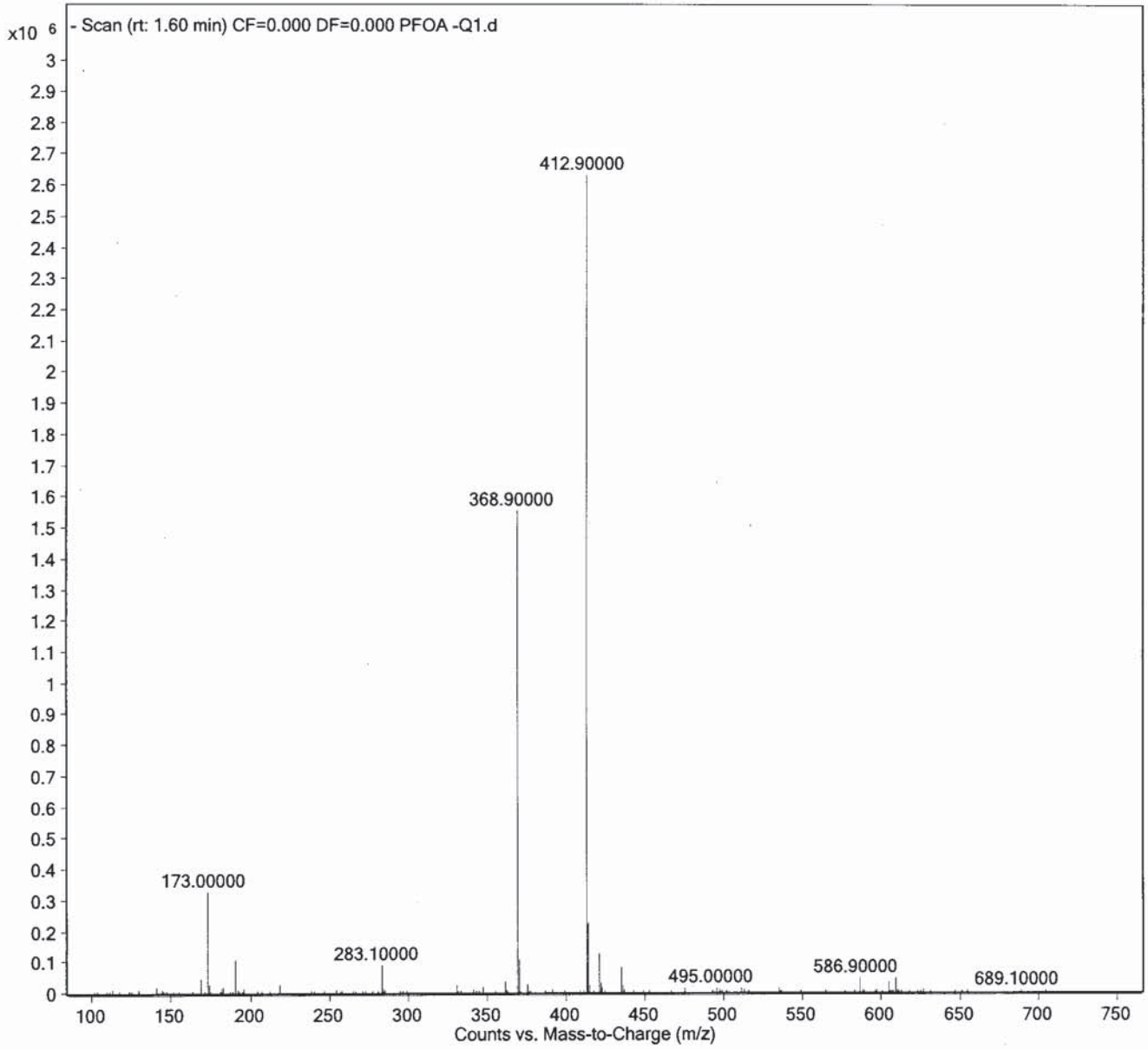
MaxXam Analytics

Sample Name	PFHpS-Q1	**Position**	P1-A7	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHpS-Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:10:06 PM

Maxxam Analytics

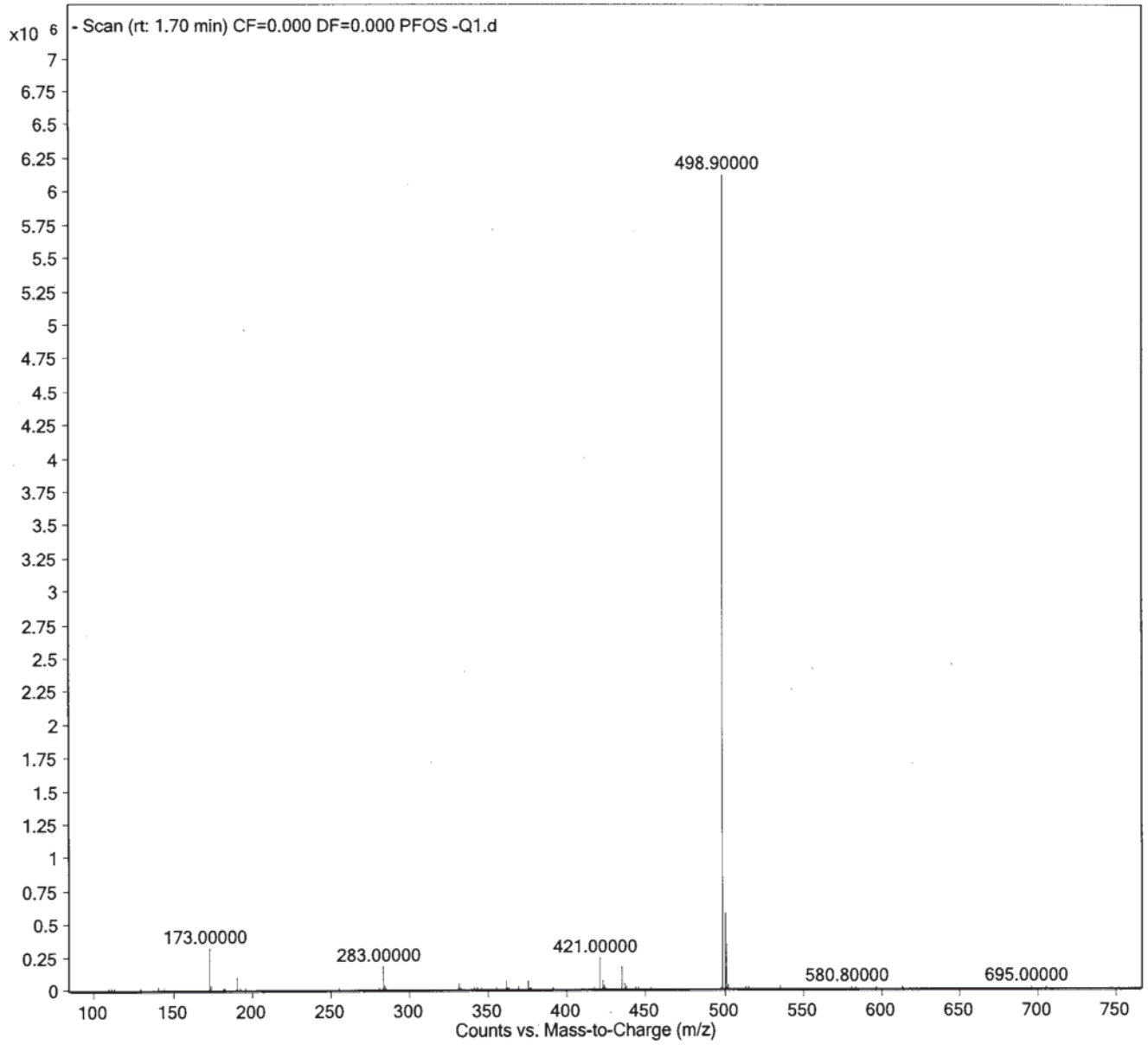


Sample Name	PFOA -Q1	**Position**	P1-A8	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFOA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:15:38 PM



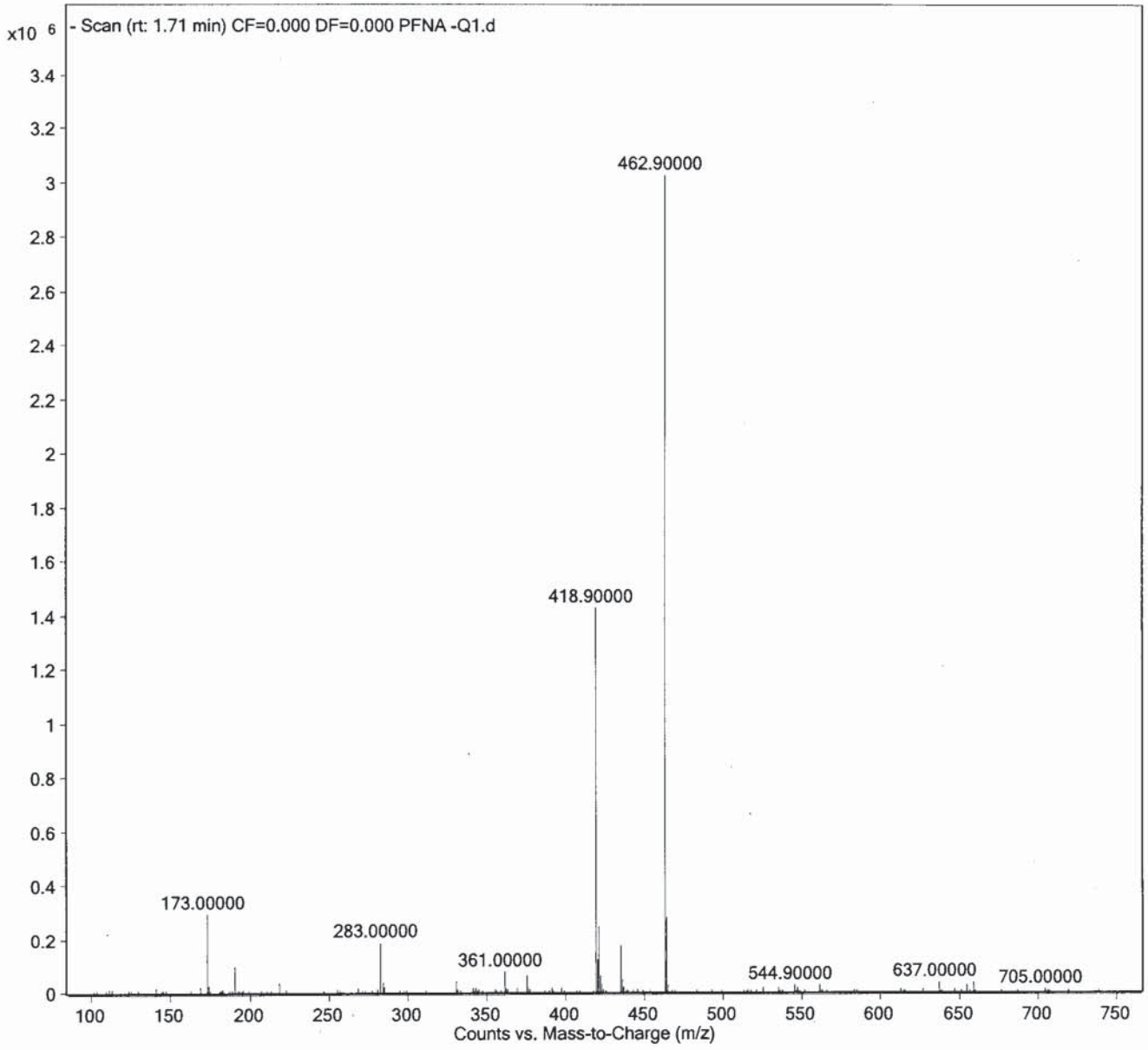
Maxxam Analytics

Sample Name	PFOS -Q1	**Position**	P1-A9	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFOS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:21:10 PM



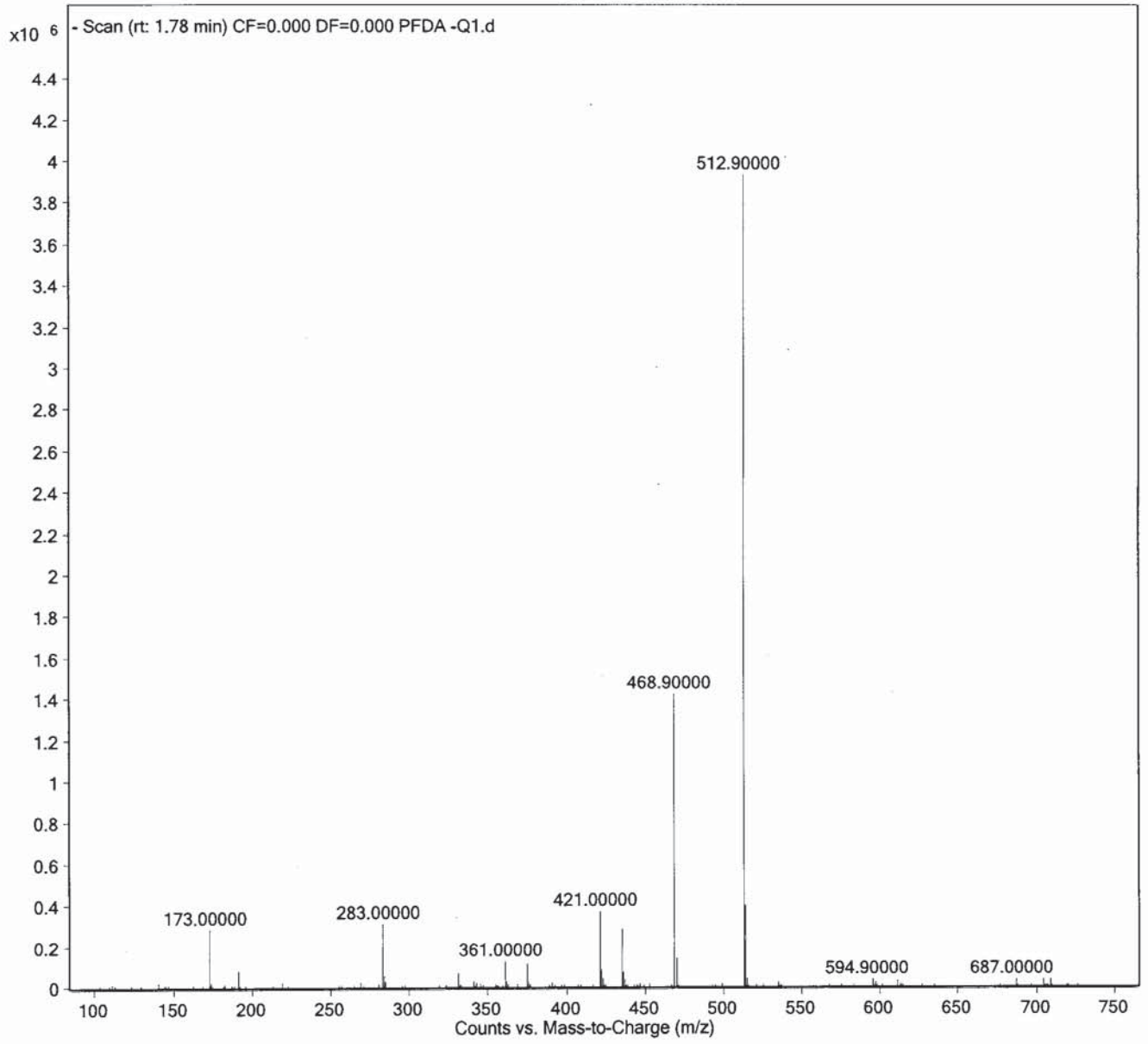
MaxXam Analytics

Sample Name	PFNA -Q1	**Position**	P1-B1	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFNA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:26:42 PM



Jaakam Analytics

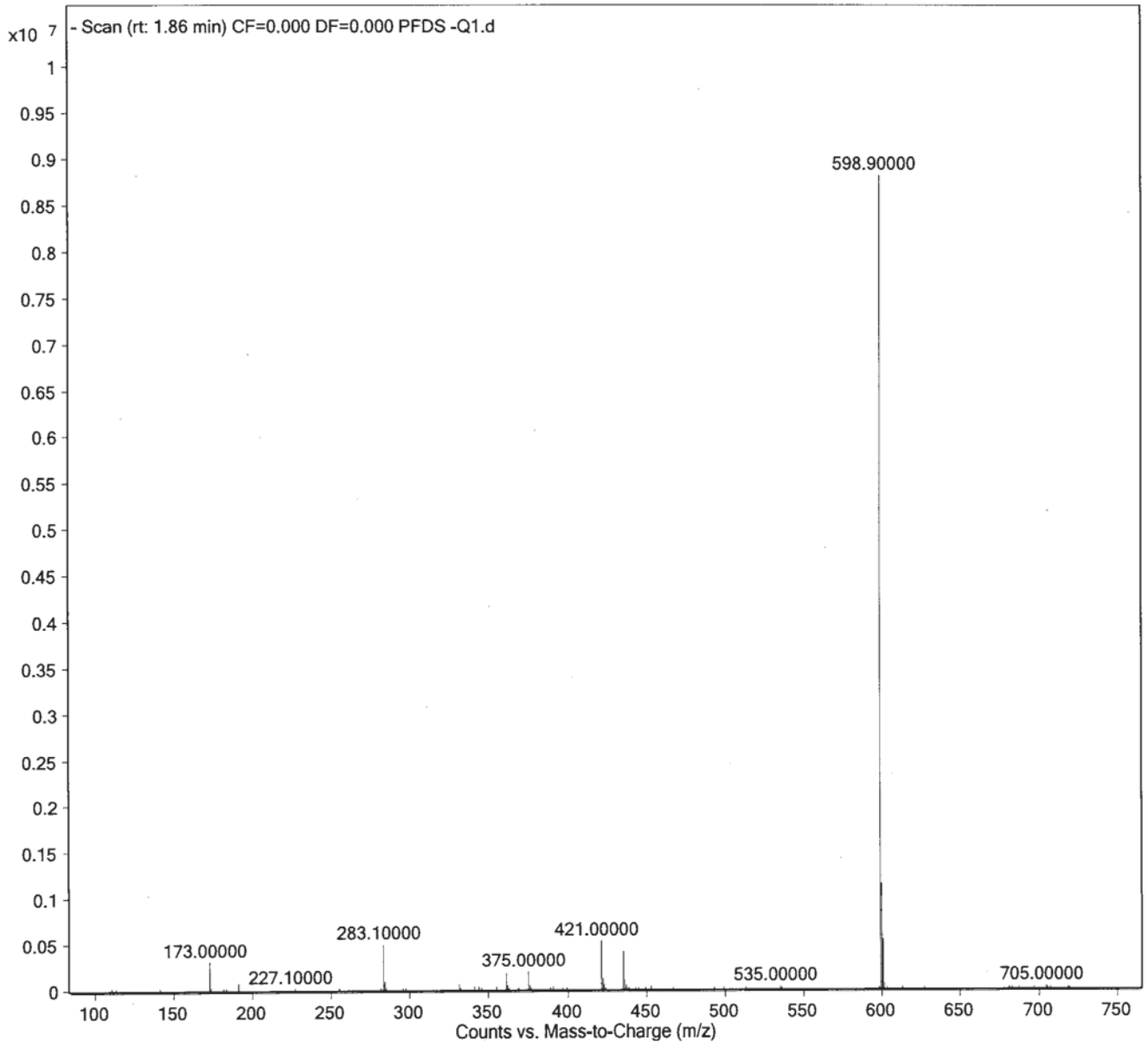
Sample Name	PFDA -Q1	**Position**	P1-B2	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFDA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:32:12 PM



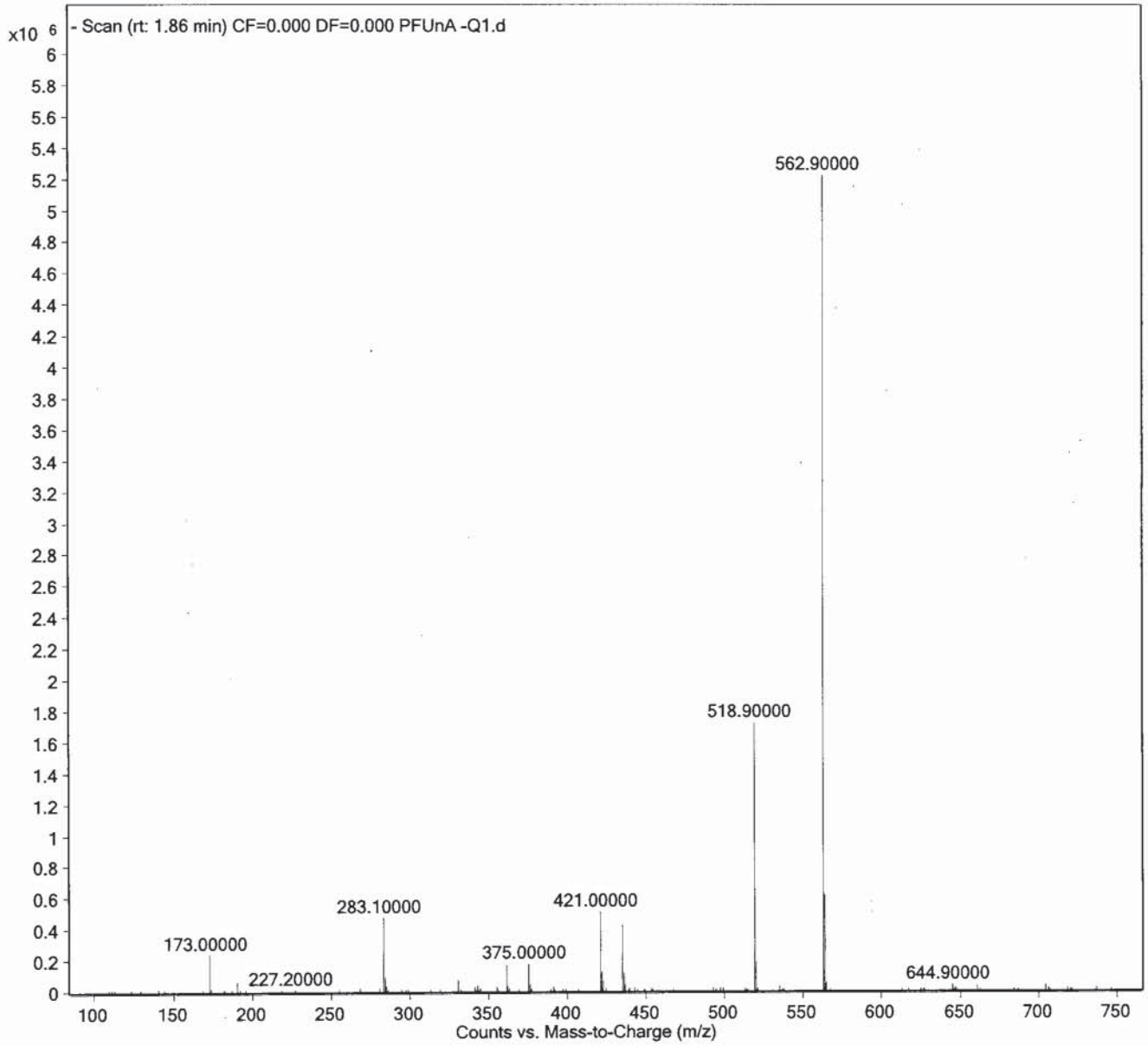
MaxXam Analytics

Sample Name	PFDS -Q1	**Position**	P1-B3	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFDS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:37:42 PM

MaxxAm Analytics

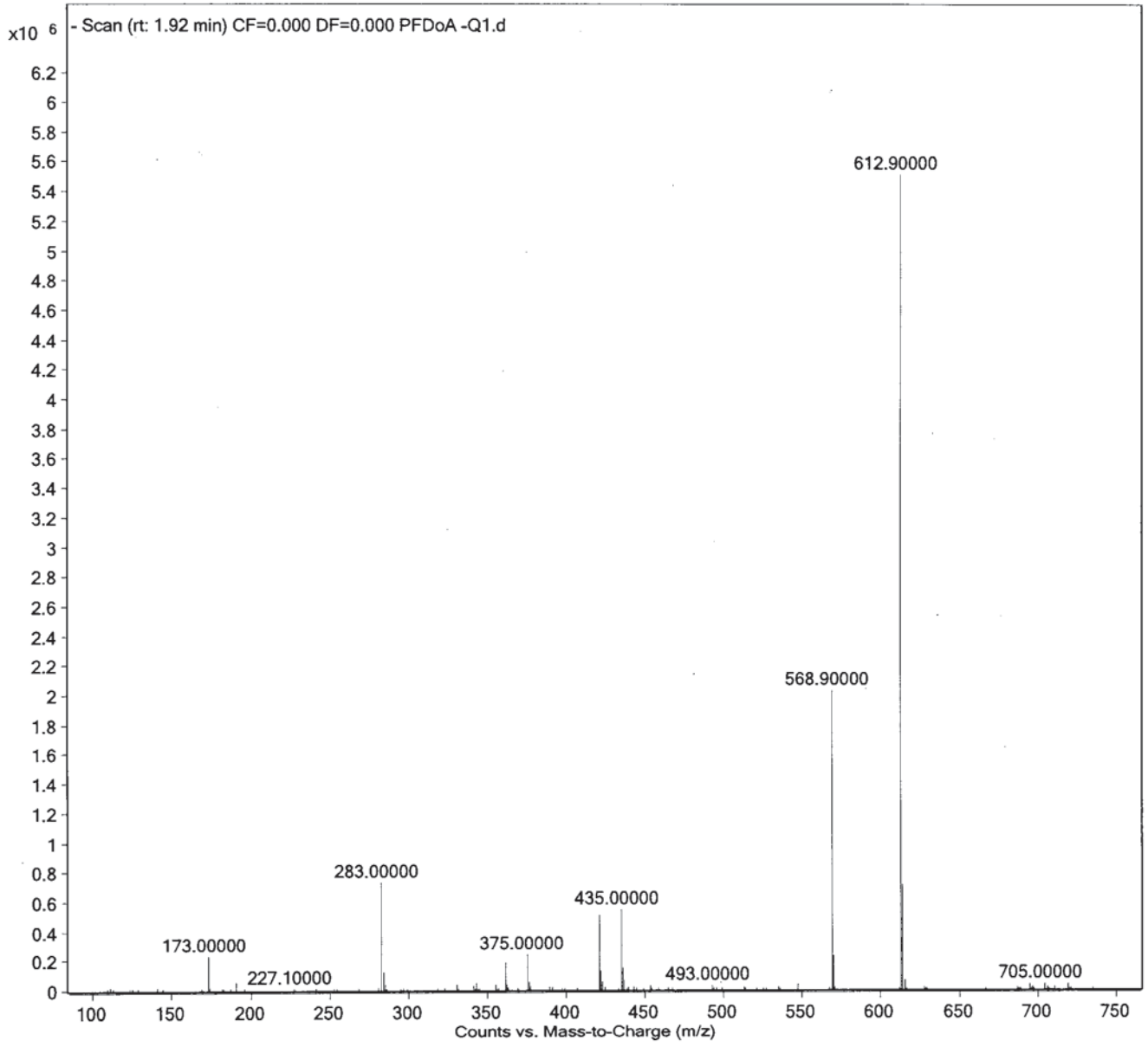


Sample Name	PFUnA -Q1	**Position**	P1-B4	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFUnA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:43:12 PM



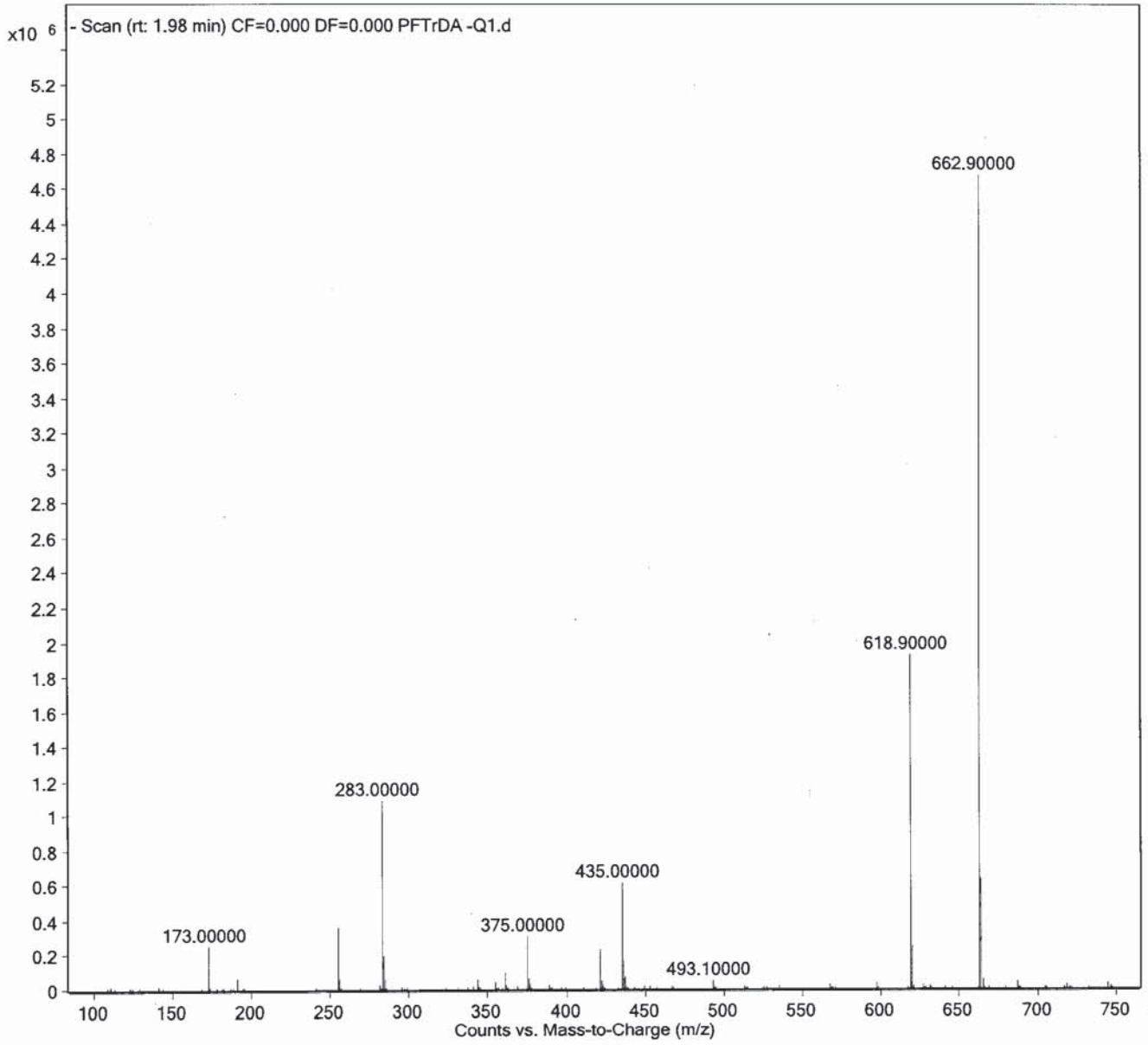
Jaxam Analytics

Sample Name	PFDoA -Q1	**Position**	P1-B5	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFDoA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:48:42 PM



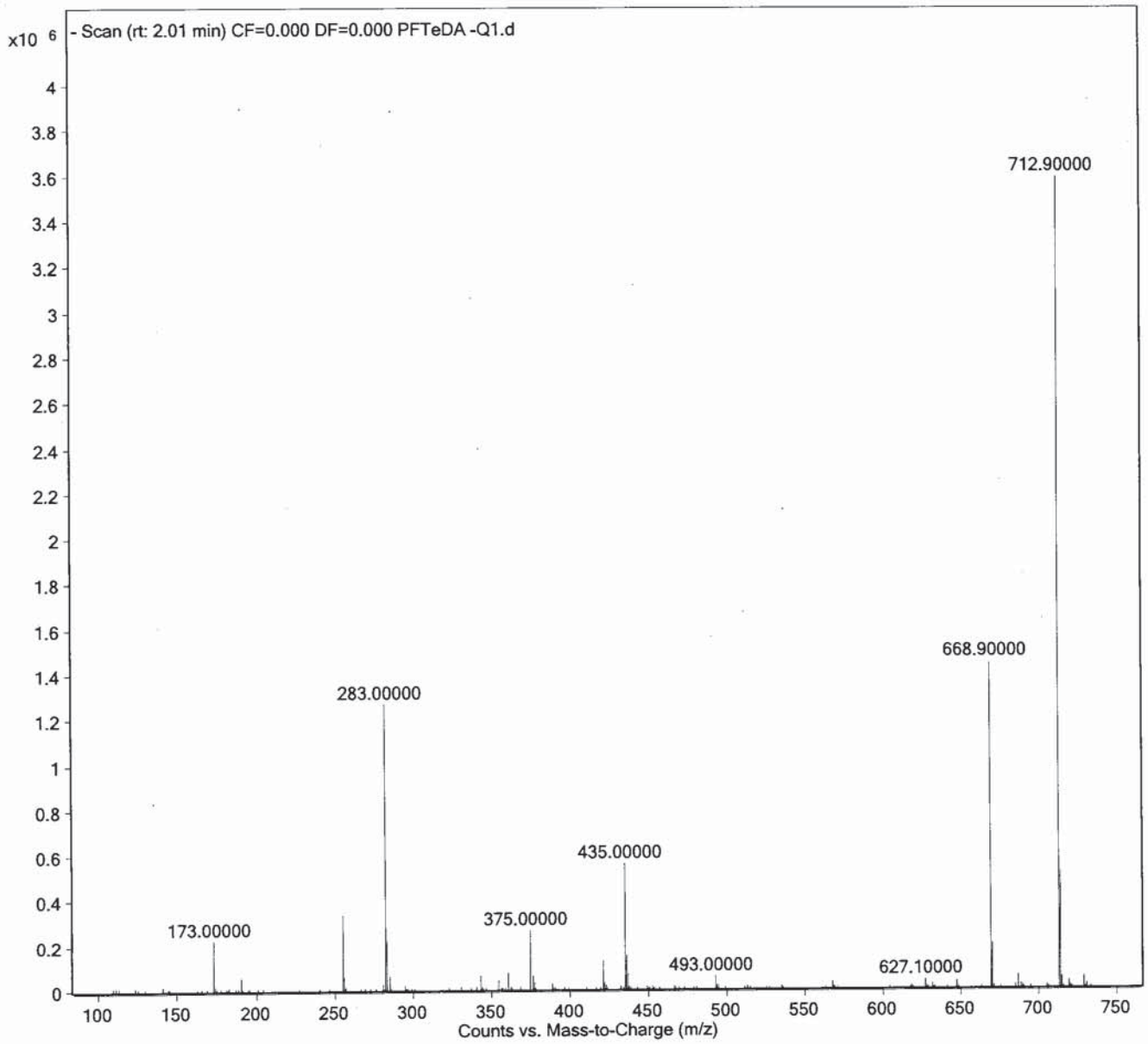
Jaxam Analytics

Sample Name	PFTrDA -Q1	**Position**	P1-B6	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFTrDA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:54:12 PM



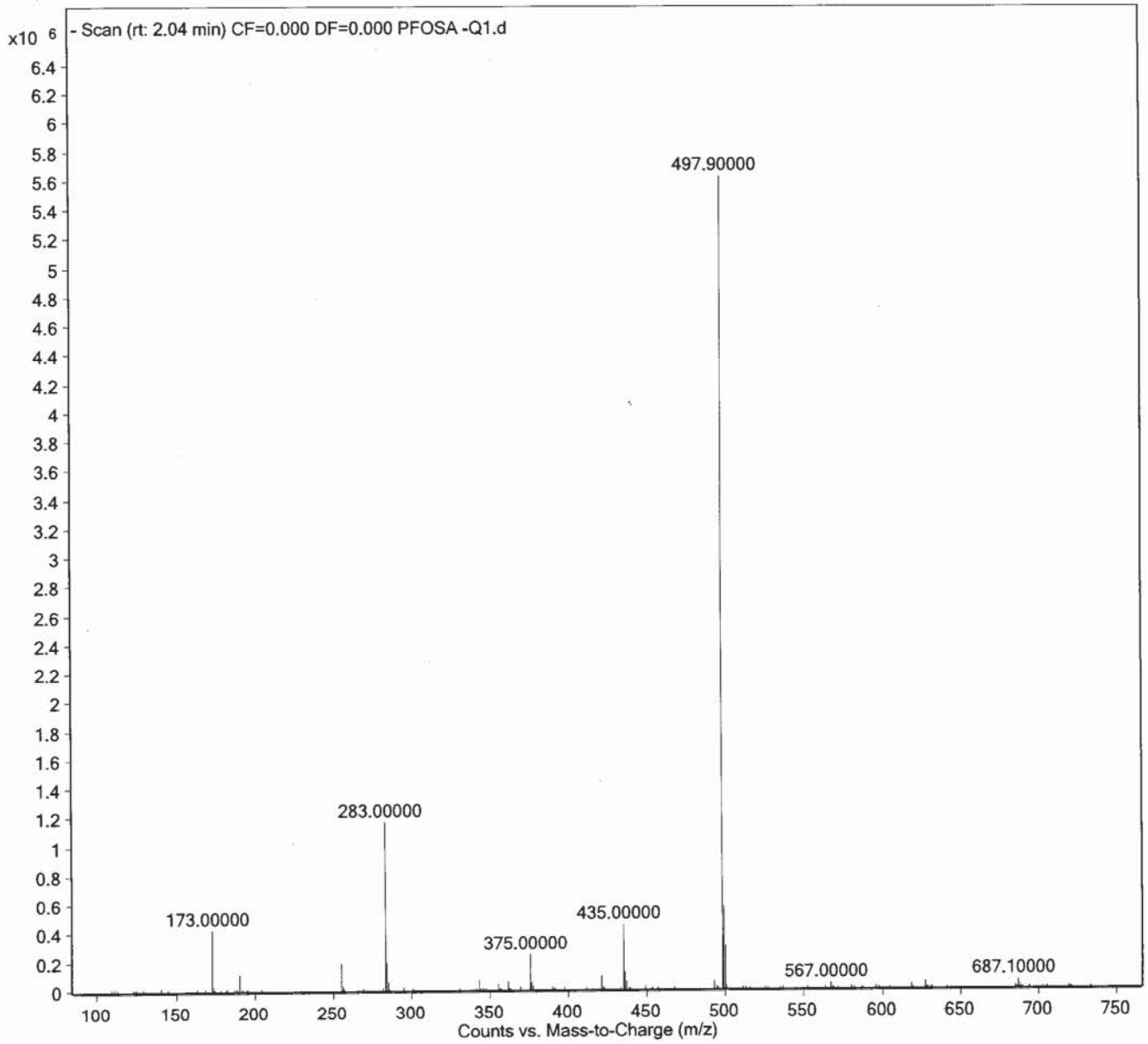
Alaskan Analytics

Sample Name	PFTeDA -Q1	**Position**	P1-B7	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFTeDA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 5:59:42 PM

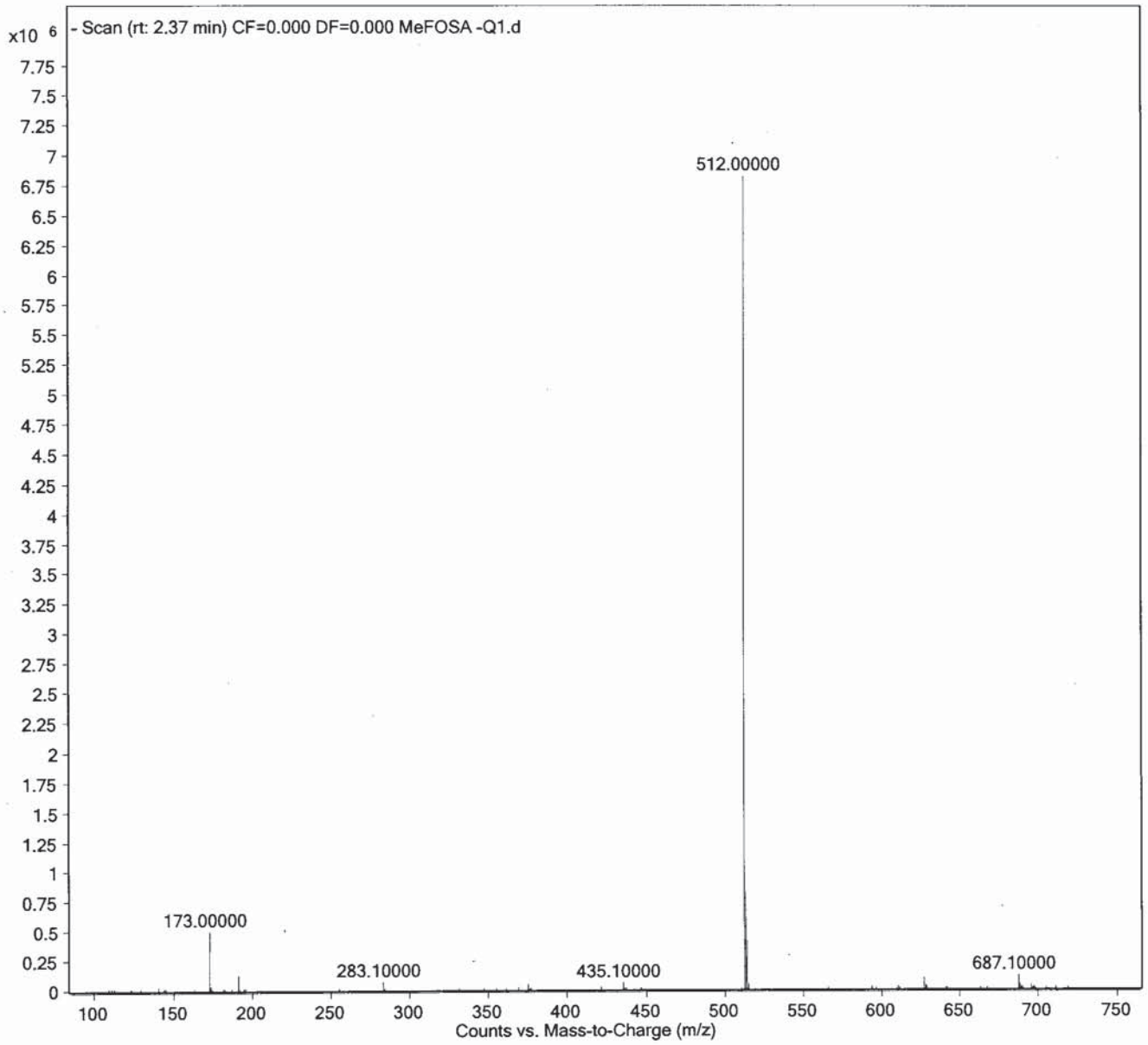


SaraKam Analytics

Sample Name	PFOSA -Q1	**Position**	P1-B8	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFOSA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:05:13 PM



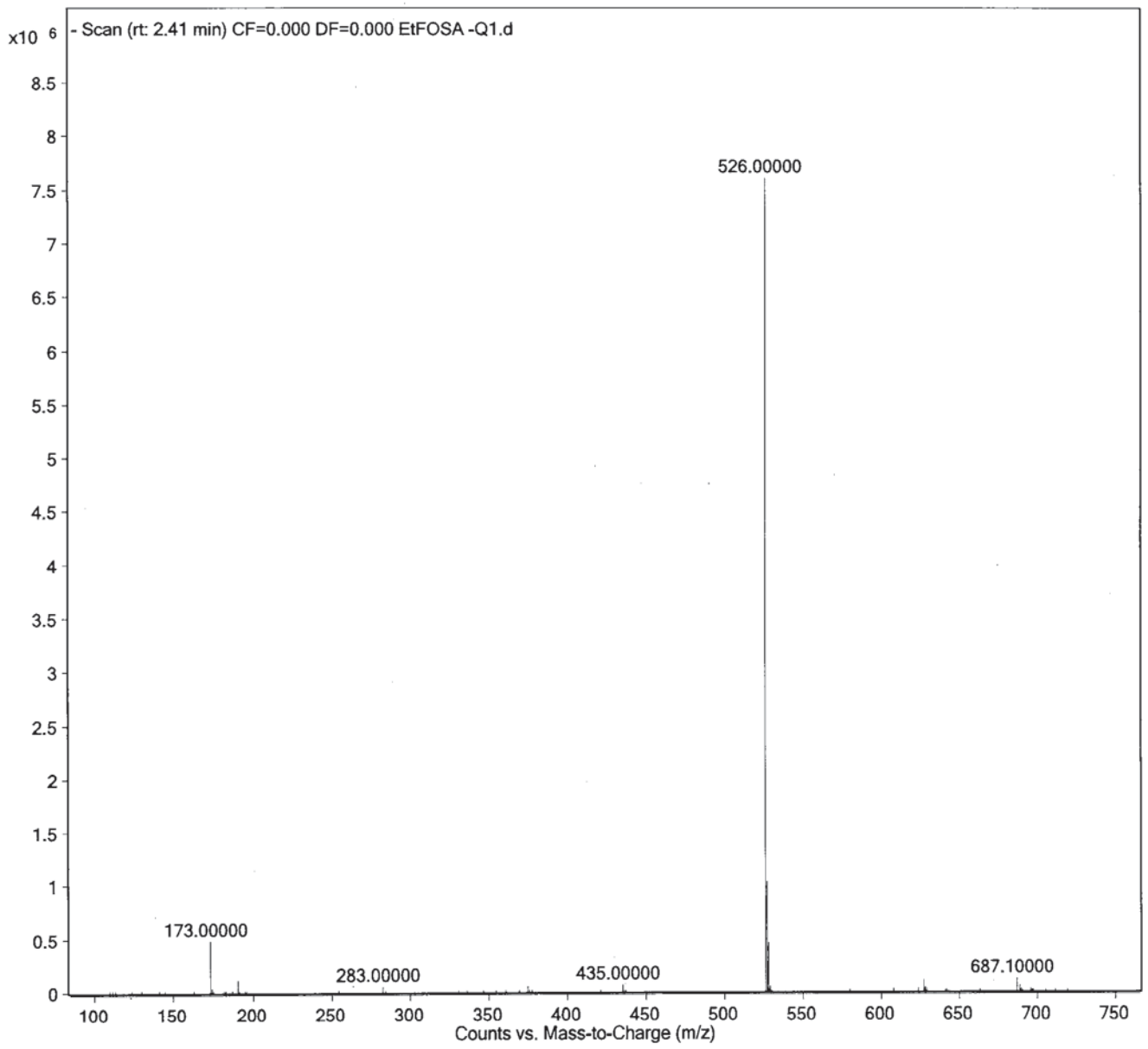
Sample Name	MeFOSA -Q1	**Position**	P1-B9	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MeFOSA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:10:45 PM



MaxXam Analytics

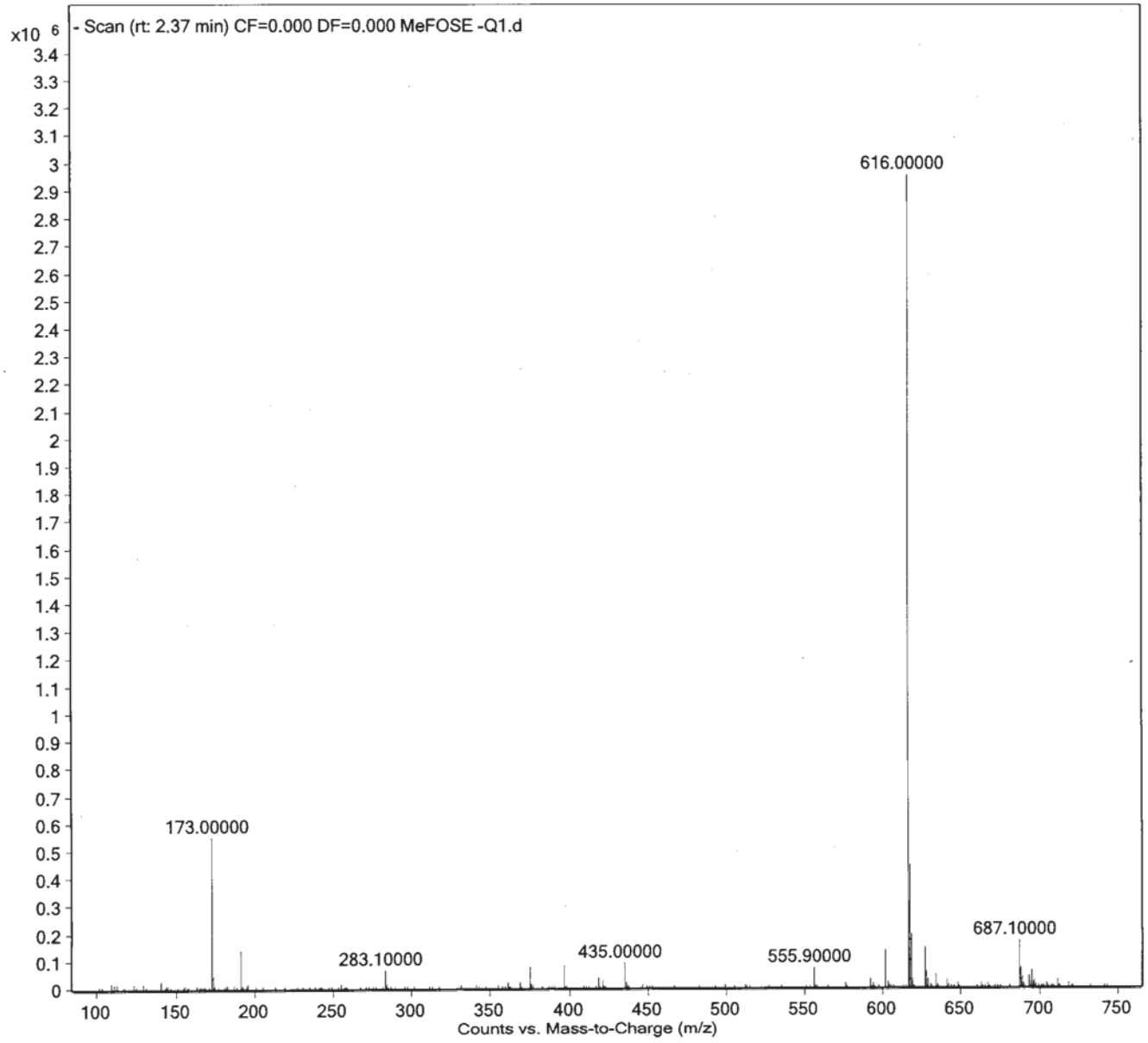
Sample Name	EtFOSA -Q1	**Position**	P1-C1	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	EtFOSA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:16:16 PM

Maxxam Analytics

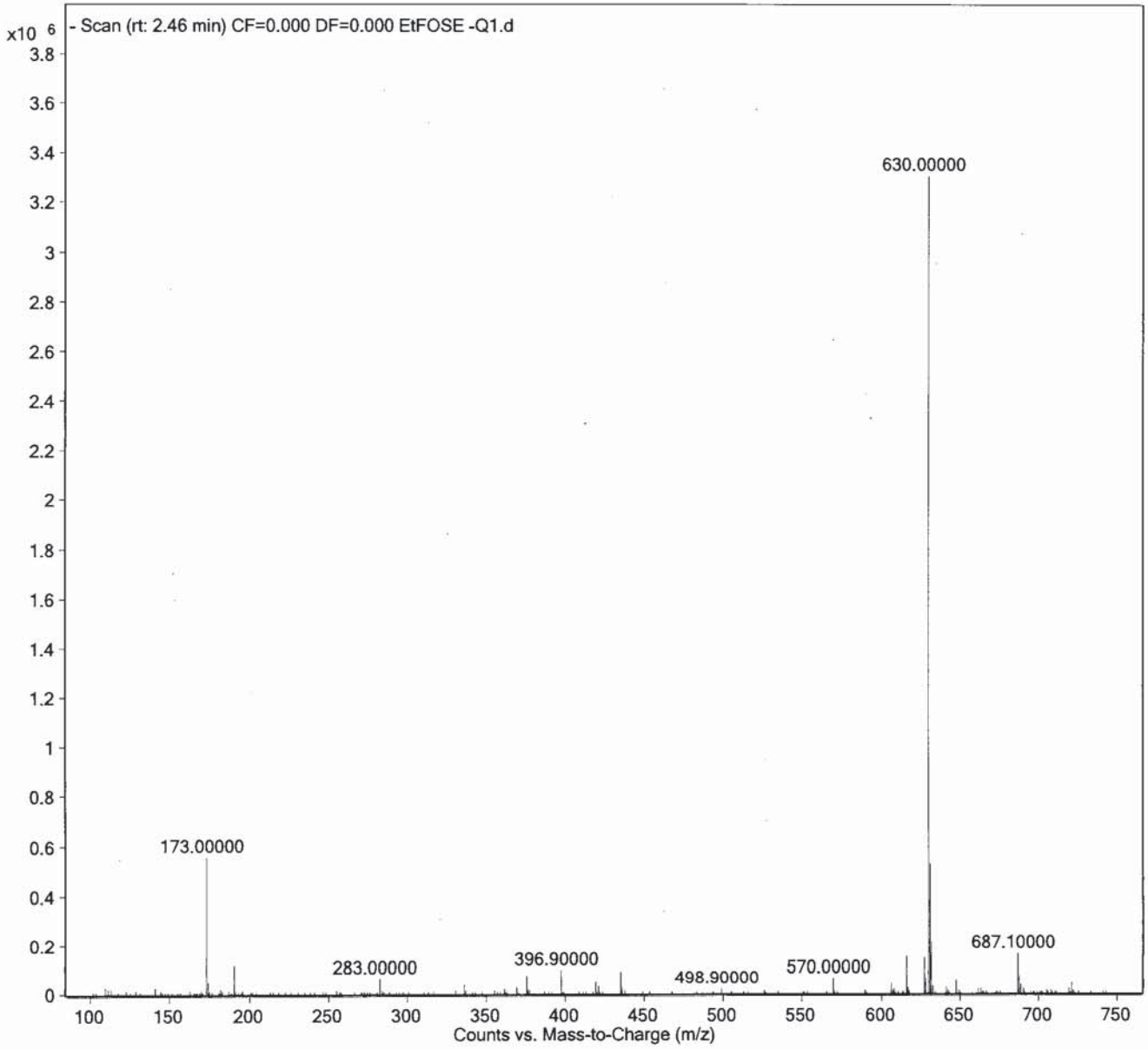


Sample Name	MeFOSE -Q1	**Position**	P1-C2	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MeFOSE -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:21:46 PM

Maxxam Analytics

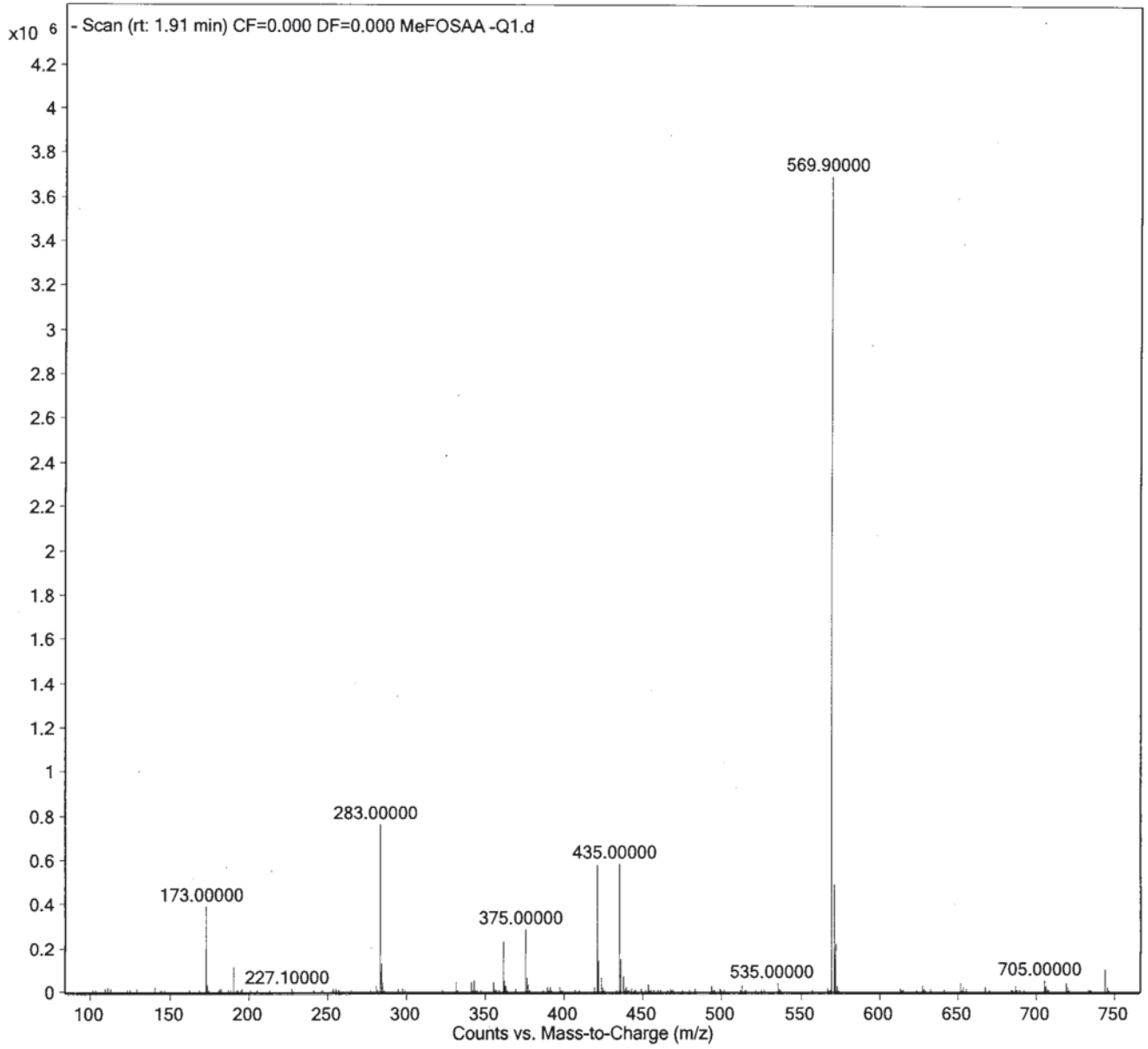


Sample Name	EtFOSE -Q1	**Position**	P1-C3	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	EtFOSE -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:27:16 PM



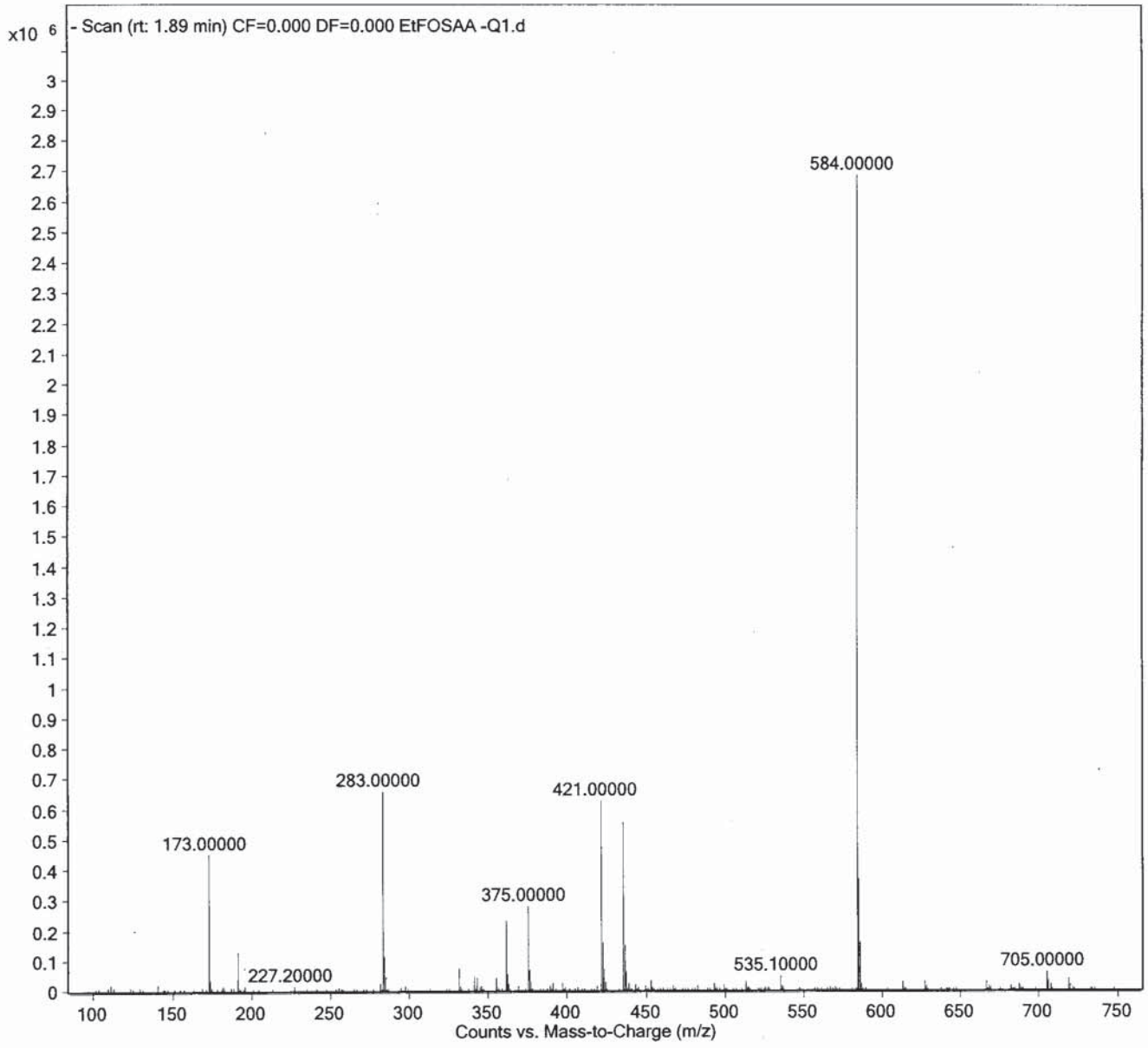
Maxxam Analytics

Sample Name	MeFOSAA -Q1	**Position**	P1-C4	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MeFOSAA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:32:46 PM



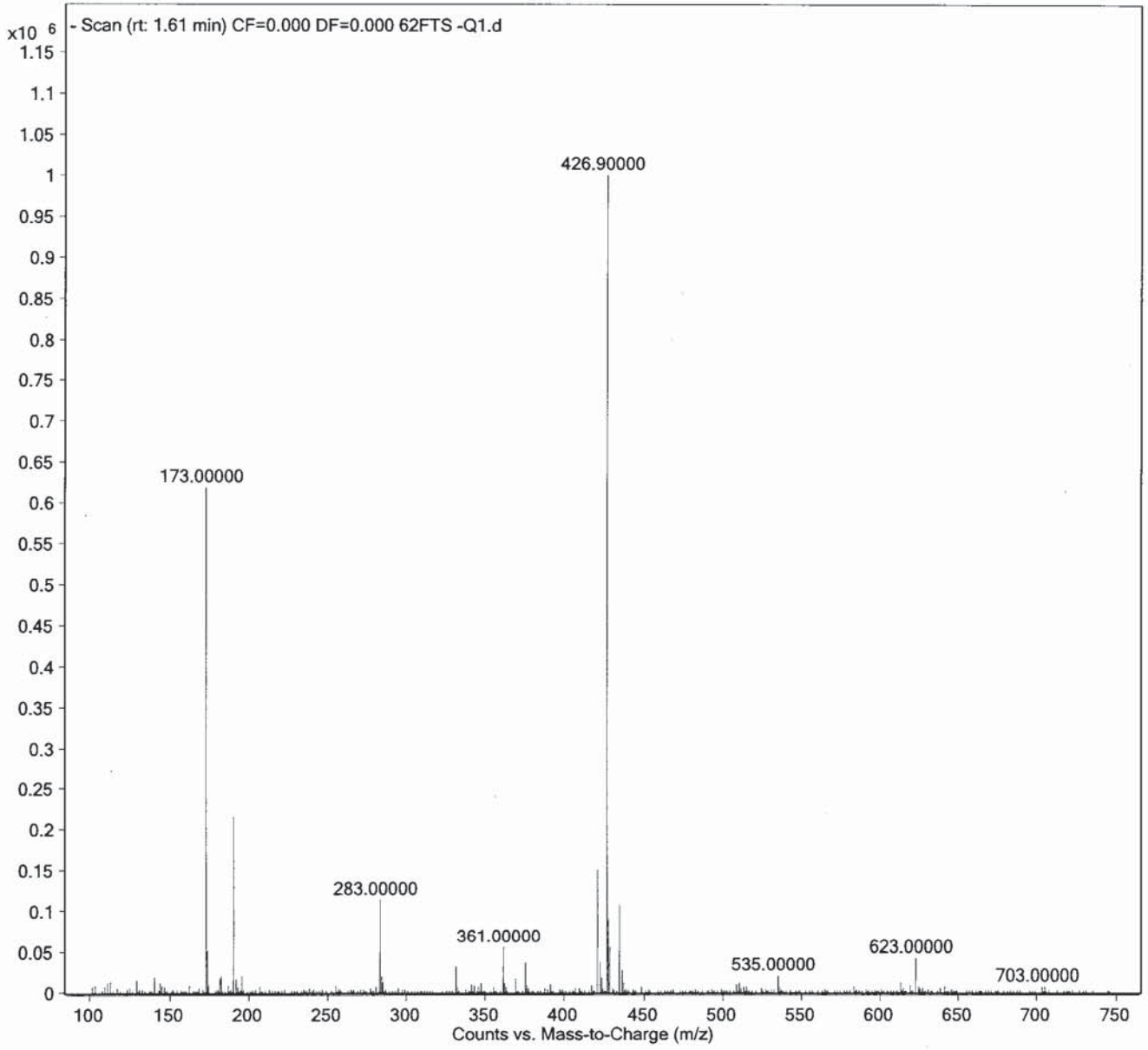
Maxxam Analytics

Sample Name	EtFOSAA -Q1	**Position**	P1-C5	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	EtFOSAA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:38:16 PM

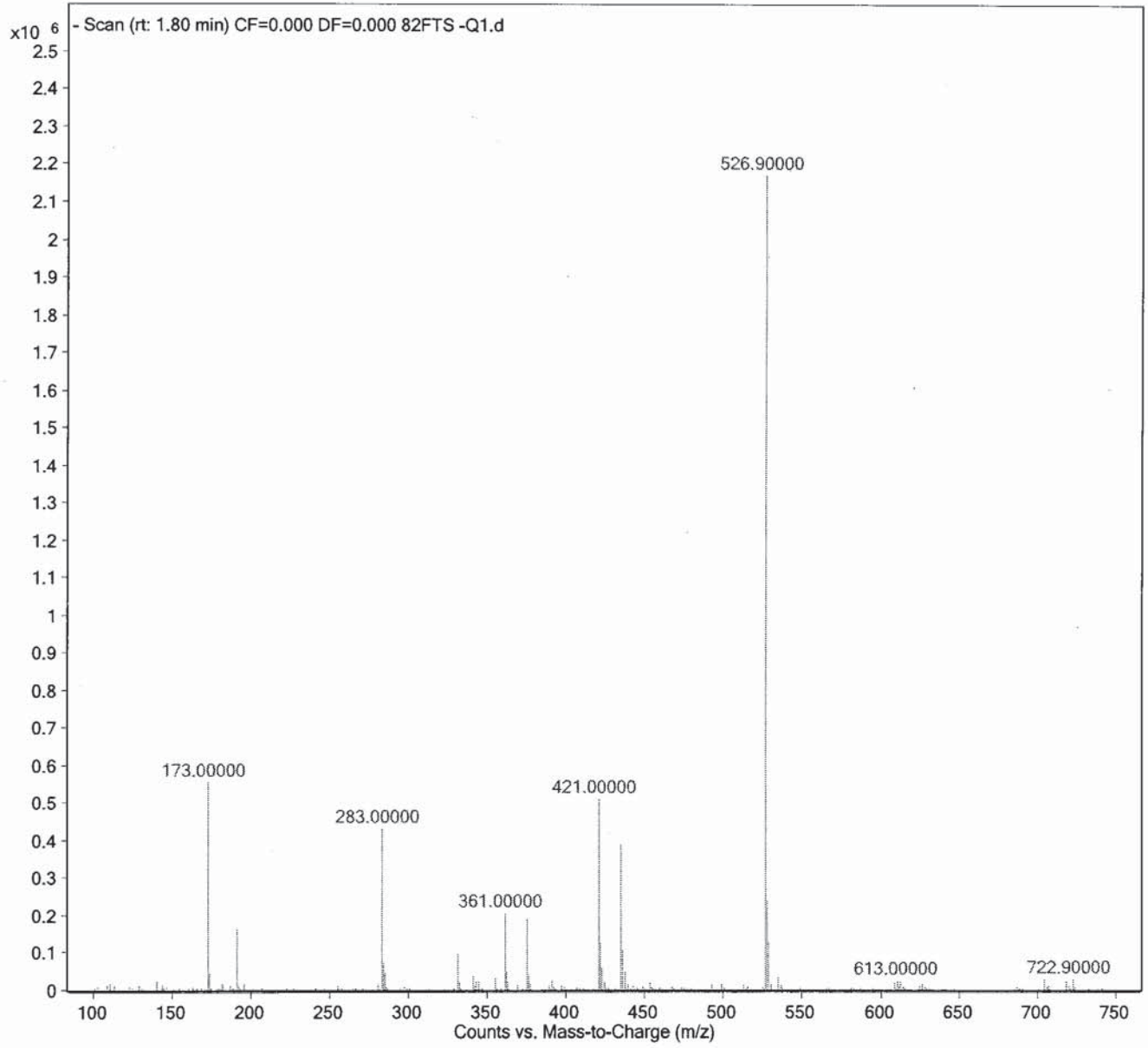


Sample Name	6:2FTS -Q1	**Position**	P1-C6	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	62FTS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:43:46 PM

Maxxam Analytics



Sample Name	8:2FTS -Q1	**Position**	P1-C7	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	82FTS -Q1.d
AcQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/10 6:49:16 PM



Jacksam Analytics

Worklist Report

Agilent Technologies

Maxxam Analytics

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFAS_MASSVER_170710.wkl

Operator Name: M_G
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\data\Mass Verification\20170710
Pre-Worklist Script: ---
Post-Worklist Script: ---
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: ---
Plate Barcode: None

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
1	PFBA -Q1	P1-A1	PFC_MassVerification-Q1.m	PFBA -Q1.d	Sample	As Method	PFAS-Q1
2	PFBS -Q1	P1-A2	PFC_MassVerification-Q1.m	PFBS -Q1.d	Sample	As Method	PFAS-Q1
3	PFPeA -Q1	P1-A3	PFC_MassVerification-Q1.m	PFPeA -Q1.d	Sample	As Method	PFAS-Q1
4	PFHxA -Q1	P1-A4	PFC_MassVerification-Q1.m	PFHxA -Q1.d	Sample	As Method	PFAS-Q1
5	PFHxS -Q1	P1-A5	PFC_MassVerification-Q1.m	PFHxS -Q1.d	Sample	As Method	PFAS-Q1
6	PFHpA-Q1	P1-A6	PFC_MassVerification-Q1.m	PFHpA-Q1.d	Sample	As Method	PFAS-Q1
7	PFHpS-Q1	P1-A7	PFC_MassVerification-Q1.m	PFHpS-Q1.d	Sample	As Method	PFAS-Q1
8	PFOA -Q1	P1-A8	PFC_MassVerification-Q1.m	PFOA -Q1.d	Sample	As Method	PFAS-Q1
9	PFOS -Q1	P1-A9	PFC_MassVerification-Q1.m	PFOS -Q1.d	Sample	As Method	PFAS-Q1

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Worklist Report

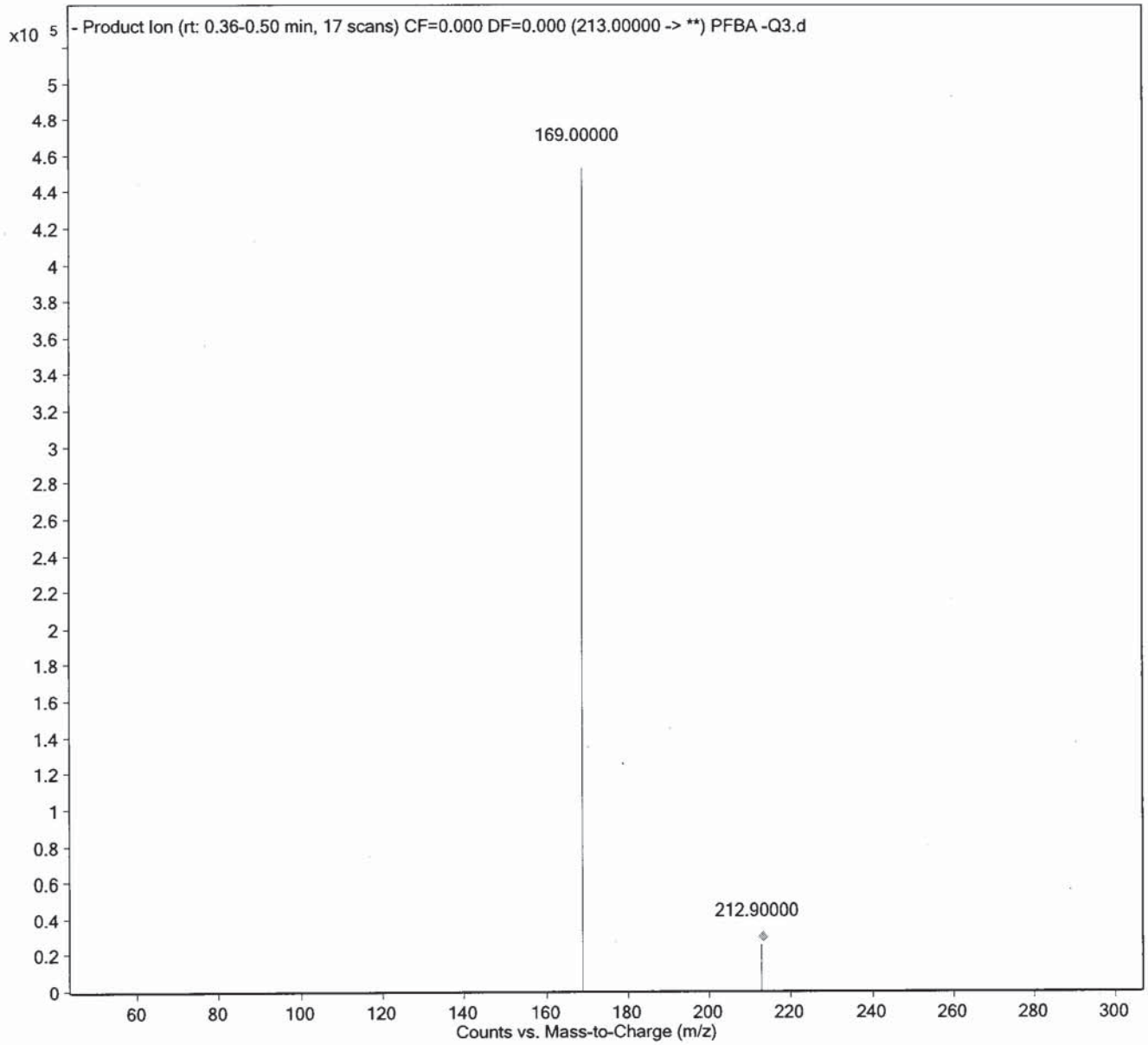
Agilent Technologies

	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
10	PFNA -Q1	P1-B1	PFC_MassVerification-Q1.m	PFNA -Q1.d	Sample	As Method	PFAS-Q1
11	PFDA -Q1	P1-B2	PFC_MassVerification-Q1.m	PFDA -Q1.d	Sample	As Method	PFAS-Q1
12	PFDS -Q1	P1-B3	PFC_MassVerification-Q1.m	PFDS -Q1.d	Sample	As Method	PFAS-Q1
13	PFUnA -Q1	P1-B4	PFC_MassVerification-Q1.m	PFUnA -Q1.d	Sample	As Method	PFAS-Q1
14	PFDoA -Q1	P1-B5	PFC_MassVerification-Q1.m	PFDoA -Q1.d	Sample	As Method	PFAS-Q1
15	PFTrDA -Q1	P1-B6	PFC_MassVerification-Q1.m	PFTrDA -Q1.d	Sample	As Method	PFAS-Q1
16	PFTeDA -Q1	P1-B7	PFC_MassVerification-Q1.m	PFTeDA -Q1.d	Sample	As Method	PFAS-Q1
17	PFOSA -Q1	P1-B8	PFC_MassVerification-Q1.m	PFOSA -Q1.d	Sample	As Method	PFAS-Q1
18	MeFOSA -Q1	P1-B9	PFC_MassVerification-Q1.m	MeFOSA -Q1.d	Sample	As Method	PFAS-Q1
19	EtFOSA -Q1	P1-C1	PFC_MassVerification-Q1.m	EtFOSA -Q1.d	Sample	As Method	PFAS-Q1
20	MeFOSE -Q1	P1-C2	PFC_MassVerification-Q1.m	MeFOSE -Q1.d	Sample	As Method	PFAS-Q1
21	EtFOSE -Q1	P1-C3	PFC_MassVerification-Q1.m	EtFOSE -Q1.d	Sample	As Method	PFAS-Q1
22	MeFOSAA -Q1	P1-C4	PFC_MassVerification-Q1.m	MeFOSAA -Q1.d	Sample	As Method	PFAS-Q1
23	EtFOSAA -Q1	P1-C5	PFC_MassVerification-Q1.m	EtFOSAA -Q1.d	Sample	As Method	PFAS-Q1
24	6:2FTS -Q1	P1-C6	PFC_MassVerification-Q1.m	62FTS -Q1.d	Sample	As Method	PFAS-Q1
25	8:2FTS -Q1	P1-C7	PFC_MassVerification-Q1.m	82FTS -Q1.d	Sample	As Method	PFAS-Q1

Maxxam Analytics

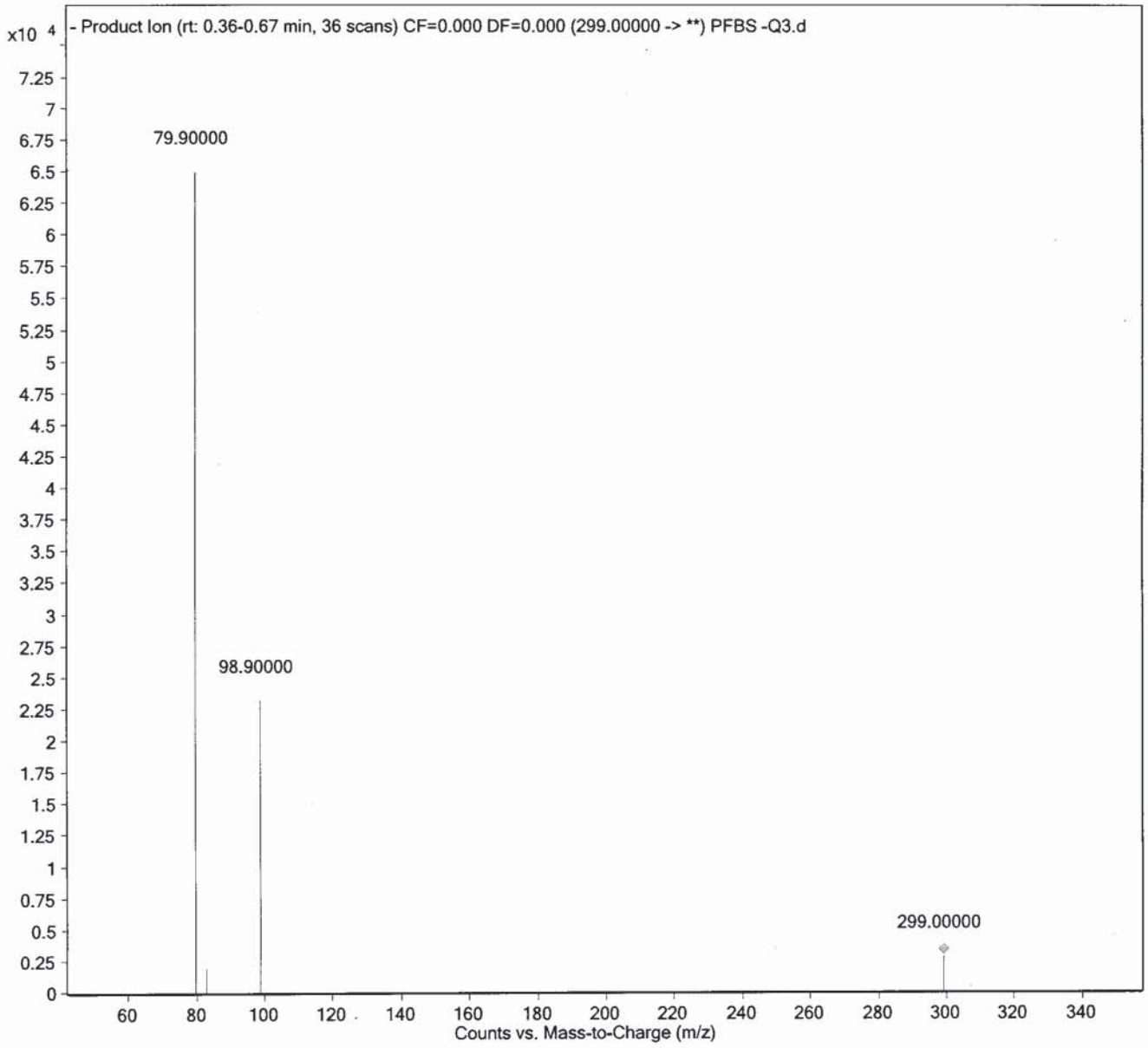
Analyte Product Ion Verification

Sample Name	PFBA -Q3	**Position**	P1-A1	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFBA -Q3.d
ACQ Method	PFC_MassVerification-PFBA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 6:54:46 PM

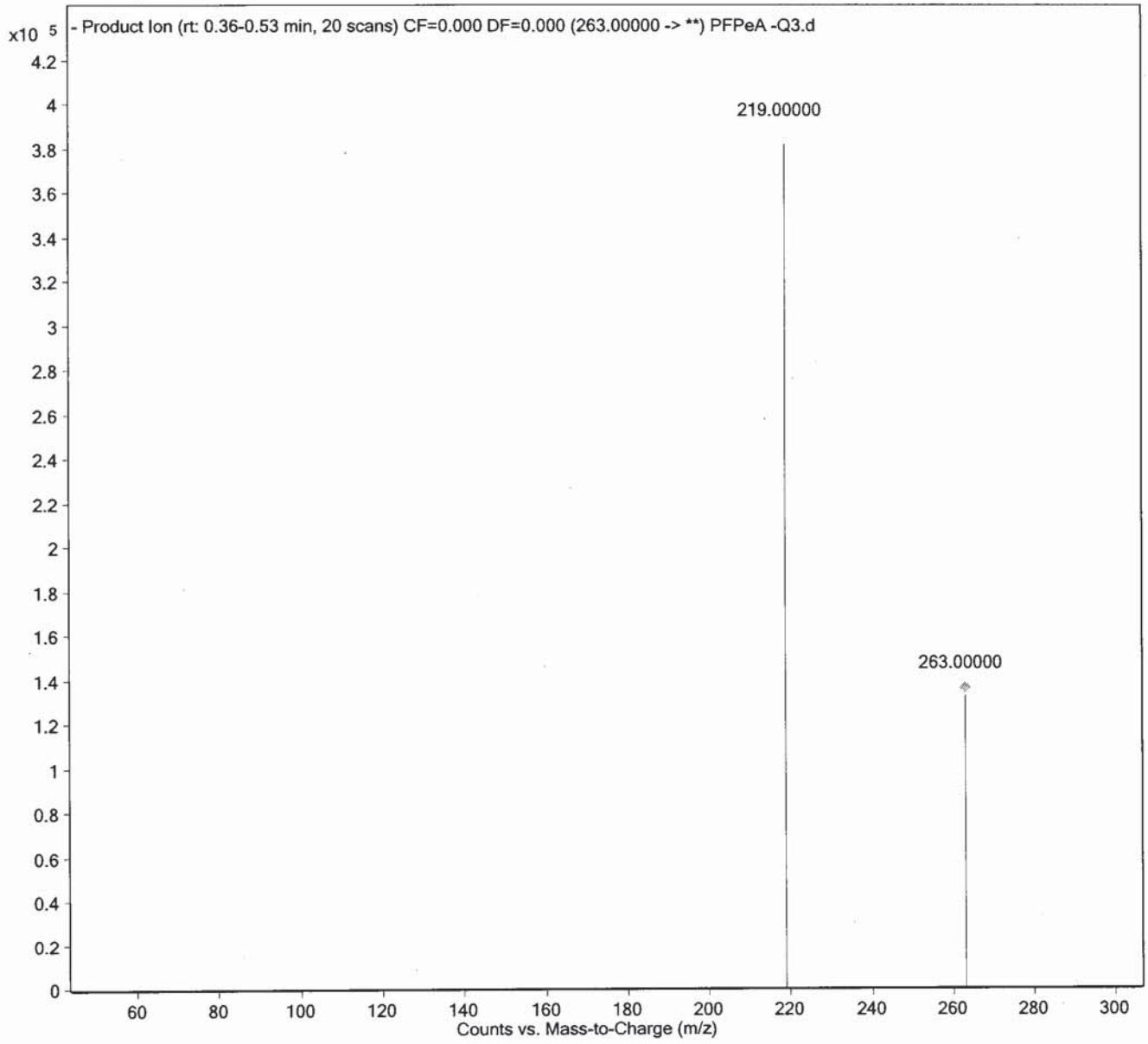


Eurofins Eaton Analytics

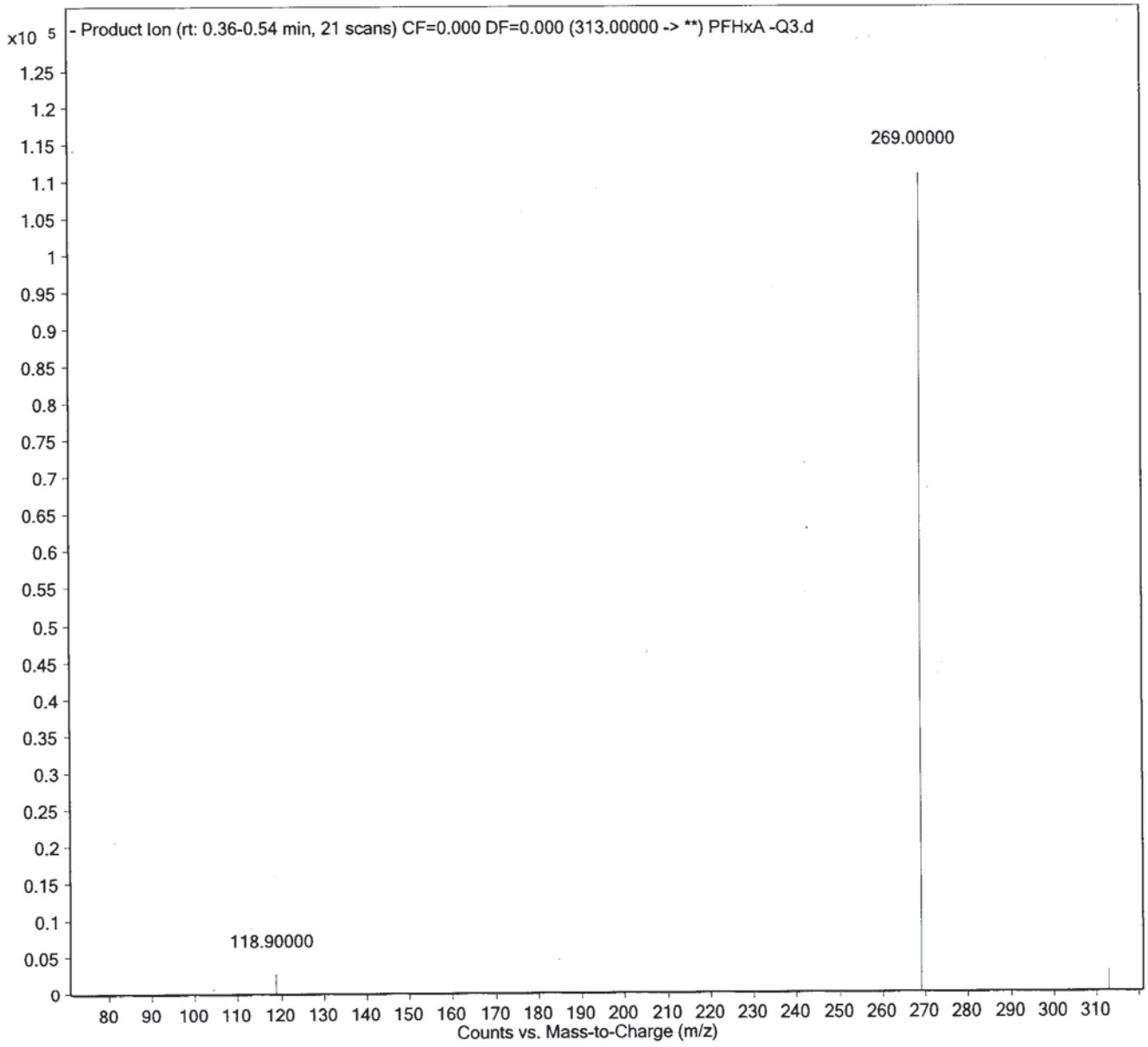
Sample Name	PFBS -Q3	**Position**	P1-A2	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFBS -Q3.d
ACQ Method	PFC_MassVerification-PFBS-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:00:16 PM



Sample Name	PFPeA -Q3	**Position**	P1-A3	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFPeA -Q3.d
ACQ Method	PFC_MassVerification-PFPeA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:05:46 PM



Sample Name	PFHxA -Q3	**Position**	P1-A4	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHxA -Q3.d
ACQ Method	PFC_MassVerification-PFHxA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:11:16 PM



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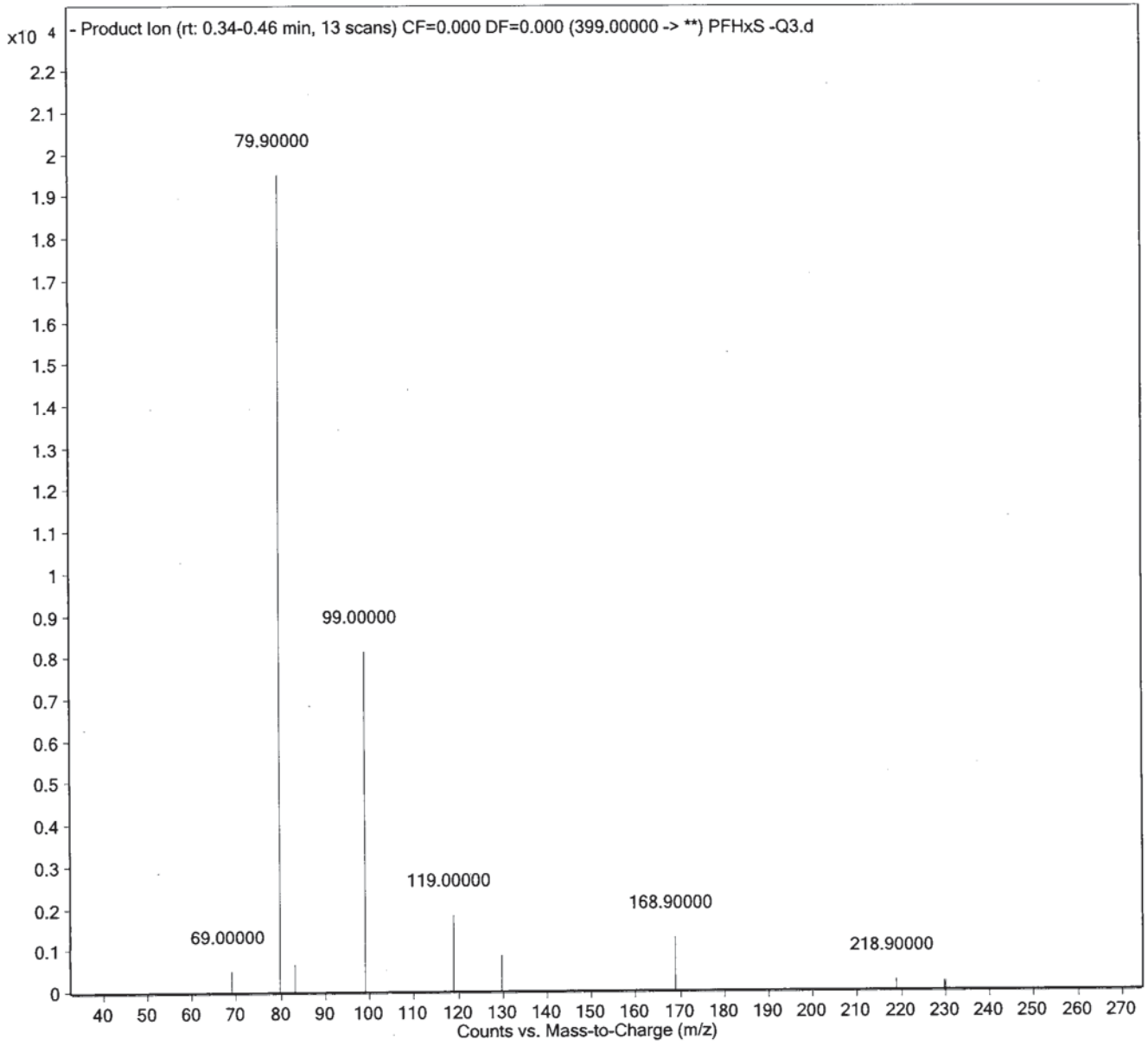
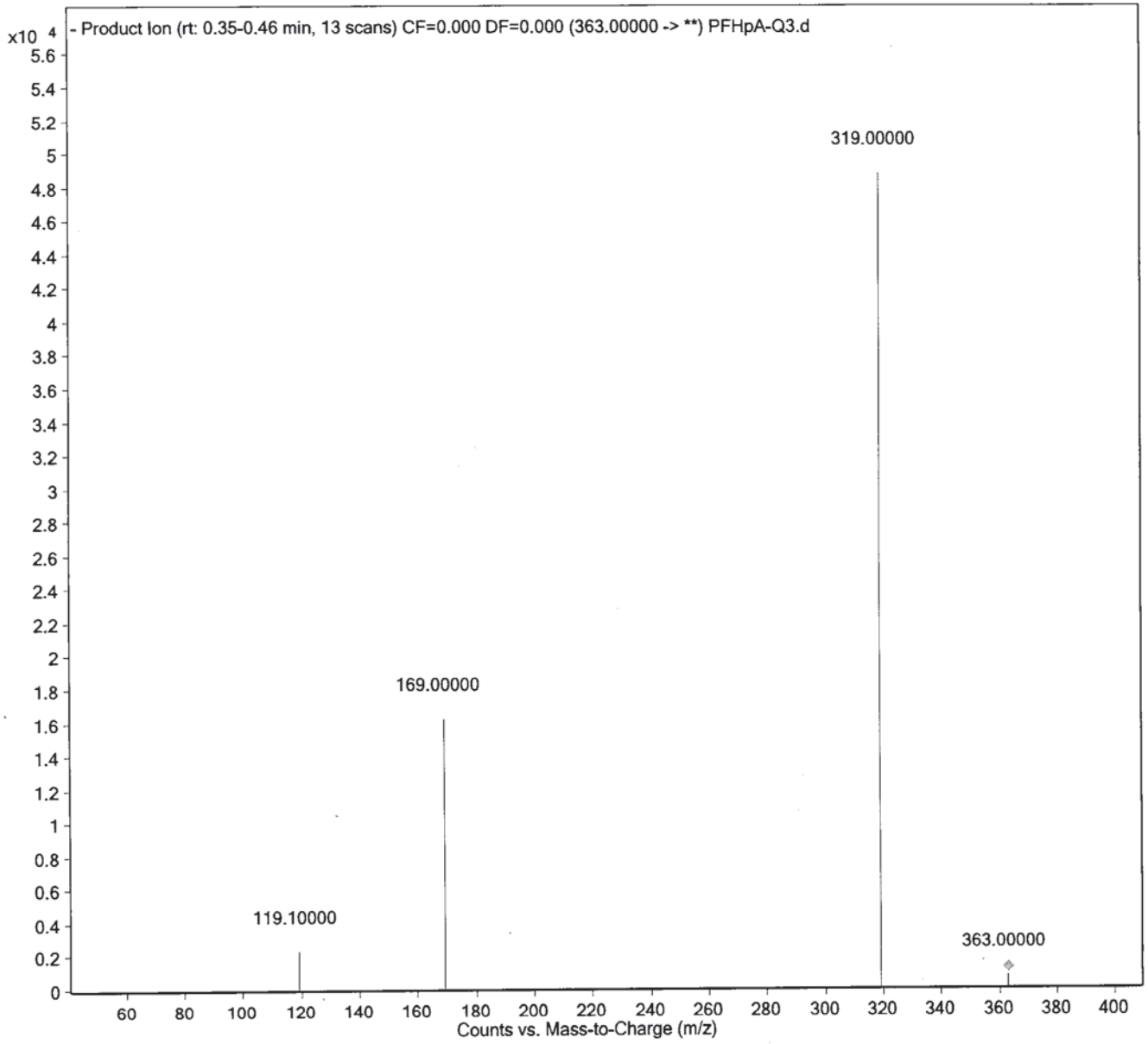
Sample Name	PFHxS -Q3	**Position**	P1-A5	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHxS -Q3.d
ACQ Method	PFC_MassVerification-PFHxS-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:16:46 PM

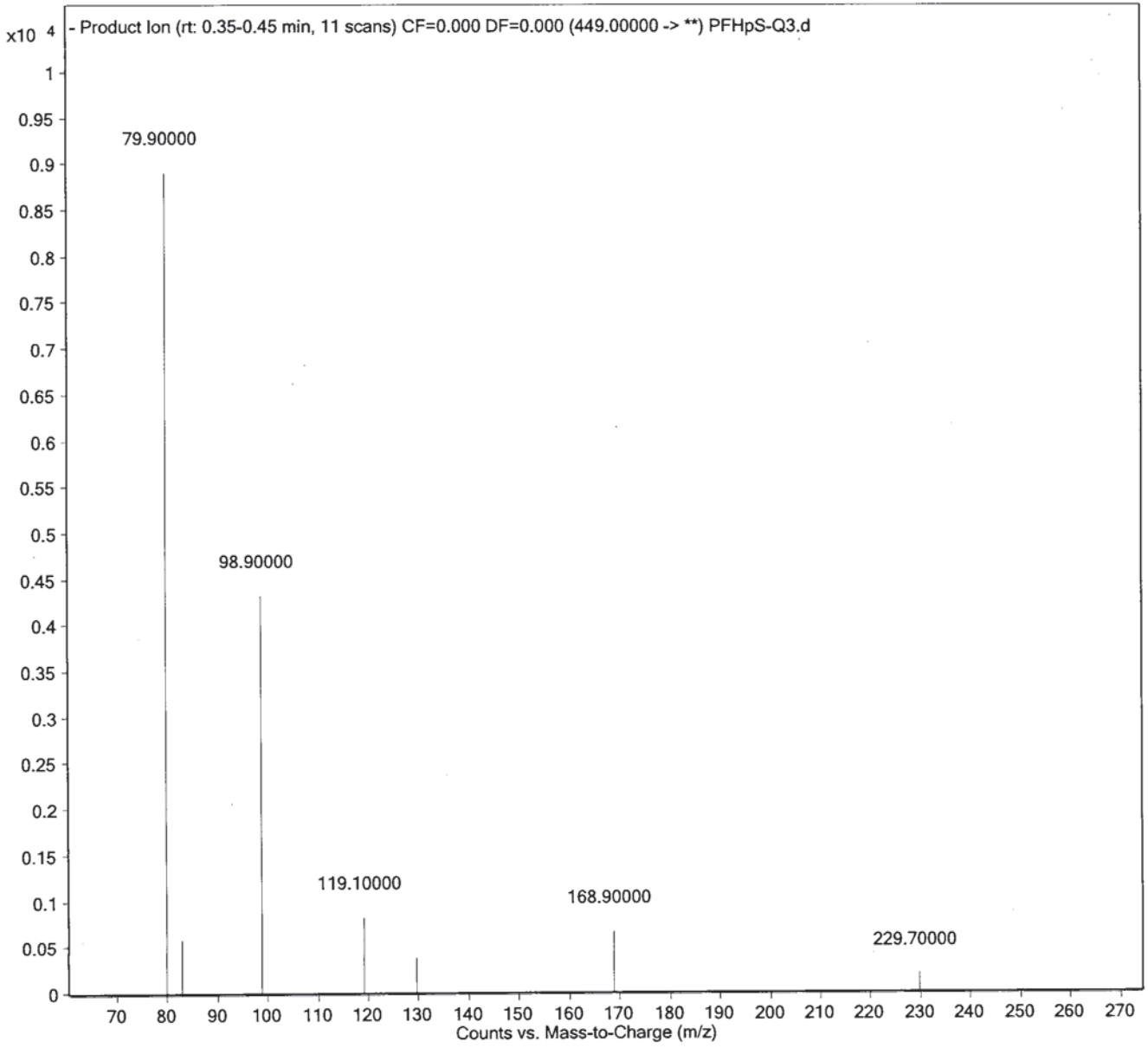


SaxKam Analytics

Sample Name	PFHpA-Q3	**Position**	P1-A6	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHpA-Q3.d
ACQ Method	PFC_MassVerification-PFHpA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:22:16 PM



Sample Name	PFHpS-Q3	**Position**	P1-A7	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFHpS-Q3.d
ACQ Method	PFC_MassVerification-PFHpS-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:27:47 PM



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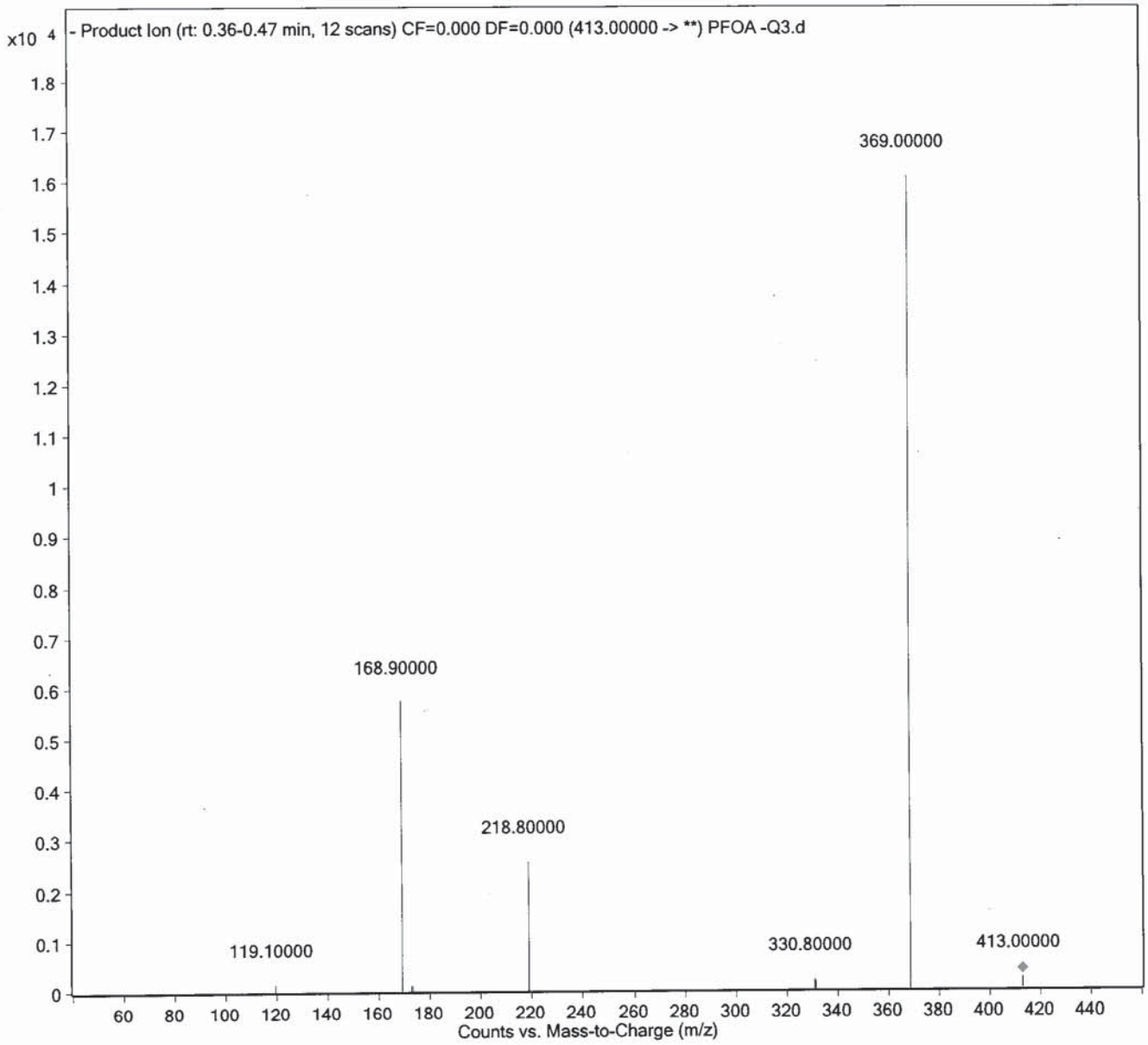
Sample Name	PFOA -Q3	**Position**	P1-A8	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFOA -Q3.d
ACQ Method	PFC_MassVerification-PFOA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:33:19 PM



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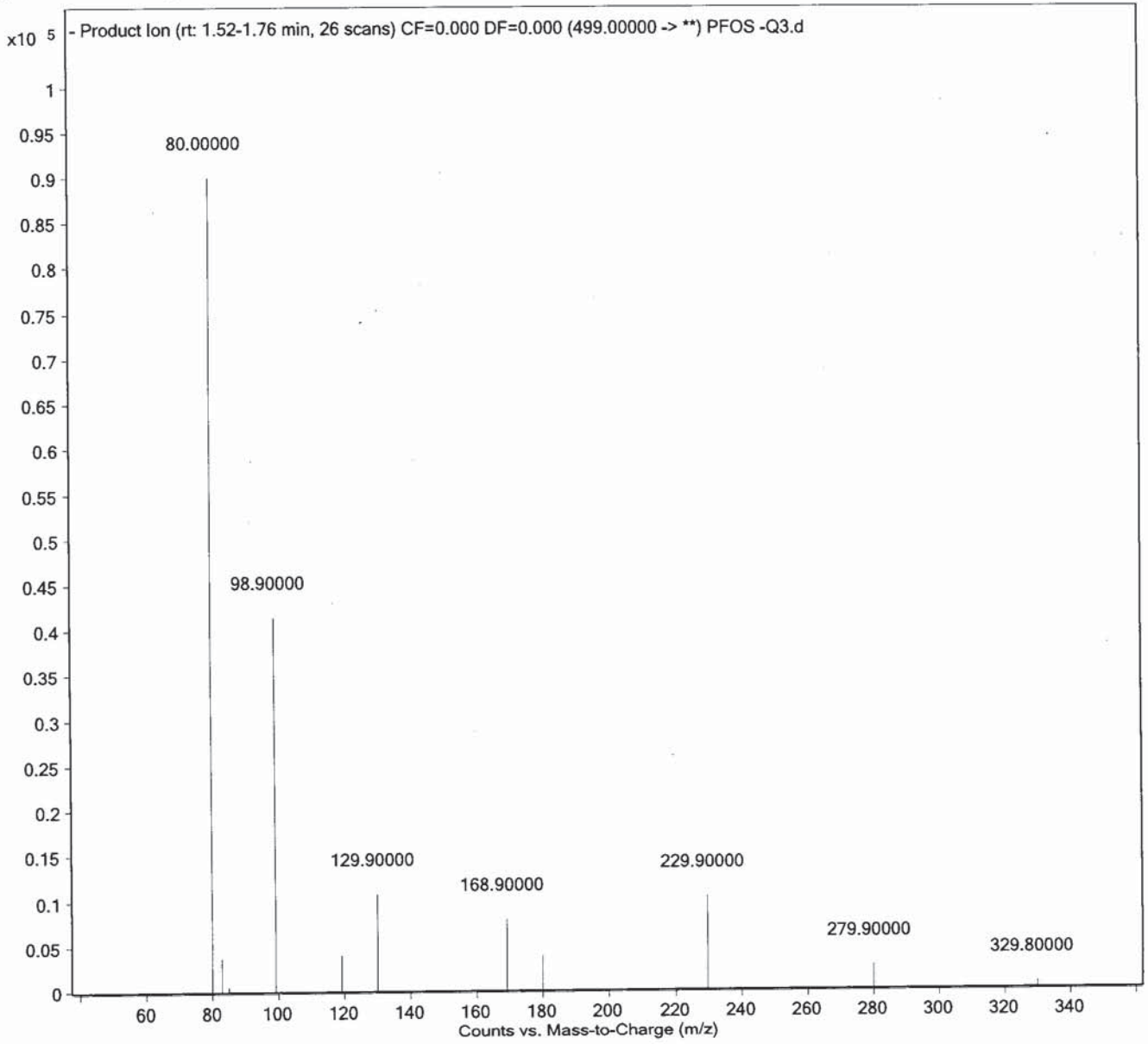
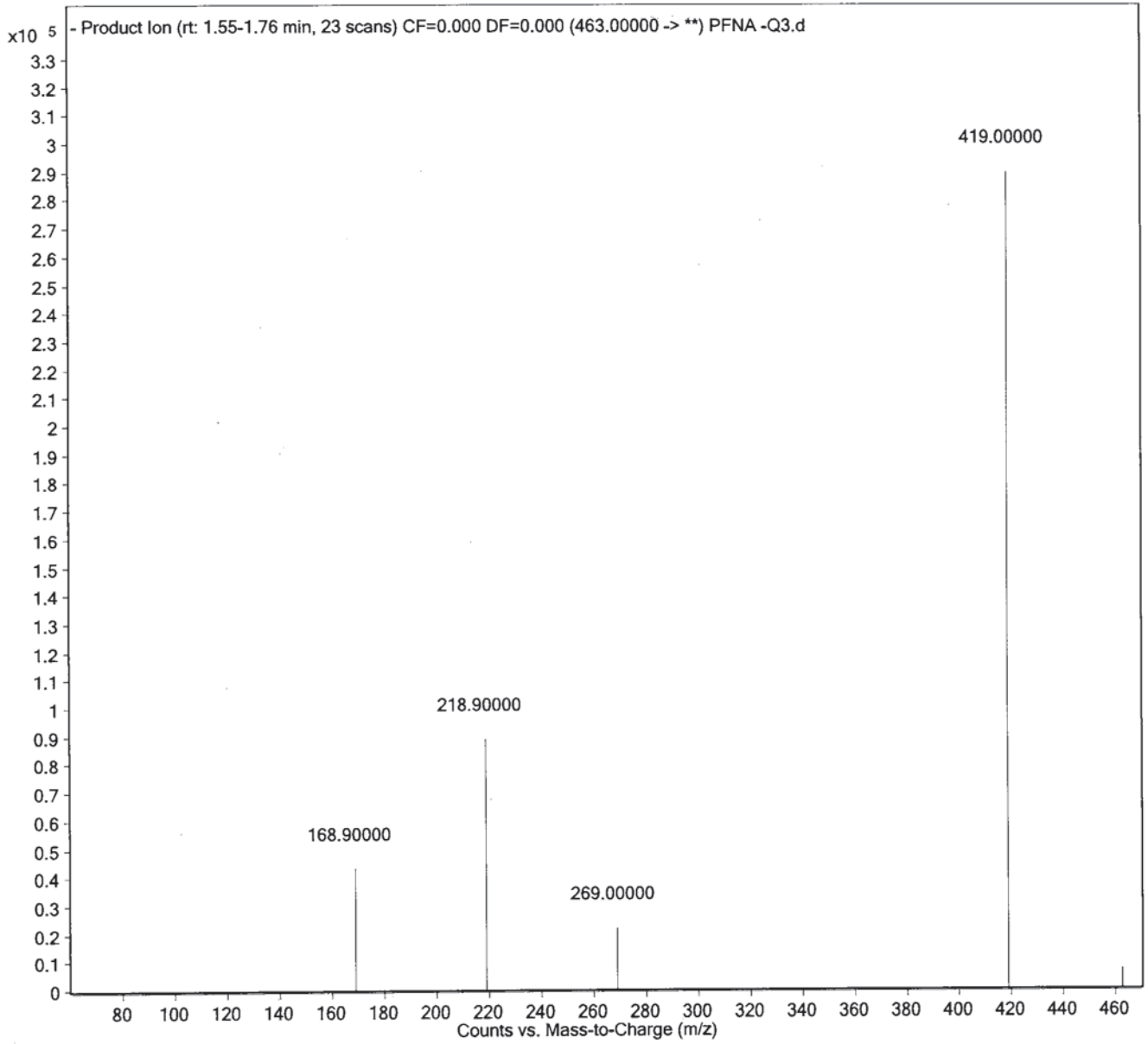
Sample Name	PFOS -Q3	**Position**	P1-A9	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFOS -Q3.d
CQ Method	PFC_MassVerification-PFOS-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:38:51 PM

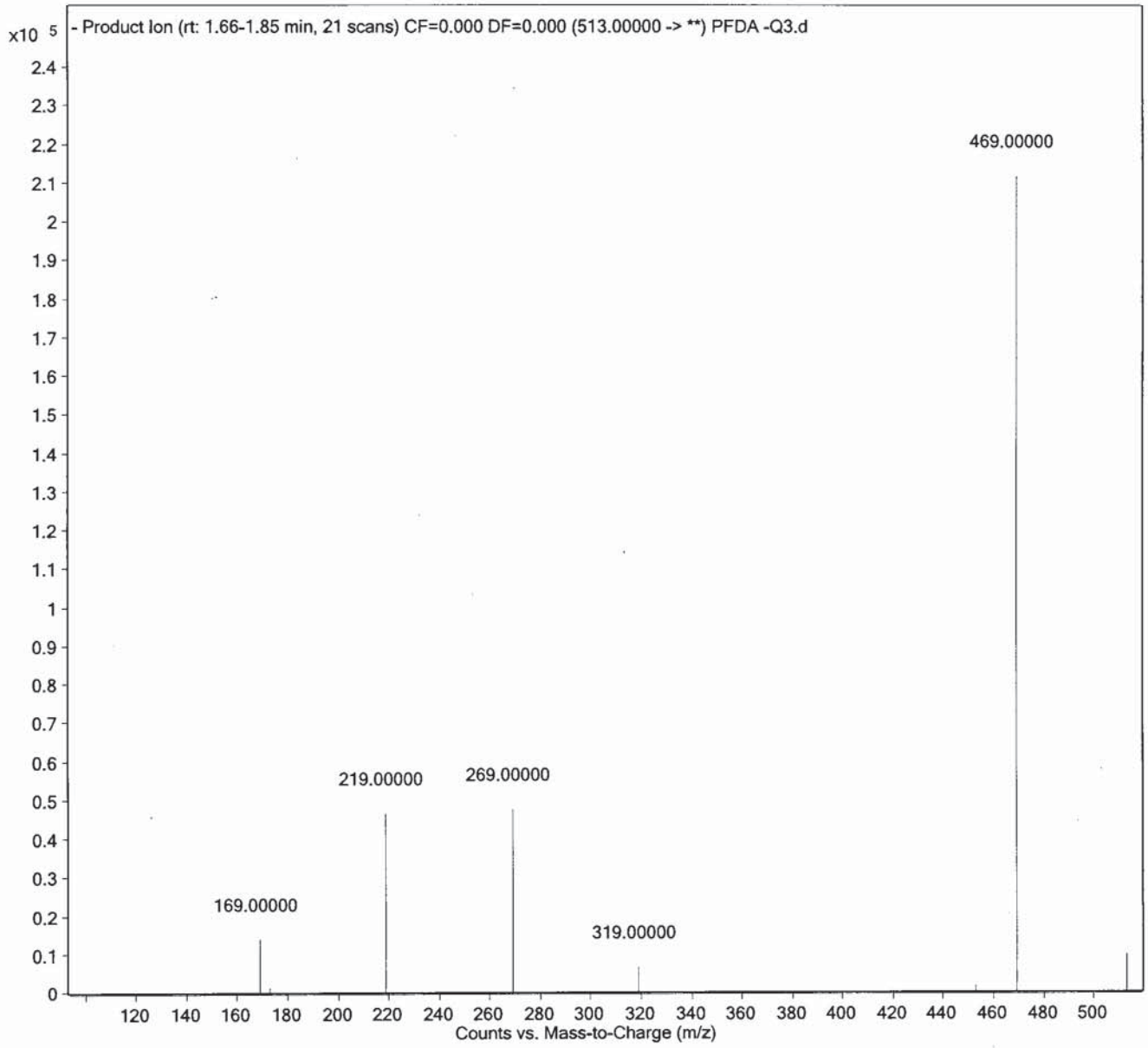


Sample Name	PFNA -Q3	**Position**	P1-B1	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFNA -Q3.d
CQ Method	PFC_MassVerification-PFNA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:44:22 PM

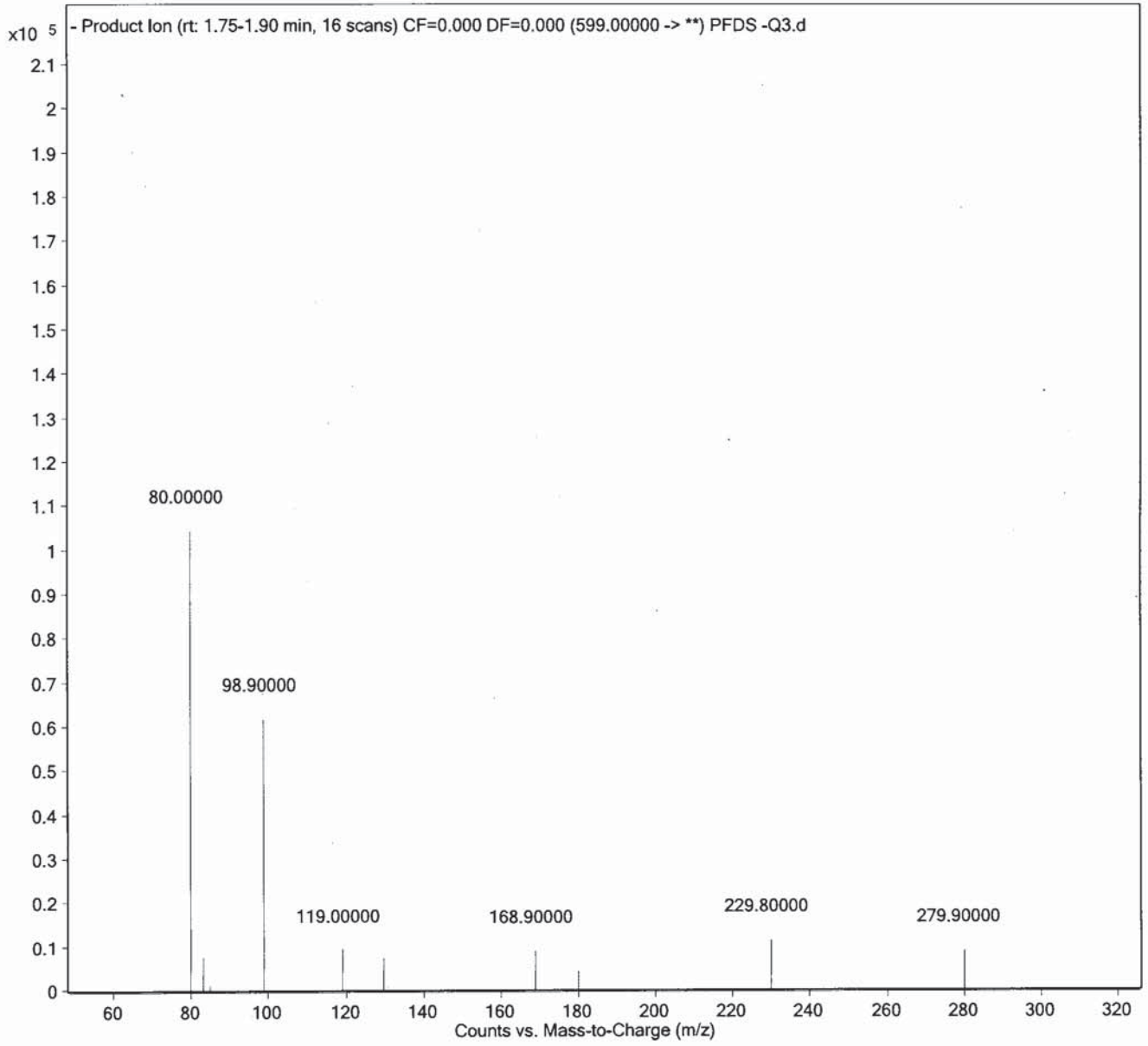


Sample Name	PFDA -Q3	**Position**	P1-B2	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFDA -Q3.d
ACQ Method	PFC_MassVerification-PFDA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:49:52 PM

Jaxam Analytics

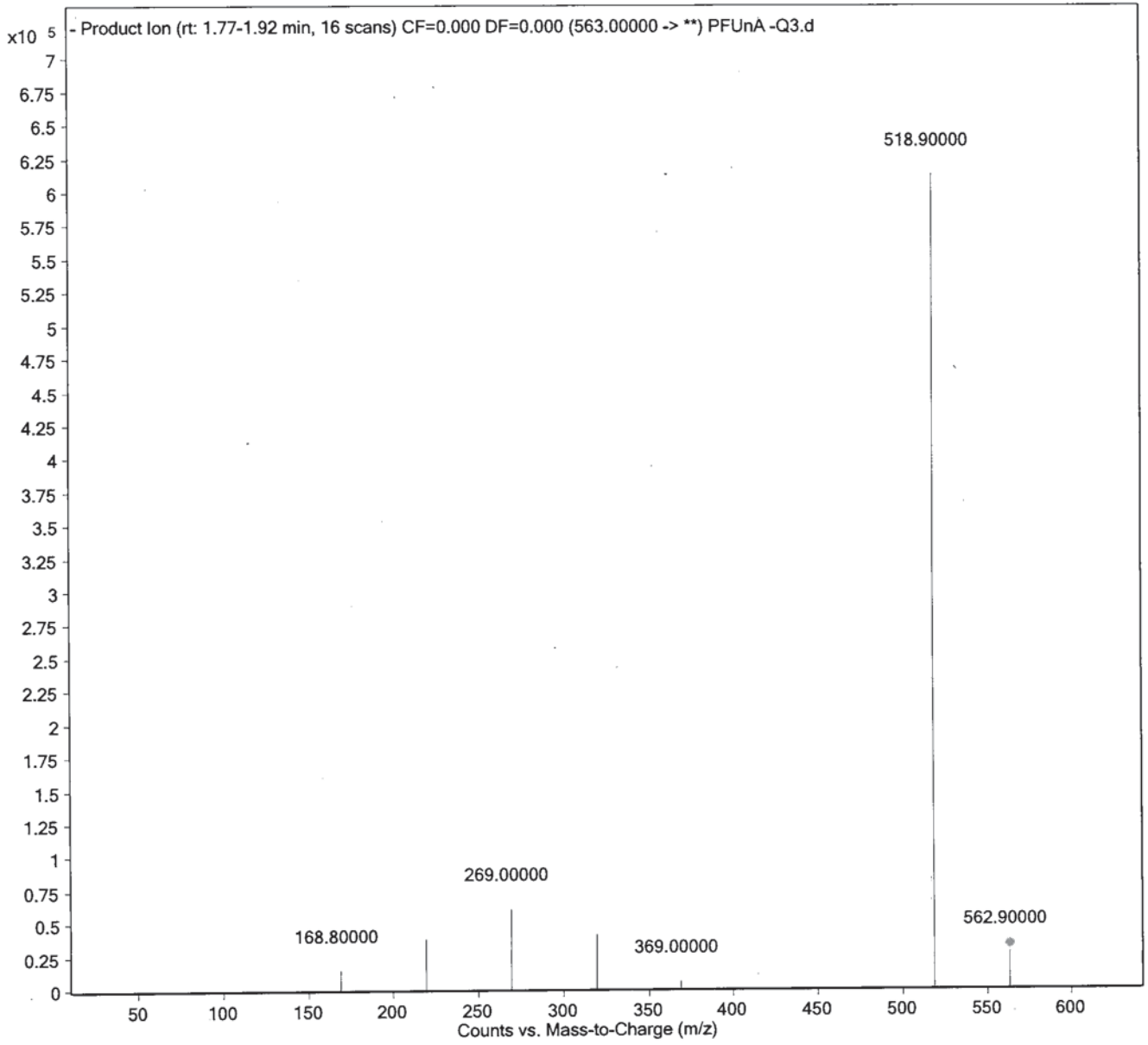


Sample Name	PFDS -Q3	**Position**	P1-B3	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFDS -Q3.d
ACQ Method	PFC_MassVerification-PFDS-Q3.m	**Comment**		**Acquired Time**	2017/07/10 7:55:22 PM



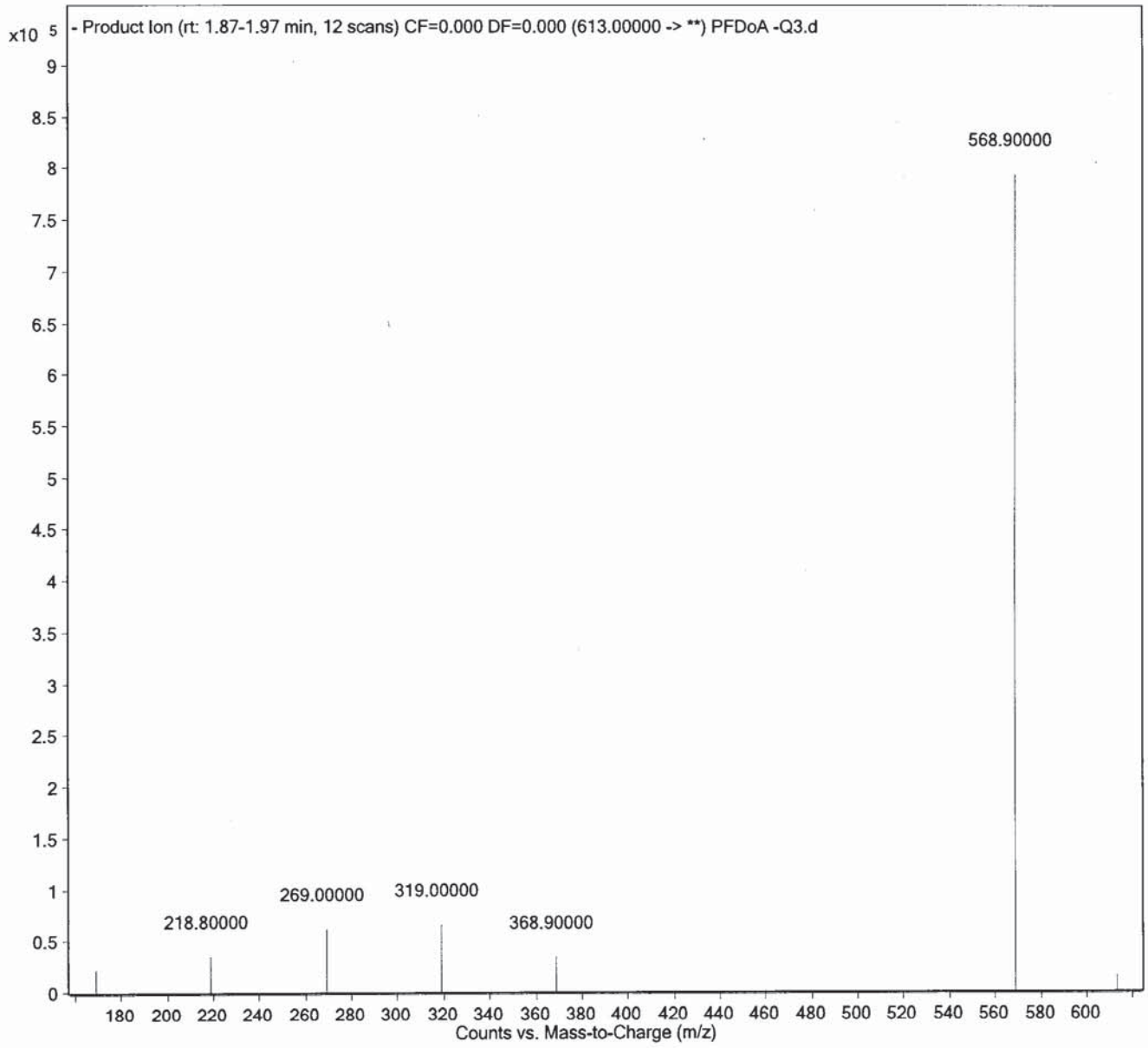
Alaskan Analytics

Sample Name	PFUnA -Q3	**Position**	P1-B4	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFUnA -Q3.d
ACQ Method	PFC_MassVerification-PFUnA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:00:52 PM



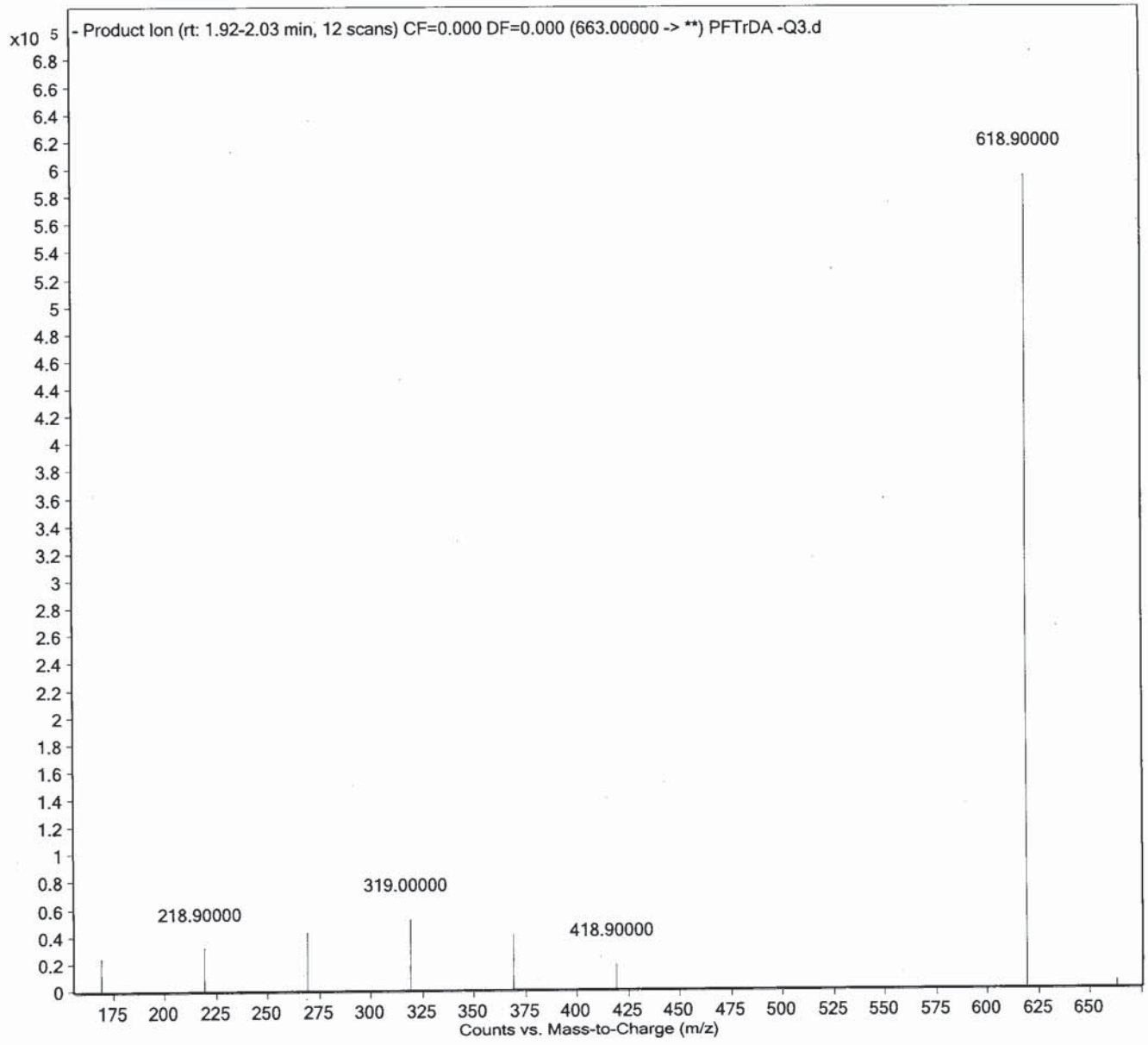
Maxxam Analytics

Sample Name	PFDoA -Q3	**Position**	P1-B5	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFDoA -Q3.d
ACQ Method	PFC_MassVerification-PFDoA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:06:23 PM



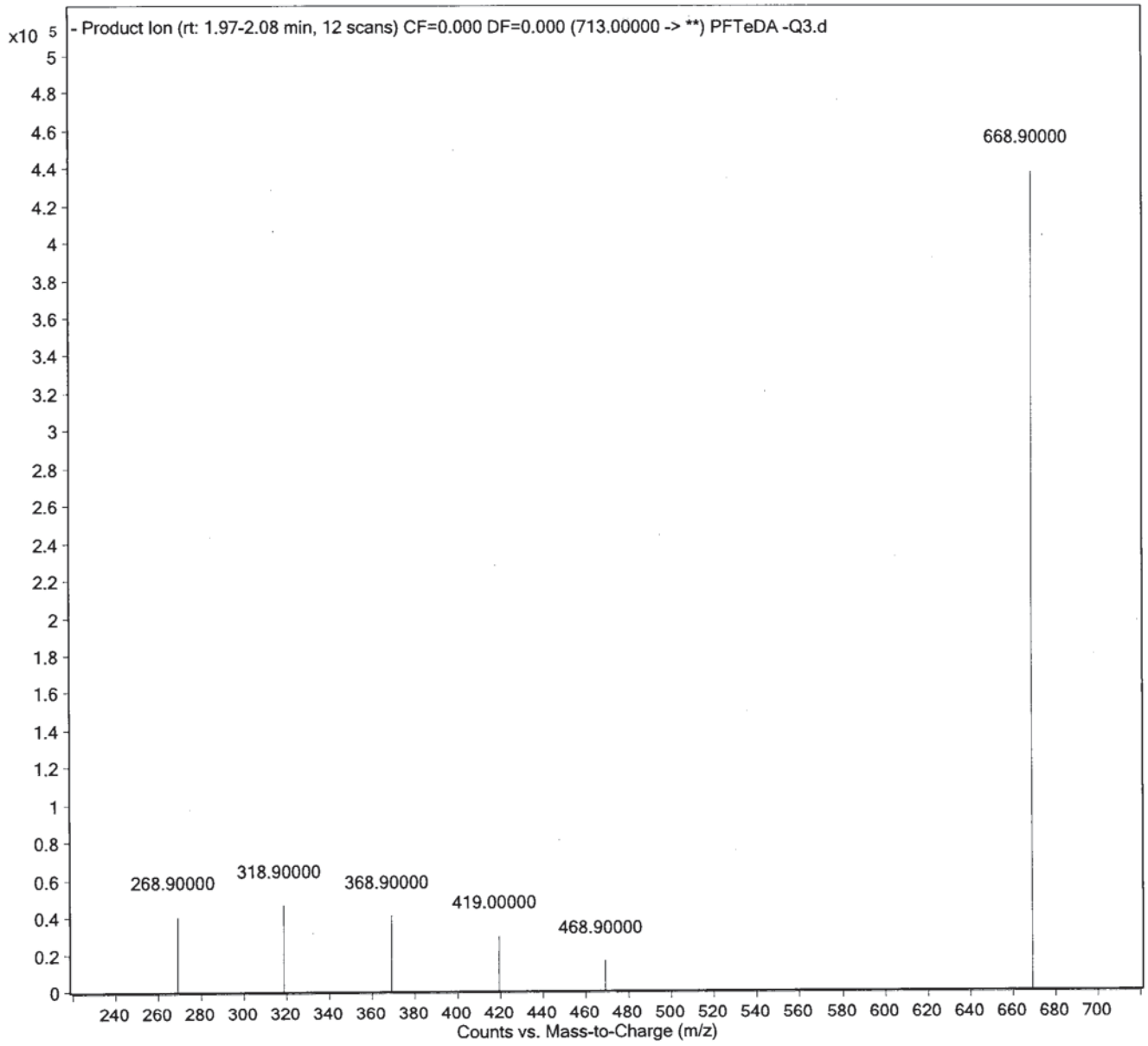
SaaXam Analytics

Sample Name	PFTrDA -Q3	**Position**	P1-B6	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFTrDA -Q3.d
ACQ Method	PFC_MassVerification-PFTrDA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:11:53 PM

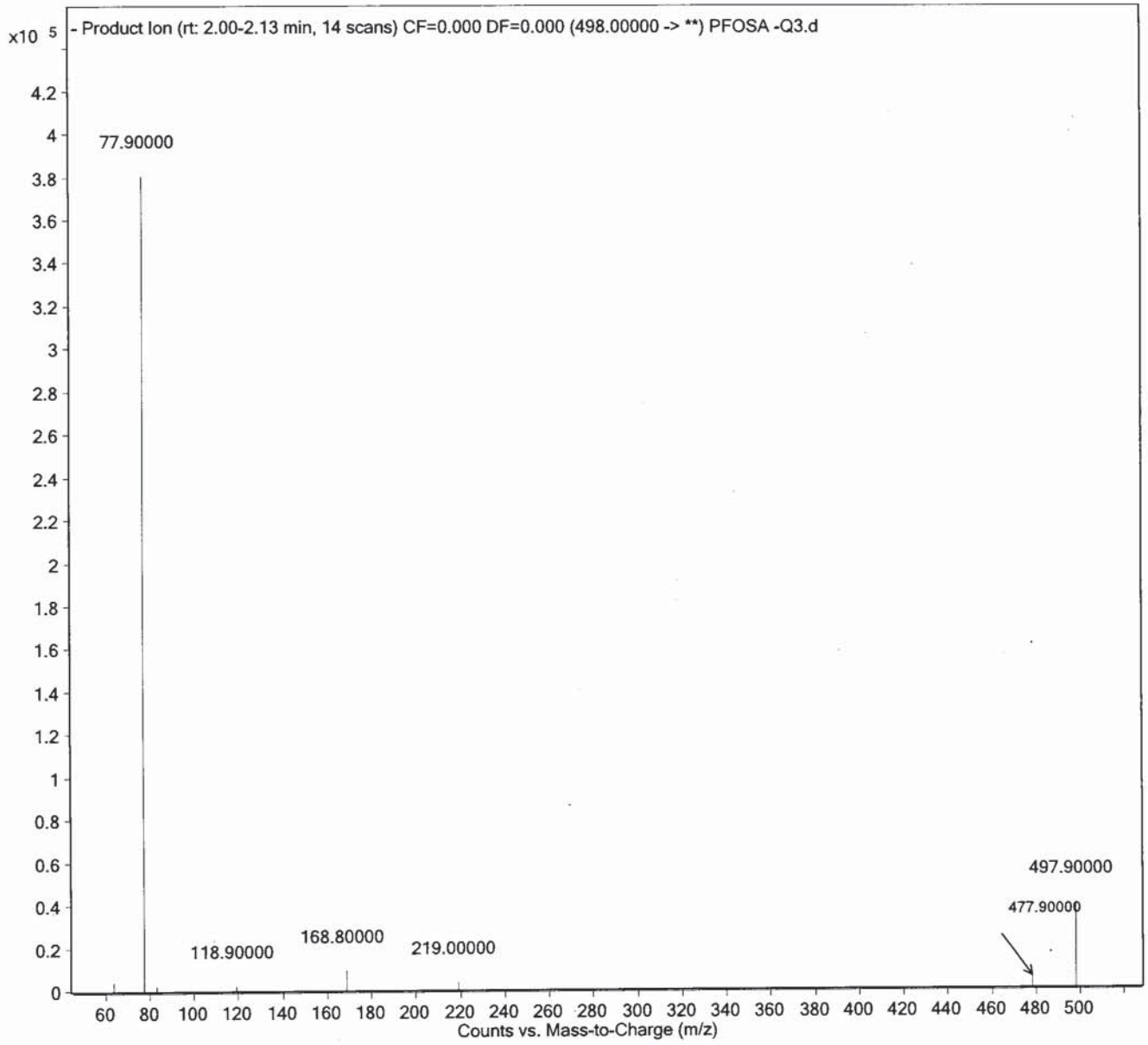


Maxxam Analytics

Sample Name	PFTeDA -Q3	**Position**	P1-B7	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFTeDA -Q3.d
ACQ Method	PFC_MassVerification-PFTeDA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:17:23 PM

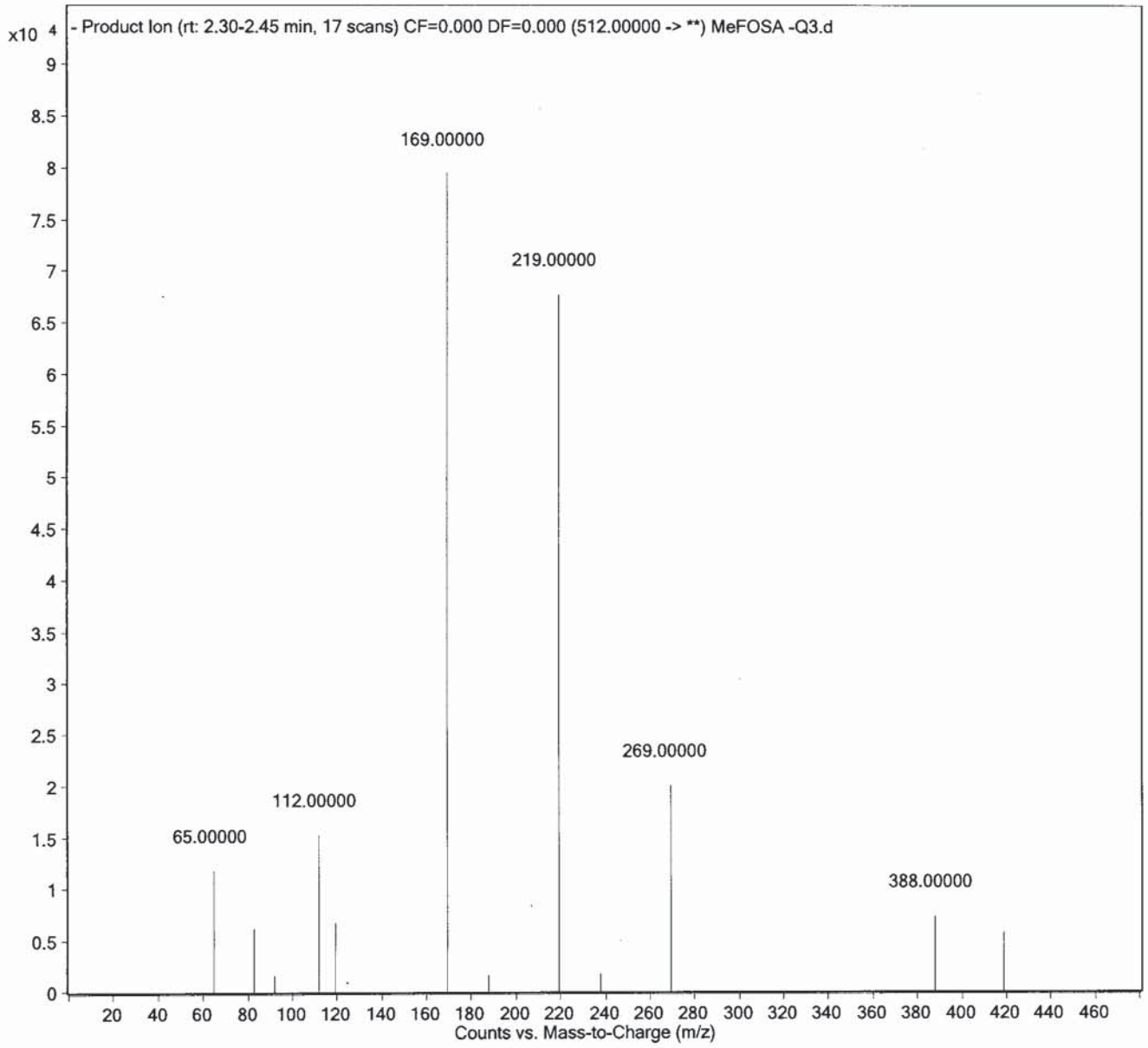


Sample Name	PFOSA -Q3	**Position**	P1-B8	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	PFOSA -Q3.d
CQ Method	PFC_MassVerification-PFOSA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:22:55 PM



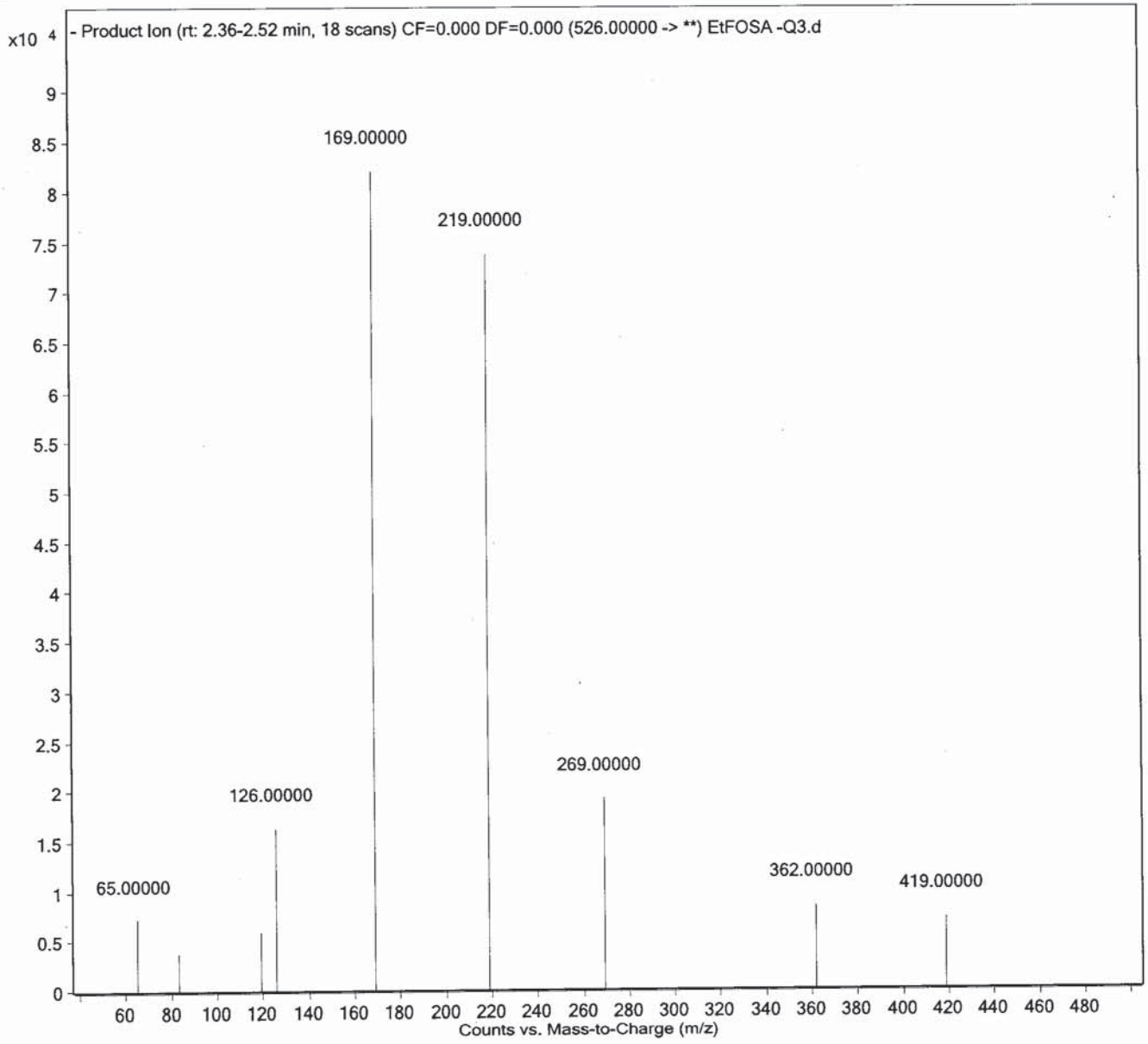
Maxxam Analytics

Sample Name	MeFOSA -Q3	**Position**	P1-B9	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MeFOSA -Q3.d
ACQ Method	PFC_MassVerification-MeFOSA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:28:25 PM



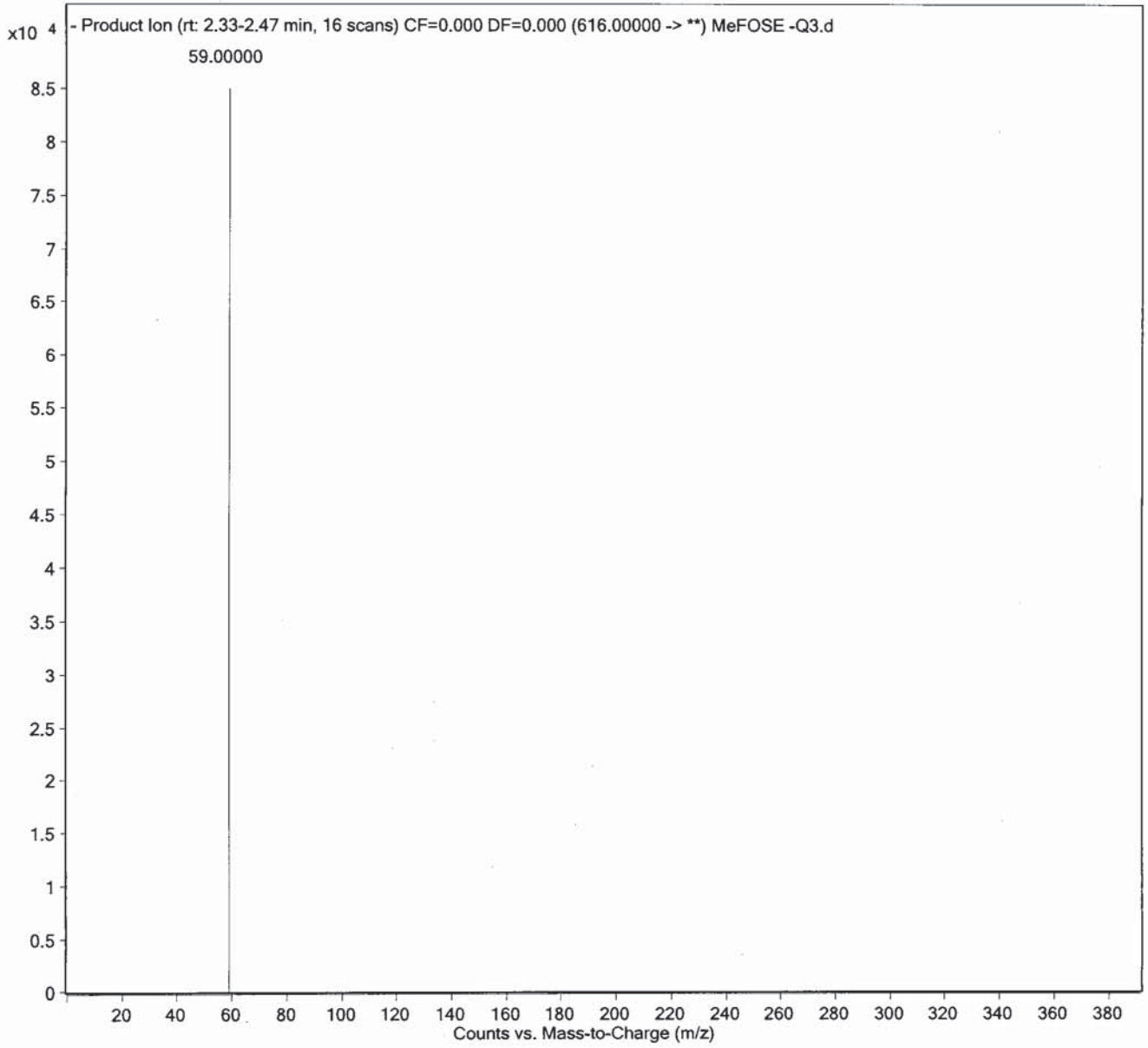
SaxAm Analytics

Sample Name	EtFOSA -Q3	**Position**	P1-C1	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	EtFOSA -Q3.d
CQ Method	PFC_MassVerification-EtFOSA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:33:57 PM



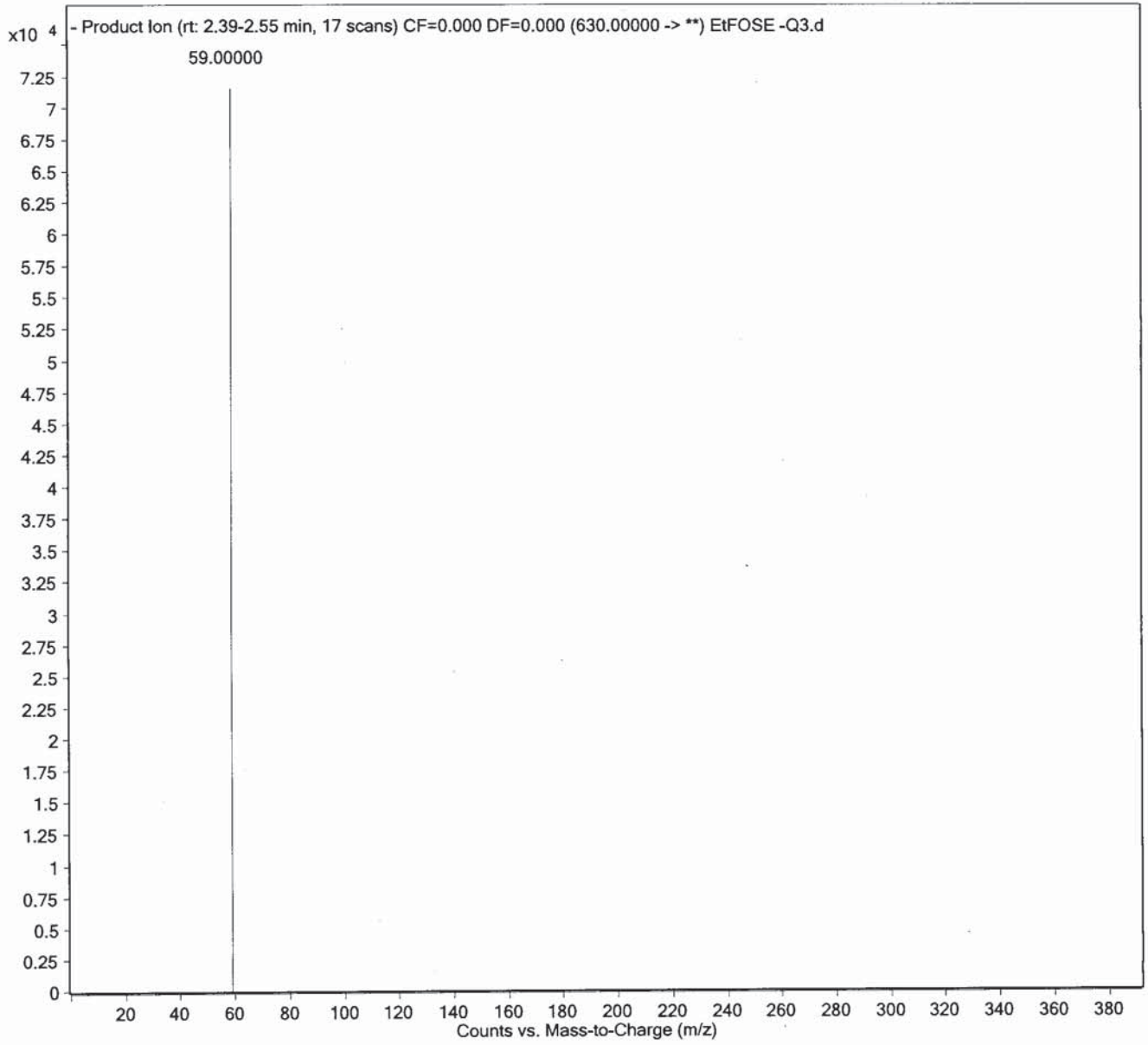
Maxxam Analytics

Sample Name	MeFOSE -Q3	**Position**	P1-C2	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MeFOSE -Q3.d
ACQ Method	PFC_MassVerification-MeFOSE-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:39:26 PM



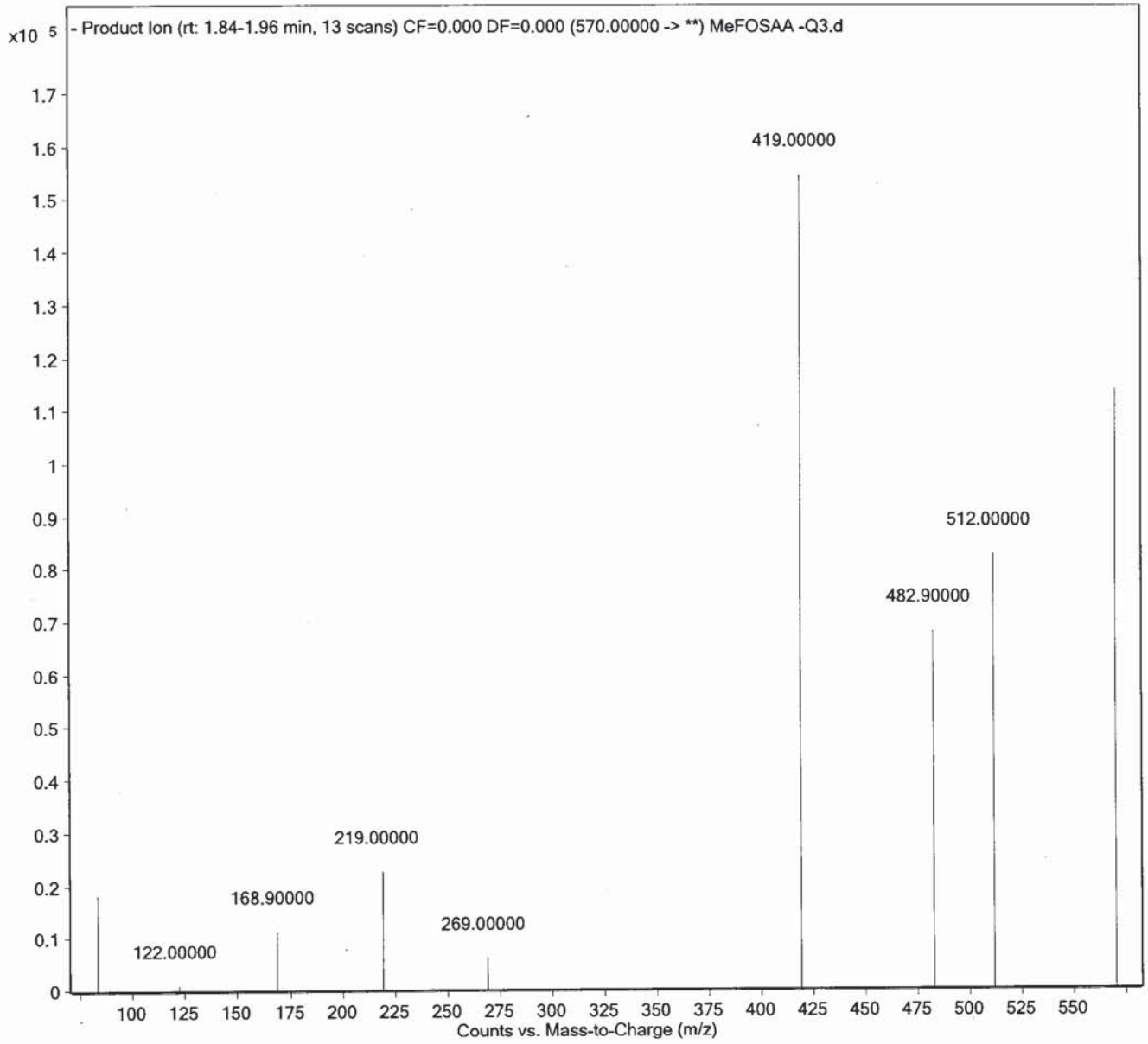
Maxxam Analytics

Sample Name	EtFOSE -Q3	**Position**	P1-C3	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	EtFOSE -Q3.d
ACQ Method	PFC_MassVerification-EtFOSE-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:44:57 PM



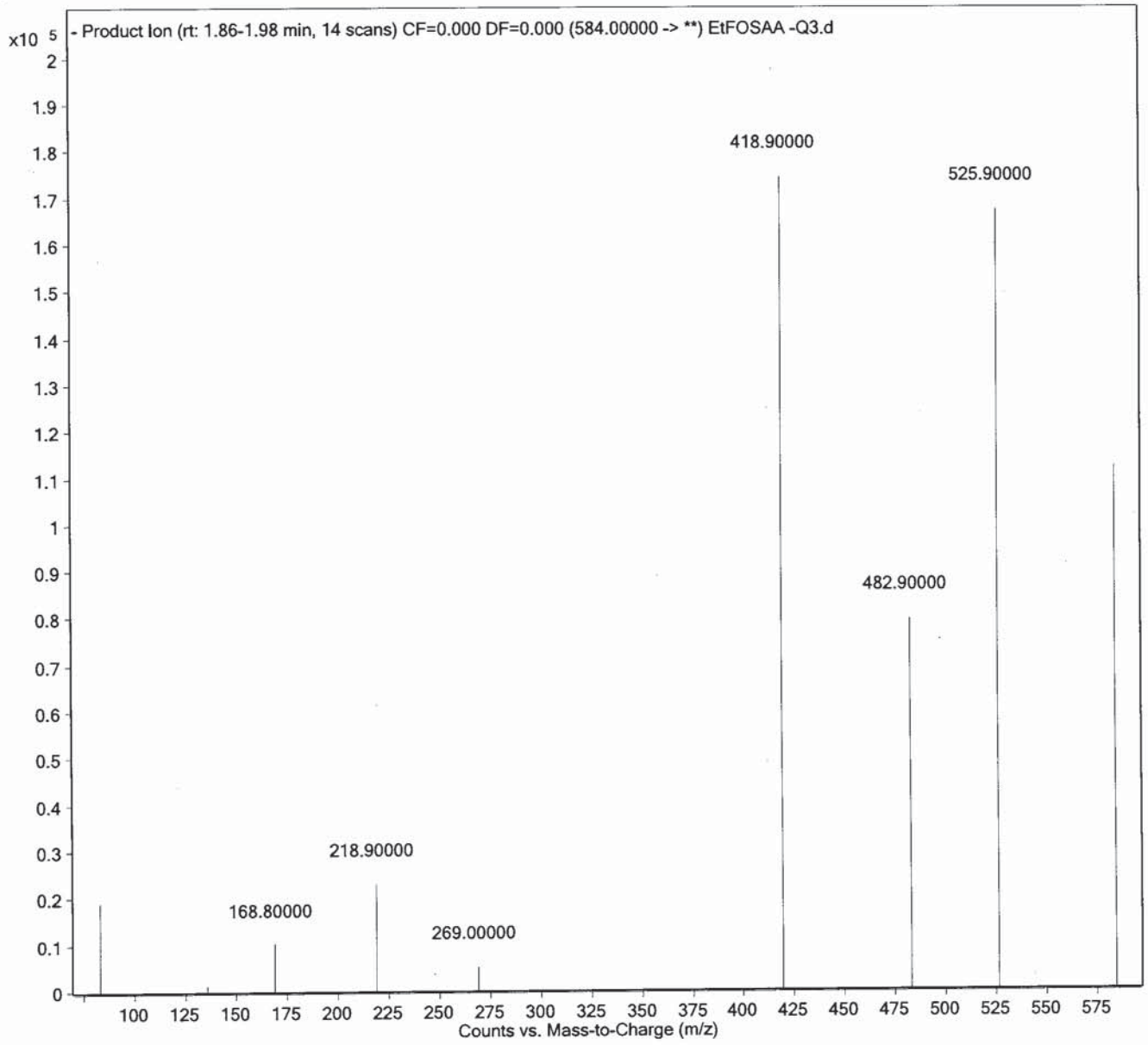
SGS AXYS Analytics

Sample Name	MeFOSAA -Q3	**Position**	P1-C4	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MeFOSAA -Q3.d
ACQ Method	PFC_MassVerification-MeFOSAA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:50:27 PM

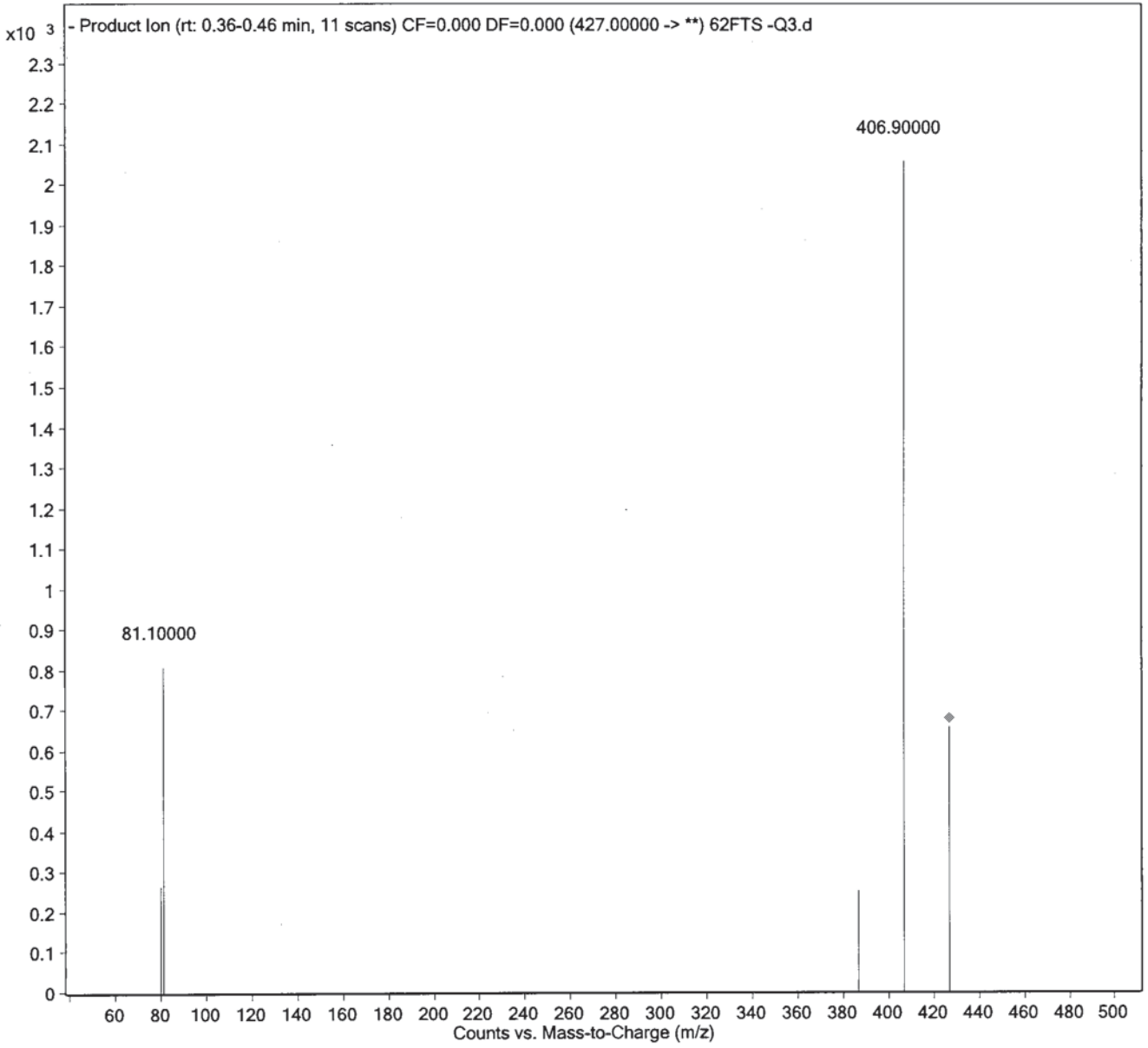


SaxAm Analytics

Sample Name	EtFOSAA -Q3	**Position**	P1-C5	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	EtFOSAA -Q3.d
CQ Method	PFC_MassVerification-EtFOSAA-Q3.m	**Comment**		**Acquired Time**	2017/07/10 8:55:57 PM

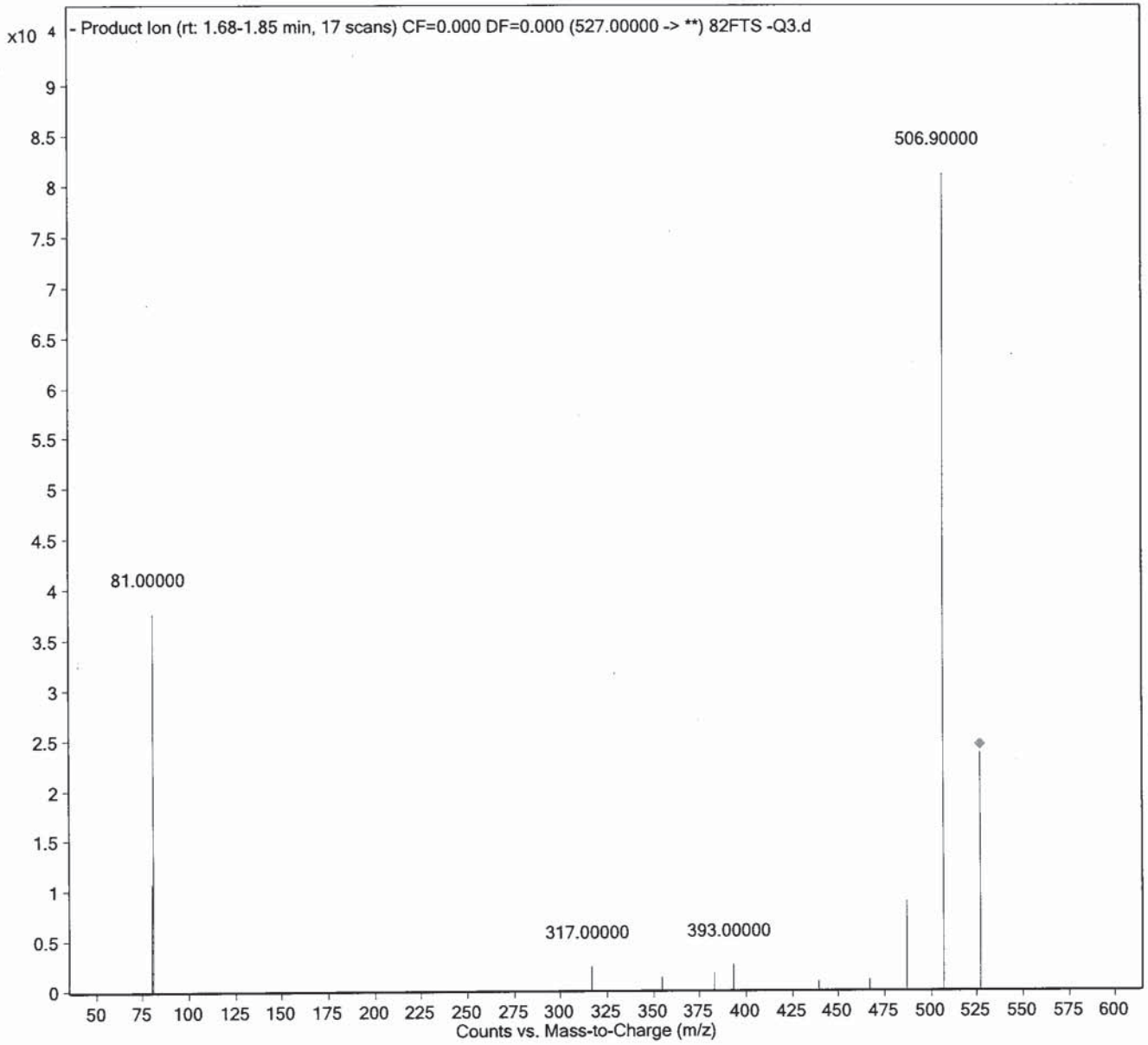


Sample Name	6:2FTS -Q3	**Position**	P1-C6	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	62FTS -Q3.d
ACQ Method	PFC_MassVerification-6-2FTS-Q3.m	**Comment**		**Acquired Time**	2017/07/10 9:01:27 PM



SGS AXYS Analytics

Sample Name	8:2FTS -Q3	**Position**	P1-C7	**Instrument Name**	LCMS04
User Name	M_G	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	82FTS -Q3.d
ACQ Method	PFC_MassVerification-8-2FTS-Q3.m	**Comment**		**Acquired Time**	2017/07/10 9:06:57 PM



Worklist Report

Agilent Technologies

Maxxam Analytics

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFAS_MASSVER_170710_Q3.wkl

Operator Name: M_G
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\data\Mass Verification\20170710_Q3
Pre-Worklist Script: ---
Post-Worklist Script: ---
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: ---

Plate Barcode:

Plate	Barcode
P1	

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
1	PFBA -Q3	P1-A1	PFC_MassVerification-PFBA-Q3.m	PFBA -Q3.d	Sample	As Method	PFAS-Q3
2	PFBS -Q3	P1-A2	PFC_MassVerification-PFBS-Q3.m	PFBS -Q3.d	Sample	As Method	PFAS-Q3
3	PFPeA -Q3	P1-A3	PFC_MassVerification-PFPeA-Q3.m	PFPeA -Q3.d	Sample	As Method	PFAS-Q3
4	PFHxA -Q3	P1-A4	PFC_MassVerification-PFHxA-Q3.m	PFHxA -Q3.d	Sample	As Method	PFAS-Q3
5	PFHxS -Q3	P1-A5	PFC_MassVerification-PFHxS-Q3.m	PFHxS -Q3.d	Sample	As Method	PFAS-Q3
6	PFHpA-Q3	P1-A6	PFC_MassVerification-PFHpA-Q3.m	PFHpA-Q3.d	Sample	As Method	PFAS-Q3
7	PFHpS-Q3	P1-A7	PFC_MassVerification-PFHpS-Q3.m	PFHpS-Q3.d	Sample	As Method	PFAS-Q3
8	PFOA -Q3	P1-A8	PFC_MassVerification-PFOA-Q3.m	PFOA -Q3.d	Sample	As Method	PFAS-Q3
9	PFOS -Q3	P1-A9	PFC_MassVerification-PFOS-Q3.m	PFOS -Q3.d	Sample	As Method	PFAS-Q3

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	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
10	PFNA -Q3	P1-B1	PFC_MassVerification-PFNA-Q3.m	PFNA -Q3.d	Sample	As Method	PFAS-Q3
11	PFDA -Q3	P1-B2	PFC_MassVerification-PFDA-Q3.m	PFDA -Q3.d	Sample	As Method	PFAS-Q3
12	PFDS -Q3	P1-B3	PFC_MassVerification-PFDS-Q3.m	PFDS -Q3.d	Sample	As Method	PFAS-Q3
13	PFUnA -Q3	P1-B4	PFC_MassVerification-PFUnA-Q3.m	PFUnA -Q3.d	Sample	As Method	PFAS-Q3
14	PFDoA -Q3	P1-B5	PFC_MassVerification-PFDoA-Q3.m	PFDoA -Q3.d	Sample	As Method	PFAS-Q3
15	PFTrDA -Q3	P1-B6	PFC_MassVerification-PFTrDA-Q3.m	PFTrDA -Q3.d	Sample	As Method	PFAS-Q3
16	PFTeDA -Q3	P1-B7	PFC_MassVerification-PFTeDA-Q3.m	PFTeDA -Q3.d	Sample	As Method	PFAS-Q3
17	PFOSA -Q3	P1-B8	PFC_MassVerification-PFOSA-Q3.m	PFOSA -Q3.d	Sample	As Method	PFAS-Q3
18	MeFOSA -Q3	P1-B9	PFC_MassVerification-MeFOSA-Q3.m	MeFOSA -Q3.d	Sample	As Method	PFAS-Q3
19	EtFOSA -Q3	P1-C1	PFC_MassVerification-EtFOSA-Q3.m	EtFOSA -Q3.d	Sample	As Method	PFAS-Q3
20	MeFOSE -Q3	P1-C2	PFC_MassVerification-MeFOSE-Q3.m	MeFOSE -Q3.d	Sample	As Method	PFAS-Q3
21	EtFOSE -Q3	P1-C3	PFC_MassVerification-EtFOSE-Q3.m	EtFOSE -Q3.d	Sample	As Method	PFAS-Q3
22	MeFOSAA -Q3	P1-C4	PFC_MassVerification-MeFOSAA-Q3.m	MeFOSAA -Q3.d	Sample	As Method	PFAS-Q3
23	EtFOSAA -Q3	P1-C5	PFC_MassVerification-EtFOSAA-Q3.m	EtFOSAA -Q3.d	Sample	As Method	PFAS-Q3
24	6:2FTS -Q3	P1-C6	PFC_MassVerification-6-2FTS-Q3.m	62FTS -Q3.d	Sample	As Method	PFAS-Q3
25	8:2FTS -Q3	P1-C7	PFC_MassVerification-8-2FTS-Q3.m	82FTS -Q3.d	Sample	As Method	PFAS-Q3

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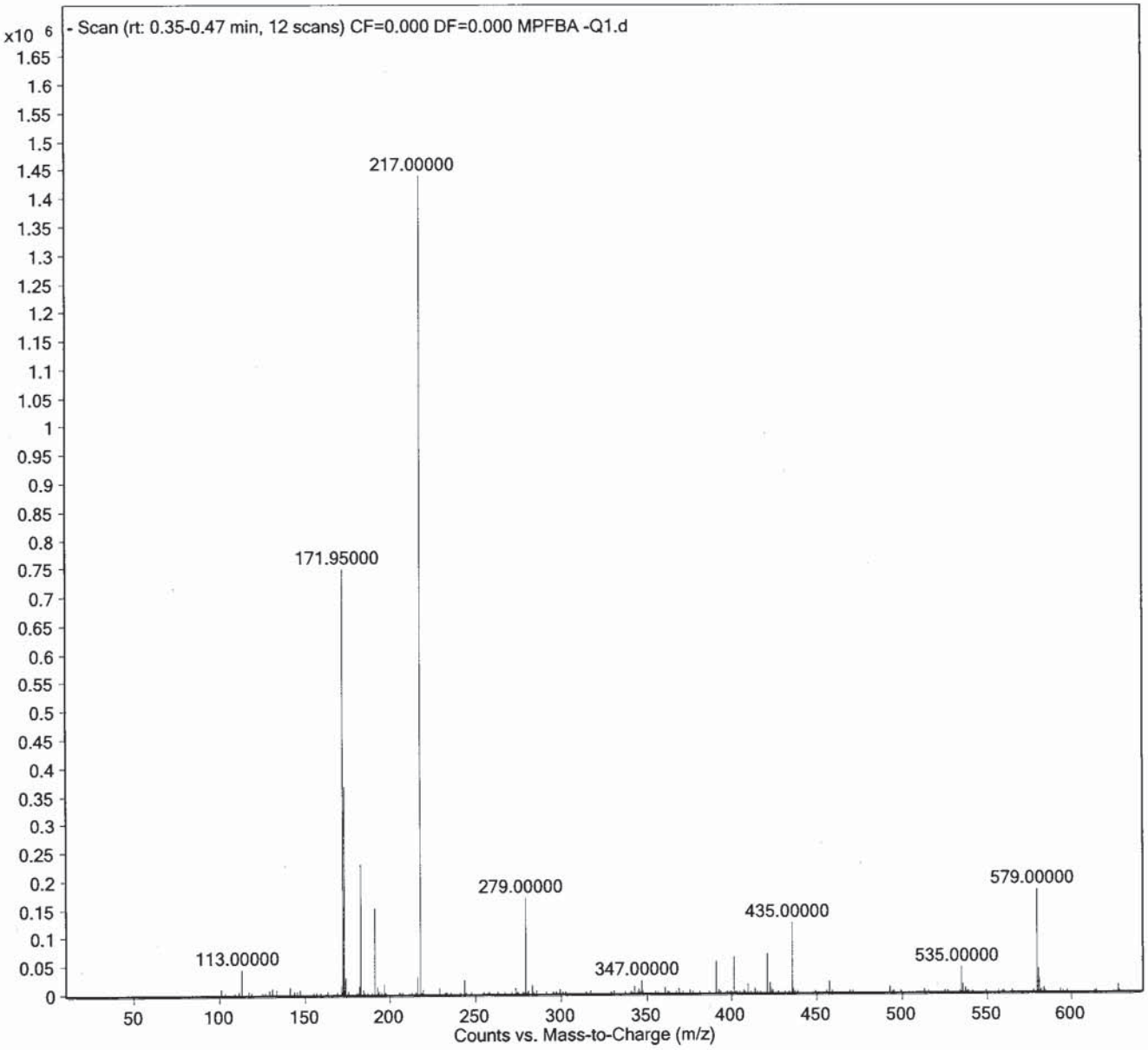
Extracted and Injection Internal Standard Precursor Ion Verification

Sample Name	MPFBA	**Position**	P2-A1	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFBA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:00:45 PM

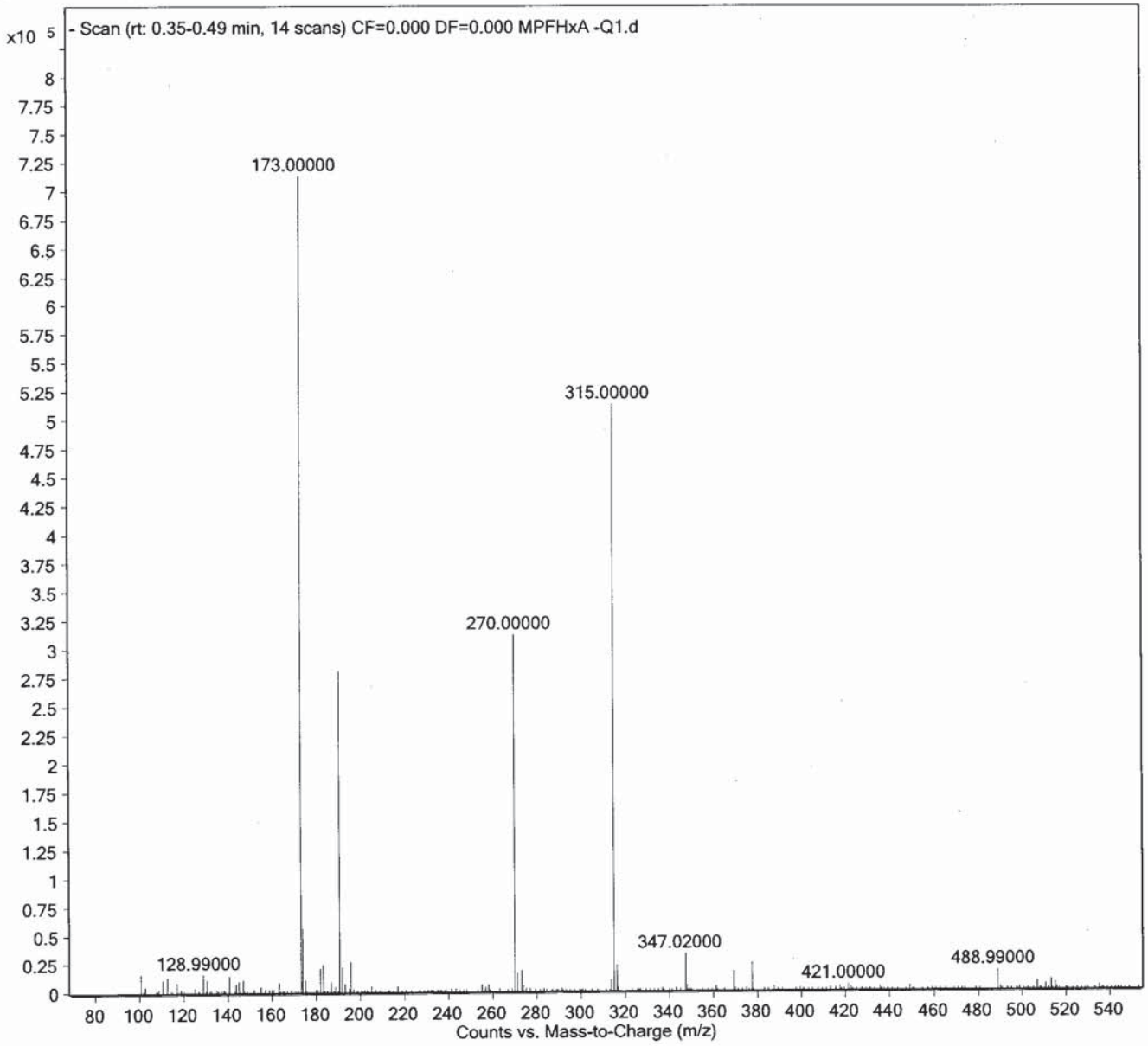


Eurofins Lancaster Laboratories Environmental

Sample Name	MPFPeA	**Position**	P2-A2	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFPeA -Q1.d
Acq Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:06:18 PM

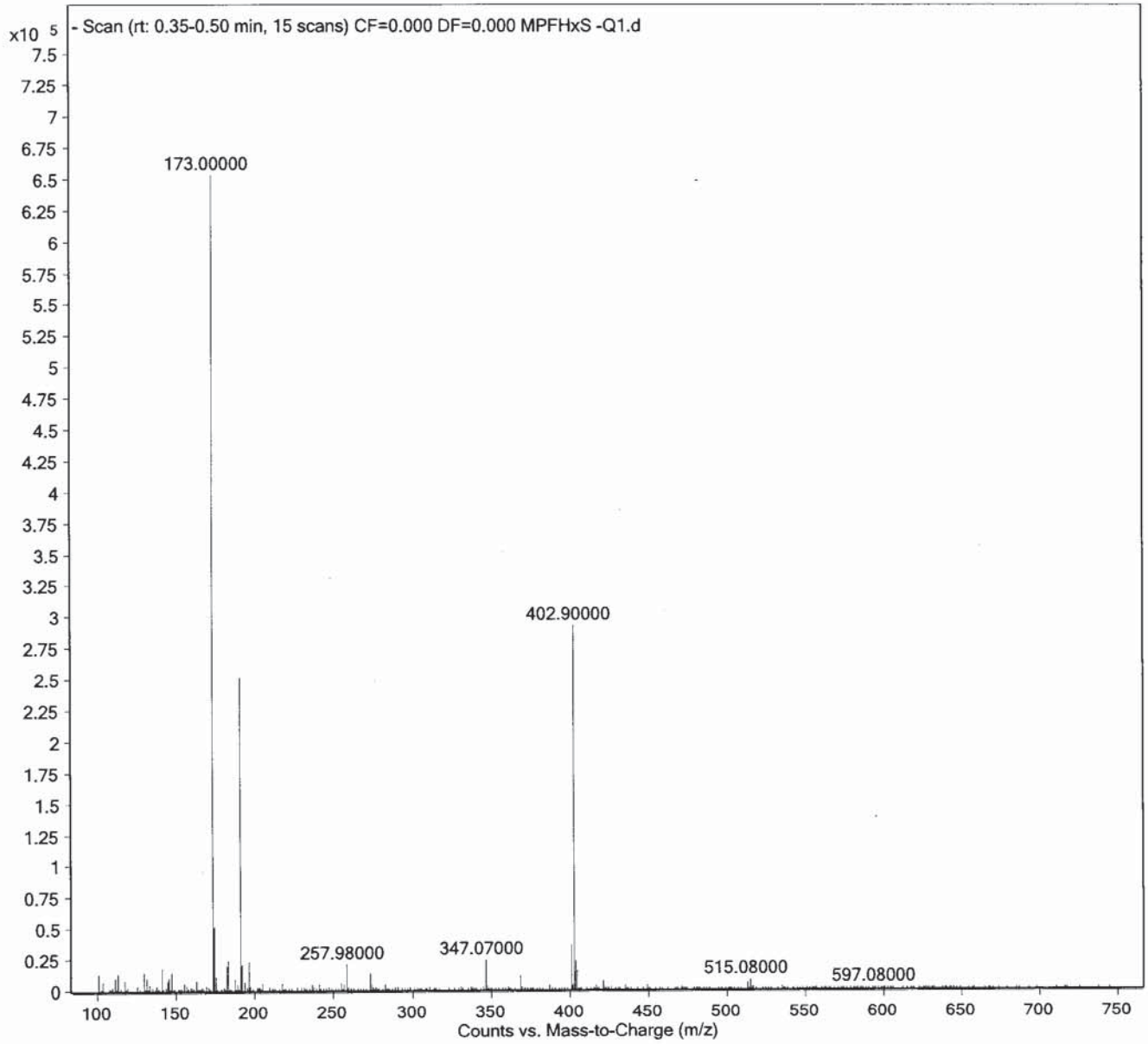
Eurofins Lancaster Laboratories Environmental, Lancaster Laboratories Environmental, Eurofins Lancaster Laboratories Environmental, Eurofins Lancaster Laboratories Environmental, Eurofins

Sample Name	MPFHxA	**Position**	P2-A3	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFHxA -Q1.d
AcQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:11:48 PM



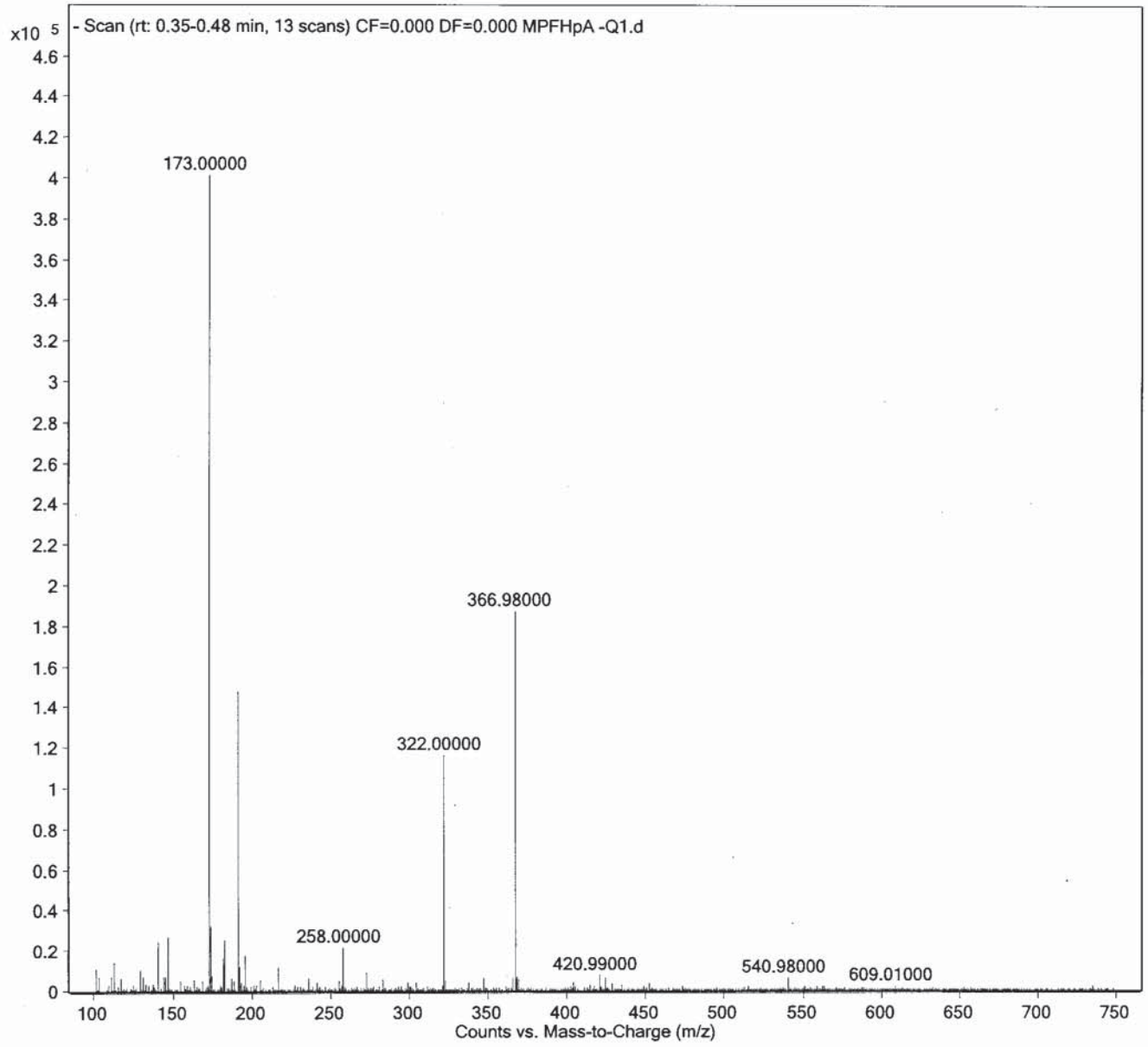
Maxxam Analytics

Sample Name	MPFHxS	**Position**	P2-A4	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFHxS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:17:18 PM



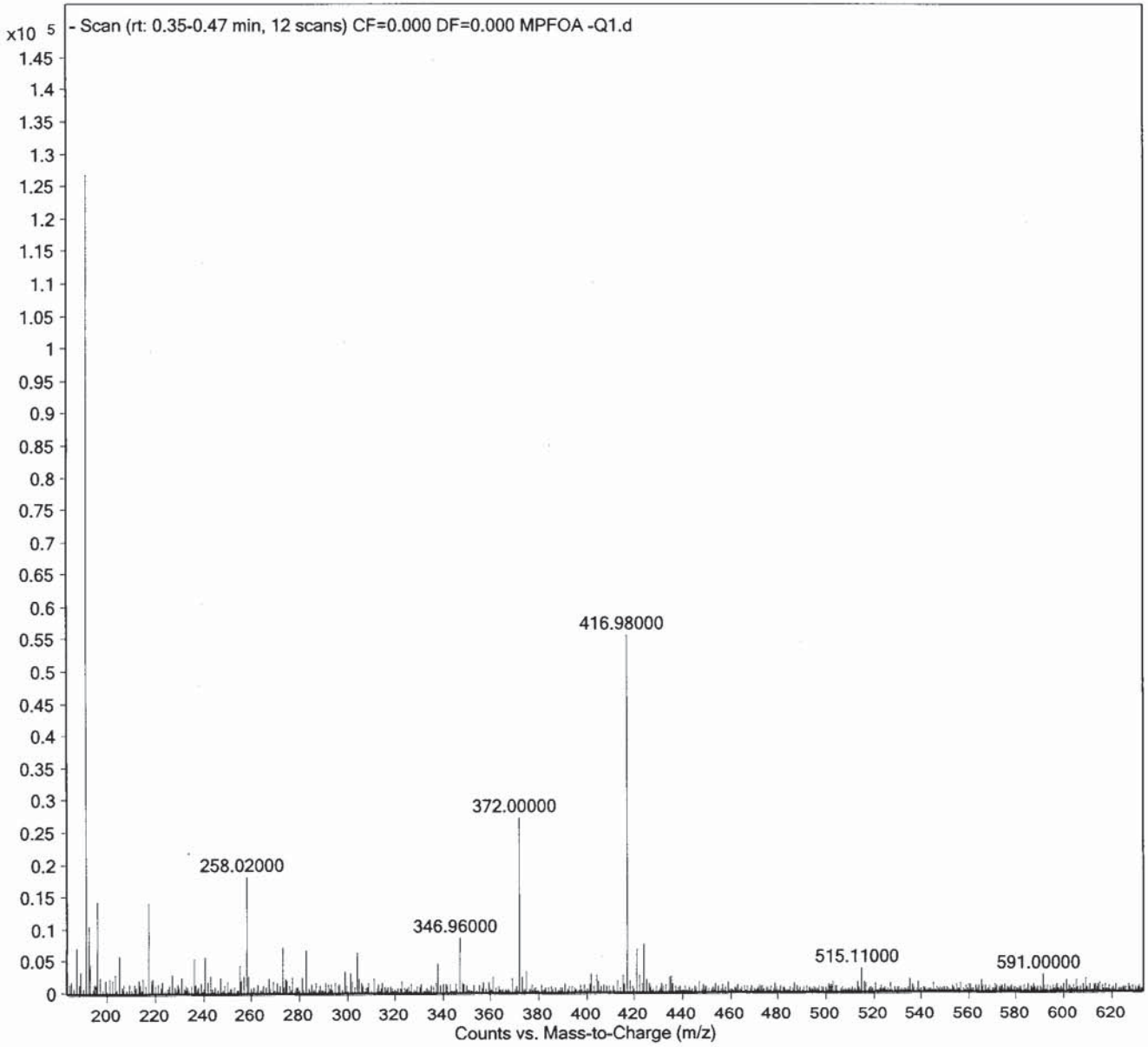
Axcam Analytics

Sample Name	MPFHpA	**Position**	P2-A5	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFHpA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:22:48 PM

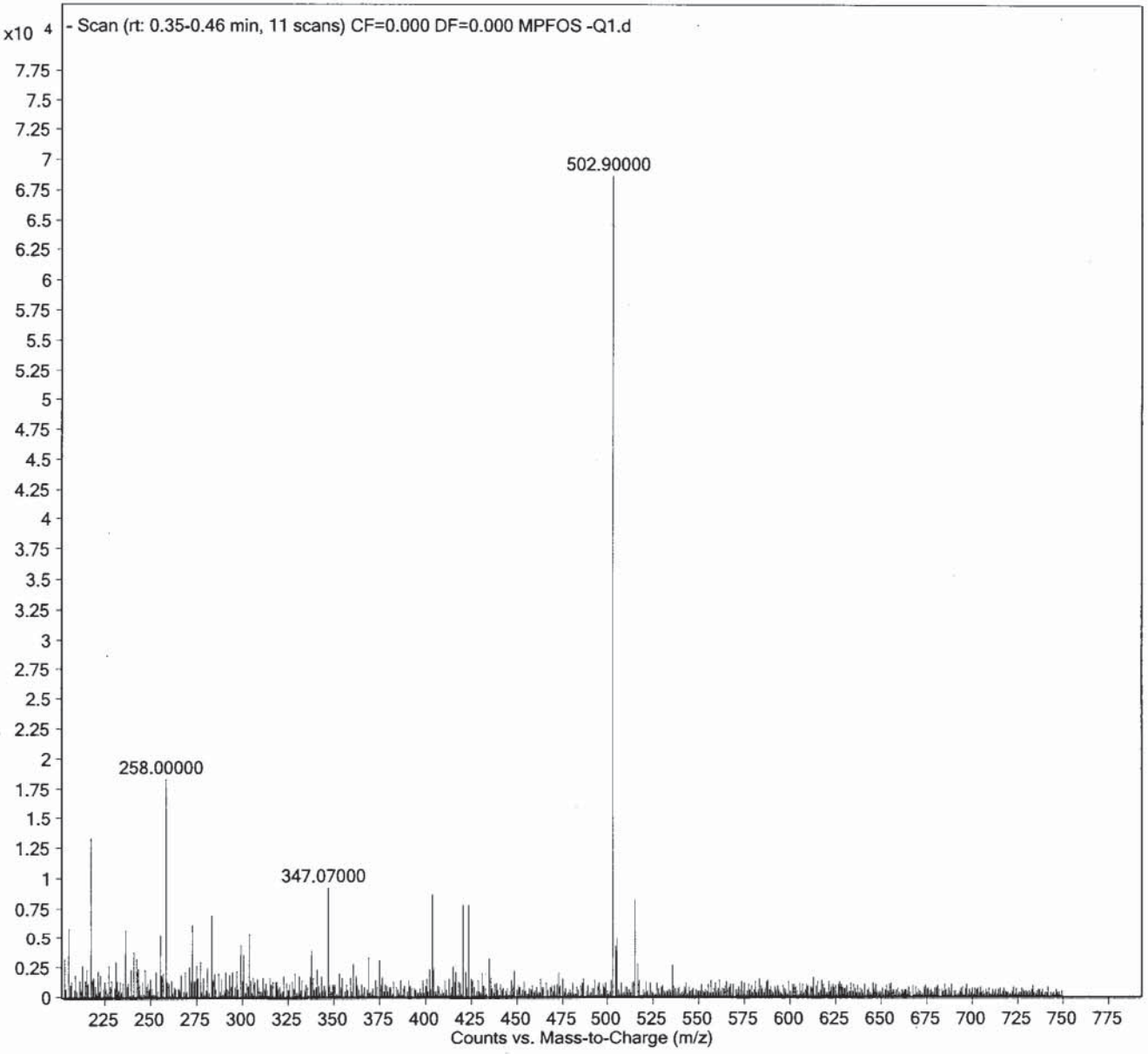


MaxXam Analytics

Sample Name	MPFOA	**Position**	P2-A6	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFOA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:28:18 PM

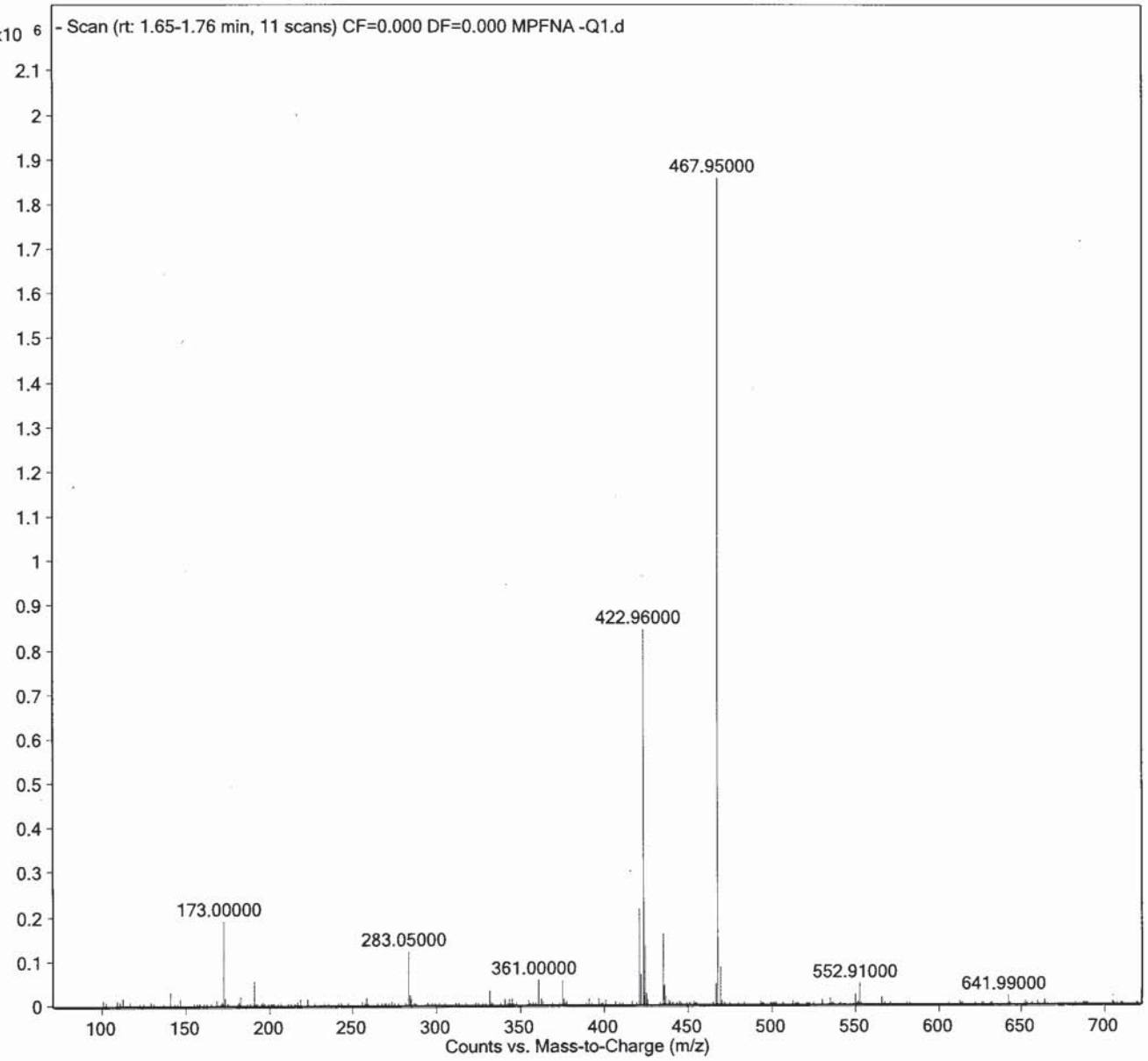


Sample Name	MPFOS	**Position**	P2-A7	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFOS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:33:49 PM



Maxxam Analytics

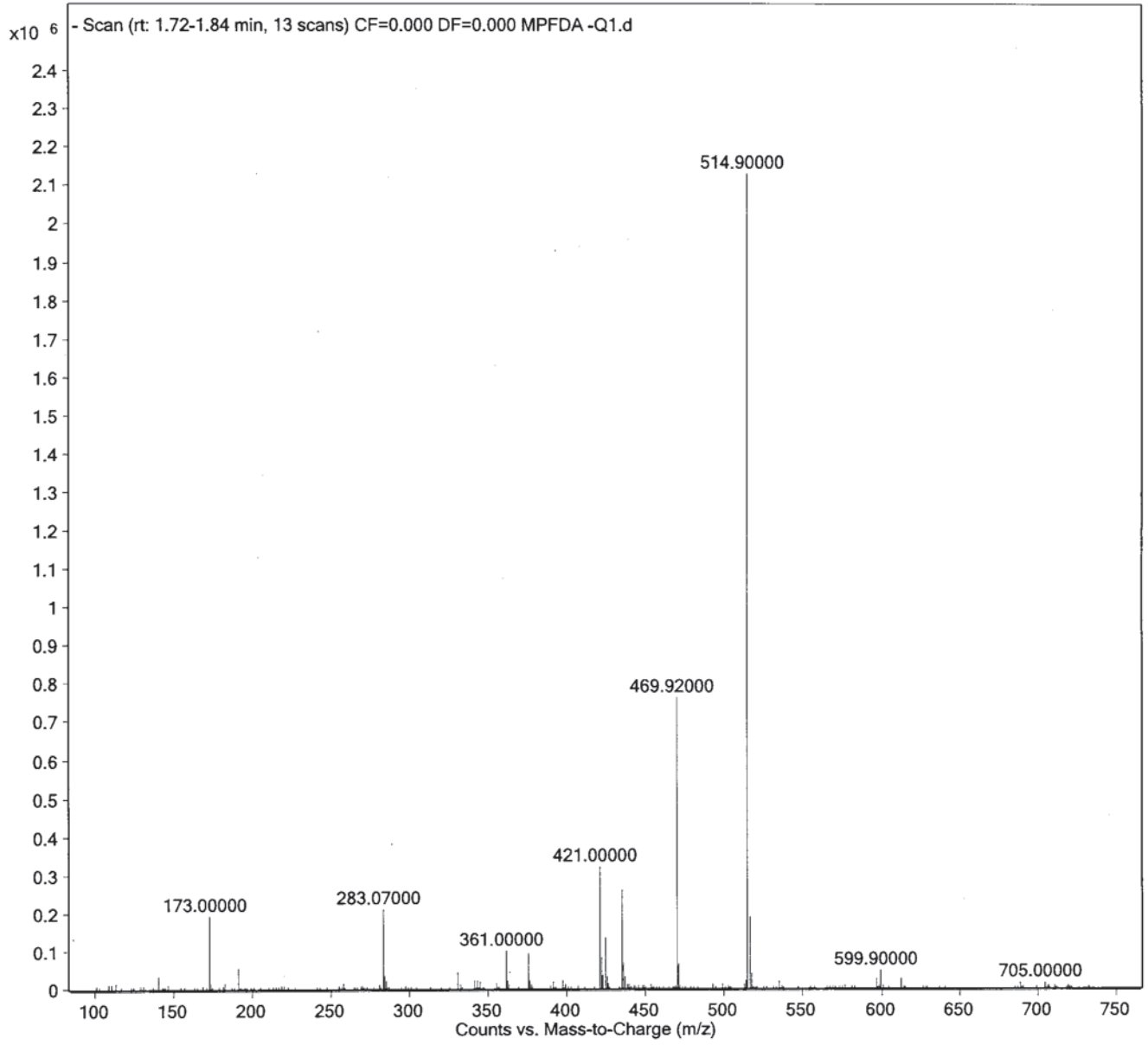
Sample Name	MPFNA	**Position**	P2-A8	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFNA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:39:21 PM



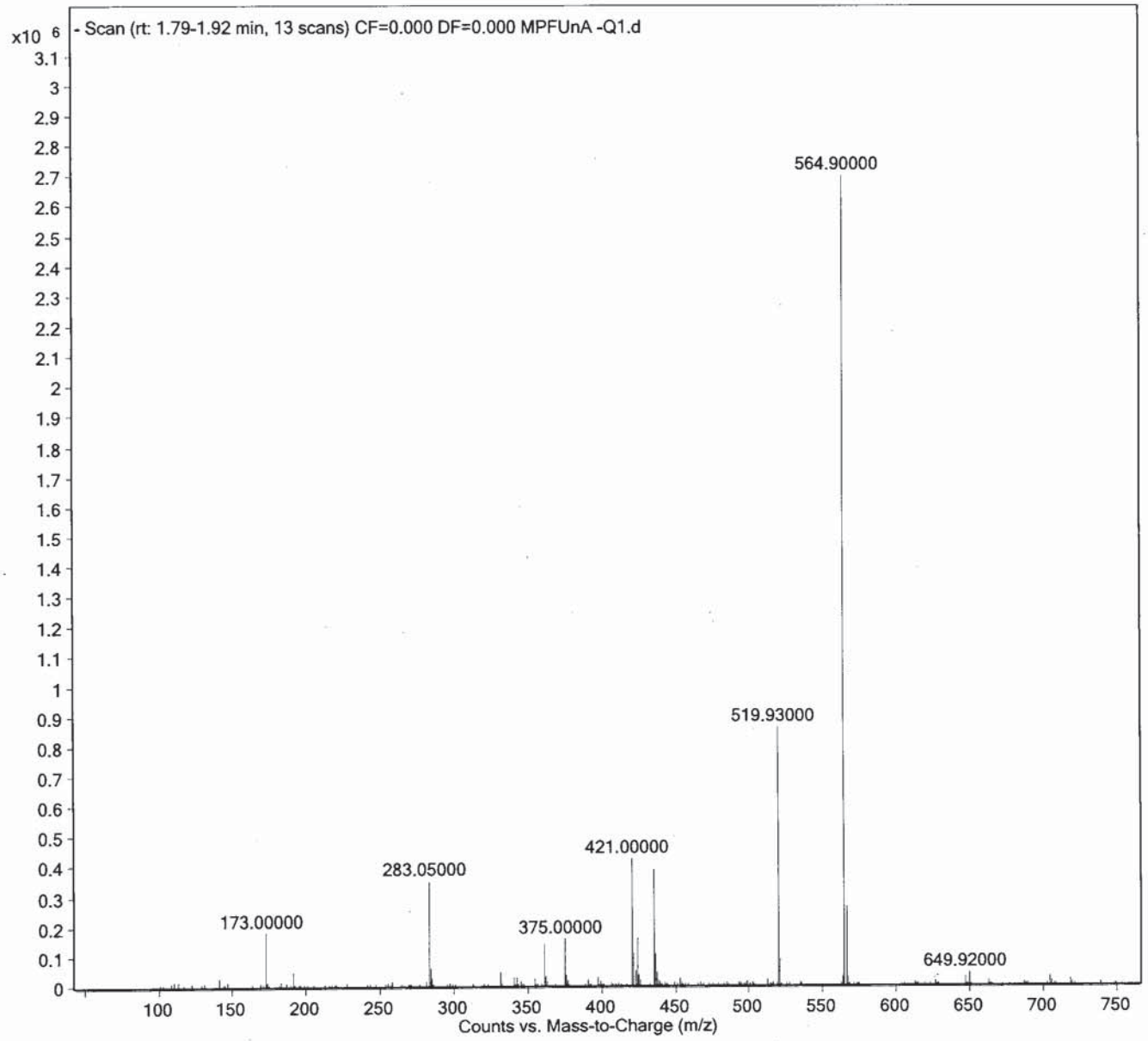
Alaxam Analytics

Sample Name	MPFDA	**Position**	P2-A9	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFDA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:44:52 PM

Alaskan Analytics

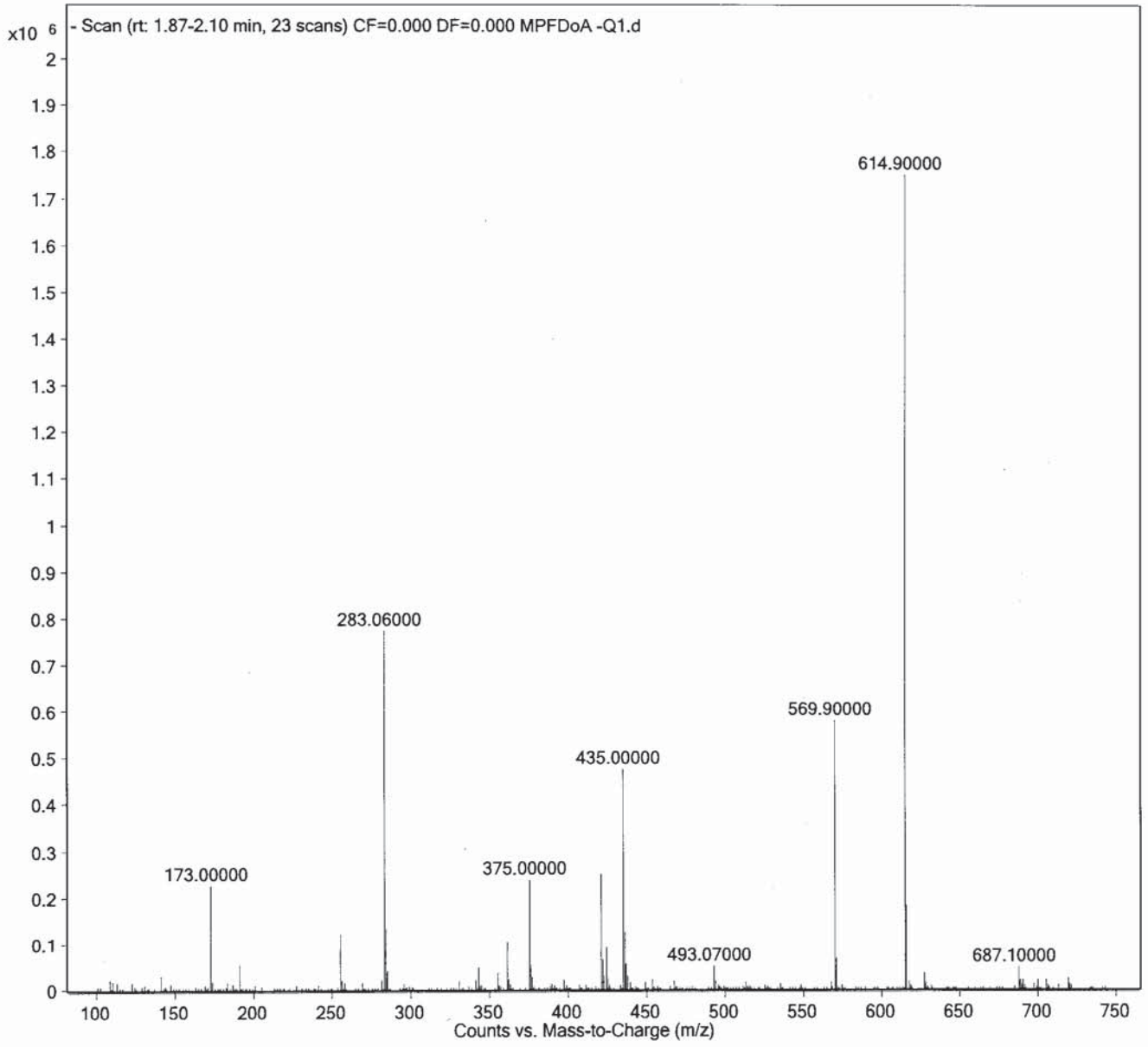


Sample Name	MPFUnA	**Position**	P2-B1	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFUnA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:50:23 PM



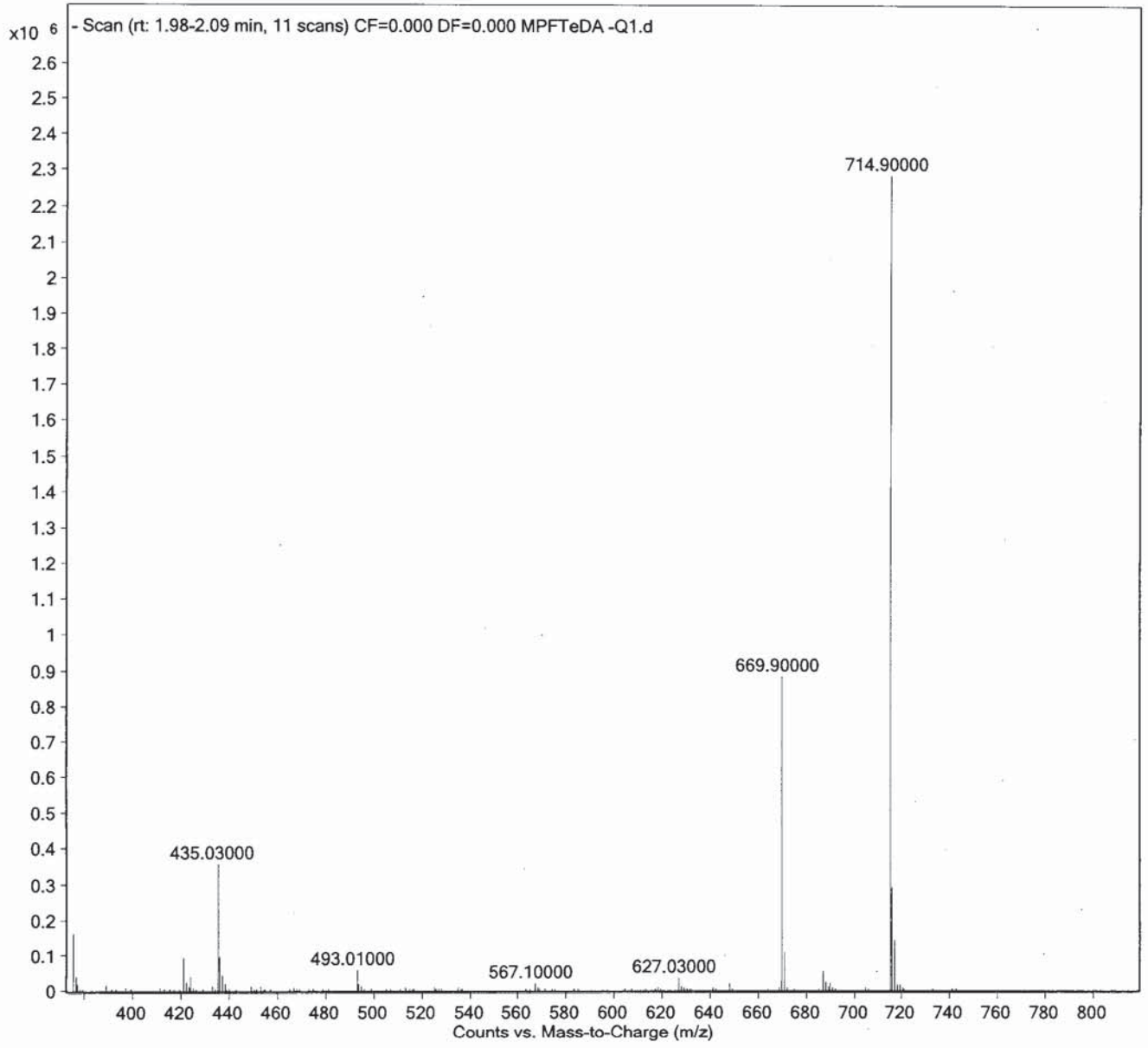
Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA 17601 Phone: 717-656-2300 Fax: 717-656-2681

Sample Name	MPFDoA	**Position**	P2-B2	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFDoA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 1:55:53 PM



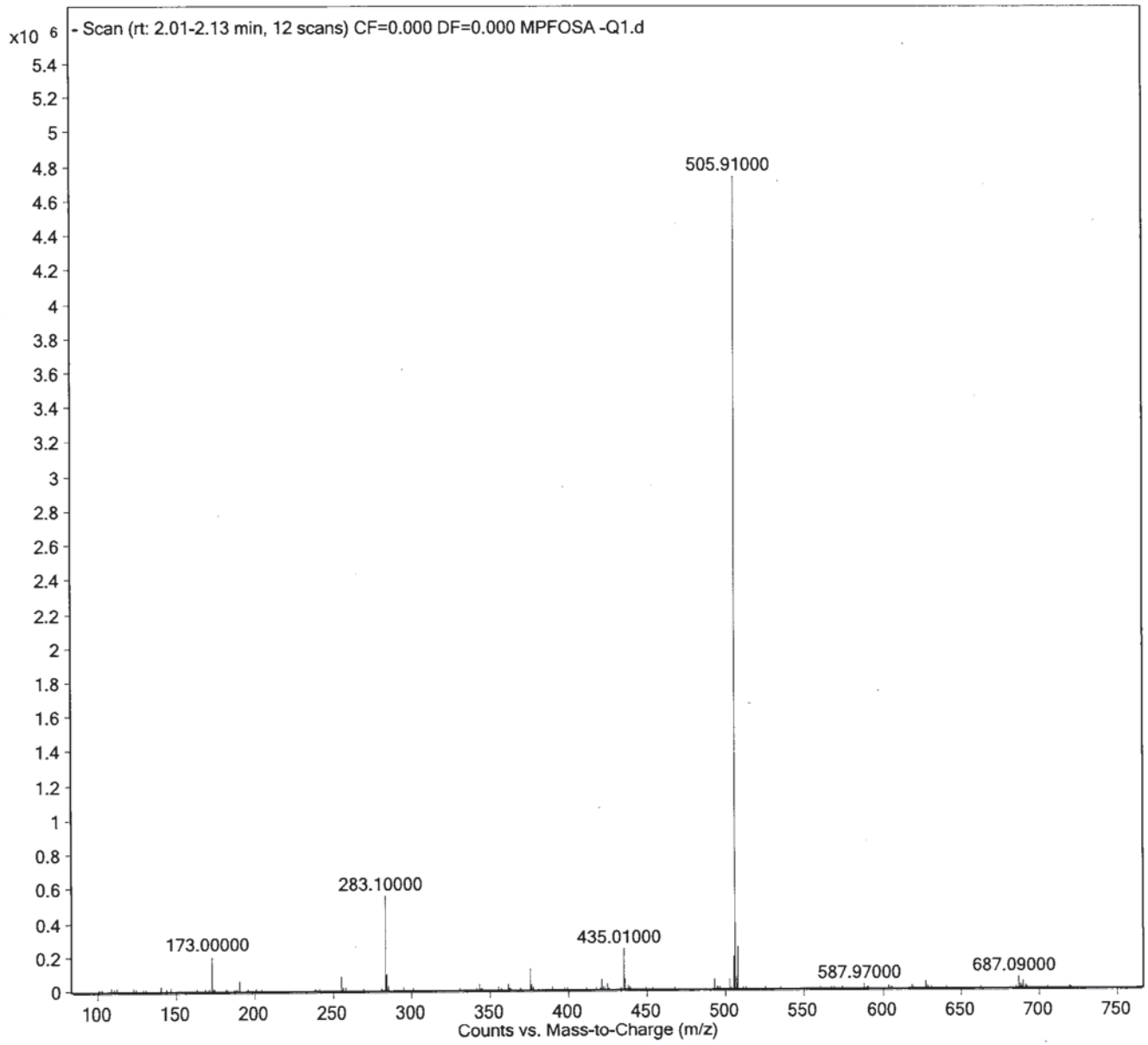
Alkam Analytics

Sample Name	MPFTeDA	**Position**	P2-B3	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFTeDA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:01:23 PM



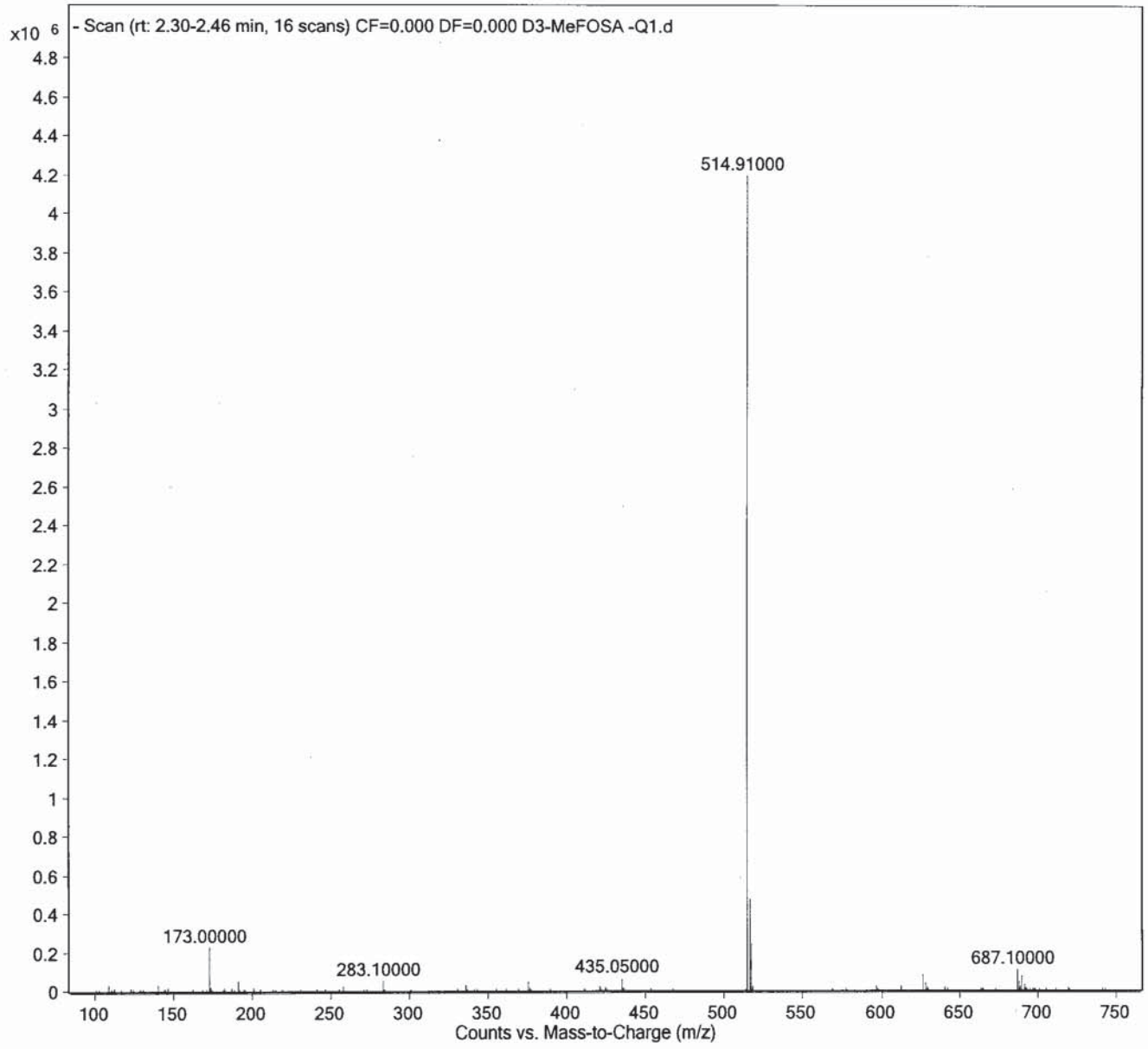
Maxxam Analytics

Sample Name	MPFOSA	**Position**	P2-B4	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFOSA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:06:53 PM



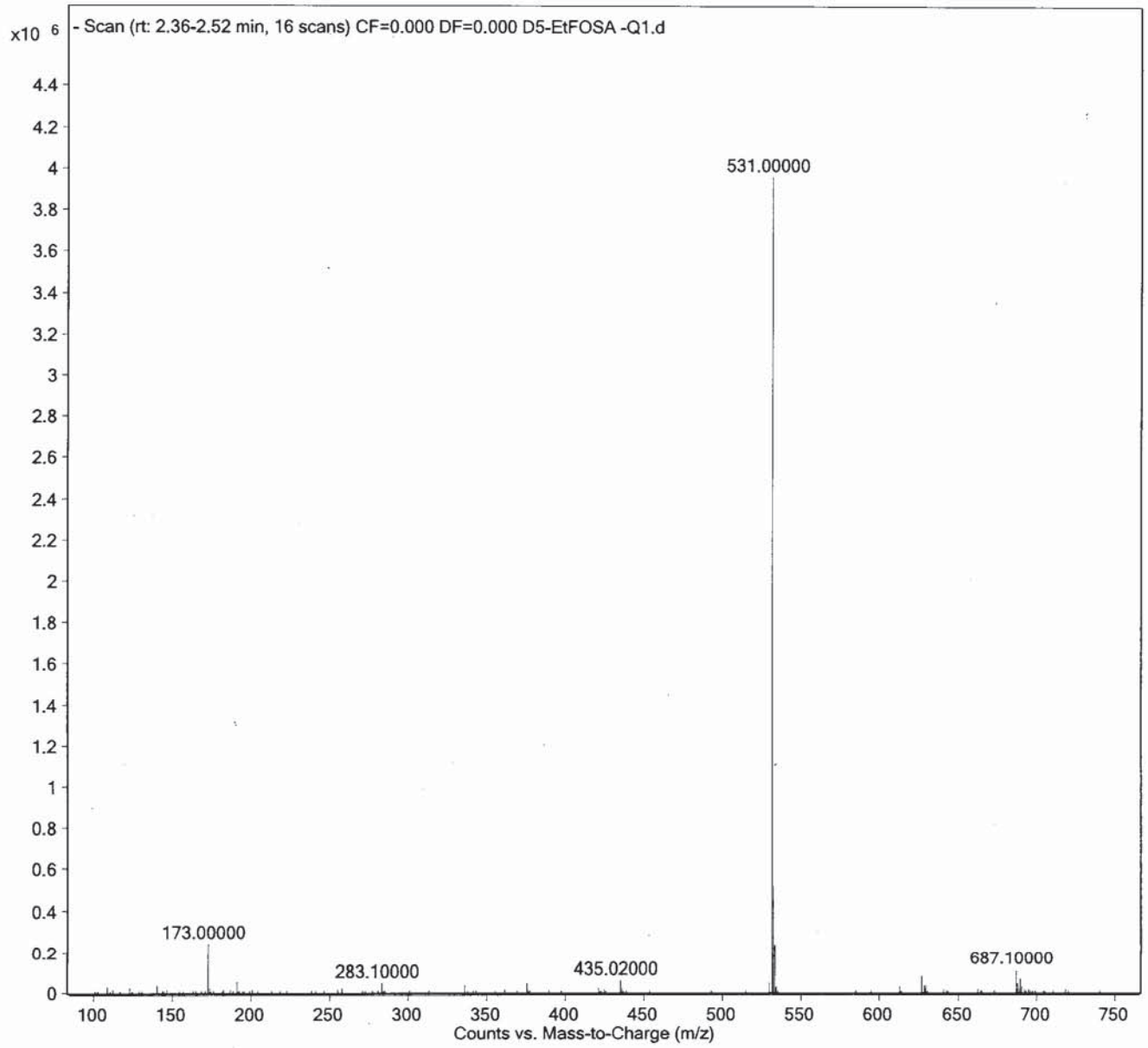
SanKam Analytics

Sample Name	D3-MeFOSA	**Position**	P2-B5	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D3-MeFOSA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:12:24 PM



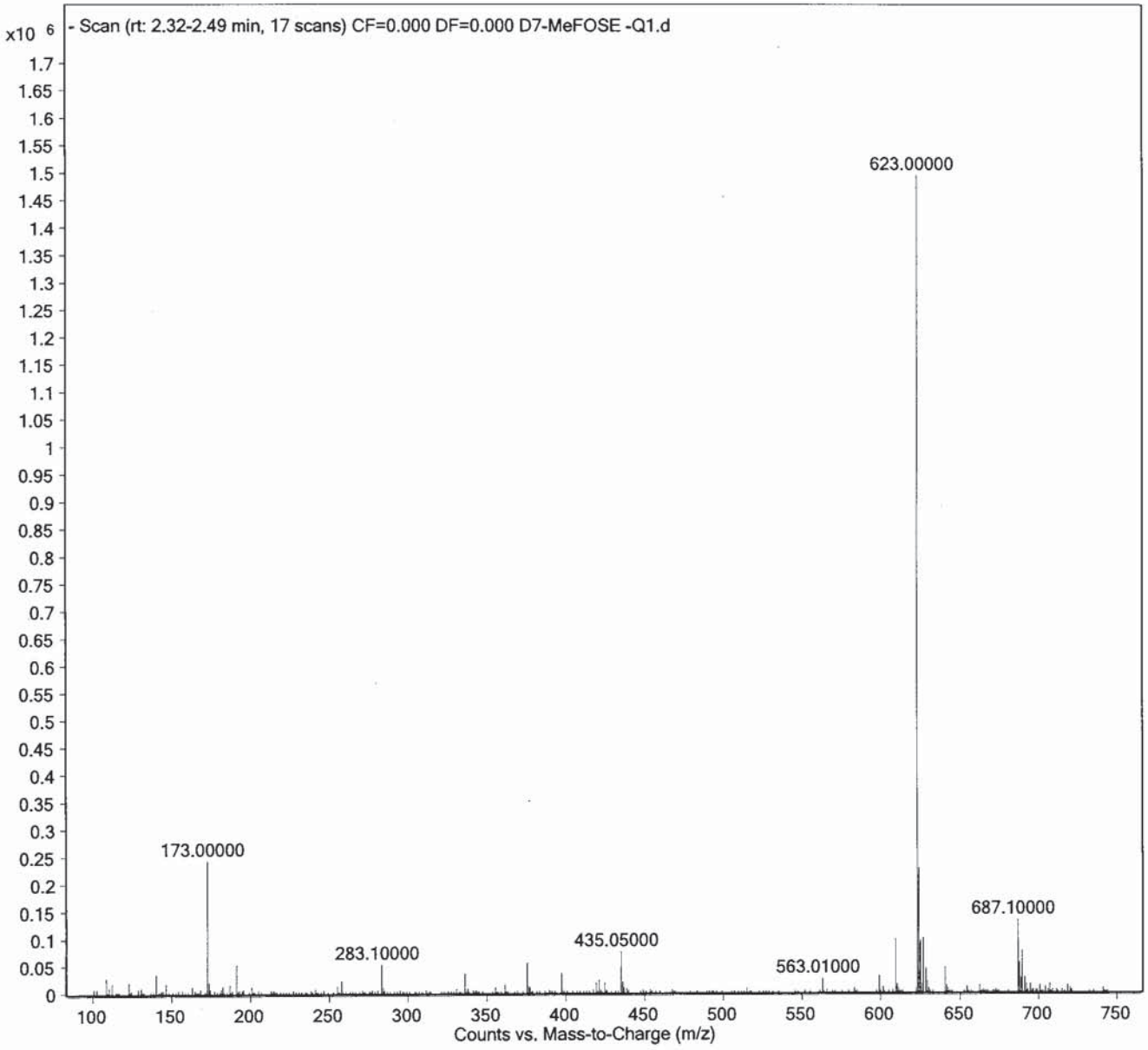
SGS AXAM Analytics

Sample Name	D5-EtFOSA	**Position**	P2-B6	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D5-EtFOSA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:17:53 PM

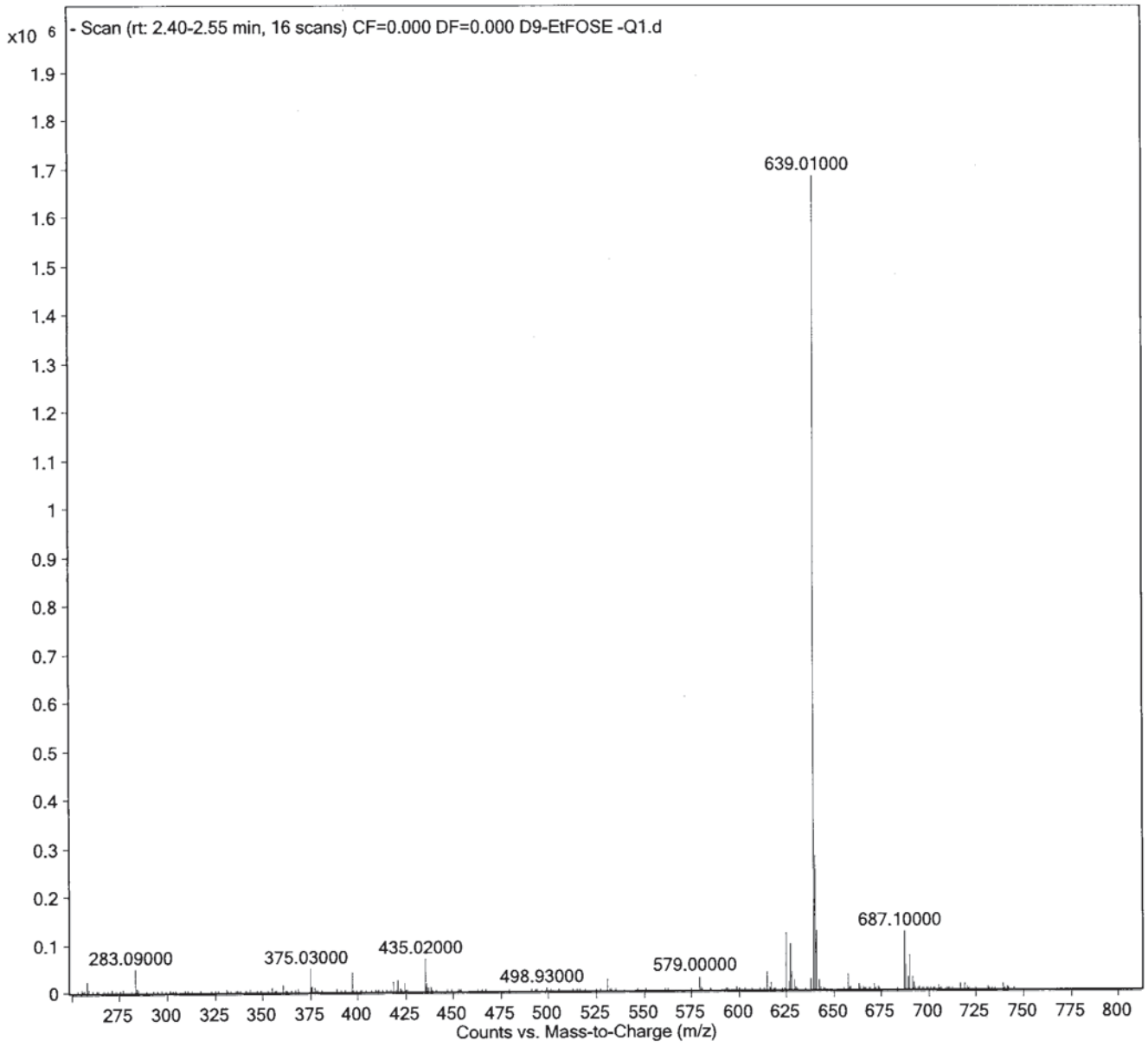


Maxam Analytics

Sample Name	D7-MeFOSE	**Position**	P2-B7	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D7-MeFOSE -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:23:24 PM

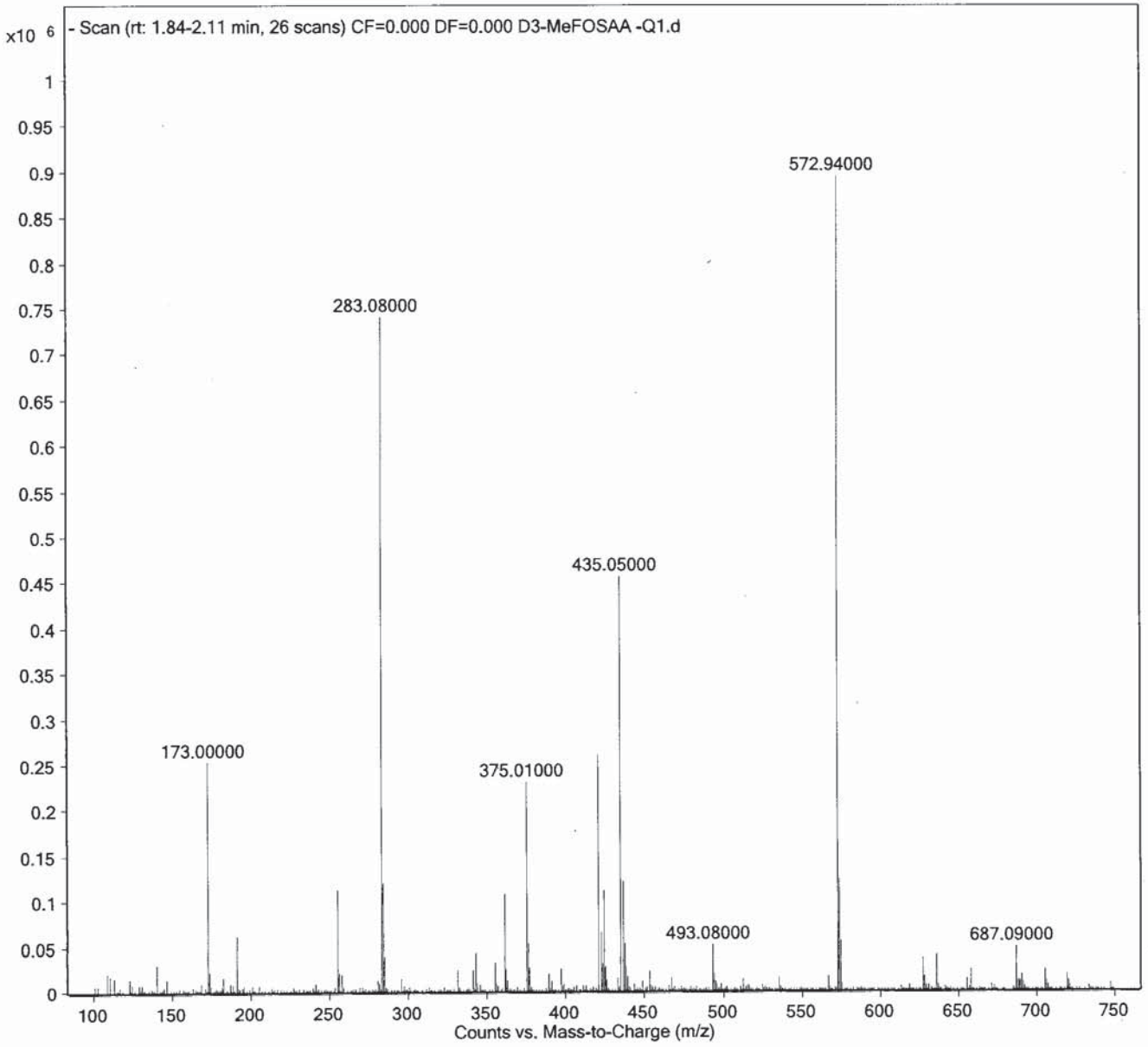


Sample Name	D9-EtFOSE	**Position**	P2-B8	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D9-EtFOSE -Q1.d
AcQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:28:56 PM

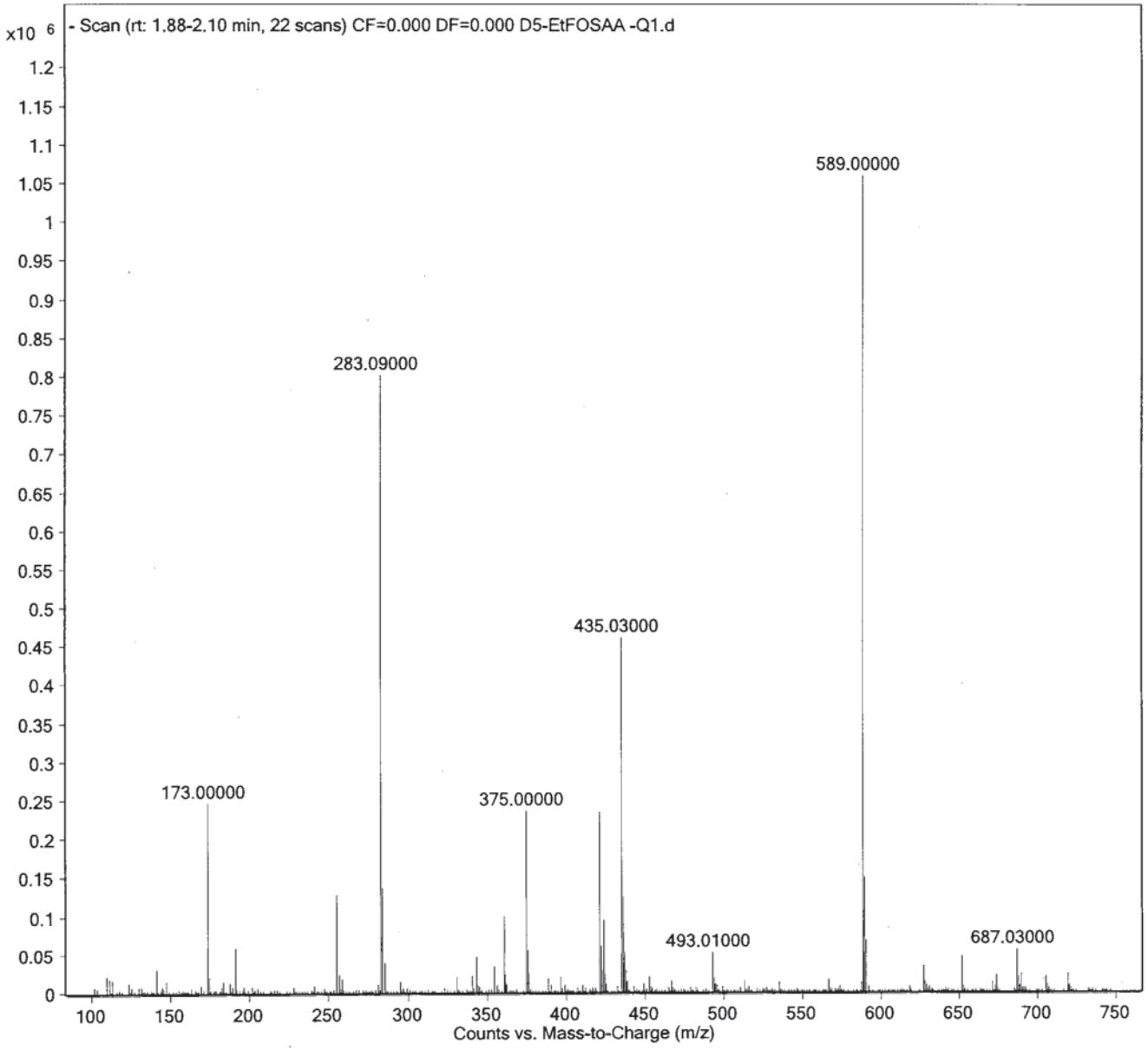


SafeAm Analytics

Sample Name	D3-MeFOSAA	**Position**	P2-B9	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D3-MeFOSAA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:34:28 PM

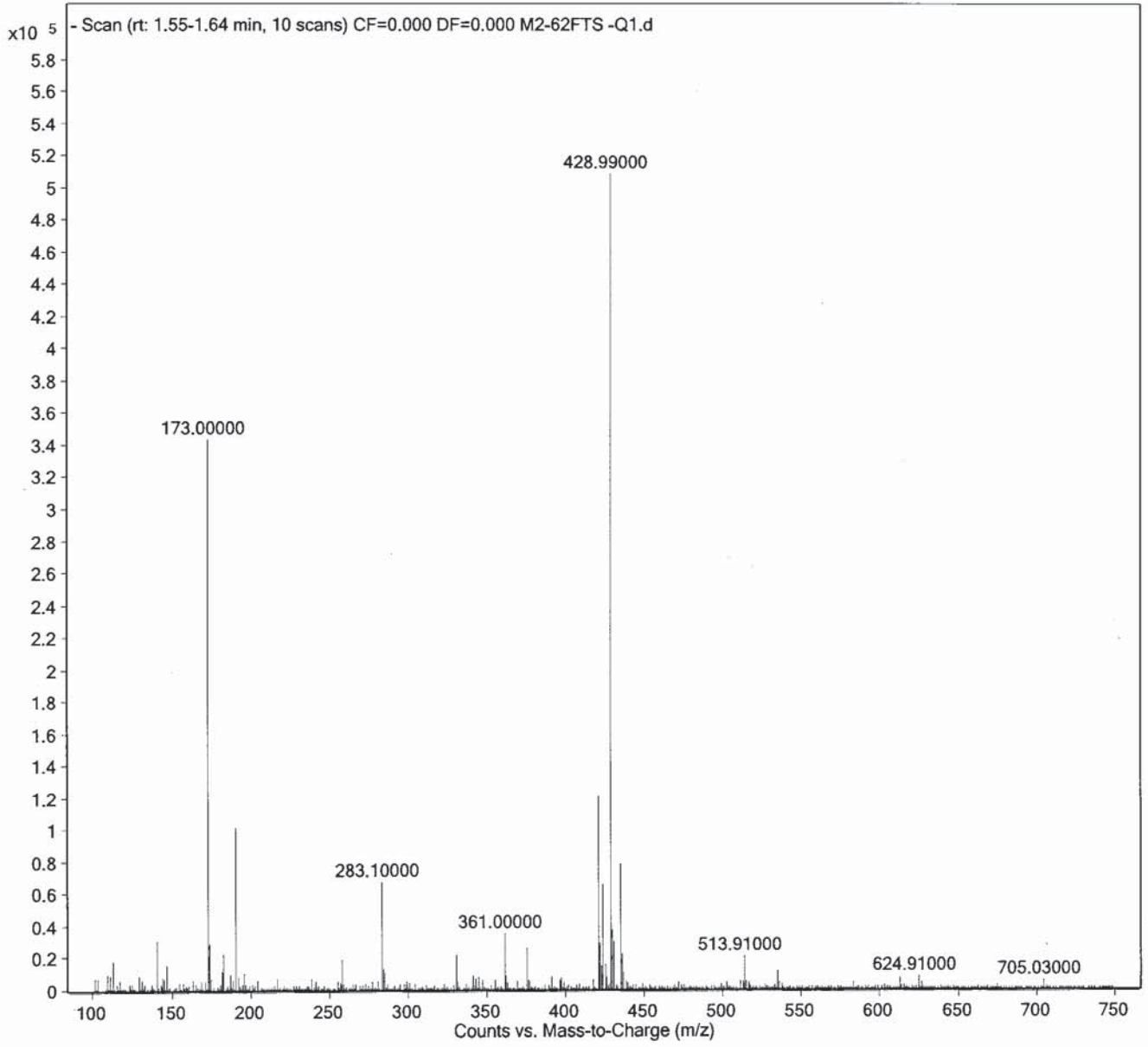


Sample Name	D5-EtFOSAA	**Position**	P2-C1	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D5-EtFOSAA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:39:59 PM



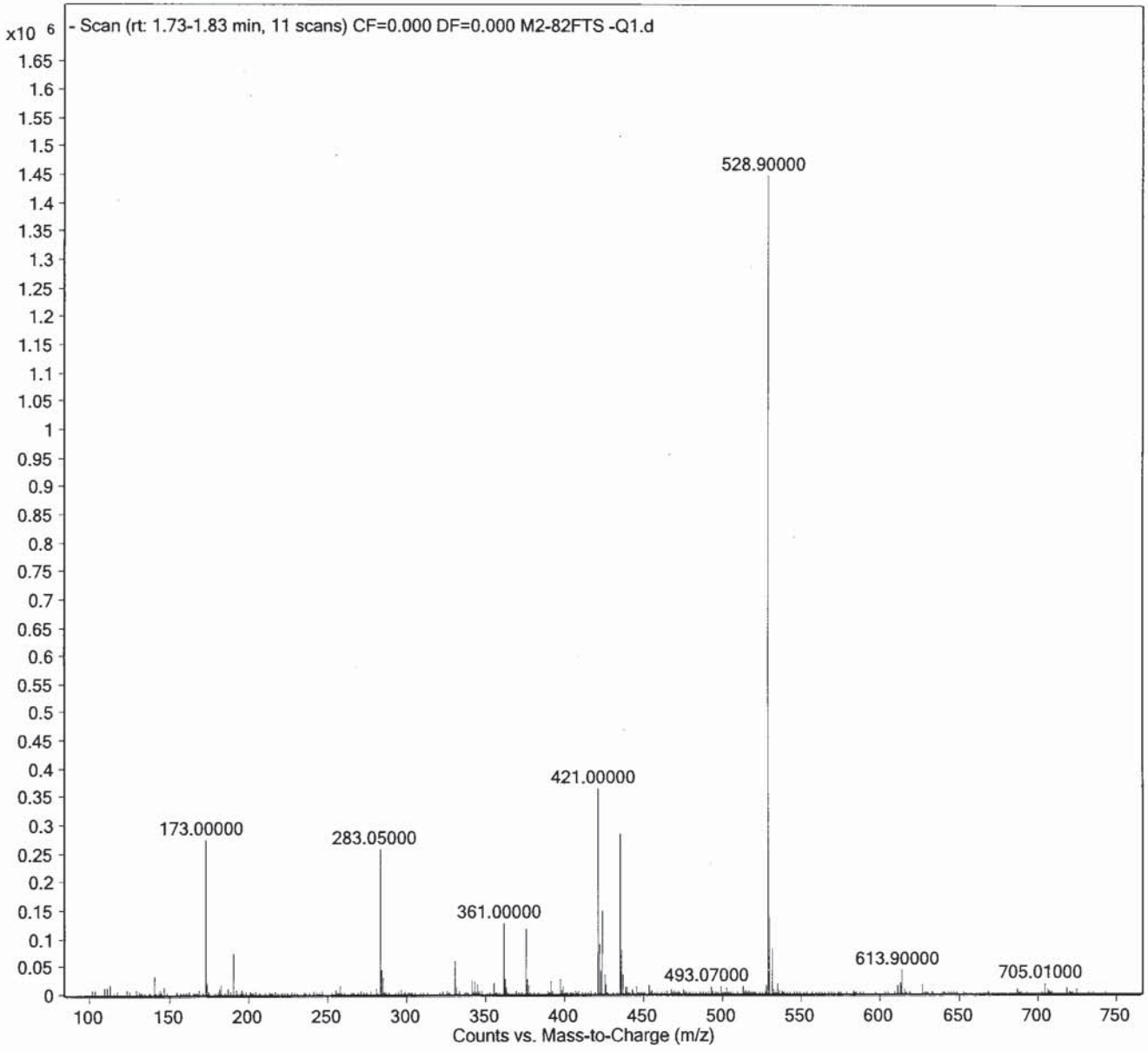
SGS AXYS Analytics

Sample Name	M2-6:2FTS	**Position**	P2-C2	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	M2-62FTS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:45:29 PM



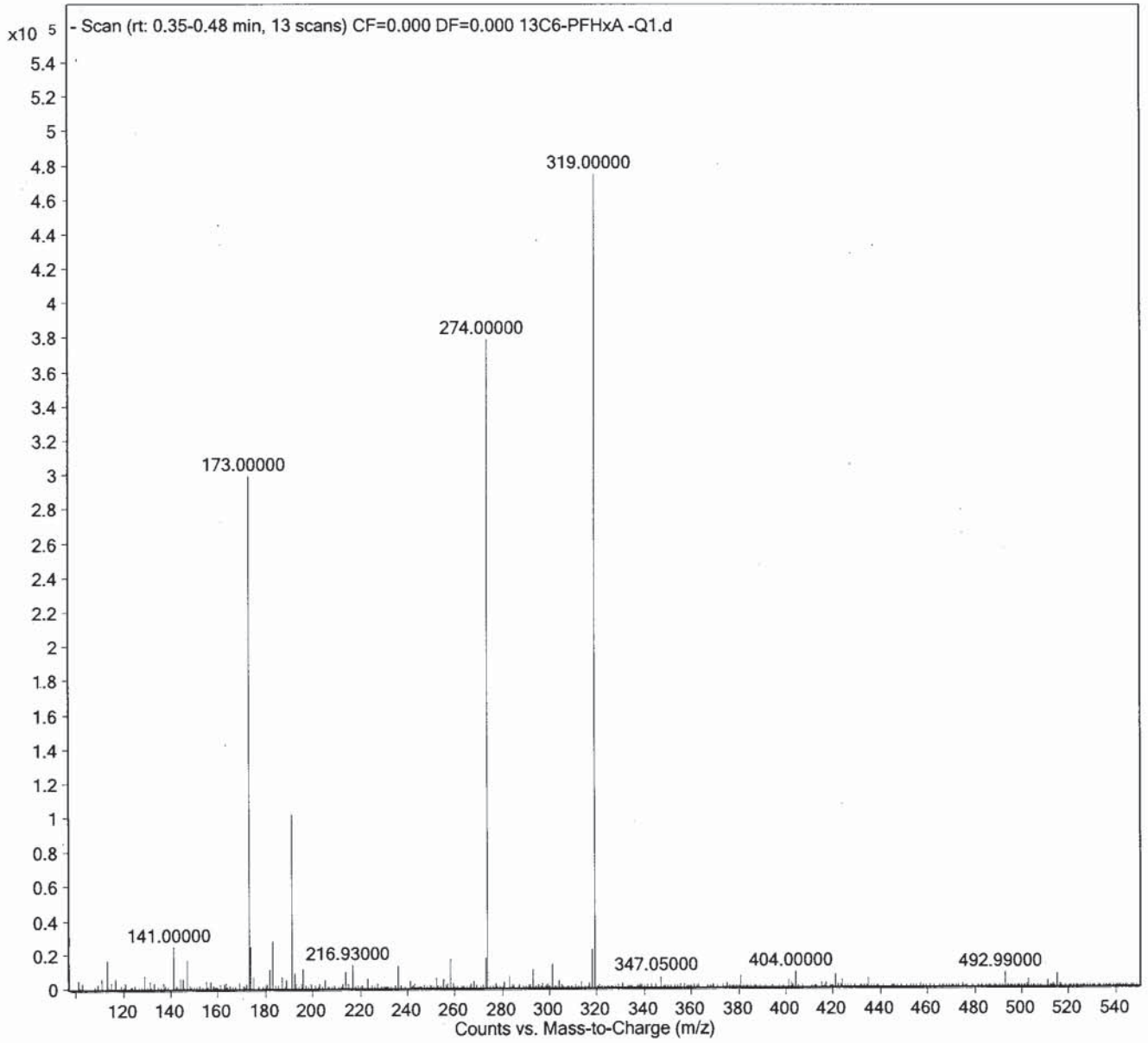
SGS AXYS Analytics

Sample Name	M2-8:2FTS	**Position**	P2-C3	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	M2-82FTS -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:50:59 PM



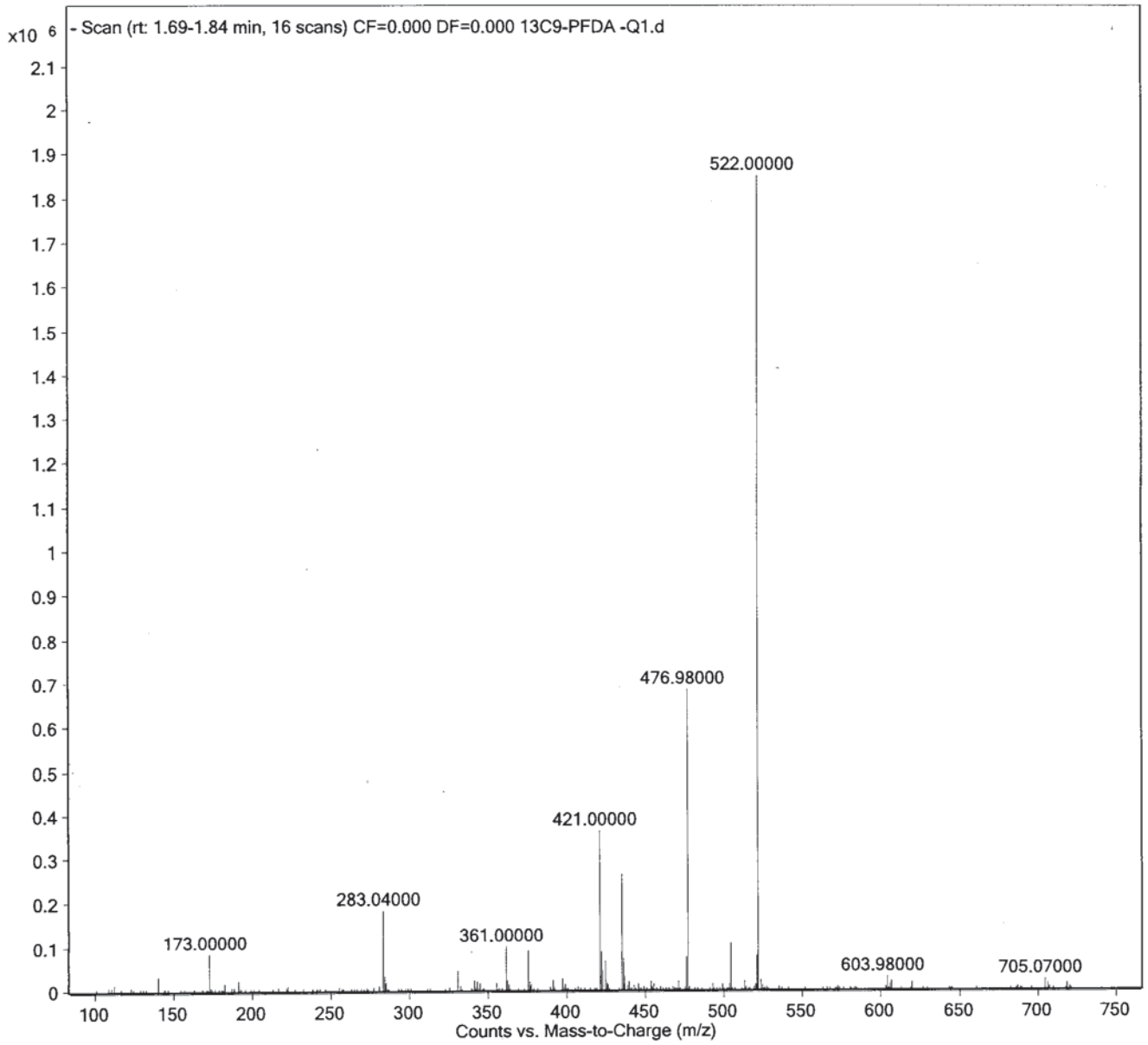
MaxAm Analytics

Sample Name	13C6-PFHxA	**Position**	P2-C4	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	13C6-PFHxA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 2:56:30 PM



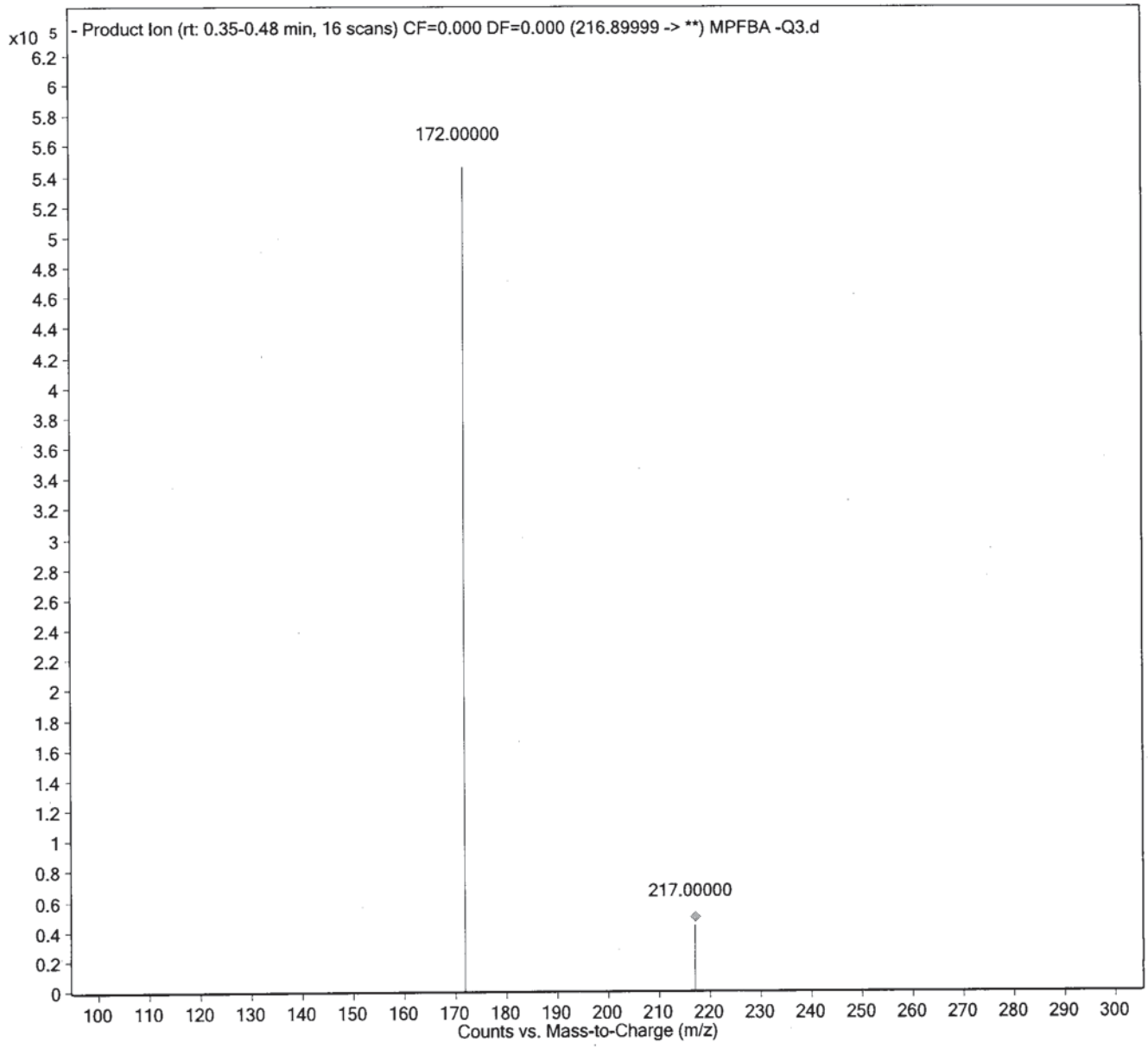
SGS AXYS Analytical

Sample Name	13C9-PFDA	**Position**	P2-C5	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	13C9-PFDA -Q1.d
ACQ Method	PFC_MassVerification-Q1.m	**Comment**		**Acquired Time**	2017/07/11 3:01:59 PM

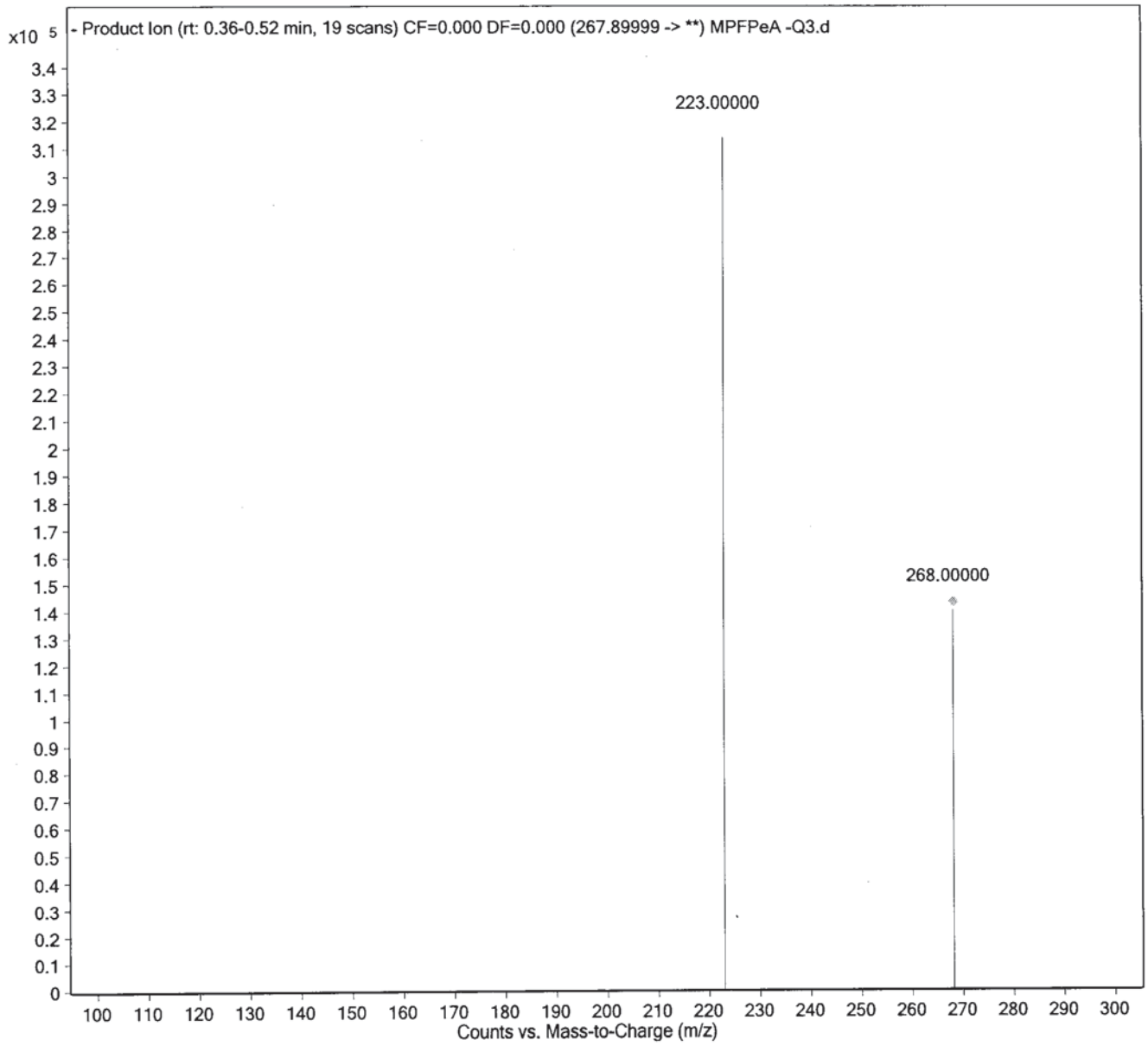


Extracted and Injection Internal Standard Product Ion Verification

Sample Name	MPFBA -Q3	**Position**	P2-A1	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFBA -Q3.d
ACQ Method	PFC_MassVerification-MPFBA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:07:29 PM

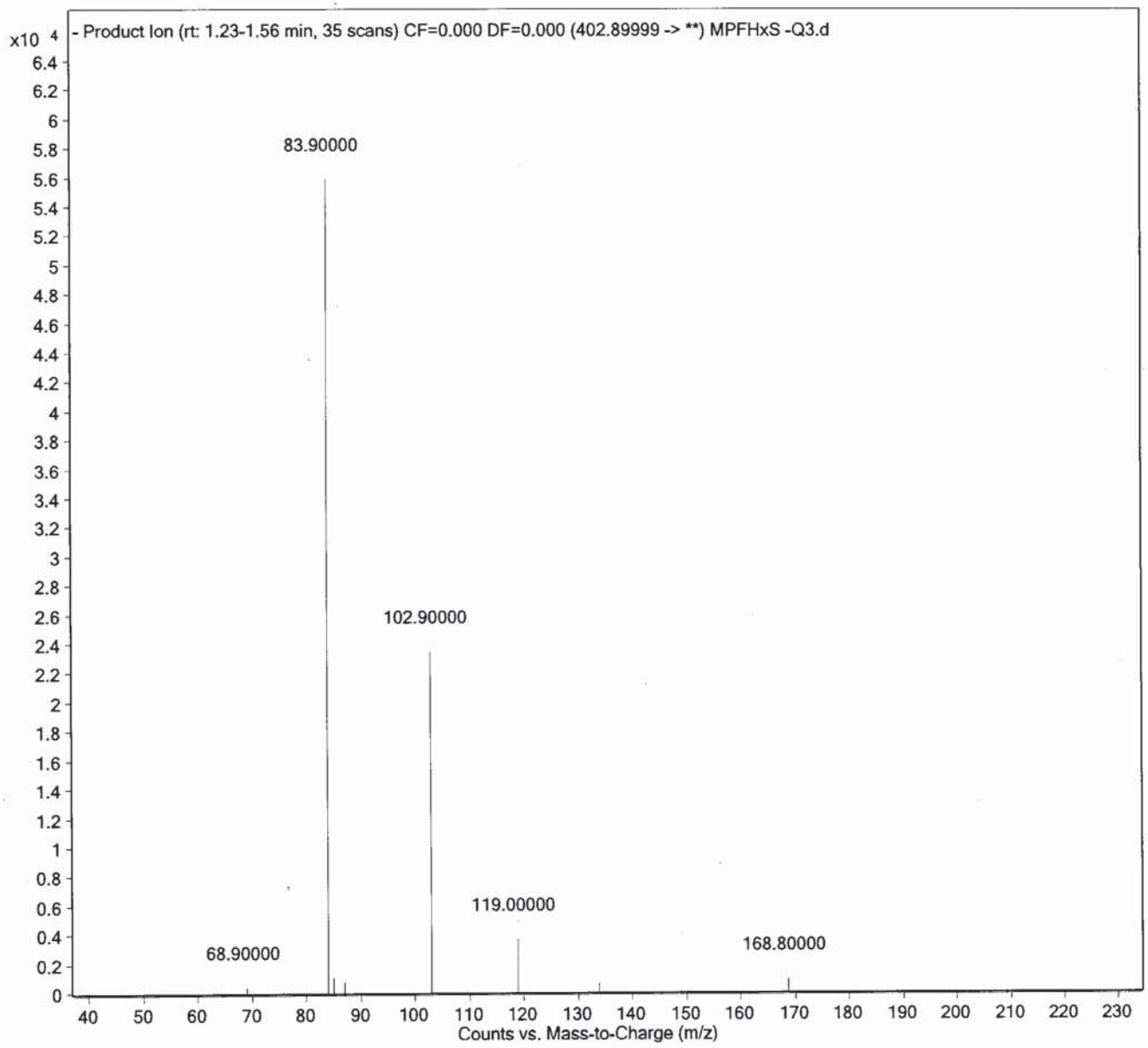


Sample Name	MPFPeA -Q3	**Position**	P2-A2	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFPeA -Q3.d
ACQ Method	PFC_MassVerification-MPFPeA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:12:59 PM



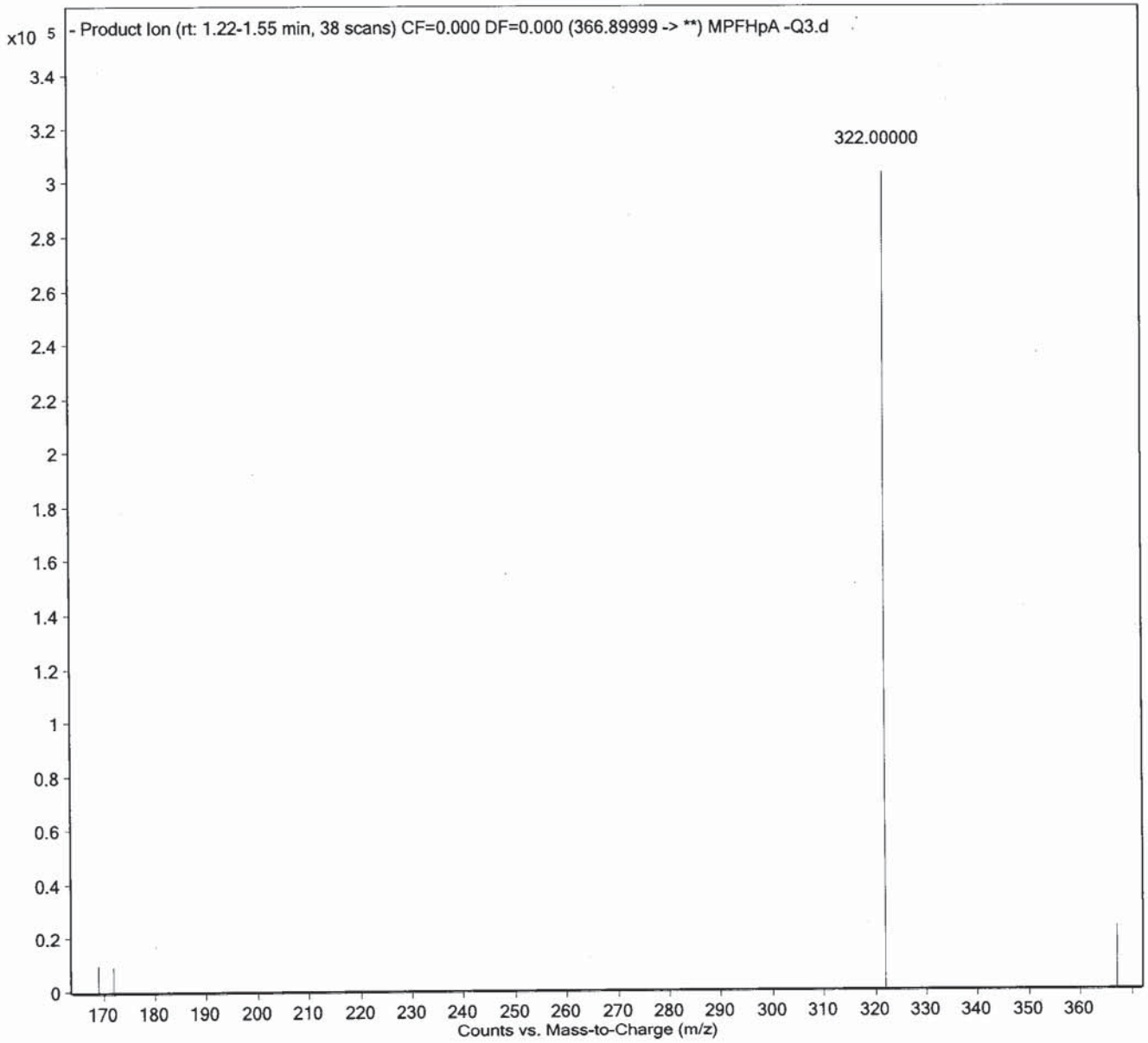
Maxxam Analytics

Sample Name	MPFHxS -Q3	**Position**	P2-A4	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFHxS -Q3.d
ACQ Method	PFC_MassVerification-MPFHxS-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:24:00 PM



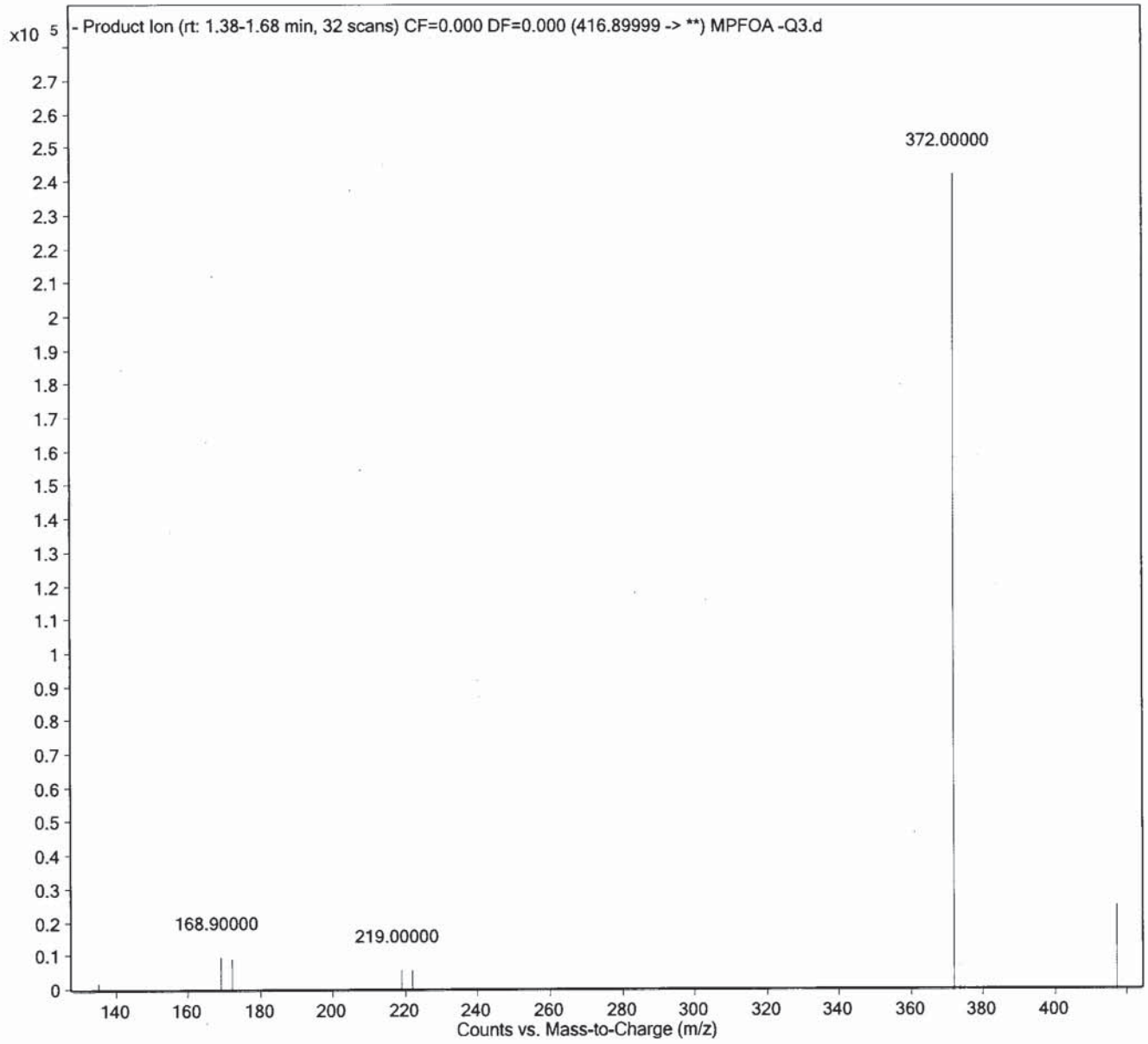
SanAm Analytics

Sample Name	MPFHpA -Q3	**Position**	P2-A5	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFHpA -Q3.d
ACQ Method	PFC_MassVerification-MPFHpA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:29:30 PM



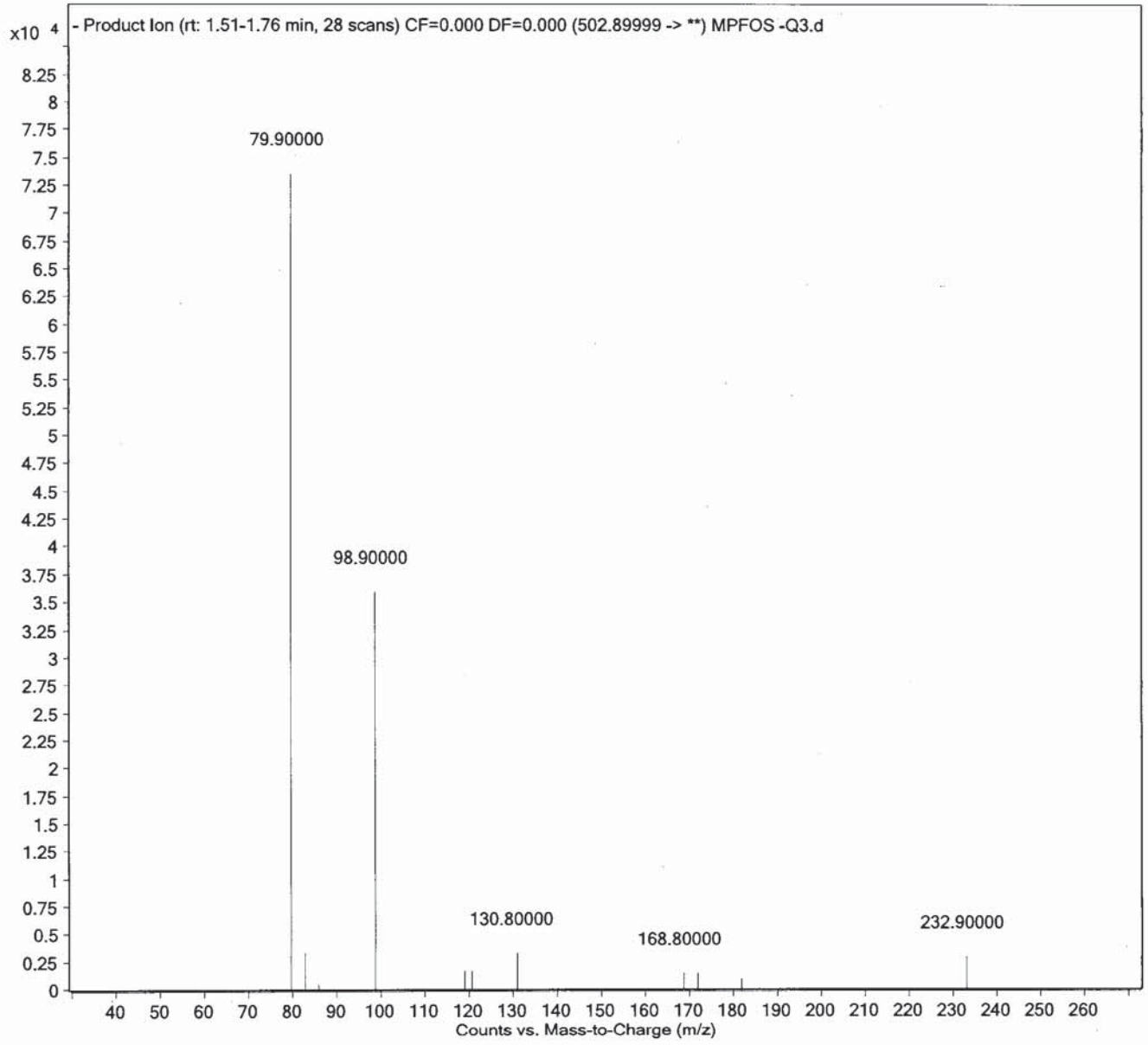
SaxAm Analytics

Sample Name	MPFOA -Q3	**Position**	P2-A6	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFOA -Q3.d
ACQ Method	PFC_MassVerification-MPFOA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:35:00 PM



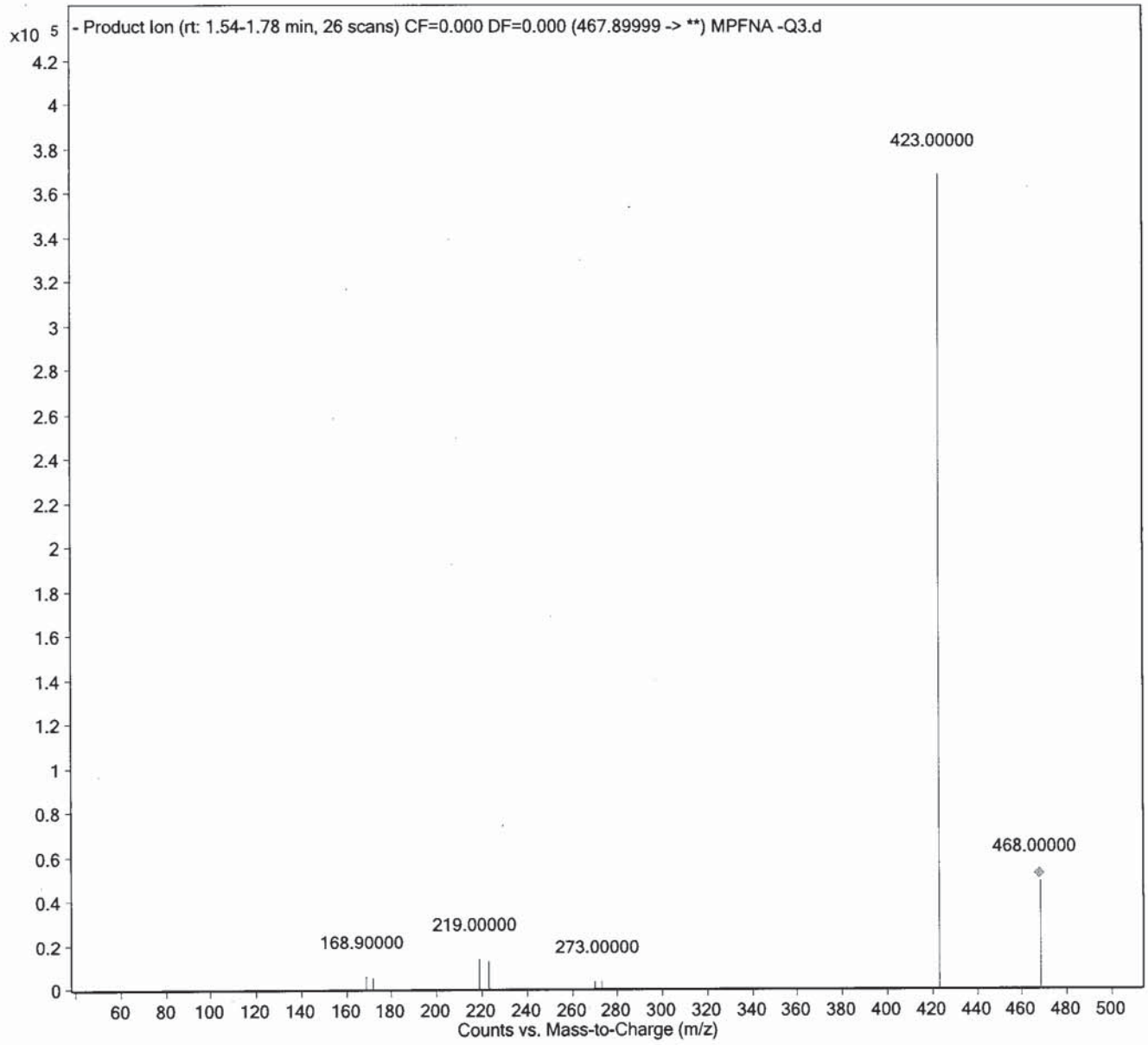
Battelle Analytics

Sample Name	MPFOS -Q3	**Position**	P2-A7	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFOS -Q3.d
ACQ Method	PFC_MassVerification-MPFOS-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:40:32 PM



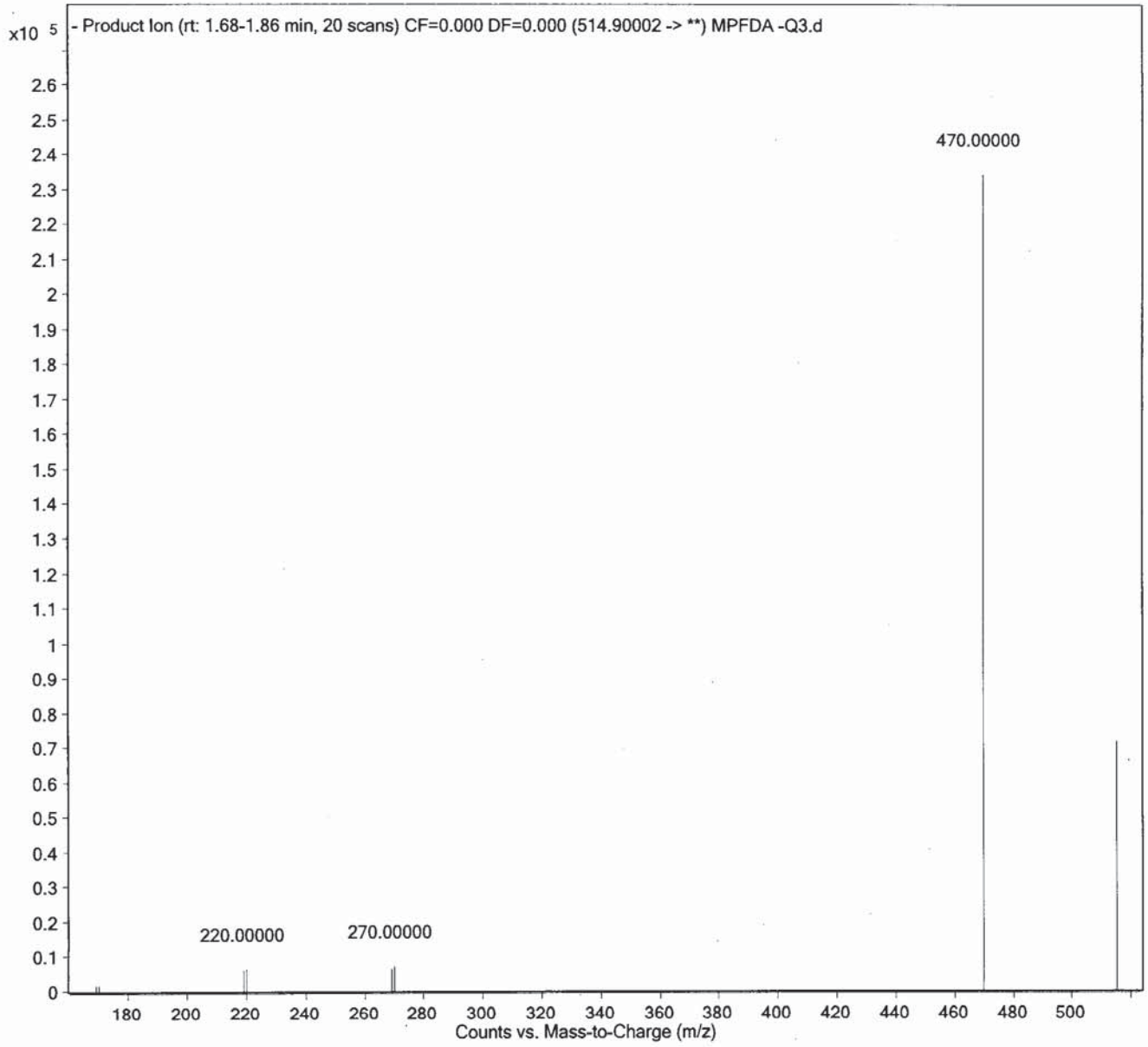
Alaska Analytics

Sample Name	MPFNA -Q3	**Position**	P2-A8	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFNA -Q3.d
ACQ Method	PFC_MassVerification-MPFNA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:46:04 PM



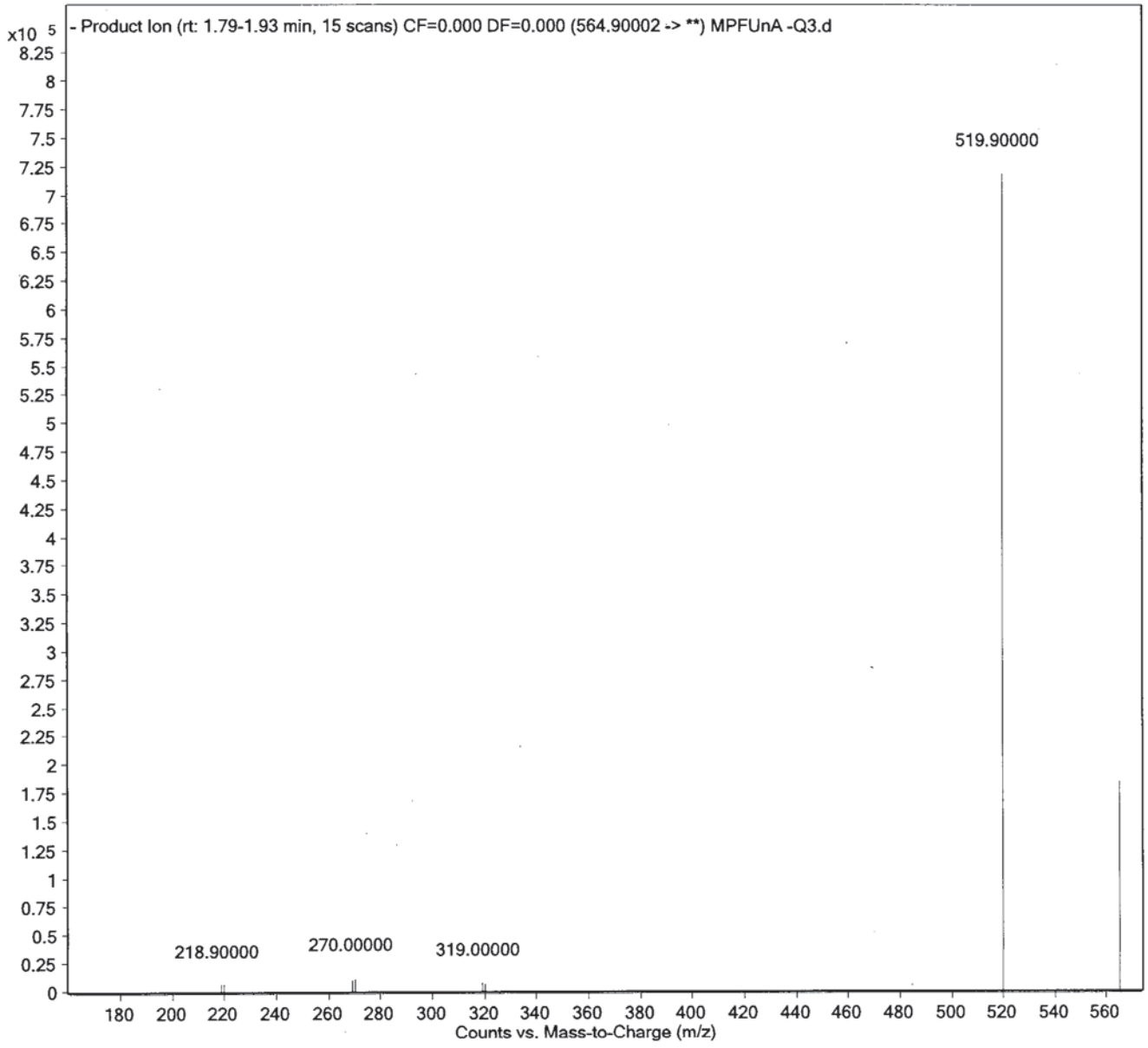
Saalam Analytics

Sample Name	MPFDA -Q3	**Position**	P2-A9	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFDA -Q3.d
ACQ Method	PFC_MassVerification-MPFDA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:51:36 PM



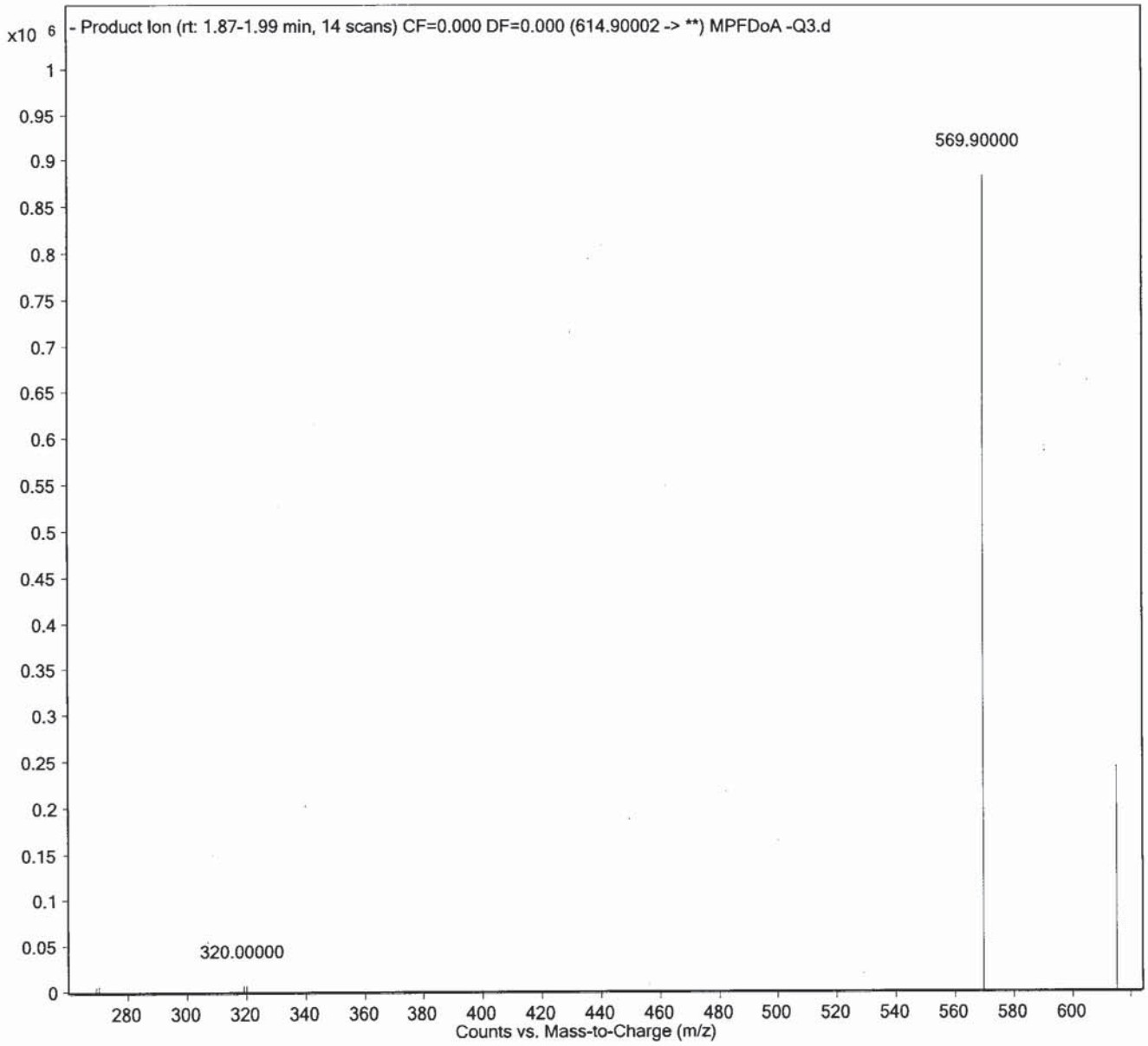
Axcam Analytics

Sample Name	MPFUnA -Q3	**Position**	P2-B1	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFUnA -Q3.d
ACQ Method	PFC_MassVerification-MPFUnA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 3:57:07 PM



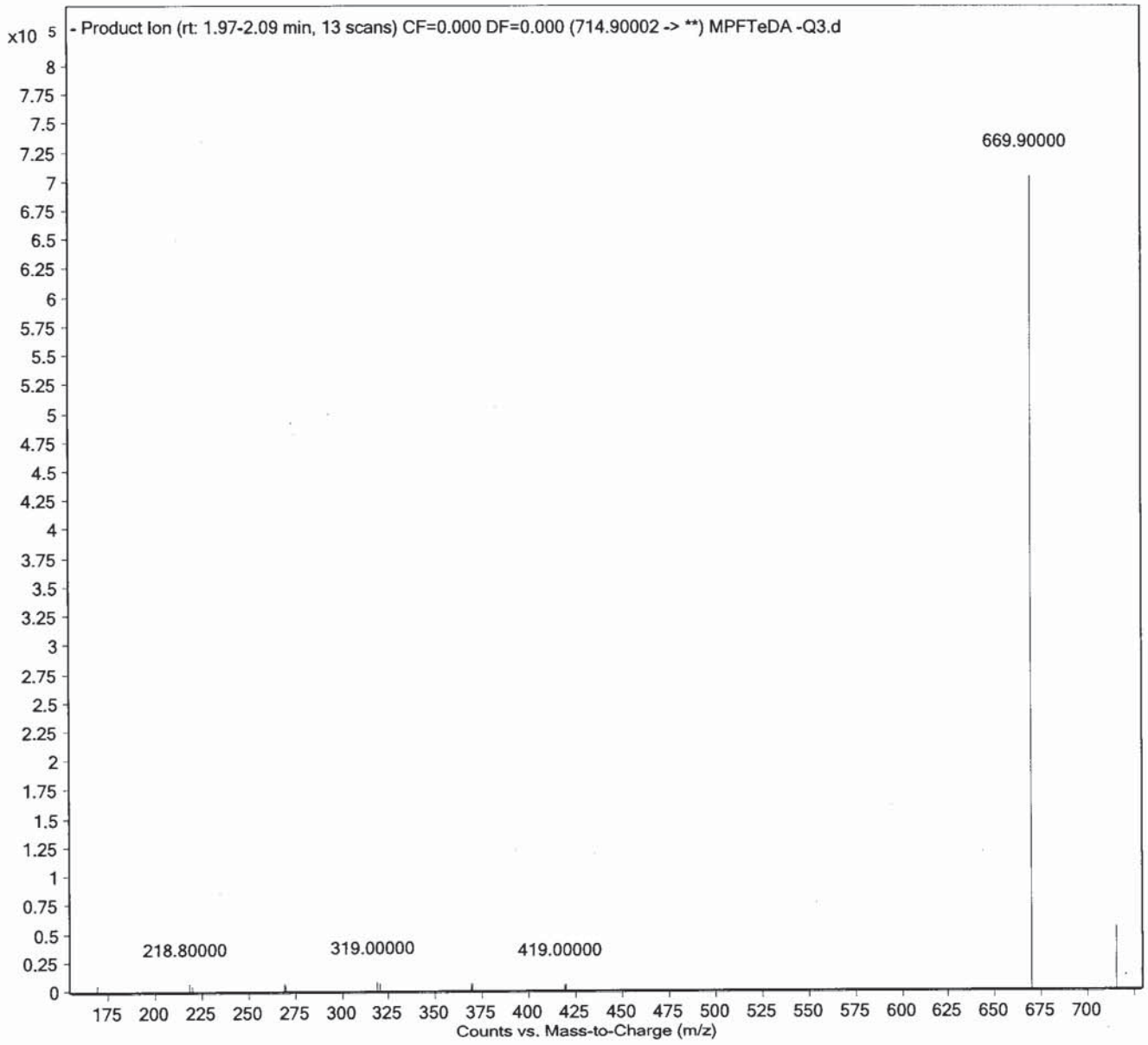
SaxAm Analytics

Sample Name	MPFDoA -Q3	**Position**	P2-B2	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFDoA -Q3.d
ACQ Method	PFC_MassVerification-MPFDoA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:02:38 PM



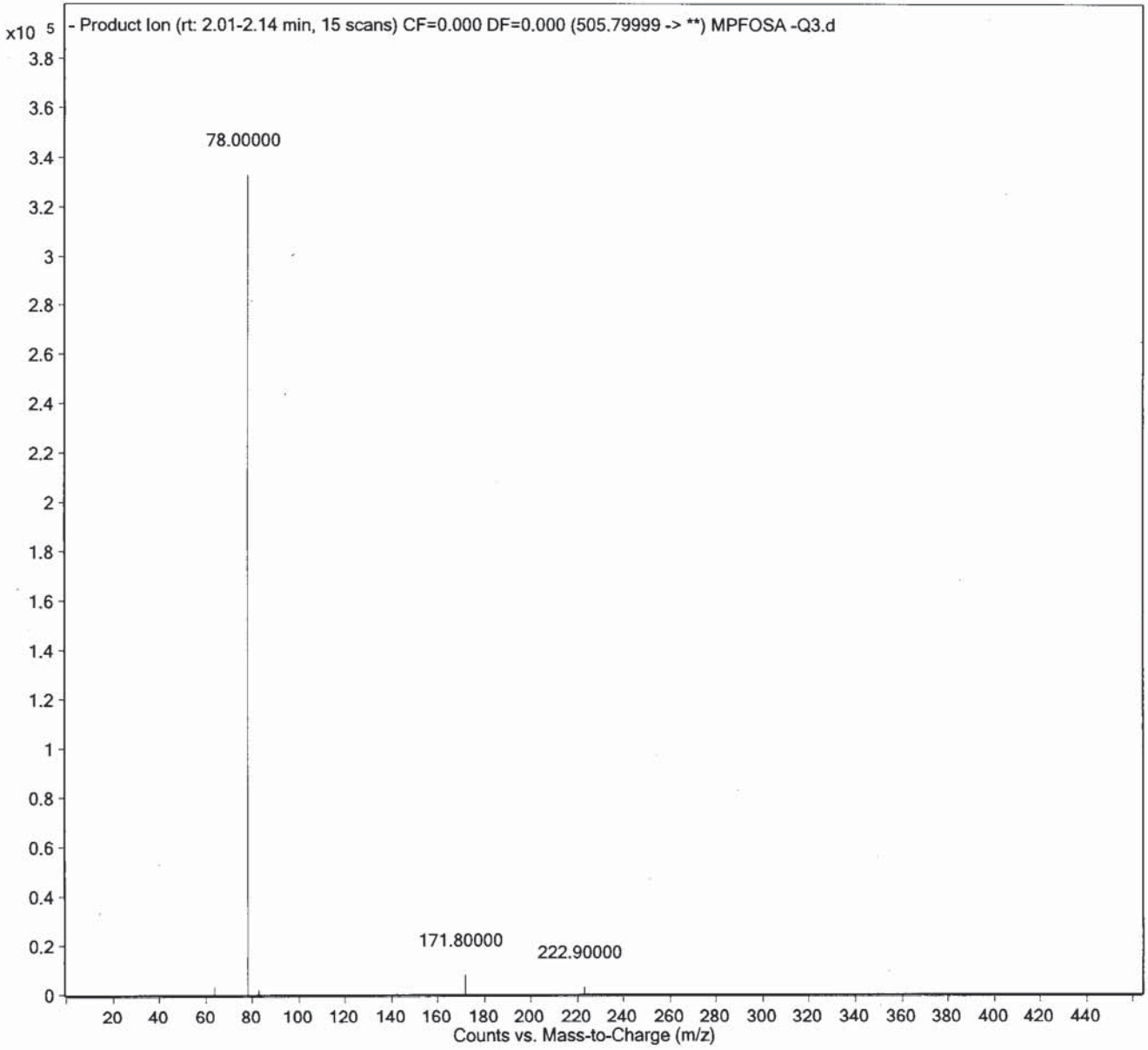
Saram Analytics

Sample Name	MPFTeDA -Q3	**Position**	P2-B3	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFTeDA -Q3.d
ACQ Method	PFC_MassVerification-MPFTeDA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:08:08 PM



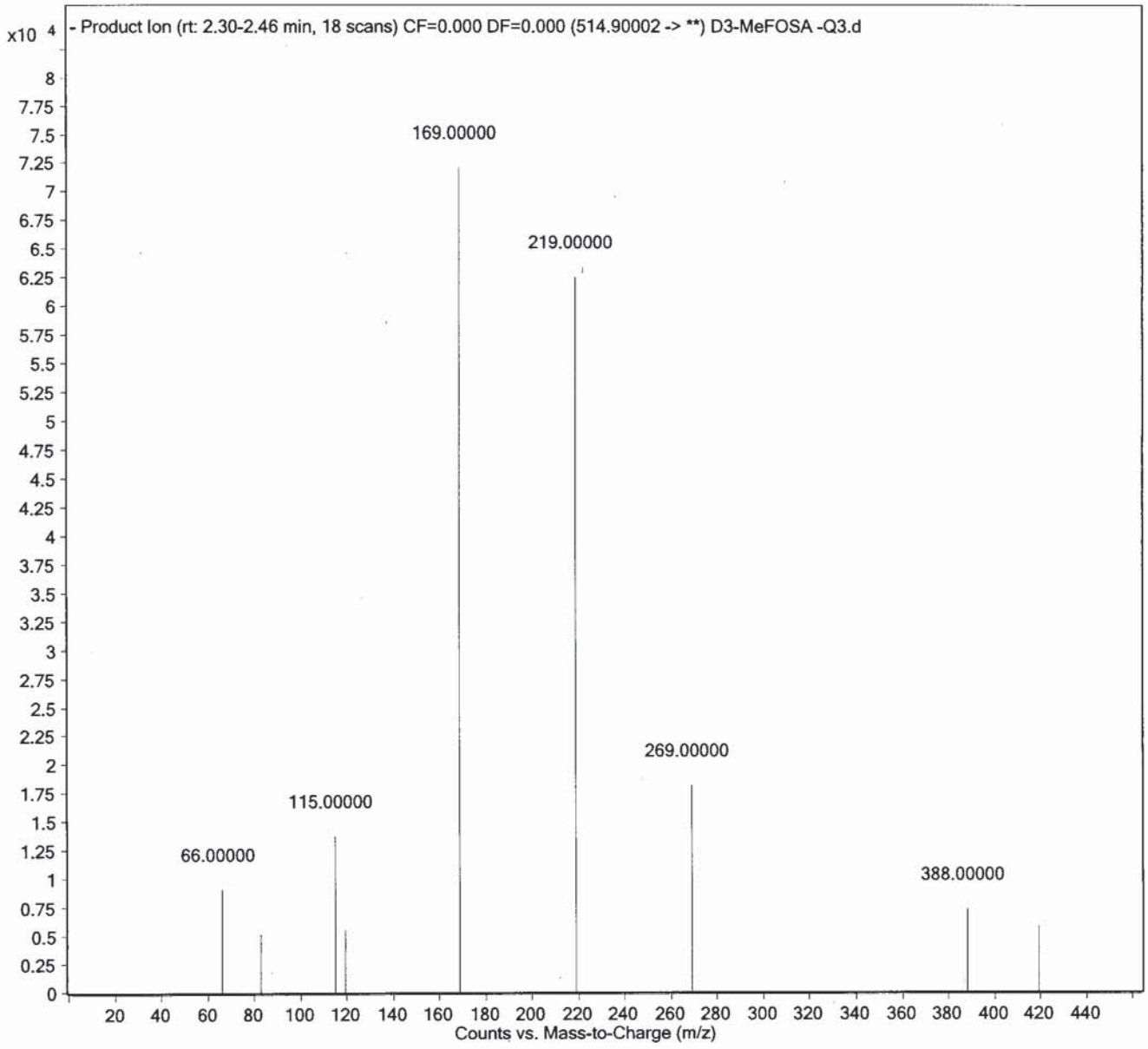
SaxAm Analytics

Sample Name	MPFOSA -Q3	**Position**	P2-B4	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	MPFOSA -Q3.d
ACQ Method	PFC_MassVerification-MPFOSA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:13:38 PM



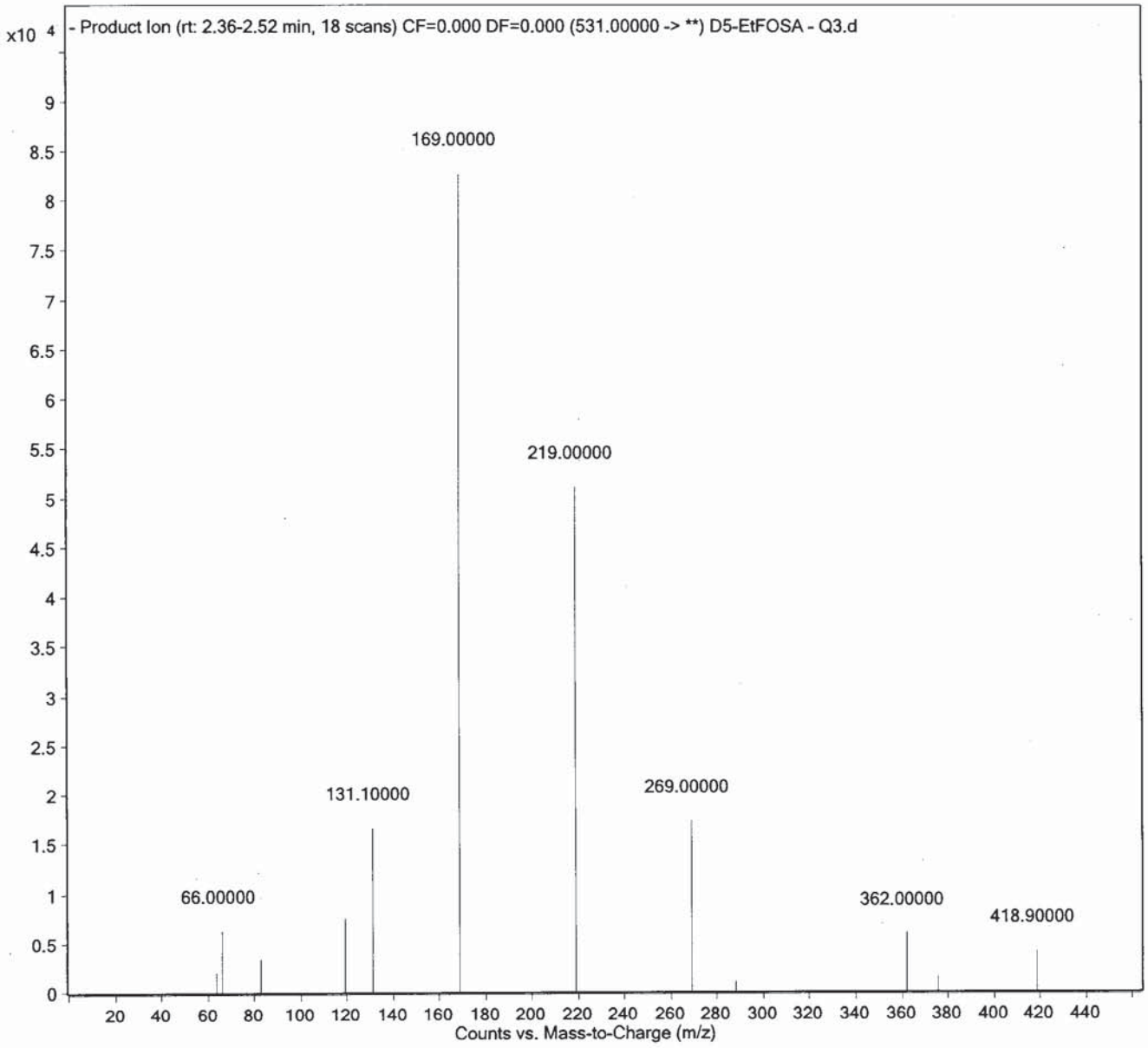
MaxAm Analytics

Sample Name	D3-MeFOSA -Q3	**Position**	P2-B5	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D3-MeFOSA -Q3.d
ACQ Method	PFC_MassVerification-D3-MeFOSA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:19:08 PM



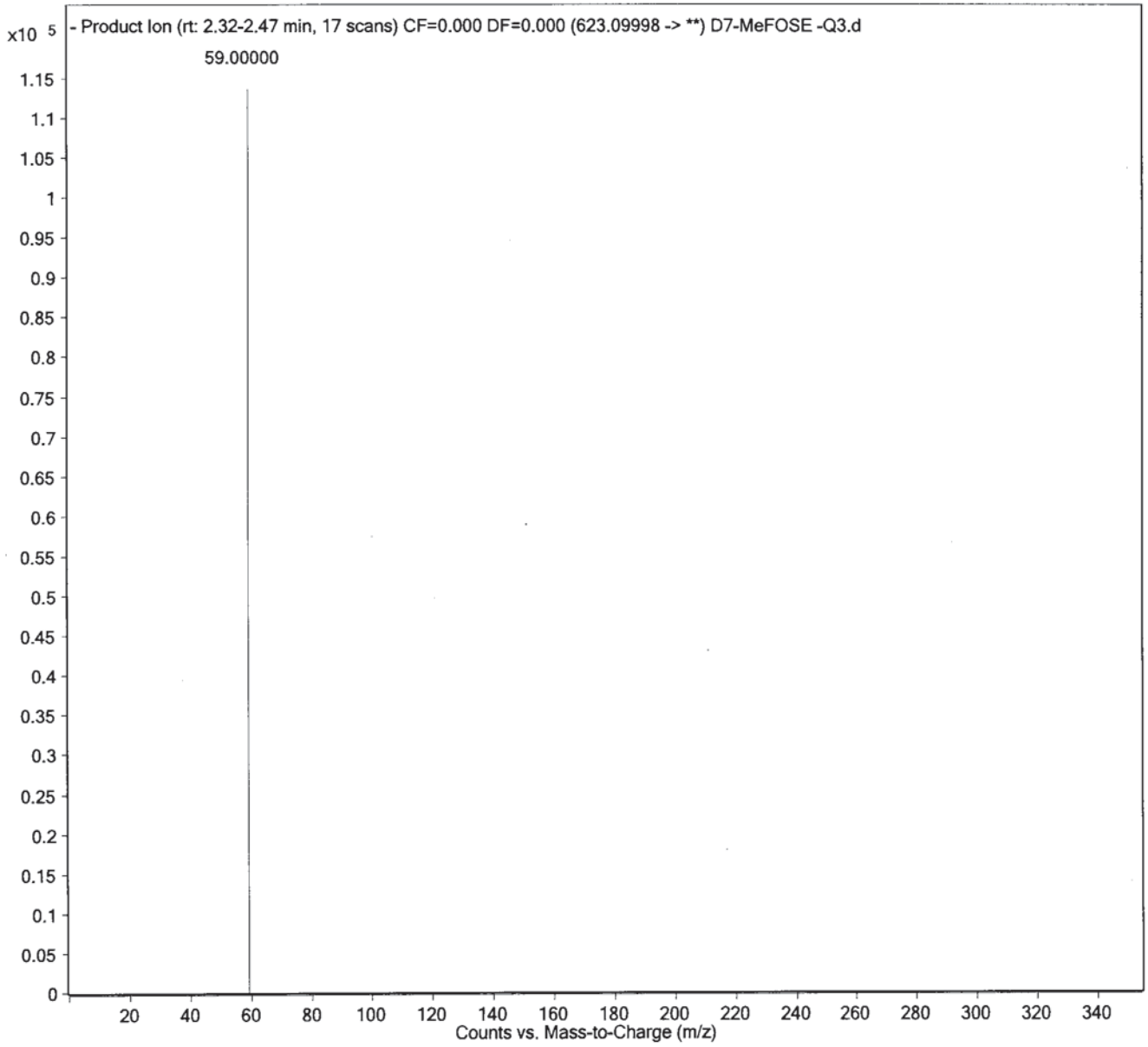
SaiKam Analytics

Sample Name	D5-EtFOSA -Q3	**Position**	P2-B6	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D5-EtFOSA - Q3.d
ACQ Method	PFC_MassVerification-D5-EtFOSA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:24:38 PM



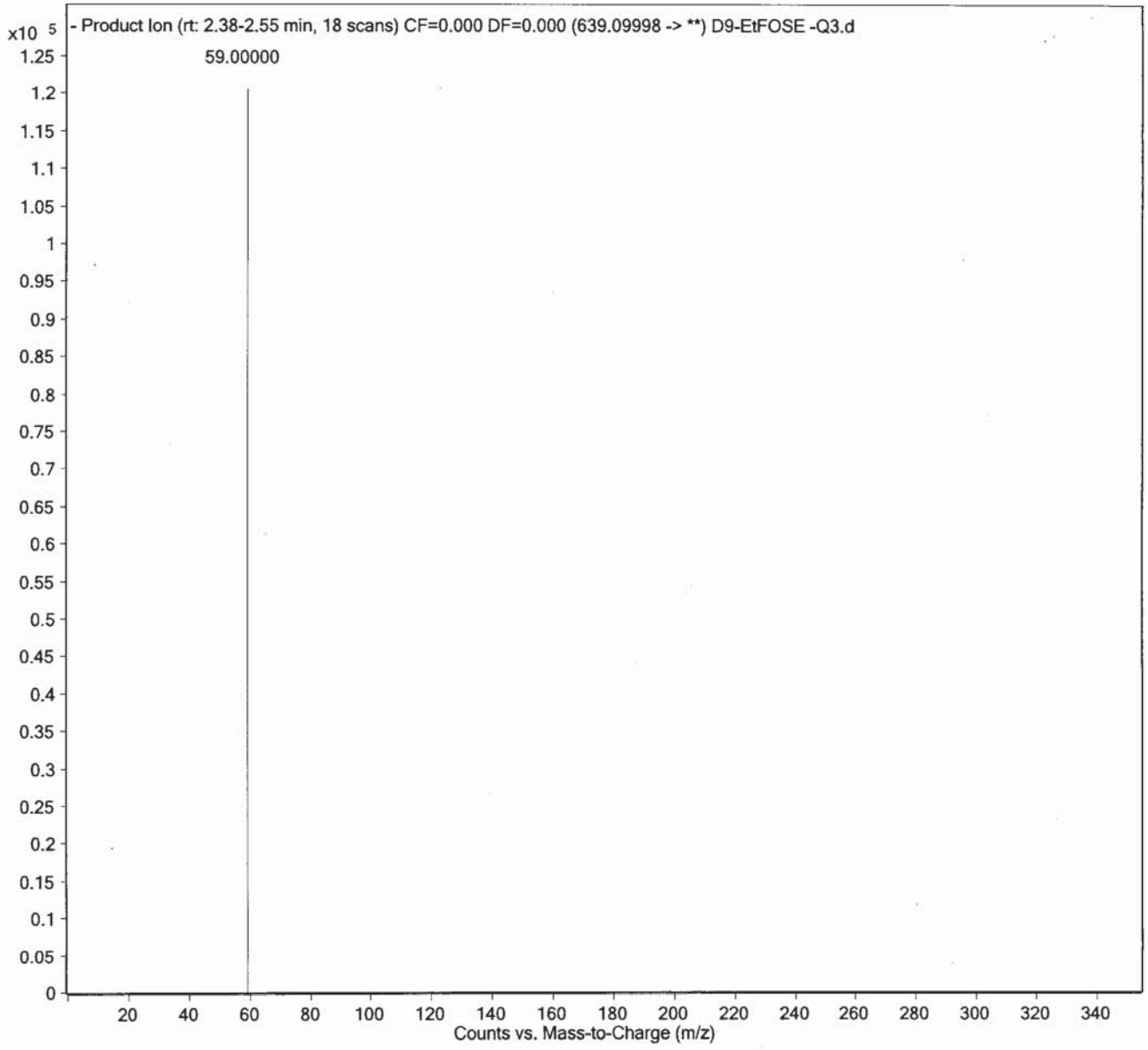
Saram Analytics

Sample Name	D7-MeFOSE -Q3	**Position**	P2-B7	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D7-MeFOSE -Q3.d
ACQ Method	PFC_MassVerification-D7-MeFOSE-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:30:08 PM



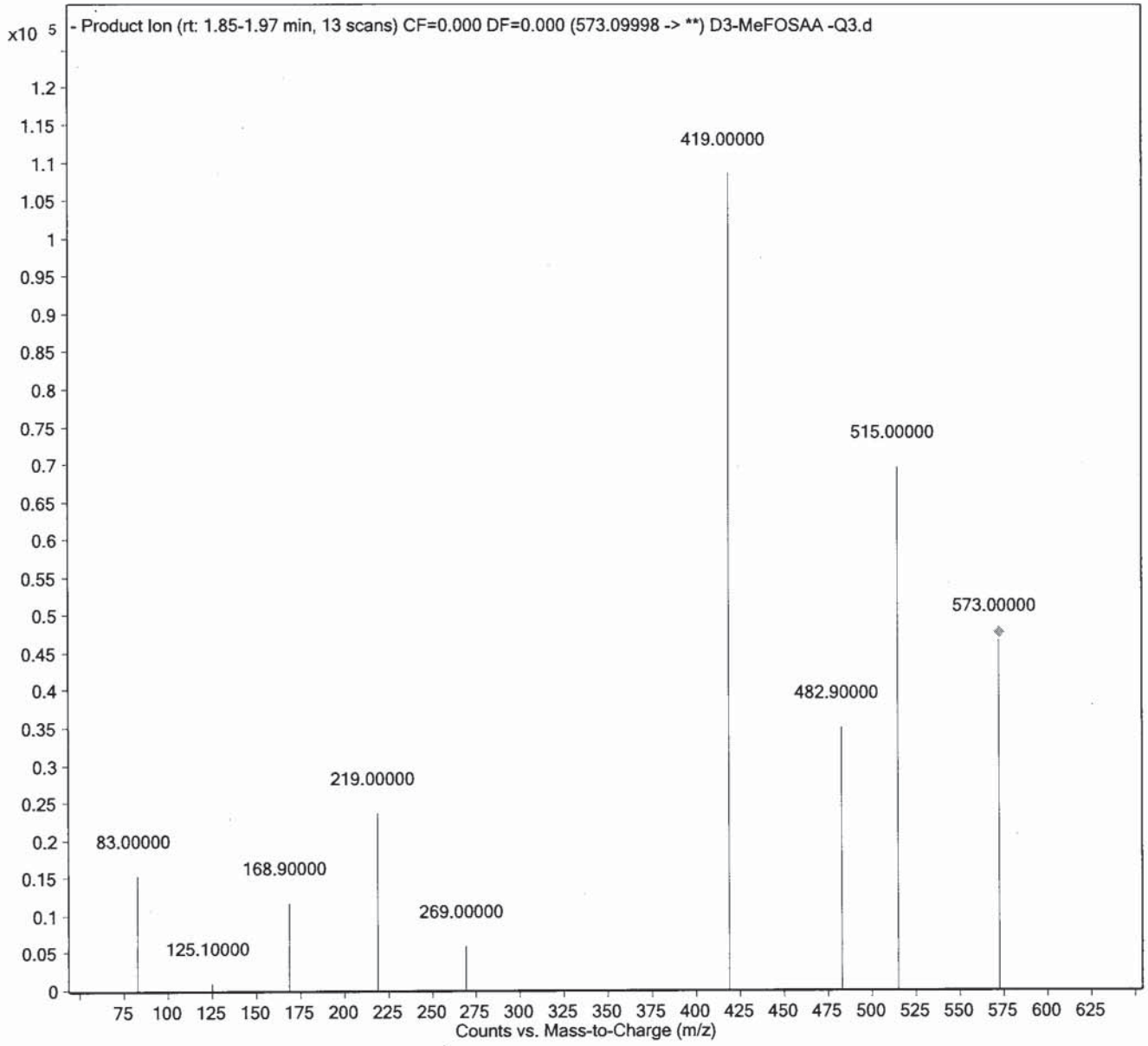
Maxxam Analytics

Sample Name	D9-EtFOSE -Q3	**Position**	P2-B8	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D9-EtFOSE -Q3.d
ACQ Method	PFC_MassVerification-D9-EtFOSE-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:35:38 PM



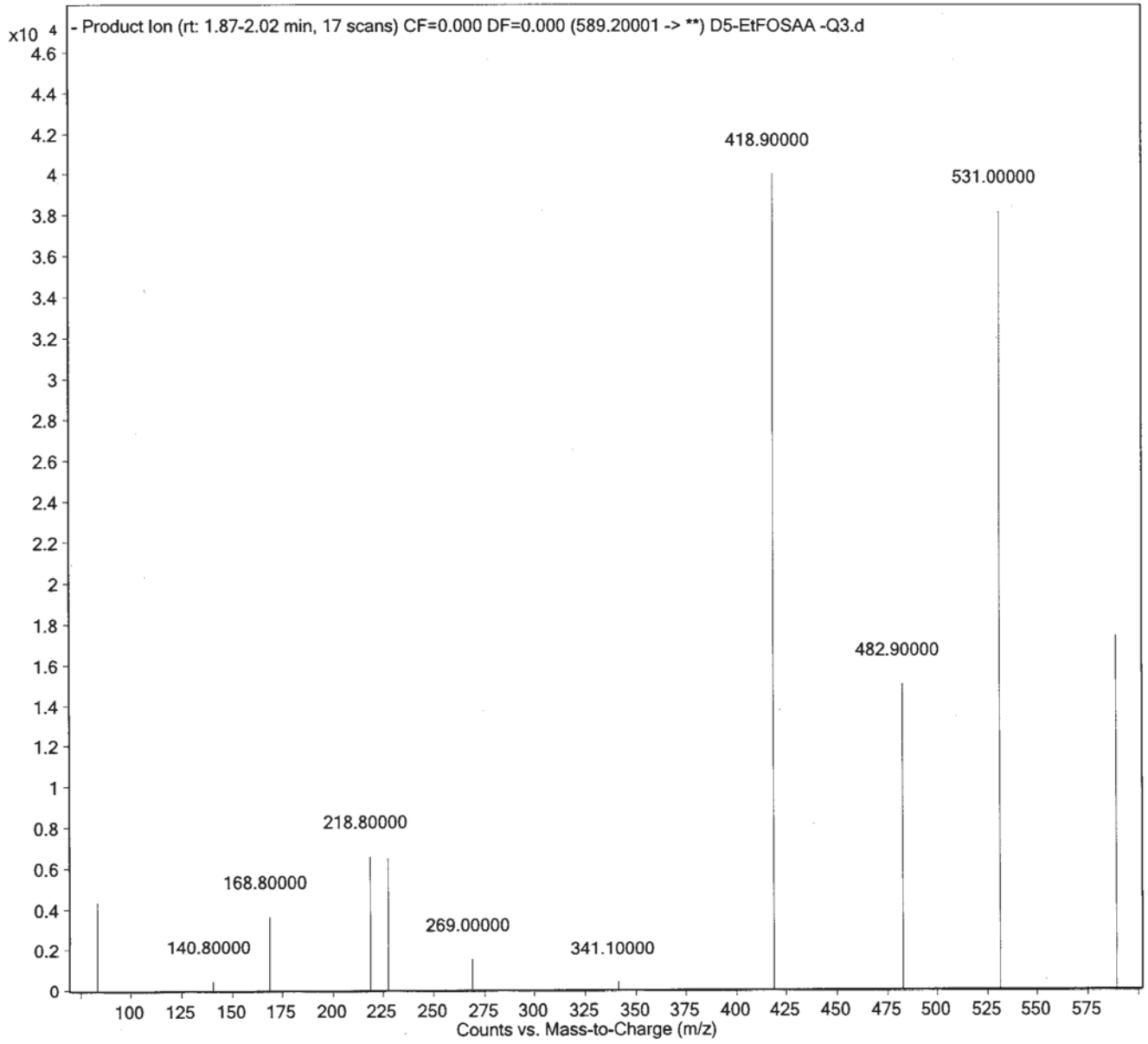
Alaska Analytics

Sample Name	D3-MeFOSAA -Q3	**Position**	P2-B9	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D3-MeFOSAA -Q3.d
ACQ Method	PFC_MassVerification-D3-MeFOSAA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:41:10 PM



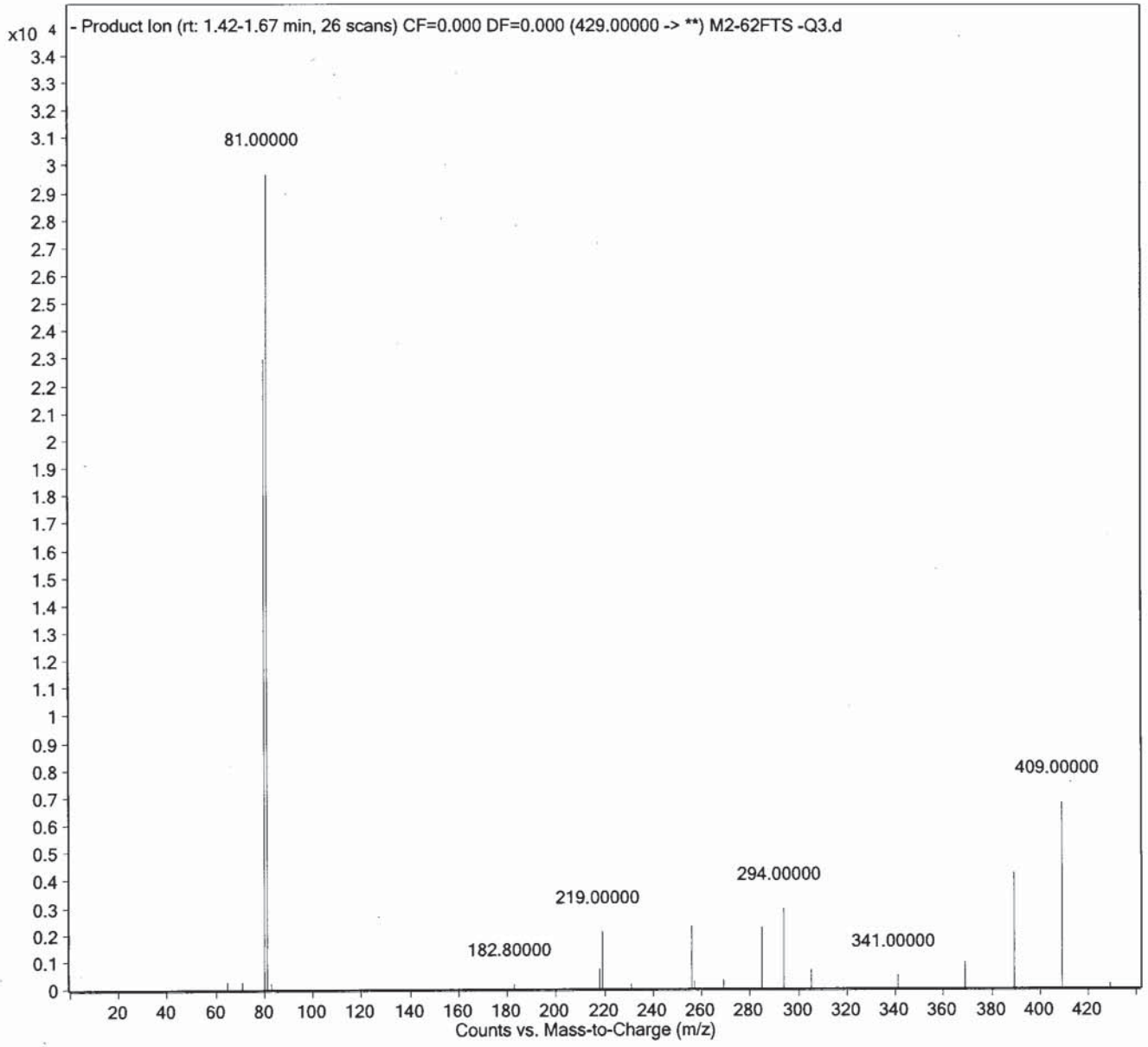
SGS AXYS Analytics

Sample Name	D5-EtFOSAA -Q3	**Position**	P2-C1	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	D5-EtFOSAA -Q3.d
ACQ Method	PFC_MassVerification-D5-EtFOSAA-Q3.m	**Comment**		**Acquired Time**	2017/07/12 8:41:07 AM



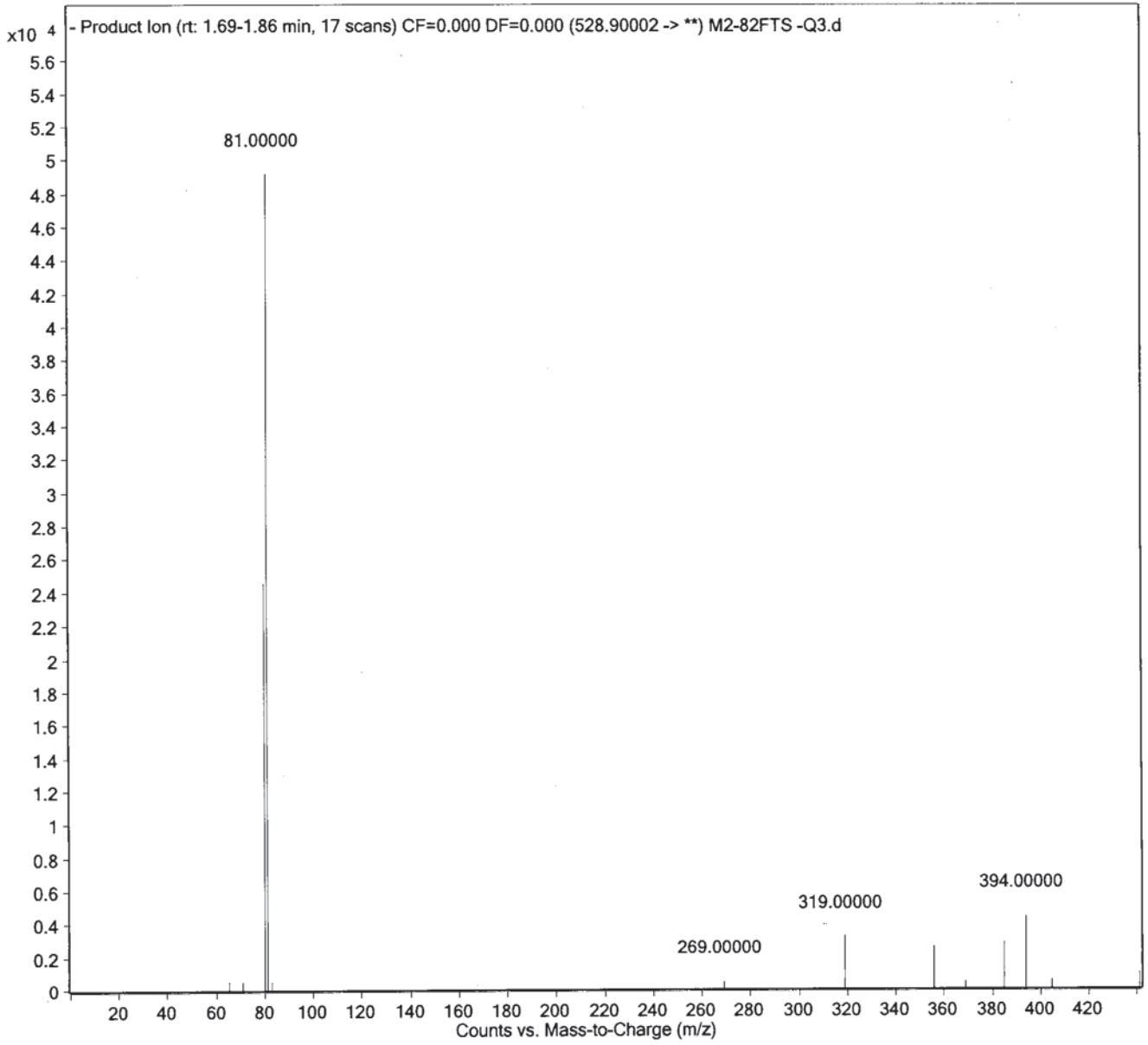
Alaska Analytics

Sample Name	M2-6:2FTS -Q3	**Position**	P2-C2	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	M2-62FTS -Q3.d
ACQ Method	PFC_MassVerification-M26-2FTS-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:52:12 PM

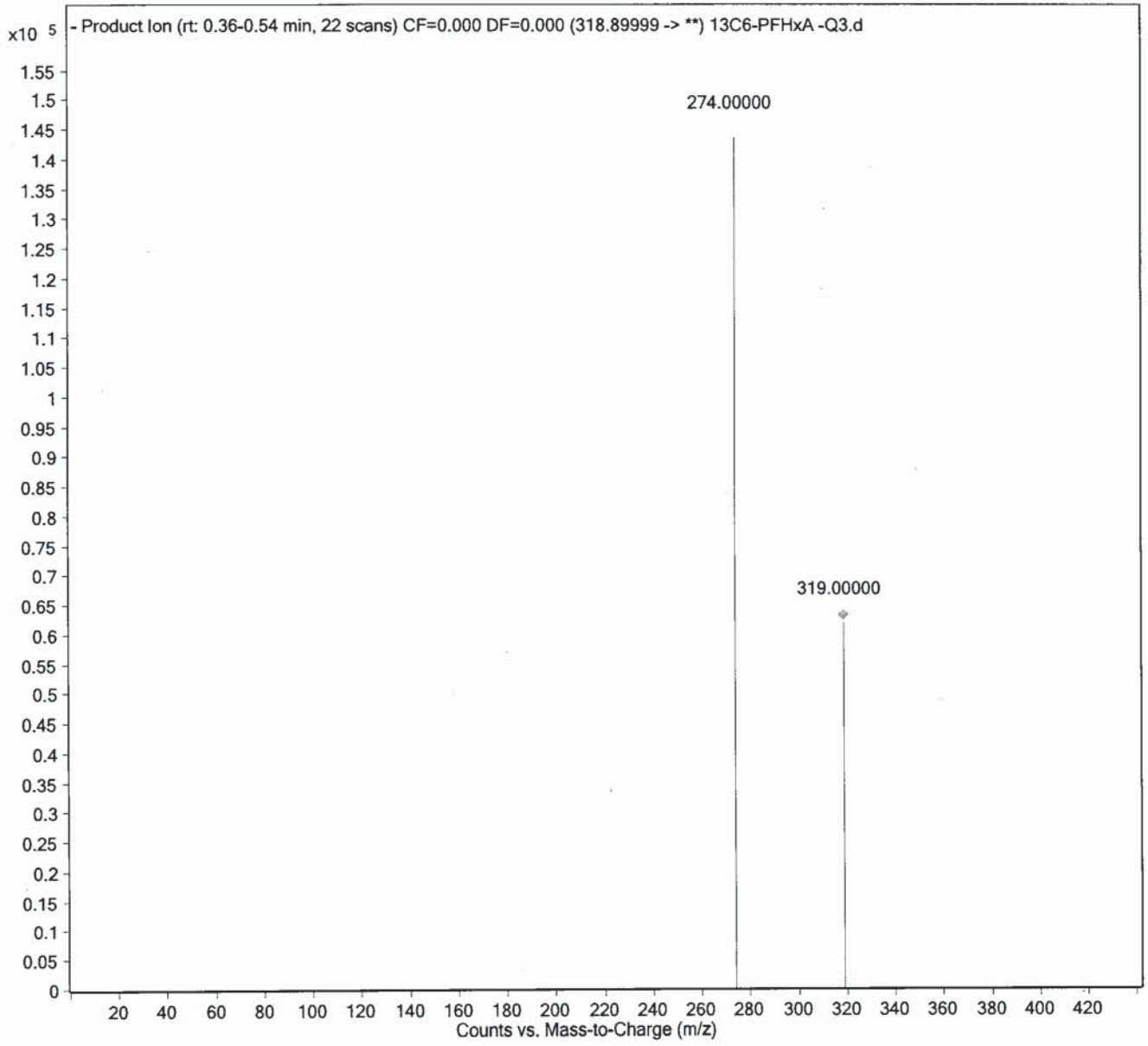


Alaskan Analytics

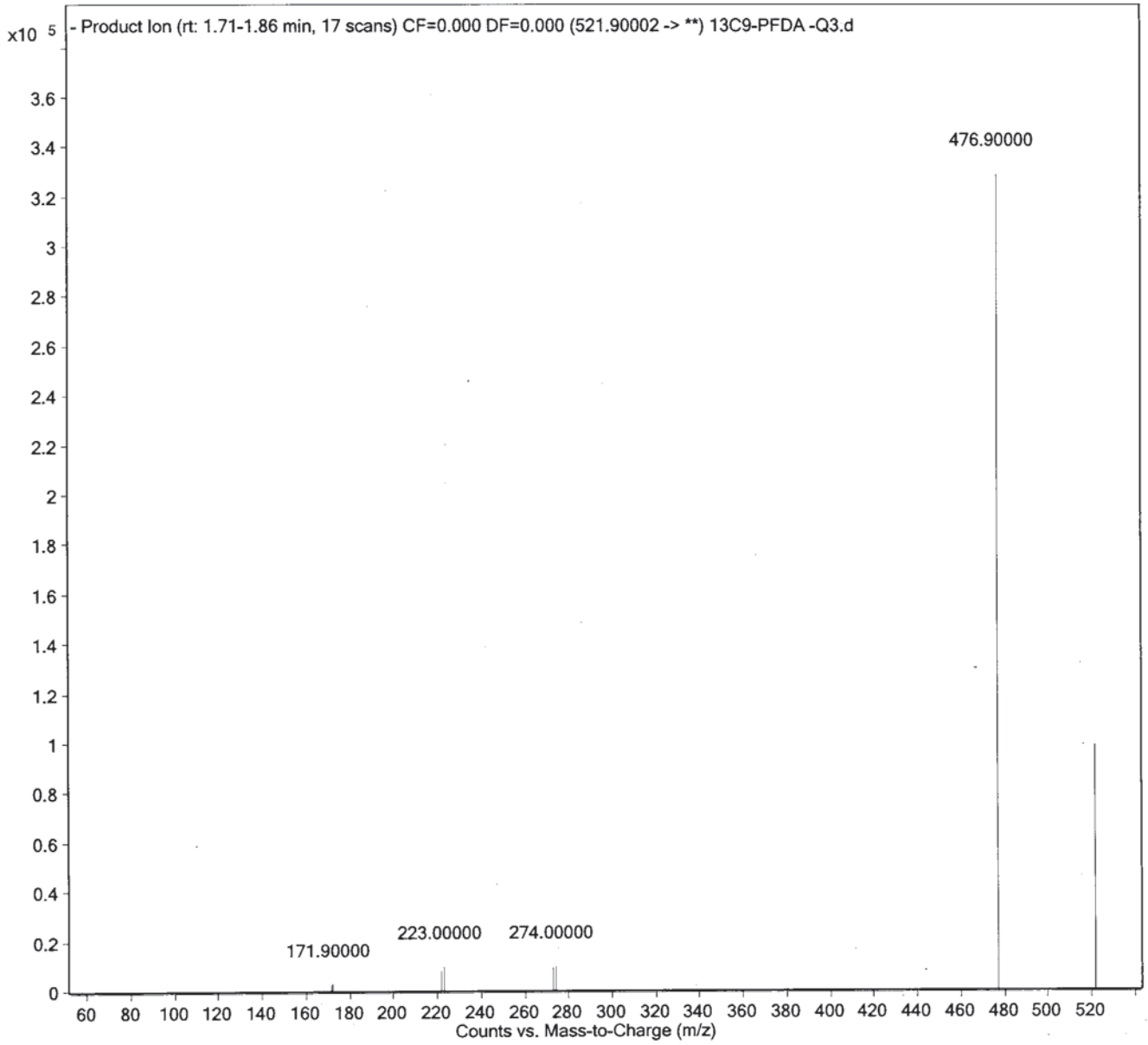
Sample Name	M2-8:2FTS -Q3	**Position**	P2-C3	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	M2-82FTS -Q3.d
ACQ Method	PFC_MassVerification-M2-8-2FTS-Q3.m	**Comment**		**Acquired Time**	2017/07/11 4:57:42 PM



Sample Name	13C6-PFHxA -Q3	**Position**	P2-C4	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	13C6-PFHxA -Q3.d
ACQ Method	PFC_MassVerification-13C6-PFHxA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 5:03:12 PM



Sample Name	13C9-PFDA -Q3	**Position**	P2-C5	**Instrument Name**	LCMS04
User Name	AD	**Inj Vol**	10	**InjPosition**	
Sample Type	Sample	**IRM Calibration Status**	Not Applicable	**Data Filename**	13C9-PFDA -Q3.d
ACQ Method	PFC_MassVerification-13C9-PFDA-Q3.m	**Comment**		**Acquired Time**	2017/07/11 5:08:42 PM



Worklist Report

Agilent Technologies

Maxxam Analytics

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFAS_MASSVER_IS_170711.wkl

Operator Name: AD
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\data\Mass Verification\20170711_IS
Pre-Worklist Script: ---
Post-Worklist Script: ---
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: ---

Plate Barcode:

Plate	Barcode
P1	

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
1	MPFBA	P2-A1	PFC_MassVerification-Q1.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFBA -Q1.d	Sample	As Method	PFAS-Q1
2	MPFPeA	P2-A2	PFC_MassVerification-Q1.m	MPFPeA -Q1.d	Sample	As Method	PFAS-Q1
3	MPFHxA	P2-A3	PFC_MassVerification-Q1.m	MPFHxA -Q1.d	Sample	As Method	PFAS-Q1
4	MPFHxS	P2-A4	PFC_MassVerification-Q1.m	MPFHxS -Q1.d	Sample	As Method	PFAS-Q1
5	MPFHpA	P2-A5	PFC_MassVerification-Q1.m	MPFHpA -Q1.d	Sample	As Method	PFAS-Q1
6	MPFOA	P2-A6	PFC_MassVerification-Q1.m	MPFOA -Q1.d	Sample	As Method	PFAS-Q1
7	MPFOS	P2-A7	PFC_MassVerification-Q1.m	MPFOS -Q1.d	Sample	As Method	PFAS-Q1
8	MPFNA	P2-A8	PFC_MassVerification-Q1.m	MPFNA -Q1.d	Sample	As Method	PFAS-Q1

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Worklist Report

Agilent Technologies

	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
9	MPFDA	P2-A9	PFC_MassVerification-Q1.m	MPFDA -Q1.d	Sample	As Method	PFAS-Q1
10	MPFUnA	P2-B1	PFC_MassVerification-Q1.m	MPFUnA -Q1.d	Sample	As Method	PFAS-Q1
11	MPFDoA	P2-B2	PFC_MassVerification-Q1.m	MPFDoA -Q1.d	Sample	As Method	PFAS-Q1
12	MPFTeDA	P2-B3	PFC_MassVerification-Q1.m	MPFTeDA -Q1.d	Sample	As Method	PFAS-Q1
13	MPFOSA	P2-B4	PFC_MassVerification-Q1.m	MPFOSA -Q1.d	Sample	As Method	PFAS-Q1
14	D3-MeFOSA	P2-B5	PFC_MassVerification-Q1.m	D3-MeFOSA -Q1.d	Sample	As Method	PFAS-Q1
15	D5-EtFOSA	P2-B6	PFC_MassVerification-Q1.m	D5-EtFOSA -Q1.d	Sample	As Method	PFAS-Q1
16	D7-MeFOSE	P2-B7	PFC_MassVerification-Q1.m	D7-MeFOSE -Q1.d	Sample	As Method	PFAS-Q1
17	D9-EtFOSE	P2-B8	PFC_MassVerification-Q1.m	D9-EtFOSE -Q1.d	Sample	As Method	PFAS-Q1
18	D3-MeFOSAA	P2-B9	PFC_MassVerification-Q1.m	D3-MeFOSAA -Q1.d	Sample	As Method	PFAS-Q1
19	D5-EtFOSAA	P2-C1	PFC_MassVerification-Q1.m	D5-EtFOSAA -Q1.d	Sample	As Method	PFAS-Q1
20	M2-6:2FTS	P2-C2	PFC_MassVerification-Q1.m	M2-62FTS -Q1.d	Sample	As Method	PFAS-Q1
21	M2-8:2FTS	P2-C3	PFC_MassVerification-Q1.m	M2-82FTS -Q1.d	Sample	As Method	PFAS-Q1
22	13C6-PFHxA	P2-C4	PFC_MassVerification-Q1.m	13C6-PFHxA -Q1.d	Sample	As Method	PFAS-Q1
23	13C9-PFDA	P2-C5	PFC_MassVerification-Q1.m	13C9-PFDA -Q1.d	Sample	As Method	PFAS-Q1
24	MPFBA -Q3	P2-A1	PFC_MassVerification-MPFBA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFBA -Q3.d	Sample	As Method	PFAS-Q3
25	MPFPeA -Q3	P2-A2	PFC_MassVerification-MPFPeA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFPeA -Q3.d	Sample	As Method	PFAS-Q3
26	MPFHxA -Q3	P2-A3	PFC_MassVerification-MPFHxA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFHxA -Q3.d	Sample	As Method	PFAS-Q3
27	MPFHxS -Q3	P2-A4	PFC_MassVerification-MPFHxS-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFHxS -Q3.d	Sample	As Method	PFAS-Q3
28	MPFHpA -Q3	P2-A5	PFC_MassVerification-MPFHpA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFHpA -Q3.d	Sample	As Method	PFAS-Q3

Maxxam Analytics

	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
29	MPFOA -Q3	P2-A6	PFC_MassVerification-MPFOA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFOA -Q3.d	Sample	As Method	PFAS-Q3
30	MPFOS -Q3	P2-A7	PFC_MassVerification-MPFOS-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFOS -Q3.d	Sample	As Method	PFAS-Q3
31	MPFNA -Q3	P2-A8	PFC_MassVerification-MPFNA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFNA -Q3.d	Sample	As Method	PFAS-Q3
32	MPFDA -Q3	P2-A9	PFC_MassVerification-MPFDA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFDA -Q3.d	Sample	As Method	PFAS-Q3
33	MPFUnA -Q3	P2-B1	PFC_MassVerification-MPFUnA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFUnA -Q3.d	Sample	As Method	PFAS-Q3
34	MPFDoA -Q3	P2-B2	PFC_MassVerification-MPFDoA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFDoA -Q3.d	Sample	As Method	PFAS-Q3
35	MPFTeDA -Q3	P2-B3	PFC_MassVerification-MPFTeDA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFTeDA -Q3.d	Sample	As Method	PFAS-Q3
36	MPFOSA -Q3	P2-B4	PFC_MassVerification-MPFOSA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\MPFOSA -Q3.d	Sample	As Method	PFAS-Q3
37	D3-MeFOSA -Q3	P2-B5	PFC_MassVerification-D3-MeFOSA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\D3-MeFOSA -Q3.d	Sample	As Method	PFAS-Q3
38	D5-EtFOSA -Q3	P2-B6	PFC_MassVerification-D5-EtFOSA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\D5-EtFOSA -Q3.d	Sample	As Method	PFAS-Q3
39	D7-MeFOSE -Q3	P2-B7	PFC_MassVerification-D7-MeFOSE-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\D7-MeFOSE -Q3.d	Sample	As Method	PFAS-Q3
40	D9-EtFOSE -Q3	P2-B8	PFC_MassVerification-D9-EtFOSE-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\D9-EtFOSE -Q3.d	Sample	As Method	PFAS-Q3
41	D3-MeFOSAA -Q3	P2-B9	PFC_MassVerification-D3-MeFOSAA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\D3-MeFOSAA -Q3.d	Sample	As Method	PFAS-Q3

Maxxam Analytics

	Sample Name	Sample Position	Method	Data File	Sample Type	Inj Vol (µl)	Sample Group
42	D5-EtFOSA -Q3	P2-C1	PFC_MassVerification-D5-EtFOSA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\D5-EtFOSA -Q3.d	Sample	As Method	PFAS-Q3
43	M2-6:2FTS -Q3	P2-C2	PFC_MassVerification-M26-2FTS-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\M2-62FTS -Q3.d	Sample	As Method	PFAS-Q3
44	M2-8:2FTS -Q3	P2-C3	PFC_MassVerification-M2-8-2FTS-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\M2-82FTS -Q3.d	Sample	As Method	PFAS-Q3
45	13C6-PFHxA -Q3	P2-C4	PFC_MassVerification-13C6-PFHxA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\13C6-PFHxA -Q3.d	Sample	As Method	PFAS-Q3
46	13C9-PFDA -Q3	P2-C5	PFC_MassVerification-13C9-PFDA-Q3.m	D:\MassHunter\Data\Mass Verification\20170711_IS\13C9-PFDA -Q3.d	Sample	As Method	PFAS-Q3
47	SCP_InstrumentStandby() {MH_Acq_Scripts.exe}						



5. Initial Calibration

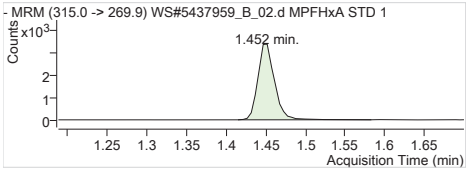
Maxxam Analytics International
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

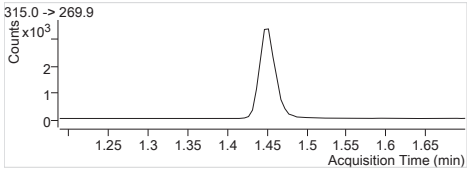
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**STD 1**	**Instrument**	LCMS04
Data File	WS#5437959_B_02.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A2
Acq. Date	2018/03/15 4:46:29 PM	**Injection Volume**	Per Method
Sample Annotation	-		

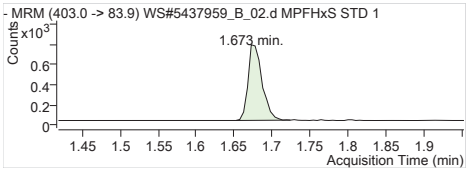
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4813	1.45	1 µg/L		
MPFHxS	968	1.67	1 µg/L		
MPFHpA	5543	1.70	1 µg/L		
MPFOA	5941	1.89	1 µg/L		
MPFOS	1180	1.97	1 µg/L		
MPFNA	5335	2.03	1 µg/L		
MPFDA	4816	2.14	1 µg/L		
MPFUnA	5812	2.24	1 µg/L		
MPFDoA	8368	2.33	1 µg/L		
MPFTeDA	9197	2.47	1 µg/L		
13C6-PFHxA IS	17689	1.45	1 µg/L		
13C9-PFDA IS	22238	2.14	1 µg/L		

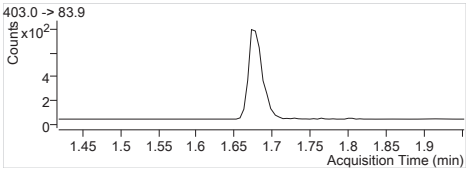
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	409	1.11	0.83	0.85 µg/L	101.82
PFHxA 1	1569	1.45	0.83	0.90 µg/L	108.25
PFHxS 1	366	1.68	0.83	0.87 µg/L	104.51
PFHpA 1	1791	1.71	0.83	0.86 µg/L	103.82
PFOA 1	2025	1.89	0.83	0.86 µg/L	104.12
PFOS 1	425	1.97	0.83	0.90 µg/L	108.29
PFNA 1	1824	2.03	0.83	0.86 µg/L	103.33
PFDA 1	2113	2.14	0.83	0.89 µg/L	107.41
PFUnA 1	2245	2.24	0.83	0.96 µg/L	115.35
PFDoA 1	2976	2.33	0.83	0.93 µg/L	112.23
PFTrDA 1	3072	2.40	0.83	0.87 µg/L	104.42
PFTeDA 1	2753	2.47	0.83	0.88 µg/L	105.55
13C2-PFHxA	4813	1.45	100.00	99.83 µg/L	99.83
18O2-PFHxS	968	1.67	100.00	99.08 µg/L	99.08
13C4-PFHpA	5543	1.70	100.00	99.60 µg/L	99.60
13C4-PFOA	5941	1.89	100.00	101.97 µg/L	101.97
13C4-PFOS	1180	1.97	100.00	99.68 µg/L	99.68
13C5-PFNA	5335	2.03	100.00	95.39 µg/L	95.39
13C2-PFDA	4813	2.14	100.00	98.02 µg/L	98.02
13C2-PFUnA	5812	2.24	100.00	93.05 µg/L	93.05
13C2-PFDoA	8368	2.33	100.00	94.70 µg/L	94.70
13C2-PFTeDA	9183	2.47	100.00	98.14 µg/L	98.14
13C6-PFHxA	17689	1.45	100.00	95.36 µg/L	95.36
13C9-PFDA	22238	2.14	100.00	98.07 µg/L	98.07



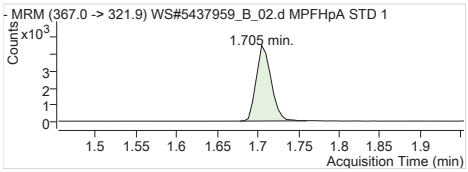


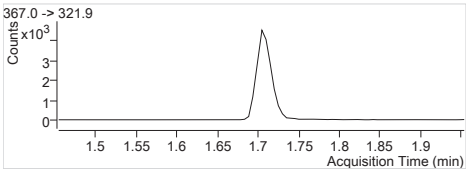
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Calibration



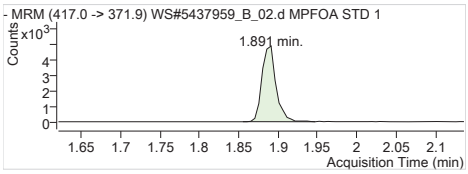


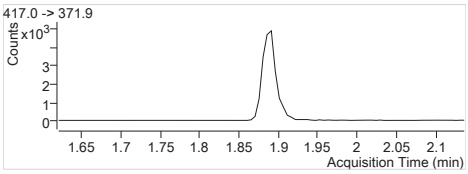
MPFHxS Internal Standard
RT (Exp. RT): 1.673 (1.678)
Concentration: 1 µg/L
Sample type: Calibration



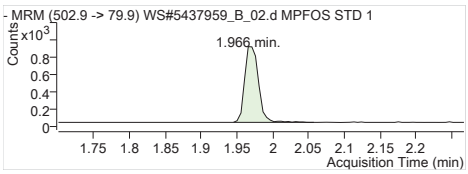


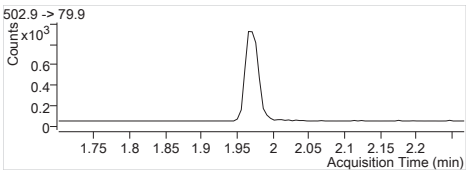
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Calibration



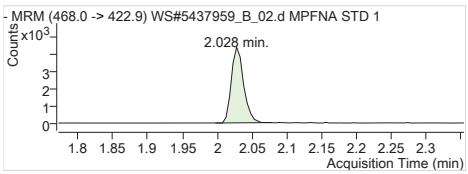


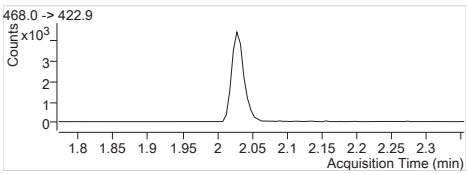
MPFOA Internal Standard
RT (Exp. RT): 1.891 (1.886)
Concentration: 1 µg/L
Sample type: Calibration



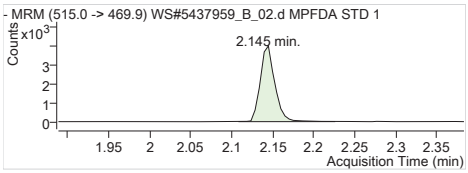


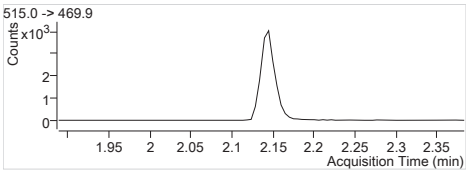
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: Calibration



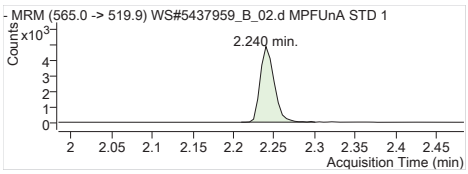


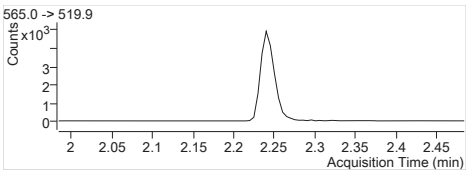
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Calibration



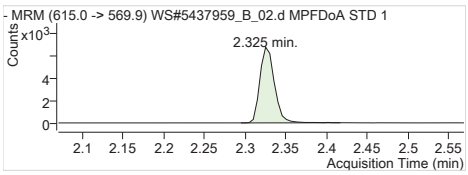


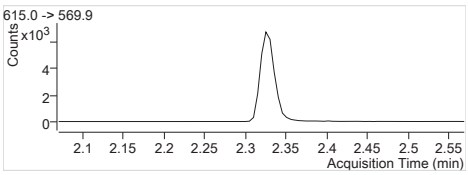
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Calibration



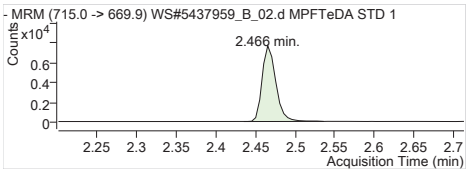


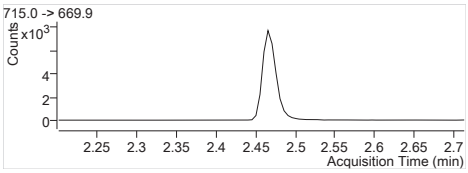
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Calibration



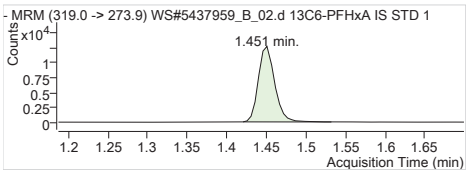


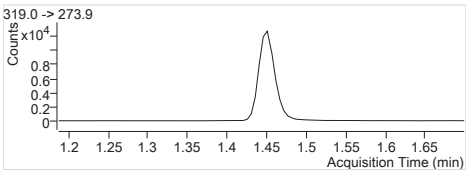
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Calibration



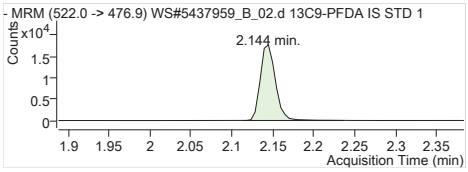


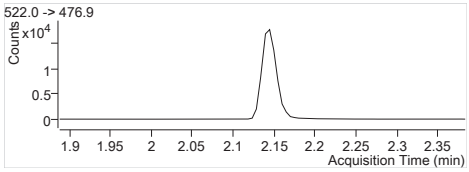
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Calibration



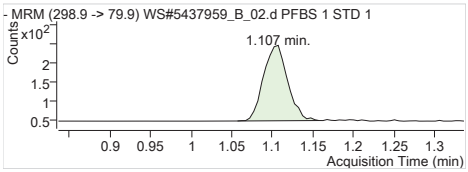


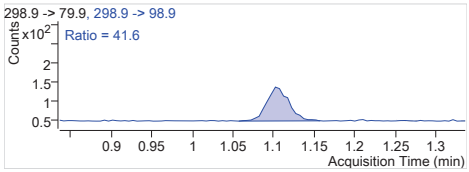
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Calibration



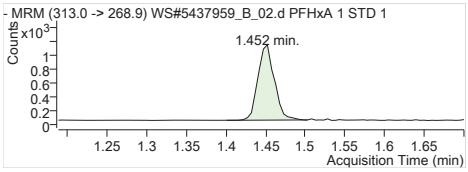


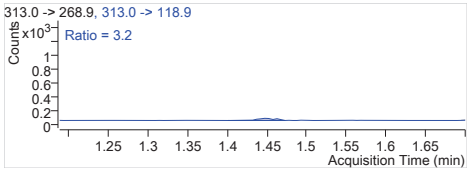
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Calibration



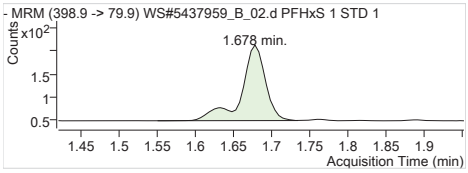


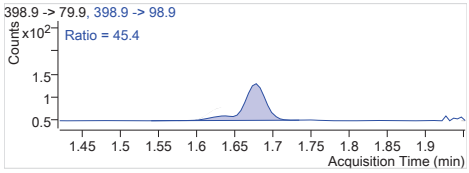
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.107 (1.107)
Calc. conc. 0.85 µg/L
Area ratio: 0.42252
Sample type: Calibration



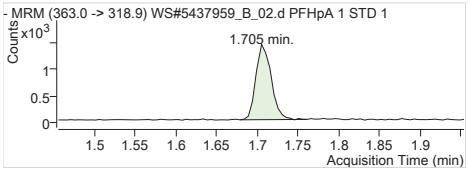


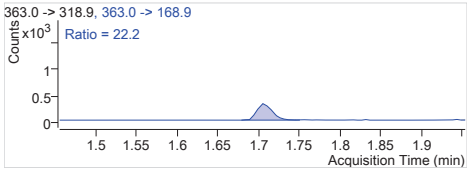
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 0.90 µg/L
Area ratio: 0.32599
Sample type: Calibration



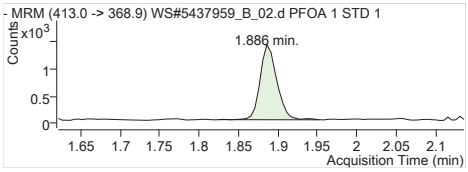


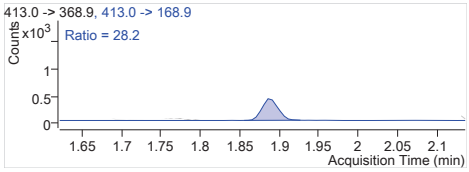
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 0.87 µg/L
Area ratio: 0.37810
Sample type: Calibration



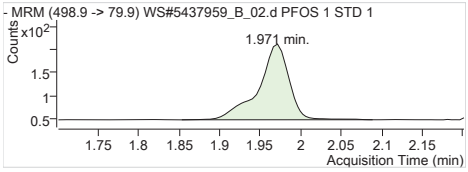


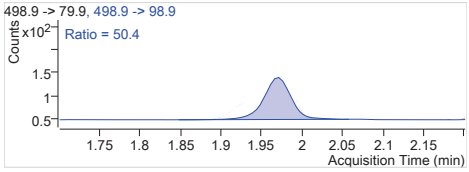
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 0.86 µg/L
Area ratio: 0.32311
Sample type: Calibration



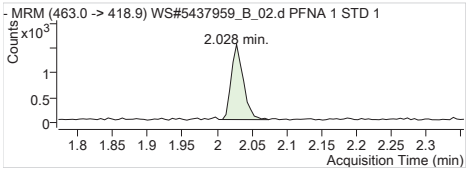


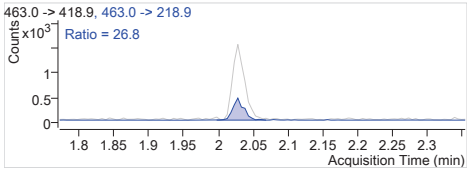
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 0.86 µg/L
Area ratio: 0.34085
Sample type: Calibration



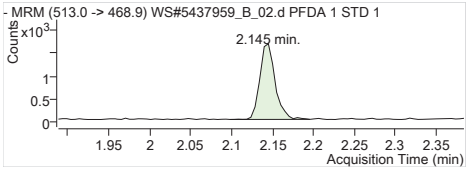


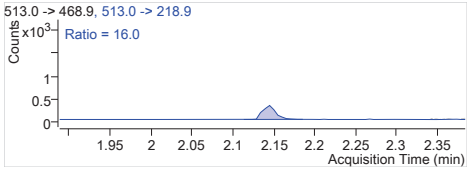
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 0.90 µg/L
Area ratio: 0.36017
Sample type: Calibration



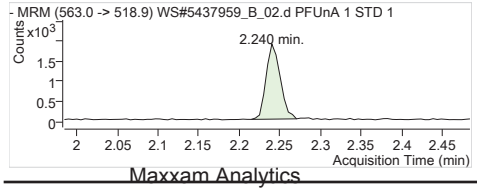


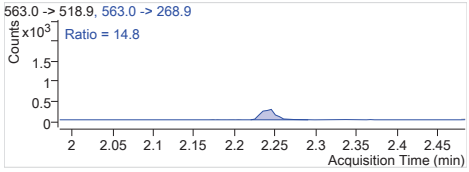
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 0.86 µg/L
Area ratio: 0.34189
Sample type: Calibration



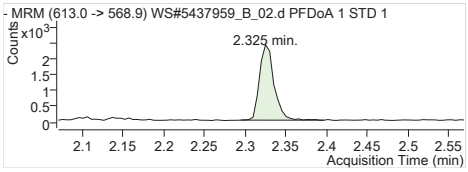


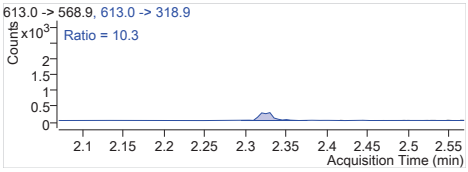
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 0.89 µg/L
Area ratio: 0.43875
Sample type: Calibration



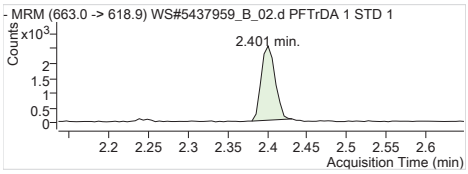


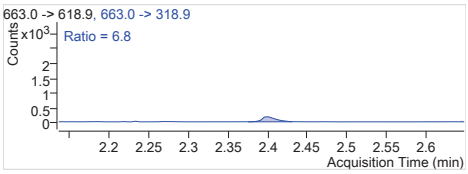
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 0.96 µg/L
Area ratio: 0.38627
Sample type: Calibration



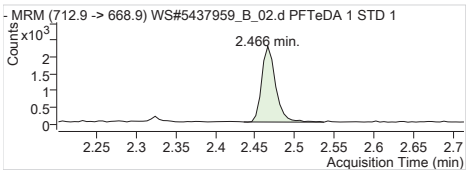


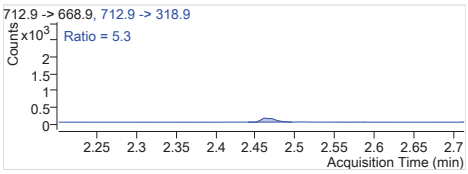
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 0.93 µg/L
Area ratio: 0.35564
Sample type: Calibration



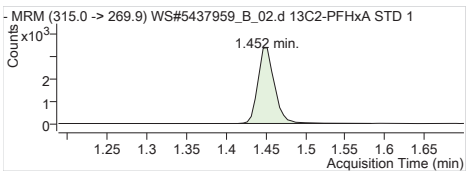


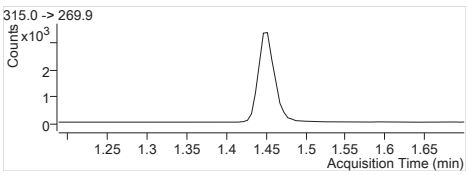
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.401 (2.401)
Calc. conc. 0.87 µg/L
Area ratio: 0.33402
Sample type: Calibration



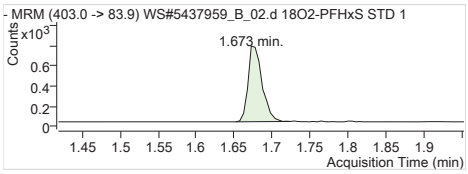


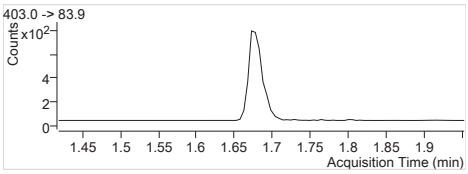
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 0.88 µg/L
Area ratio: 0.29934
Sample type: Calibration



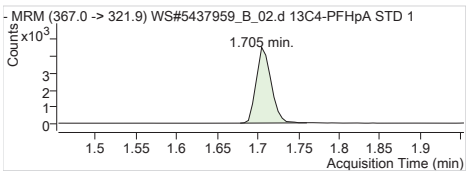


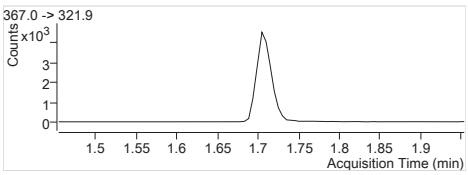
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 99.83 µg/L
Area ratio: 0.27209
Sample type: Calibration



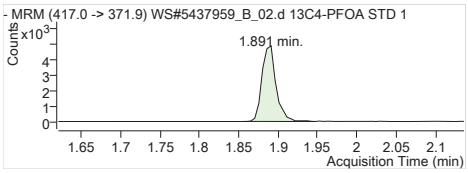


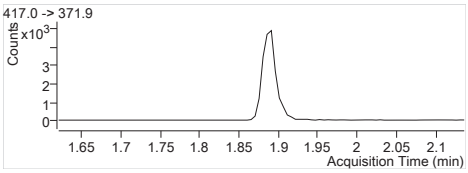
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.673 (1.678)
Calc. conc. 99.08 µg/L
Area ratio: 0.05472
Sample type: Calibration



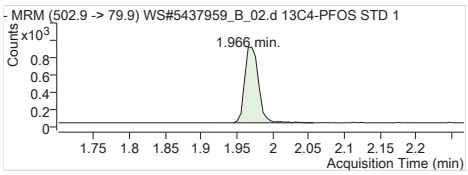


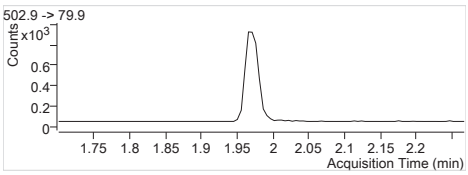
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 99.60 µg/L
Area ratio: 0.31336
Sample type: Calibration



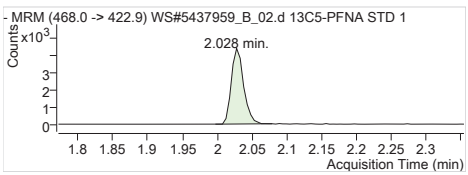


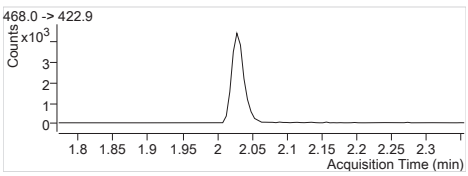
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.891 (1.886)
Calc. conc. 101.97 µg/L
Area ratio: 0.33586
Sample type: Calibration



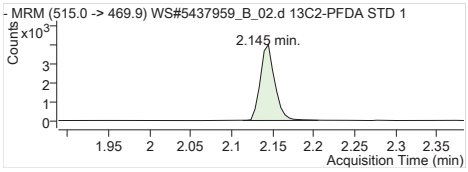


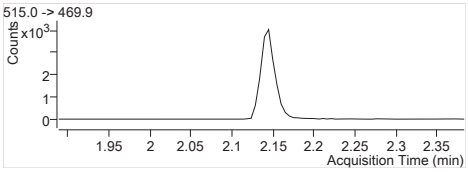
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 99.68 µg/L
Area ratio: 0.06671
Sample type: Calibration



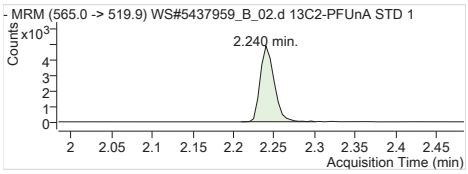


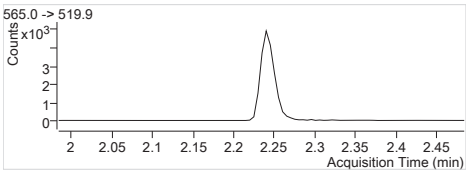
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 95.39 µg/L
Area ratio: 0.30160
Sample type: Calibration



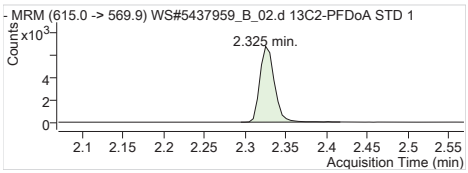


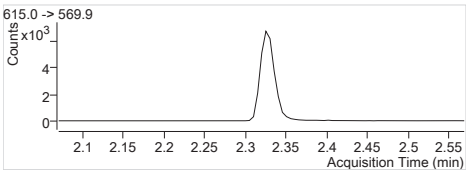
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 98.02 µg/L
Area ratio: 0.21643
Sample type: Calibration



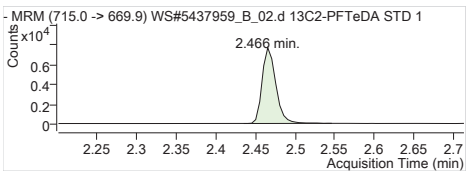


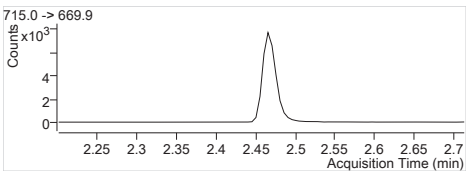
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 93.05 µg/L
Area ratio: 0.26135
Sample type: Calibration



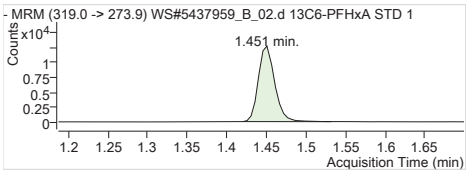


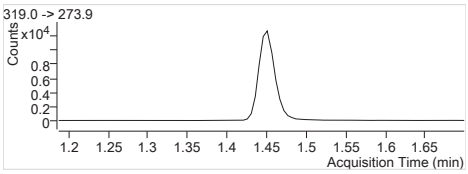
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 94.70 µg/L
Area ratio: 0.37629
Sample type: Calibration



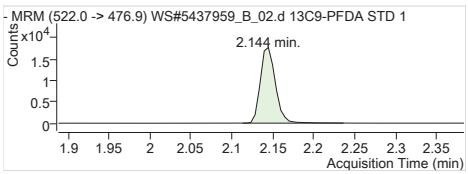


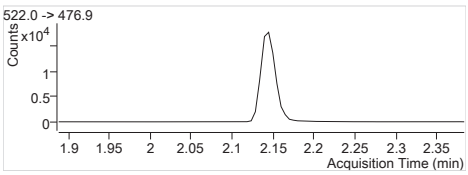
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 98.14 µg/L
Area ratio: 0.41294
Sample type: Calibration





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 95.36 µg/L
Area ratio: 0
Sample type: Calibration





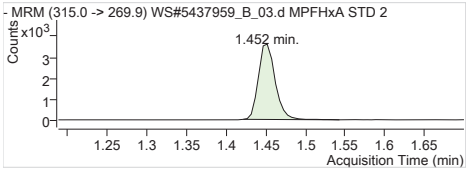
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 98.07 µg/L
Area ratio: 0
Sample type: Calibration

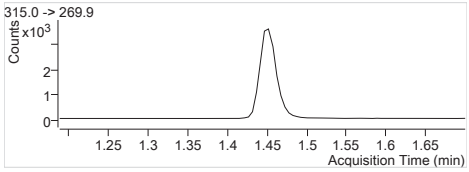
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**STD 2**	**Instrument**	LCMS04
Data File	WS#5437959_B_03.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A3
Acq. Date	2018/03/15 4:51:26 PM	**Injection Volume**	Per Method
Sample Annotation	-		

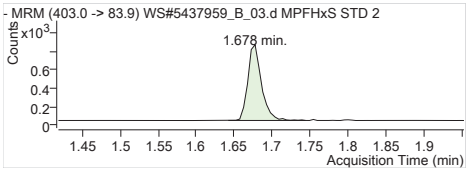
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	5160	1.45	1 µg/L		
MPFHxS	1040	1.68	1 µg/L		
MPFHpA	6094	1.70	1 µg/L		
MPFOA	6340	1.89	1 µg/L		
MPFOS	1286	1.97	1 µg/L		
MPFNA	5972	2.03	1 µg/L		
MPFDA	5150	2.14	1 µg/L		
MPFUnA	6988	2.24	1 µg/L		
MPFDoA	9249	2.33	1 µg/L		
MPFTeDA	9585	2.47	1 µg/L		
13C6-PFHxA IS	18251	1.45	1 µg/L		
13C9-PFDA IS	22909	2.14	1 µg/L		

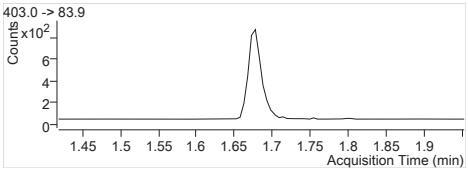
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	811	1.10	1.70	1.56 µg/L	91.70
PFHxA 1	3057	1.45	1.70	1.58 µg/L	92.94
PFHxS 1	711	1.68	1.70	1.55 µg/L	91.21
PFHpA 1	3597	1.71	1.70	1.55 µg/L	91.47
PFOA 1	4237	1.89	1.70	1.62 µg/L	95.44
PFOS 1	819	1.97	1.70	1.56 µg/L	91.56
PFNA 1	3722	2.03	1.70	1.59 µg/L	93.80
PFDA 1	4097	2.14	1.70	1.59 µg/L	93.55
PFUnA 1	4232	2.24	1.70	1.46 µg/L	85.77
PFDoA 1	5524	2.33	1.70	1.54 µg/L	90.50
PFTrDA 1	6214	2.40	1.70	1.61 µg/L	94.61
PFTeDA 1	5165	2.47	1.70	1.56 µg/L	91.68
13C2-PFHxA	5160	1.45	100.00	103.74 µg/L	103.74
18O2-PFHxS	1040	1.68	100.00	103.18 µg/L	103.18
13C4-PFHpA	6094	1.70	100.00	106.13 µg/L	106.13
13C4-PFOA	6340	1.89	100.00	105.47 µg/L	105.47
13C4-PFOS	1286	1.97	100.00	105.28 µg/L	105.28
13C5-PFNA	6058	2.03	100.00	104.98 µg/L	104.98
13C2-PFDA	5100	2.14	100.00	100.82 µg/L	100.82
13C2-PFUnA	6988	2.24	100.00	108.61 µg/L	108.61
13C2-PFDoA	9249	2.33	100.00	101.60 µg/L	101.60
13C2-PFTeDA	9577	2.47	100.00	99.35 µg/L	99.35
13C6-PFHxA	18251	1.45	100.00	98.38 µg/L	98.38
13C9-PFDA	22909	2.14	100.00	101.03 µg/L	101.03



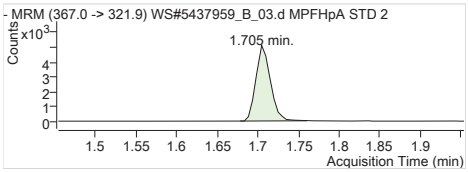


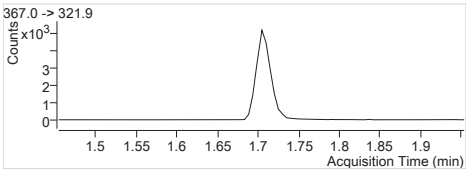
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Calibration



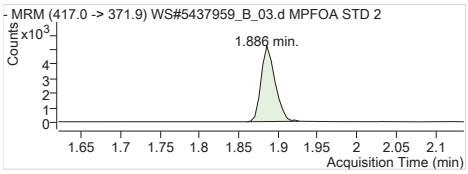


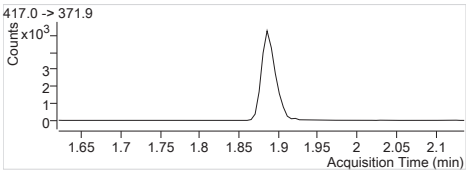
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Calibration



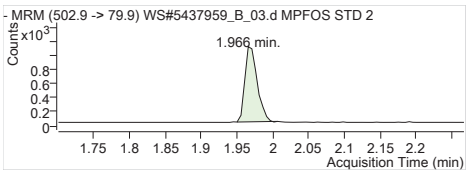


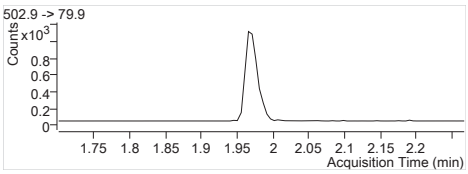
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Calibration



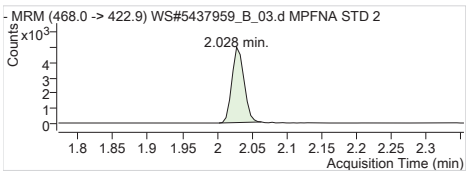


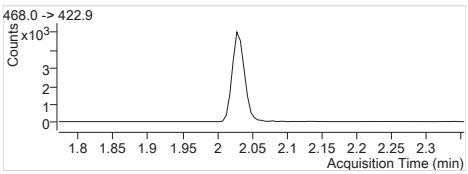
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Calibration



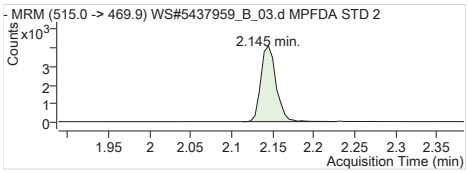


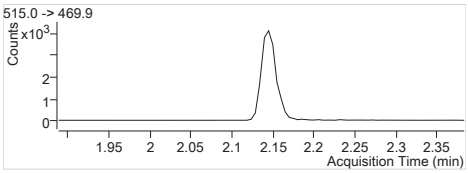
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: Calibration



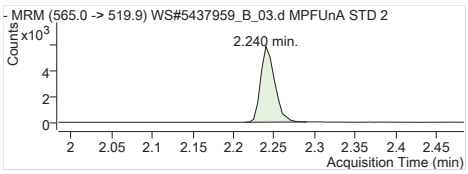


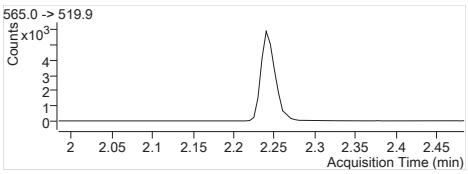
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Calibration



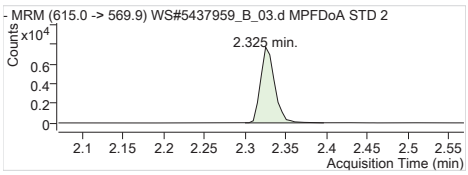


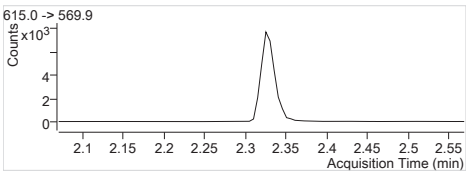
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Calibration



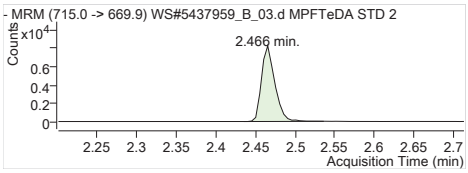


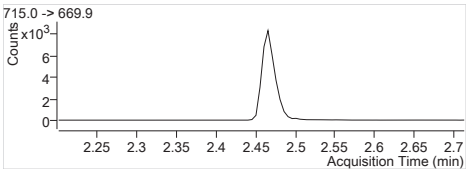
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Calibration



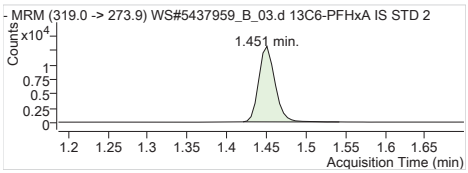


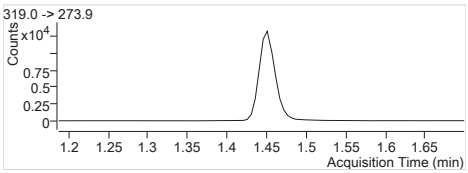
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Calibration



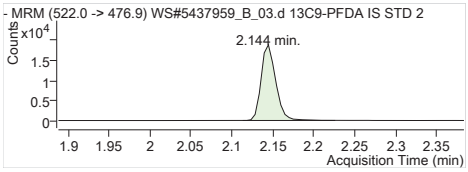


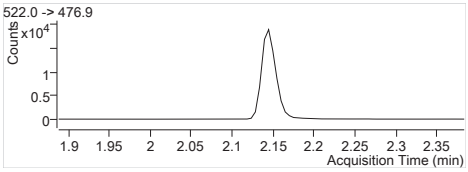
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Calibration



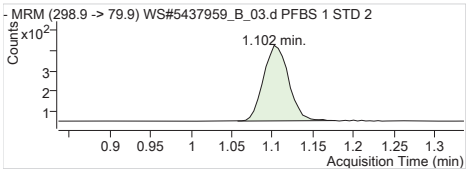


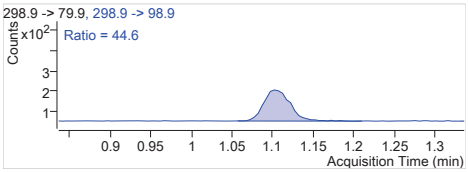
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Calibration



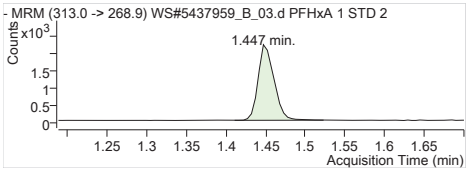


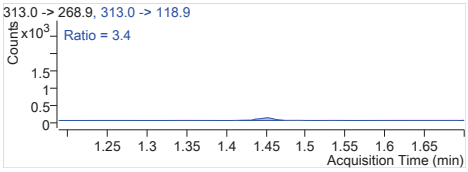
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Calibration



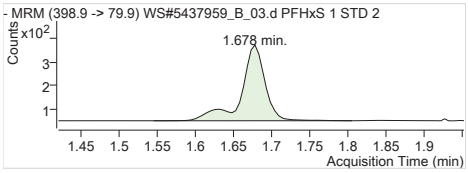


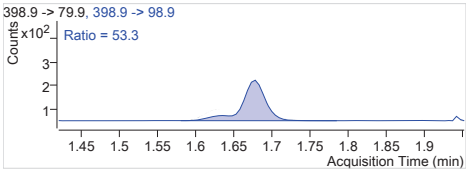
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.102 (1.107)
Calc. conc. 1.56 µg/L
Area ratio: 0.77981
Sample type: Calibration



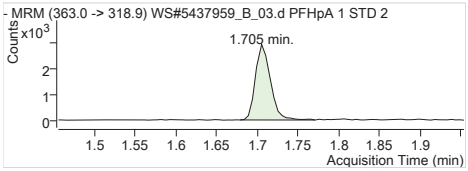


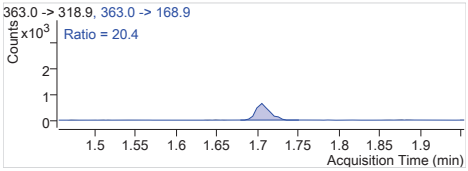
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.447 (1.452)
Calc. conc. 1.58 µg/L
Area ratio: 0.59244
Sample type: Calibration



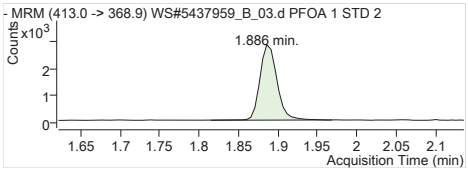


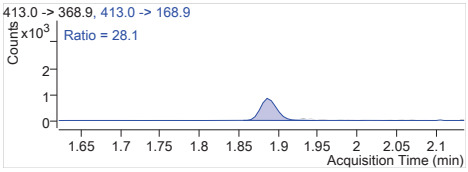
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 1.55 µg/L
Area ratio: 0.68365
Sample type: Calibration



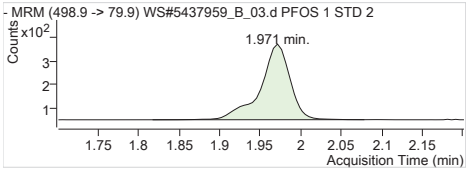


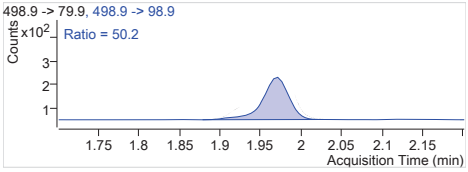
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 1.55 µg/L
Area ratio: 0.59025
Sample type: Calibration



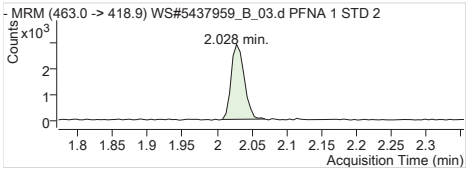


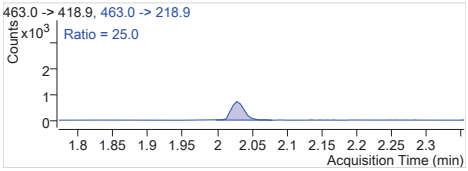
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 1.62 µg/L
Area ratio: 0.66830
Sample type: Calibration



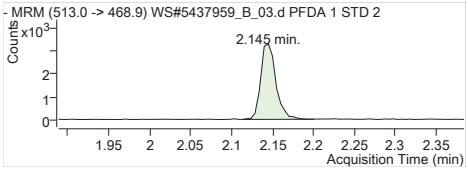


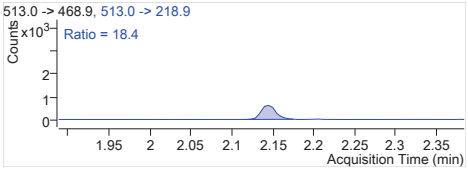
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 1.56 µg/L
Area ratio: 0.63686
Sample type: Calibration



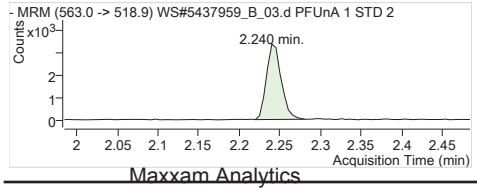


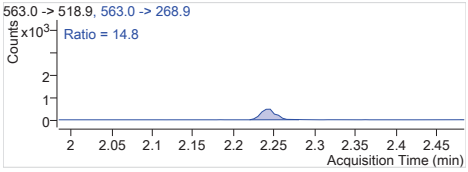
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 1.59 µg/L
Area ratio: 0.62324
Sample type: Calibration



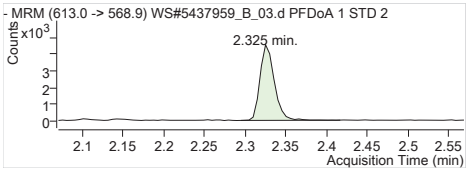


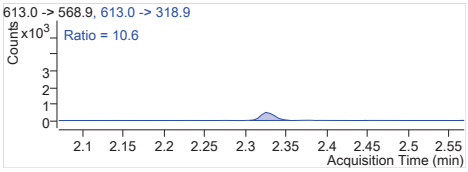
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 1.59 µg/L
Area ratio: 0.79553
Sample type: Calibration



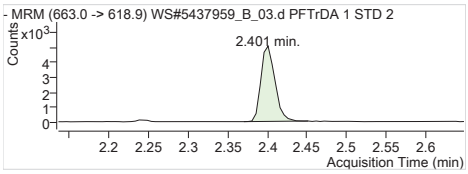


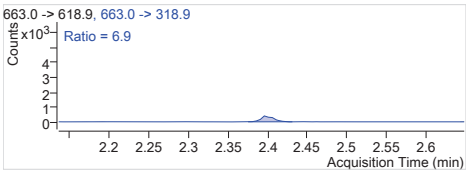
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 1.46 µg/L
Area ratio: 0.60561
Sample type: Calibration



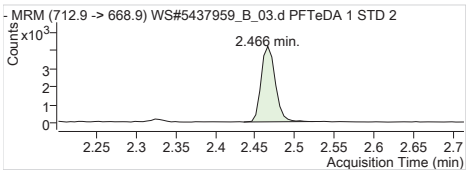


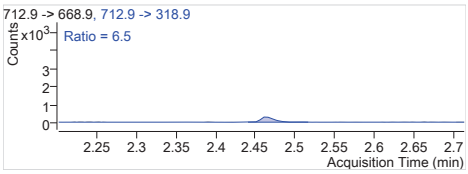
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 1.54 µg/L
Area ratio: 0.59725
Sample type: Calibration



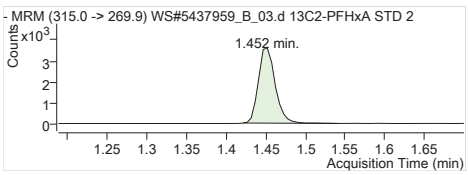


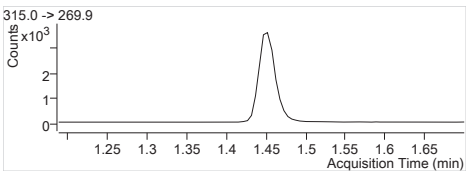
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.401 (2.401)
Calc. conc. 1.61 µg/L
Area ratio: 0.64830
Sample type: Calibration



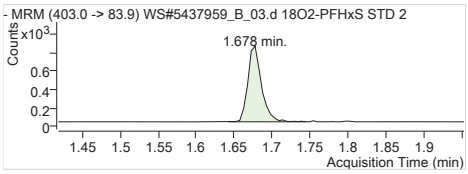


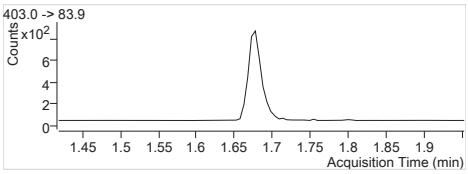
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 1.56 µg/L
Area ratio: 0.53886
Sample type: Calibration



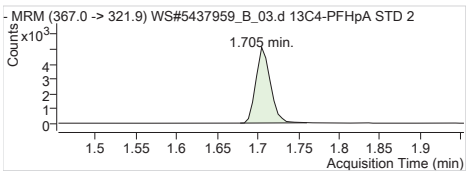


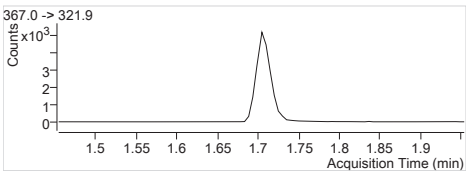
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 103.74 µg/L
Area ratio: 0.28272
Sample type: Calibration



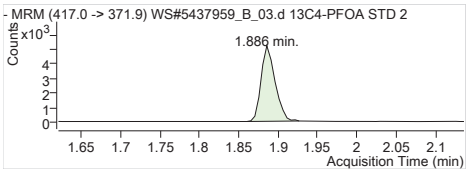


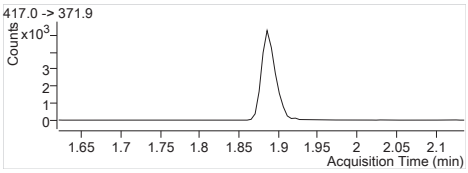
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 103.18 µg/L
Area ratio: 0.05698
Sample type: Calibration



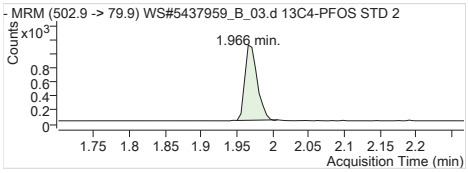


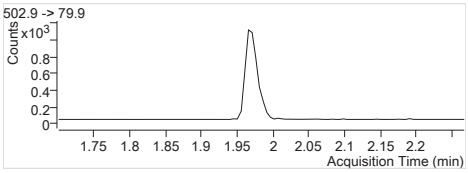
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 106.13 µg/L
Area ratio: 0.33390
Sample type: Calibration



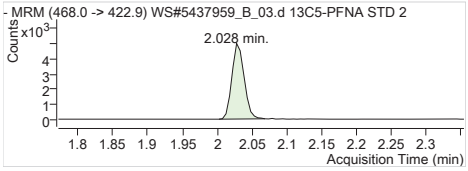


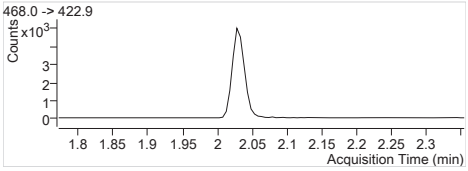
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 105.47 µg/L
Area ratio: 0.34738
Sample type: Calibration



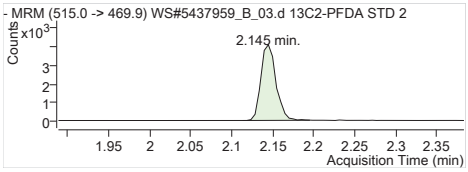


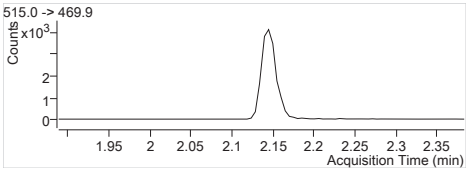
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 105.28 µg/L
Area ratio: 0.07046
Sample type: Calibration



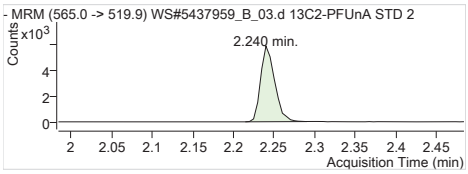


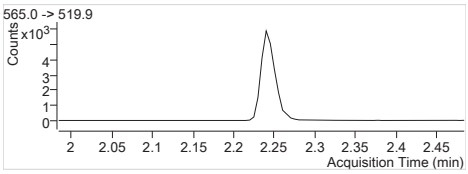
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 104.98 µg/L
Area ratio: 0.33193
Sample type: Calibration



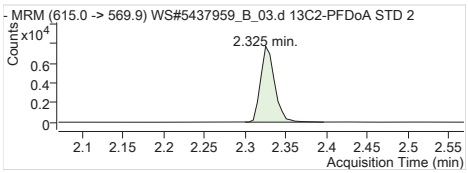


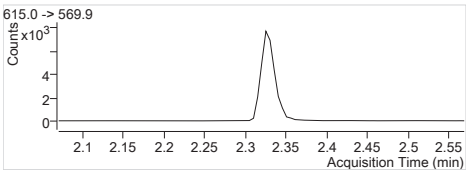
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 100.82 µg/L
Area ratio: 0.22262
Sample type: Calibration



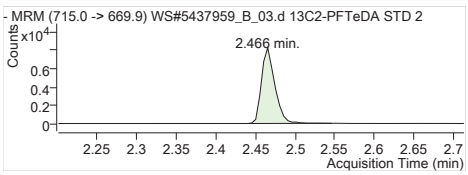


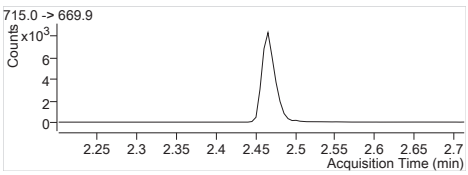
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 108.61 µg/L
Area ratio: 0.30503
Sample type: Calibration



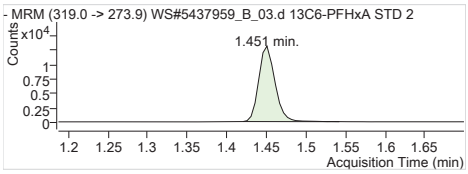


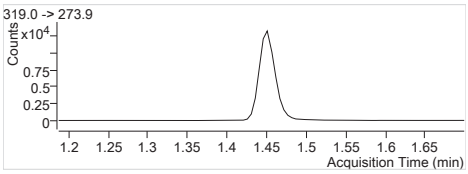
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 101.60 µg/L
Area ratio: 0.40373
Sample type: Calibration



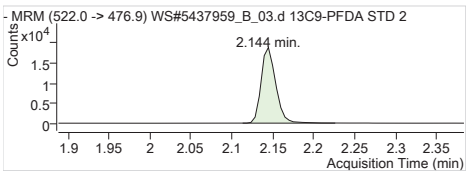


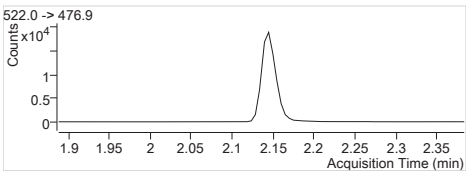
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 99.35 µg/L
Area ratio: 0.41805
Sample type: Calibration





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 98.38 µg/L
Area ratio: 0
Sample type: Calibration





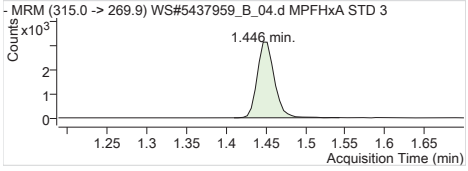
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 101.03 µg/L
Area ratio: 0
Sample type: Calibration

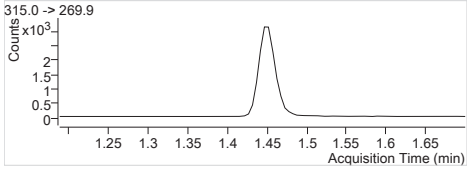
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**STD 3**	**Instrument**	LCMS04
Data File	WS#5437959_B_04.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A4
Acq. Date	2018/03/15 4:56:23 PM	**Injection Volume**	Per Method
Sample Annotation	-		

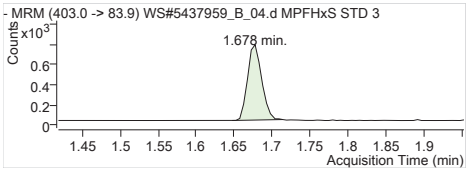
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4665	1.45	1 µg/L		
MPFHxS	974	1.68	1 µg/L		
MPFHpA	5195	1.70	1 µg/L		
MPFOA	5549	1.89	1 µg/L		
MPFOS	1148	1.97	1 µg/L		
MPFNA	5204	2.03	1 µg/L		
MPFDA	4713	2.14	1 µg/L		
MPFUnA	5676	2.24	1 µg/L		
MPFDoA	8408	2.33	1 µg/L		
MPFTeDA	8856	2.47	1 µg/L		
13C6-PFHxA IS	18391	1.45	1 µg/L		
13C9-PFDA IS	22150	2.14	1 µg/L		

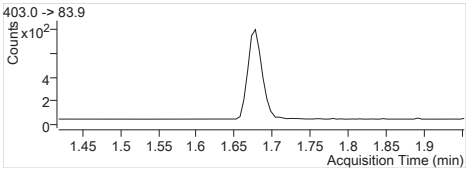
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	2585	1.10	5.00	5.30 µg/L	106.06
PFHxA 1	9394	1.45	5.00	5.22 µg/L	104.31
PFHxS 1	2265	1.68	5.00	5.22 µg/L	104.42
PFHpA 1	10921	1.71	5.00	5.48 µg/L	109.57
PFOA 1	12161	1.89	5.00	5.15 µg/L	103.01
PFOS 1	2568	1.97	5.00	5.36 µg/L	107.20
PFNA 1	10698	2.03	5.00	5.35 µg/L	106.93
PFDA 1	12334	2.14	5.00	5.16 µg/L	103.18
PFUnA 1	13019	2.24	5.00	5.31 µg/L	106.24
PFDoA 1	16968	2.33	5.00	5.11 µg/L	102.15
PFTrDA 1	19565	2.40	5.00	5.29 µg/L	105.84
PFTeDA 1	16706	2.47	5.00	5.40 µg/L	107.97
13C2-PFHxA	4665	1.45	100.00	93.07 µg/L	93.07
18O2-PFHxS	974	1.68	100.00	95.89 µg/L	95.89
13C4-PFHpA	5195	1.70	100.00	89.79 µg/L	89.79
13C4-PFOA	5549	1.89	100.00	91.61 µg/L	91.61
13C4-PFOS	1148	1.97	100.00	93.27 µg/L	93.27
13C5-PFNA	5401	2.03	100.00	92.88 µg/L	92.88
13C2-PFDA	4713	2.14	100.00	96.36 µg/L	96.36
13C2-PFUnA	5676	2.24	100.00	91.24 µg/L	91.24
13C2-PFDoA	8408	2.33	100.00	95.53 µg/L	95.53
13C2-PFTeDA	8762	2.47	100.00	94.01 µg/L	94.01
13C6-PFHxA	18391	1.45	100.00	99.14 µg/L	99.14
13C9-PFDA	22150	2.14	100.00	97.68 µg/L	97.68



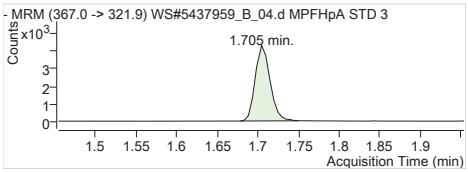


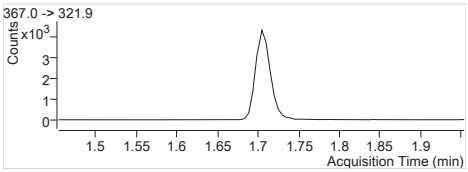
MPFHxA	Internal Standard
RT (Exp. RT):	1.446 (1.452)
Concentration:	1 µg/L
Sample type:	Calibration



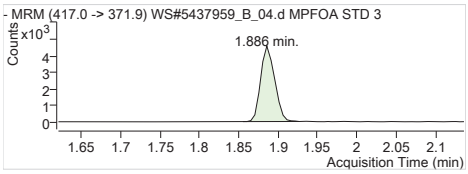


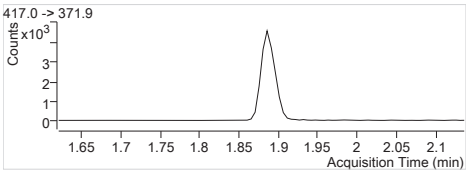
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Calibration



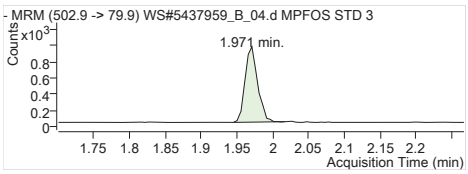


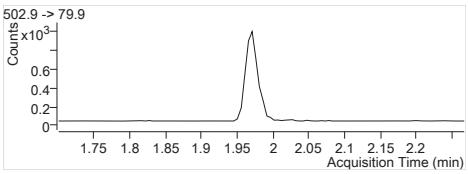
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Calibration



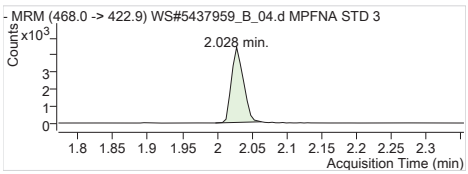


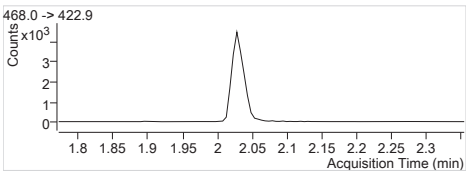
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Calibration



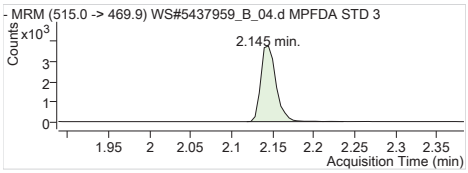


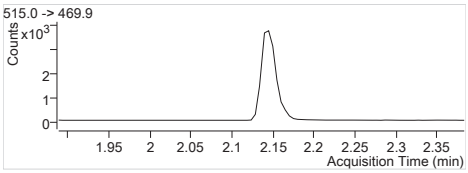
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Calibration



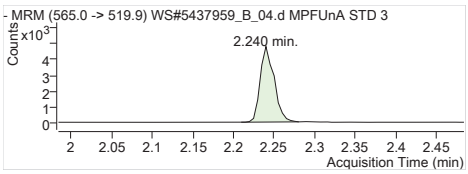


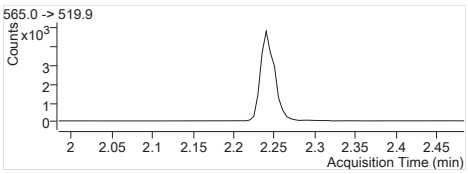
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Calibration



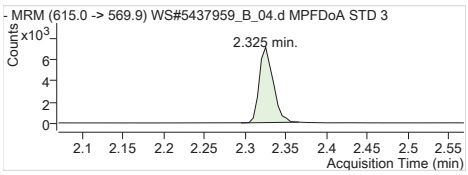


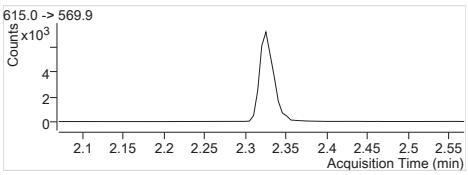
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Calibration



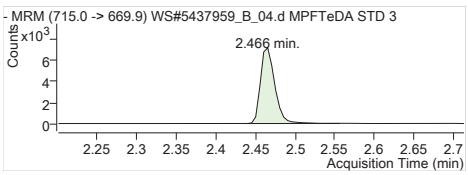


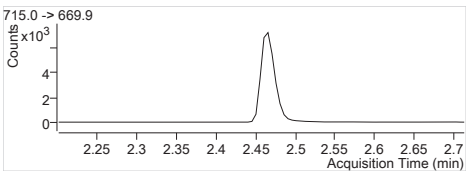
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Calibration



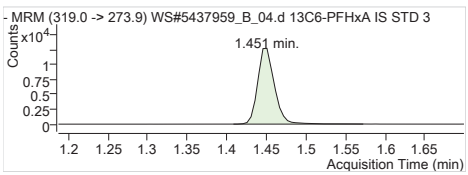


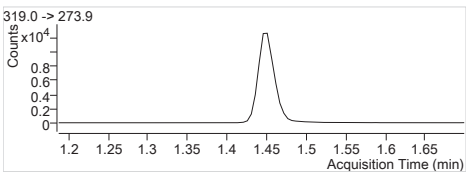
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Calibration



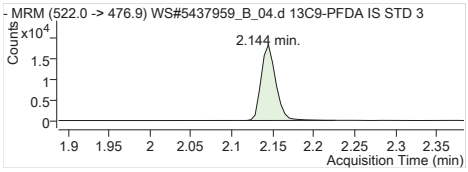


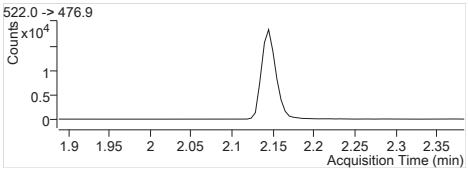
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Calibration



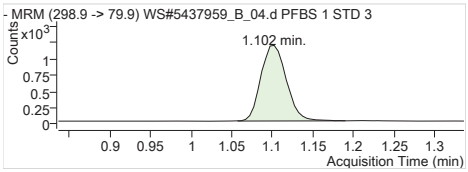


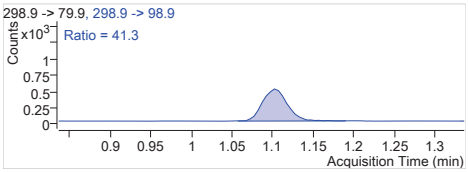
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Calibration



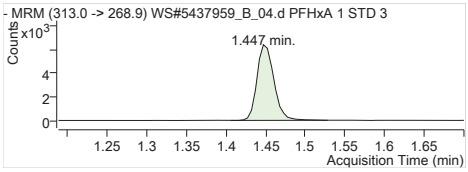


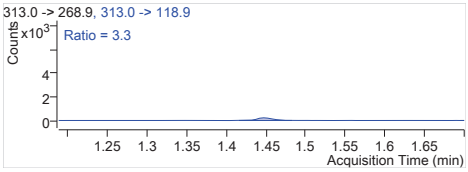
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Calibration



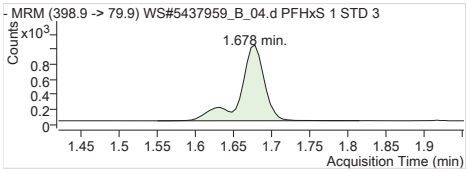


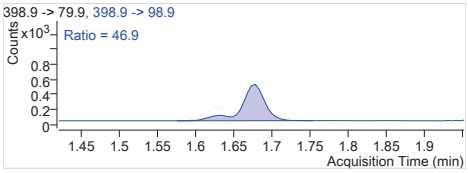
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.102 (1.107)
Calc. conc. 5.30 µg/L
Area ratio: 2.65400
Sample type: Calibration



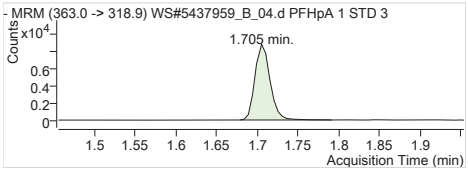


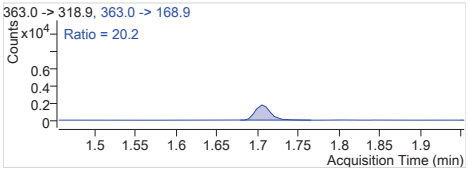
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.447 (1.452)
Calc. conc. 5.22 µg/L
Area ratio: 2.01372
Sample type: Calibration



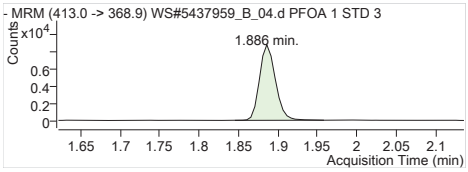


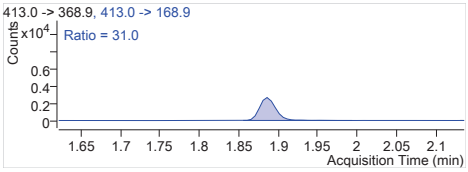
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 5.22 µg/L
Area ratio: 2.32546
Sample type: Calibration



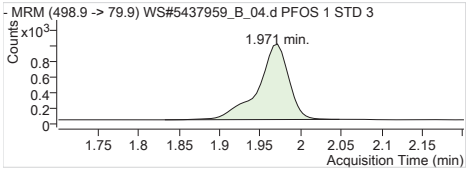


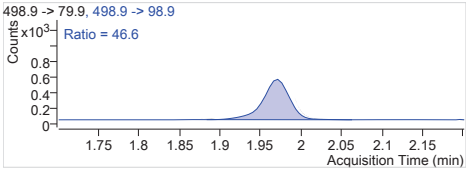
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 5.48 µg/L
Area ratio: 2.10221
Sample type: Calibration



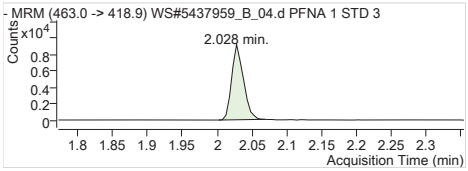


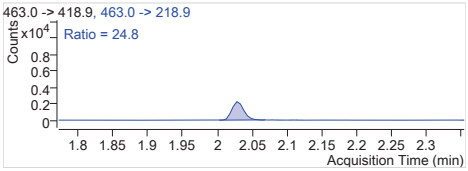
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 5.15 µg/L
Area ratio: 2.19157
Sample type: Calibration



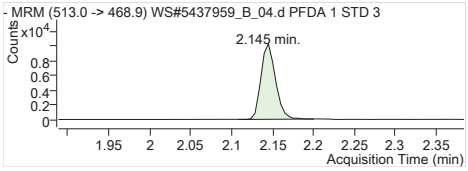


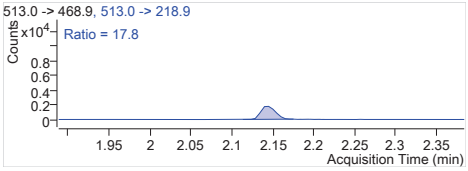
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 5.36 µg/L
Area ratio: 2.23693
Sample type: Calibration



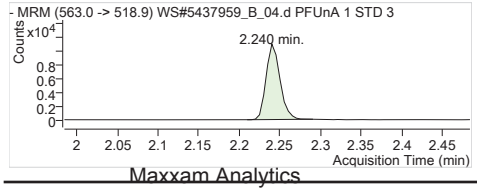


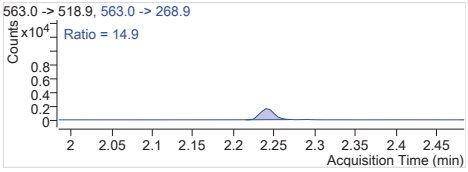
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 5.35 µg/L
Area ratio: 2.05573
Sample type: Calibration



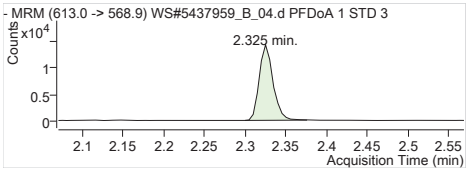


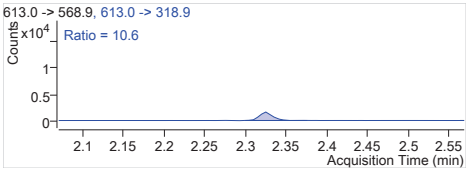
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 5.16 µg/L
Area ratio: 2.61702
Sample type: Calibration



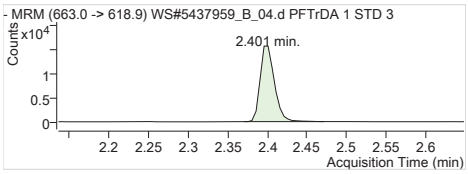


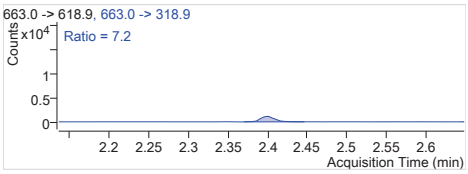
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 5.31 µg/L
Area ratio: 2.29369
Sample type: Calibration



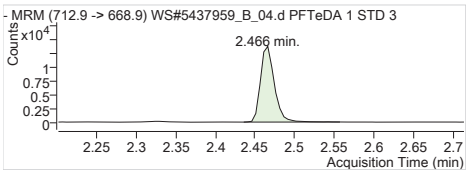


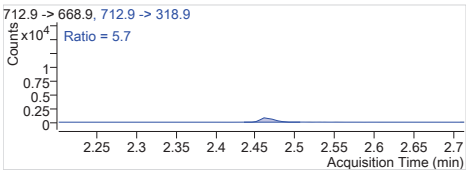
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 5.11 µg/L
Area ratio: 2.01808
Sample type: Calibration



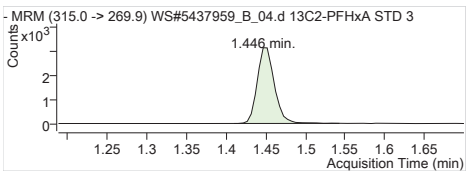


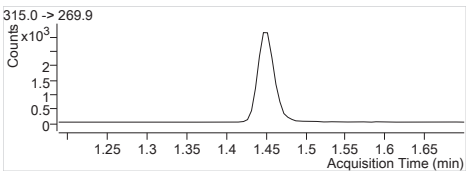
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.401 (2.401)
Calc. conc. 5.29 µg/L
Area ratio: 2.20924
Sample type: Calibration



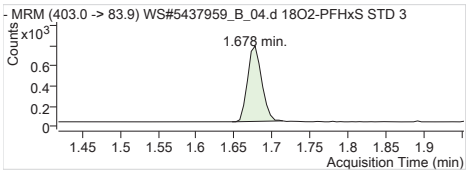


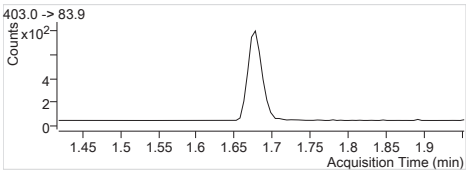
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 5.40 µg/L
Area ratio: 1.88640
Sample type: Calibration



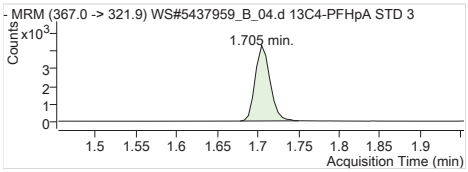


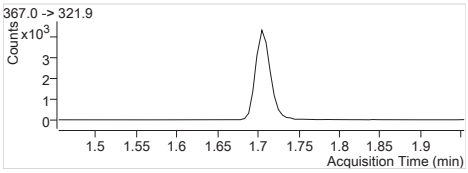
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.446 (1.452)
Calc. conc. 93.07 µg/L
Area ratio: 0.25366
Sample type: Calibration



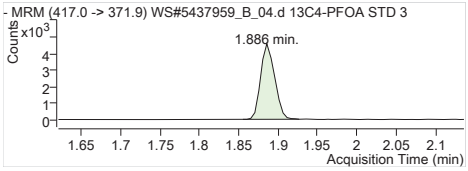


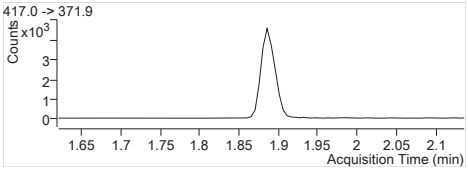
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 95.89 µg/L
Area ratio: 0.05296
Sample type: Calibration



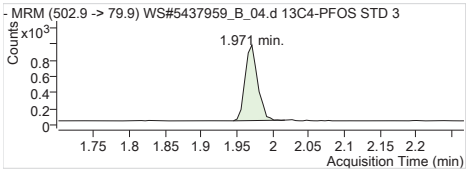


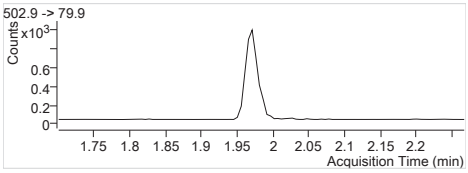
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 89.79 µg/L
Area ratio: 0.28248
Sample type: Calibration



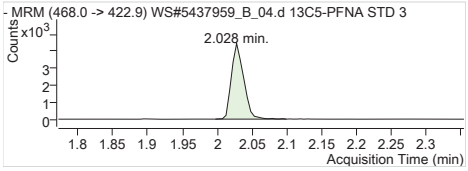


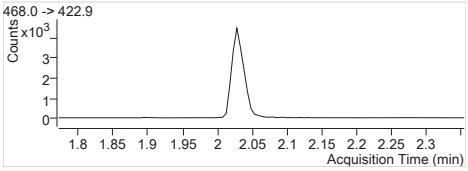
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 91.61 µg/L
Area ratio: 0.30172
Sample type: Calibration



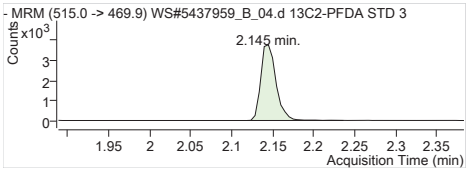


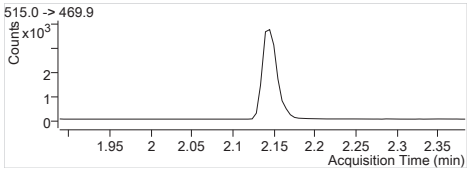
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 93.27 µg/L
Area ratio: 0.06242
Sample type: Calibration



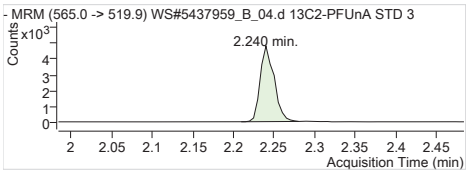


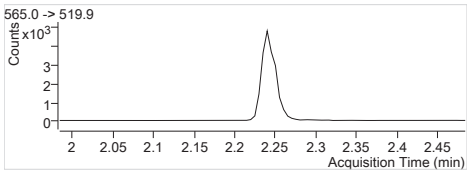
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 92.88 µg/L
Area ratio: 0.29368
Sample type: Calibration



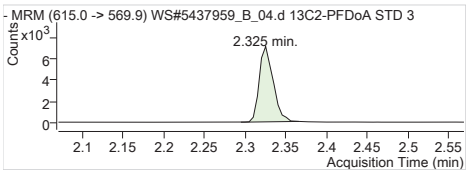


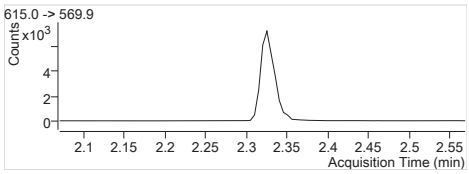
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 96.36 µg/L
Area ratio: 0.21278
Sample type: Calibration



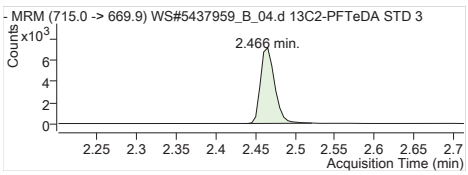


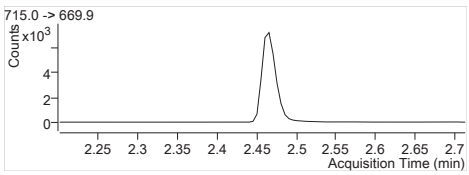
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 91.24 µg/L
Area ratio: 0.25625
Sample type: Calibration



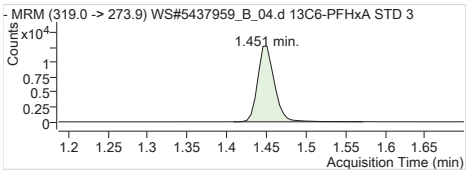


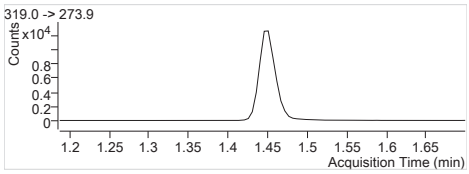
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 95.53 µg/L
Area ratio: 0.37959
Sample type: Calibration



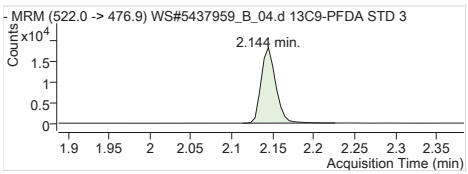


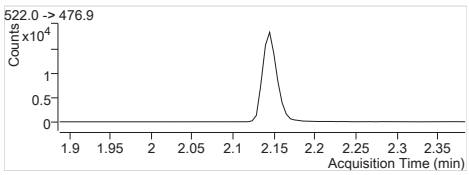
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 94.01 µg/L
Area ratio: 0.39558
Sample type: Calibration





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 99.14 µg/L
Area ratio: 0
Sample type: Calibration





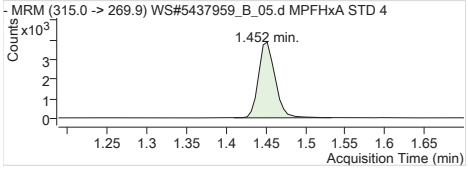
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 97.68 µg/L
Area ratio: 0
Sample type: Calibration

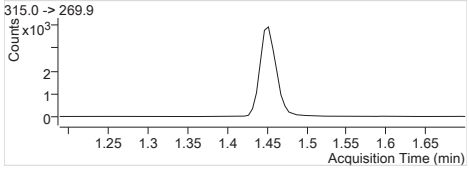
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**STD 4**	**Instrument**	LCMS04
Data File	WS#5437959_B_05.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A5
Acq. Date	2018/03/15 5:01:20 PM	**Injection Volume**	Per Method
Sample Annotation	-		

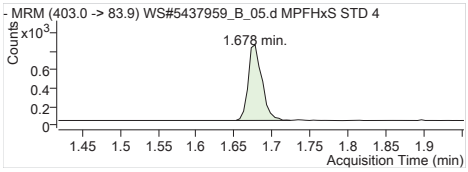
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	5553	1.45	1 µg/L		
MPFHxS	1040	1.68	1 µg/L		
MPFHpA	6351	1.70	1 µg/L		
MPFOA	6454	1.89	1 µg/L		
MPFOS	1374	1.97	1 µg/L		
MPFNA	6475	2.03	1 µg/L		
MPFDA	5392	2.14	1 µg/L		
MPFUnA	6975	2.24	1 µg/L		
MPFDoA	9741	2.33	1 µg/L		
MPFTeDA	10547	2.47	1 µg/L		
13C6-PFHxA IS	19324	1.45	1 µg/L		
13C9-PFDA IS	23266	2.14	1 µg/L		

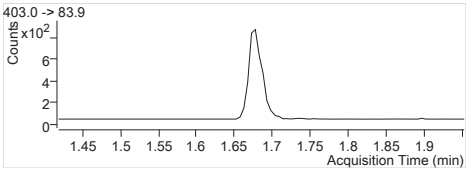
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	7204	1.11	12.50	13.84 µg/L	110.71
PFHxA 1	27042	1.45	12.50	12.52 µg/L	100.17
PFHxS 1	6353	1.68	12.50	13.68 µg/L	109.43
PFHpA 1	31165	1.71	12.50	12.76 µg/L	102.06
PFOA 1	36482	1.89	12.50	13.17 µg/L	105.33
PFOS 1	7103	1.97	12.50	12.33 µg/L	98.65
PFNA 1	31739	2.03	12.50	12.80 µg/L	102.40
PFDA 1	35078	2.14	12.50	12.78 µg/L	102.21
PFUnA 1	36961	2.24	12.50	12.17 µg/L	97.39
PFDoA 1	49229	2.33	12.50	12.73 µg/L	101.87
PFTrDA 1	55859	2.40	12.50	12.58 µg/L	100.62
PFTeDA 1	46166	2.47	12.50	12.50 µg/L	99.97
13C2-PFHxA	5553	1.45	100.00	105.44 µg/L	105.44
18O2-PFHxS	1040	1.68	100.00	97.45 µg/L	97.45
13C4-PFHpA	6351	1.70	100.00	104.47 µg/L	104.47
13C4-PFOA	6454	1.89	100.00	101.40 µg/L	101.40
13C4-PFOS	1374	1.97	100.00	106.24 µg/L	106.24
13C5-PFNA	6568	2.03	100.00	107.50 µg/L	107.50
13C2-PFDA	5357	2.14	100.00	104.27 µg/L	104.27
13C2-PFUnA	6975	2.24	100.00	106.74 µg/L	106.74
13C2-PFDoA	9741	2.33	100.00	105.37 µg/L	105.37
13C2-PFTeDA	10547	2.47	100.00	107.73 µg/L	107.73
13C6-PFHxA	19324	1.45	100.00	104.17 µg/L	104.17
13C9-PFDA	23266	2.14	100.00	102.61 µg/L	102.61



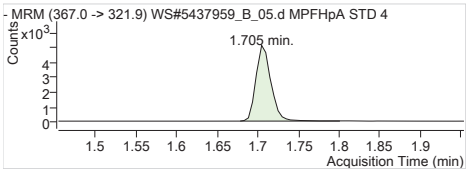


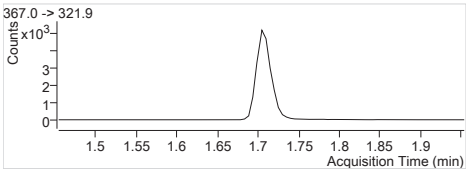
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Calibration



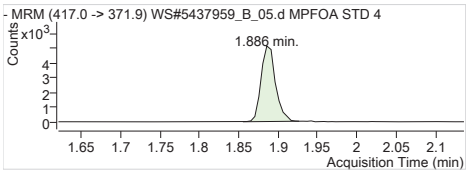


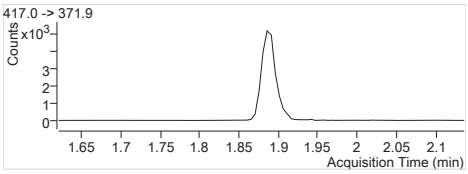
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Calibration



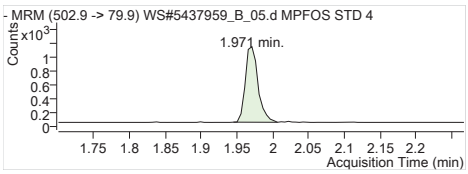


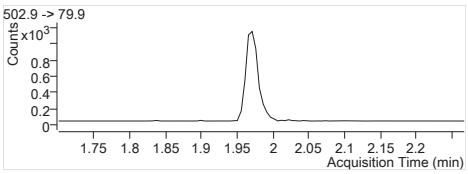
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Calibration



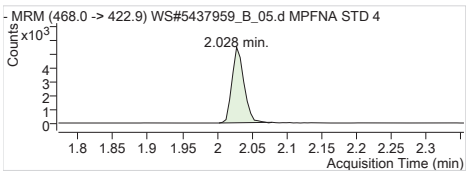


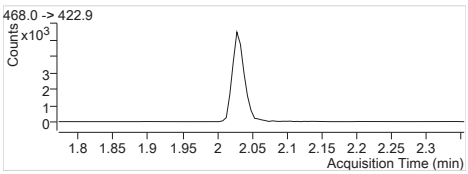
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Calibration



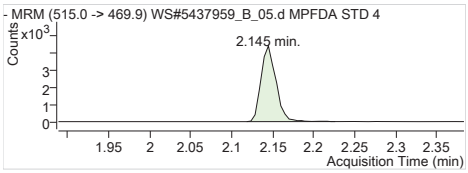


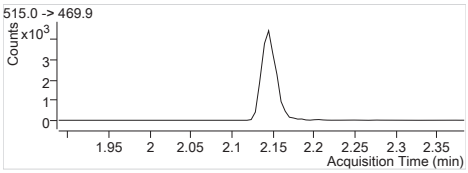
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Calibration



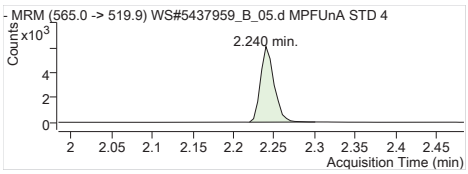


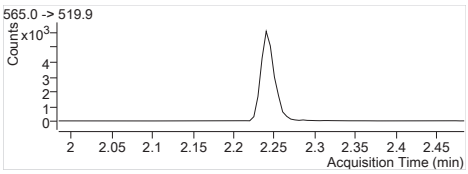
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Calibration



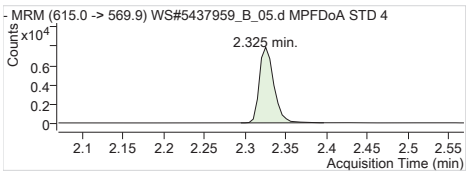


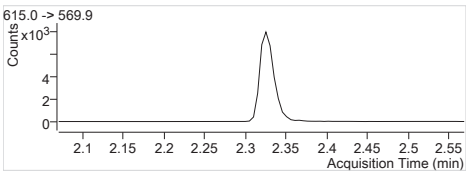
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Calibration



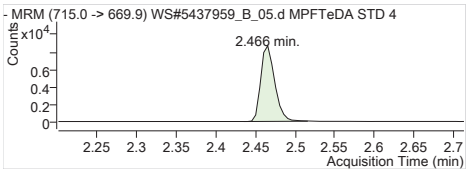


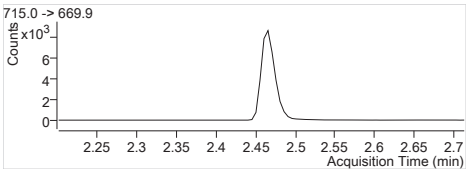
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Calibration



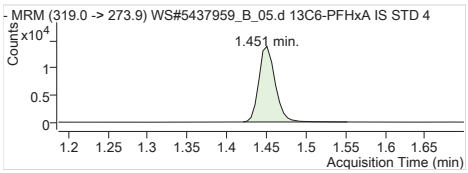


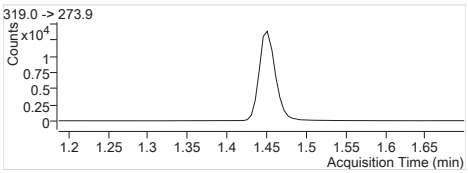
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Calibration



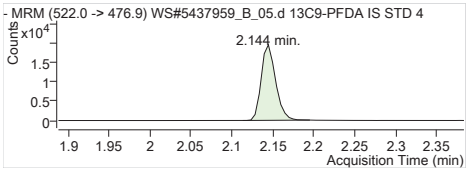


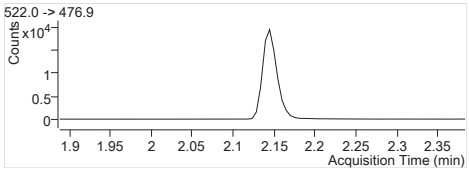
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Calibration



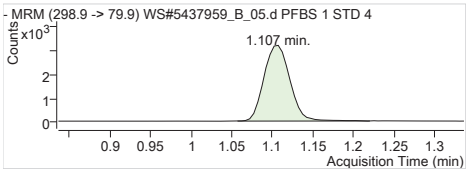


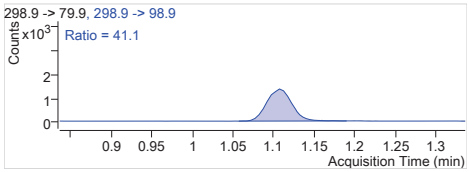
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Calibration



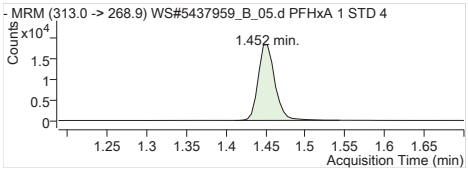


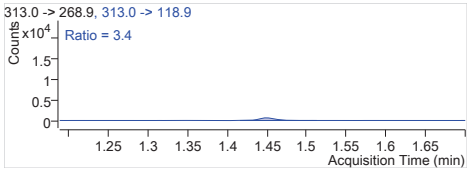
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Calibration



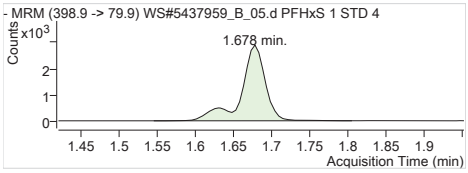


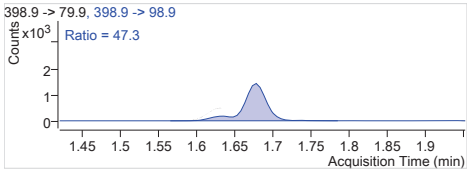
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.107 (1.107)
Calc. conc. 13.84 µg/L
Area ratio: 6.92692
Sample type: Calibration



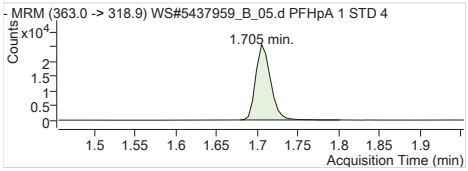


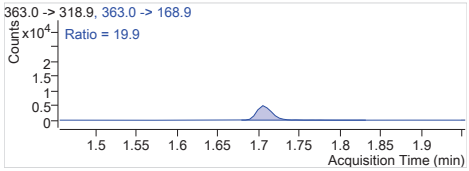
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 12.52 µg/L
Area ratio: 4.86980
Sample type: Calibration



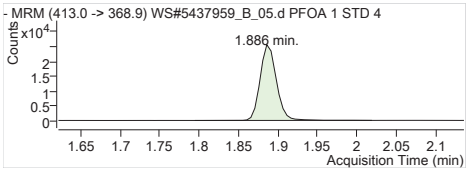


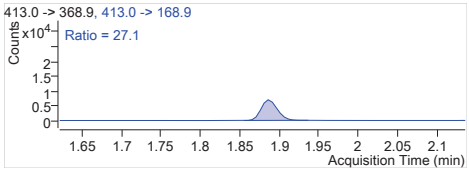
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 13.68 µg/L
Area ratio: 6.10865
Sample type: Calibration



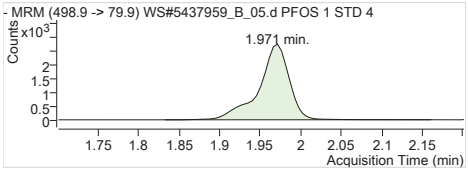


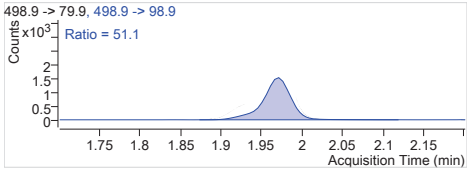
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 12.76 µg/L
Area ratio: 4.90710
Sample type: Calibration



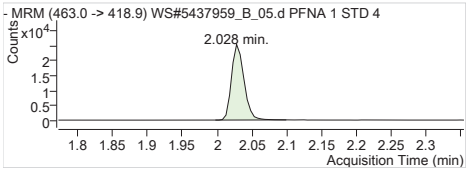


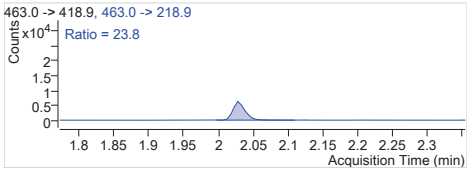
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 13.17 µg/L
Area ratio: 5.65262
Sample type: Calibration



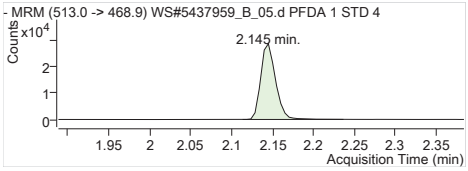


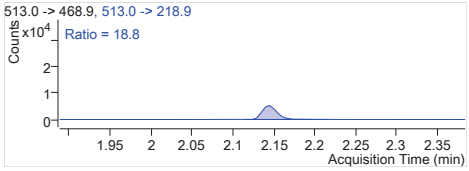
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 12.33 µg/L
Area ratio: 5.16958
Sample type: Calibration



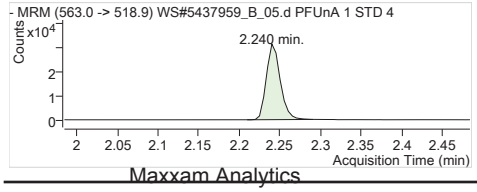


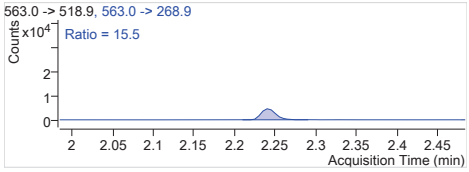
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 12.80 µg/L
Area ratio: 4.90178
Sample type: Calibration



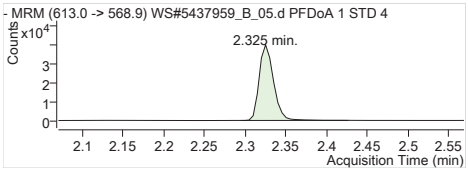


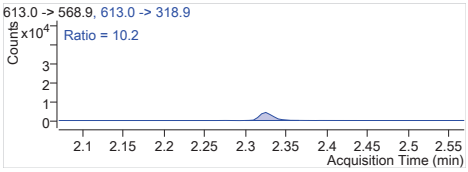
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 12.78 µg/L
Area ratio: 6.50556
Sample type: Calibration



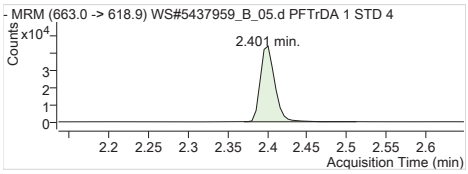


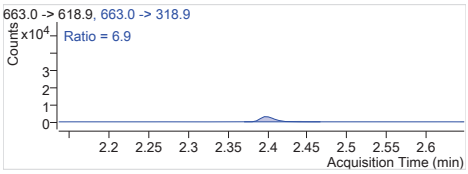
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 12.17 µg/L
Area ratio: 5.29907
Sample type: Calibration



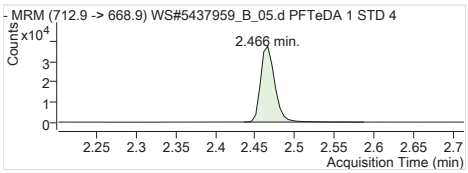


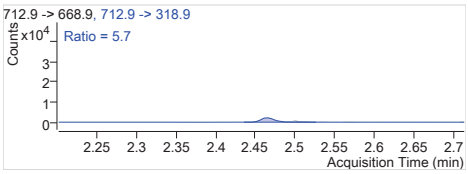
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 12.73 µg/L
Area ratio: 5.05379
Sample type: Calibration



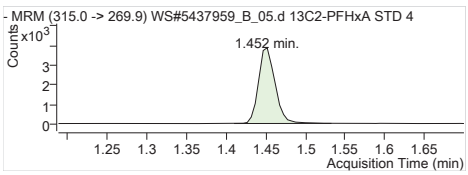


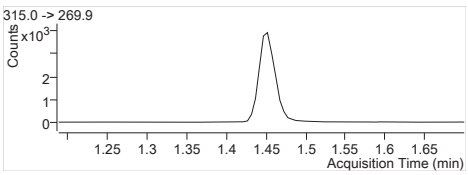
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.401 (2.401)
Calc. conc. 12.58 µg/L
Area ratio: 5.29620
Sample type: Calibration



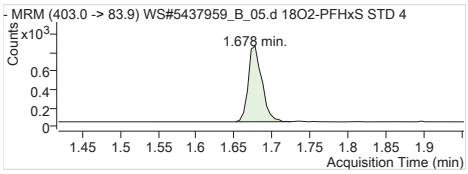


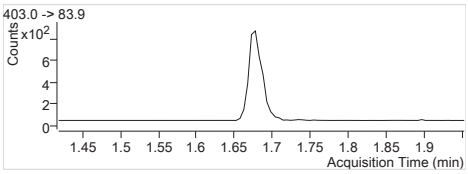
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 12.50 µg/L
Area ratio: 4.37717
Sample type: Calibration



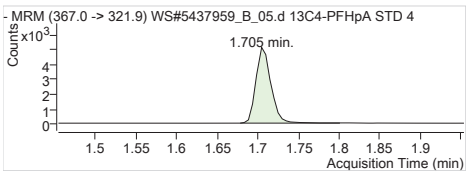


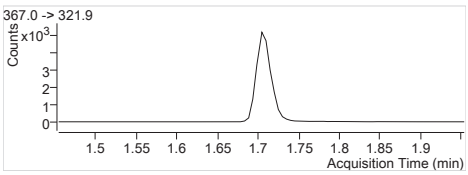
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 105.44 µg/L
Area ratio: 0.28736
Sample type: Calibration



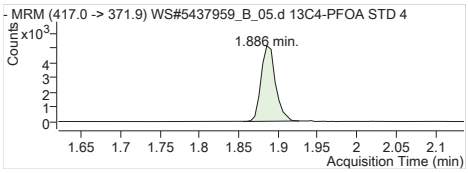


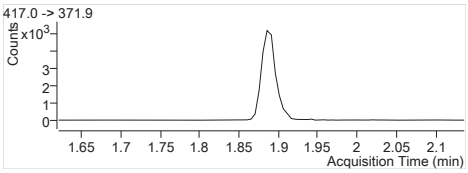
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 97.45 µg/L
Area ratio: 0.05382
Sample type: Calibration



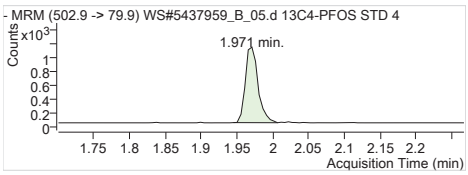


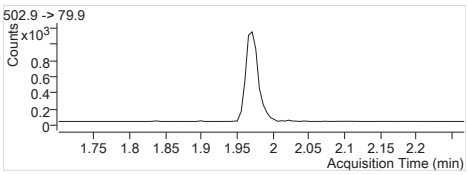
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 104.47 µg/L
Area ratio: 0.32866
Sample type: Calibration



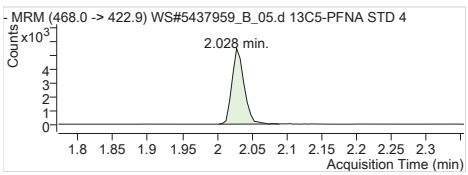


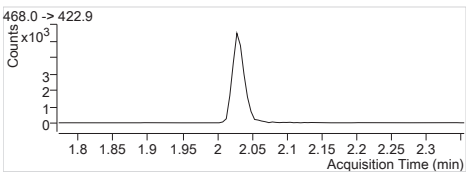
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 101.40 µg/L
Area ratio: 0.33399
Sample type: Calibration



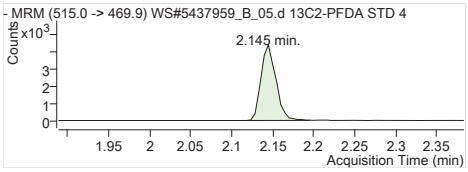


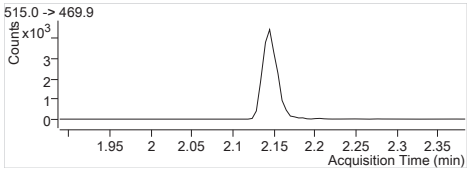
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 106.24 µg/L
Area ratio: 0.07110
Sample type: Calibration



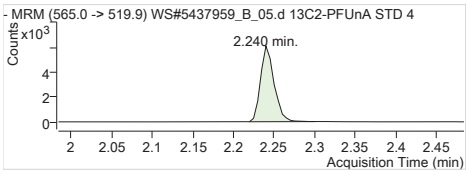


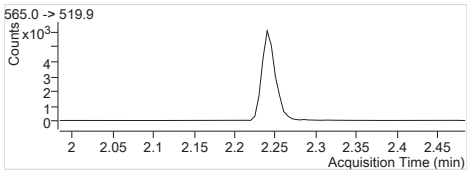
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 107.50 µg/L
Area ratio: 0.33989
Sample type: Calibration



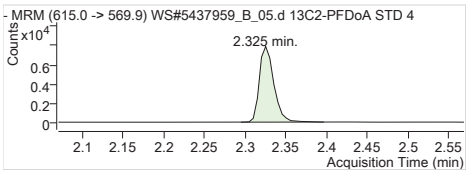


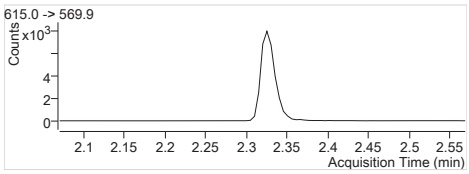
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 104.27 µg/L
Area ratio: 0.23025
Sample type: Calibration



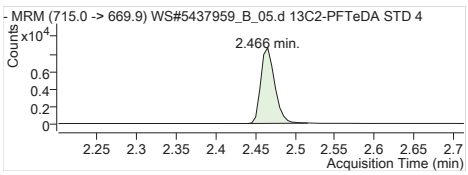


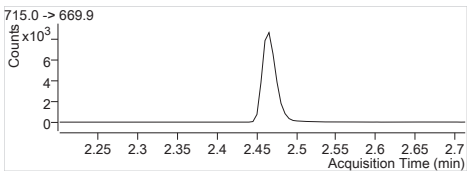
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 106.74 µg/L
Area ratio: 0.29979
Sample type: Calibration



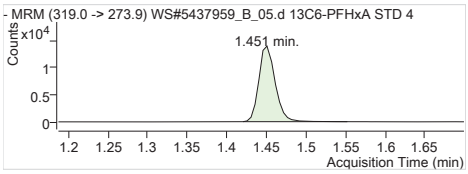


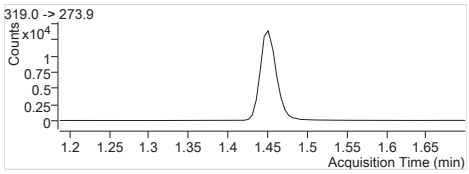
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 105.37 µg/L
Area ratio: 0.41868
Sample type: Calibration



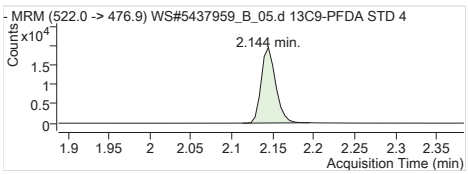


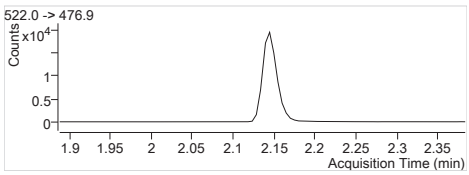
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 107.73 µg/L
Area ratio: 0.45332
Sample type: Calibration





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 104.17 µg/L
Area ratio: 0
Sample type: Calibration





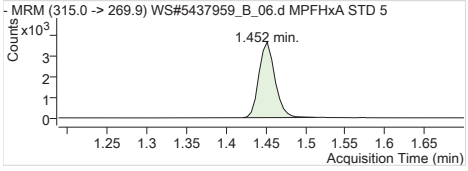
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 102.61 µg/L
Area ratio: 0
Sample type: Calibration

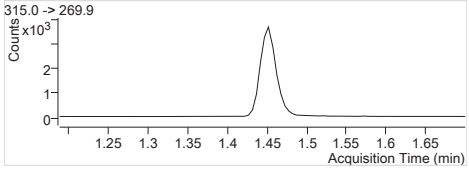
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**STD 5**	**Instrument**	LCMS04
Data File	WS#5437959_B_06.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A6
Acq. Date	2018/03/15 5:06:17 PM	**Injection Volume**	Per Method
Sample Annotation	-		

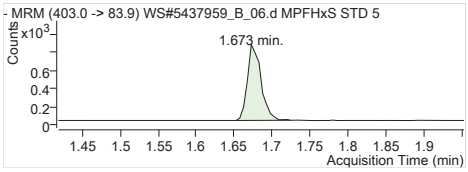
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	5002	1.45	1 µg/L		
MPFHxS	1059	1.67	1 µg/L		
MPFHpA	5860	1.70	1 µg/L		
MPFOA	6213	1.89	1 µg/L		
MPFOS	1208	1.97	1 µg/L		
MPFNA	5867	2.03	1 µg/L		
MPFDA	4968	2.14	1 µg/L		
MPFUnA	6450	2.25	1 µg/L		
MPFDoA	9014	2.33	1 µg/L		
MPFTeDA	9377	2.47	1 µg/L		
13C6-PFHxA IS	18922	1.45	1 µg/L		
13C9-PFDA IS	23282	2.14	1 µg/L		

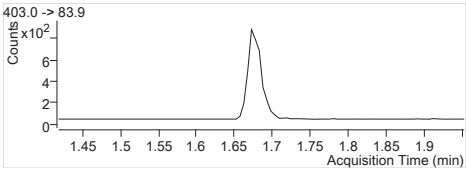
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	11050	1.11	25.00	20.85 µg/L	83.38
PFHxA 1	42378	1.45	25.00	21.74 µg/L	86.94
PFHxS 1	9914	1.68	25.00	20.95 µg/L	83.81
PFHpA 1	48752	1.71	25.00	21.61 µg/L	86.45
PFOA 1	56751	1.89	25.00	21.23 µg/L	84.92
PFOS 1	10962	1.97	25.00	21.61 µg/L	86.46
PFNA 1	48967	2.03	25.00	21.82 µg/L	87.29
PFDA 1	54737	2.14	25.00	21.62 µg/L	86.47
PFUnA 1	61502	2.24	25.00	21.84 µg/L	87.38
PFDoA 1	75981	2.33	25.00	21.21 µg/L	84.85
PFTrDA 1	87280	2.40	25.00	22.04 µg/L	88.18
PFTeDA 1	73062	2.47	25.00	22.23 µg/L	88.90
13C2-PFHxA	5002	1.45	100.00	96.99 µg/L	96.99
18O2-PFHxS	1059	1.67	100.00	101.33 µg/L	101.33
13C4-PFHpA	5860	1.70	100.00	98.44 µg/L	98.44
13C4-PFOA	6213	1.89	100.00	99.69 µg/L	99.69
13C4-PFOS	1208	1.97	100.00	95.39 µg/L	95.39
13C5-PFNA	5885	2.03	100.00	98.36 µg/L	98.36
13C2-PFDA	4968	2.14	100.00	96.64 µg/L	96.64
13C2-PFUnA	6450	2.25	100.00	98.64 µg/L	98.64
13C2-PFDoA	9014	2.33	100.00	97.44 µg/L	97.44
13C2-PFTeDA	9371	2.47	100.00	95.65 µg/L	95.65
13C6-PFHxA	18922	1.45	100.00	102.00 µg/L	102.00
13C9-PFDA	23282	2.14	100.00	102.68 µg/L	102.68



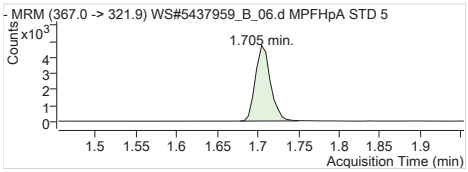


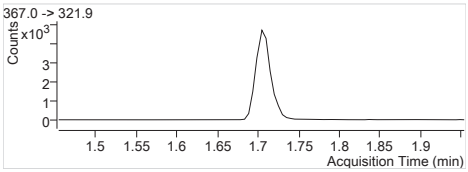
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Calibration



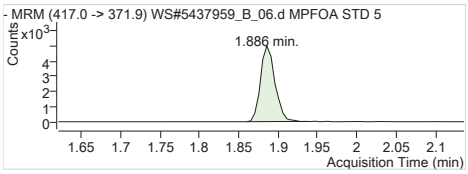


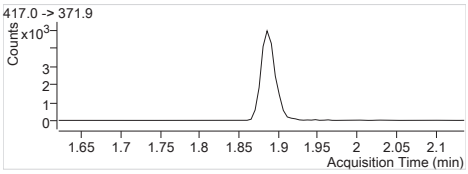
MPFHxS Internal Standard
RT (Exp. RT): 1.673 (1.678)
Concentration: 1 µg/L
Sample type: Calibration



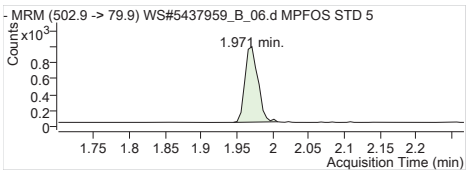


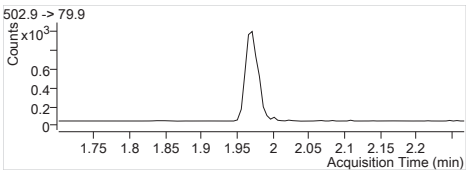
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Calibration



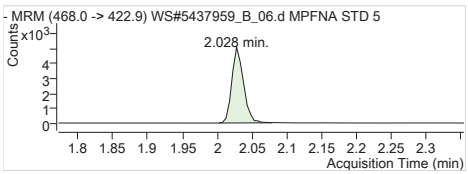


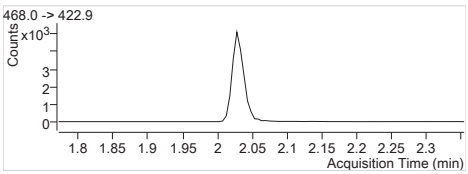
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Calibration



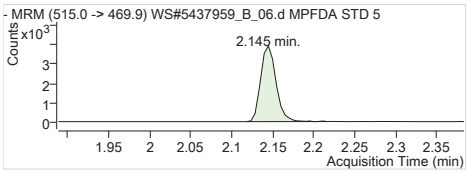


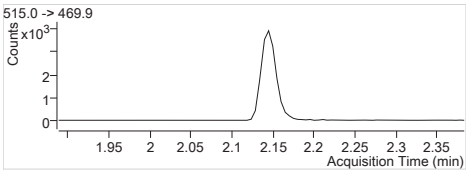
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: Calibration



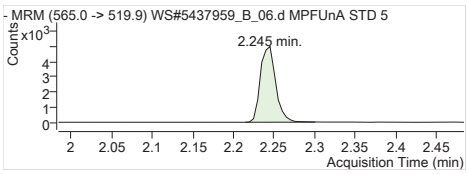


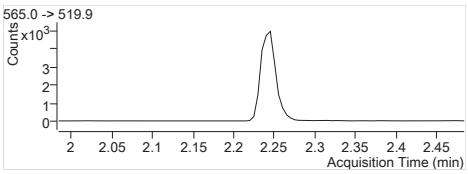
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Calibration



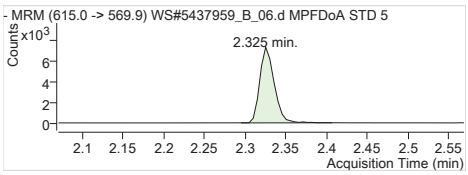


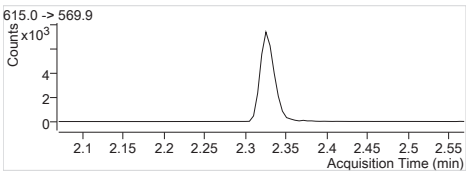
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Calibration



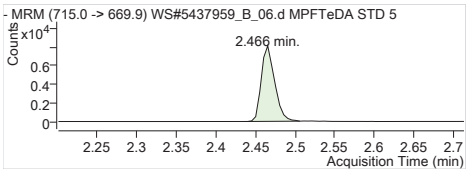


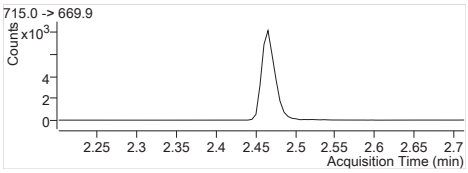
MPFUnA Internal Standard
RT (Exp. RT): 2.245 (2.240)
Concentration: 1 µg/L
Sample type: Calibration



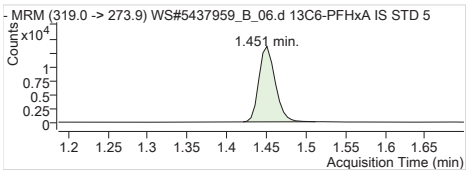


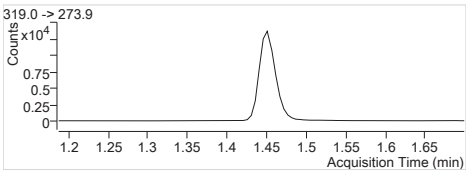
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Calibration



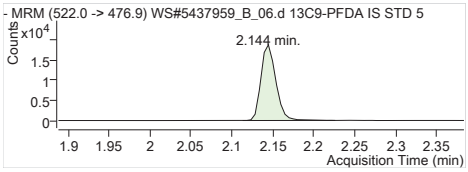


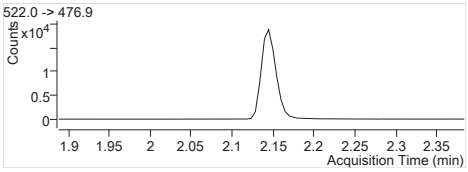
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Calibration



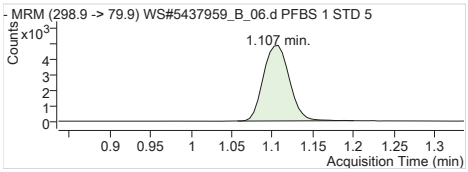


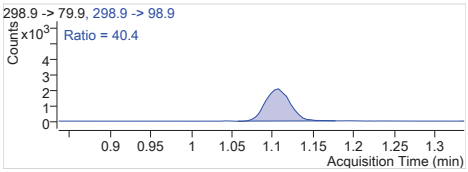
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Calibration



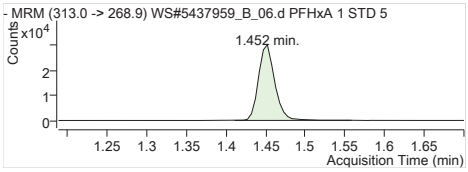


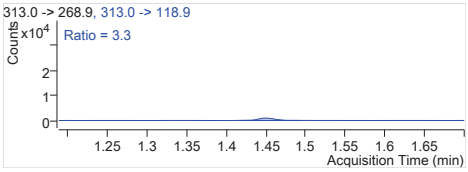
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Calibration



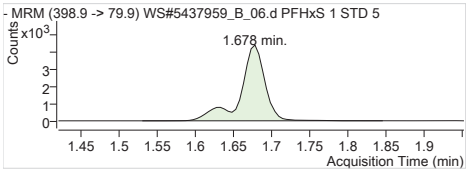


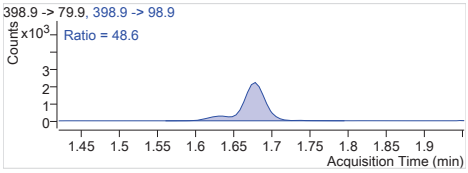
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.107 (1.107)
Calc. conc. 20.85 µg/L
Area ratio: 10.43437
Sample type: Calibration



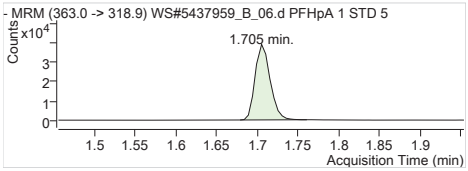


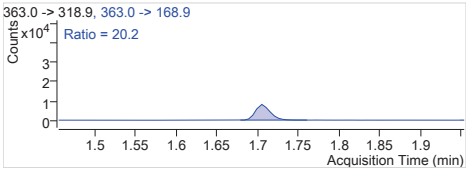
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 21.74 µg/L
Area ratio: 8.47221
Sample type: Calibration



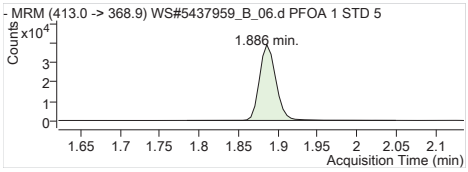


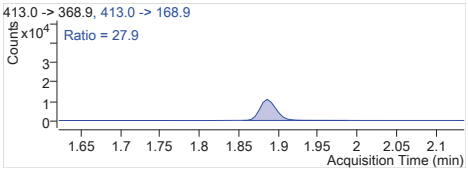
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 20.95 µg/L
Area ratio: 9.36166
Sample type: Calibration



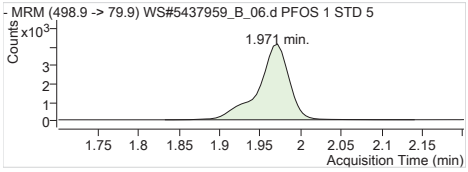


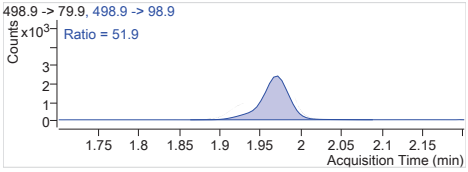
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 21.61 µg/L
Area ratio: 8.31945
Sample type: Calibration



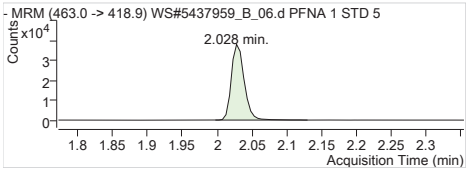


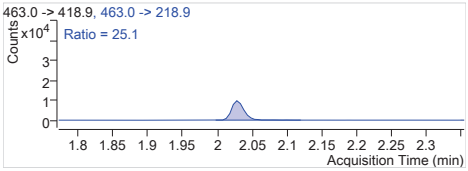
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 21.23 µg/L
Area ratio: 9.13423
Sample type: Calibration



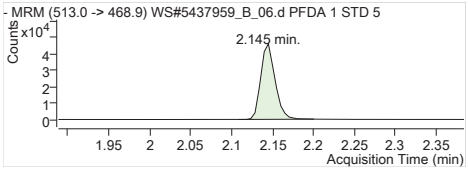


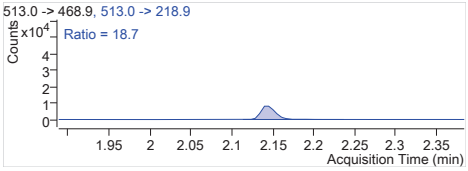
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 21.61 µg/L
Area ratio: 9.07450
Sample type: Calibration



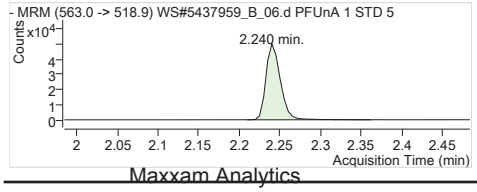


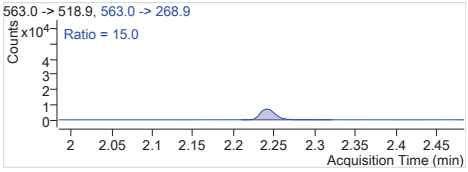
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 21.82 µg/L
Area ratio: 8.34617
Sample type: Calibration



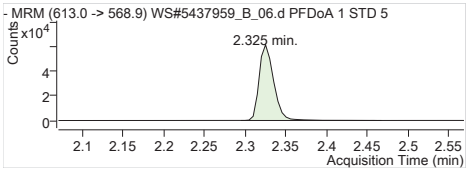


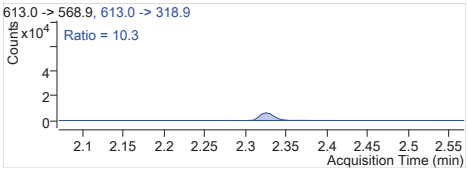
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 21.62 µg/L
Area ratio: 11.01791
Sample type: Calibration



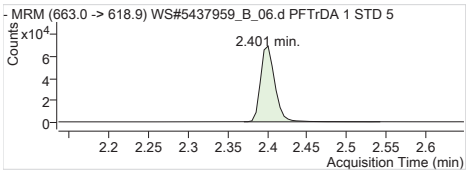


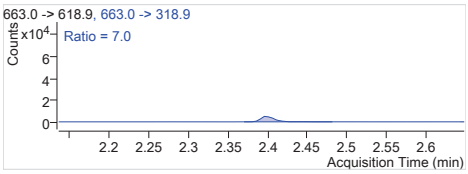
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 21.84 µg/L
Area ratio: 9.53519
Sample type: Calibration



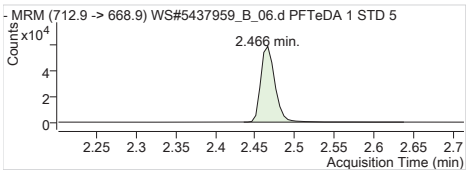


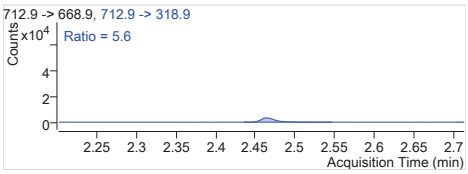
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 21.21 µg/L
Area ratio: 8.42922
Sample type: Calibration



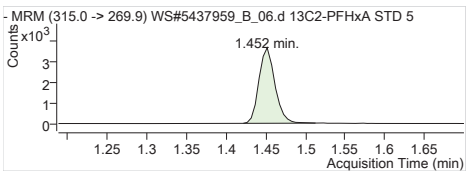


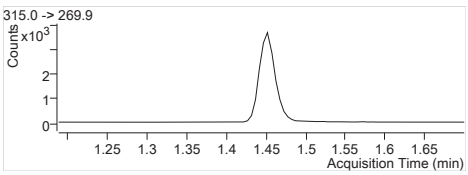
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.401 (2.401)
Calc. conc. 22.04 µg/L
Area ratio: 9.30788
Sample type: Calibration



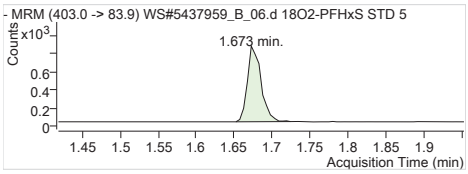


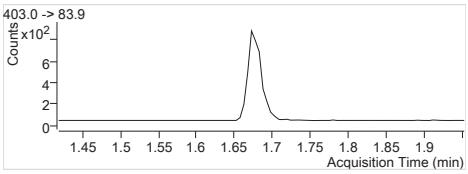
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 22.23 µg/L
Area ratio: 7.79162
Sample type: Calibration



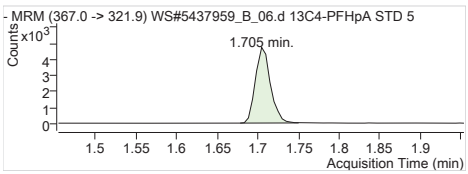


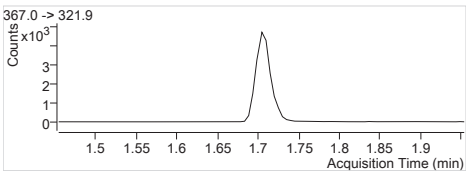
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 96.99 µg/L
Area ratio: 0.26435
Sample type: Calibration



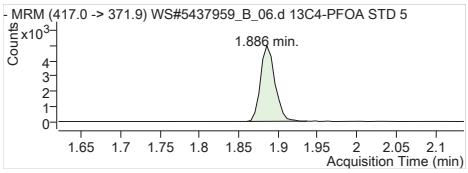


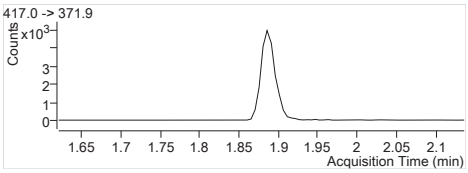
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.673 (1.678)
Calc. conc. 101.33 µg/L
Area ratio: 0.05597
Sample type: Calibration



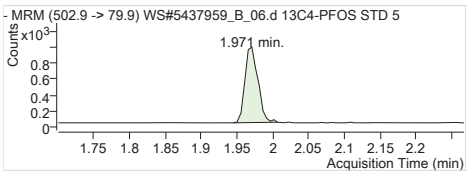


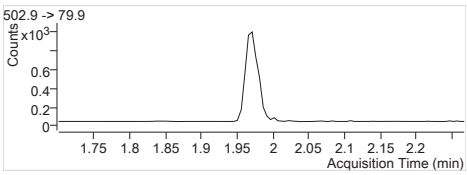
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 98.44 µg/L
Area ratio: 0.30969
Sample type: Calibration



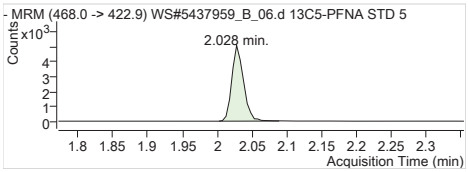


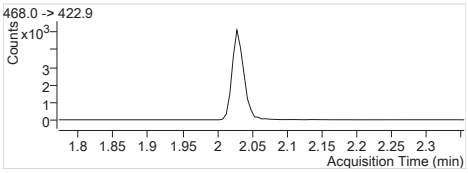
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 99.69 µg/L
Area ratio: 0.32835
Sample type: Calibration



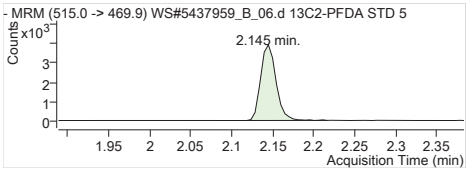


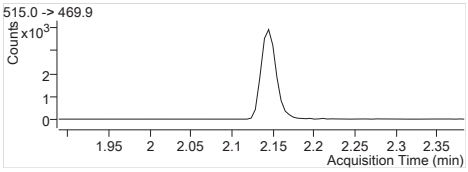
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 95.39 µg/L
Area ratio: 0.06384
Sample type: Calibration



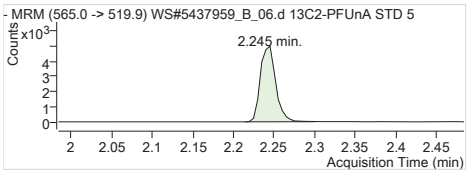


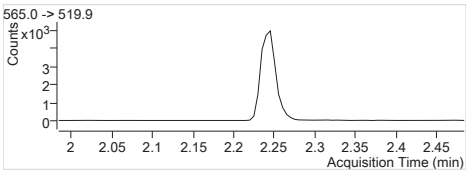
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 98.36 µg/L
Area ratio: 0.31101
Sample type: Calibration



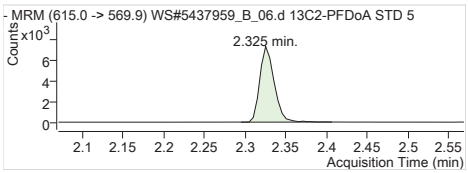


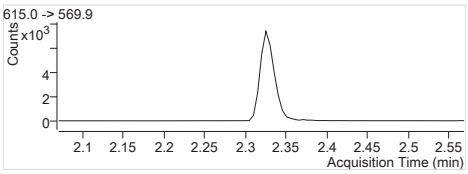
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 96.64 µg/L
Area ratio: 0.21338
Sample type: Calibration



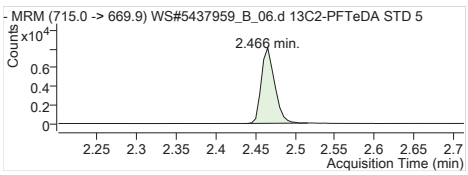


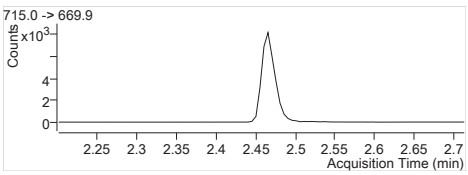
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.245 (2.240)
Calc. conc. 98.64 µg/L
Area ratio: 0.27704
Sample type: Calibration



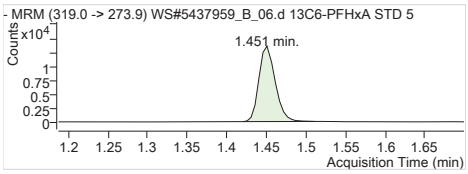


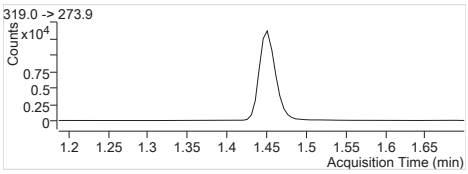
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 97.44 µg/L
Area ratio: 0.38717
Sample type: Calibration



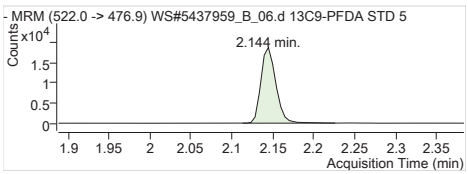


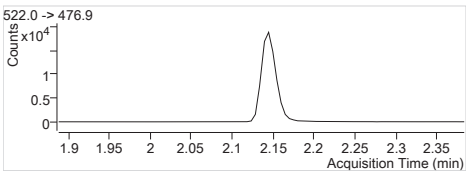
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 95.65 µg/L
Area ratio: 0.40250
Sample type: Calibration





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 102.00 µg/L
Area ratio: 0
Sample type: Calibration





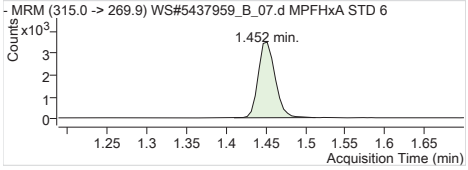
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 102.68 µg/L
Area ratio: 0
Sample type: Calibration

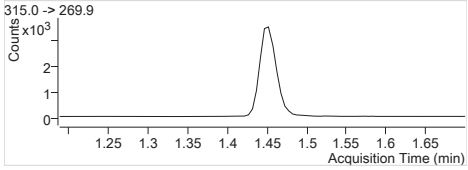
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**STD 6**	**Instrument**	LCMS04
Data File	WS#5437959_B_07.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A7
Acq. Date	2018/03/15 5:11:14 PM	**Injection Volume**	Per Method
Sample Annotation	-		

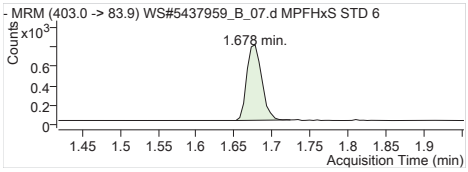
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	5151	1.45	1 µg/L		
MPFHxS	1066	1.68	1 µg/L		
MPFHpA	5984	1.70	1 µg/L		
MPFOA	6160	1.89	1 µg/L		
MPFOS	1255	1.97	1 µg/L		
MPFNA	5974	2.03	1 µg/L		
MPFDA	5094	2.14	1 µg/L		
MPFUnA	6344	2.24	1 µg/L		
MPFDoA	9296	2.33	1 µg/L		
MPFTeDA	9883	2.47	1 µg/L		
13C6-PFHxA IS	18727	1.45	1 µg/L		
13C9-PFDA IS	22205	2.14	1 µg/L		

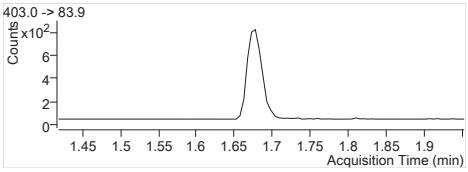
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	23660	1.10	41.70	44.34 µg/L	106.33
PFHxA 1	90045	1.45	41.70	44.78 µg/L	107.38
PFHxS 1	21189	1.68	41.70	44.46 µg/L	106.62
PFHpA 1	102484	1.71	41.70	44.47 µg/L	106.63
PFOA 1	118690	1.89	41.70	44.70 µg/L	107.19
PFOS 1	23719	1.97	41.70	44.97 µg/L	107.84
PFNA 1	101154	2.03	41.70	44.31 µg/L	106.26
PFDA 1	116138	2.14	41.70	44.70 µg/L	107.19
PFUnA 1	124796	2.24	41.70	44.99 µg/L	107.88
PFDoA 1	167153	2.33	41.70	45.21 µg/L	108.41
PFTrDA 1	185359	2.40	41.70	44.34 µg/L	106.33
PFTeDA 1	153139	2.47	41.70	44.18 µg/L	105.94
13C2-PFHxA	5151	1.45	100.00	100.92 µg/L	100.92
18O2-PFHxS	1066	1.68	100.00	103.07 µg/L	103.07
13C4-PFHpA	5984	1.70	100.00	101.57 µg/L	101.57
13C4-PFOA	6160	1.89	100.00	99.87 µg/L	99.87
13C4-PFOS	1255	1.97	100.00	100.13 µg/L	100.13
13C5-PFNA	5974	2.03	100.00	100.89 µg/L	100.89
13C2-PFDA	5094	2.14	100.00	103.89 µg/L	103.89
13C2-PFUnA	6344	2.24	100.00	101.72 µg/L	101.72
13C2-PFDoA	9296	2.33	100.00	105.36 µg/L	105.36
13C2-PFTeDA	9822	2.47	100.00	105.12 µg/L	105.12
13C6-PFHxA	18727	1.45	100.00	100.95 µg/L	100.95
13C9-PFDA	22205	2.14	100.00	97.93 µg/L	97.93



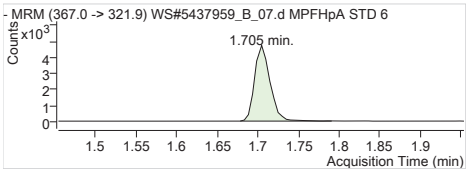


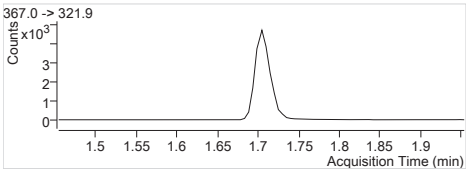
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Calibration



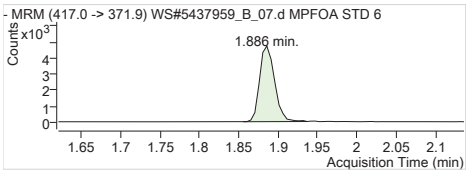


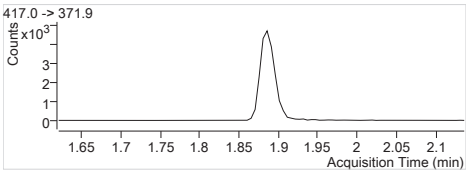
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: Calibration



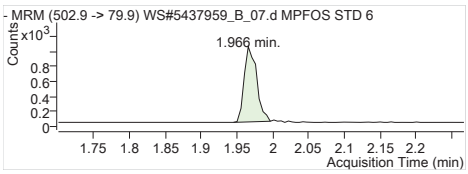


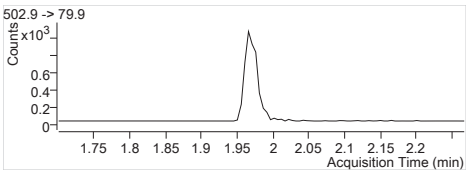
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: Calibration



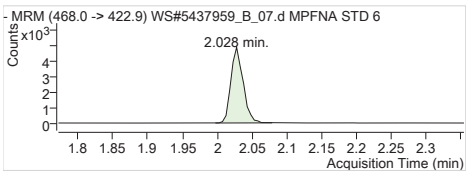


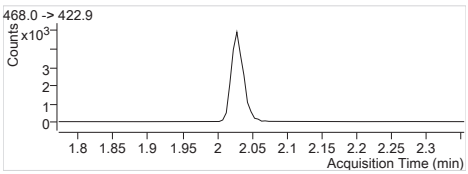
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: Calibration



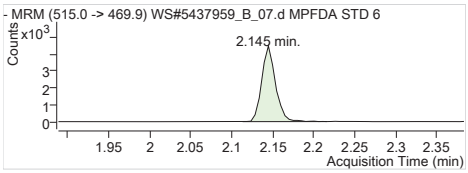


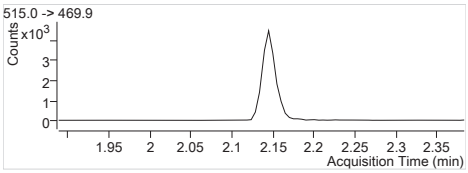
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: Calibration



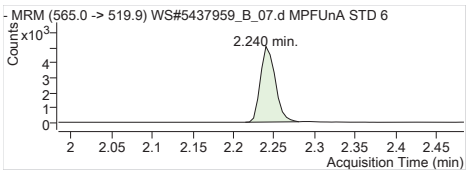


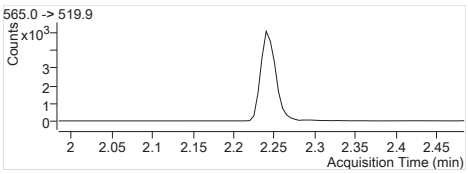
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: Calibration



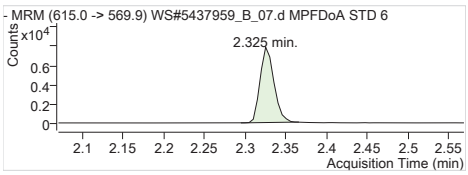


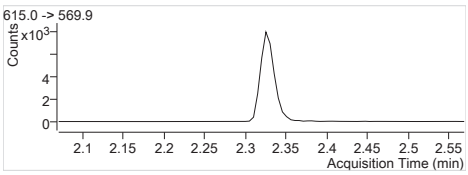
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: Calibration



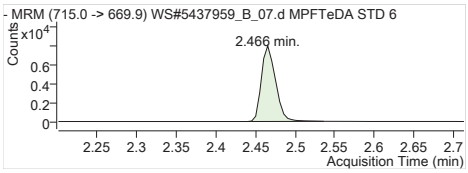


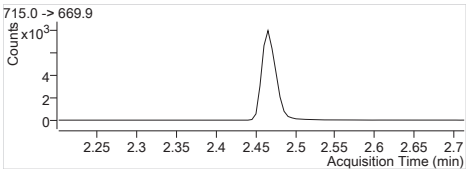
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: Calibration



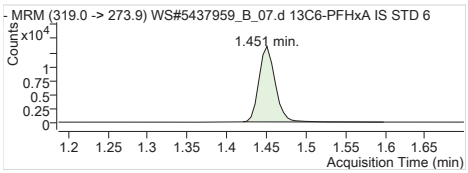


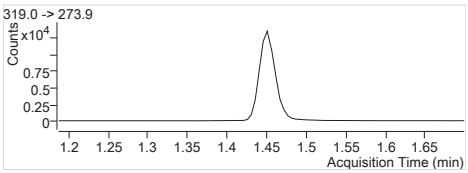
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: Calibration



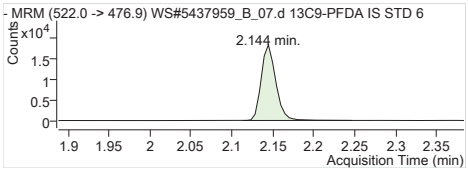


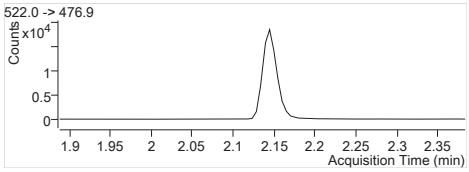
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: Calibration



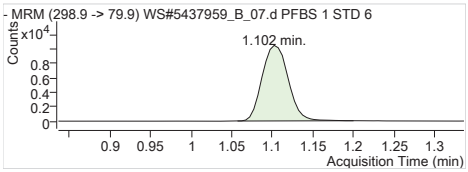


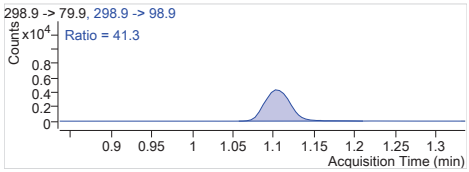
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: Calibration



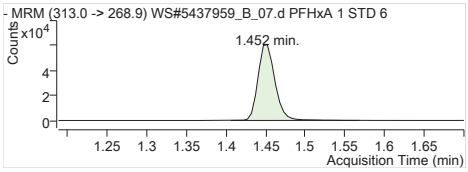


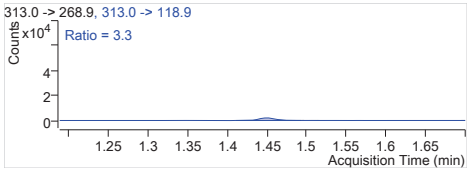
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: Calibration



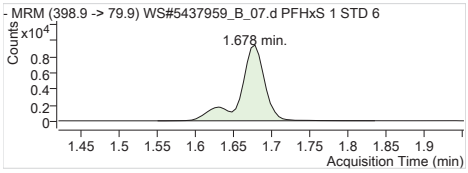


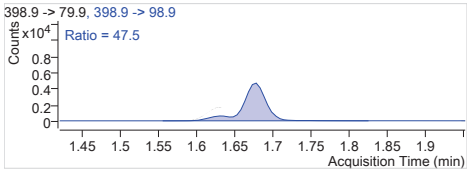
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.102 (1.107)
Calc. conc. 44.34 µg/L
Area ratio: 22.19512
Sample type: Calibration



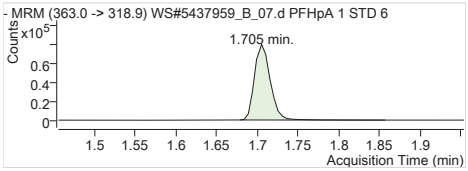


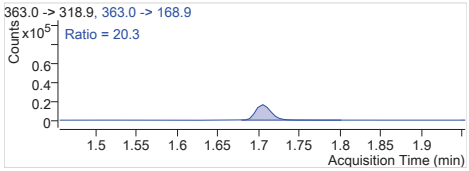
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 44.78 µg/L
Area ratio: 17.48107
Sample type: Calibration



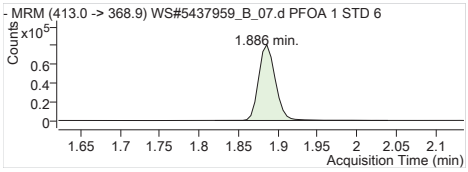


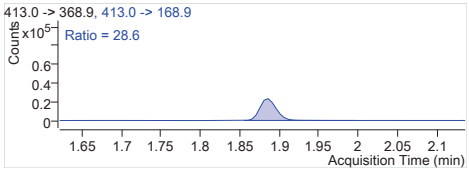
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 44.46 µg/L
Area ratio: 19.87711
Sample type: Calibration



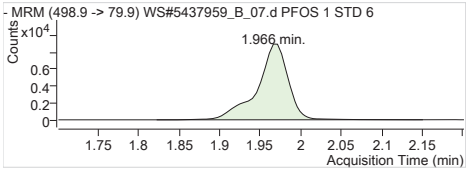


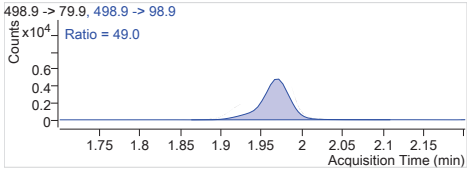
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 44.47 µg/L
Area ratio: 17.12634
Sample type: Calibration



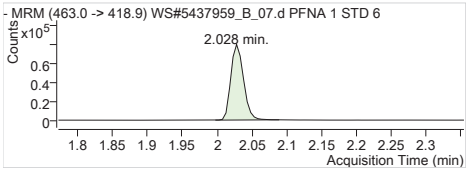


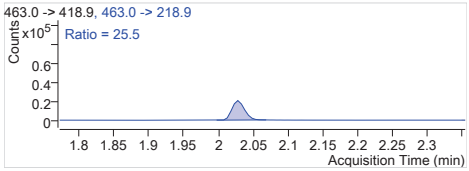
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 44.70 µg/L
Area ratio: 19.26786
Sample type: Calibration



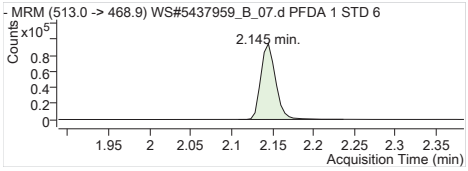


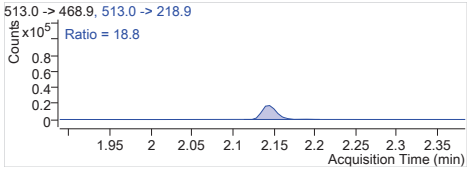
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 44.97 µg/L
Area ratio: 18.89960
Sample type: Calibration



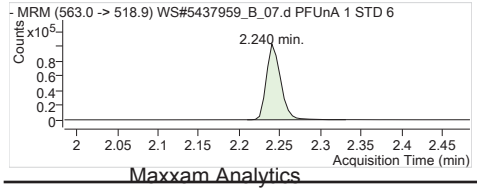


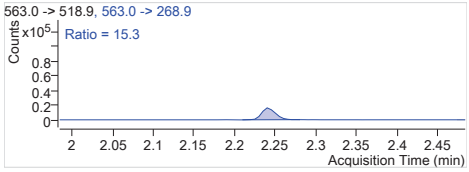
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 44.31 µg/L
Area ratio: 16.93237
Sample type: Calibration



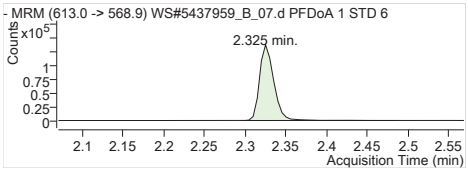


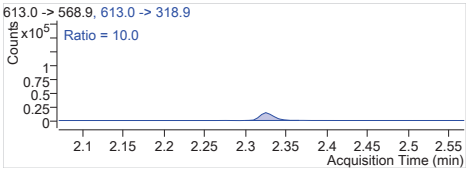
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 44.70 µg/L
Area ratio: 22.79898
Sample type: Calibration



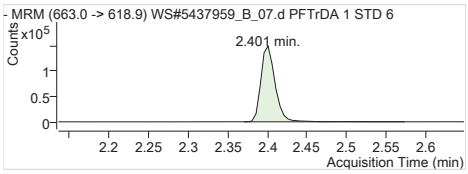


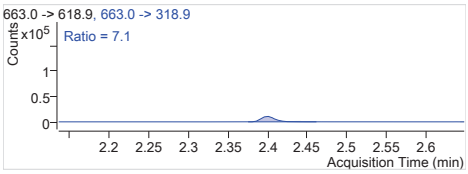
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 44.99 µg/L
Area ratio: 19.67150
Sample type: Calibration



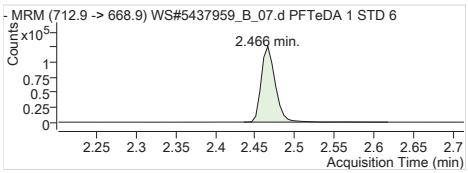


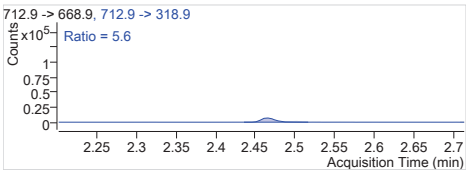
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 45.21 µg/L
Area ratio: 17.98117
Sample type: Calibration



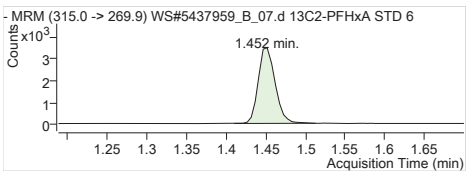


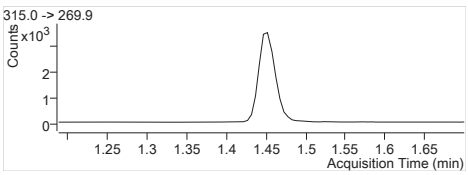
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.401 (2.401)
Calc. conc. 44.34 µg/L
Area ratio: 18.75534
Sample type: Calibration



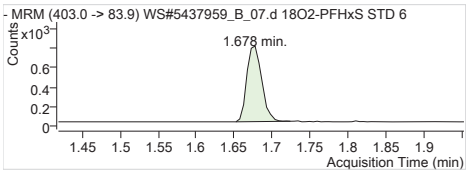


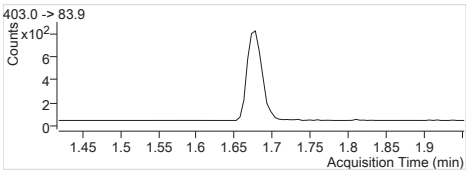
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 44.18 µg/L
Area ratio: 15.49519
Sample type: Calibration



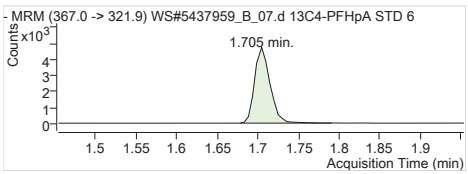


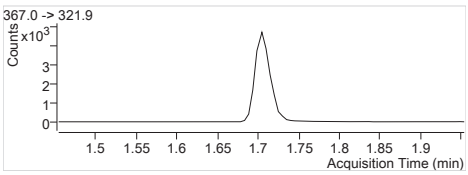
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 100.92 µg/L
Area ratio: 0.27506
Sample type: Calibration



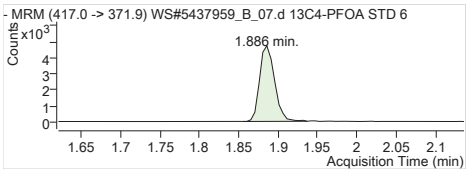


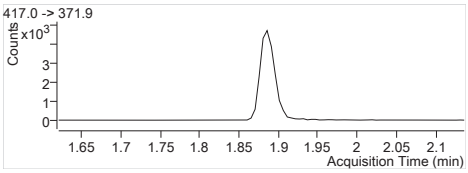
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 103.07 µg/L
Area ratio: 0.05692
Sample type: Calibration



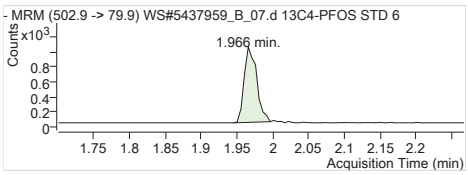


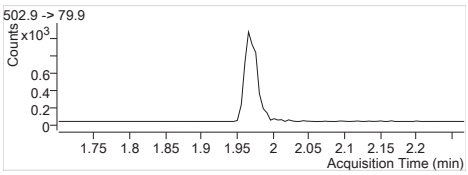
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 101.57 µg/L
Area ratio: 0.31954
Sample type: Calibration



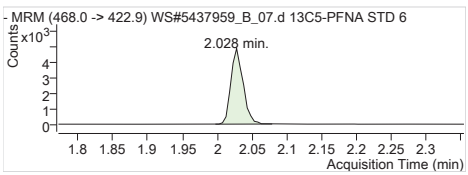


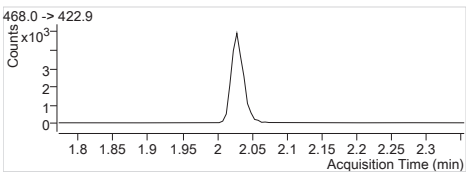
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 99.87 µg/L
Area ratio: 0.32894
Sample type: Calibration



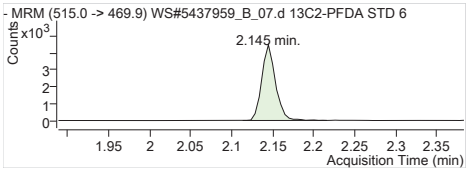


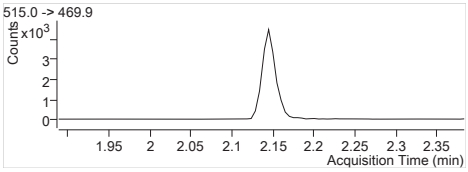
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 100.13 µg/L
Area ratio: 0.06702
Sample type: Calibration



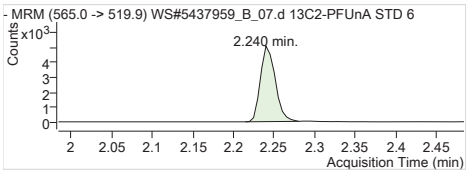


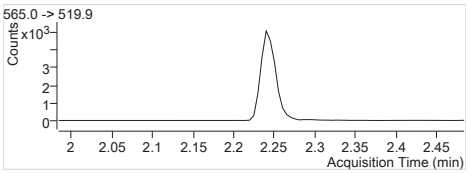
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 100.89 µg/L
Area ratio: 0.31900
Sample type: Calibration



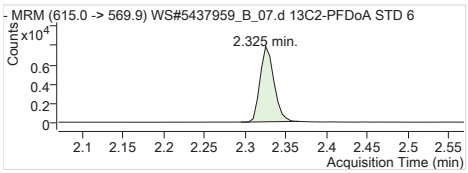


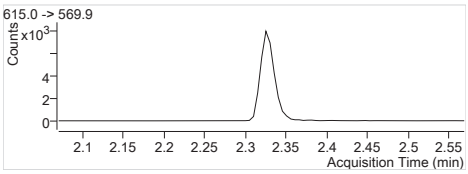
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 103.89 µg/L
Area ratio: 0.22941
Sample type: Calibration



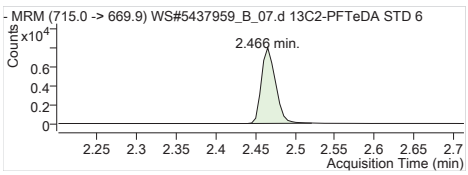


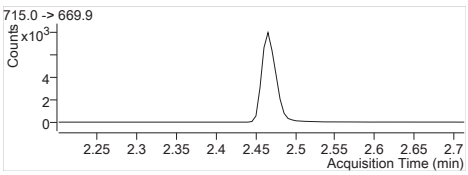
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 101.72 µg/L
Area ratio: 0.28570
Sample type: Calibration



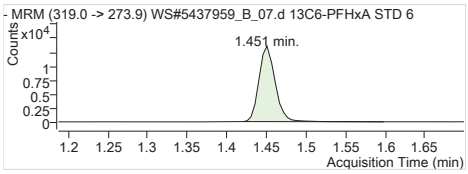


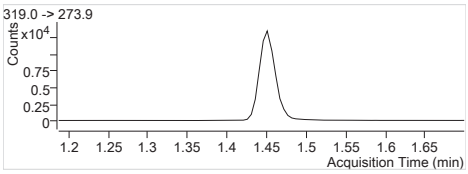
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 105.36 µg/L
Area ratio: 0.41864
Sample type: Calibration



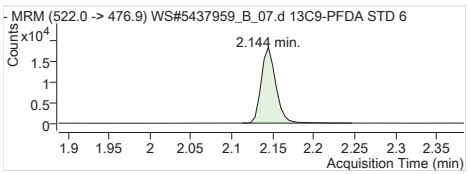


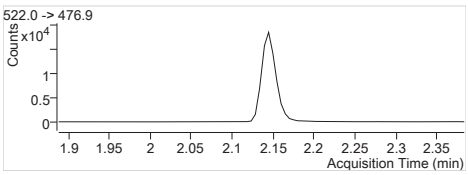
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 105.12 µg/L
Area ratio: 0.44233
Sample type: Calibration





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 100.95 µg/L
Area ratio: 0
Sample type: Calibration





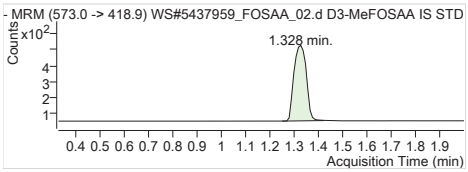
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 97.93 µg/L
Area ratio: 0
Sample type: Calibration

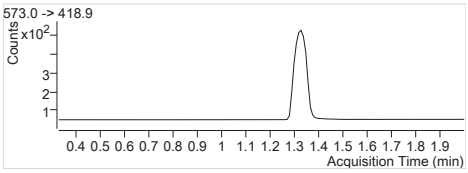
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**STD 1**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_02.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A2
Acq. Date	2018/03/13 8:37:22 PM	**Injection Volume**	Per Method
Sample Annotation	-		

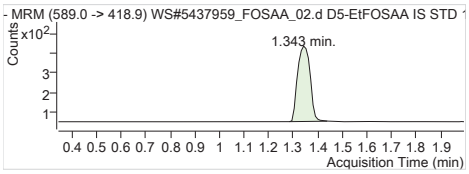
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1688	1.33	1 µg/L		
D5-EtFOSAA IS	1359	1.34	1 µg/L		
13C9-PFDA IS	19181	0.95	1 µg/L		

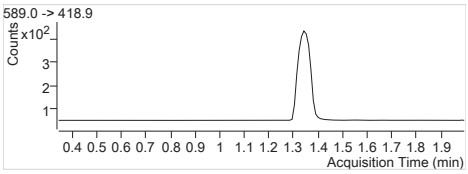
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	528	1.32	0.83	0.85 µg/L	102.10
EtFOSAA 1	514	1.34	0.83	0.93 µg/L	112.52
D3-MeFOSAA	1704	1.33	100.00	100.86 µg/L	100.86
D5-EtFOSAA	1373	1.34	100.00	95.04 µg/L	95.04
13C9-PFDA	19174	0.95	100.00	101.23 µg/L	101.23



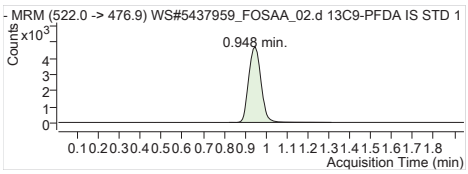


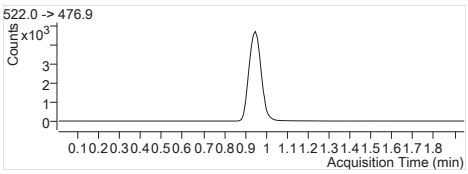
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Calibration



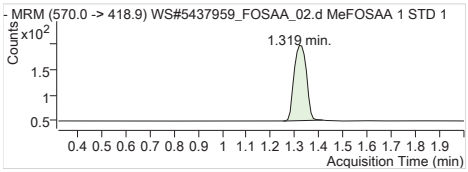


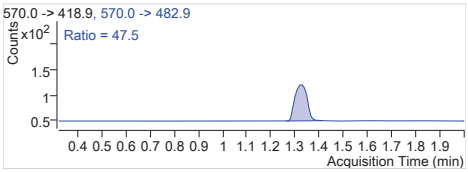
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Calibration



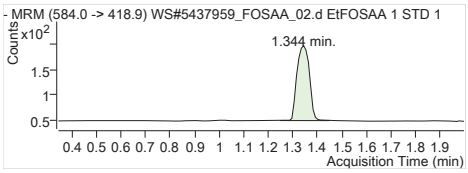


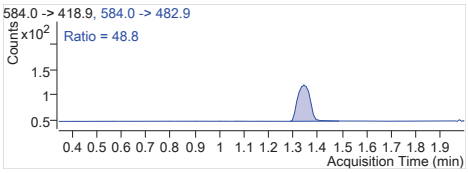
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: Calibration



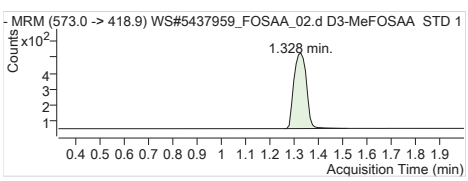


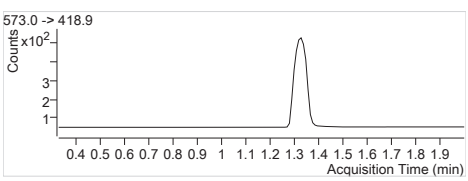
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.319 (1.319)
Calc. conc. 0.85 µg/L
Area ratio: 0.31280
Sample type: Calibration



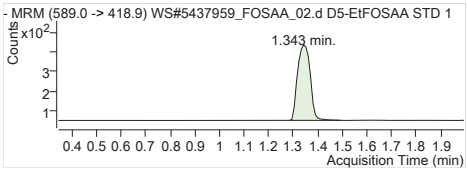


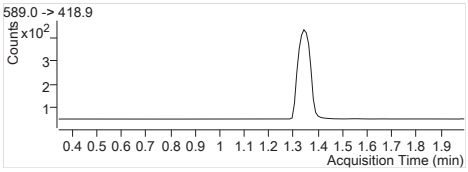
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 0.93 µg/L
Area ratio: 0.37822
Sample type: Calibration



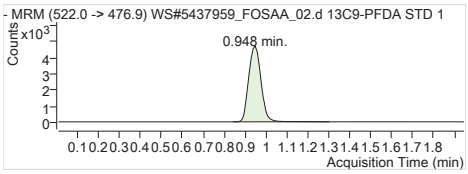


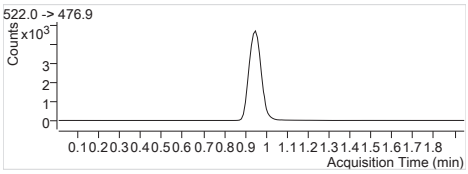
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 100.86 µg/L
Area ratio: 0.08884
Sample type: Calibration





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	95.04 µg/L
Area ratio:	0.07158
Sample type:	Calibration





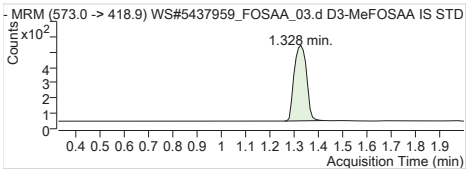
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	101.23 µg/L
Area ratio:	0
Sample type:	Calibration

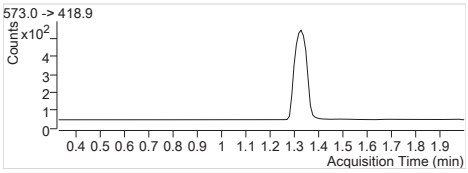
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**STD 2**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_03.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A3
Acq. Date	2018/03/13 8:39:48 PM	**Injection Volume**	Per Method
Sample Annotation	-		

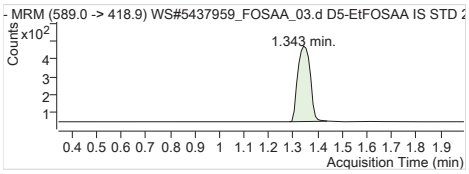
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1742	1.33	1 µg/L		
D5-EtFOSAA IS	1486	1.34	1 µg/L		
13C9-PFDA IS	18460	0.95	1 µg/L		

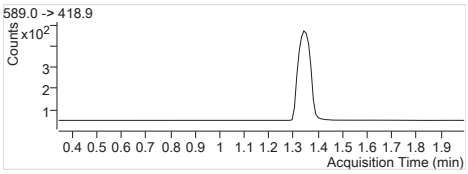
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	972	1.33	1.70	1.56 µg/L	91.53
EtFOSAA 1	911	1.34	1.70	1.51 µg/L	88.89
D3-MeFOSAA	1750	1.33	100.00	107.63 µg/L	107.63
D5-EtFOSAA	1497	1.34	100.00	107.68 µg/L	107.68
13C9-PFDA	18462	0.95	100.00	97.48 µg/L	97.48



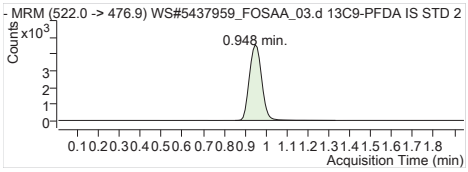


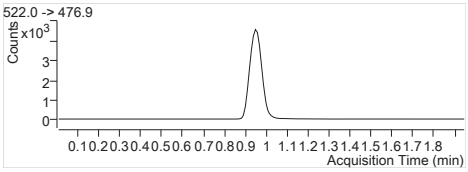
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Calibration



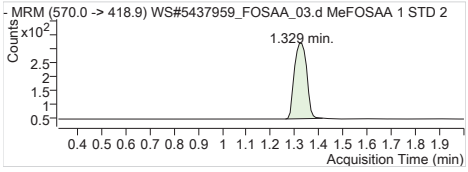


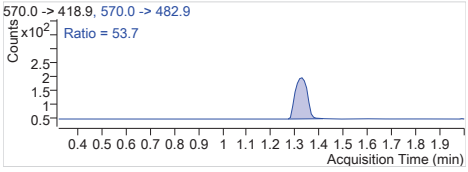
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Calibration



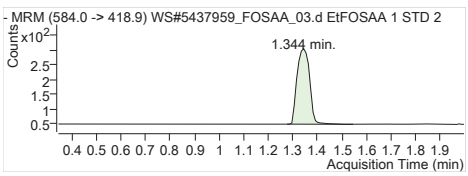


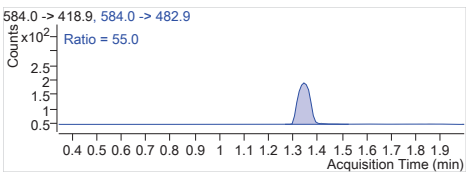
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: Calibration



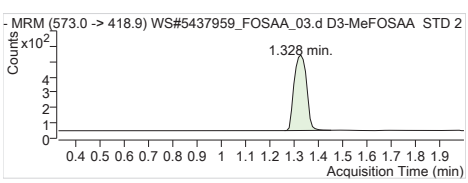


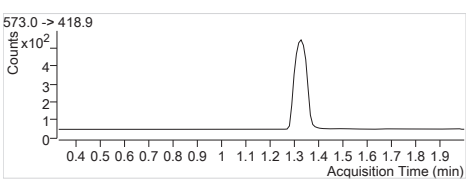
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.329 (1.319)
Calc. conc. 1.56 µg/L
Area ratio: 0.55798
Sample type: Calibration



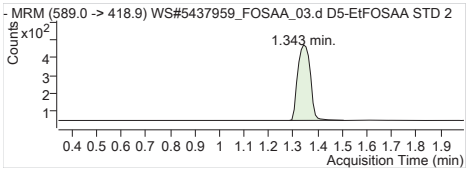


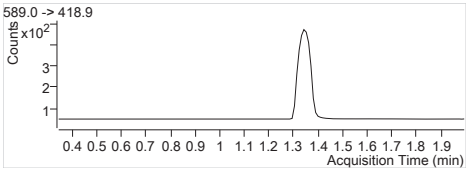
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 1.51 µg/L
Area ratio: 0.61306
Sample type: Calibration



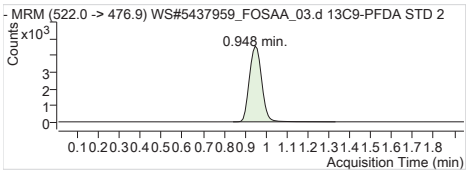


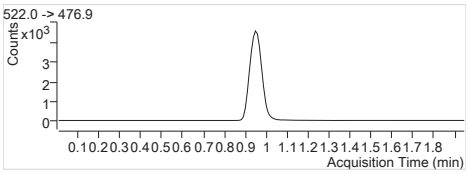
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 107.63 µg/L
Area ratio: 0.09480
Sample type: Calibration





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	107.68 µg/L
Area ratio:	0.08109
Sample type:	Calibration





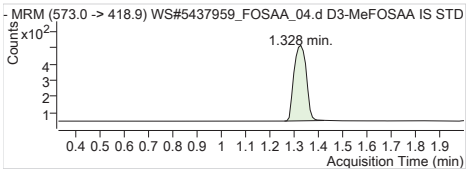
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	97.48 µg/L
Area ratio:	0
Sample type:	Calibration

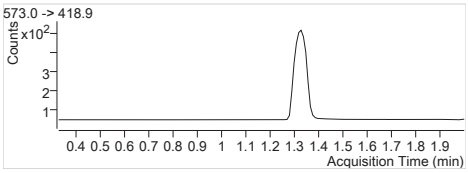
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**STD 3**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_04.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A4
Acq. Date	2018/03/13 8:42:13 PM	**Injection Volume**	Per Method
Sample Annotation	-		

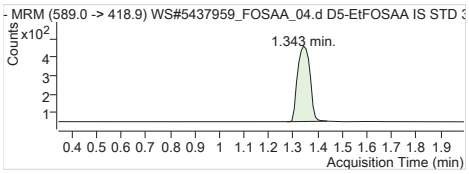
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1637	1.33	1 µg/L		
D5-EtFOSAA IS	1434	1.34	1 µg/L		
13C9-PFDA IS	19960	0.94	1 µg/L		

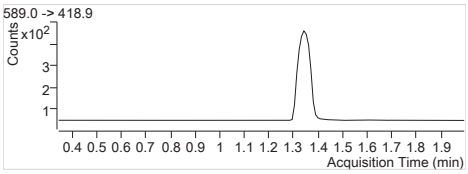
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	3158	1.32	5.00	5.52 µg/L	110.36
EtFOSAA 1	3003	1.34	5.00	5.15 µg/L	103.04
D3-MeFOSAA	1654	1.33	100.00	94.08 µg/L	94.08
D5-EtFOSAA	1451	1.34	100.00	96.52 µg/L	96.52
13C9-PFDA	19973	0.94	100.00	105.45 µg/L	105.45



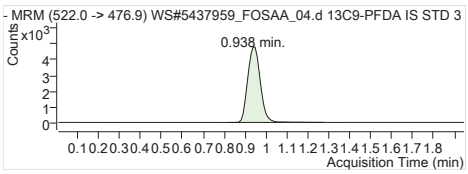


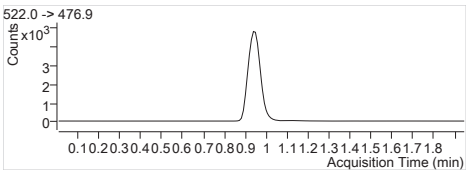
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Calibration



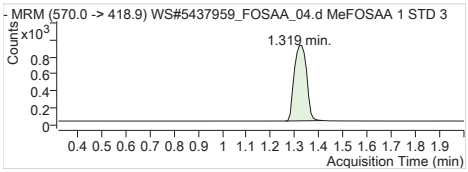


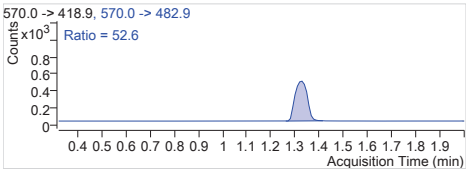
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Calibration



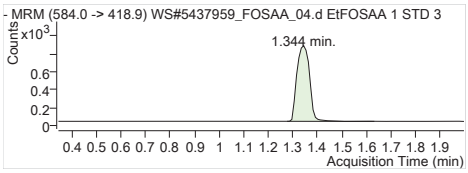


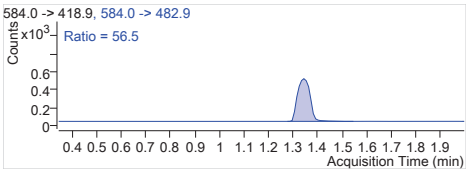
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.938 (0.948)
Concentration: 1 µg/L
Sample type: Calibration



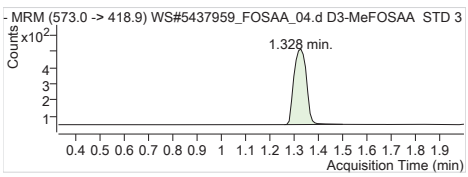


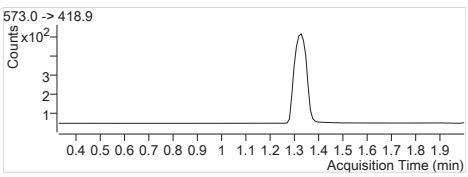
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.319 (1.319)
Calc. conc. 5.52 µg/L
Area ratio: 1.92914
Sample type: Calibration



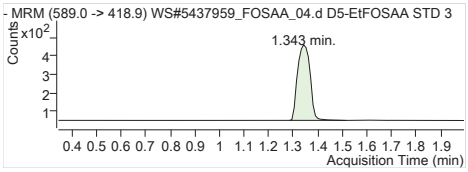


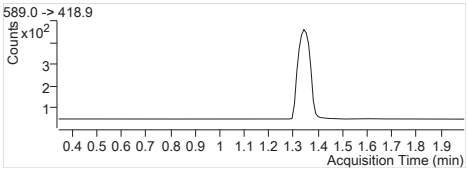
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 5.15 µg/L
Area ratio: 2.09414
Sample type: Calibration



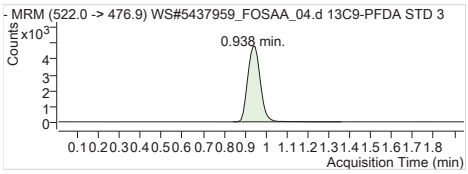


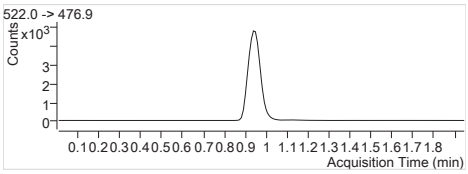
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 94.08 µg/L
Area ratio: 0.08287
Sample type: Calibration





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	96.52 µg/L
Area ratio:	0.07270
Sample type:	Calibration





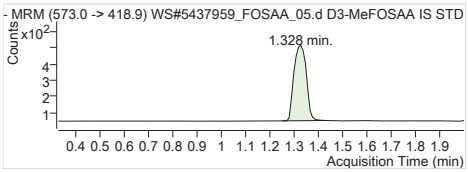
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.938 (0.948)
Calc. conc.	105.45 µg/L
Area ratio:	0
Sample type:	Calibration

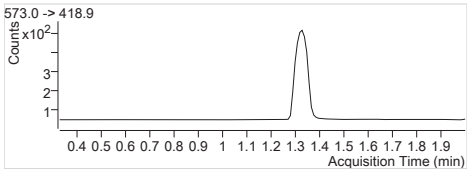
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**STD 4**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_05.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A5
Acq. Date	2018/03/13 8:44:38 PM	**Injection Volume**	Per Method
Sample Annotation	-		

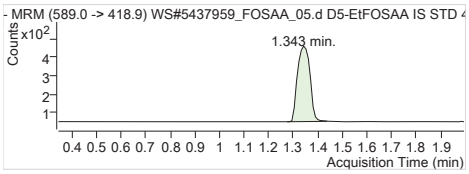
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1646	1.33	1 µg/L		
D5-EtFOSAA IS	1445	1.34	1 µg/L		
13C9-PFDA IS	18363	0.95	1 µg/L		

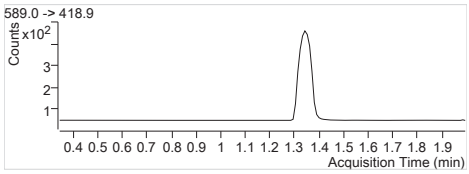
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	7404	1.32	12.50	12.94 µg/L	103.53
EtFOSAA 1	7406	1.34	12.50	12.60 µg/L	100.83
D3-MeFOSAA	1654	1.33	100.00	102.26 µg/L	102.26
D5-EtFOSAA	1457	1.34	100.00	105.35 µg/L	105.35
13C9-PFDA	18485	0.95	100.00	97.60 µg/L	97.60



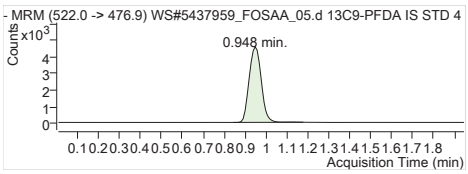


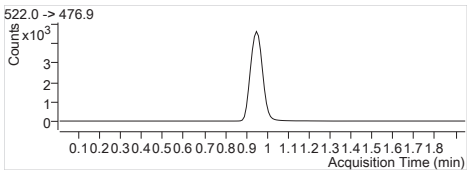
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Calibration



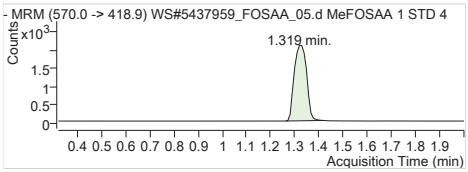


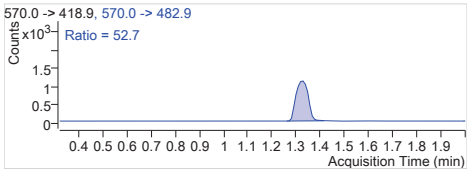
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Calibration



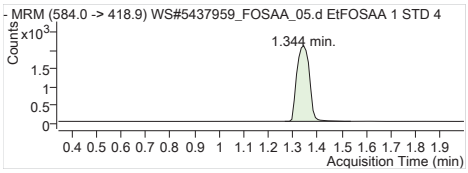


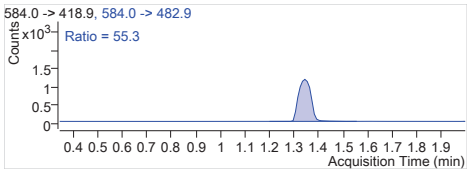
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: Calibration



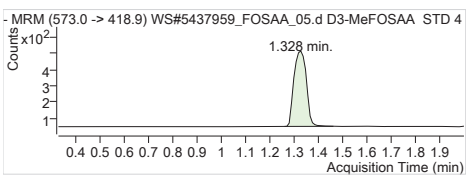


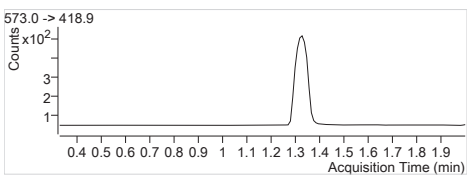
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.319 (1.319)
Calc. conc. 12.94 µg/L
Area ratio: 4.49818
Sample type: Calibration



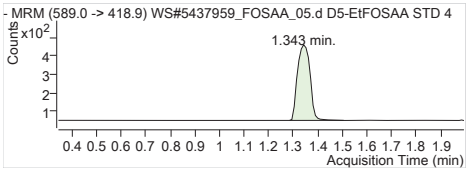


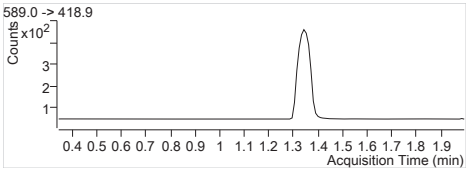
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 12.60 µg/L
Area ratio: 5.12526
Sample type: Calibration



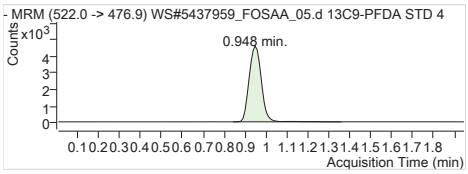


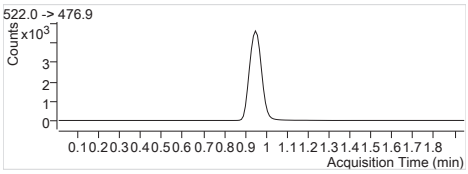
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 102.26 µg/L
Area ratio: 0.09007
Sample type: Calibration





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	105.35 µg/L
Area ratio:	0.07934
Sample type:	Calibration





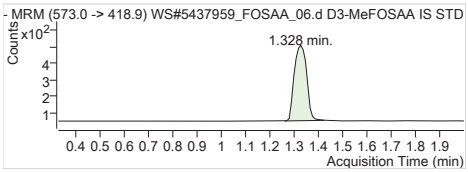
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	97.60 µg/L
Area ratio:	0
Sample type:	Calibration

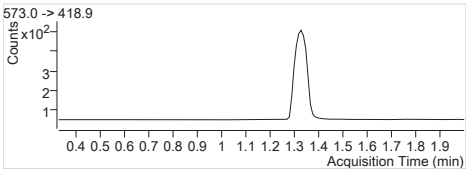
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**STD 5**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_06.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A6
Acq. Date	2018/03/13 8:47:02 PM	**Injection Volume**	Per Method
Sample Annotation	-		

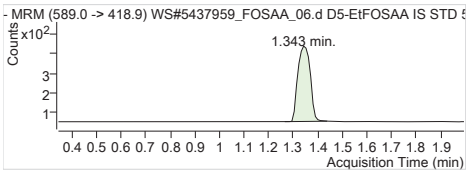
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1626	1.33	1 µg/L		
D5-EtFOSAA IS	1365	1.34	1 µg/L		
13C9-PFDA IS	19119	0.95	1 µg/L		

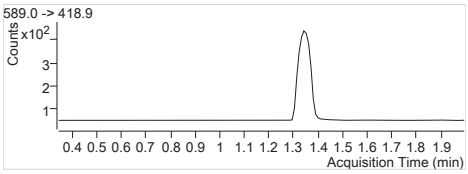
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	12159	1.33	25.00	21.55 µg/L	86.21
EtFOSAA 1	12191	1.34	25.00	21.96 µg/L	87.84
D3-MeFOSAA	1632	1.33	100.00	96.91 µg/L	96.91
D5-EtFOSAA	1376	1.34	100.00	95.56 µg/L	95.56
13C9-PFDA	19130	0.95	100.00	101.00 µg/L	101.00



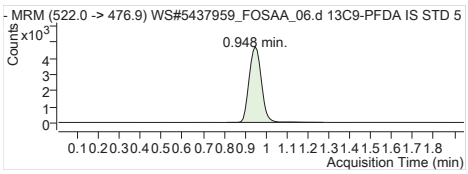


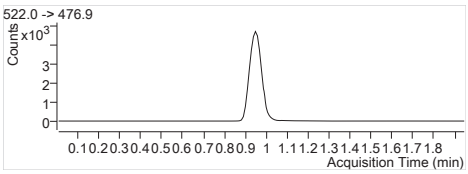
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Calibration



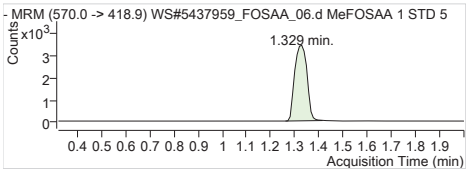


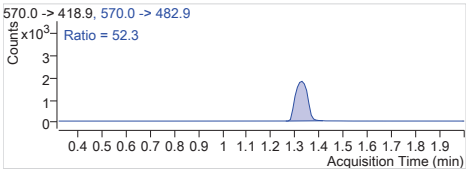
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Calibration



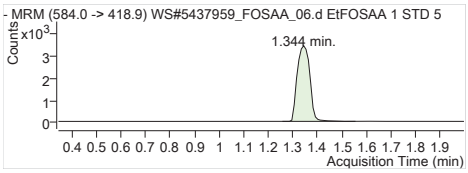


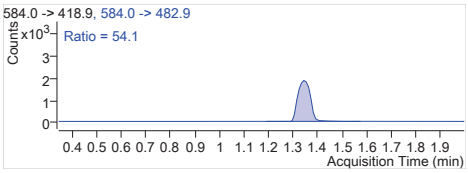
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: Calibration



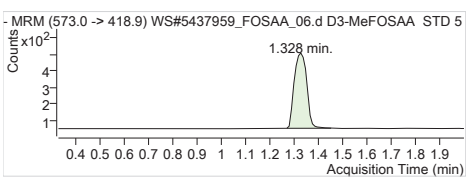


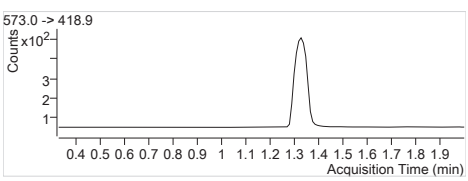
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.329 (1.319)
Calc. conc. 21.55 µg/L
Area ratio: 7.47786
Sample type: Calibration



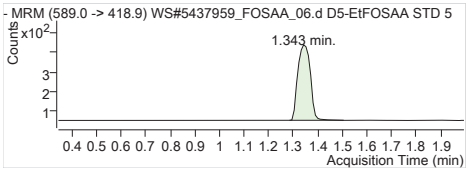


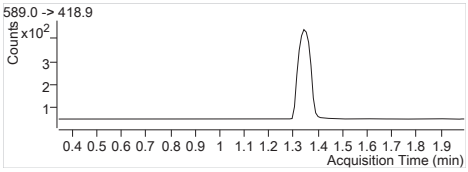
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 21.96 µg/L
Area ratio: 8.93114
Sample type: Calibration



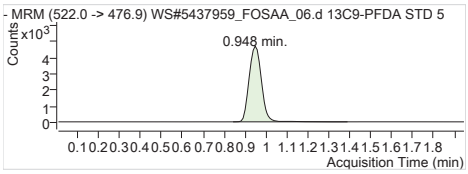


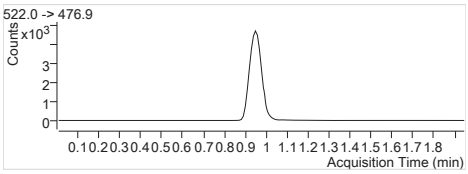
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 96.91 µg/L
Area ratio: 0.08536
Sample type: Calibration





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	95.56 µg/L
Area ratio:	0.07197
Sample type:	Calibration





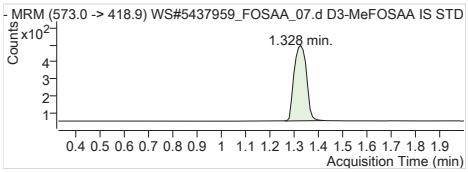
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	101.00 µg/L
Area ratio:	0
Sample type:	Calibration

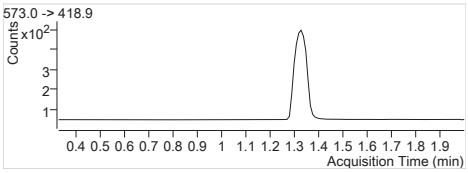
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**STD 6**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_07.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A7
Acq. Date	2018/03/13 8:49:27 PM	**Injection Volume**	Per Method
Sample Annotation	-		

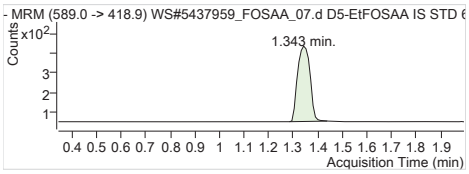
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1587	1.33	1 µg/L		
D5-EtFOSAA IS	1367	1.34	1 µg/L		
13C9-PFDA IS	18419	0.95	1 µg/L		

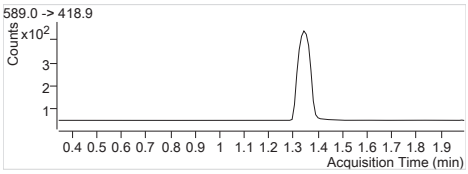
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	24369	1.33	41.70	44.32 µg/L	106.27
EtFOSAA 1	24783	1.34	41.70	44.57 µg/L	106.88
D3-MeFOSAA	1594	1.33	100.00	98.25 µg/L	98.25
D5-EtFOSAA	1385	1.34	100.00	99.84 µg/L	99.84
13C9-PFDA	18417	0.95	100.00	97.24 µg/L	97.24



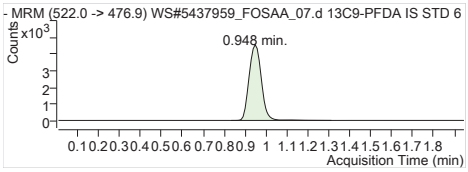


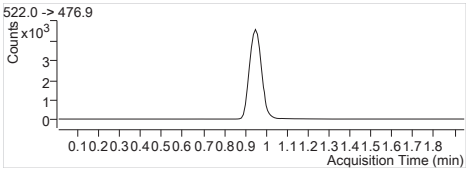
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: Calibration



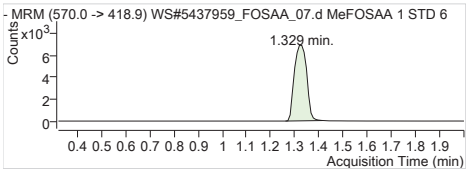


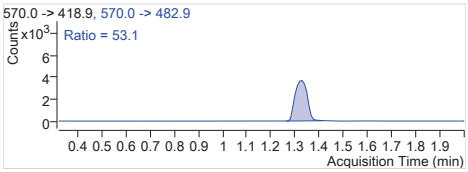
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: Calibration



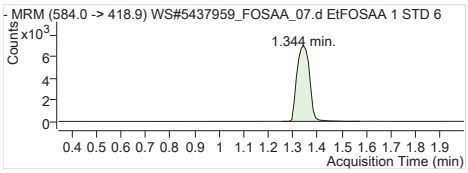


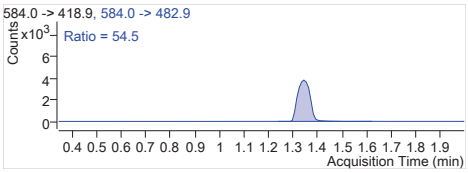
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: Calibration



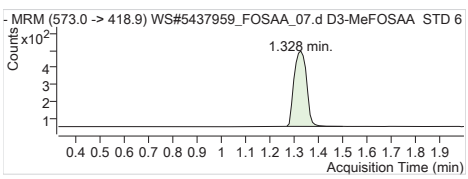


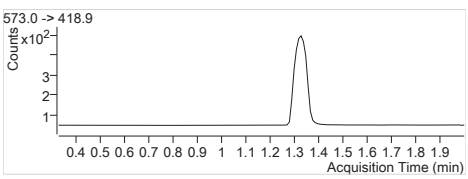
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.329 (1.319)
Calc. conc. 44.32 µg/L
Area ratio: 15.35539
Sample type: Calibration



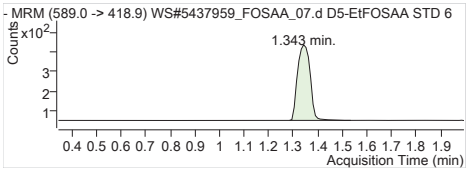


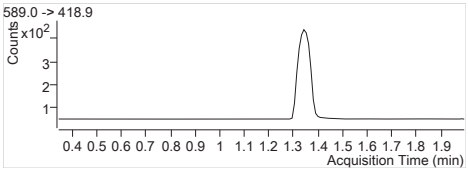
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 44.57 µg/L
Area ratio: 18.12948
Sample type: Calibration



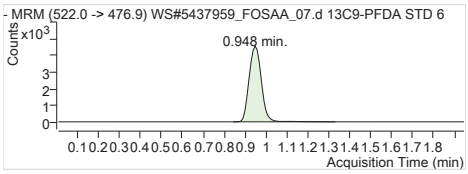


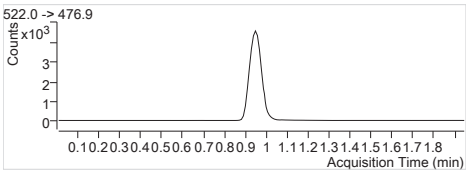
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 98.25 µg/L
Area ratio: 0.08654
Sample type: Calibration





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	99.84 µg/L
Area ratio:	0.07519
Sample type:	Calibration





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	97.24 µg/L
Area ratio:	0
Sample type:	Calibration

Quantitation Results

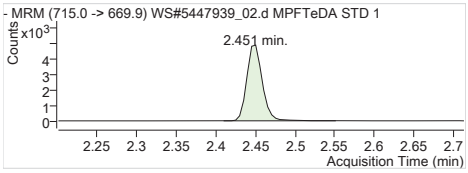
Agilent Technologies

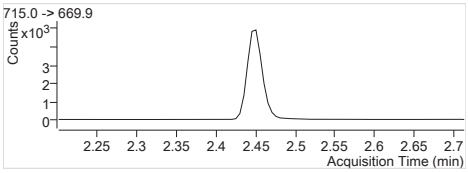
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**STD 1**	**Instrument**	LCMS04
Data File	WS#5447939_02.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A2
Acq. Date	2018/03/21 1:49:36 PM	**Injection Volume**	Per Method
Sample Annotation	-		

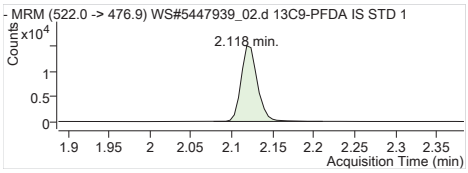
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6612	2.45	1 µg/L		
13C9-PFDA IS	20769	2.12	1 µg/L		

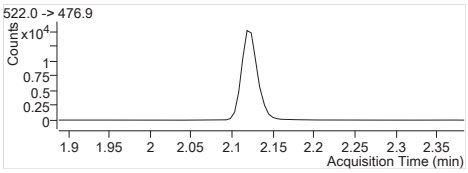
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	2534	2.38	0.83	0.70 µg/L	84.78
PFTeDA 1	2216	2.45	0.83	0.71 µg/L	85.81
13C2-PFTeDA	6612	2.45	100.00	99.20 µg/L	99.20
13C9-PFDA	20769	2.12	100.00	99.32 µg/L	99.32



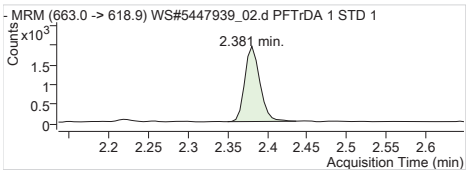


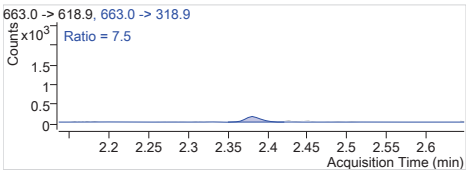
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: Calibration



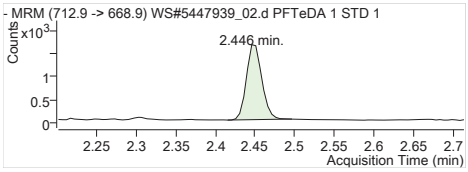


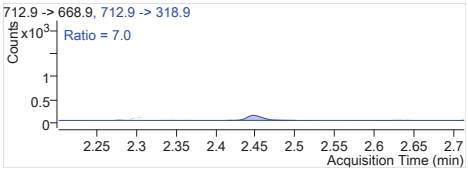
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.118 (2.118)
Concentration: 1 µg/L
Sample type: Calibration



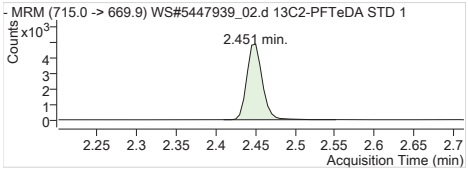


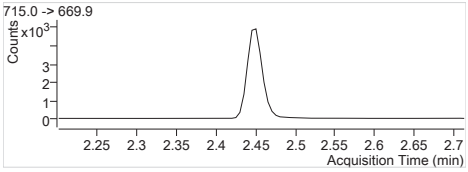
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 0.70 µg/L
Area ratio: 0.38324
Sample type: Calibration



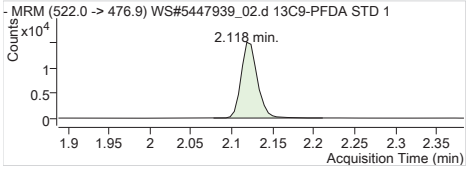


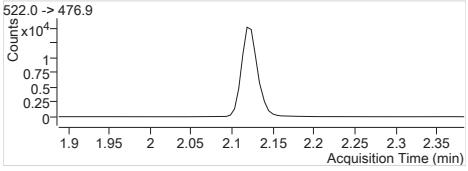
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 0.71 µg/L
Area ratio: 0.33515
Sample type: Calibration





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 99.20 µg/L
Area ratio: 0.31836
Sample type: Calibration





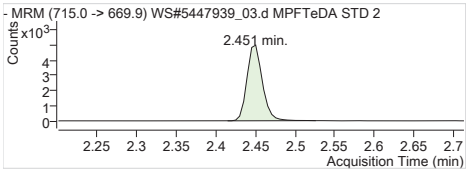
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.118 (2.118)
Calc. conc. 99.32 µg/L
Area ratio: 0
Sample type: Calibration

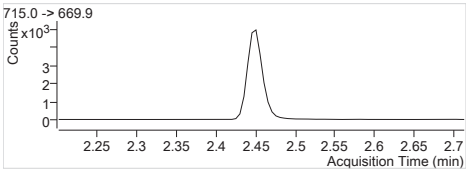
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**STD 2**	**Instrument**	LCMS04
Data File	WS#5447939_03.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A3
Acq. Date	2018/03/21 1:54:31 PM	**Injection Volume**	Per Method
Sample Annotation	-		

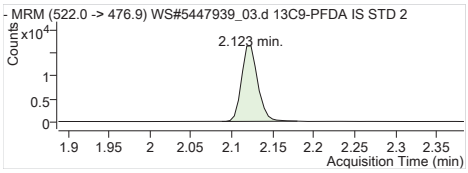
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6633	2.45	1 µg/L		
13C9-PFDA IS	22773	2.12	1 µg/L		

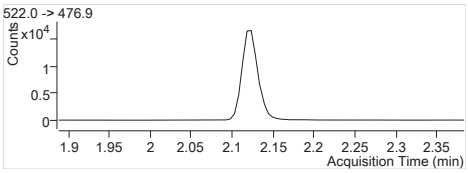
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	5864	2.38	1.70	1.83 µg/L	107.57
PFTeDA 1	4937	2.45	1.70	1.80 µg/L	105.83
13C2-PFTeDA	6633	2.45	100.00	90.76 µg/L	90.76
13C9-PFDA	22773	2.12	100.00	108.90 µg/L	108.90



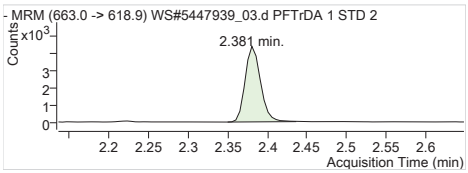


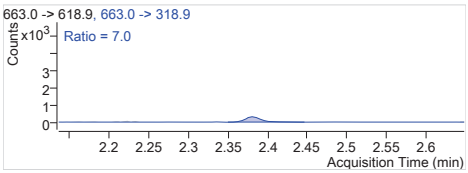
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: Calibration



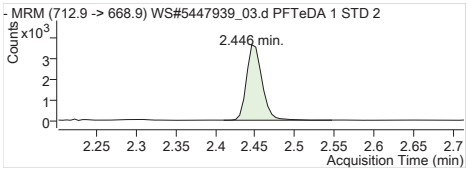


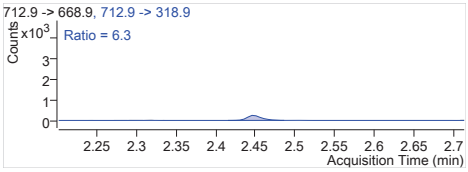
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Calibration



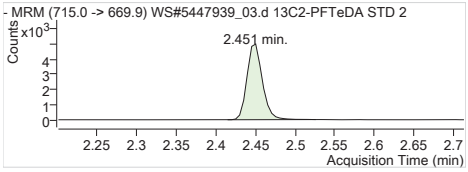


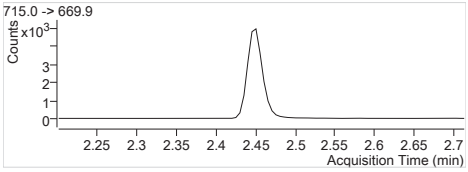
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 1.83 µg/L
Area ratio: 0.88406
Sample type: Calibration



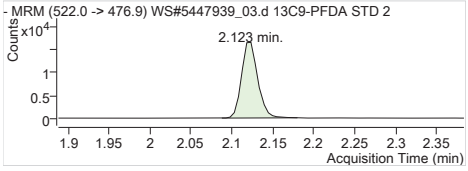


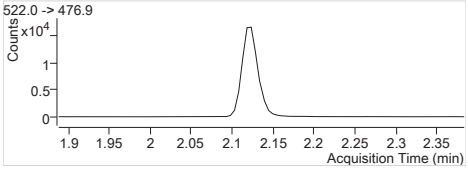
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 1.80 µg/L
Area ratio: 0.74431
Sample type: Calibration





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 90.76 µg/L
Area ratio: 0.29127
Sample type: Calibration





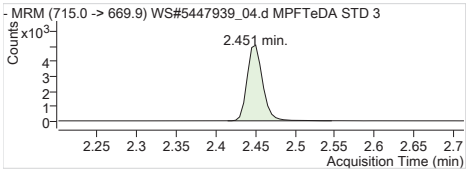
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 108.90 µg/L
Area ratio: 0
Sample type: Calibration

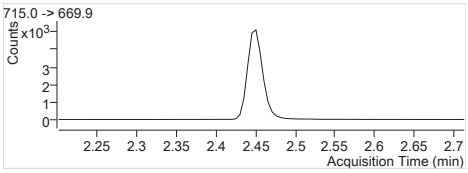
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**STD 3**	**Instrument**	LCMS04
Data File	WS#5447939_04.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A4
Acq. Date	2018/03/21 1:59:26 PM	**Injection Volume**	Per Method
Sample Annotation	-		

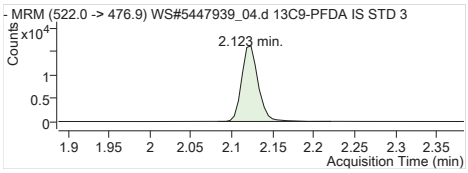
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6825	2.45	1 µg/L		
13C9-PFDA IS	22560	2.12	1 µg/L		

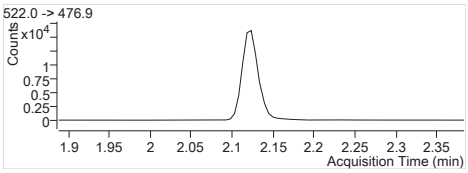
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	17877	2.38	5.00	5.73 µg/L	114.54
PFTeDA 1	14958	2.45	5.00	5.64 µg/L	112.88
13C2-PFTeDA	6825	2.45	100.00	94.27 µg/L	94.27
13C9-PFDA	22560	2.12	100.00	107.88 µg/L	107.88



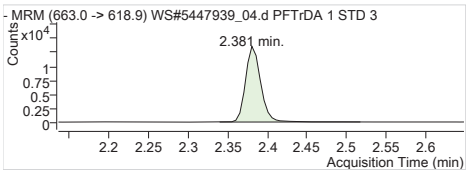


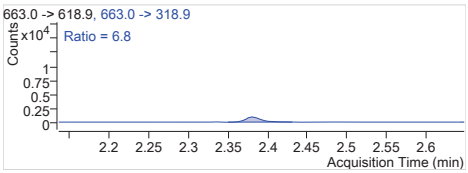
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: Calibration



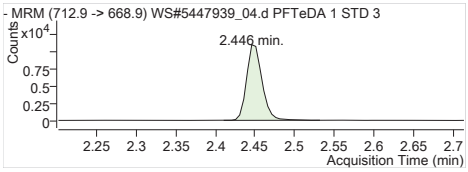


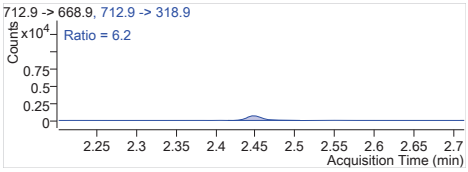
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Calibration



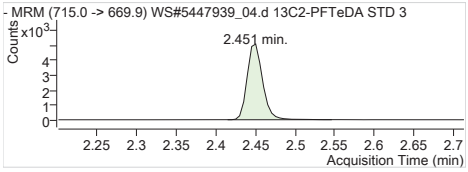


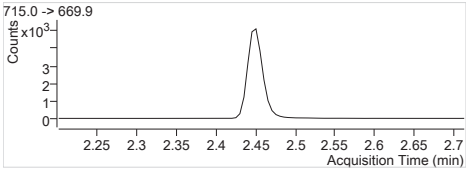
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 5.73 µg/L
Area ratio: 2.61934
Sample type: Calibration



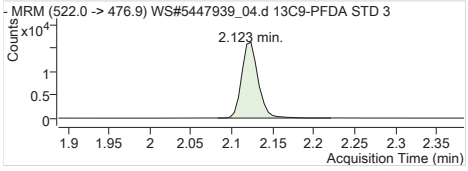


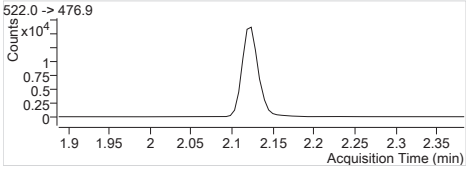
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 5.64 µg/L
Area ratio: 2.19165
Sample type: Calibration





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 94.27 µg/L
Area ratio: 0.30253
Sample type: Calibration





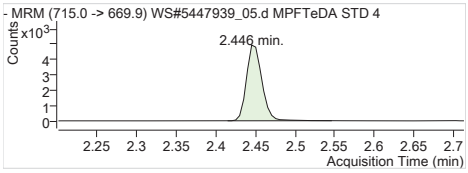
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 107.88 µg/L
Area ratio: 0
Sample type: Calibration

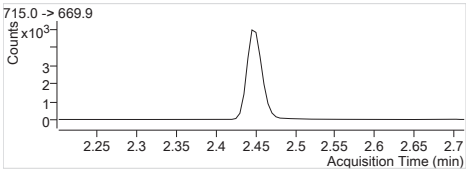
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**STD 4**	**Instrument**	LCMS04
Data File	WS#5447939_05.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A5
Acq. Date	2018/03/21 2:04:21 PM	**Injection Volume**	Per Method
Sample Annotation	-		

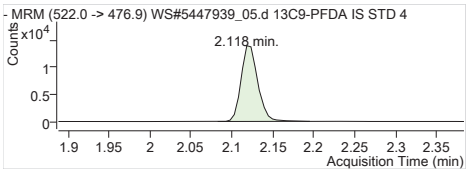
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6613	2.45	1 µg/L		
13C9-PFDA IS	19572	2.12	1 µg/L		

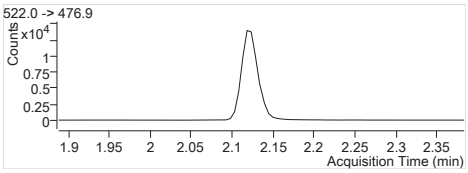
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	35196	2.38	12.50	11.80 µg/L	94.39
PFTeDA 1	30245	2.45	12.50	11.97 µg/L	95.77
13C2-PFTeDA	6613	2.45	100.00	105.28 µg/L	105.28
13C9-PFDA	19572	2.12	100.00	93.59 µg/L	93.59



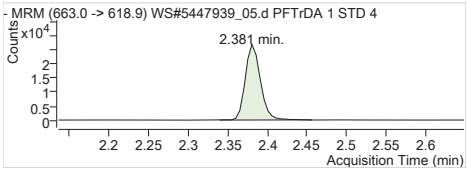


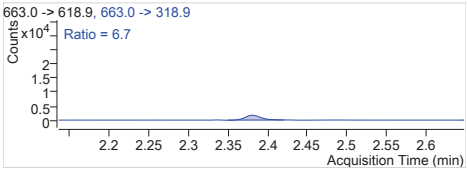
MPFTeDA Internal Standard
RT (Exp. RT): 2.446 (2.446)
Concentration: 1 µg/L
Sample type: Calibration



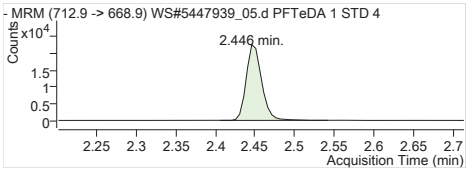


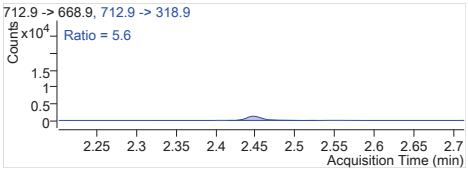
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.118 (2.118)
Concentration: 1 µg/L
Sample type: Calibration



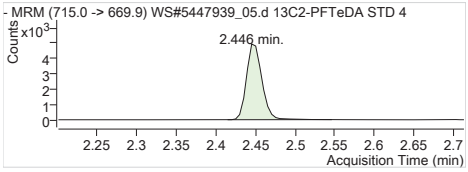


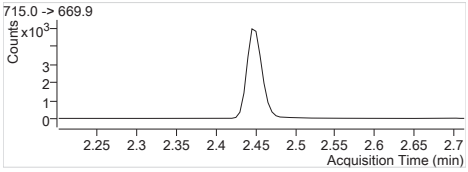
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 11.80 µg/L
Area ratio: 5.32224
Sample type: Calibration



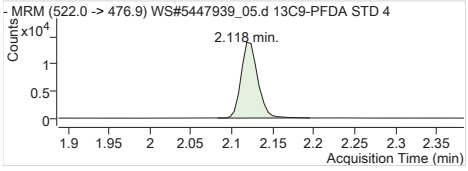


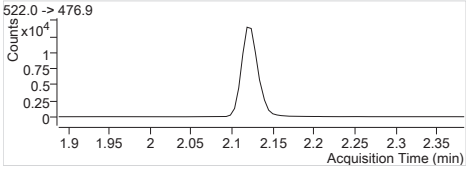
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 11.97 µg/L
Area ratio: 4.57357
Sample type: Calibration





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 105.28 µg/L
Area ratio: 0.33788
Sample type: Calibration





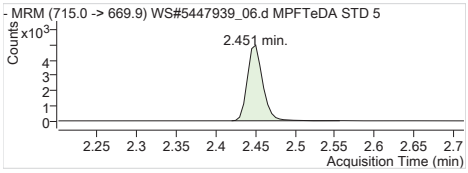
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.118 (2.118)
Calc. conc. 93.59 µg/L
Area ratio: 0
Sample type: Calibration

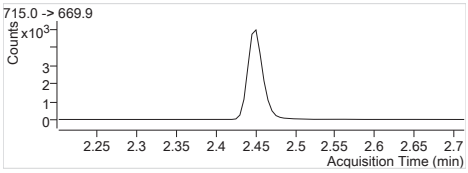
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**STD 5**	**Instrument**	LCMS04
Data File	WS#5447939_06.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A6
Acq. Date	2018/03/21 2:09:18 PM	**Injection Volume**	Per Method
Sample Annotation	-		

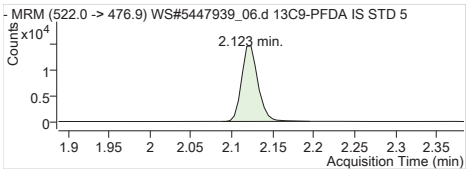
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6565	2.45	1 µg/L		
13C9-PFDA IS	20426	2.12	1 µg/L		

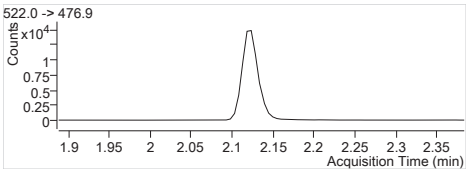
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	71299	2.38	25.00	24.24 µg/L	96.96
PFTeDA 1	62130	2.45	25.00	24.96 µg/L	99.85
13C2-PFTeDA	6565	2.45	100.00	100.15 µg/L	100.15
13C9-PFDA	20426	2.12	100.00	97.68 µg/L	97.68



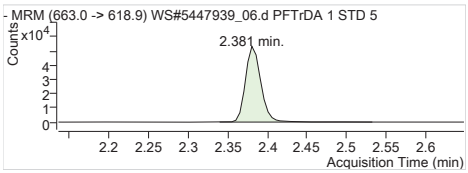


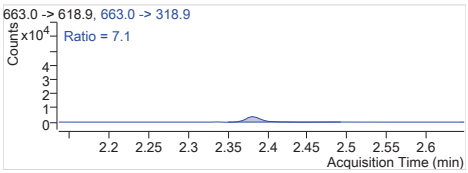
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: Calibration



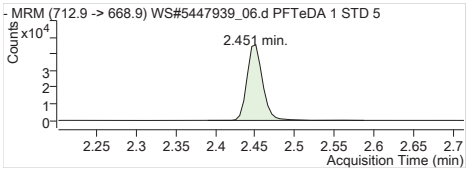


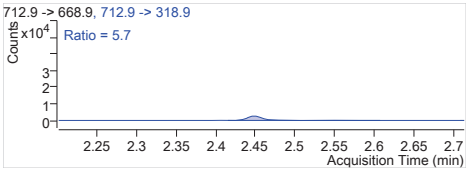
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Calibration



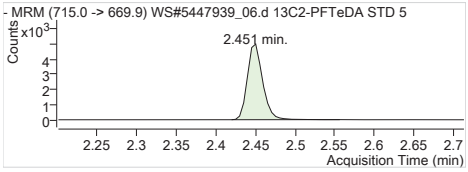


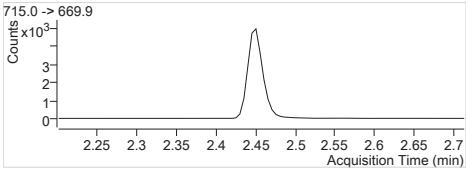
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 24.24 µg/L
Area ratio: 10.86047
Sample type: Calibration



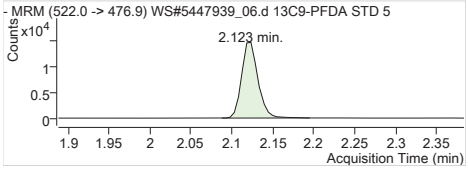


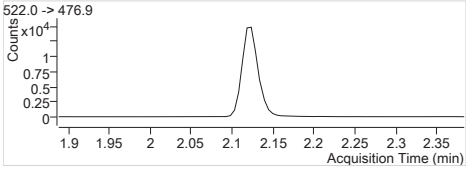
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 24.96 µg/L
Area ratio: 9.46382
Sample type: Calibration





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 100.15 µg/L
Area ratio: 0.32140
Sample type: Calibration





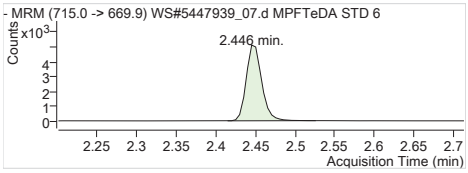
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 97.68 µg/L
Area ratio: 0
Sample type: Calibration

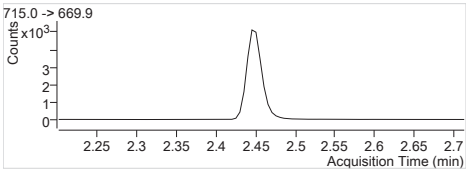
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**STD 6**	**Instrument**	LCMS04
Data File	WS#5447939_07.d	**Operator**	
Sample Type	Cal	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A7
Acq. Date	2018/03/21 2:14:16 PM	**Injection Volume**	Per Method
Sample Annotation	-		

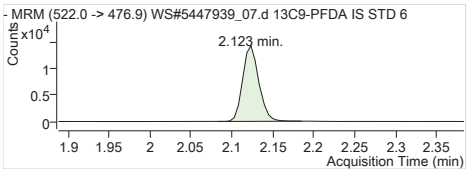
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6859	2.45	1 µg/L		
13C9-PFDA IS	19370	2.12	1 µg/L		

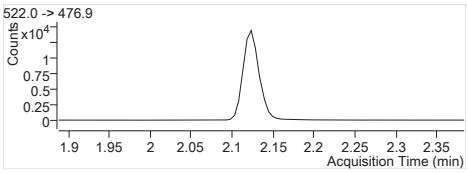
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	130033	2.38	41.70	42.43 µg/L	101.75
PFTeDA 1	107975	2.45	41.70	41.64 µg/L	99.86
13C2-PFTeDA	6859	2.45	100.00	110.34 µg/L	110.34
13C9-PFDA	19370	2.12	100.00	92.63 µg/L	92.63



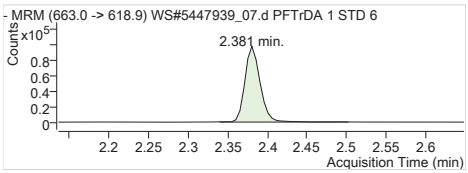


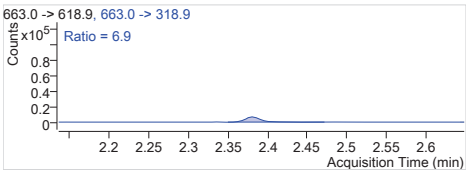
MPFTeDA Internal Standard
RT (Exp. RT): 2.446 (2.446)
Concentration: 1 µg/L
Sample type: Calibration



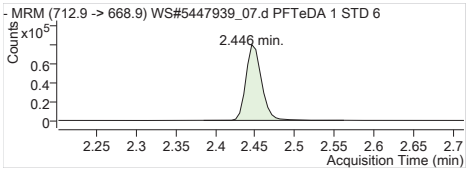


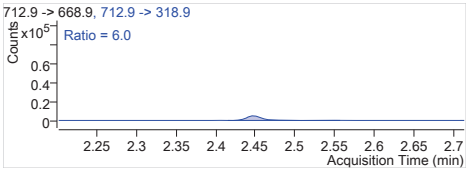
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: Calibration



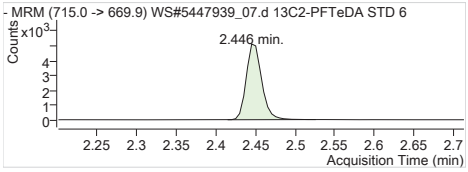


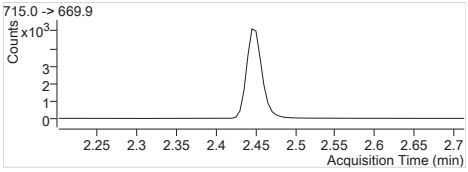
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 42.43 µg/L
Area ratio: 18.95801
Sample type: Calibration



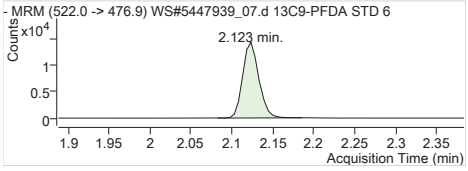


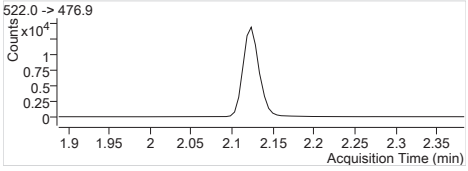
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 41.64 µg/L
Area ratio: 15.74209
Sample type: Calibration





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 110.34 µg/L
Area ratio: 0.35410
Sample type: Calibration





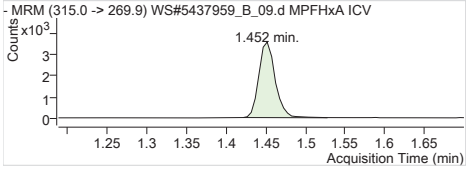
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 92.63 µg/L
Area ratio: 0
Sample type: Calibration

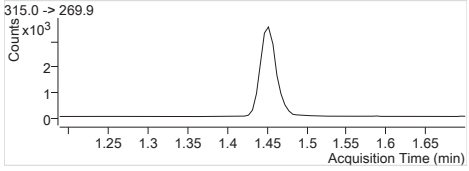
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**ICV**	**Instrument**	LCMS04
Data File	WS#5437959_B_09.d	**Operator**	
Sample Type	QC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A9
Acq. Date	2018/03/15 5:21:08 PM	**Injection Volume**	Per Method
Sample Annotation	-		

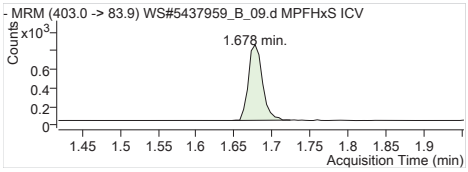
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4957	1.45	1 µg/L		
MPFHxS	1060	1.68	1 µg/L		
MPFHpA	5915	1.70	1 µg/L		
MPFOA	6055	1.89	1 µg/L		
MPFOS	1334	1.97	1 µg/L		
MPFNA	5714	2.03	1 µg/L		
MPFDA	5228	2.14	1 µg/L		
MPFUnA	6230	2.24	1 µg/L		
MPFDoA	9051	2.33	1 µg/L		
MPFTeDA	9318	2.47	1 µg/L		
13C6-PFHxA IS	18442	1.45	1 µg/L		
13C9-PFDA IS	22875	2.14	1 µg/L		

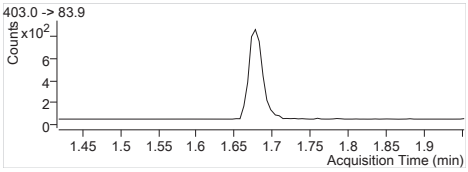
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	9071	1.10	20.80	17.10 µg/L	82.19
PFHxA 1	33255	1.45	20.80	17.22 µg/L	82.81
PFHxS 1	7926	1.68	20.80	16.74 µg/L	80.48
PFHpA 1	38456	1.71	20.80	16.89 µg/L	81.22
PFOA 1	44358	1.89	20.80	17.04 µg/L	81.93
PFOS 1	8831	1.97	20.80	15.78 µg/L	75.86
PFNA 1	37825	2.03	20.80	17.30 µg/L	83.17
PFDA 1	43151	2.14	20.80	16.20 µg/L	77.89
PFUnA 1	47347	2.24	20.80	17.43 µg/L	83.78
PFDoA 1	60096	2.33	20.80	16.72 µg/L	80.37
PFTrDA 1	68736	2.40	20.80	17.49 µg/L	84.07
PFTeDA 1	56464	2.47	20.80	17.29 µg/L	83.12
13C2-PFHxA	4957	1.45	100.00	98.62 µg/L	98.62
18O2-PFHxS	1060	1.68	100.00	104.07 µg/L	104.07
13C4-PFHpA	5915	1.70	100.00	101.95 µg/L	101.95
13C4-PFOA	6055	1.89	100.00	99.68 µg/L	99.68
13C4-PFOS	1334	1.97	100.00	108.08 µg/L	108.08
13C5-PFNA	5707	2.03	100.00	97.87 µg/L	97.87
13C2-PFDA	5242	2.14	100.00	103.78 µg/L	103.78
13C2-PFUnA	6230	2.24	100.00	96.97 µg/L	96.97
13C2-PFDoA	9051	2.33	100.00	99.58 µg/L	99.58
13C2-PFTeDA	9319	2.47	100.00	96.82 µg/L	96.82
13C6-PFHxA	18442	1.45	100.00	99.41 µg/L	99.41
13C9-PFDA	22875	2.14	100.00	100.88 µg/L	100.88



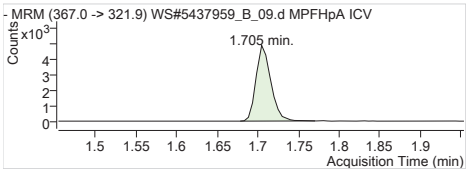


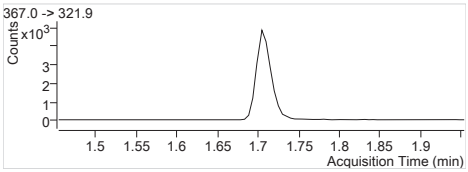
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	QC



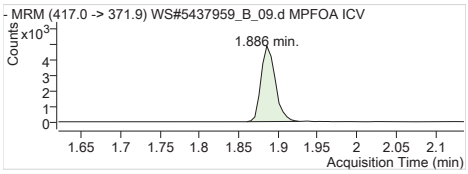


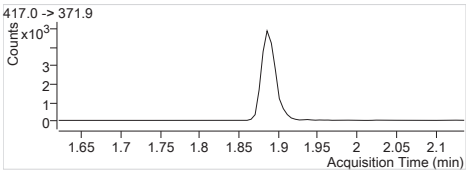
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: QC



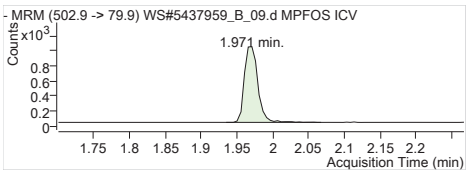


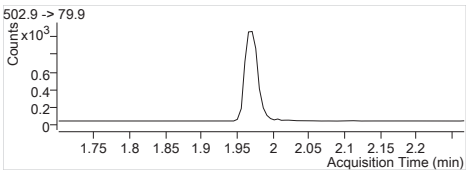
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: QC



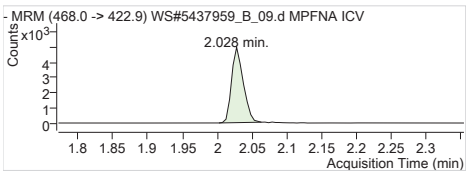


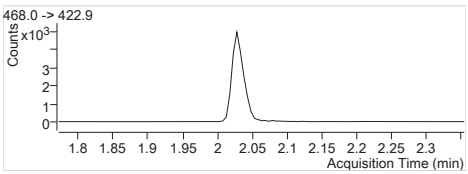
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: QC



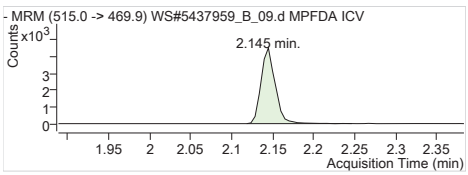


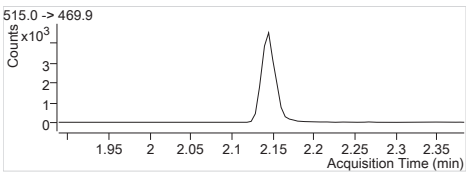
MPFOS Internal Standard
RT (Exp. RT): 1.971 (1.971)
Concentration: 1 µg/L
Sample type: QC



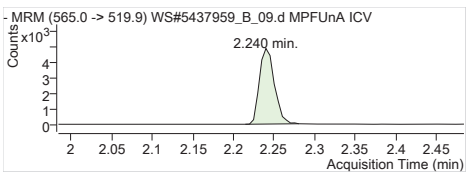


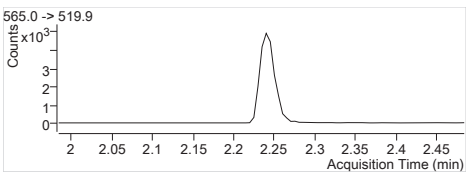
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: QC



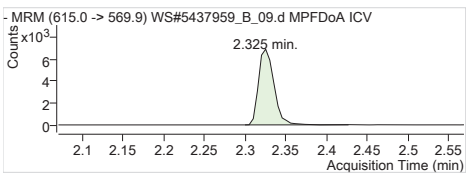


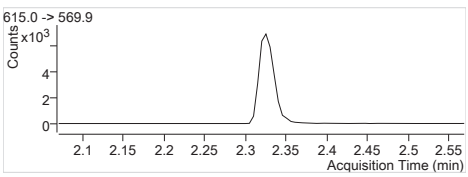
MPFDA Internal Standard
RT (Exp. RT): 2.145 (2.145)
Concentration: 1 µg/L
Sample type: QC



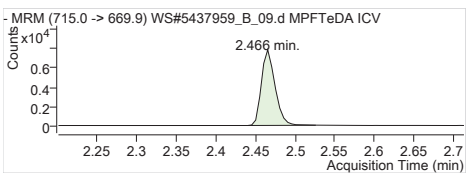


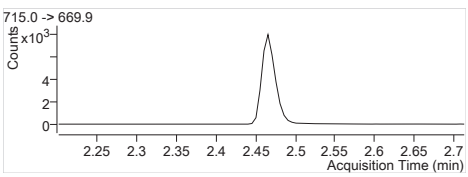
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: QC



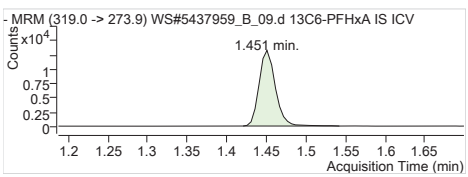


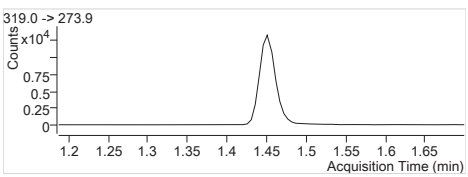
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: QC



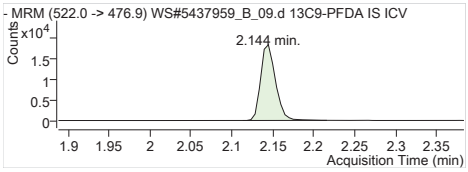


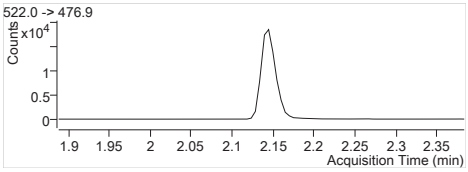
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: QC



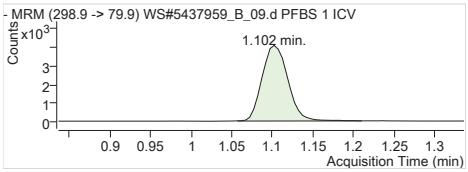


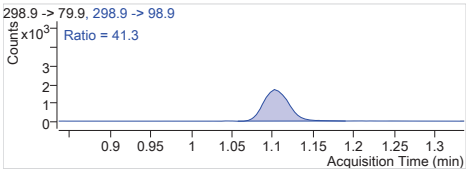
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: QC



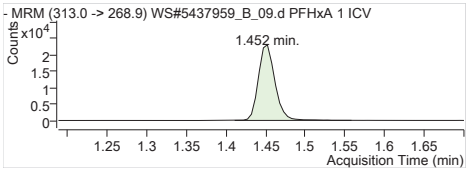


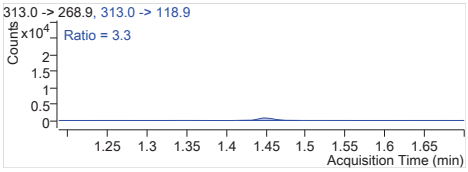
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: QC



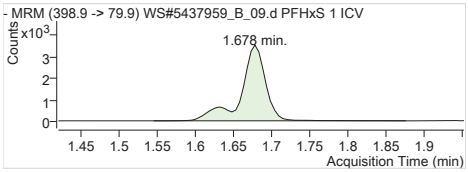


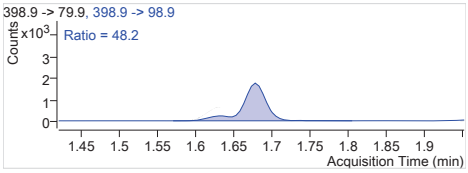
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.102 (1.107)
Calc. conc. 17.10 µg/L
Area ratio: 8.55755
Sample type: QC



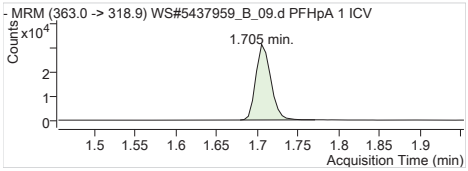


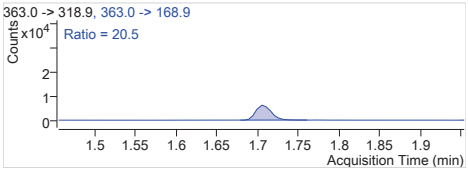
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 17.22 µg/L
Area ratio: 6.70869
Sample type: QC



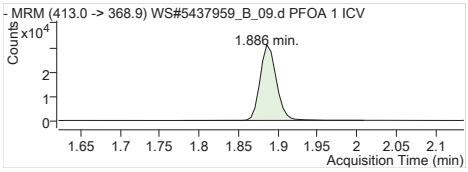


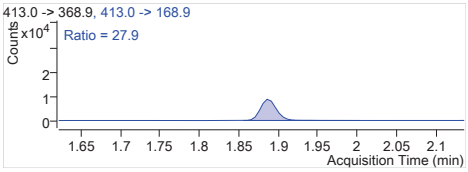
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 16.74 µg/L
Area ratio: 7.47736
Sample type: QC



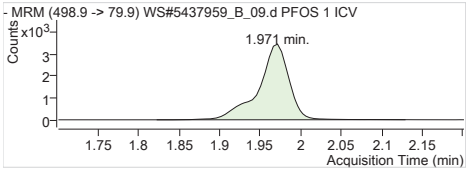


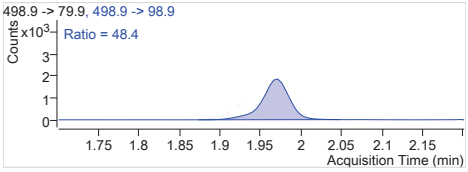
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 16.89 µg/L
Area ratio: 6.50144
Sample type: QC



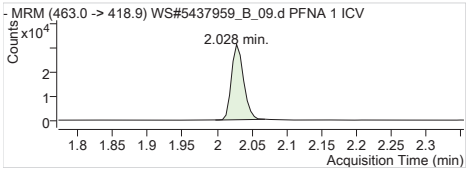


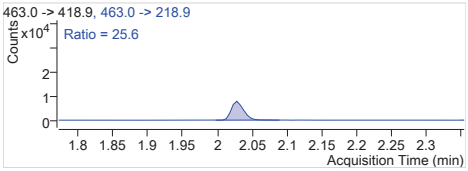
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 17.04 µg/L
Area ratio: 7.32585
Sample type: QC



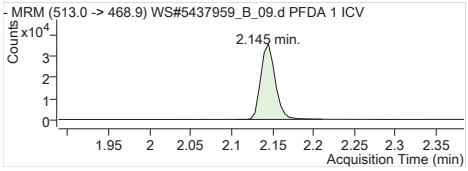


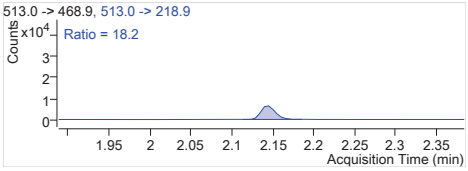
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 15.78 µg/L
Area ratio: 6.61994
Sample type: QC



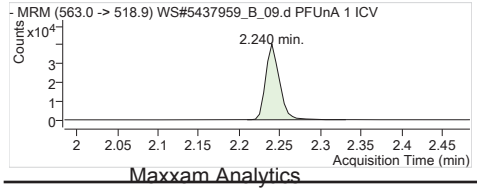


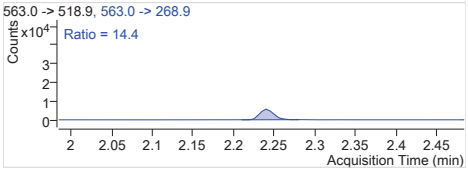
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 17.30 µg/L
Area ratio: 6.61971
Sample type: QC



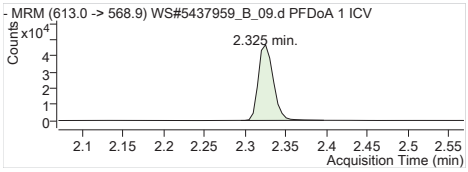


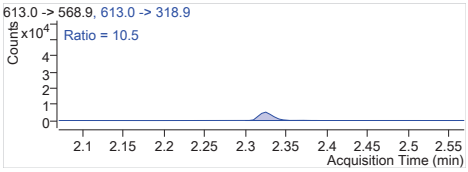
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 16.20 µg/L
Area ratio: 8.25383
Sample type: QC



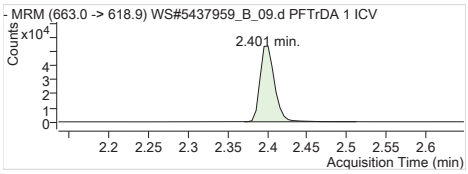


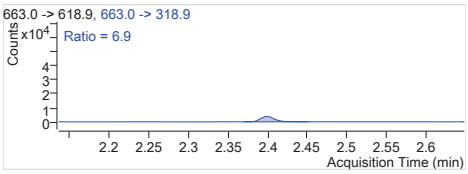
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 17.43 µg/L
Area ratio: 7.59984
Sample type: QC



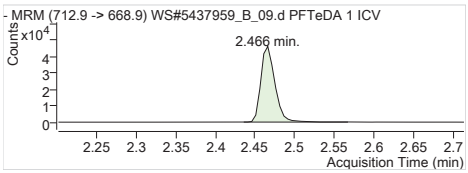


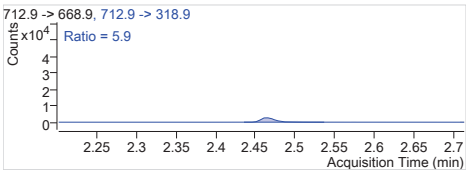
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 16.72 µg/L
Area ratio: 6.63971
Sample type: QC



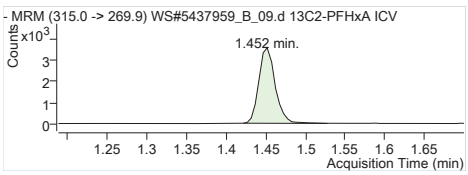


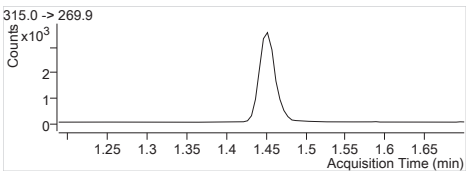
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.401 (2.401)
Calc. conc. 17.49 µg/L
Area ratio: 7.37669
Sample type: QC



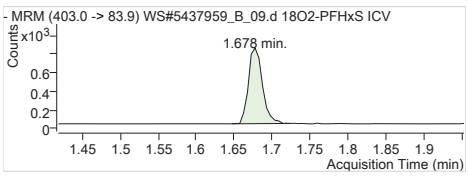


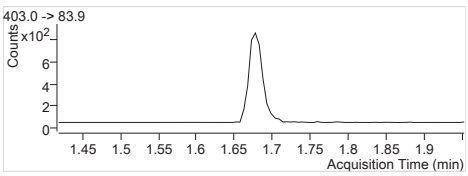
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 17.29 µg/L
Area ratio: 6.05967
Sample type: QC



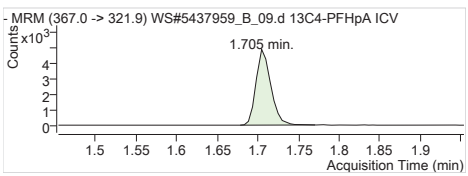


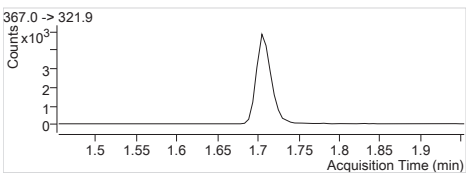
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 98.62 µg/L
Area ratio: 0.26879
Sample type: QC



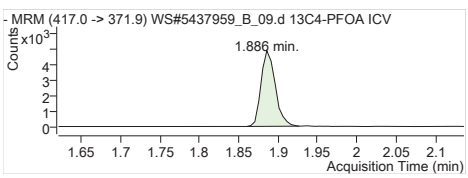


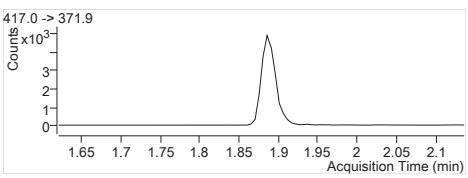
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 104.07 µg/L
Area ratio: 0.05748
Sample type: QC



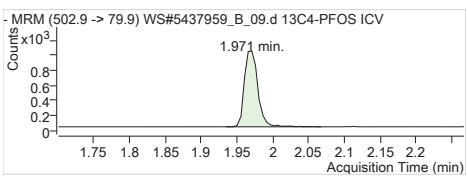


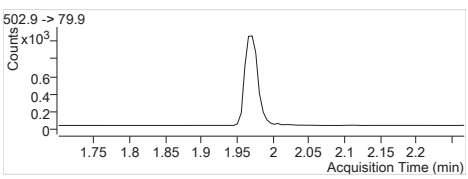
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 101.95 µg/L
Area ratio: 0.32074
Sample type: QC



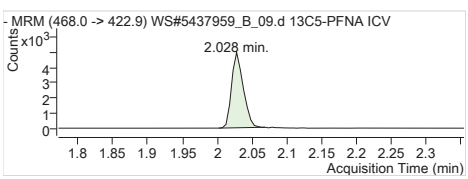


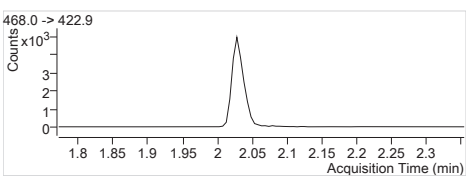
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 99.68 µg/L
Area ratio: 0.32833
Sample type: QC



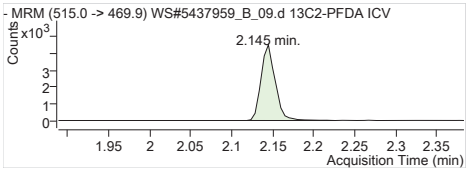


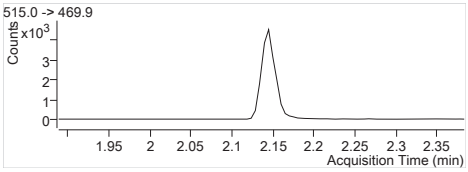
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 108.08 µg/L
Area ratio: 0.07233
Sample type: QC



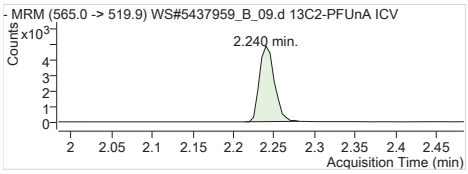


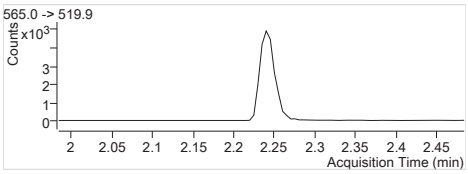
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 97.87 µg/L
Area ratio: 0.30946
Sample type: QC



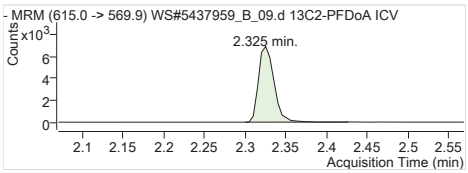


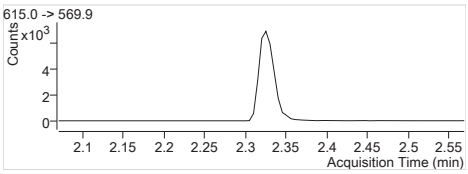
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 103.78 µg/L
Area ratio: 0.22916
Sample type: QC



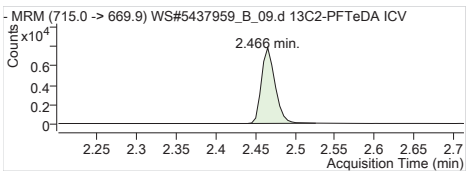


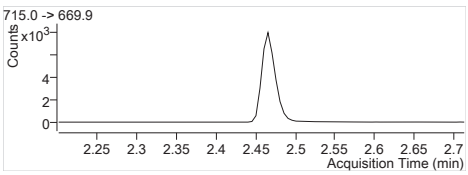
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 96.97 µg/L
Area ratio: 0.27235
Sample type: QC



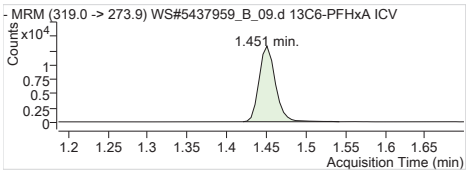


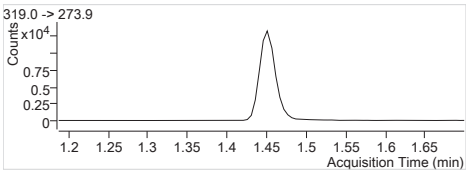
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 99.58 µg/L
Area ratio: 0.39567
Sample type: QC



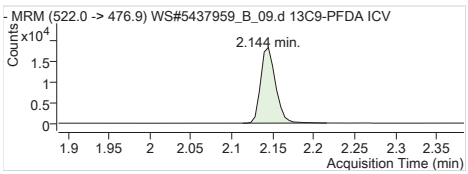


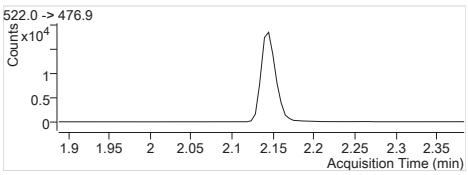
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 96.82 µg/L
Area ratio: 0.40739
Sample type: QC





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 99.41 µg/L
Area ratio: 0
Sample type: QC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 100.88 µg/L
Area ratio: 0
Sample type: QC

Quantitation Results

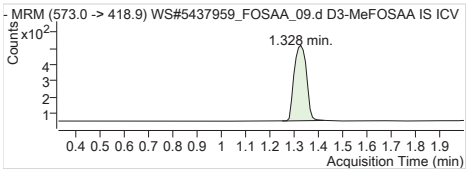
Agilent Technologies

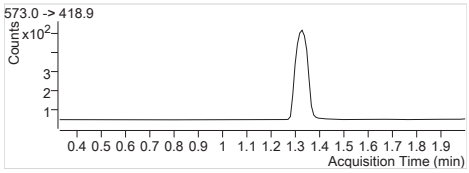
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**ICV**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_09.d	**Operator**	
Sample Type	QC	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A9
Acq. Date	2018/03/13 8:54:17 PM	**Injection Volume**	Per Method
Sample Annotation	-		

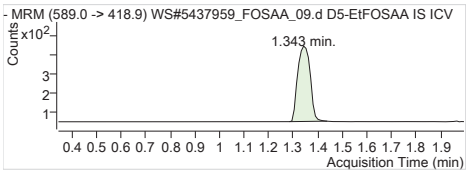
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1653	1.33	1 µg/L		
D5-EtFOSAA IS	1400	1.34	1 µg/L		
13C9-PFDA IS	18394	0.95	1 µg/L		

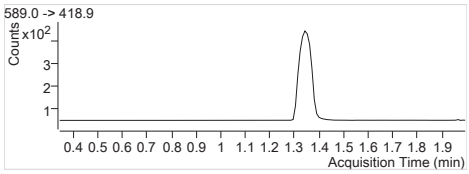
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	9745	1.33	20.80	16.98 µg/L	81.63
EtFOSAA 1	9734	1.34	20.80	17.10 µg/L	82.19
D3-MeFOSAA	1665	1.33	100.00	102.77 µg/L	102.77
D5-EtFOSAA	1415	1.34	100.00	102.14 µg/L	102.14
13C9-PFDA	18534	0.95	100.00	97.86 µg/L	97.86



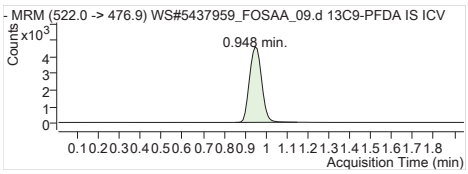


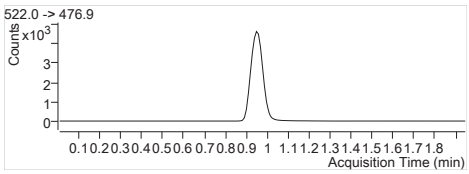
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: QC



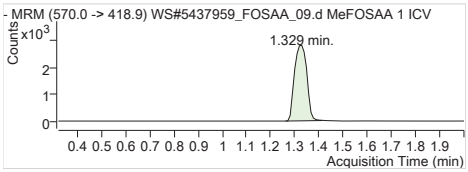


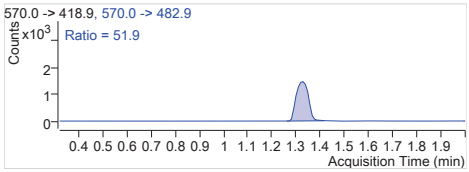
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: QC



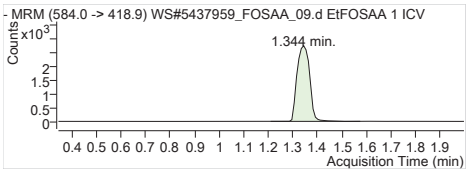


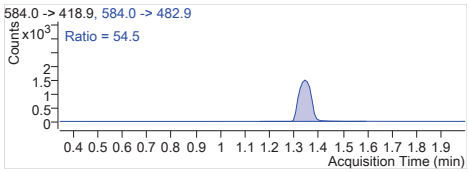
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: QC



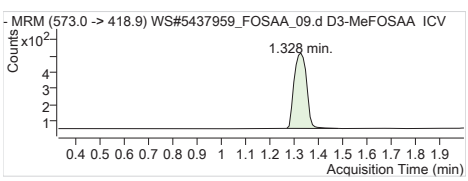


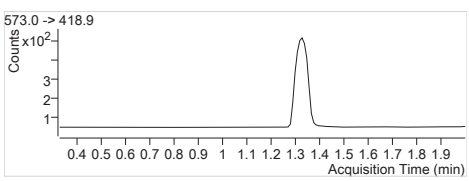
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.329 (1.319)
Calc. conc. 16.98 µg/L
Area ratio: 5.89534
Sample type: QC



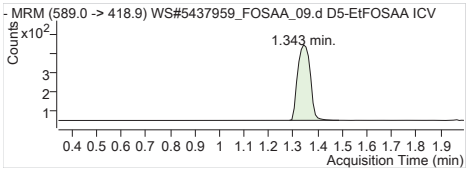


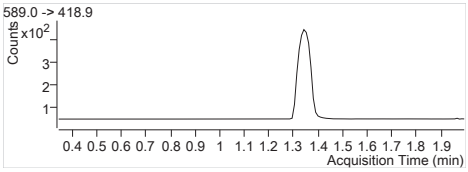
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 17.10 µg/L
Area ratio: 6.95286
Sample type: QC



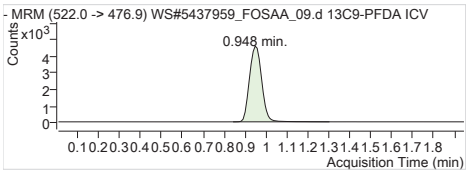


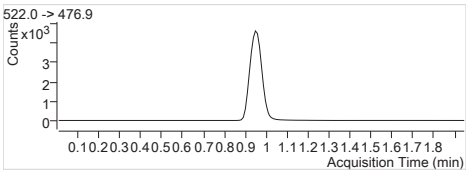
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 102.77 µg/L
Area ratio: 0.09052
Sample type: QC





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	102.14 µg/L
Area ratio:	0.07693
Sample type:	QC





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	97.86 µg/L
Area ratio:	0
Sample type:	QC

Quantitation Results

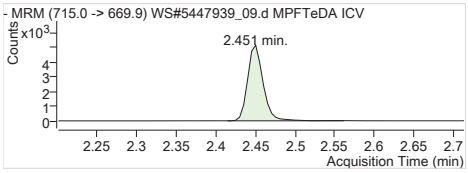
Agilent Technologies

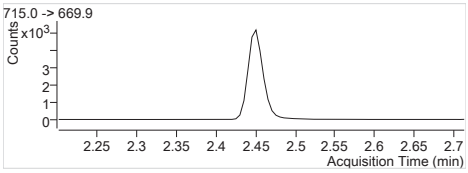
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**ICV**	**Instrument**	LCMS04
Data File	WS#5447939_09.d	**Operator**	
Sample Type	QC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A9
Acq. Date	2018/03/21 2:24:10 PM	**Injection Volume**	Per Method
Sample Annotation	-		

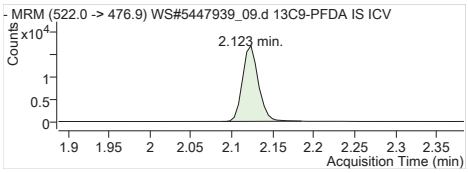
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6833	2.45	1 µg/L		
13C9-PFDA IS	22356	2.12	1 µg/L		

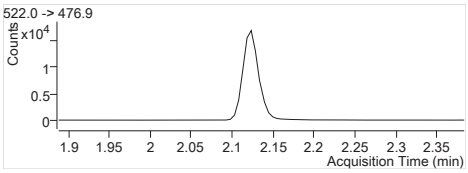
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	65285	2.38	20.80	21.31 µg/L	102.43
PFTeDA 1	56246	2.45	20.80	21.69 µg/L	104.27
13C2-PFTeDA	6833	2.45	100.00	95.24 µg/L	95.24
13C9-PFDA	22356	2.12	100.00	106.91 µg/L	106.91



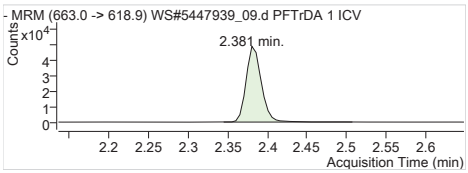


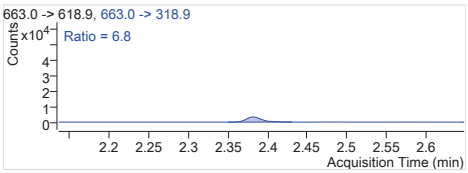
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: QC



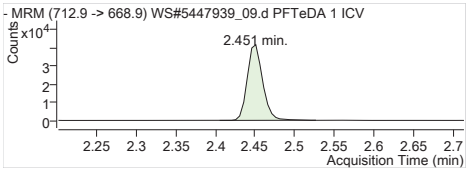


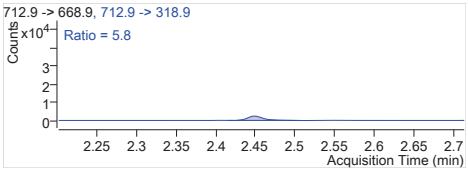
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: QC



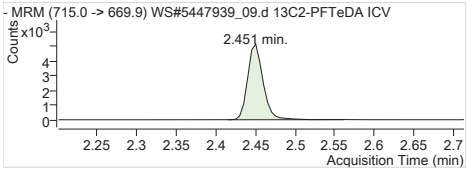


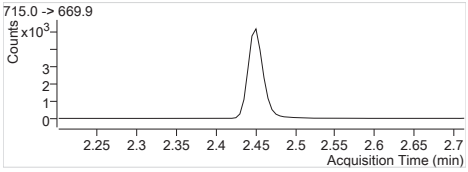
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 21.31 µg/L
Area ratio: 9.55437
Sample type: QC



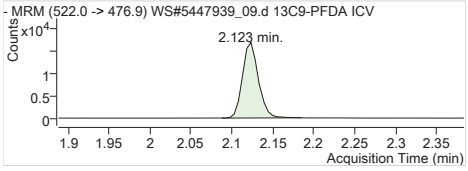


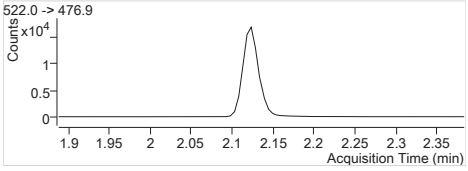
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 21.69 µg/L
Area ratio: 8.23152
Sample type: QC





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 95.24 µg/L
Area ratio: 0.30565
Sample type: QC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 106.91 µg/L
Area ratio: 0
Sample type: QC

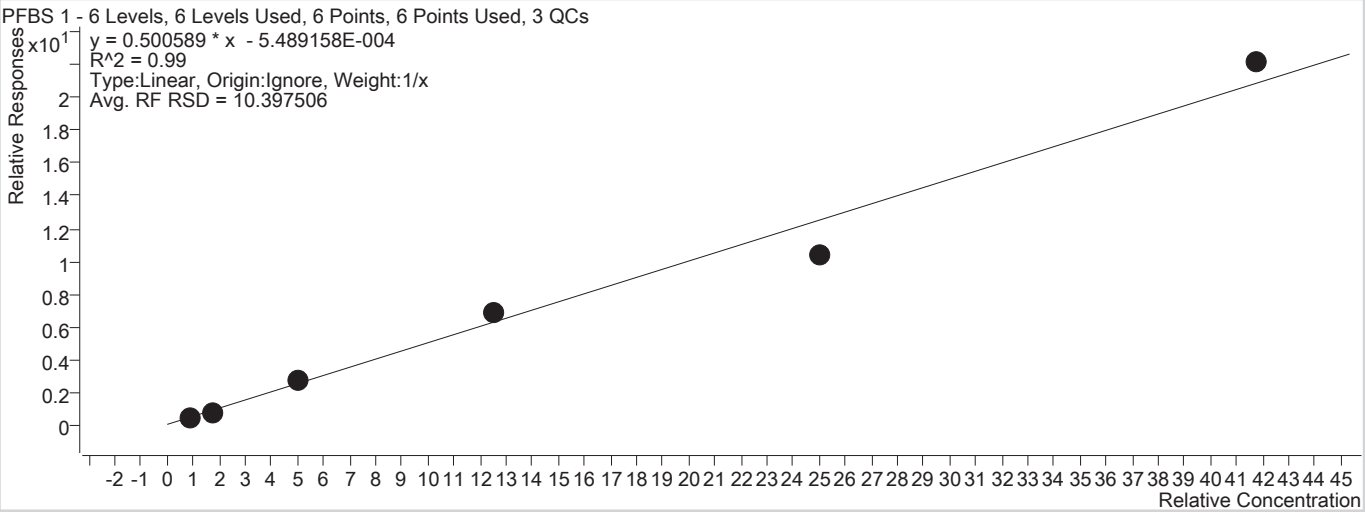
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFBS 1

Internal Standard: MPFHxS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.85	409	0.5091	94	101.8
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.56	811	0.4587	142	91.7
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.30	2585	0.5308	347	106.1
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	13.84	7204	0.5542	492	110.7
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	20.85	11050	0.4174	384	83.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.34	23660	0.5323	517	106.3

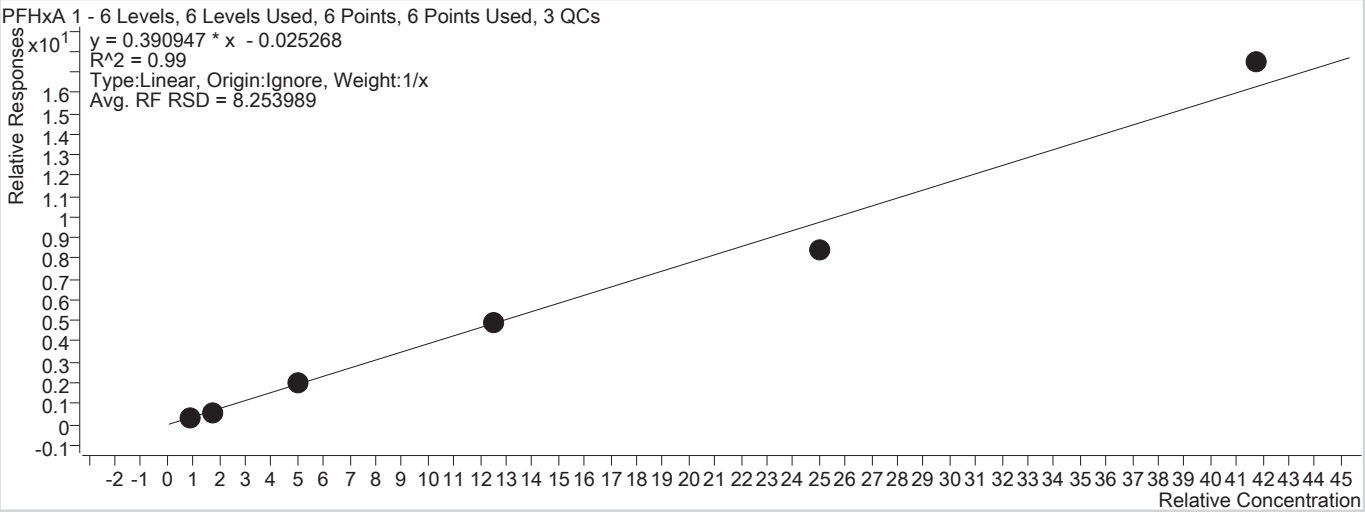
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFHxA 1

Internal Standard: MPFHxA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.90	1569	0.3928	175	108.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.58	3057	0.3485	158	92.9
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.22	9394	0.4027	297	104.3
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.52	27042	0.3896	304	100.2
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.74	42378	0.3389	378	86.9
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.78	90045	0.4192	356	107.4

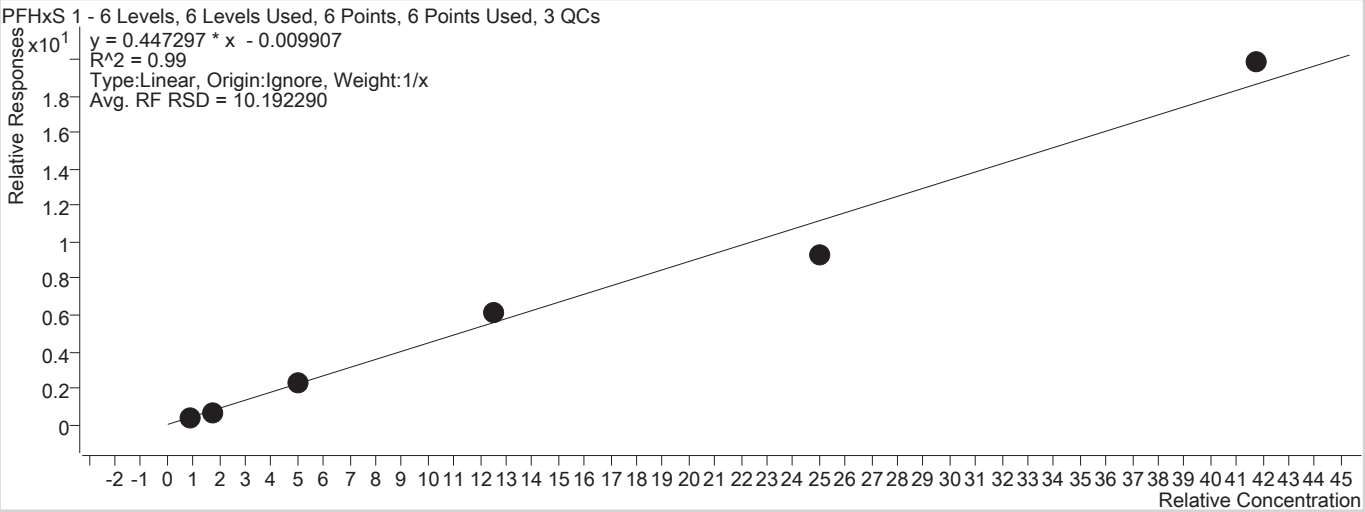
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFHxS 1

Internal Standard: MPFHxS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.87	366	0.4555	102	104.5
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.55	711	0.4021	73	91.2
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.22	2265	0.4651	194	104.4
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	13.68	6353	0.4887	840	109.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	20.95	9914	0.3745	724	83.8
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.46	21189	0.4767	1026	106.6

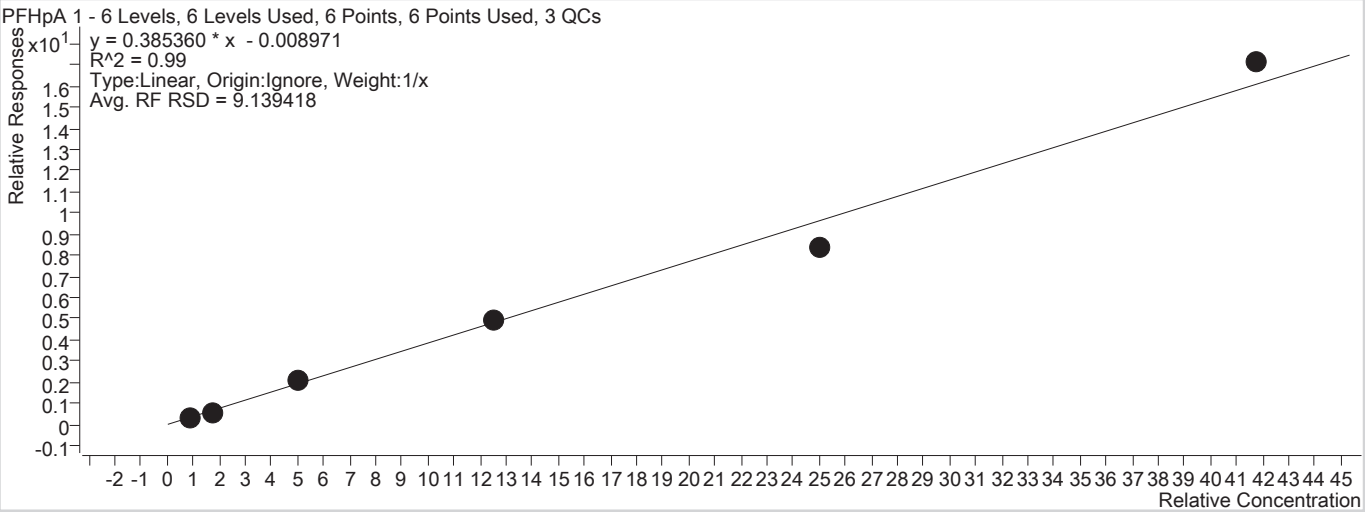
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFHpA 1

Internal Standard: MPFHpA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.86	1791	0.3893	52	103.8
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.55	3597	0.3472	84	91.5
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.48	10921	0.4204	294	109.6
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.76	31165	0.3926	436	102.1
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.61	48752	0.3328	319	86.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.47	102484	0.4107	582	106.6

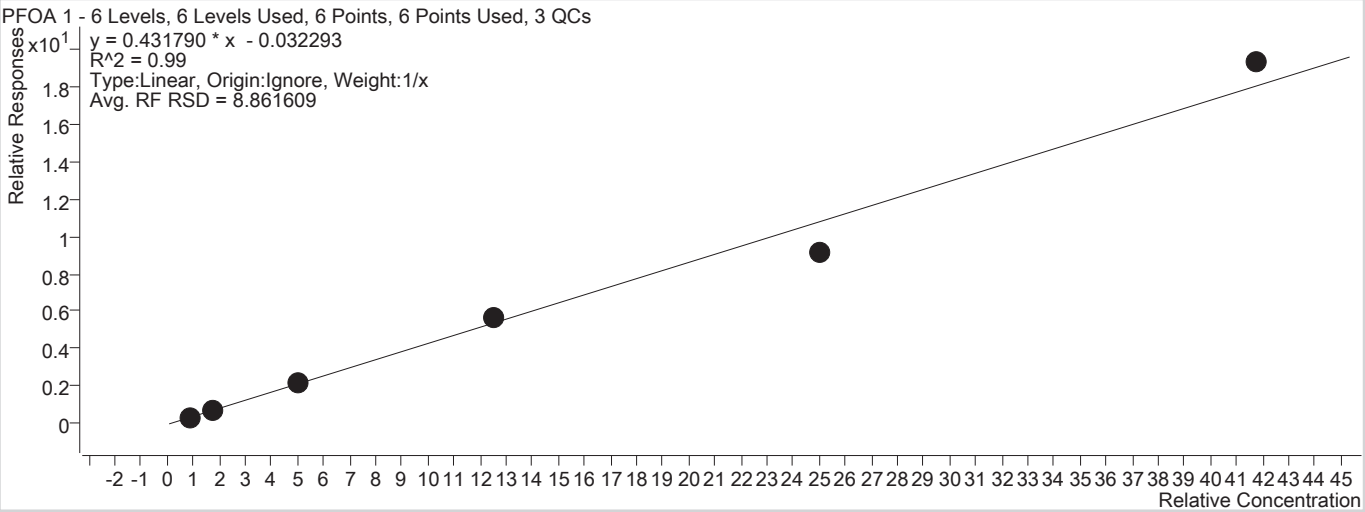
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFOA 1

Internal Standard: MPFOA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.86	2025	0.4107	25	104.1
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.62	4237	0.3931	117	95.4
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.15	12161	0.4383	225	103.0
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	13.17	36482	0.4522	417	105.3
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.23	56751	0.3654	902	84.9
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.70	118690	0.4621	1632	107.2

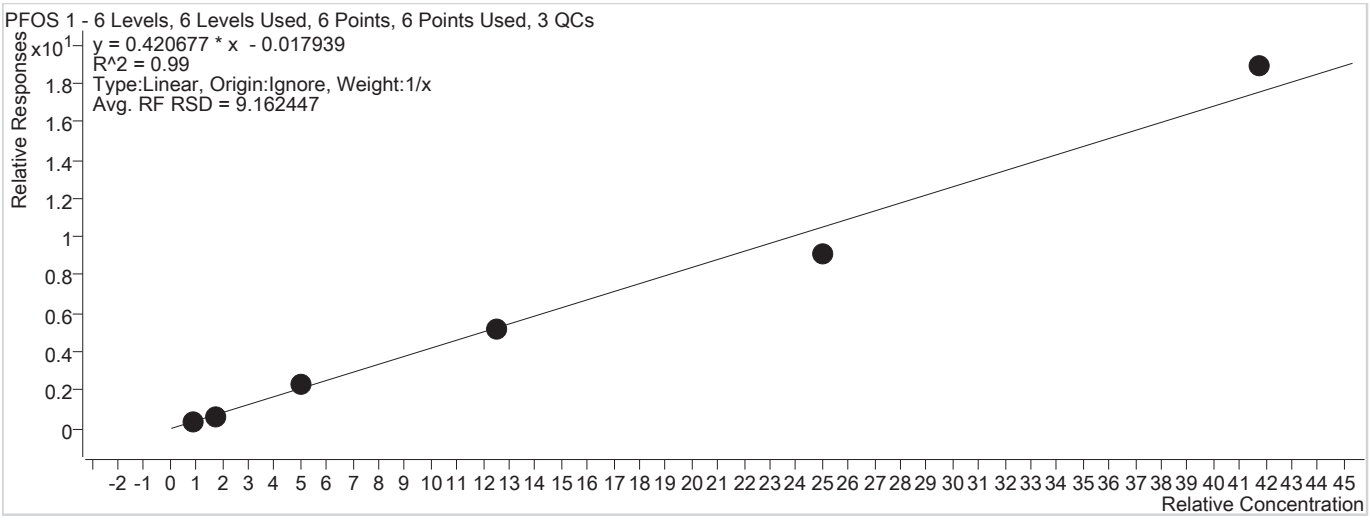
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFOS 1

Internal Standard: MPFOS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.90	425	0.4339	68	108.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.56	819	0.3746	268	91.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.36	2568	0.4474	423	107.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.33	7103	0.4136	459	98.7
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.61	10962	0.3630	790	86.5
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.97	23719	0.4532	1105	107.8

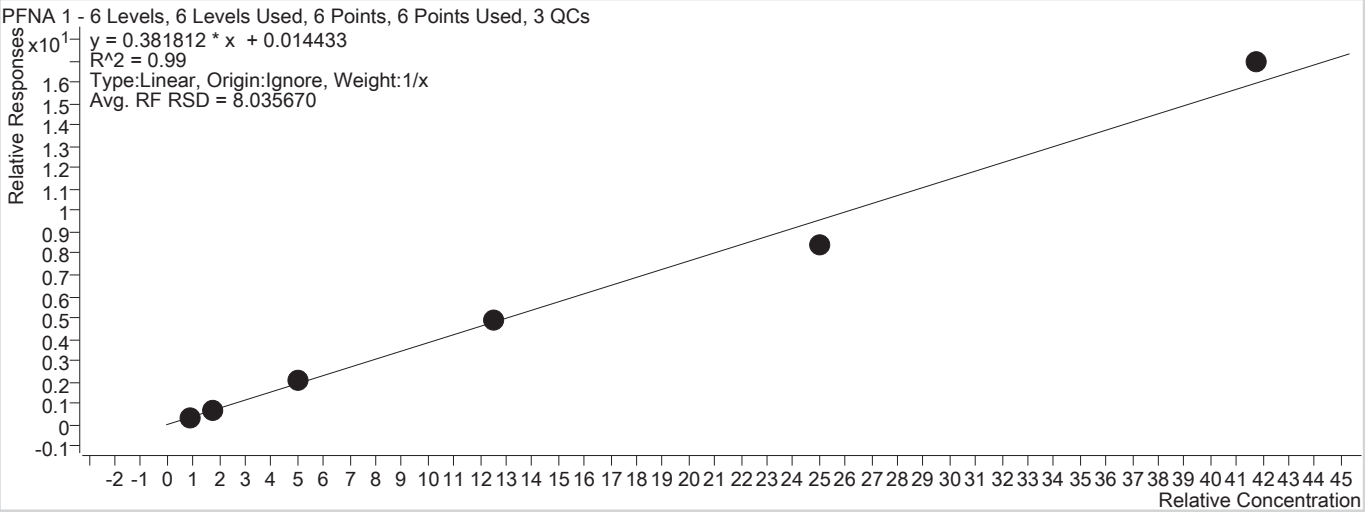
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFNA 1

Internal Standard: MPFNA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.86	1824	0.4119	38	103.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.59	3722	0.3666	75	93.8
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.35	10698	0.4111	188	106.9
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.80	31739	0.3921	1051	102.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.82	48967	0.3338	1075	87.3
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.31	101154	0.4061	3066	106.3

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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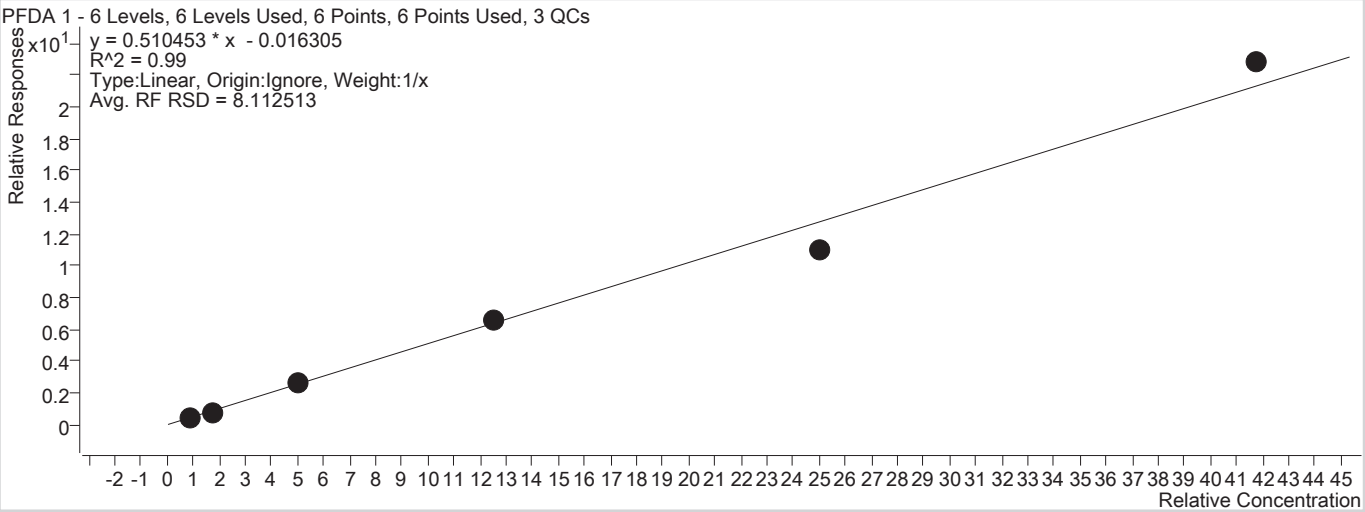
Instrument: LCMS04

Analyte: PFDA 1

Internal Standard: MPFDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.89	2113	0.5286	57	107.4
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.59	4097	0.4680	116	93.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.16	12334	0.5234	162	103.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.78	35078	0.5204	791	102.2
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.62	54737	0.4407	410	86.5
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.70	116138	0.5467	1275	107.2

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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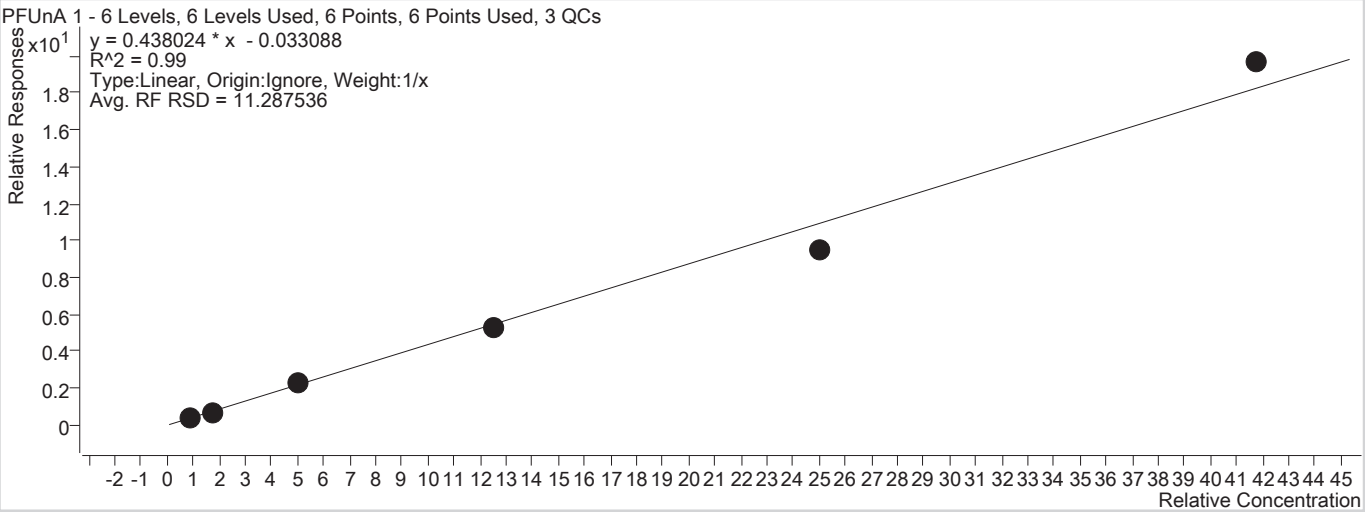
Instrument: LCMS04

Analyte: PFUnA 1

Internal Standard: MPFUnA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.96	2245	0.4654	53	115.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.46	4232	0.3562	84	85.8
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.31	13019	0.4587	233	106.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.17	36961	0.4239	454	97.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.84	61502	0.3814	1287	87.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.99	124796	0.4717	983	107.9

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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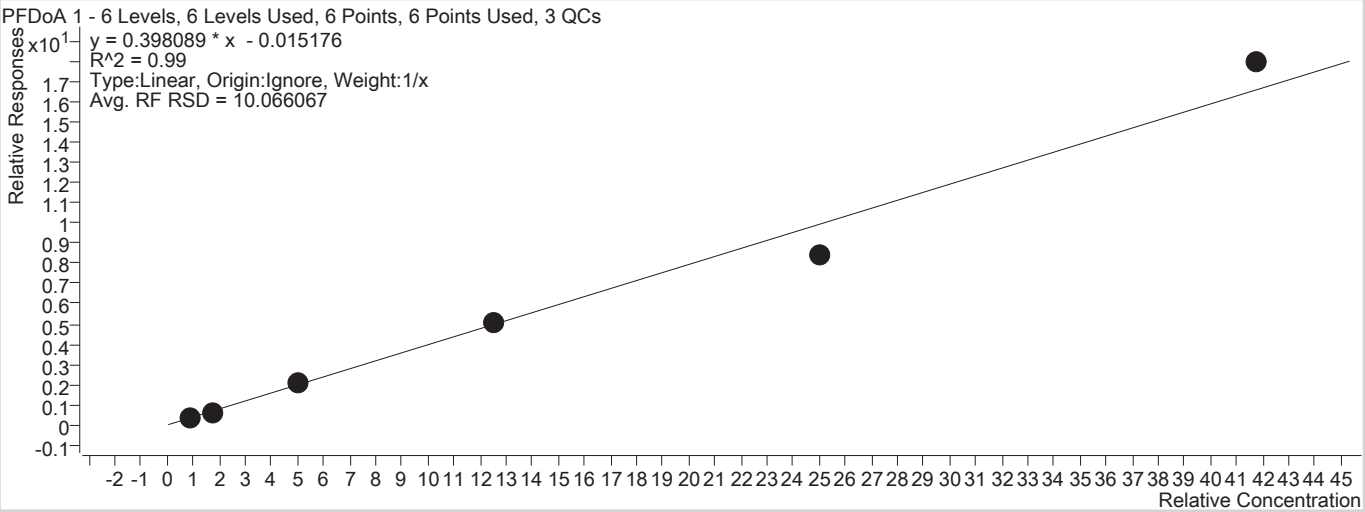
Instrument: LCMS04

Analyte: PFDoA 1

Internal Standard: MPFDoA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.93	2976	0.4285	23	112.2
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.54	5524	0.3513	46	90.5
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.11	16968	0.4036	125	102.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.73	49229	0.4043	307	101.9
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.21	75981	0.3372	626	84.8
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	45.21	167153	0.4312	1156	108.4

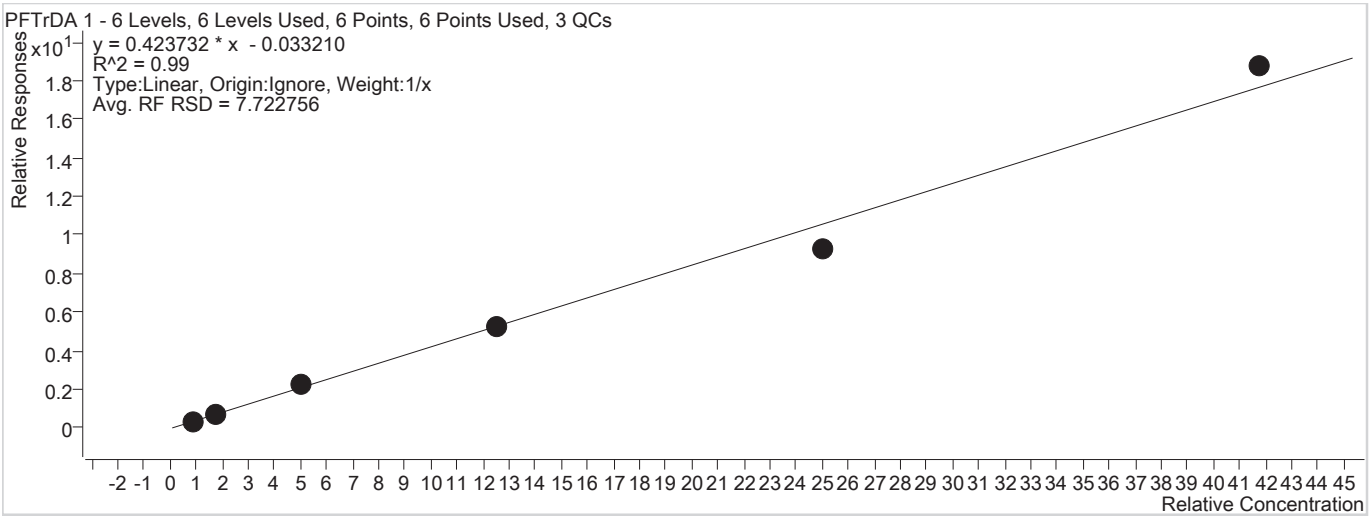
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFTrDA 1

Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.87	3072	0.4024	26	104.4
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.61	6214	0.3814	61	94.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.29	19565	0.4418	210	105.8
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.58	55859	0.4237	545	100.6
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	22.04	87280	0.3723	923	88.2
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.34	185359	0.4498	1417	106.3

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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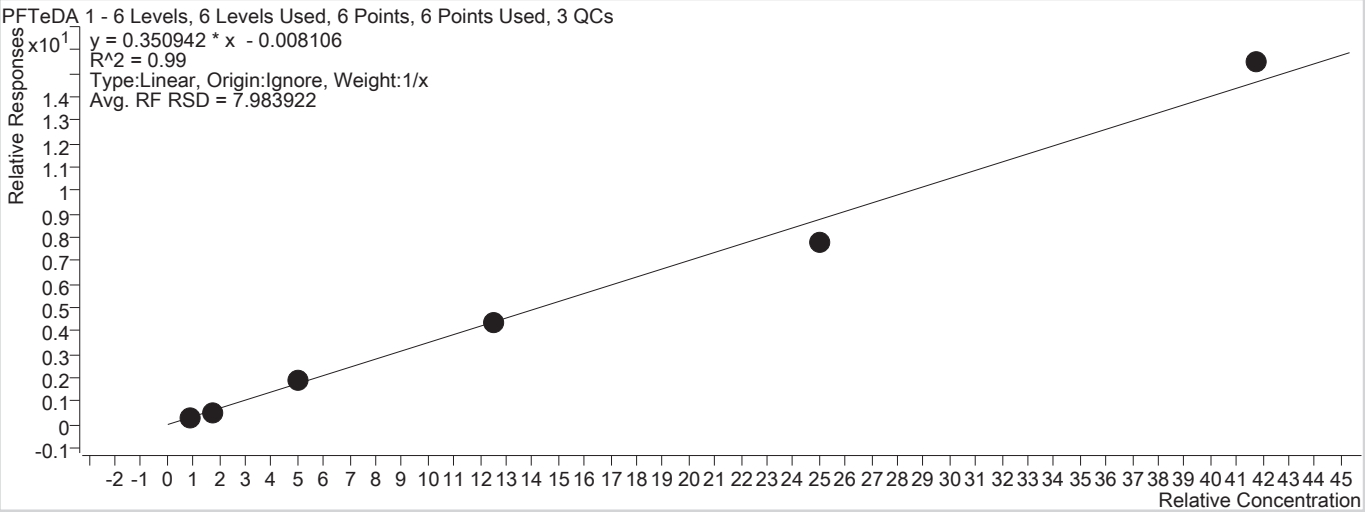
Instrument: LCMS04

Analyte: PFTeDA 1

Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.88	2753	0.3606	22	105.5
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.56	5165	0.3170	41	91.7
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.40	16706	0.3773	139	108.0
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.50	46166	0.3502	371	100.0
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	22.23	73062	0.3117	639	88.9
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.18	153139	0.3716	898	105.9

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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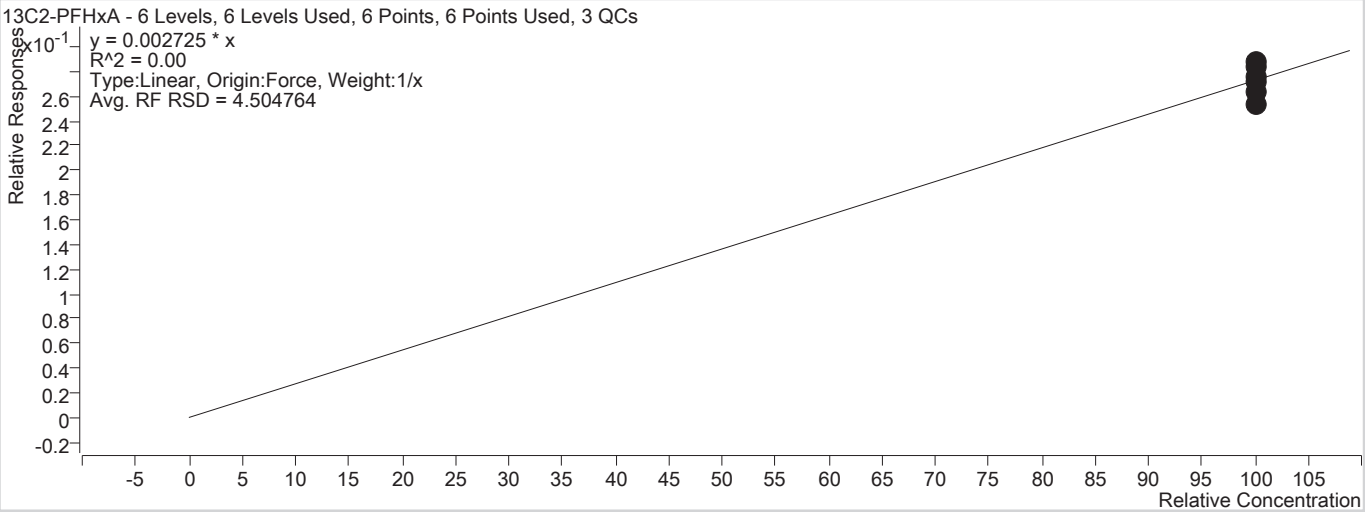
Instrument: LCMS04

Analyte: 13C2-PFHxA

Internal Standard: 13C6-PFHxA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	99.83	4813	0.0027	655	99.8
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	103.74	5160	0.0028	209	103.7
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	93.07	4665	0.0025	343	93.1
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	105.44	5553	0.0029	576	105.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	96.99	5002	0.0026	255	97.0
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	100.92	5151	0.0028	439	100.9

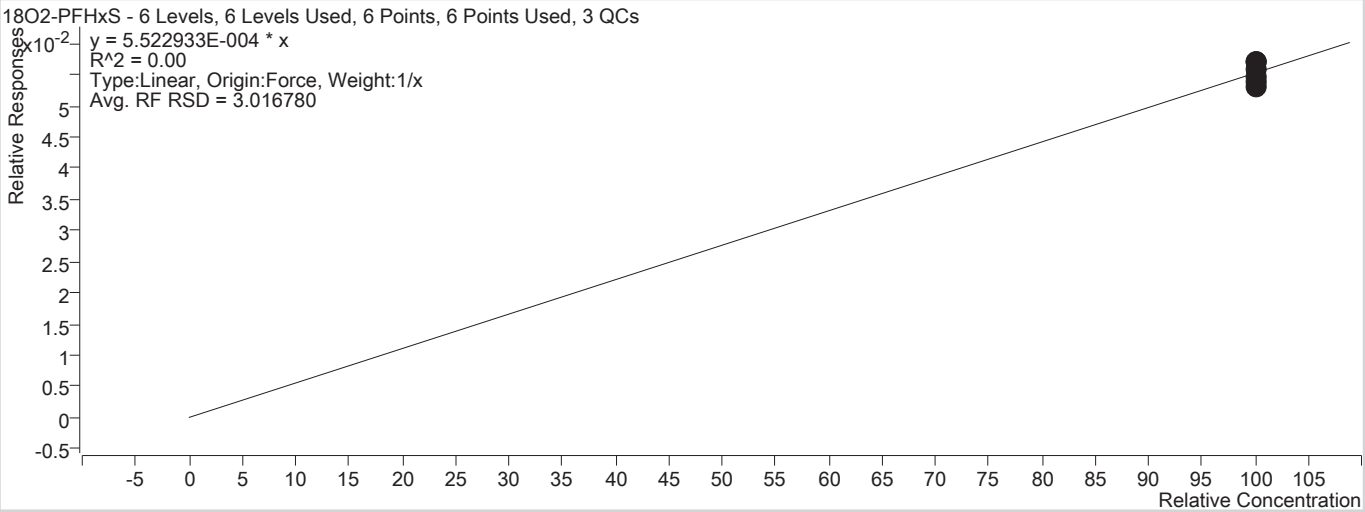
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: 18O2-PFHxS

Internal Standard: 13C6-PFHxA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	99.08	968	0.0005	157	99.1
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	103.18	1040	0.0006	111	103.2
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	95.89	974	0.0005	112	95.9
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	97.45	1040	0.0005	145	97.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	101.33	1059	0.0006	213	101.3
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	103.07	1066	0.0006	116	103.1

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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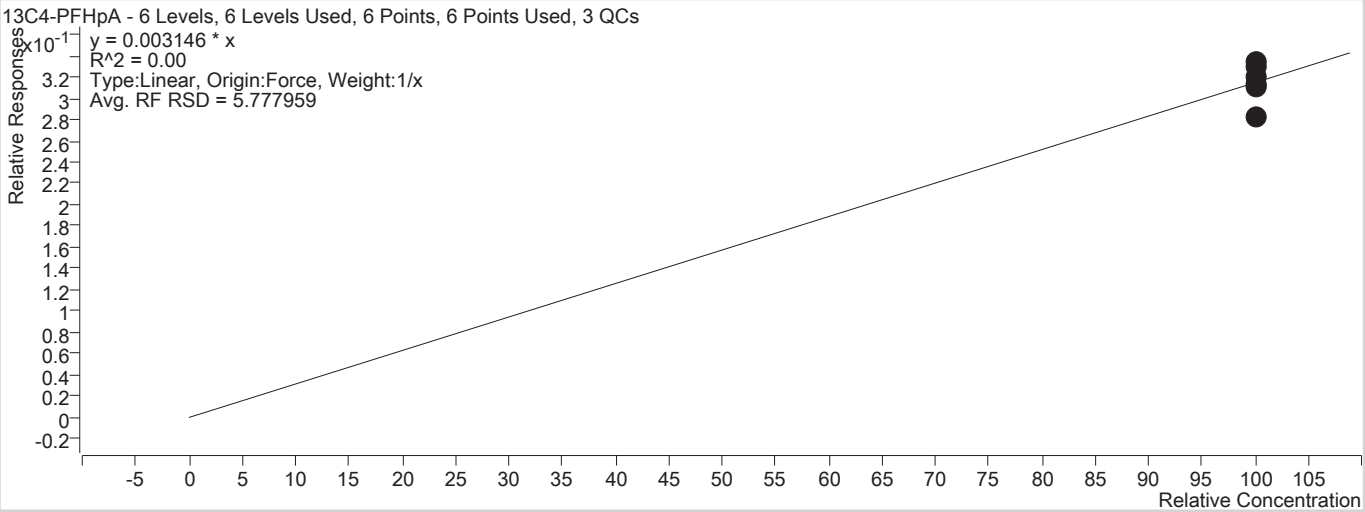
Instrument: LCMS04

Analyte: 13C4-PFHpA

Internal Standard: 13C6-PFHxA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	99.60	5543	0.0031	266	99.6
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	106.13	6094	0.0033	253	106.1
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	89.79	5195	0.0028	256	89.8
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	104.47	6351	0.0033	442	104.5
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	98.44	5860	0.0031	296	98.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	101.57	5984	0.0032	428	101.6

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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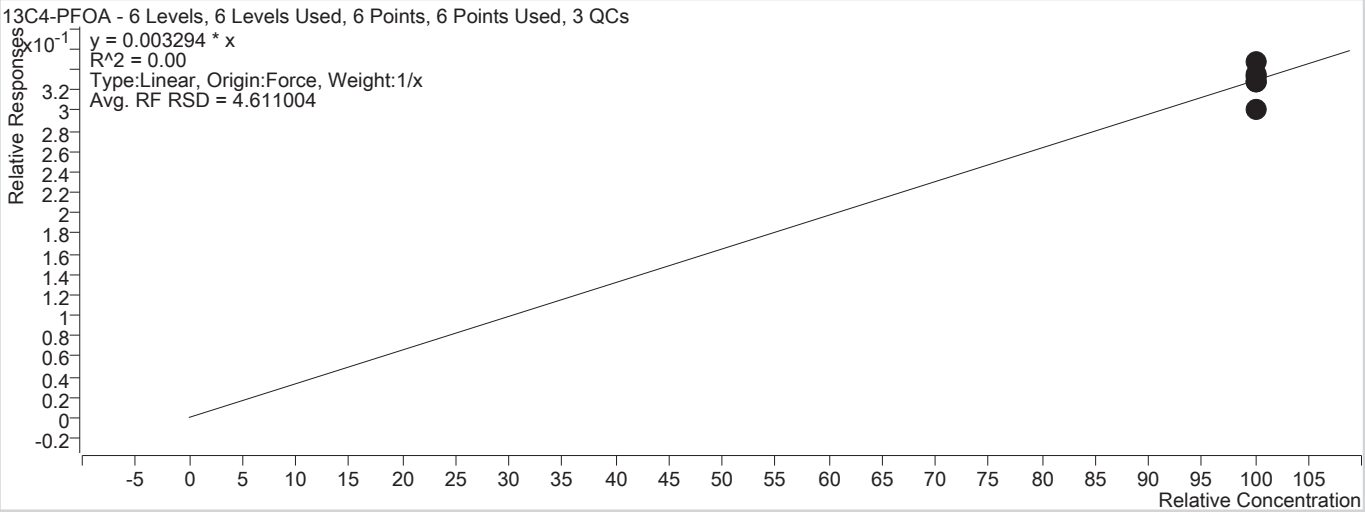
Instrument: LCMS04

Analyte: 13C4-PFOA

Internal Standard: 13C6-PFHxA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	101.97	5941	0.0034	244	102.0
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	105.47	6340	0.0035	213	105.5
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	91.61	5549	0.0030	187	91.6
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	101.40	6454	0.0033	155	101.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	99.69	6213	0.0033	218	99.7
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	99.87	6160	0.0033	236	99.9

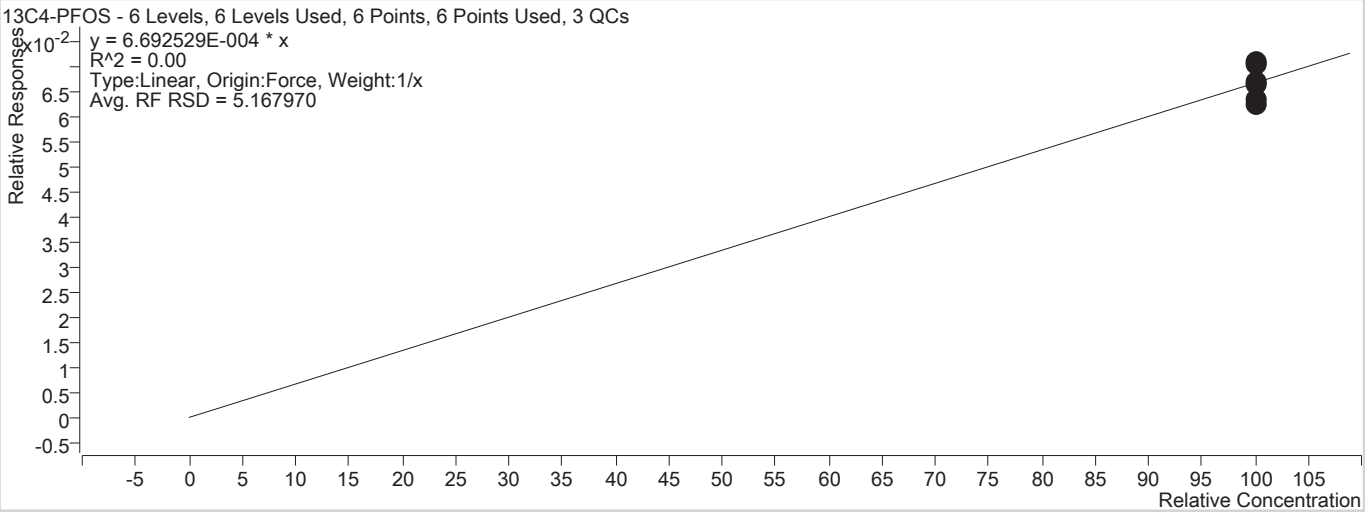
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: 13C4-PFOS

Internal Standard: 13C6-PFHxA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	99.68	1180	0.0007	236	99.7
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	105.28	1286	0.0007	99	105.3
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	93.27	1148	0.0006	101	93.3
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	106.24	1374	0.0007	94	106.2
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	95.39	1208	0.0006	133	95.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	100.13	1255	0.0007	59	100.1

Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

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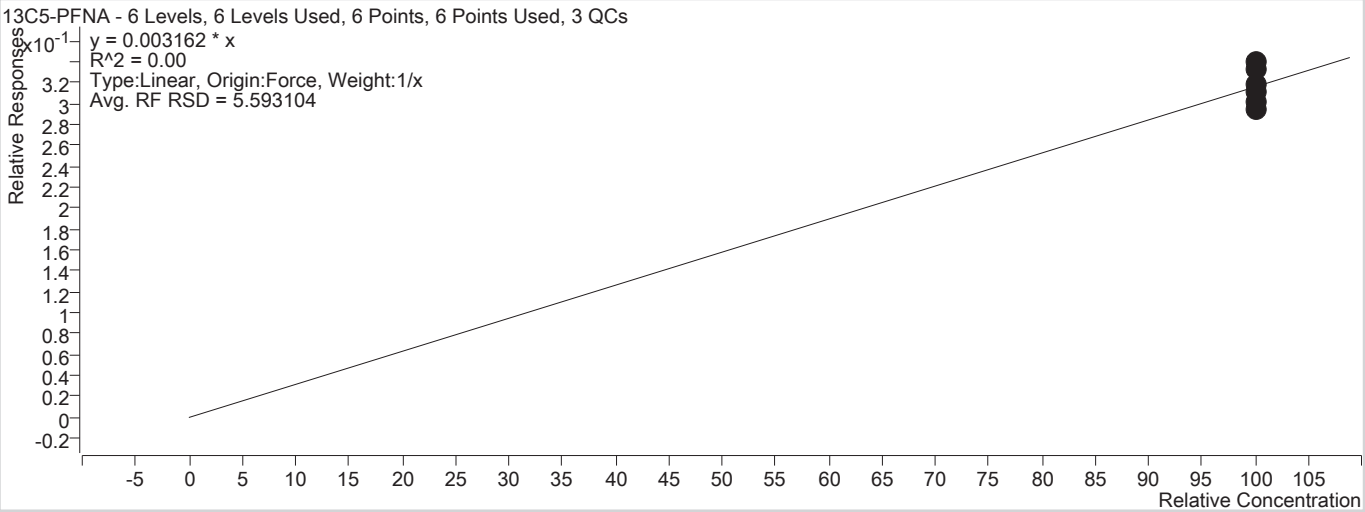
Instrument: LCMS04

Analyte: 13C5-PFNA

Internal Standard: 13C6-PFHxA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	95.39	5335	0.0030	246	95.4
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	104.98	6058	0.0033	193	105.0
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	92.88	5401	0.0029	253	92.9
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	107.50	6568	0.0034	306	107.5
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	98.36	5885	0.0031	441	98.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	100.89	5974	0.0032	281	100.9

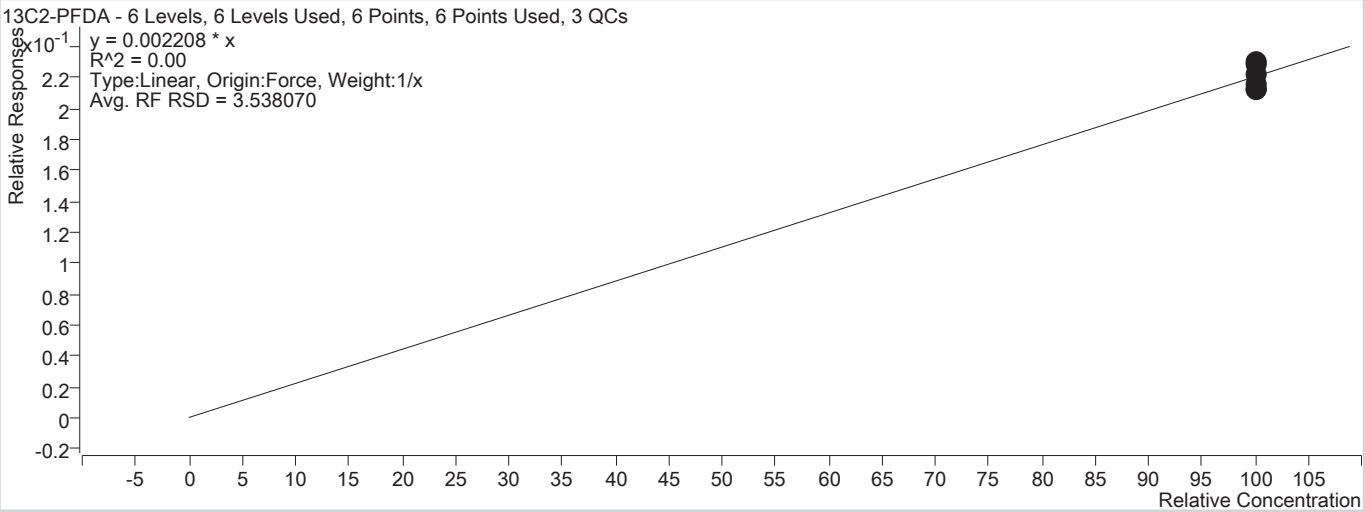
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: 13C2-PFDA

Internal Standard: 13C9-PFDA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	98.02	4813	0.0022	308	98.0
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	100.82	5100	0.0022	233	100.8
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	96.36	4713	0.0021	310	96.4
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	104.27	5357	0.0023	245	104.3
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	96.64	4968	0.0021	266	96.6
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	103.89	5094	0.0023	453	103.9

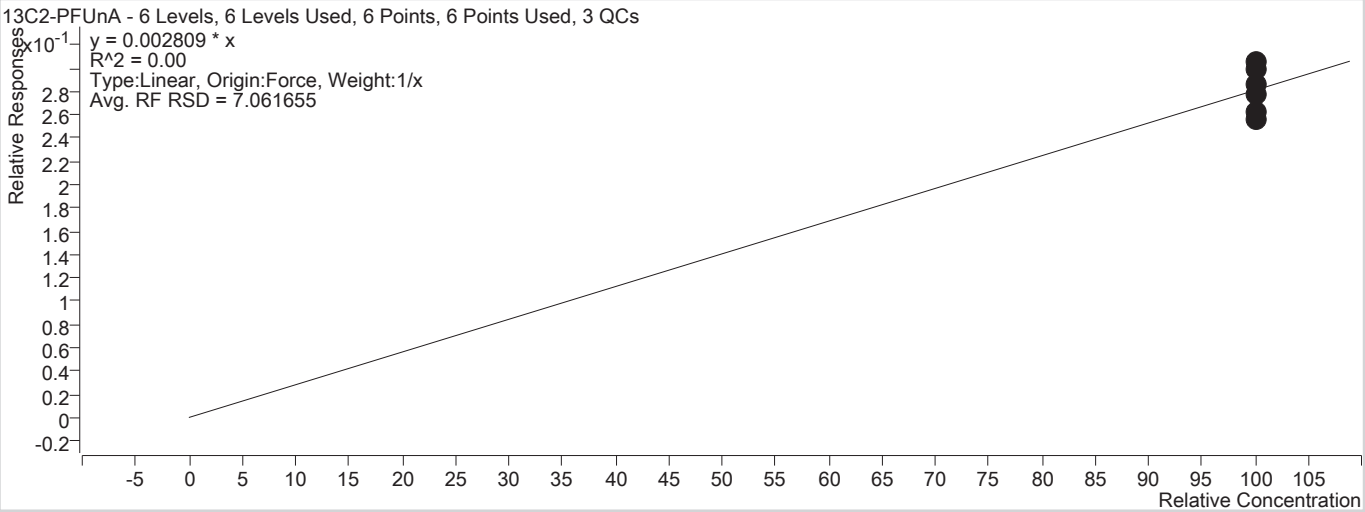
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: 13C2-PFUnA

Internal Standard: 13C9-PFDA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	93.05	5812	0.0026	277	93.1
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	108.61	6988	0.0031	332	108.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	91.24	5676	0.0026	217	91.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	106.74	6975	0.0030	361	106.7
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	98.64	6450	0.0028	199	98.6
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	101.72	6344	0.0029	189	101.7

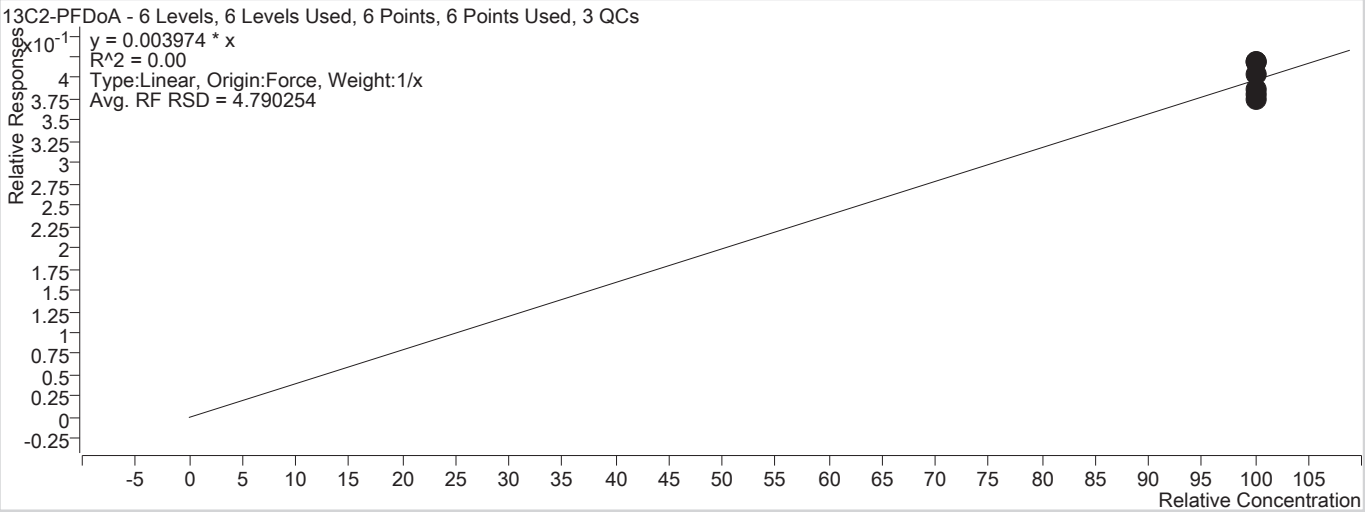
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: 13C2-PFDoA

Internal Standard: 13C9-PFDA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	94.70	8368	0.0038	426	94.7
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	101.60	9249	0.0040	445	101.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	95.53	8408	0.0038	190	95.5
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	105.37	9741	0.0042	476	105.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	97.44	9014	0.0039	522	97.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	105.36	9296	0.0042	186	105.4

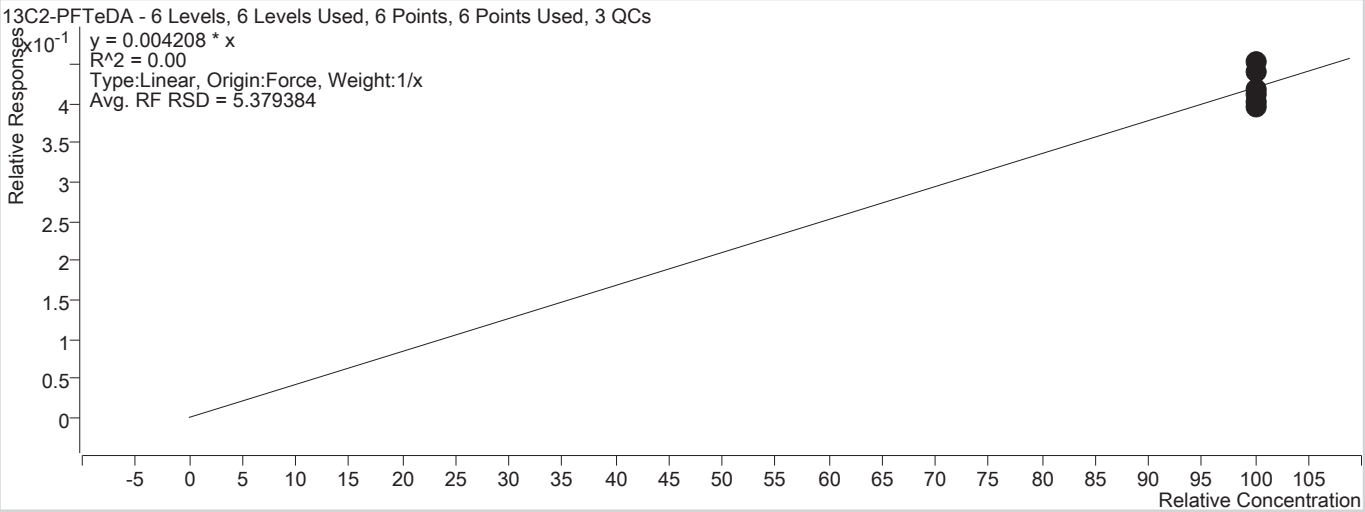
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: 13C2-PFTeDA

Internal Standard: 13C9-PFDA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	100.00	98.14	9183	0.0041	455	98.1
STD 2	STD 2	x	2018/03/15 4:51:26 PM	100.00	99.35	9577	0.0042	508	99.3
STD 3	STD 3	x	2018/03/15 4:56:23 PM	100.00	94.01	8762	0.0040	285	94.0
STD 4	STD 4	x	2018/03/15 5:01:20 PM	100.00	107.73	10547	0.0045	309	107.7
STD 5	STD 5	x	2018/03/15 5:06:17 PM	100.00	95.65	9371	0.0040	278	95.7
STD 6	STD 6	x	2018/03/15 5:11:14 PM	100.00	105.12	9822	0.0044	386	105.1

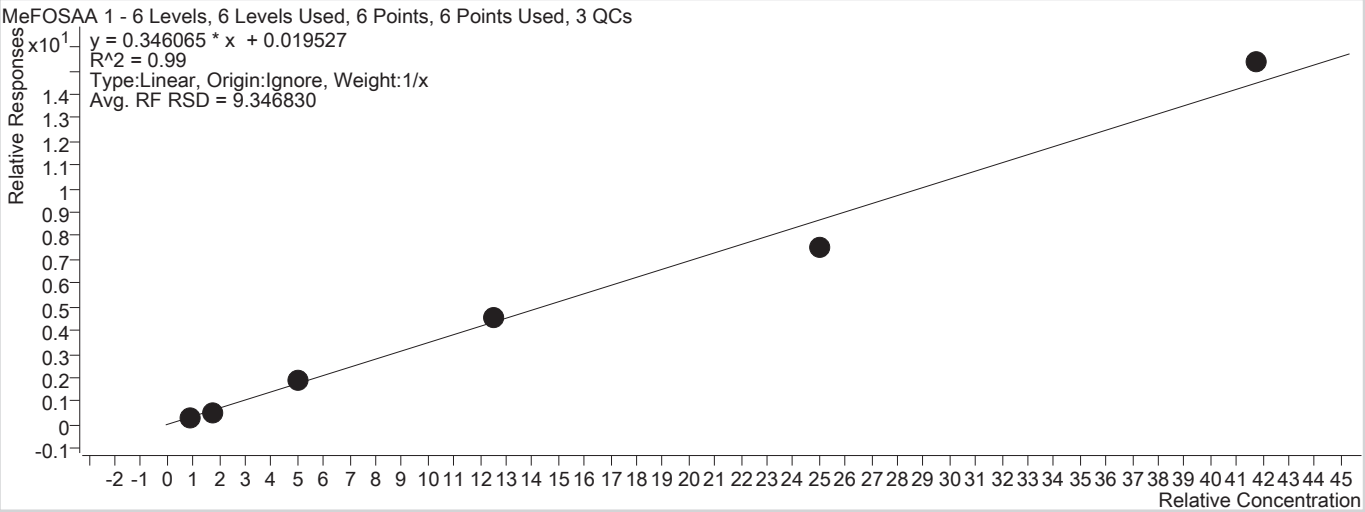
Batch Path T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETox ics.batch.bin

Last Calib Update 2018/03/19 11:16:39 AM

Instrument: LCMS04

Analyte: MeFOSAA 1

Internal Standard: D3-MeFOSAA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/13 8:37:22 PM	0.83	0.85	528	0.3769	135	102.1
STD 2	STD 2	x	2018/03/13 8:39:48 PM	1.70	1.56	972	0.3282	219	91.5
STD 3	STD 3	x	2018/03/13 8:42:13 PM	5.00	5.52	3158	0.3858	365	110.4
STD 4	STD 4	x	2018/03/13 8:44:38 PM	12.50	12.94	7404	0.3599	293	103.5
STD 5	STD 5	x	2018/03/13 8:47:02 PM	25.00	21.55	12159	0.2991	356	86.2
STD 6	STD 6	x	2018/03/13 8:49:27 PM	41.70	44.32	24369	0.3682	363	106.3

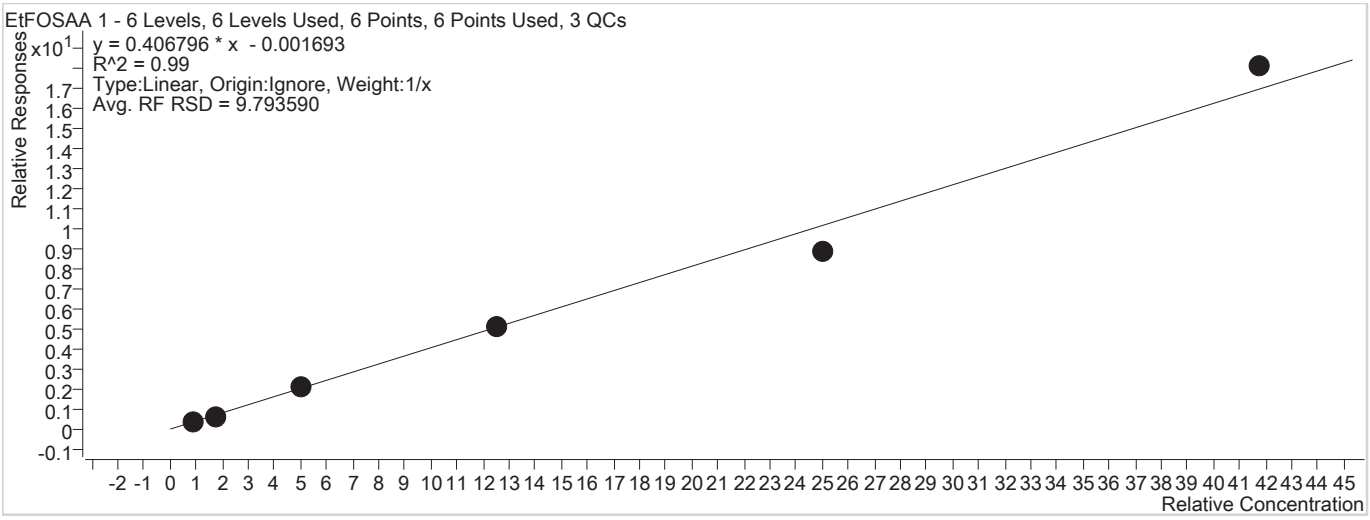
Batch Path T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETox ics.batch.bin

Last Calib Update 2018/03/19 11:16:39 AM

Instrument: LCMS04

Analyte: EtFOSAA 1

Internal Standard: D5-EtFOSAA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/13 8:37:22 PM	0.83	0.93	514	0.4557	93	112.5
STD 2	STD 2	x	2018/03/13 8:39:48 PM	1.70	1.51	911	0.3606	160	88.9
STD 3	STD 3	x	2018/03/13 8:42:13 PM	5.00	5.15	3003	0.4188	442	103.0
STD 4	STD 4	x	2018/03/13 8:44:38 PM	12.50	12.60	7406	0.4100	985	100.8
STD 5	STD 5	x	2018/03/13 8:47:02 PM	25.00	21.96	12191	0.3572	979	87.8
STD 6	STD 6	x	2018/03/13 8:49:27 PM	41.70	44.57	24783	0.4348	1997	106.9

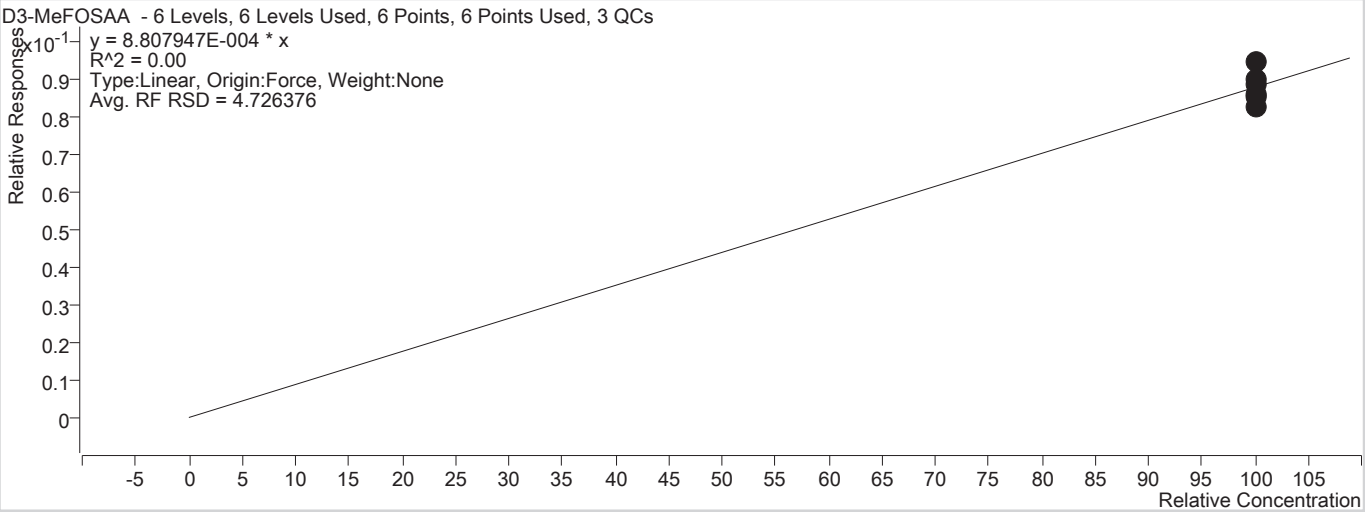
Batch Path T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETox ics.batch.bin

Last Calib Update 2018/03/19 11:16:39 AM

Instrument: LCMS04

Analyte: D3-MeFOSAA

Internal Standard: 13C9-PFDA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/13 8:37:22 PM	100.00	100.86	1704	0.0009	288	100.9
STD 2	STD 2	x	2018/03/13 8:39:48 PM	100.00	107.63	1750	0.0009	130	107.6
STD 3	STD 3	x	2018/03/13 8:42:13 PM	100.00	94.08	1654	0.0008	160	94.1
STD 4	STD 4	x	2018/03/13 8:44:38 PM	100.00	102.26	1654	0.0009	151	102.3
STD 5	STD 5	x	2018/03/13 8:47:02 PM	100.00	96.91	1632	0.0009	161	96.9
STD 6	STD 6	x	2018/03/13 8:49:27 PM	100.00	98.25	1594	0.0009	230	98.3

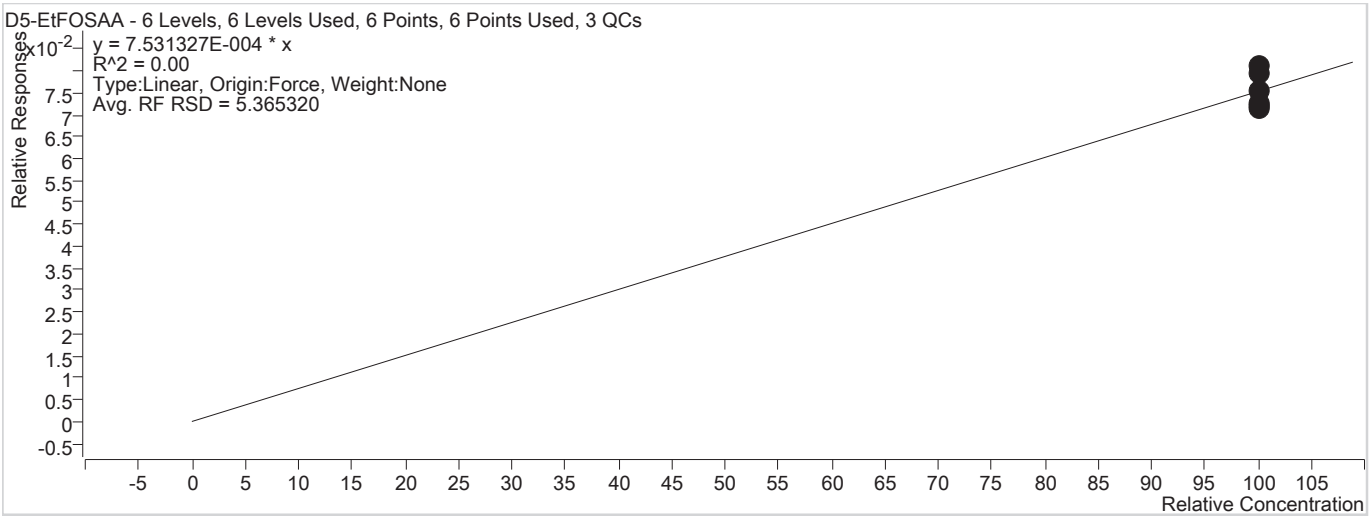
Batch Path T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETox ics.batch.bin

Last Calib Update 2018/03/19 11:16:39 AM

Instrument: LCMS04

Analyte: D5-EtFOSAA

Internal Standard: 13C9-PFDA IS



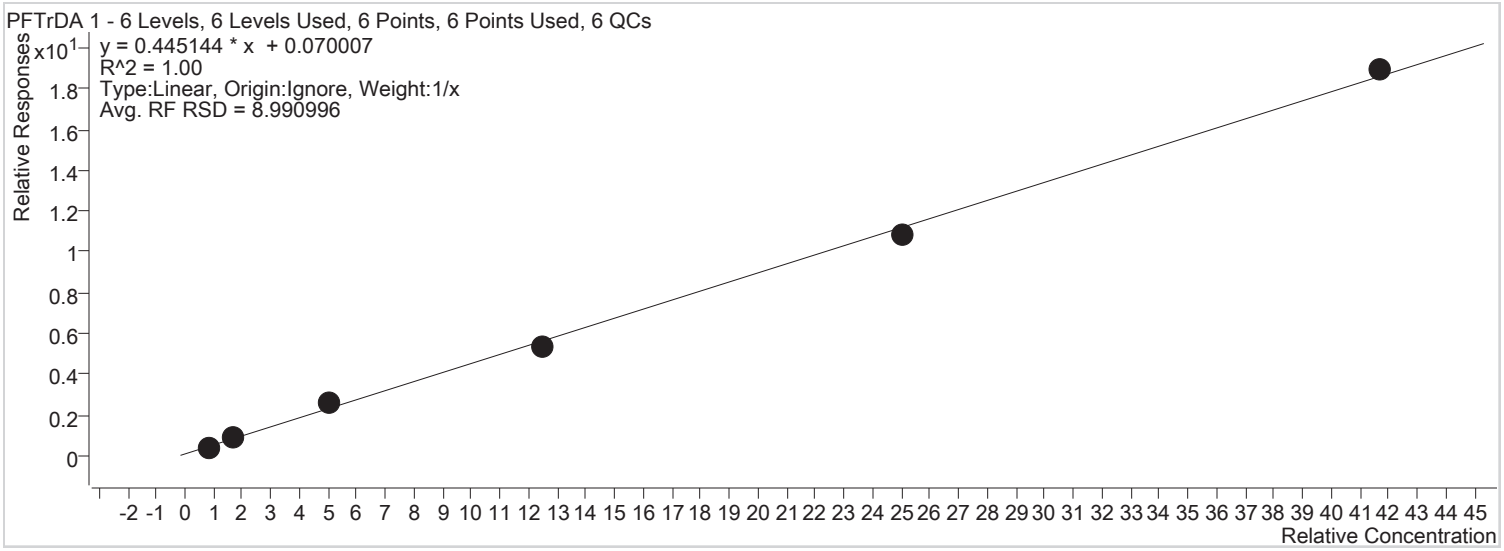
Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/13 8:37:22 PM	100.00	95.04	1373	0.0007	244	95.0
STD 2	STD 2	x	2018/03/13 8:39:48 PM	100.00	107.68	1497	0.0008	219	107.7
STD 3	STD 3	x	2018/03/13 8:42:13 PM	100.00	96.52	1451	0.0007	187	96.5
STD 4	STD 4	x	2018/03/13 8:44:38 PM	100.00	105.35	1457	0.0008	189	105.4
STD 5	STD 5	x	2018/03/13 8:47:02 PM	100.00	95.56	1376	0.0007	232	95.6
STD 6	STD 6	x	2018/03/13 8:49:27 PM	100.00	99.84	1385	0.0008	307	99.8

By Compound Report

Agilent Technologies

Batch Path T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics.batch.bin
Last Calib Update 2018/03/27 7:44:59 AM
Instrument: LCMS04

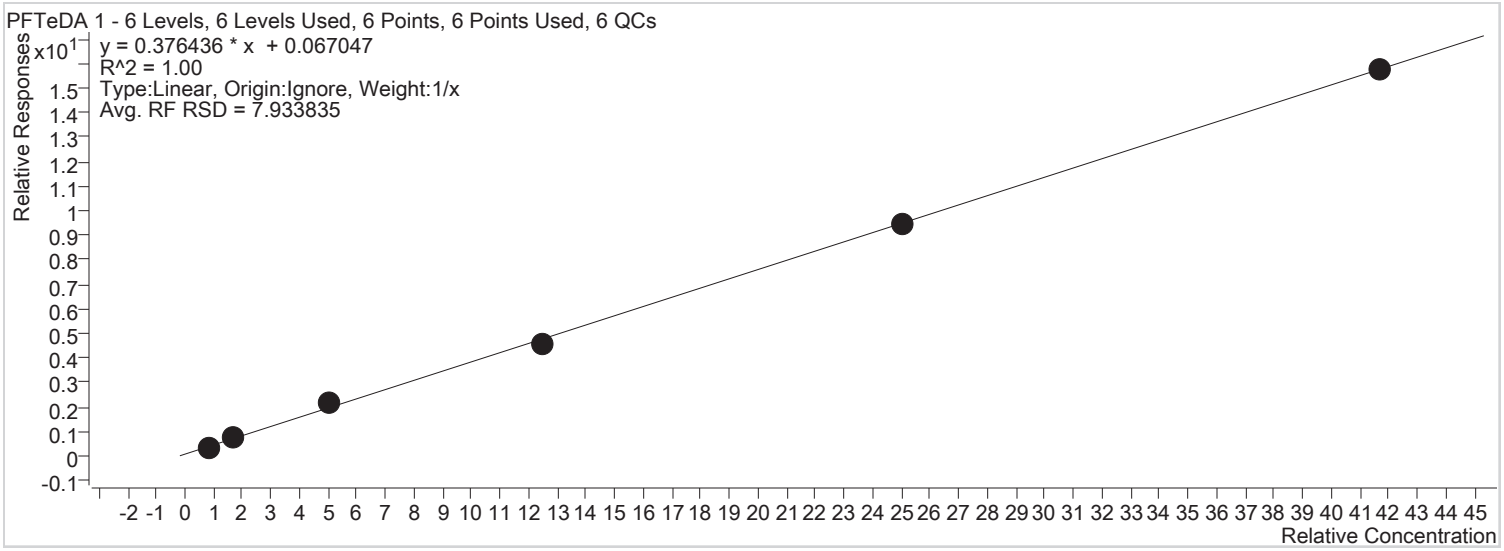
Analyte: PFTrDA 1
Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/21 1:49:36 PM	0.83	0.70	2534	0.4617	41	84.8
STD 2	STD 2	x	2018/03/21 1:54:31 PM	1.70	1.83	5864	0.5200	93	107.6
STD 3	STD 3	x	2018/03/21 1:59:26 PM	5.00	5.73	17877	0.5239	299	114.5
STD 4	STD 4	x	2018/03/21 2:04:21 PM	12.50	11.80	35196	0.4258	481	94.4
STD 5	STD 5	x	2018/03/21 2:09:18 PM	25.00	24.24	71299	0.4344	1092	97.0
STD 6	STD 6	x	2018/03/21 2:14:16 PM	41.70	42.43	130033	0.4546	1548	101.8

Batch Path T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics.batch.bin
Last Calib Update 2018/03/27 7:44:59 AM
Instrument: LCMS04

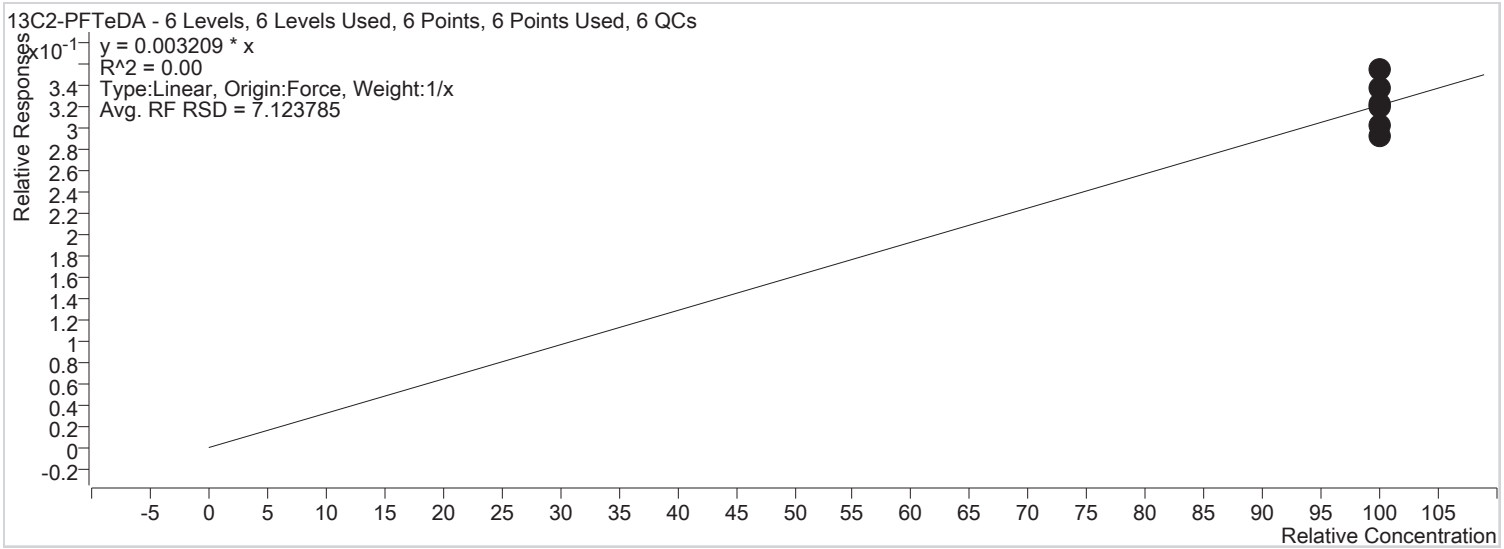
Analyte: PFTeDA 1
Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/21 1:49:36 PM	0.83	0.71	2216	0.4038	36	85.8
STD 2	STD 2	x	2018/03/21 1:54:31 PM	1.70	1.80	4937	0.4378	84	105.8
STD 3	STD 3	x	2018/03/21 1:59:26 PM	5.00	5.64	14958	0.4383	324	112.9
STD 4	STD 4	x	2018/03/21 2:04:21 PM	12.50	11.97	30245	0.3659	470	95.8
STD 5	STD 5	x	2018/03/21 2:09:18 PM	25.00	24.96	62130	0.3786	947	99.8
STD 6	STD 6	x	2018/03/21 2:14:16 PM	41.70	41.64	107975	0.3775	1198	99.9

Batch Path T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics.batch.bin
Last Calib Update 2018/03/27 7:44:59 AM
Instrument: LCMS04

Analyte: 13C2-PFTeDA
Internal Standard: 13C9-PFDA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/21 1:49:36 PM	100.00	99.20	6612	0.0032	949	99.2
STD 2	STD 2	x	2018/03/21 1:54:31 PM	100.00	90.76	6633	0.0029	556	90.8
STD 3	STD 3	x	2018/03/21 1:59:26 PM	100.00	94.27	6825	0.0030	841	94.3
STD 4	STD 4	x	2018/03/21 2:04:21 PM	100.00	105.28	6613	0.0034	496	105.3
STD 5	STD 5	x	2018/03/21 2:09:18 PM	100.00	100.15	6565	0.0032	911	100.1
STD 6	STD 6	x	2018/03/21 2:14:16 PM	100.00	110.34	6859	0.0035	741	110.3



6. Continuing Calibration

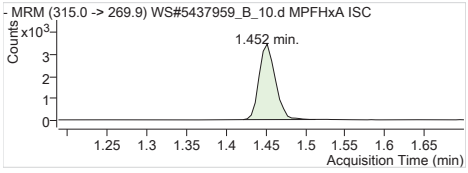
Maxxam Analytics International
6740 Campobello Rd
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

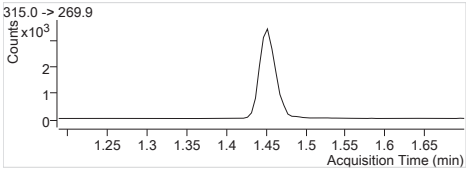
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**ISC**	**Instrument**	LCMS04
Data File	WS#5437959_B_10.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A2
Acq. Date	2018/03/15 5:27:21 PM	**Injection Volume**	Per Method
Sample Annotation	-		

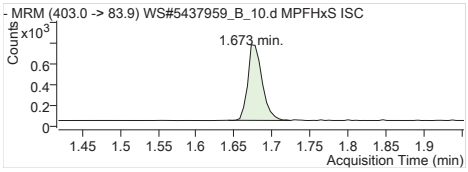
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4770	1.45	1 µg/L		
MPFHxS	971	1.67	1 µg/L		
MPFHpA	5507	1.70	1 µg/L		
MPFOA	5668	1.89	1 µg/L		
MPFOS	1220	1.97	1 µg/L		
MPFNA	5519	2.03	1 µg/L		
MPFDA	4524	2.14	1 µg/L		
MPFUnA	5671	2.24	1 µg/L		
MPFDoA	8145	2.33	1 µg/L		
MPFTeDA	8570	2.47	1 µg/L		
13C6-PFHxA IS	18281	1.45	1 µg/L		
13C9-PFDA IS	21247	2.14	1 µg/L		

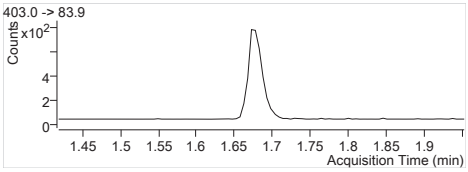
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	410	1.11	0.83	0.84 µg/L	101.76
PFHxA 1	1587	1.45	0.83	0.92 µg/L	110.32
PFHxS 1	401	1.68	0.83	0.95 µg/L	113.91
PFHpA 1	1716	1.71	0.83	0.83 µg/L	100.23
PFOA 1	2042	1.89	0.83	0.91 µg/L	109.54
PFOS 1	442	1.97	0.83	0.90 µg/L	108.90
PFNA 1	1748	2.03	0.83	0.79 µg/L	95.39
PFDA 1	1890	2.14	0.83	0.85 µg/L	102.45
PFUnA 1	2093	2.24	0.83	0.92 µg/L	110.62
PFDoA 1	2838	2.33	0.83	0.91 µg/L	110.05
PFTrDA 1	3228	2.40	0.83	0.97 µg/L	116.54
PFTeDA 1	2714	2.47	0.83	0.93 µg/L	111.50
13C2-PFHxA	4770	1.45	100.00	95.74 µg/L	95.74
18O2-PFHxS	971	1.67	100.00	96.17 µg/L	96.17
13C4-PFHpA	5507	1.70	100.00	95.75 µg/L	95.75
13C4-PFOA	5668	1.89	100.00	94.13 µg/L	94.13
13C4-PFOS	1220	1.97	100.00	99.72 µg/L	99.72
13C5-PFNA	5441	2.03	100.00	94.13 µg/L	94.13
13C2-PFDA	4432	2.14	100.00	94.47 µg/L	94.47
13C2-PFUnA	5671	2.24	100.00	95.03 µg/L	95.03
13C2-PFDoA	8145	2.33	100.00	96.48 µg/L	96.48
13C2-PFTeDA	8539	2.47	100.00	95.51 µg/L	95.51
13C6-PFHxA	18281	1.45	100.00	98.55 µg/L	98.55
13C9-PFDA	21247	2.14	100.00	93.70 µg/L	93.70



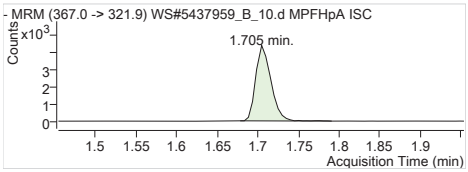


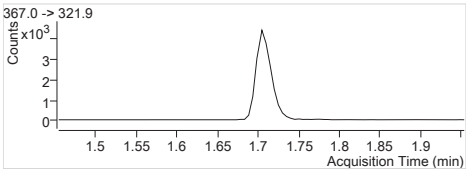
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	CC



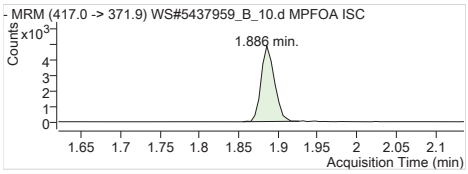


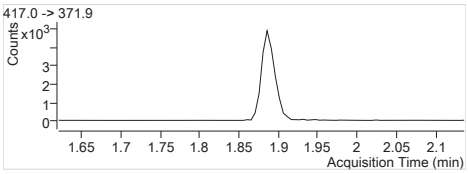
MPFHxS Internal Standard
RT (Exp. RT): 1.673 (1.678)
Concentration: 1 µg/L
Sample type: CC



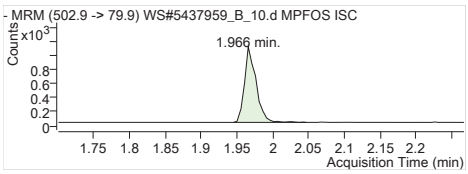


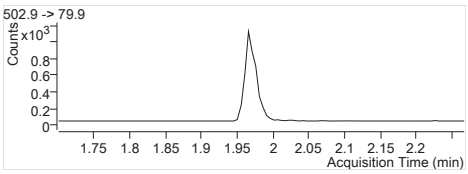
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: CC



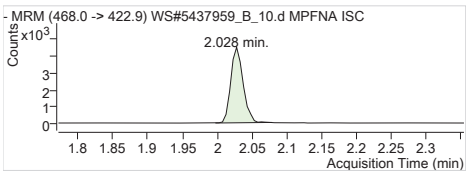


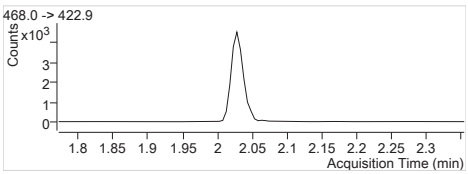
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: CC



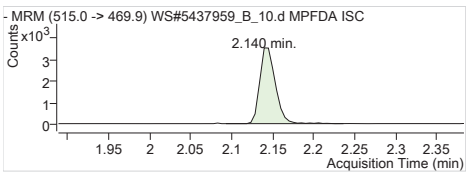


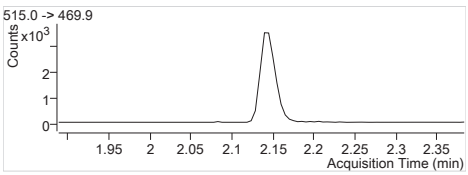
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: CC



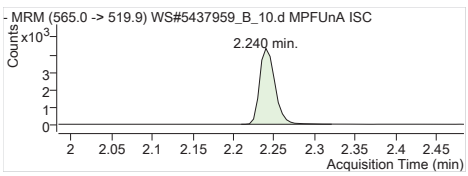


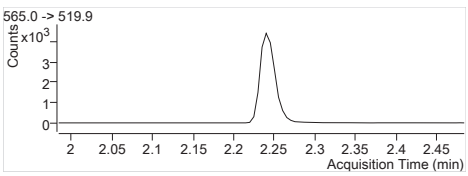
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: CC



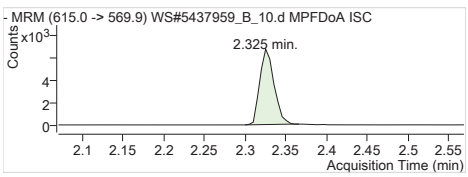


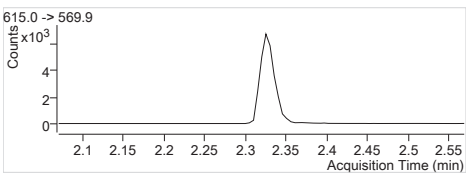
MPFDA Internal Standard
RT (Exp. RT): 2.140 (2.145)
Concentration: 1 µg/L
Sample type: CC



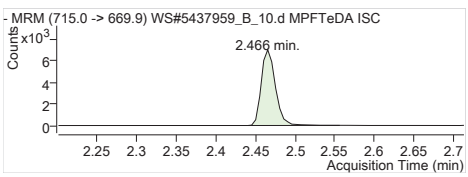


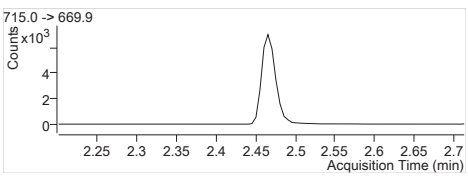
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: CC



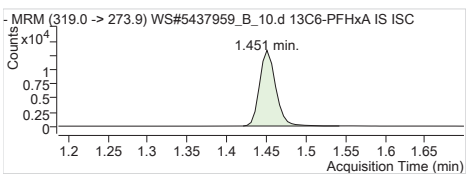


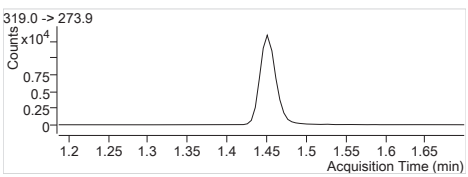
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: CC



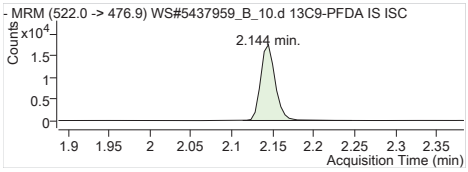


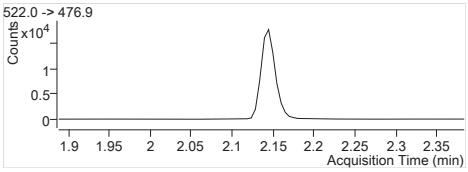
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: CC



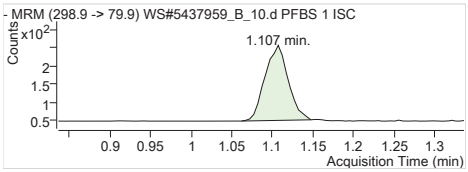


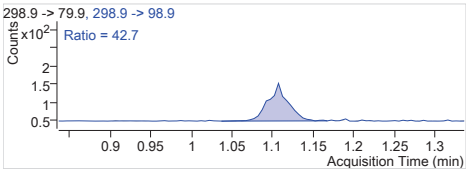
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: CC



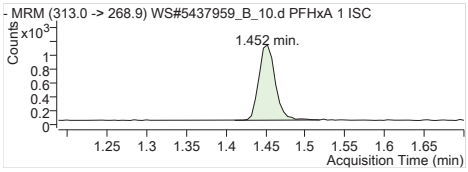


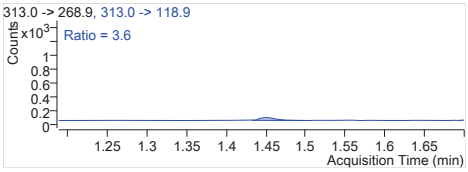
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: CC



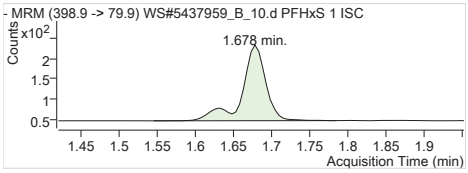


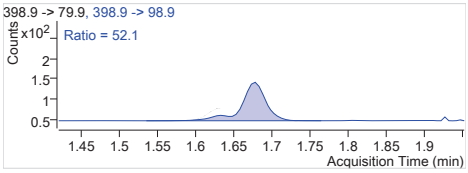
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.107 (1.107)
Calc. conc. 0.84 µg/L
Area ratio: 0.42225
Sample type: CC



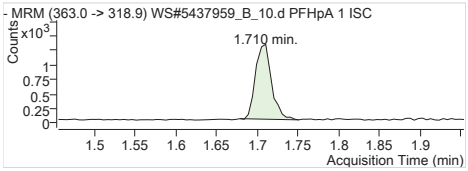


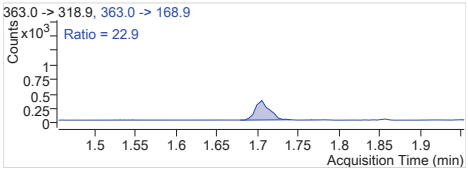
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 0.92 µg/L
Area ratio: 0.33270
Sample type: CC



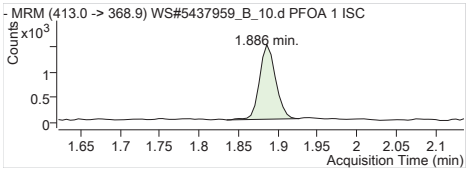


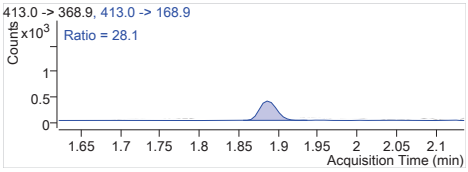
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 0.95 µg/L
Area ratio: 0.41298
Sample type: CC



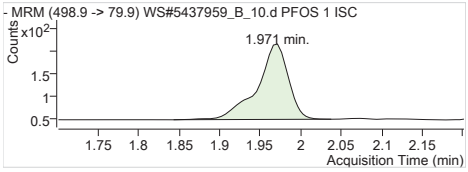


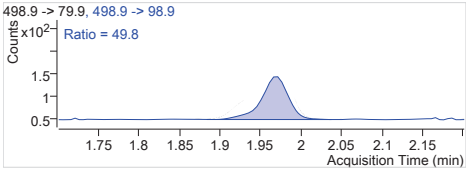
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.710 (1.705)
Calc. conc. 0.83 µg/L
Area ratio: 0.31160
Sample type: CC



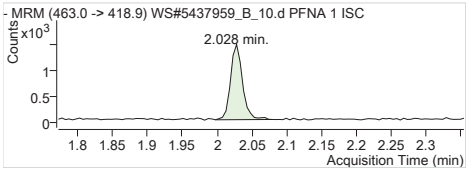


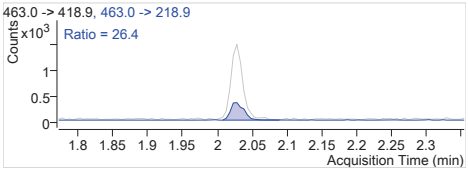
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 0.91 µg/L
Area ratio: 0.36027
Sample type: CC



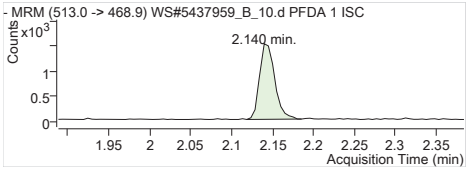


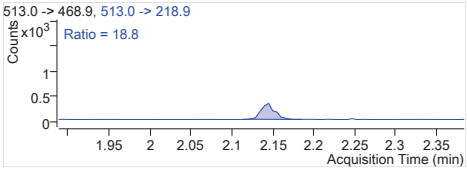
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 0.90 µg/L
Area ratio: 0.36230
Sample type: CC



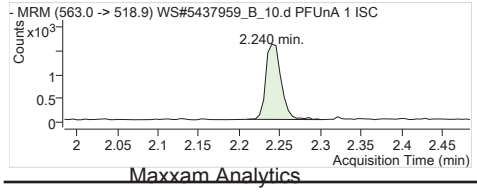


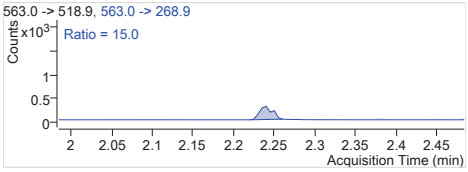
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 0.79 µg/L
Area ratio: 0.31672
Sample type: CC



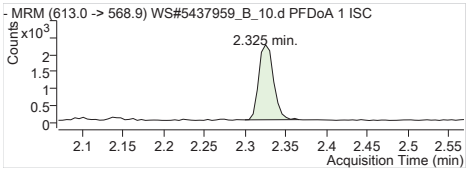


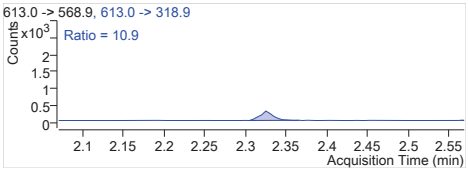
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.140 (2.145)
Calc. conc. 0.85 µg/L
Area ratio: 0.41777
Sample type: CC



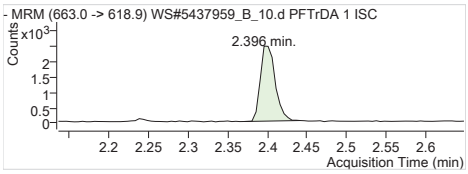


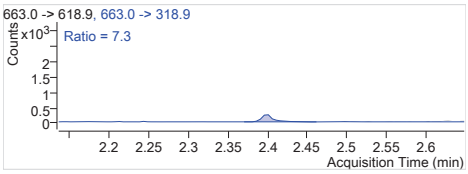
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 0.92 µg/L
Area ratio: 0.36907
Sample type: CC



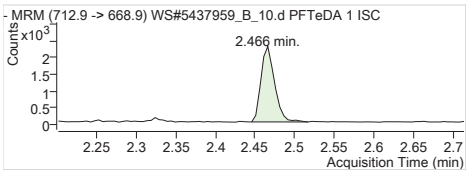


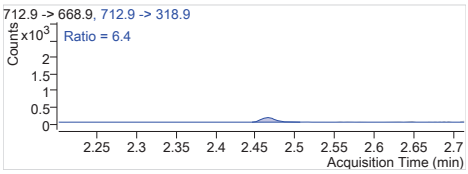
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 0.91 µg/L
Area ratio: 0.34843
Sample type: CC



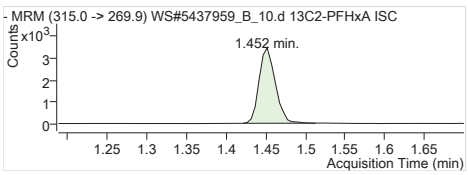


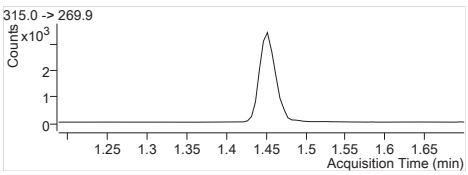
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.396 (2.401)
Calc. conc. 0.97 µg/L
Area ratio: 0.37666
Sample type: CC



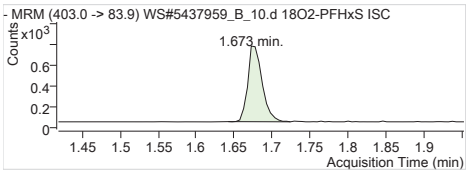


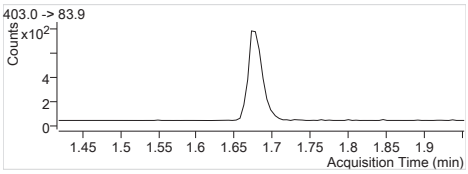
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 0.93 µg/L
Area ratio: 0.31669
Sample type: CC



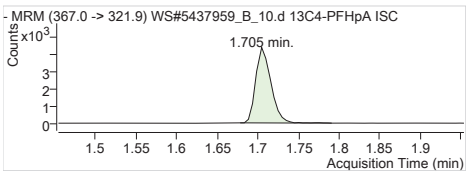


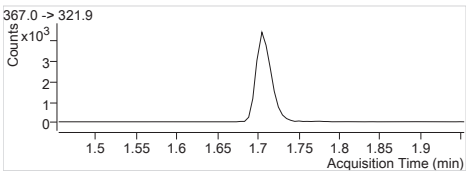
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 95.74 µg/L
Area ratio: 0.26093
Sample type: CC



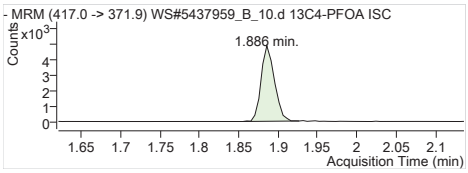


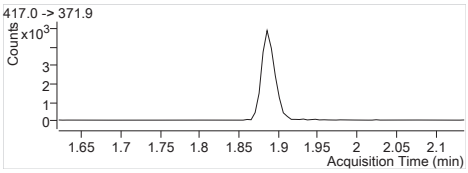
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.673 (1.678)
Calc. conc. 96.17 µg/L
Area ratio: 0.05312
Sample type: CC



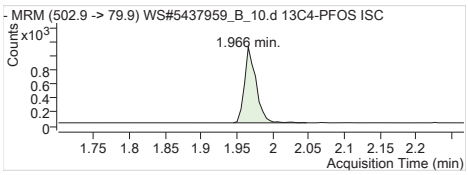


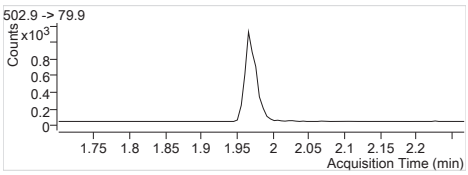
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 95.75 µg/L
Area ratio: 0.30124
Sample type: CC



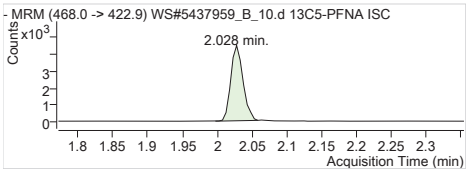


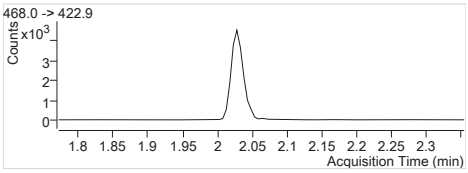
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 94.13 µg/L
Area ratio: 0.31005
Sample type: CC



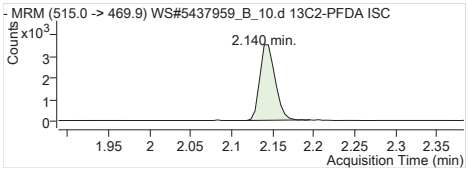


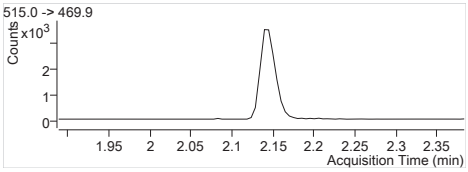
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 99.72 µg/L
Area ratio: 0.06674
Sample type: CC



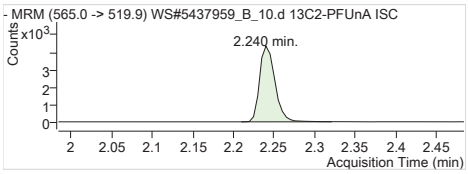


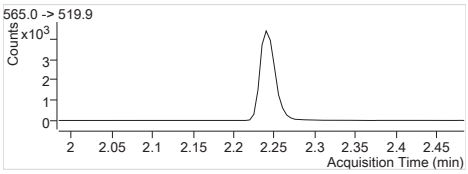
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 94.13 µg/L
Area ratio: 0.29763
Sample type: CC



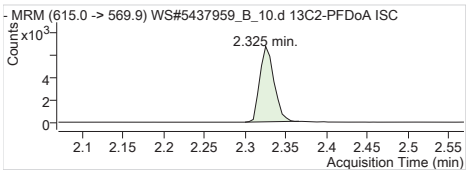


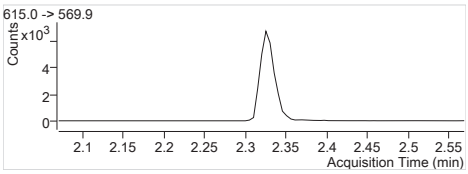
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.140 (2.145)
Calc. conc. 94.47 µg/L
Area ratio: 0.20859
Sample type: CC



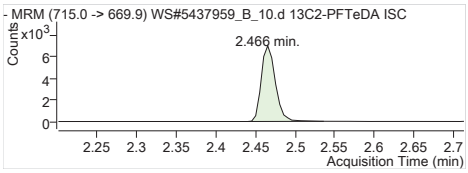


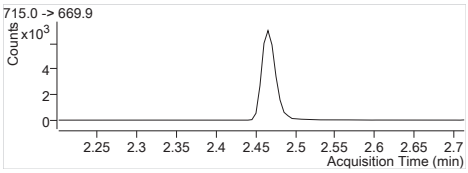
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 95.03 µg/L
Area ratio: 0.26691
Sample type: CC



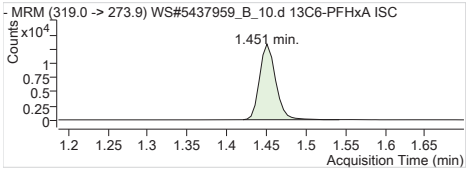


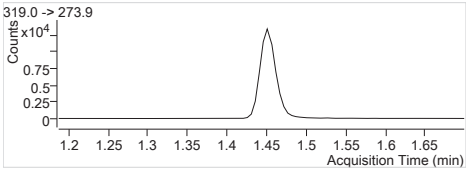
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 96.48 µg/L
Area ratio: 0.38335
Sample type: CC



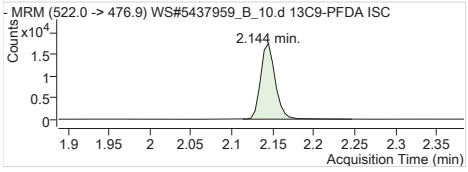


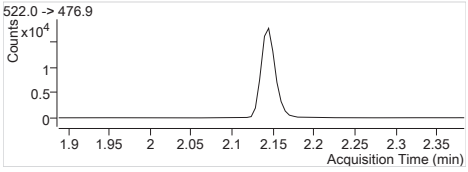
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 95.51 µg/L
Area ratio: 0.40189
Sample type: CC





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 98.55 µg/L
Area ratio: 0
Sample type: CC





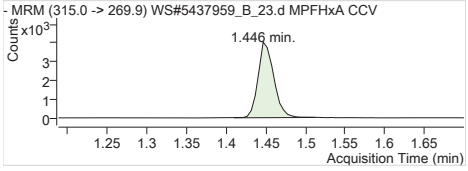
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 93.70 µg/L
Area ratio: 0
Sample type: CC

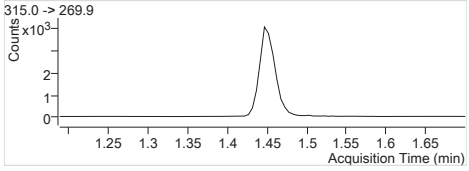
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**CCV**	**Instrument**	LCMS04
Data File	WS#5437959_B_23.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A5
Acq. Date	2018/03/15 6:32:01 PM	**Injection Volume**	Per Method
Sample Annotation	-		

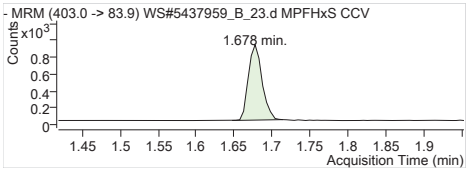
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	5517	1.45	1 µg/L		
MPFHxS	1137	1.68	1 µg/L		
MPFHpA	6340	1.70	1 µg/L		
MPFOA	6648	1.89	1 µg/L		
MPFOS	1345	1.97	1 µg/L		
MPFNA	6304	2.03	1 µg/L		
MPFDA	5299	2.14	1 µg/L		
MPFUnA	6600	2.24	1 µg/L		
MPFDoA	9429	2.33	1 µg/L		
MPFTeDA	10206	2.46	1 µg/L		
13C6-PFHxA IS	19946	1.45	1 µg/L		
13C9-PFDA IS	22645	2.14	1 µg/L		

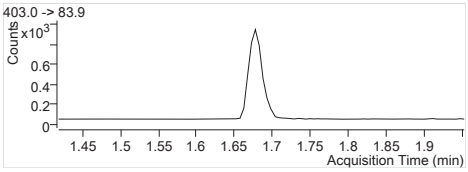
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	7194	1.10	12.50	12.64 µg/L	101.12
PFHxA 1	27050	1.45	12.50	12.61 µg/L	100.85
PFHxS 1	6526	1.68	12.50	12.85 µg/L	102.83
PFHpA 1	31440	1.71	12.50	12.89 µg/L	103.13
PFOA 1	36245	1.89	12.50	12.70 µg/L	101.61
PFOS 1	7128	1.97	12.50	12.64 µg/L	101.12
PFNA 1	30702	2.03	12.50	12.72 µg/L	101.74
PFDA 1	34575	2.14	12.50	12.81 µg/L	102.51
PFUnA 1	36655	2.24	12.50	12.75 µg/L	102.04
PFDoA 1	48326	2.33	12.50	12.91 µg/L	103.30
PFTrDA 1	54730	2.40	12.50	12.73 µg/L	101.87
PFTeDA 1	44957	2.46	12.50	12.57 µg/L	100.60
13C2-PFHxA	5517	1.45	100.00	101.49 µg/L	101.49
18O2-PFHxS	1137	1.68	100.00	103.21 µg/L	103.21
13C4-PFHpA	6340	1.70	100.00	101.03 µg/L	101.03
13C4-PFOA	6648	1.89	100.00	101.19 µg/L	101.19
13C4-PFOS	1345	1.97	100.00	100.76 µg/L	100.76
13C5-PFNA	6145	2.03	100.00	97.44 µg/L	97.44
13C2-PFDA	5266	2.14	100.00	105.31 µg/L	105.31
13C2-PFUnA	6600	2.24	100.00	103.77 µg/L	103.77
13C2-PFDoA	9429	2.33	100.00	104.79 µg/L	104.79
13C2-PFTeDA	10212	2.46	100.00	107.17 µg/L	107.17
13C6-PFHxA	19946	1.45	100.00	107.52 µg/L	107.52
13C9-PFDA	22645	2.14	100.00	99.87 µg/L	99.87



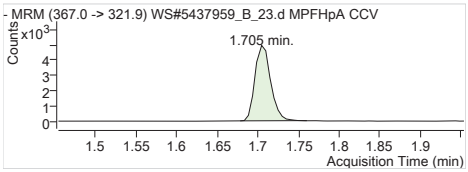


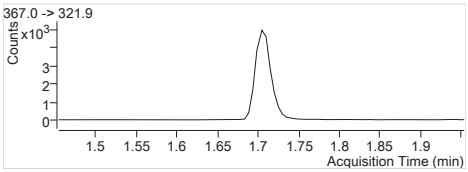
MPFHxA	Internal Standard
RT (Exp. RT):	1.446 (1.452)
Concentration:	1 µg/L
Sample type:	CC



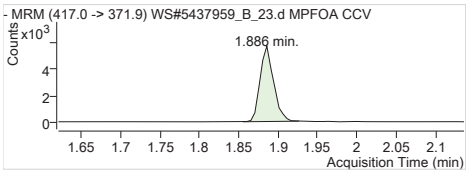


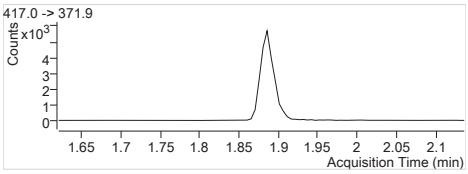
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: CC



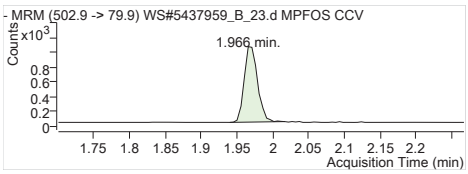


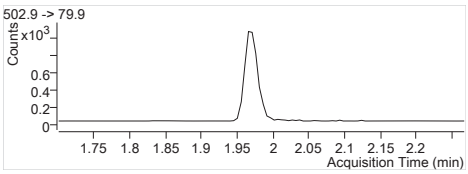
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: CC



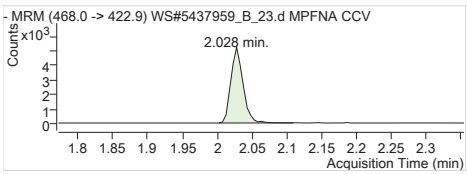


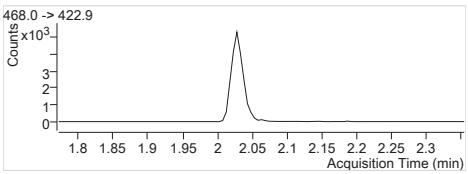
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: CC



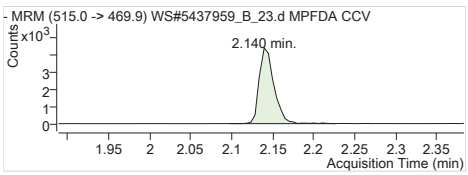


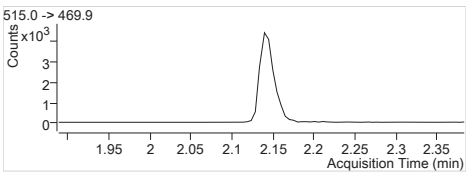
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: CC



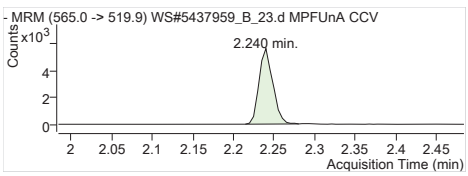


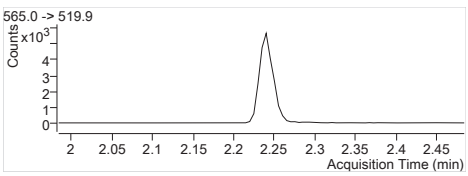
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: CC



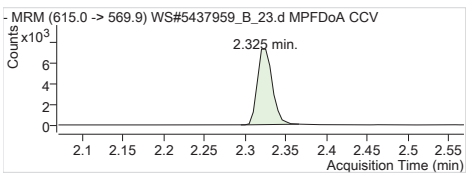


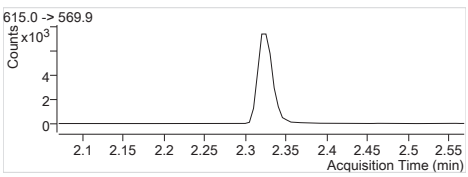
MPFDA Internal Standard
RT (Exp. RT): 2.140 (2.145)
Concentration: 1 µg/L
Sample type: CC



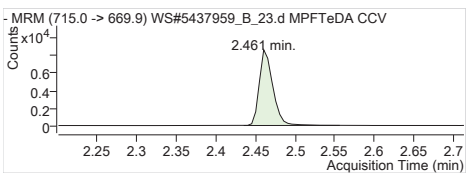


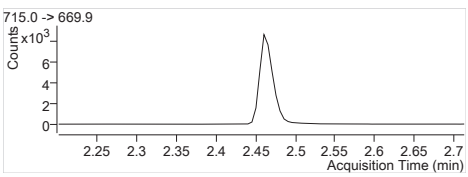
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: CC



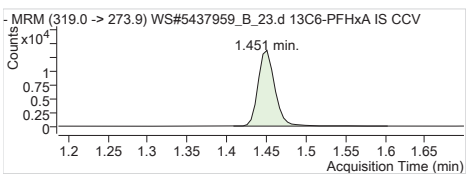


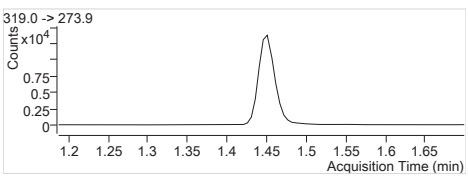
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: CC



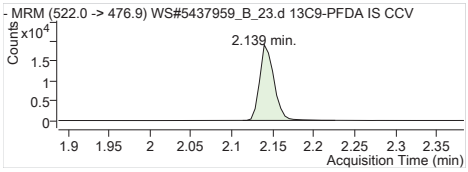


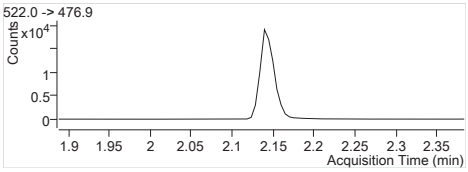
MPFTeDA Internal Standard
RT (Exp. RT): 2.461 (2.466)
Concentration: 1 µg/L
Sample type: CC



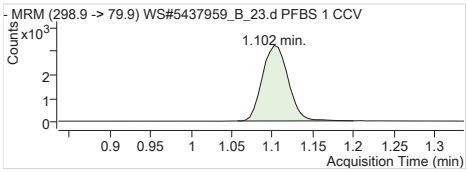


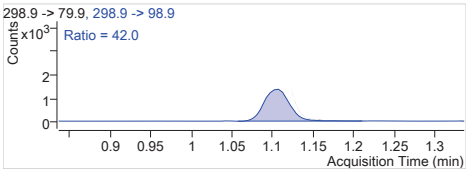
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: CC



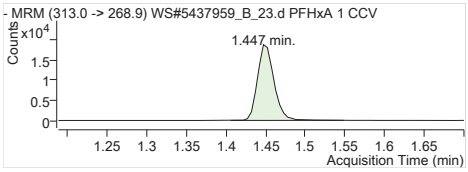


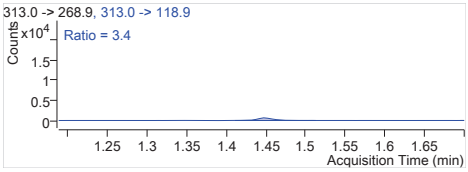
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.139 (2.144)
Concentration: 1 µg/L
Sample type: CC



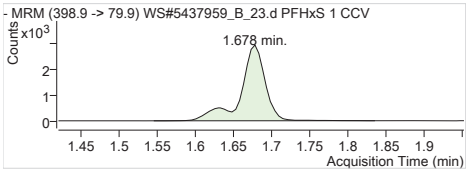


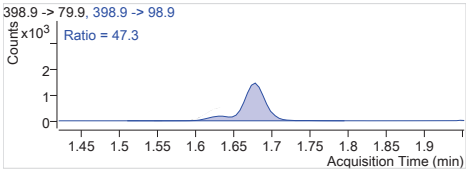
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.102 (1.107)
Calc. conc. 12.64 µg/L
Area ratio: 6.32718
Sample type: CC



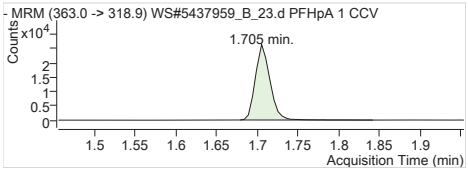


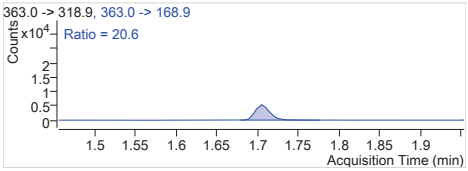
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.447 (1.452)
Calc. conc. 12.61 µg/L
Area ratio: 4.90303
Sample type: CC



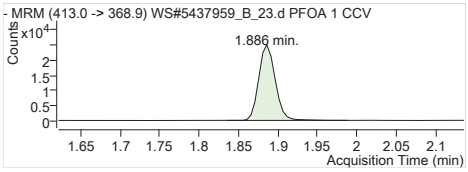


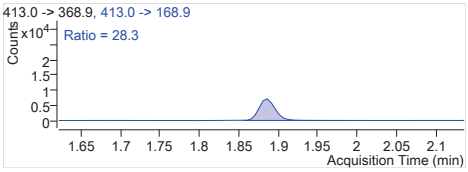
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 12.85 µg/L
Area ratio: 5.73967
Sample type: CC



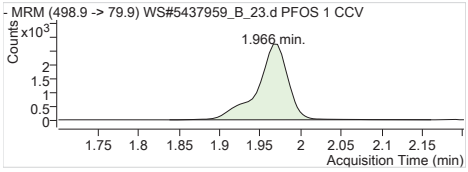


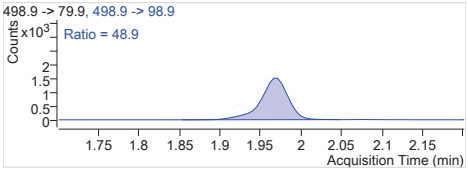
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 12.89 µg/L
Area ratio: 4.95899
Sample type: CC



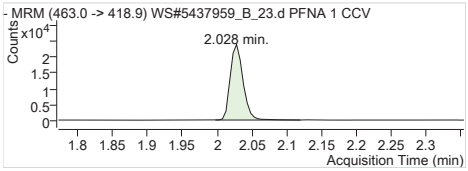


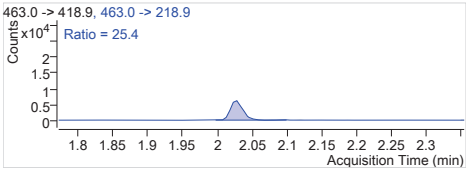
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 12.70 µg/L
Area ratio: 5.45202
Sample type: CC



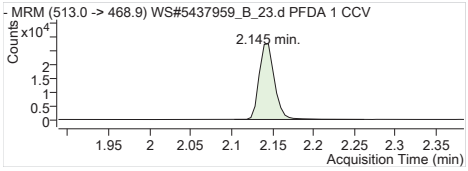


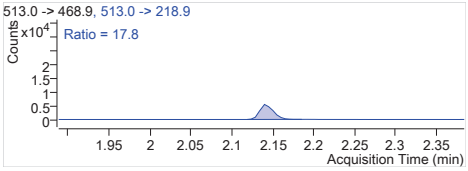
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 12.64 µg/L
Area ratio: 5.29963
Sample type: CC



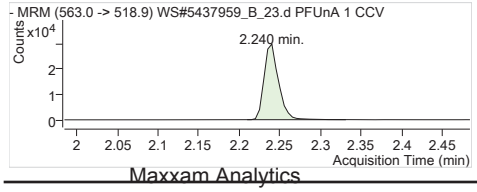


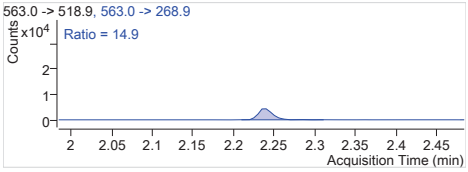
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 12.72 µg/L
Area ratio: 4.87024
Sample type: CC



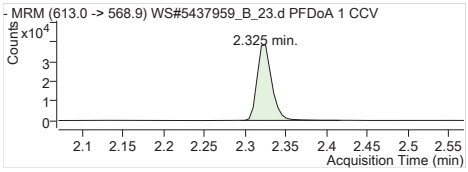


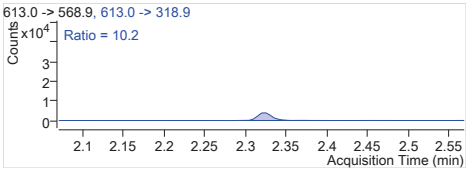
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 12.81 µg/L
Area ratio: 6.52482
Sample type: CC



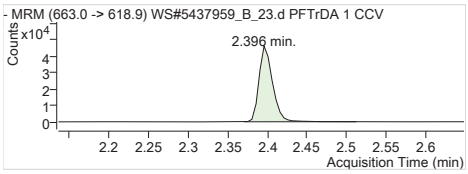


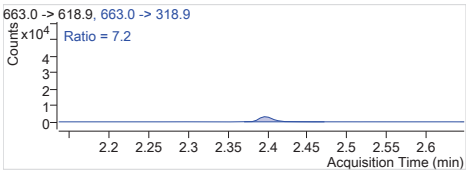
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 12.75 µg/L
Area ratio: 5.55379
Sample type: CC



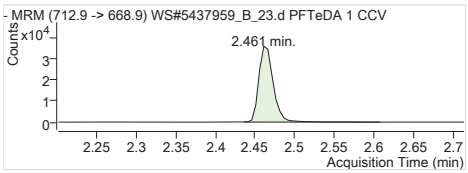


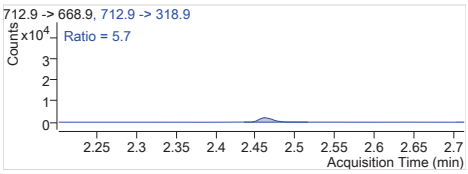
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 12.91 µg/L
Area ratio: 5.12525
Sample type: CC



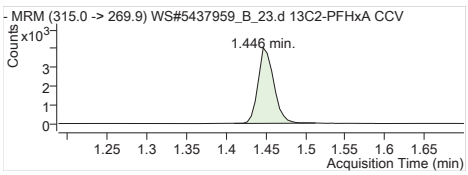


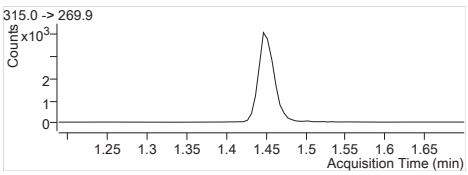
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.396 (2.401)
Calc. conc. 12.73 µg/L
Area ratio: 5.36253
Sample type: CC



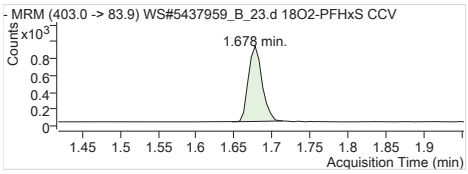


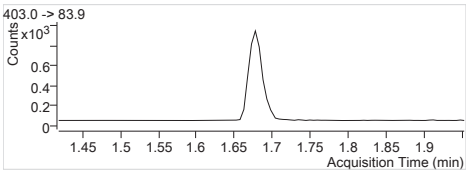
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.461 (2.466)
Calc. conc. 12.57 µg/L
Area ratio: 4.40496
Sample type: CC



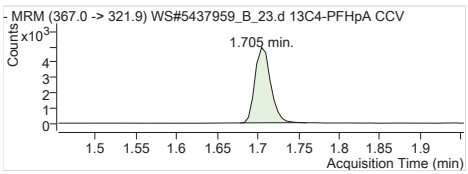


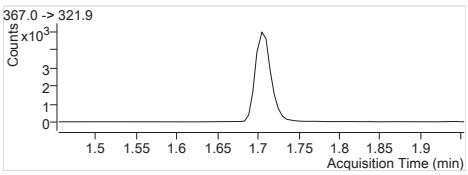
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.446 (1.452)
Calc. conc. 101.49 µg/L
Area ratio: 0.27660
Sample type: CC



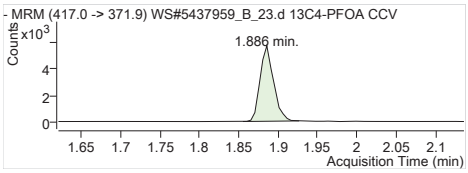


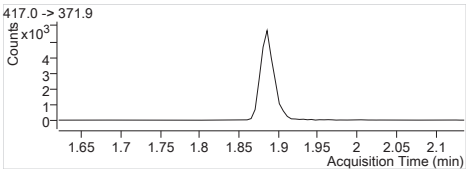
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 103.21 µg/L
Area ratio: 0.05700
Sample type: CC



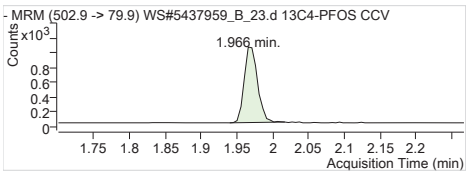


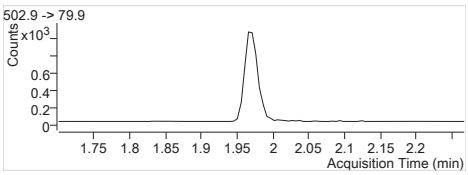
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 101.03 µg/L
Area ratio: 0.31786
Sample type: CC



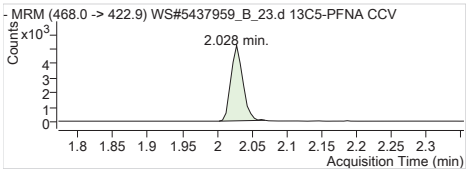


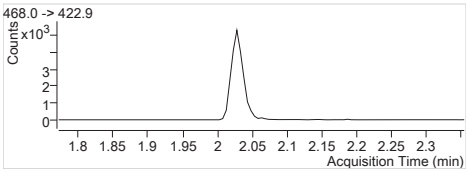
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 101.19 µg/L
Area ratio: 0.33330
Sample type: CC



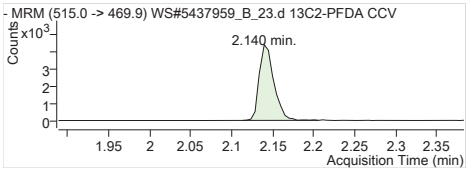


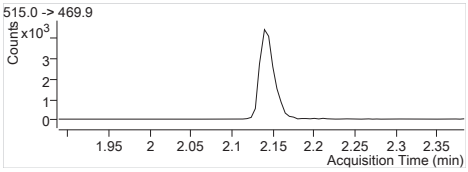
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 100.76 µg/L
Area ratio: 0.06743
Sample type: CC



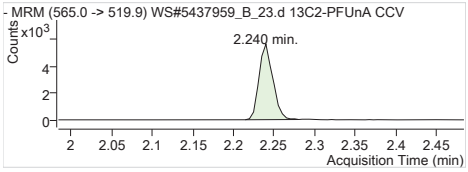


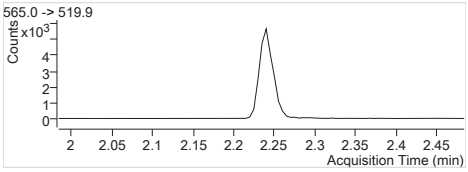
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 97.44 µg/L
Area ratio: 0.30808
Sample type: CC



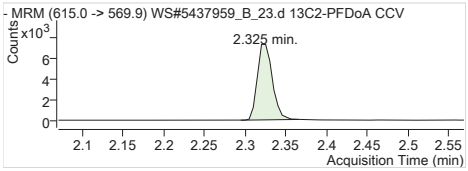


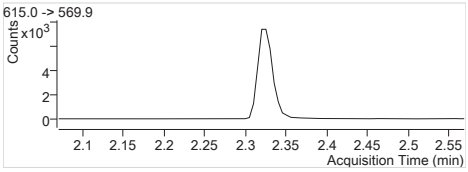
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.140 (2.145)
Calc. conc. 105.31 µg/L
Area ratio: 0.23255
Sample type: CC



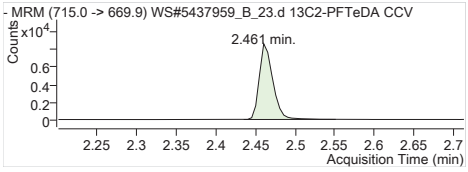


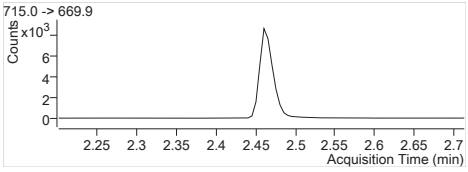
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 103.77 µg/L
Area ratio: 0.29146
Sample type: CC



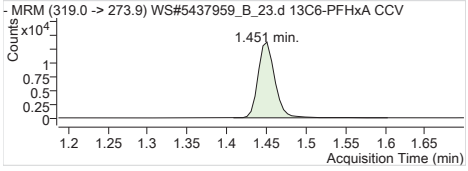


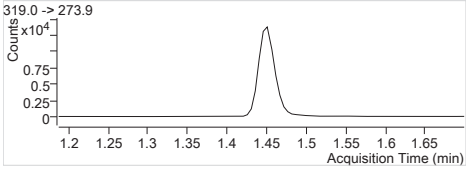
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 104.79 µg/L
Area ratio: 0.41638
Sample type: CC



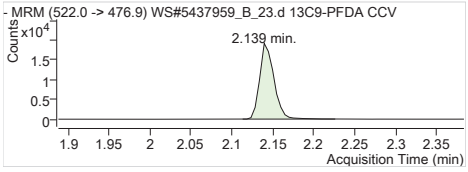


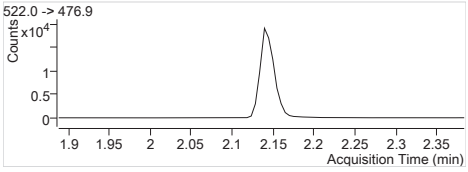
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.461 (2.466)
Calc. conc. 107.17 µg/L
Area ratio: 0.45096
Sample type: CC





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 107.52 µg/L
Area ratio: 0
Sample type: CC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.139 (2.144)
Calc. conc. 99.87 µg/L
Area ratio: 0
Sample type: CC

Quantitation Results

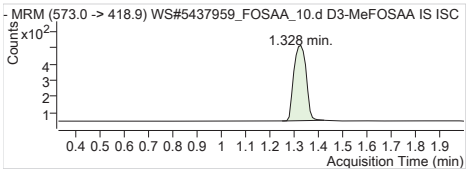
Agilent Technologies

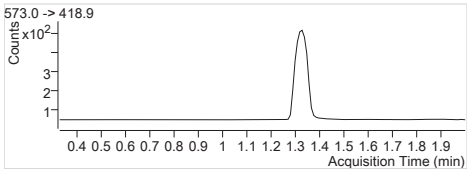
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**ISC**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_10.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A2
Acq. Date	2018/03/13 8:56:42 PM	**Injection Volume**	Per Method
Sample Annotation	-		

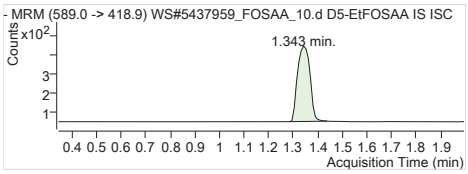
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1640	1.33	1 µg/L		
D5-EtFOSAA IS	1394	1.34	1 µg/L		
13C9-PFDA IS	18861	0.95	1 µg/L		

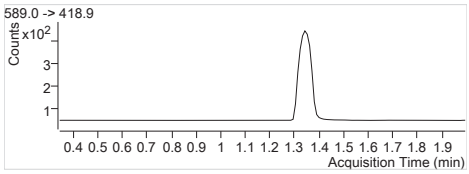
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	561	1.32	0.83	0.93 µg/L	112.29
EtFOSAA 1	542	1.34	0.83	0.96 µg/L	115.66
D3-MeFOSAA	1665	1.33	100.00	100.22 µg/L	100.22
D5-EtFOSAA	1413	1.34	100.00	99.47 µg/L	99.47
13C9-PFDA	18856	0.95	100.00	99.56 µg/L	99.56



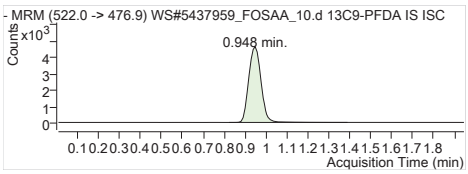


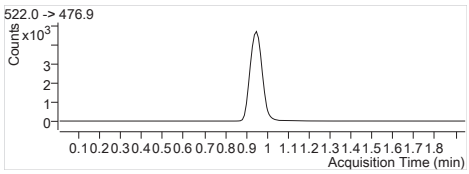
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: CC



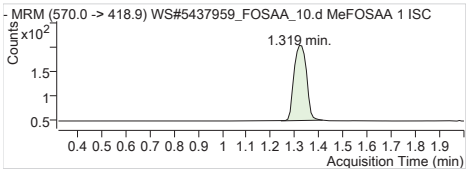


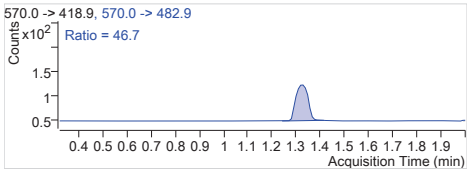
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: CC



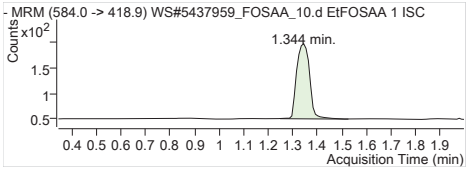


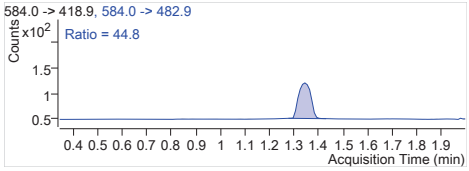
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: CC



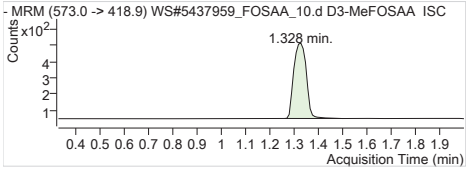


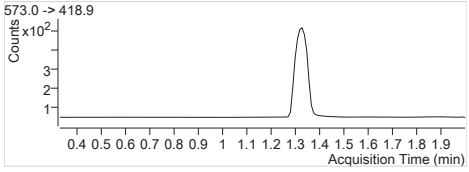
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.319 (1.319)
Calc. conc. 0.93 µg/L
Area ratio: 0.34207
Sample type: CC



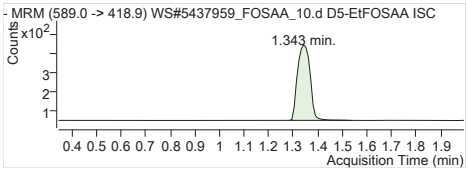


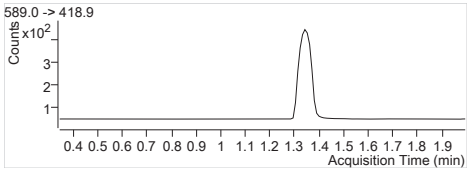
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 0.96 µg/L
Area ratio: 0.38881
Sample type: CC



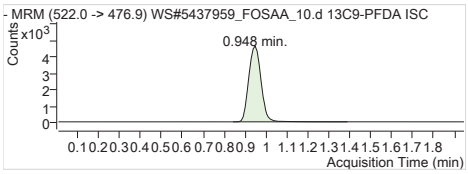


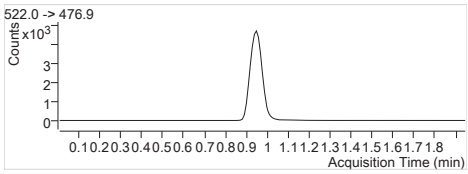
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 100.22 µg/L
Area ratio: 0.08828
Sample type: CC





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	99.47 µg/L
Area ratio:	0.07492
Sample type:	CC





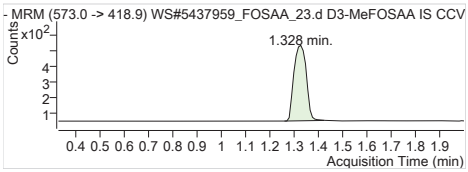
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	99.56 µg/L
Area ratio:	0
Sample type:	CC

Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

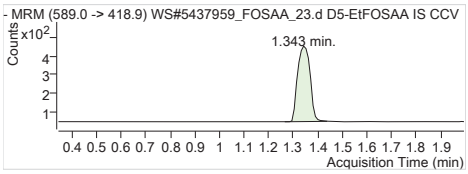
Sample Name	**CCV**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_23.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A5
Acq. Date	2018/03/13 9:28:04 PM	**Injection Volume**	Per Method
Sample Annotation	-		

ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1704	1.33	1 µg/L		
D5-EtFOSAA IS	1424	1.34	1 µg/L		
13C9-PFDA IS	18284	0.95	1 µg/L		

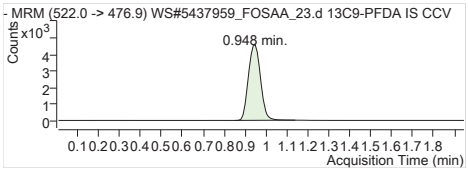
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	7363	1.33	12.50	12.43 µg/L	99.44
EtFOSAA 1	7276	1.34	12.50	12.56 µg/L	100.52
D3-MeFOSAA	1728	1.33	100.00	107.30 µg/L	107.30
D5-EtFOSAA	1433	1.34	100.00	104.06 µg/L	104.06
13C9-PFDA	17954	0.95	100.00	94.79 µg/L	94.79



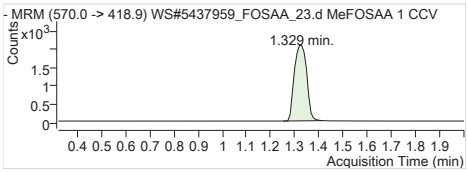
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: CC



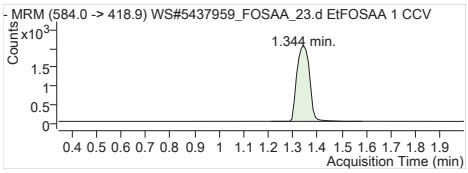
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: CC



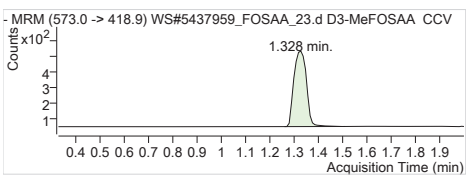
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: CC



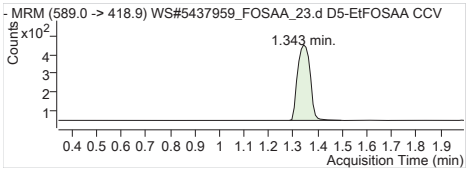
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.329 (1.319)
Calc. conc. 12.43 µg/L
Area ratio: 4.32101
Sample type: CC

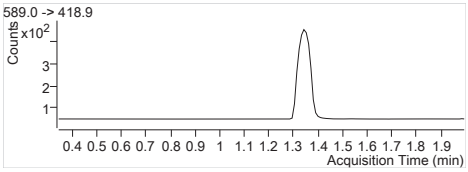


EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 12.56 µg/L
Area ratio: 5.10955
Sample type: CC

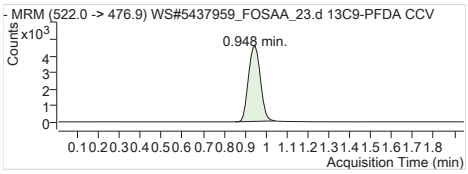


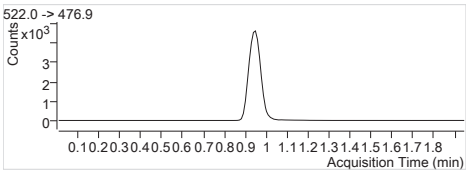
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 107.30 µg/L
Area ratio: 0.09451
Sample type: CC





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	104.06 µg/L
Area ratio:	0.07837
Sample type:	CC





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	94.79 µg/L
Area ratio:	0
Sample type:	CC

Quantitation Results

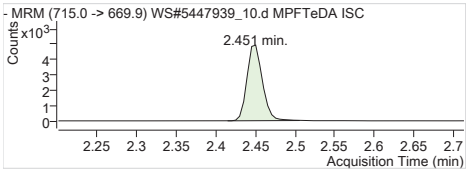
Agilent Technologies

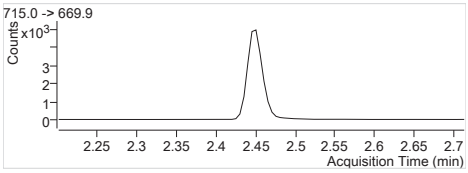
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**ISC**	**Instrument**	LCMS04
Data File	WS#5447939_10.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A2
Acq. Date	2018/03/21 2:29:06 PM	**Injection Volume**	Per Method
Sample Annotation	-		

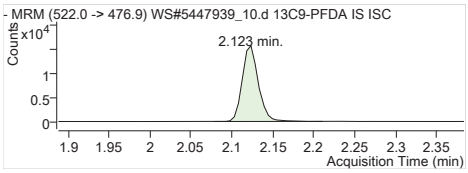
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6611	2.45	1 µg/L		
13C9-PFDA IS	21333	2.12	1 µg/L		

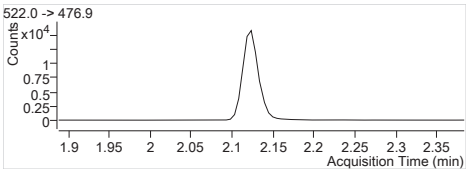
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	2620	2.38	0.83	0.73 µg/L	88.32
PFTeDA 1	2511	2.45	0.83	0.83 µg/L	100.11
13C2-PFTeDA	6611	2.45	100.00	96.56 µg/L	96.56
13C9-PFDA	21333	2.12	100.00	102.01 µg/L	102.01



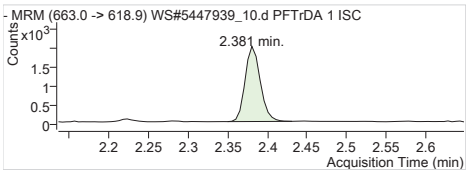


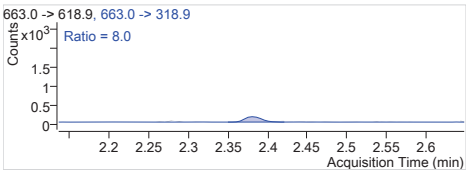
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: CC



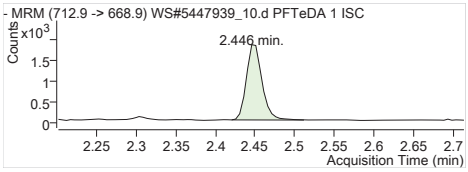


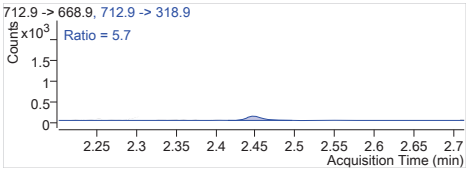
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: CC



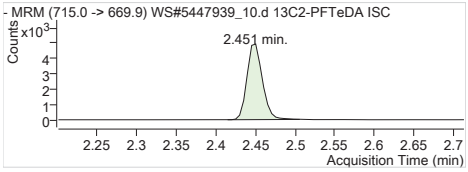


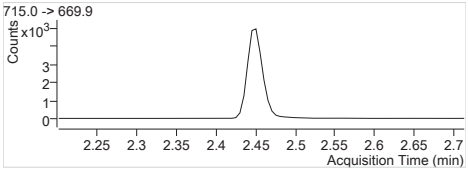
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 0.73 µg/L
Area ratio: 0.39631
Sample type: CC



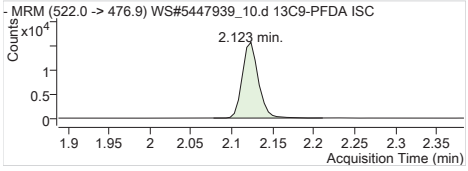


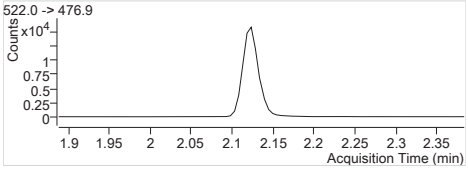
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 0.83 µg/L
Area ratio: 0.37982
Sample type: CC





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 96.56 µg/L
Area ratio: 0.30990
Sample type: CC





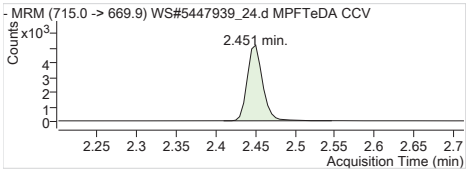
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 102.01 µg/L
Area ratio: 0
Sample type: CC

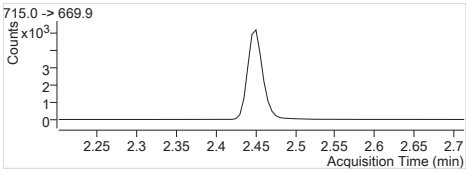
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**CCV**	**Instrument**	LCMS04
Data File	WS#5447939_24.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A5
Acq. Date	2018/03/21 3:42:41 PM	**Injection Volume**	Per Method
Sample Annotation	-		

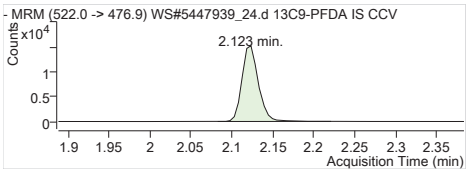
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6927	2.45	1 µg/L		
13C9-PFDA IS	21028	2.12	1 µg/L		

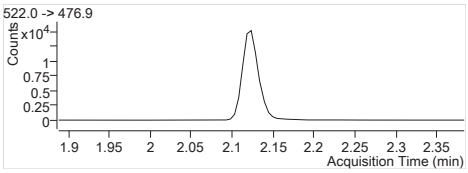
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	35740	2.38	12.50	11.43 µg/L	91.47
PFTeDA 1	30951	2.45	12.50	11.69 µg/L	93.53
13C2-PFTeDA	6927	2.45	100.00	102.65 µg/L	102.65
13C9-PFDA	21028	2.12	100.00	100.56 µg/L	100.56



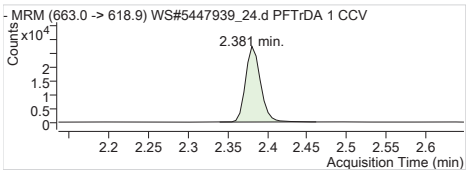


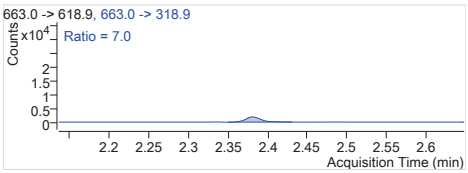
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: CC



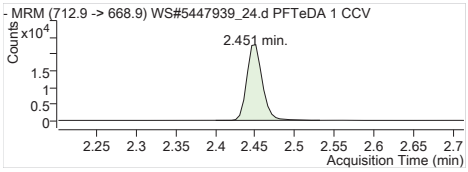


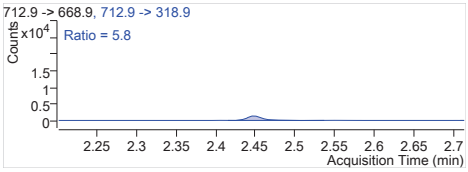
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: CC



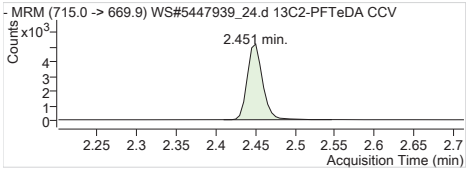


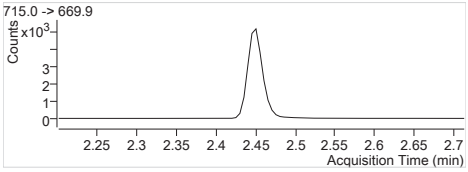
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 11.43 µg/L
Area ratio: 5.15952
Sample type: CC



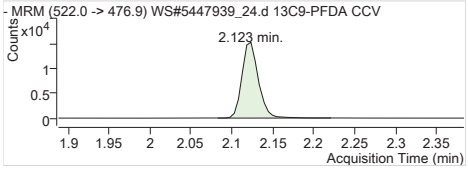


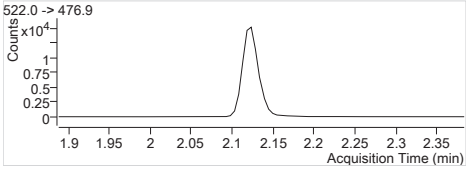
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 11.69 µg/L
Area ratio: 4.46817
Sample type: CC





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 102.65 µg/L
Area ratio: 0.32942
Sample type: CC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 100.56 µg/L
Area ratio: 0
Sample type: CC



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Maxxam Analytics International
6740 Campobello Rd.
Mississauga, Ontario, Canada
L5N 2L8
1-800-668-0639
www.maxxamanalytics.com

"CEF-CS01AR-0318","E537","IN","GEZ789","MAXXAM","13C2PFDA","13C2-Perfluorodecanoic acid","77","%","","-99","NA","","SUR","77","","-99","NA","YES","-99","","1","1","-99","TEST"
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acid","85","%","","-99","NA","","SUR","85","","-99","NA","YES","-99","","1","1","-99","TEST"
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acid","90","%","","-99","NA","","SUR","90","","-99","NA","YES","-99","","1","1","-99","TEST"
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6","EtFOSAA","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","5.0","ng/L","U","5.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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"FB-CEF-CS-030218","E537","IN","GEZ790","MAXXAM","335-67-1","Perfluorooctanoic
acid","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"FB-CEF-CS-030218","E537","IN","GEZ790","MAXXAM","375-95-1","Perfluorononanoic
acid","8.7","ng/L","U","8.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"FB-CEF-CS-030218","E537","IN","GEZ790","MAXXAM","1763-23-1","Perfluorooctanesulfonic
acid","6.0","ng/L","U","6.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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"FB-CEF-CS-030218","E537","IN","GEZ790","MAXXAM","72629-94-8","Perfluorotridecanoic
acid","3.8","ng/L","U","3.8","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"FB-CEF-CS-030218","E537","IN","GEZ790","MAXXAM","2058-94-8","Perfluoroundecanoic
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"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","13C2PFDA","13C2-Perfluorodecanoic

acid","81","%","","-99","NA","","SUR","81","","-99","NA","YES","-99","","1","1","-99","TEST"
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"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","13C2PFHXA","13C2-Perfluorohexanoic
acid","85","%","","-99","NA","","SUR","85","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","13C2PFTDA","13C2-Perfluorotetradecanoic
acid","69","%","","-99","NA","","SUR","69","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","13C2PFUA","13C2-Perfluoroundecanoic
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"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","13C4PFHPA","13C4-Perfluoroheptanoic
acid","87","%","","-99","NA","","SUR","87","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","1763-23-1_13","13C4-
Perfluorooctanesulfonate","86","%","","-99","NA","","SUR","86","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","335-67-1_13C","13C4-Perfluorooctanoic
acid","84","%","","-99","NA","","SUR","84","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","13C4PFNA","13C5-Perfluorononanoic
acid","81","%","","-99","NA","","SUR","81","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","18O2PFHXS","18O2-
Perfluorohexanesulfonate","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
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PERFLUOROOCTANESULFONAMIDOACETIC
ACID","69","%","","-99","NA","","SUR","69","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","D5-ETFOSAA","D5-
ETFOSAA","67","%","","-99","NA","","SUR","67","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","2991-50-
6","EtFOSAA","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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9","MeFOSAA","2.9","ng/L","U","2.9","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","375-73-5","Perfluorobutanesulfonic
acid","5.4","ng/L","U","5.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","6.1","ng/L","U","6.1","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","5.0","ng/L","U","5.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","7.4","ng/L","U","7.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","5.6","ng/L","U","5.6","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","3.5","ng/L","U","3.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","335-67-1","Perfluorooctanoic
acid","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","375-95-1","Perfluorononanoic
acid","8.7","ng/L","U","8.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","1763-23-1","Perfluorooctanesulfonic
acid","6.0","ng/L","U","6.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","376-06-7","Perfluorotetradecanoic
acid","2.7","ng/L","U","2.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","72629-94-8","Perfluorotridecanoic
acid","3.8","ng/L","U","3.8","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-CS10-0318","E537","IN","GEZ791","MAXXAM","2058-94-8","Perfluoroundecanoic
acid","2.5","ng/L","U","2.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","13C2PFDA","13C2-Perfluorodecanoic
acid","90","%","","-99","NA","","SUR","90","","-99","NA","YES","-99","","1","1","-99","TEST"

"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","13C2PFDOA","13C2-Perfluorododecanoic acid","66","%","","-99","NA","","SUR","66","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","13C2PFHXA","13C2-Perfluorohexanoic acid","93","%","","-99","NA","","SUR","93","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","RA0","GEZ792","MAXXAM","13C2PFTDA","13C2-Perfluorotetradecanoic acid","54","%","","-99","NA","","SUR","54","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","13C2PFUA","13C2-Perfluoroundecanoic acid","74","%","","-99","NA","","SUR","74","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","13C4PFHPA","13C4-Perfluoroheptanoic acid","96","%","","-99","NA","","SUR","96","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","1763-23-1_13","13C4-Perfluorooctanesulfonate","93","%","","-99","NA","","SUR","93","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","335-67-1_13C","13C4-Perfluorooctanoic acid","94","%","","-99","NA","","SUR","94","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","13C4PFNA","13C5-Perfluorononanoic acid","97","%","","-99","NA","","SUR","97","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","18O2PFHXS","18O2-Perfluorohexanesulfonate","101","%","","-99","NA","","SUR","101","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","D3-MEFOSAA","N-METHYL-D3-PERFLUOROOCTANESULFONAMIDOACETIC ACID","68","%","","-99","NA","","SUR","68","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","D5-ETFOSAA","D5-ETFOSAA","66","%","","-99","NA","","SUR","66","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","2991-50-6","EtFOSAA","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","2355-31-9","MeFOSAA","2.9","ng/L","U","2.9","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","375-73-5","Perfluorobutanesulfonic acid","21","ng/L","","5.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","335-76-2","Perfluorodecanoic acid","6.1","ng/L","U","6.1","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","307-55-1","Perfluorododecanoic acid","5.0","ng/L","U","5.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","375-85-9","Perfluoroheptanoic acid","19","ng/L","J","7.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","355-46-4","Perfluorohexanesulfonic acid","330","ng/L","","5.6","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","307-24-4","Perfluorohexanoic acid","93","ng/L","","3.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","335-67-1","Perfluorooctanoic acid","120","ng/L","","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","375-95-1","Perfluorononanoic acid","8.7","ng/L","U","8.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","1763-23-1","Perfluorooctanesulfonic acid","62","ng/L","","6.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","RA0","GEZ792","MAXXAM","376-06-7","Perfluorotetradecanoic acid","2.7","ng/L","U","2.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","RA0","GEZ792","MAXXAM","72629-94-8","Perfluorotridecanoic acid","3.8","ng/L","U","3.8","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-013-085-0318","E537","IN","GEZ792","MAXXAM","2058-94-8","Perfluoroundecanoic acid","2.5","ng/L","U","2.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","13C2PFDA","13C2-Perfluorodecanoic acid","90","%","","-99","NA","","SUR","90","","-99","NA","YES","-99","","1","1","-99","TEST"

"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","13C2PFDOA","13C2-Perfluorododecanoic acid","76","%","","-99","NA","","SUR","76","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","13C2PFHXA","13C2-Perfluorohexanoic acid","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","13C2PFTDA","13C2-Perfluorotetradecanoic acid","77","%","","-99","NA","","SUR","77","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","13C2PFUA","13C2-Perfluoroundecanoic acid","78","%","","-99","NA","","SUR","78","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","13C4PFHPA","13C4-Perfluoroheptanoic acid","94","%","","-99","NA","","SUR","94","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","1763-23-1_13","13C4-Perfluorooctanesulfonate","93","%","","-99","NA","","SUR","93","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","335-67-1_13C","13C4-Perfluorooctanoic acid","94","%","","-99","NA","","SUR","94","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","13C4PFNA","13C5-Perfluorononanoic acid","96","%","","-99","NA","","SUR","96","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","18O2PFHXS","18O2-Perfluorohexanesulfonate","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","D3-MEFOSAA","N-METHYL-D3-PERFLUOROOCTANESULFONAMIDOACETIC ACID","78","%","","-99","NA","","SUR","78","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","D5-ETFOSAA","D5-ETFOSAA","73","%","","-99","NA","","SUR","73","","-99","NA","YES","-99","","1","1","-99","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","2991-50-6","EtFOSAA","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","2355-31-9","MeFOSAA","2.9","ng/L","U","2.9","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","375-73-5","Perfluorobutanesulfonic acid","5.4","ng/L","U","5.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","335-76-2","Perfluorodecanoic acid","6.1","ng/L","U","6.1","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","307-55-1","Perfluorododecanoic acid","5.0","ng/L","U","5.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","375-85-9","Perfluoroheptanoic acid","7.4","ng/L","U","7.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","355-46-4","Perfluorohexanesulfonic acid","5.6","ng/L","U","5.6","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","307-24-4","Perfluorohexanoic acid","3.5","ng/L","U","3.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","335-67-1","Perfluorooctanoic acid","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","375-95-1","Perfluorononanoic acid","8.7","ng/L","U","8.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","1763-23-1","Perfluorooctanesulfonic acid","6.0","ng/L","U","6.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","376-06-7","Perfluorotetradecanoic acid","2.7","ng/L","U","2.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","72629-94-8","Perfluorotridecanoic acid","3.8","ng/L","U","3.8","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"CEF-003-425-0318","E537","IN","GEZ793","MAXXAM","2058-94-8","Perfluoroundecanoic acid","2.5","ng/L","U","2.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","13C2PFDA","13C2-Perfluorodecanoic acid","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","13C2PFDOA","13C2-

Perfluorododecanoic acid","86","%","","-99","NA","","SUR","86","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","13C2PFHXA","13C2-
Perfluorohexanoic acid","93","%","","-99","NA","","SUR","93","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","13C2PFTDA","13C2-
Perfluorotetradecanoic
acid","87","%","","-99","NA","","SUR","87","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","13C2PFUA","13C2-
Perfluoroundecanoic acid","94","%","","-99","NA","","SUR","94","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","13C4PFHPA","13C4-
Perfluoroheptanoic acid","95","%","","-99","NA","","SUR","95","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","1763-23-1_13","13C4-
Perfluorooctanesulfonate","102","%","","-99","NA","","SUR","102","","-99","NA","YES","-99","","1","1","-99","TES
T"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","335-67-1_13C","13C4-
Perfluorooctanoic acid","96","%","","-99","NA","","SUR","96","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","13C4PFNA","13C5-Perfluorononanoic
acid","96","%","","-99","NA","","SUR","96","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","18O2PFHXS","18O2-
Perfluorohexanesulfonate","100","%","","-99","NA","","SUR","100","","-99","NA","YES","-99","","1","1","-99","TES
T"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","D3-MEFOSAA","N-METHYL-D3-
PERFLUOROOCTANESULFONAMIDOACETIC
ACID","82","%","","-99","NA","","SUR","82","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","D5-ETFOSAA","D5-
ETFOSAA","81","%","","-99","NA","","SUR","81","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","2991-50-
6","EtFOSAA","98","ng/L","","3.3","MDL","","PDSPK","98","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","2355-31-
9","MeFOSAA","103","ng/L","","2.9","MDL","","PDSPK","103","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","375-73-5","Perfluorobutanesulfonic
acid","100","ng/L","","5.4","MDL","","PDSPK","100","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","335-76-2","Perfluorodecanoic
acid","102","ng/L","","6.1","MDL","","PDSPK","102","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","307-55-1","Perfluorododecanoic
acid","100","ng/L","","5.0","MDL","","PDSPK","100","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","375-85-9","Perfluoroheptanoic
acid","101","ng/L","","7.4","MDL","","PDSPK","101","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","355-46-4","Perfluorohexanesulfonic
acid","99","ng/L","","5.6","MDL","","PDSPK","99","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","307-24-4","Perfluorohexanoic
acid","102","ng/L","","3.5","MDL","","PDSPK","102","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","335-67-1","Perfluorooctanoic
acid","101","ng/L","","3.3","MDL","","PDSPK","101","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","375-95-1","Perfluorononanoic
acid","102","ng/L","","8.7","MDL","","PDSPK","102","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","1763-23-1","Perfluorooctanesulfonic
acid","94","ng/L","","6.0","MDL","","PDSPK","94","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","376-06-7","Perfluorotetradecanoic
acid","98","ng/L","","2.7","MDL","","PDSPK","98","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","72629-94-8","Perfluorotridecanoic
acid","98","ng/L","","3.8","MDL","","PDSPK","98","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Spiked Blank","E537","IN","5437959:Spiked Blank","MAXXAM","2058-94-8","Perfluoroundecanoic
acid","102","ng/L","","2.5","MDL","","PDSPK","102","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","13C2PFDA","13C2-Perfluorodecanoic

acid","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","13C2PFDOA","13C2-Perfluorododecanoic
acid","86","%","","-99","NA","","SUR","86","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","13C2PFHXA","13C2-Perfluorohexanoic
acid","90","%","","-99","NA","","SUR","90","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","13C2PFTDA","13C2-Perfluorotetradecanoic
acid","86","%","","-99","NA","","SUR","86","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","13C2PFUA","13C2-Perfluoroundecanoic
acid","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","13C4PFHPA","13C4-Perfluoroheptanoic
acid","89","%","","-99","NA","","SUR","89","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","1763-23-1_13","13C4-
Perfluorooctanesulfonate","97","%","","-99","NA","","SUR","97","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","335-67-1_13C","13C4-Perfluorooctanoic
acid","93","%","","-99","NA","","SUR","93","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","13C4PFNA","13C5-Perfluorononanoic
acid","92","%","","-99","NA","","SUR","92","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","18O2PFHXS","18O2-
Perfluorohexanesulfonate","92","%","","-99","NA","","SUR","92","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","D3-MEFOSAA","N-METHYL-D3-
PERFLUOROOCTANESULFONAMIDOACETIC
ACID","81","%","","-99","NA","","SUR","81","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","D5-ETFOSAA","D5-
ETFOSAA","81","%","","-99","NA","","SUR","81","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","2991-50-
6","EtFOSAA","92","ng/L","","3.3","MDL","","PDSPK","92","6.4","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","2355-31-
9","MeFOSAA","95","ng/L","","2.9","MDL","","PDSPK","95","7.8","20","PQL","YES","-99","","1","1","20","TEST"
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acid","95","ng/L","","5.4","MDL","","PDSPK","95","4.8","20","PQL","YES","-99","","1","1","20","TEST"
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acid","96","ng/L","","6.1","MDL","","PDSPK","96","5.2","20","PQL","YES","-99","","1","1","20","TEST"
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acid","97","ng/L","","5.0","MDL","","PDSPK","97","3.2","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","375-85-9","Perfluoroheptanoic
acid","98","ng/L","","7.4","MDL","","PDSPK","98","3.6","20","PQL","YES","-99","","1","1","20","TEST"
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acid","96","ng/L","","5.6","MDL","","PDSPK","96","3.7","20","PQL","YES","-99","","1","1","20","TEST"
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acid","98","ng/L","","3.5","MDL","","PDSPK","98","4.2","20","PQL","YES","-99","","1","1","20","TEST"
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acid","93","ng/L","","3.3","MDL","","PDSPK","93","8.0","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","375-95-1","Perfluorononanoic
acid","97","ng/L","","8.7","MDL","","PDSPK","97","4.9","20","PQL","YES","-99","","1","1","20","TEST"
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acid","89","ng/L","","6.0","MDL","","PDSPK","89","4.9","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","376-06-7","Perfluorotetradecanoic
acid","96","ng/L","","2.7","MDL","","PDSPK","96","2.0","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","72629-94-8","Perfluorotridecanoic
acid","95","ng/L","","3.8","MDL","","PDSPK","95","3.0","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:LCSD","E537","IN","5437959:LCSD","MAXXAM","2058-94-8","Perfluoroundecanoic
acid","97","ng/L","","2.5","MDL","","PDSPK","97","4.7","20","PQL","YES","-99","","1","1","20","TEST"
"5447939:Spiked Blank","E537","IN","5447939:Spiked Blank","MAXXAM","13C2PFTDA","13C2-
Perfluorotetradecanoic

acid","75","%","","-99","NA","","SUR","75","","-99","NA","YES","-99","","1","1","-99","TEST"
"5447939:Spiked Blank","E537","IN","5447939:Spiked Blank","MAXXAM","376-06-7","Perfluorotetradecanoic
acid","91","ng/L","","2.7","MDL","","PDSPK","91","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","88","ng/L","","3.8","MDL","","PDSPK","88","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","77","%","","-99","NA","","SUR","77","","-99","NA","YES","-99","","1","1","-99","TEST"
"5447939:LCSD","E537","IN","5447939:LCSD","MAXXAM","376-06-7","Perfluorotetradecanoic
acid","100","ng/L","","2.7","MDL","","PDSPK","100","10","20","PQL","YES","-99","","1","1","20","TEST"
"5447939:LCSD","E537","IN","5447939:LCSD","MAXXAM","72629-94-8","Perfluorotridecanoic
acid","97","ng/L","","3.8","MDL","","PDSPK","97","9.9","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","13C2PFDA","13C2-Perfluorodecanoic
acid","89","%","","-99","NA","","SUR","89","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","13C2PFDOA","13C2-
Perfluorododecanoic acid","79","%","","-99","NA","","SUR","79","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","13C2PFHXA","13C2-
Perfluorohexanoic acid","90","%","","-99","NA","","SUR","90","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","13C2PFTDA","13C2-
Perfluorotetradecanoic
acid","59","%","","-99","NA","","SUR","59","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","13C2PFUA","13C2-
Perfluoroundecanoic acid","81","%","","-99","NA","","SUR","81","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","13C4PFHPA","13C4-
Perfluoroheptanoic acid","95","%","","-99","NA","","SUR","95","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","1763-23-1_13","13C4-
Perfluorooctanesulfonate","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","335-67-1_13C","13C4-
Perfluorooctanoic acid","91","%","","-99","NA","","SUR","91","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","13C4PFNA","13C5-
Perfluorononanoic acid","95","%","","-99","NA","","SUR","95","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","18O2PFHXS","18O2-
Perfluorohexanesulfonate","93","%","","-99","NA","","SUR","93","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","D3-MEFOSAA","N-METHYL-D3-
PERFLUOROOCTANESULFONAMIDOACETIC
ACID","80","%","","-99","NA","","SUR","80","","-99","NA","YES","-99","","1","1","-99","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","D5-ETFOSAA","D5-
ETFOSAA","79","%","","-99","NA","","SUR","79","","-99","NA","YES","-99","","1","1","-99","TEST"
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6","EtFOSAA","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","2355-31-
9","MeFOSAA","2.9","ng/L","U","2.9","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","375-73-5","Perfluorobutanesulfonic
acid","5.4","ng/L","U","5.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","335-76-2","Perfluorodecanoic
acid","6.1","ng/L","U","6.1","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","307-55-1","Perfluorododecanoic
acid","5.0","ng/L","U","5.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","375-85-9","Perfluoroheptanoic
acid","7.4","ng/L","U","7.4","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","355-46-4","Perfluorohexanesulfonic
acid","5.6","ng/L","U","5.6","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","307-24-4","Perfluorohexanoic
acid","3.5","ng/L","U","3.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","3.3","ng/L","U","3.3","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5437959:Method Blank","E537","IN","5437959:Method Blank","MAXXAM","375-95-1","Perfluorononanoic
acid","8.7","ng/L","U","8.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","6.0","ng/L","U","6.0","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","2.7","ng/L","U","2.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","3.8","ng/L","U","3.8","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","2.5","ng/L","U","2.5","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
"5447939:Method Blank","E537","IN","5447939:Method Blank","MAXXAM","13C2PFTDA","13C2-
Perfluorotetradecanoic
acid","80","%","","-99","NA","","SUR","80","","-99","NA","YES","-99","","1","1","-99","TEST"
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acid","2.7","ng/L","U","2.7","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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acid","3.8","ng/L","U","3.8","MDL","","NM","","","20","PQL","YES","-99","","1","1","20","TEST"
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00:00","-99","5437959","5437959","1","03152018","B850056","03/06/2018 13:41","03/22/2018 09:01",""
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TETRA TECH

INTERNAL CORRESPONDENCE

TO: **M. VED** **DATE:** **MAY 3, 2018**

FROM: **MICHELLE L. WOEBER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – POLYFLUOROALKYL SUBSTANCES (PFAS)**
NAVAL AIR STATION (NAS), CECIL FIELD
SAMPLE DELIVERY GROUP (SDG) B850056

SAMPLES: 5/Aqueous/PFAS

CEF-003-42S-0318	CEF-013-08S-0318	CEF-CS01AR-0318
CEF-CS10-0318	FB-CEF-CS-030218	

Overview

The sample set for NAS Cecil Field, SDG B850056 consisted of four (4) aqueous environmental samples and one (1) Field Reagent Blank (FRB). All five (5) samples were analyzed for polyfluoroalkyl substances (PFAS). No field duplicate sample pair was included in this SDG.

The samples were collected by Tetra Tech, Inc. on March 2, 2018 and analyzed by Maxxam Analytics. All analyses were conducted in accordance with EPA 537 Modified analytical and reporting protocols. The data contained in this SDG was validated with regard to the following parameters:

* • Data completeness
• Hold times/Sample Preservation
* • Mass Calibration
* • LC/MS/MS System Tuning and Performance
* • Mass Spectral Acquisition Rate
* • Instrument Sensitivity Check
* • Ion Transition Check
* • Initial/Continuing Calibrations
* • Laboratory Method Blank Results
* • Field Reagent Blank Results
• Extraction Internal Standard Recoveries
* • Injection Internal Standard Recoveries
* • Laboratory Control Sample Recoveries/Laboratory Control Sample Duplicate Results
* • Compound Identification
* • Compound Quantitation
* • Detection Limits

The symbol (*) indicates that all quality control criteria were met for this parameter. Qualified analytical results are presented in Appendix A, results as reported by the laboratory are presented in Appendix B, and documentation supporting these findings is presented in Appendix C.

PFAS

Per the laboratory case narrative, sample CEF-013-08S-0318 had Percent Recoveries (%Rs) for the extracted internal standard, 13C2-perfluorotetradecanoic acid (13C2-PFTeDA), below the lower quality control limit. The sample was re-extracted outside the 14-day holding time and reanalyzed with acceptable results. The laboratory only reported the results from the reanalyses for the PFAS compounds associated with this extracted internal standard. The non-detected results reported for perfluorotridecanoic acid (PFTrDA) and perfluorotetradecanoic acid (PFTeDA) in these samples were qualified as estimated, (UJ), due to the holding time exceedance.

Additional Comments

A detected result reported below the Limit of Quantitation (LOQ) but above the Method Detection Limit (MDL) was qualified as estimated, (J). Non-detected results were reported to the MDL in the database.

Executive Summary

Laboratory Performance Issues: Extraction holding time was exceeded for one sample because corrective action was taken to remedy an extraction standard exceedance in the initial analysis. Only the compounds associated with this extraction standard were affected.

Other Factors Affecting Data Quality: A detected result below the LOQ was estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Superfund Methods Data Review" (January 2017), EPA Method 537 Modified, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (2017). The text of this report has been formulated to address only those areas affecting data quality.

for Tetra Tech, Inc.
Michelle L. Woeber
Chemist/Data Validator

Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:
Appendix A - Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's r < 0.995
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate
Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

PROJ_NO: 08005-JM10	NSAMPLE	CEF-003-42S-0318			CEF-013-08S-0318			CEF-CS01AR-0318			CEF-CS10-0318		
SDG: B850056	LAB_ID	GEZ793			GEZ792			GEZ789			GEZ791		
FRACTION: PFAS	SAMP_DATE	3/2/2018			3/2/2018			3/2/2018			3/2/2018		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
N-ETHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		3.3	U		3.3	U		3.3	U		3.3	U	
N-METHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		2.9	U		2.9	U		2.9	U		2.9	U	
PENTADECAFLUOROOCTANOIC ACID		3.3	U		120			3.3	U		3.3	U	
PERFLUOROBUTANESULFONIC ACID		5.4	U		21			5.4	U		5.4	U	
PERFLUORODECANOIC ACID		6.1	U		6.1	U		6.1	U		6.1	U	
PERFLUORODODECANOIC ACID		5	U		5	U		5	U		5	U	
PERFLUOROHEPTANOIC ACID		7.4	U		19	J	P	7.4	U		7.4	U	
PERFLUOROHEXANESULFONIC ACID		5.6	U		330			5.6	U		5.6	U	
PERFLUOROHEXANOIC ACID		3.5	U		93			3.5	U		3.5	U	
PERFLUORONONANOIC ACID		8.7	U		8.7	U		8.7	U		8.7	U	
PERFLUOROOCTANE SULFONIC ACID		6	U		62			6	U		6	U	
PERFLUOROTETRADECANOIC ACID		2.7	U		2.7	UJ	H	2.7	U		2.7	U	
PERFLUOROTRIDECANOIC ACID		3.8	U		3.8	UJ	H	3.8	U		3.8	U	
PERFLUOROUNDECANOIC ACID		2.5	U		2.5	U		2.5	U		2.5	U	

PROJ_NO: 08005-JM10	NSAMPLE	FB-CEF-CS-030218		
SDG: B850056	LAB_ID	GEZ790		
FRACTION: PFAS	SAMP_DATE	3/2/2018		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
N-ETHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		3.3	U	
N-METHYL PERFLUOROOCTANE SULFONAMIDOACETIC ACID		2.9	U	
PENTADECAFLUOROOCTANOIC ACID		3.3	U	
PERFLUOROBUTANESULFONIC ACID		5.4	U	
PERFLUORODECANOIC ACID		6.1	U	
PERFLUORODODECANOIC ACID		5	U	
PERFLUOROHEPTANOIC ACID		7.4	U	
PERFLUOROHEXANESULFONIC ACID		5.6	U	
PERFLUOROHEXANOIC ACID		3.5	U	
PERFLUORONONANOIC ACID		8.7	U	
PERFLUOROOCTANE SULFONIC ACID		6	U	
PERFLUOROTETRADECANOIC ACID		2.7	U	
PERFLUOROTRIDECANOIC ACID		3.8	U	
PERFLUOROUNDECANOIC ACID		2.5	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

RESULTS OF ANALYSES OF GROUND WATER

Maxxam ID		GEZ789	GEZ791		GEZ792				
Sampling Date		2018/03/02 12:05	2018/03/02 12:40		2018/03/02 10:53				
COC Number		3188	3188		3188				
	UNITS	CEF-CS01AR-0318	CEF-CS10-0318	QC Batch	~~CEF-013-085-0318~~	DL	LOD	LOQ	QC Batch
Miscellaneous Parameters					CEF-013-08S-0318				
EtFOSAA	ng/L	10 U	10 U	5437959	10 U	3.3	10	20	5437959
MeFOSAA	ng/L	10 U	10 U	5437959	10 U	2.9	10	20	5437959
Perfluorobutane Sulfonate (PFBS)	ng/L	15 U	15 U	5437959	21	5.4	15	20	5437959
Perfluoroheptanoic Acid (PFHpA)	ng/L	15 U	15 U	5437959	19 J	7.4	15	20	5437959
Perfluorohexanoic Acid (PFHxA)	ng/L	10 U	10 U	5437959	93	3.5	10	20	5437959
Perfluorohexane Sulfonate (PFHxS)	ng/L	15 U	15 U	5437959	330	5.6	15	20	5437959
Perfluorononanoic Acid (PFNA)	ng/L	18 U	18 U	5437959	18 U	8.7	18	20	5437959
Perfluorotetradecanoic Acid	ng/L	10 U	10 U	5437959	10 U	2.7	10	20	5447939
Perfluorotridecanoic Acid	ng/L	10 U	10 U	5437959	10 U	3.8	10	20	5447939
Perfluoroundecanoic Acid (PFUnA)	ng/L	10 U	10 U	5437959	10 U	2.5	10	20	5437959
Perfluorodecanoic Acid (PFDA)	ng/L	15 U	15 U	5437959	15 U	6.1	15	20	5437959
Perfluorododecanoic Acid (PFDoA)	ng/L	10 U	10 U	5437959	10 U	5.0	10	20	5437959
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	10 U	10 U	5437959	120	3.3	10	20	5437959
Perfluorooctane Sulfonate (PFOS)	ng/L	15 U	15 U	5437959	62	6.0	15	20	5437959
Surrogate Recovery (%)									
13C2-Perfluorodecanoic acid	%	77	81	5437959	90				5437959
13C2-Perfluorododecanoic acid	%	74	76	5437959	66				5437959
13C2-Perfluorohexanoic acid	%	83	85	5437959	93				5437959
13C2-perfluorotetradecanoic acid	%	72	69	5437959	54				5447939
13C2-Perfluoroundecanoic acid	%	75	76	5437959	74				5437959
13C4-Perfluoroheptanoic acid	%	86	87	5437959	96				5437959
13C4-Perfluorooctanesulfonate	%	85	86	5437959	93				5437959
13C4-Perfluorooctanoic acid	%	87	84	5437959	94				5437959
13C5-Perfluorononanoic acid	%	83	81	5437959	97				5437959
18O2-Perfluorohexanesulfonate	%	87	91	5437959	101				5437959
D3-MeFOSAA	%	69	69	5437959	68				5437959
D5-EtFOSAA	%	70	67	5437959	66				5437959

DL = Detection Limit
LOD = Limit of Detection
LOQ = Limit of Quantitation
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Analytics

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

JAS 5/3/18

RESULTS OF ANALYSES OF GROUND WATER

Maxxam ID		GEZ793				
Sampling Date		2018/03/02 12:48				
COC Number		3188				
	UNITS	~~CEF-003-425-0318~~	DL	LOD	LOQ	QC Batch
Miscellaneous Parameters		CEF-003-42S-0318				
EtFOSAA	ng/L	10 U	3.3	10	20	5437959
MeFOSAA	ng/L	10 U	2.9	10	20	5437959
Perfluorobutane Sulfonate (PFBS)	ng/L	15 U	5.4	15	20	5437959
Perfluoroheptanoic Acid (PFHpA)	ng/L	15 U	7.4	15	20	5437959
Perfluorohexanoic Acid (PFHxA)	ng/L	10 U	3.5	10	20	5437959
Perfluorohexane Sulfonate (PFHxS)	ng/L	15 U	5.6	15	20	5437959
Perfluorononanoic Acid (PFNA)	ng/L	18 U	8.7	18	20	5437959
Perfluorotetradecanoic Acid	ng/L	10 U	2.7	10	20	5437959
Perfluorotridecanoic Acid	ng/L	10 U	3.8	10	20	5437959
Perfluoroundecanoic Acid (PFUnA)	ng/L	10 U	2.5	10	20	5437959
Perfluorodecanoic Acid (PFDA)	ng/L	15 U	6.1	15	20	5437959
Perfluorododecanoic Acid (PFDoA)	ng/L	10 U	5.0	10	20	5437959
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	10 U	3.3	10	20	5437959
Perfluorooctane Sulfonate (PFOS)	ng/L	15 U	6.0	15	20	5437959
Surrogate Recovery (%)						
13C2-Perfluorodecanoic acid	%	90				5437959
13C2-Perfluorododecanoic acid	%	76				5437959
13C2-Perfluorohexanoic acid	%	91				5437959
13C2-perfluorotetradecanoic acid	%	77				5437959
13C2-Perfluoroundecanoic acid	%	78				5437959
13C4-Perfluoroheptanoic acid	%	94				5437959
13C4-Perfluorooctanesulfonate	%	93				5437959
13C4-Perfluorooctanoic acid	%	94				5437959
13C5-Perfluorononanoic acid	%	96				5437959
18O2-Perfluorohexanesulfonate	%	91				5437959
D3-MeFOSAA	%	78				5437959
D5-EtFOSAA	%	73				5437959

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LOD = Limit of Detection
LOQ = Limit of Quantitation
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Analytics

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

RESULTS OF ANALYSES OF WATER

Maxxam ID		GEZ790				
Sampling Date		2018/03/02 12:20				
COC Number		3188				
	UNITS	FB-CEF-CS-030218	DL	LOD	LOQ	QC Batch
Miscellaneous Parameters						
EtFOSAA	ng/L	10 U	3.3	10	20	5437959
MeFOSAA	ng/L	10 U	2.9	10	20	5437959
Perfluorobutane Sulfonate (PFBS)	ng/L	15 U	5.4	15	20	5437959
Perfluoroheptanoic Acid (PFHpA)	ng/L	15 U	7.4	15	20	5437959
Perfluorohexanoic Acid (PFHxA)	ng/L	10 U	3.5	10	20	5437959
Perfluorohexane Sulfonate (PFHxS)	ng/L	15 U	5.6	15	20	5437959
Perfluorononanoic Acid (PFNA)	ng/L	18 U	8.7	18	20	5437959
Perfluorotetradecanoic Acid	ng/L	10 U	2.7	10	20	5437959
Perfluorotridecanoic Acid	ng/L	10 U	3.8	10	20	5437959
Perfluoroundecanoic Acid (PFUnA)	ng/L	10 U	2.5	10	20	5437959
Perfluorodecanoic Acid (PFDA)	ng/L	15 U	6.1	15	20	5437959
Perfluorododecanoic Acid (PFDoA)	ng/L	10 U	5.0	10	20	5437959
Perfluoro-n-Octanoic Acid (PFOA)	ng/L	10 U	3.3	10	20	5437959
Perfluorooctane Sulfonate (PFOS)	ng/L	15 U	6.0	15	20	5437959
Surrogate Recovery (%)						
13C2-Perfluorodecanoic acid	%	81				5437959
13C2-Perfluorododecanoic acid	%	77				5437959
13C2-Perfluorohexanoic acid	%	86				5437959
13C2-perfluorotetradecanoic acid	%	69				5437959
13C2-Perfluoroundecanoic acid	%	82				5437959
13C4-Perfluoroheptanoic acid	%	89				5437959
13C4-Perfluorooctanesulfonate	%	83				5437959
13C4-Perfluorooctanoic acid	%	85				5437959
13C5-Perfluorononanoic acid	%	90				5437959
18O2-Perfluorohexanesulfonate	%	85				5437959
D3-MeFOSAA	%	72				5437959
D5-EtFOSAA	%	76				5437959

DL = Detection Limit
LOD = Limit of Detection
LOQ = Limit of Quantitation
QC Batch = Quality Control Batch
N/A = Not Applicable

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APPENDIX C

SUPPORT DOCUMENTATION

NTC ORLANDO
SDG B850056

SAMPLE IDENTIFICATION	CEF-013-085-0318 (GEZ792)	
COMPOUND	PERFLUOROHEXANESULFONIC ACID	
EXTRACTION	3ml/125ml	
INTERNAL STANDARD CONCENTRATION	1	

CONCENTRATION USING CALIBRATION CURVE

AREA*(IS CONCENTRATION/IS AREA)

4945*(1/817) = 6.052631579

CALIBRATION CURVE y = 0.447297 * x - 0.009907 p. 469 data package

6.05263157894737 = 0.447297 * x - 0.009907

x = 13.55372064

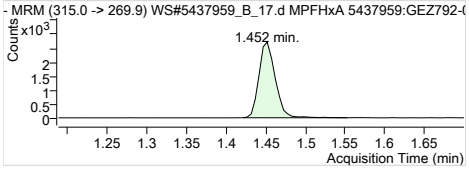
PFDA RESULT CONC = X/EXTRACTION	0.33	µg/L
DILUTION FACTOR	1	
FINAL RESULT	0.33	µg/L
	325	ng/L

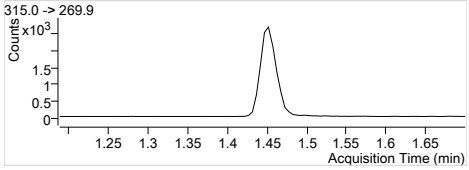
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:GEZ792-01**	**Instrument**	LCMS04
Data File	WS#5437959_B_17.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B7
Acq. Date	2018/03/15 6:02:20 PM	**Injection Volume**	Per Method
Sample Annotation	-		

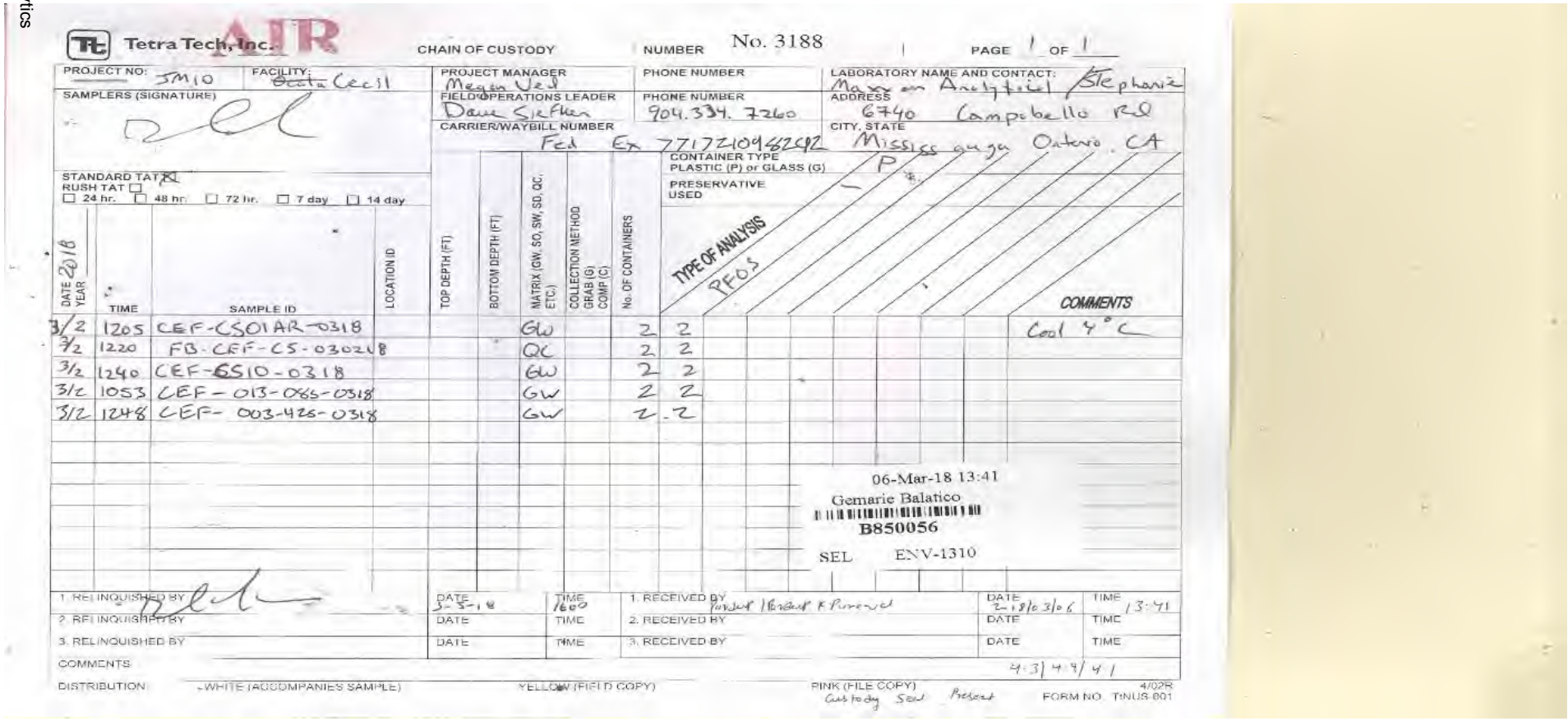
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	3729	1.45	1 µg/L		
MPFHxS	817	1.68	1 µg/L		
MPFHpA	4435	1.70	1 µg/L		
MPFOA	4542	1.89	1 µg/L		
MPFOS	912	1.97	1 µg/L		
MPFNA	4525	2.03	1 µg/L		
MPFDA	3733	2.14	1 µg/L		
MPFUnA	3831	2.24	1 µg/L		
MPFDoA	4862	2.33	1 µg/L		
MPFTeDA	3587	2.47	1 µg/L		
13C6-PFHxA IS	14658	1.45	1 µg/L		
13C9-PFDA IS	18420	2.14	1 µg/L		

Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	362	1.09	-	0.02 µg/L	-
PFHxA 1	5578	1.45	-	0.09 µg/L	-
PFHxS 1	4945	1.68	-	0.33 µg/L	-
PFHpA 1	1303	1.71	-	0.02 µg/L	-
PFOA 1	9646	1.89	-	0.12 µg/L	-
PFOS 1	973	1.93	-	0.06 µg/L	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	3729	1.45	-	93.34 µg/L	-
18O2-PFHxS	817	1.68	-	100.92 µg/L	-
13C4-PFHpA	4435	1.70	-	96.17 µg/L	-
13C4-PFOA	4542	1.89	-	94.08 µg/L	-
13C4-PFOS	912	1.97	-	92.97 µg/L	-
13C5-PFNA	4509	2.03	-	97.29 µg/L	-
13C2-PFDA	3661	2.14	-	90.01 µg/L	-
13C2-PFUnA	3831	2.24	-	74.05 µg/L	-
13C2-PFDoA	4862	2.33	-	66.43 µg/L	-
13C2-PFTeDA	3588	2.47	-	46.29 µg/L	-
13C6-PFHxA	14658	1.45	-	1.90 µg/L	-
13C9-PFDA	18420	2.14	-	1.95 µg/L	-





MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Sample



Tetra Tech, Inc. AIR

CHAIN OF CUSTODY NUMBER No. 3188 PAGE 1 OF 1

PROJECT NO: JM10 FACILITY: Ocala Cecil

SAMPLERS (SIGNATURE)

PROJECT MANAGER: Megan Ved

FIELD OPERATIONS LEADER: Dave Siefken

PHONE NUMBER: 904.334.7260

CARRIER/WAYBILL NUMBER: Fed Ex 771721094 2492

LABORATORY NAME AND CONTACT: Maxxam Analytical / Stephanie

ADDRESS: 6740 Campobello Rd

CITY, STATE: Mississauga Ontario, CA

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): P

PRESERVATIVE USED: —

TYPE OF ANALYSIS: PFOS

DATE 2018 YEAR	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	PFOS	COMMENTS
3/2	1205	CEF-CS01AR-0318				GW		2	2	Cool 4°C
3/2	1220	FB-CEF-CS-030218				QC		2	2	
3/2	1240	CEF-CS10-0318				GW		2	2	
3/2	1053	CEF-013-085-0318				GW		2	2	
3/2	1248	CEF-003-425-0318				GW		2	2	

06-Mar-18 13:41
Gemarie Balatico
B850056
SEL ENV-1310

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	3-5-18	1600	1. RECEIVED BY Pardeep / Pardeep K Purewal	2-18/03/06	13:41
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS 4:3 / 4:9 / 4:1

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) Custody Seal Present

4/02R FORM NO. TINUS-001

Maxxam Job: B850056

Sample Analysis

Samples were initially analyzed on QC batch 5437959 (2018/03/13-15).

The extracted internal standard analyte $^{13}C_2$-Perfluorotetradecanoic acid ($^{13}C_2$-PFTeDA) is used to quantify native Perfluorotridecanoic acid (PFTrDA) & Perfluorotetradecanoic acid (PFTeDA). The recovery observed for this extracted internal standard analyte was below the defined lower control limit (LCL) for the following sample:

GEZ792 *CEF-013-085-0318*

The sample was re-extracted and re-analyzed for the associated native analytes on QC batch 5447939 (2018/03/21), past the method defined hold time. Because of their chemical structures, per- and polyfluorinated alkyl substances (PFAS) are chemically and biologically stable in the environment and resist typical environmental degradation processes. This would suggest the hold time exceedance would not have a significant impact on the data quality. Acceptable $^{13}C_2$-PFTeDA recovery was obtained on re-analysis.

Data Qualifiers

U – Analyte was not detected and is reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample.

J – The reported result is an estimated value (e.g., matrix interference was observed, or the analyte was detected at a concentration outside the calibration range).

Sin Chii Chia, B.Sc.
schia@maxxam.ca
Office 905 817 5700

PROJECT NARRATIVE

Maxxam Analytics
Client Project #: JM10 CECIL

Client: Earth Toxics Inc
Client Project: JM10 CECIL

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Maxxam ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Date Run	Initial Calibration
PFOS and PFOA in water by SPE/LCMS						
GEZ789	CEF-CS01AR-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15
GEZ790	FB-CEF-CS-030218	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15
GEZ791	CEF-CS10-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15
GEZ792	CEF-013-085-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15 & 2018/03/21
GEZ793	CEF-003-425-0318	2018/03/02	2018/03/06	2018/03/13	2018/03/15	2018/03/13-15

Run Date is defined as the date of injection of the last calibration standard (12 hours or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

No problems encountered

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis

a) Hold Times: Due to rework requirements, sample GEZ792 was analyzed for PFTrDA and PFTeDA past hold time.

b) Instrument Calibration: all within control limits

c) Quality Control: All applicable QC meets control criteria, except where otherwise noted.

d) All analytes requiring manual intergration(s) are noted on the sample chromatograms

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for other than the conditions detailed above.

In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Project Manager- Site Assessment and Remediation/ Ultra Trace

2018/03/29
Date

Glossary of Terms

- ***Detection Limit (DL)*** this can also be called ***Method Detection Limit (MDL***): The lowest concentration or amount of the target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value. (Clarification): The smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence. At the DL, the false positive rate (Type I error) is 1%.

- ***Limit of Detection (LOD*)**: An estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte- and matrix-specific and may be laboratory-dependent. (Clarification): The smallest amount or concentration of a substance that must be present in a sample in order to be detected at a high level of confidence (99%). At the LOD, the false negative rate (Type II error) is 1%.

- ***Limits of Quantitation (LOQ)*** this can also be called ***Reporting Detection Limit (RDL)***: The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. (Clarification): The lowest concentration that produces a quantitative result within specified limits of precision and bias. For DoD projects, the LOQ shall be set at or above the concentration of the lowest initial calibration standard.

- ***Acceptance Criteria*** are values used by the laboratory to determine that a process is in control.

- ***Accuracy*** is the degree of agreement of a measured value with the true or expected value.

- ***Calibration Standards*** are a set of solutions containing the analytes of interest at a specified concentration.

- ***Calibration Verification Standard*** consists of a calibration standard solution of intermediate concentration (mid-point initial calibration level) used to access whether the initial calibration is still valid

- ***Certified Reference Material*** is a stable homogenous material that is certified by repetitive analysis from a supplier who is certified to generate said materials.

- ***Internal Standard*** a deuterated or ^{13}C-labelled analyte that is added to a sample extract prior to instrumental analysis to compensate for injection variability.

- ***Isomer*** is a member of a group of compounds that differ from each other only in the locations of a specific number of common substituent atoms or groups of atoms on the parent compound.

- ***Method Blank*** is a laboratory control sample using reagents that are known to be free of contamination.

- ***Precision*** is the degree of agreement between the data generated from repetitive measurements under specific conditions.

- ***Quality Assurance*** is a system of activities whose purpose is to provide the producer or user of a product with the assurance that the product meets a defined standard of quality.

- ***Quality Control*** is the overall system of activities whose purpose is to control the quality of a product so that it meets the needs of the end user.

- ***RSD*** is the relative standard deviation.

- ***Blank Spike*** is a laboratory control sample that has been fortified with native analytes of interest.

- ***Window Defining Mixture*** is a solution containing only the earliest and latest eluting congeners within each homologous group of target analytes on a specified GC column.

- ***RPD*** or Relative Percent Difference. A measure used to compare duplicate sample analysis.

- ***EMPC/NDR –*** Peak detected does not meet ratio criteria and has resulted in a higher detection limit.

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.4°C

Results reported in ng/L as per client request.

Sample GEZ792, PFOS and PFOA in water by SPE/LCMS: Test repeated.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

INJECTION INTERNAL STANDARD PEAK AREAS

Sample Name	Analyte	13C6-PFHxA	13C9-PFDA
	Mass labeled IS	STD 4	STD 4
	IS Area	19324	23266
		IS Peak Area	IS Peak Area
STD 1		17689	22238
STD 2		18251	22909
STD 3		18391	22150
STD 4		19324	23266
STD 5		18922	23282
STD 6		18727	22205
IB		18272	21328
ICV		18442	22875
ISC		18281	21247
5437959:BLANK		17191	21109
5437959:SPIKE		15747	19090
5437959:SPIKE:D1		15891	18845
5437959:GEZ789-01		17359	21374
5437959:GEZ790-01		18834	23025
5437959:GEZ791-01		18096	21997
5437959:GEZ792-01		14658	18420
5437959:GEZ793-01		15732	19114
5437959:GFF357-01		20974	26022
5437959:GFF358-01		17231	20416
5437959:GFF359-01		15171	18457
5437959:GFF360-01		17657	21343
CCV		19946	22645

INJECTION INTERNAL STANDARD PEAK AREAS

Sample Name	Analyte	13C9-PFDA
	Mass labeled IS	STD 4
	IS Area	18363
		IS Peak Area
STD 1		19181
STD 2		18460
STD 3		19960
STD 4		18363
STD 5		19119
STD 6		18419
IB		19129
ICV		18394
ISC		18861
5437959:BLANK		18898
5437959:SPIKE		17696
5437959:SPIKE:D1		18684
5437959:GEZ789-01		18981
5437959:GEZ790-01		20462
5437959:GEZ791-01		19294
5437959:GEZ792-01		17976
5437959:GEZ793-01		17700
5437959:GFF357-01		22960
5437959:GFF358-01		18903
5437959:GFF359-01		18513
5437959:GFF360-01		18892
CCV		18284

INJECTION INTERNAL STANDARD PEAK AREAS

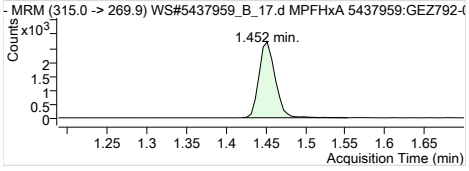
Sample Name	Analyte	13C9-PFDA	13C9-PFDA
	Mass labeled IS	STD 4	ISC/CCV
	IS Area	19572	14411
		IS Peak Area	IS Peak Area
STD 1		20769	
STD 2		22773	
STD 3		22560	
STD 4		19572	
STD 5		20426	
STD 6		19370	
IB		20095	
ICV		22356	
ISC		21333	
5447939:BLANK		22686	
5447939:SPIKE		24781	
5447939:SPIKE:D1		22342	
5447939:GEZ792-01		18804	
5447939:GGI852-01		23468	
5447939:GGT090-01		21943	
5447939:GGT091-01		23089	
5447939:GGT113-01:20x		21212	
5447939:GGT113-01:2x		23701	
IB		20632	
5447939:GGT114-01:20x		19261	
5447939:GGT114-01:2x		20054	
IB		19955	
CCV		21028	
STD 6		13527	
IB		13139	
ISC			14411
5447939:BLANK			16265
5447939:SPIKE			18136
5447939:SPIKE:D1			16521
5447939:GEZ792-01			15959
5447939:GGI852-01			17276
5447939:GGT090-01			16883
5447939:GGT091-01			16793
5447939:GGT113-01:20x			16343
5447939:GGT113-01:2x			18151
IB			15397
5447939:GGT114-01:20x			14997
5447939:GGT114-01:2x			14708
IB			15716
CCV			16586

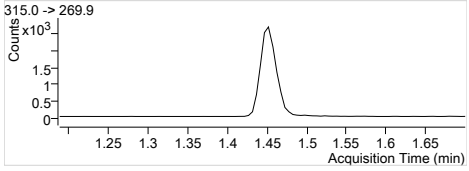
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_ETOxics

Sample Name	**5437959:GEZ792-01**	**Instrument**	LCMS04
Data File	WS#5437959_B_17.d	**Operator**	
Sample Type	Sample	**Dilution**	0.024
Acq. Method	PFC_Water_Low.m	**Position**	P2-B7
Acq. Date	2018/03/15 6:02:20 PM	**Injection Volume**	Per Method
Sample Annotation	-		

ISTD Compounds	Response	RT	Target conc.		
MPFHxA	3729	1.45	1 µg/L		
MPFHxS	817	1.68	1 µg/L		
MPFHpA	4435	1.70	1 µg/L		
MPFOA	4542	1.89	1 µg/L		
MPFOS	912	1.97	1 µg/L		
MPFNA	4525	2.03	1 µg/L		
MPFDA	3733	2.14	1 µg/L		
MPFUnA	3831	2.24	1 µg/L		
MPFDoA	4862	2.33	1 µg/L		
MPFTeDA	3587	2.47	1 µg/L		
13C6-PFHxA IS	14658	1.45	1 µg/L		
13C9-PFDA IS	18420	2.14	1 µg/L		

Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	362	1.09	-	0.02 µg/L	-
PFHxA 1	5578	1.45	-	0.09 µg/L	-
PFHxS 1	4945	1.68	-	0.33 µg/L	-
PFHpA 1	1303	1.71	-	0.02 µg/L	-
PFOA 1	9646	1.89	-	0.12 µg/L	-
PFOS 1	973	1.93	-	0.06 µg/L	-
PFNA 1			-	ND	-
PFDA 1			-	ND	-
PFUnA 1			-	ND	-
PFDoA 1			-	ND	-
PFTrDA 1			-	ND	-
PFTeDA 1			-	ND	-
13C2-PFHxA	3729	1.45	-	93.34 µg/L	-
18O2-PFHxS	817	1.68	-	100.92 µg/L	-
13C4-PFHpA	4435	1.70	-	96.17 µg/L	-
13C4-PFOA	4542	1.89	-	94.08 µg/L	-
13C4-PFOS	912	1.97	-	92.97 µg/L	-
13C5-PFNA	4509	2.03	-	97.29 µg/L	-
13C2-PFDA	3661	2.14	-	90.01 µg/L	-
13C2-PFUnA	3831	2.24	-	74.05 µg/L	-
13C2-PFDoA	4862	2.33	-	66.43 µg/L	-
13C2-PFTeDA	3588	2.47	-	46.29 µg/L	-
13C6-PFHxA	14658	1.45	-	1.90 µg/L	-
13C9-PFDA	18420	2.14	-	1.95 µg/L	-





MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	Sample

Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5437959	M_G	Spiked Blank	13C2-Perfluorodecanoic acid	2018/03/15		91	%	50 - 150
			13C2-Perfluorododecanoic acid	2018/03/15		86	%	50 - 150
			13C2-Perfluorohexanoic acid	2018/03/15		93	%	50 - 150
			13C2-perfluorotetradecanoic acid	2018/03/15		87	%	50 - 150
			13C2-Perfluoroundecanoic acid	2018/03/15		94	%	50 - 150
			13C4-Perfluoroheptanoic acid	2018/03/15		95	%	50 - 150
			13C4-Perfluorooctanesulfonate	2018/03/15		102	%	50 - 150
			13C4-Perfluorooctanoic acid	2018/03/15		96	%	50 - 150
			13C5-Perfluorononanoic acid	2018/03/15		96	%	50 - 150
			18O2-Perfluorohexanesulfonate	2018/03/15		100	%	50 - 150
			D3-MeFOSAA	2018/03/15		82	%	50 - 150
			D5-EtFOSAA	2018/03/15		81	%	50 - 150
			EtFOSAA	2018/03/15		98	%	73 - 128
			MeFOSAA	2018/03/15		103	%	77 - 127
			Perfluorobutane Sulfonate (PFBS)	2018/03/15		100	%	65 - 135
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15		101	%	73 - 129
			Perfluorohexanoic Acid (PFHxA)	2018/03/15		102	%	74 - 129
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15		99	%	67 - 132
			Perfluorononanoic Acid (PFNA)	2018/03/15		102	%	72 - 131
			Perfluorotetradecanoic Acid	2018/03/15		98	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/15		98	%	67 - 143
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15		102	%	71 - 133
			Perfluorodecanoic Acid (PFDA)	2018/03/15		102	%	71 - 133
			Perfluorododecanoic Acid (PFDoA)	2018/03/15		100	%	71 - 131
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15		101	%	71 - 130
			Perfluorooctane Sulfonate (PFOS)	2018/03/15		94	%	72 - 131
5437959	M_G	Spiked Blank DUP	13C2-Perfluorodecanoic acid	2018/03/15		91	%	50 - 150
			13C2-Perfluorododecanoic acid	2018/03/15		86	%	50 - 150
			13C2-Perfluorohexanoic acid	2018/03/15		90	%	50 - 150
			13C2-perfluorotetradecanoic acid	2018/03/15		86	%	50 - 150
			13C2-Perfluoroundecanoic acid	2018/03/15		91	%	50 - 150
			13C4-Perfluoroheptanoic acid	2018/03/15		89	%	50 - 150
			13C4-Perfluorooctanesulfonate	2018/03/15		97	%	50 - 150
			13C4-Perfluorooctanoic acid	2018/03/15		93	%	50 - 150
			13C5-Perfluorononanoic acid	2018/03/15		92	%	50 - 150
			18O2-Perfluorohexanesulfonate	2018/03/15		92	%	50 - 150
			D3-MeFOSAA	2018/03/15		81	%	50 - 150
			D5-EtFOSAA	2018/03/15		81	%	50 - 150
			EtFOSAA	2018/03/15		92	%	73 - 128
			MeFOSAA	2018/03/15		95	%	77 - 127
			Perfluorobutane Sulfonate (PFBS)	2018/03/15		95	%	65 - 135
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15		98	%	73 - 129
			Perfluorohexanoic Acid (PFHxA)	2018/03/15		98	%	74 - 129
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15		96	%	67 - 132
			Perfluorononanoic Acid (PFNA)	2018/03/15		97	%	72 - 131
			Perfluorotetradecanoic Acid	2018/03/15		96	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/15		95	%	67 - 143
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15		97	%	71 - 133
			Perfluorodecanoic Acid (PFDA)	2018/03/15		96	%	71 - 133
			Perfluorododecanoic Acid (PFDoA)	2018/03/15		97	%	71 - 131
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15		93	%	71 - 130
			Perfluorooctane Sulfonate (PFOS)	2018/03/15		89	%	72 - 131
5437959	M_G	RPD	EtFOSAA	2018/03/15	6.4		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			MeFOSAA	2018/03/15	7.8		%	30
			Perfluorobutane Sulfonate (PFBS)	2018/03/15	4.8		%	30
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15	3.6		%	30
			Perfluorohexanoic Acid (PFHxA)	2018/03/15	4.2		%	30
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15	3.7		%	30
			Perfluorononanoic Acid (PFNA)	2018/03/15	4.9		%	30
			Perfluorotetradecanoic Acid	2018/03/15	2.0		%	30
			Perfluorotridecanoic Acid	2018/03/15	3.0		%	30
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15	4.7		%	30
			Perfluorodecanoic Acid (PFDA)	2018/03/15	5.2		%	30
			Perfluorododecanoic Acid (PFDoA)	2018/03/15	3.2		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15	8.0		%	30
			Perfluorooctane Sulfonate (PFOS)	2018/03/15	4.9		%	30
5437959	M_G	Method Blank	13C2-Perfluorodecanoic acid	2018/03/15		89	%	50 - 150
			13C2-Perfluorododecanoic acid	2018/03/15		79	%	50 - 150
			13C2-Perfluorohexanoic acid	2018/03/15		90	%	50 - 150
			13C2-perfluorotetradecanoic acid	2018/03/15		59	%	50 - 150
			13C2-Perfluoroundecanoic acid	2018/03/15		81	%	50 - 150
			13C4-Perfluoroheptanoic acid	2018/03/15		95	%	50 - 150
			13C4-Perfluorooctanesulfonate	2018/03/15		91	%	50 - 150
			13C4-Perfluorooctanoic acid	2018/03/15		91	%	50 - 150
			13C5-Perfluorononanoic acid	2018/03/15		95	%	50 - 150
			18O2-Perfluorohexanesulfonate	2018/03/15		93	%	50 - 150
			D3-MeFOSAA	2018/03/15		80	%	50 - 150
			D5-EtFOSAA	2018/03/15		79	%	50 - 150
			EtFOSAA	2018/03/15	10 U, LOD=10		ng/L	
			MeFOSAA	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorobutane Sulfonate (PFBS)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluoroheptanoic Acid (PFHpA)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluorohexanoic Acid (PFHxA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorohexane Sulfonate (PFHxS)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluorononanoic Acid (PFNA)	2018/03/15	18 U, LOD=18		ng/L	
			Perfluorotetradecanoic Acid	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorotridecanoic Acid	2018/03/15	10 U, LOD=10		ng/L	
			Perfluoroundecanoic Acid (PFUnA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorodecanoic Acid (PFDA)	2018/03/15	15 U, LOD=15		ng/L	
			Perfluorododecanoic Acid (PFDoA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluoro-n-Octanoic Acid (PFOA)	2018/03/15	10 U, LOD=10		ng/L	
			Perfluorooctane Sulfonate (PFOS)	2018/03/15	15 U, LOD=15		ng/L	

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Maxxam Job #: B850056
Report Date: 2018/03/21

Earth Toxics Inc
Client Project #: JM10 CECIL
Site Location: JM10 CECIL

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
5447939	DZU	Spiked Blank	13C2-perfluorotetradecanoic acid	2018/03/21		75	%	50 - 150
			Perfluorotetradecanoic Acid	2018/03/21		91	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/21		88	%	67 - 143
5447939	DZU	Spiked Blank DUP	13C2-perfluorotetradecanoic acid	2018/03/21		77	%	50 - 150
			Perfluorotetradecanoic Acid	2018/03/21		100	%	70 - 134
			Perfluorotridecanoic Acid	2018/03/21		97	%	67 - 143
5447939	DZU	RPD	Perfluorotetradecanoic Acid	2018/03/21	10		%	30
			Perfluorotridecanoic Acid	2018/03/21	9.9		%	30
5447939	DZU	Method Blank	13C2-perfluorotetradecanoic acid	2018/03/21		80	%	50 - 150
			Perfluorotetradecanoic Acid	2018/03/21	10 U, LOD=10		ng/L	
			Perfluorotridecanoic Acid	2018/03/21	10 U, LOD=10		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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TUNE CHECK

Instrument: Agilent 6470 LC/MS/MS

Instrument Serial Number: SG1611G001

Maxxam Instrument Identification: LCMS04

Mass Calibration Performed: July 7, 2017

Tune Check Performed: July 10 & 11, 2017

Mass Assignment Reference Table _____ Page 2

Analyte Precursor Ion Verification _____ Page 4

Analyte Product Ion Verification _____ Page 31

Extracted and Injection Internal Standard Precursor Ion Verification _____ Page 59

Extracted and Injection Internal Standard Product Ion Verification _____ Page 83

Reviewed by:

Adam Robinson, Supervisor – Liquid Chromatography

July 12/2017
Date

Mass Assignments – Analytes, Extracted Internal Standards and Injection Internal Standards

Compound	Abbreviation	Precursor Ion (m/z)	Precursor Ion Formula	Quant Ion (m/z)	Quantitation Ion Formula	Confirmation Ion (m/z)	Confirmation Ion Formula
Native Analytes							
Perfluorobutanoic acid	PFBA	212.9	$[CF_3(CF_2)_2CO_2]^-$	169.0	$[CF_3(CF_2)_2]^-$	[1] N/A	N/A
Perfluorobutanesulfonate	PFBS	298.9	$[CF_3(CF_2)_3SO_3]^-$	79.9	$[SO_3]^-$	98.9	$[FSO_3]^-$
Perfluoropentanoic acid	PFPeA	262.9	$[CF_3(CF_2)_3CO_2]^-$	218.9	$[CF_3(CF_2)_3]^-$	[1] N/A	N/A
Perfluorohexanoic acid	PFHxA	313.0	$[CF_3(CF_2)_4CO_2]^-$	269.0	$[CF_3(CF_2)_4]^-$	119.0	$[CF_3(CF_2)]^-$
Perfluorohexanesulfonate	PFHxS	398.9	$[CF_3(CF_2)_5SO_3]^-$	79.9	$[SO_3]^-$	98.9	$[FSO_3]^-$
Perfluoroheptanoic acid	PFHpA	363.0	$[CF_3(CF_2)_5CO_2]^-$	319.0	$[CF_3(CF_2)_5]^-$	169.2	$[CF_3(CF_2)_2]^-$
Perfluoroheptanesulfonate	PFHpS	448.9	$[CF_3(CF_2)_6SO_3]^-$	79.9	$[SO_3]^-$	99.0	$[FSO_3]^-$
Perfluorooctanoic acid	PFOA	413.1	$[CF_3(CF_2)_6CO_2]^-$	369.0	$[CF_3(CF_2)_6]^-$	169.0	$[CF_3(CF_2)_2]^-$
Perfluorooctanesulfonate	PFOS	498.8	$[CF_3(CF_2)_7SO_3]^-$	79.9	$[SO_3]^-$	98.9	$[FSO_3]^-$
Perfluorononanoic acid	PFNA	462.9	$[CF_3(CF_2)_7CO_2]^-$	419.0	$[CF_3(CF_2)_7]^-$	219.1	$[CF_3(CF_2)_3]^-$
Perfluorodecanoic acid	PFDA	513.0	$[CF_3(CF_2)_8CO_2]^-$	469.1	$[CF_3(CF_2)_8]^-$	218.9	$[CF_3(CF_2)_3]^-$
Perfluorodecanesulfonate	PFDS	598.9	$[CF_3(CF_2)_9SO_3]$-	79.9	$[SO_3]^-$	98.8	$[FSO_3]^-$
Perfluoroundecanoic acid	PFUnA	562.9	$[CF_3(CF_2)_9CO_2]^-$	519.0	$[CF_3(CF_2)_9]^-$	269.2	$[CF_3(CF_2)_4]^-$
Perfluorododecanoic acid	PFDoA	612.9	$[CF_3(CF_2)_{10}CO_2]^-$	569.0	$[CF_3(CF_2)_{10}]^-$	319.0	$[CF_3(CF_2)_5]^-$
Perfluorotridecanoic acid	PFTrDA	663.0	$[CF_3(CF_2)_{11}CO_2]^-$	619.0	$[CF_3(CF_2)_{11}]^-$	318.9	$[CF_3(CF_2)_5]^-$
Perfluorotetradecanoic acid	PFTeDA	713.0	$[CF_3(CF_2)_{12}CO_2]^-$	669.0	$[CF_3(CF_2)_{12}]^-$	319.2	$[CF_3(CF_2)_5]^-$
Perfluorooctane sulfonamide	PFOSA	497.9	$[CF_3(CF_2)_7SO_2NH]^-$	78.0	$[SO_2N]^-$	478.0	$[(CF_2)_8SO_2N]^-$
N-methylperfluorooctane sulfonamide	MeFOSA	511.9	$[CF_3(CF_2)_7SO_2N(CH_3)]^-$	169.0	$[CF_3(CF_2)_2]^-$	219.0	$[CF_3(CF_2)_3]^-$
N-ethylperfluorooctane sulfonamide	EtFOSA	526.0	$[CF_3(CF_2)_7SO_2N(C_2H_5)]^-$	169.0	$[CF_3(CF_2)_2]^-$	219.0	$[CF_3(CF_2)_3]^-$
N-methylperfluorooctane sulfonamidoethanol	MeFOSE	616.0	$[CF_3(CF_2)_7SO_2N(CH_3)C_2H_4OH{\cdot}CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	[1] N/A	N/A
N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	630.0	$[CF_3(CF_2)_7SO_2N(C_2H_5)C_2H_4OH{\cdot}CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	[1] N/A	N/A
N-methylperfluorooctanesufonamidoacetic acid	MeFOSAA	570.1	$[CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2]^-$	419.1	$[CF_3(CF_2)_7]^-$	483.0	$[CF_3(CF_2)_7SO_2]^-$
N-ethylperfluorooctanesufonamidoacetic acid	EtFOSAA	584.1	$[CF_3(CF_2)_7SO_2N(CH_2CH_3)CH_2CO_2]^-$	419.1	$[CF_3(CF_2)_7]^-$	483.0	$[CF_3(CF_2)_7SO_2]^-$
6:2 Fluorotelomersulfonate	6:2FTS	427.0	$[CF_3(CF_2)_5CH_2CH_2SO_3]^-$	407.0	$[CF_3(CF_2)_4CFCHCH_2SO_3]^-$	80.9	$[SO_2OH]^-$
8:2 Fluorotelomersulfonate	8:2FTS	526.9	$[CF_3(CF_2)_7CH_2CH_2SO_3]^-$	507.0	$[CF_3(CF_2)_6CFCHCH_2SO_3]^-$	80.9	$[SO_2OH]^-$
Mass-labeled Extracted Internal Standards							
$^{13}C_4$-Perfluorobutanoic acid	MPFBA	216.9	$[^{13}CF_3(^{13}CF_2)_2{}^{13}CO_2]^-$	172.0	$[^{13}CF_3(^{13}CF_2)_2]^-$	N/A	N/A

Compound	Abbreviation	Precursor Ion (m/z)	Precursor Ion Formula	Quant Ion (m/z)	Quantitation Ion Formula	Confirmation Ion (m/z)	Confirmation Ion Formula
$^{13}C_5$-Perfluoropentanoic acid	MPFPeA	267.9	$[^{13}CF_3(^{13}CF_2)_3{}^{13}CO_2]^-$	223.0	$[^{13}CF_3(^{13}CF_2)_3]^-$	N/A	N/A
$^{13}C_2$-Perfluorohexanoic acid	MPFHxA	314.9	$[CF_3(CF_2)_3(^{13}CF_2){}^{13}CO_2]^-$	270.0	$[CF_3(CF_2)_3{}^{13}CF_2]^-$	N/A	N/A
$^{18}O_2$-Perfluorohexanesulfonate	MPFHxS	402.9	$[CF_3(CF_2)_5S(^{18}O)_2O]^-$	84.0	$[S(^{18}O)_2O]^-$	N/A	N/A
$^{13}C_4$-Perfluoroheptanoic acid	MPFHpA	366.9	$[CF_3CF_2(^{13}CF_2)_3{}^{13}CO_2]^-$	322.0	$[CF_3CF_2(^{13}CF_2)_4]^-$	N/A	N/A
$^{13}C_4$-Perfluorooctanoic acid	MPFOA	416.9	$[CF_3(CF_2)_3(^{13}CF_2)_3{}^{13}CO_2]^-$	372.0	$[CF_3(CF_2)_3(^{13}CF_2)_3]^-$	N/A	N/A
$^{13}C_4$-Perfluorooctanesulfonate	MPFOS	502.9	$[CF_3(CF_2)_3(^{13}CF_2)_4SO_3]^-$	79.9	$[SO_3]^-$	N/A	N/A
$^{13}C_5$-Perfluorononanoic acid	MPFNA	467.9	$[CF_3(CF_2)_3(^{13}CF_2)_4{}^{13}CO_2]^-$	423.0	$[CF_3(CF_2)_3(^{13}CF_2)_4]^-$	N/A	N/A
$^{13}C_2$-Perfluorodecanoic acid	MPFDA	514.9	$[CF_3(CF_2)_7(^{13}CF_2){}^{13}CO_2]^-$	470.0	$[CF_3(CF_2)_7{}^{13}CF_2]^-$	N/A	N/A
$^{13}C_2$-Perfluoroundecanoic acid	MPFUnA	564.9	$[CF_3(CF_2)_8(^{13}CF_2){}^{13}CO_2]^-$	520.0	$[CF_3(CF_2)_8{}^{13}CF_2]^-$	N/A	N/A
$^{13}C_2$-Perfluorododecanoic acid	MPFDoA	614.9	$[CF_3(CF_2)_9(^{13}CF_2){}^{13}CO_2]^-$	570.0	$[CF_3(CF_2)_9{}^{13}CF_2]^-$	N/A	N/A
$^{13}C_2$-Perfluorotetradecanoic acid	MPFTeDA	714.9	$[CF_3(CF_2)_{12}(^{13}CF_2){}^{13}CO_2]^-$	669.9	$[CF_3(CF_2)_{12}]^-$	N/A	N/A
$^{13}C_8$-Perfluorooctane sulfonamide	MPFOSA	505.8	$[^{13}CF_3(^{13}CF_2)_7SO_2NH]^-$	77.9	$[SO_2N]^-$	N/A	N/A
N-methyl-d_3-perfluorooctanesulfonamide	D_3-MeFOSA	514.9	$[CF_3(CF_2)_7SO_2N(CD_3)]^-$	168.9	$[CF_3(CF_2)_2]^-$	N/A	N/A
N-ethyl-d_5-perfluorooctanesulfonamide	D_5-EtFOSA	531.0	$[CF_3(CF_2)_7SO_2N(C_2D_5)]^-$	168.9	$[CF_3(CF_2)_2]^-$	N/A	N/A
N-methyl-d_3-perfluorooctanesulfonamidoethanol-d_4	D_7-MeFOSE	623.1	$[CF_3(CF_2)_7SO_2N(CD_3)CD_2CD_2OH \cdot CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	N/A	N/A
N-ethyl-d_5-perfluorooctanesulfonamidoethanol-d_4	D_9-EtFOSE	639.1	$[CF_3(CF_2)_7SO_2N(CD_2CD_3)CD_2CD_2OH \cdot CH_3CO_2]^-$	59.0	$[CH_3CO_2]^-$	N/A	N/A
N-methyl-d_3-perfluorooctanesulfonamidoacetic acid	D_3-MeFOSAA	573.1	$[CF_3(CF_2)_7SO_2N(CD_3)CH_2CO_2]^-$	419.1	$[CF_3(CF_2)_7]^-$	N/A	N/A
N-ethyl-d_5-perfluorooctanesulfonamidoacetic acid	D_5-EtFOSAA	589.2	$[CF_3(CF_2)_7SO_2N(CD_2CD_3)CH_2CO_2]^-$	419.0	$[CF_3(CF_2)_7]^-$	N/A	N/A
$^{13}C_2$-Fluorotelomersulfonate (6:2)	M2-6:2FTS	429.0	$[CF_3(CF_2)_5(^{13}CH_2)_2SO_3]^-$	80.9	$[SO_2OH]^-$	N/A	N/A
$^{13}C_2$-Fluorotelomersulfonate (8:2)	M2-8:2FTS	528.9	$[CF_3(CF_2)_7(^{13}CH_2)_2SO_3]^-$	80.9	$[SO_2OH]^-$	N/A	N/A
Injection Internal Standards							
$^{13}C_6$-Perfluorohexanoic acid	$^{13}C_6$-PFHxA	318.9	$[^{13}CF_3(^{13}CF_2)_4{}^{13}CO_2]^-$	274.0	$[^{13}CF_3(^{13}CF_2)_4]^-$	N/A	N/A
$^{13}C_9$-Perfluorodecanoic acid	$^{13}C_9$-PFDA	521.9	$[CF_3(^{13}CF_2)_8{}^{13}CO_2]^-$	477.1	$[CF_3(^{13}CF_2)_8]^-$	N/A	N/A

DoD Projects - Internal Data Validation Checklist

Run date: 2018/03/15

Worksheet # (s): 5H37959

Analysis: PFOSALCM-W

Primary review by the analyst - 1st 100 % analysis review	1st 100% review yes	no	n/a	*2nd 100% review
1 Sample analyses meet hold time criteria	✓			✓
2 Analysis set-up meets method criteria	✓			✓
3 Tuning and correct calibration used - criteria meets method criteria	✓			✓
4 SQC/Control Charts updated, analysis in statistical/method control	✓			✓
5 Internal area counts checked (if applicable)	✓			✓
6 LCS, SRM are within acceptance criteria	✓			✓
7 Surrogate Recovery(s) is within acceptance criteria	✓			✓
8 Method Blank meets acceptance criteria		✓		✓
9 Matrix Spike recovery(s) meets acceptance criteria	✓			✓
10 Duplicate precision meets acceptance criteria			✓	✓
11 QC is documented on the run logs	✓			✓
12 Runs checked for carryover	✓			✓
13 Prep log / worksheet(s) are present, signed / dated by a prep / instrument analysts	✓			✓
14 Initial weights, splits, impringer volumes (where applicable) are documented	✓			✓
15 Standards and reagents traceable to Certificates of Analysis	✓			✓
16 Samples above calibration range diluted and reanalyzed			✓	✓
17 Dilution factors (where justified) have been checked for correctness and entered			✓	✓
18 Analytical observations/anomalies documented in LIMS	✓			✓
19 Random calculation checked and in correct units	✓			✓
20 If corrective actions were applied they are documented, initialed & dated			✓	✓
21 Manual integration – before & after data with a reason included, initialed & dated			✓	✓
22 Transferred data is validated in LIMS for correctness	✓			✓
23 Data package assembled (where required)	✓			✓

Reviewed by: MCP Date: 2018/03/19

Comments:

Secondary Supervisor/Qualified Data Review Staff - 2nd 100% verification review	yes	no	n/a
1 Repeats documented and referenced			✓
2 Method and sample deviations noted, anomalies described (if applicable)			✓
3 Data and QC validated in LIMS	✓		
4 Random calculation checked	✓		
5 Benchsheet (s) signed and dated	✓		
6 Data Package (if required) checked for completeness	✓		

Reviewed by: CM Date: 3/19/2018

Comments:

*Note: 2nd 100% verification review documented by secondary qualified data review
Primary and Secondary Internal Data Review Check must be performed by a different person

Worksheet Data Validation Checklist - Extractable Organics

Worksheet # 5437959 | Testcode: PFOSALCM-W

Sample Preparation		yes	no	n/a
1	Samples extracted within hold time	✓		
2	Client sample ID verified against Lab ID (waters & oils)	✓		
3	Parameter list and Client comments reviewed, (Spiking solutions matched to parameter list)	✓		
4	Height of sediment or if sample was decanted, recorded on worksheet	✓		
5	Method required QC processed with samples, maximum batch size = 20 client samples.	✓		
6	Sample, duplicate, matrix spike appear similar, initial sample as well as final extract			✓
7	Sample weight or initial volume and extract final volume, aliquot factor clearly recorded.	✓		
8	If performed any additional dilution clearly recorded			✓
9	Matrix spike / Duplicate performed on IOL samples if present			✓
10	Spiking solutions valid (haven't expired), ID and volume used clearly identified on worksheet	✓		
11	Spiking process witnessed and signed off	✓		
12	Extraction type recorded (N3A2B = neutral, 3 x acidic, 2 x basic)			✓
13	Sample prep deviations documented within CompliantPro as a Policy Deviation			✓
14	Job Remarks reviewed on 2nd page of worksheet.	✓		
15	Worksheet and reagent tracking record completed and authorized.	✓		

Reviewed by: DM3 | Date: 2018/03/13

Comments:

Worksheet Approval		yes	no	n/a
1	Verified the position of the vials in autosampler against sequence list; signed off sequence list			
2	Calibration and CCV standards valid (haven't expired)			
3	Initial calibration curve and DFTPP tune (if applicable) acceptable			
4	Continuing and Final CCV and DFTPP tune (if applicable) acceptable			
5	System performance check acceptable (if applicable)			
6	Internal standard responses acceptable			
7	Method blank meets acceptance criteria			
8	Lab Control Samples recoveries meets acceptance criteria			
9	Duplicate RPD meets acceptance criteria			
10	Matrix spike recoveries meets acceptance criteria			
11	Surrogate recoveries meets acceptance criteria			
12	Appropriate control charts updated			
13	Samples above calibration range diluted and reanalyzed			
14	Dilutions clearly documented on tracking record, inst file and verified during data upload			
15	Samples following high level samples checked for carryover.			
16	Mass spectra ion ratios acceptable for positive results, hardcopy in file.			
17	Analytical observations / anomalies documented			
18	DQW comments entered in LIMS, hardcopy in file			
19	Sample Prep section (above) reviewed and verified.			
20	WS Approval performed in LIMS			

Reviewed by: | Date:

Comments:

Worksheet Validation		yes	no	n/a
1	Calibration, QC and sample results reviewed and determined acceptable			
2	Manual integrations verified			
3	Random calculation checked			
4	Data and QC validated in LIMS			
5	Comments reviewed for appropriateness			
6	Reworks / relogs documented in file			
7	Worksheet signed and dated,			
8	Worksheet approved and validated within LIMS			

Reviewed by: | Date:

Comments:

WS# : 5437959

Page #: 1/2

Report Name : Worksheet - (Liquids and Solids)

Assignment Date : Tuesday, March 13, 2018

Assigned to : Daniella McLean

Test Code : PFOSALCM-W

Instrument Id:

Test Description : PFOS and PFOA in water by LC-MS/MS

	Job Number	Sample Number	D	Sample ID	F	~~% Moisture~~ Sediments	Wt or Vol	Final Vol (mL)	DF or AF	# Cont	Expiry Date	Test DeadLine	Criteria	Extract Date	Envi (Acres (mg))
5,3		SPIKE	0	PFC-W		0	125	3	1X					2018/03/13	28
5,4		SPIKE	1	PFC-W		0	125	3	1X					2018/03/13	32
5,1		BLANK				0	125	3	1X					2018/03/13	35
5,6	B850056	*GEZ789-01R		CEF-CS01AR-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	33
5,8	B850056	*GEZ790-01R		FB-CEF-CS-030218		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	32
5,10	B850056	*GEZ791-01R		CEF-CS10-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	28
5,12	B850056	*GEZ792-01R		CEF-013-085-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	27
5,14	B850056	*GEZ793-01R		CEF-003-425-0318		0	125	3	1X	2	2018/03/16	2018/03/19 23:00	DOD	2018/03/13	34
5,16	B851133	*GFF357-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	27
5,18	B851133	*GFF358-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	30
5,20	B851133	*GFF359-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	29
5,22	B851133	*GFF360-01R		[redacted]		0	125	3	1X	2	2018/03/20	2018/03/20 23:00	DOD	2018/03/13	29

2018/03/20 DM3

Remarks:

Samples extracted by: Daniella McLean DM3 2018/03/20

Instrumentation performed by: [signature] Date: 2018/03/13

Calculations performed by: [signature] Date: 2018/03/19

Validated by: CM Date: 2018/03/20

Job No.	Rep	Client Name / Remarks	Contact	Client Tier	National
GB850056	SP8	Earth Toxics Inc	Rick Carr	Tier 5 (Enviro.)	
		nreg, PFOSALCM-W Level IV Package and TetraTech EDD required *PM report results in ng/L Project #: JM10 CECIL			
GB851133	[redacted]				

Job	Sample	Lab Comments
	SPIKE	
	SPIKE	
	BLANK	
B850056	GEZ789-01R	
B850056	GEZ790-01R	
B850056	GEZ791-01R	
B850056	GEZ792-01R	
B850056	GEZ793-01R	
B851133	GFF357-01R	
B851133	GFF358-01R	
B851133	GFF359-01R	
B851133	GFF360-01R	

S1 25
S2 50 } SK-7430
S3 150
S4 37.5
S5 75 } I-5315
S6 ~~6~~ 125
DMB 2018/03/13
ICV 62.5 ← I-5312
IB 2850µ MeOH + 150µ IS LR 2018/03/13

Folder: 2018/03/15

Batch re-integrated for PFOS & $^{13}C_4$ PFBA due to poor initial integration.
Results file: PFC_Water_Low_180315_WS#5437959_B_Re-integrated. 2018/03/15 WG
~~Folder: 20180313 WS# 5437959_A WS# 5437959_FOSAA KC 2018/03/15~~
SL 2018/03/20.

Worksheet Reagent Tracking Record Worksheet # 5437959

Surrogate/Spike solutions	√	Solution ID #	Conc.	Volume (µL) Blk-Spk Solid	Blk-Spk Liquid	MS Solid	MS Liquid	Samples Solid	Samples Liquid
DGT Spike			100 ug/mL	60	30	60	30	NA	NA
Diquat Dibromide			50 ug/mL	NA	350	NA	350	NA	NA
Explosives Spiking solution A			20 ug/mL	250	100	250	100	NA	NA
Explosives Spiking solution B			20/80 ug/mL	250	100	250	100	NA	NA
Formaldehyde Spike			100 ug/mL	25	25	25	25	NA	NA
Glyphosate Spike			25 ug/mL	500	20	500	20	NA	NA
Nonylphenol Ethoxylate Spike			100 ug/mL	100	100	100	100	NA	NA
Nonylphenol Spike			10 ug/mL	100	100	100	100	NA	NA
Paraquat Cl Tetrahydrate			20 ug/mL	NA	125	NA	125	NA	NA
Perchlorate Standard Spike			10 ng/mL	NA	100	NA	100	NA	NA
Perchlorate Standard Spike			500 ng/mL	40	NA	40	NA	NA	NA
Perchlorate O-18 Internal Standard			0.10 ng/uL	20	20	20	20	20	20
Morpholine Second Source Working Std			2500 ug/L	NA	80	NA	80	NA	NA
Morpholine-D8 Internal Standard			10 ug/mL	NA	50	NA	50	NA	50
Steril Second Source Spiking Solution			NA	20	NA	20	NA	NA	NA
Sterilants Comp. IS Working Solution			3 ug/mL	50	NA	50	NA	50	NA
Comp. PFC Working Solution A	✓	I-5312 (2/3)	1ug/mL	75	21 (62.5)	75	21 (62.5)	NA	NA
PFC Internal Standard Solution	✓	SE-6805 (4/4) LR	50/125 ng/mL	200	100 (150)	200	100 (150)	200	100 (150)
PFC Injection IS	✓	SE-6807 (1/4) LR	400 ng/mL	20	(20)	20	20	20	(20)
ICV	✓	I-5312 (2/3)	1µg/mL		62.5				

Solvent/Reagent	√	Lot No.	Date Opened	Solvent/Reagent	√	Lot No.	Date Opened/ Prepared
DCM				50% NaOH			
Ottawa Sand				o-Phosphoric Acid			
Methanol	✓	SHBJ8485	2018/03/13	Borax			
2-Propanol (IPA)				Calcium Chloride			
Acetonitrile				EDTA			
Sodium Sulfate				Phosphate Buffer			
70:30 Methanol: Water				Sodium Thiosulphate			
60:40 Water: Methanol	✓	PRURE-108-414		DNPH			
DCM:Ethyl Ether (75:25)				FMOC			
Hexane:IPA (98:2)				5M Acetate Buffer			
2% Formic Acid	✓	PRURE-108-415		0.2% NH_4OH	✓	PRURE	108-423
0.2% Formic Acid				Leachate Fluid			
0.05M KOH				Reagent Water	✓	57297	2018/03/09
0.05M HCl							

*Spiked by: DM3

Spike Date: 2018/03/13

Spike Syringe/Pipette ID#: G24390G

Int. Std Syringe/Pipette ID#: M41011F

*Spiking Witnessed by: LR

Final pH:

Equipment & ID	√	Equipment	ID#	√	Equipment	Lot #
Pipettor I47987G	✓	SPE Cartridge	0003437247A	✓	QC Balance ID	
	✓	Filter			Thermometer ID &Temp	
Dispenser		Centrifuge	42148683	✓		
		Sonicator				

Bottle Tracking: Bottle# 18801; Cap# 18778; Systems plus Lot#: 18-02-01

Comments: enviCARB lot# 96489
250mL cylinder #3026

* - SPIKING OF QC'S & SAMPLES MUST BE WITNESSED AT ALL TIMES.

Worksheet Number: **5437959**

PFOS and PFOA in water by SPE/LCMS - Water

ug/L

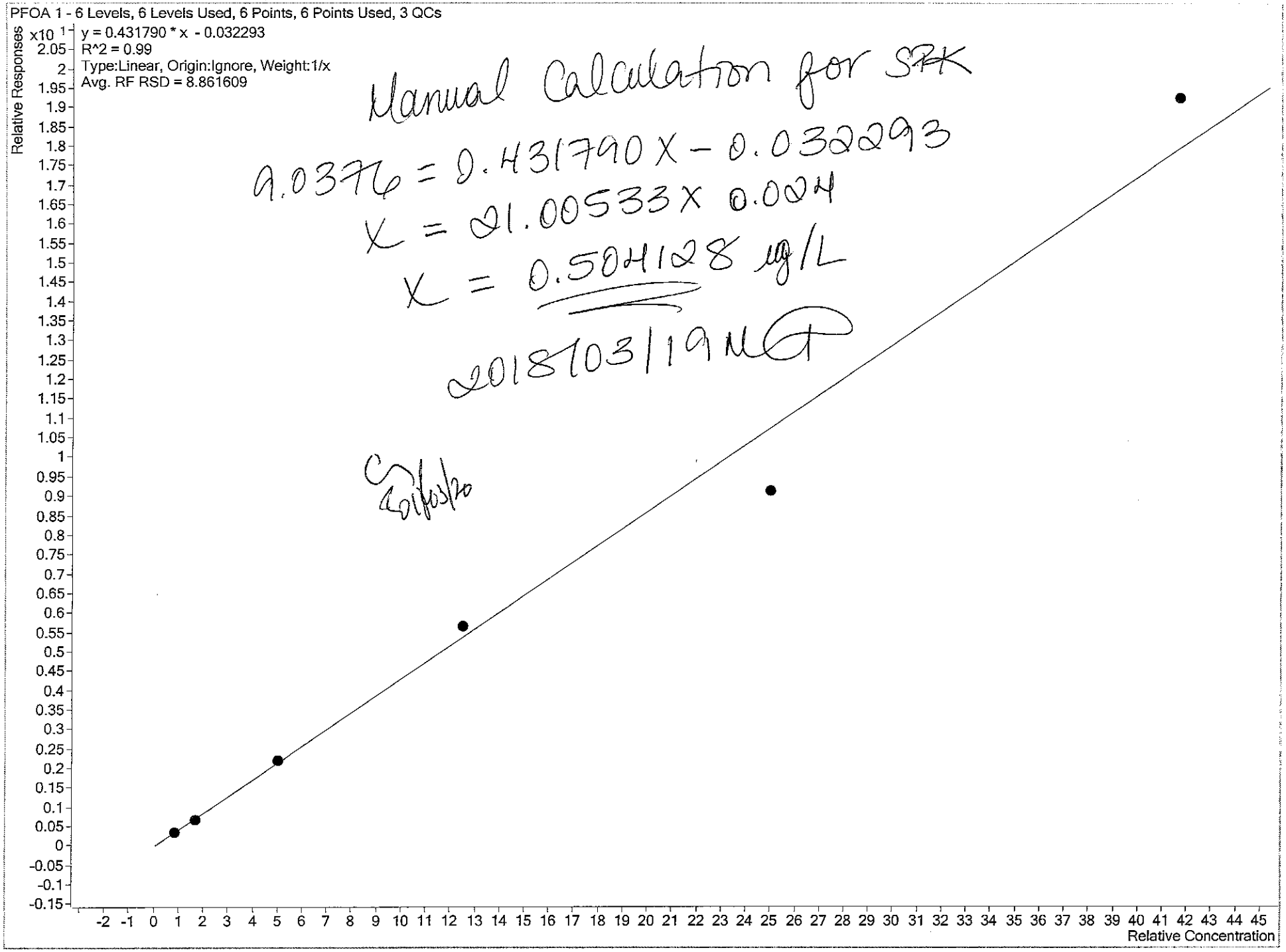
Parameter Name	Units	SPIKE	SPIKE Dup1	BLANK	DL	B850056 GEZ789	B850056 GEZ790
6:2 Fluorotelomer sulfonate	ug/L	100.87867	100.80428	0	0.02	N/A*******	N/A*******
8:2 Fluorotelomer sulfonate	ug/L	102.07965	94.16540	0	0.02	N/A*******	N/A*******
N-ethylperfluorooctane sulfonamide	ug/L	98.46314	96.71690	0	0.04	N/A*******	N/A*******
EtFOSAA	ug/L	97.77011	91.75203	0	0.02	0	0
N-ethylperfluorooctane sulfonamidoe	ug/L	93.52735	93.79681	0	0.04	N/A*******	N/A*******
N-methylperfluorooctane sulfonamide	ug/L	93.14423	89.07026	0	0.04	N/A*******	N/A*******
MeFOSAA	ug/L	102.78921	95.10310	0	0.02	0	0
N-methylperfluorooctanesulfonamidol	ug/L	97.55788	93.34723	0	0.04	N/A*******	N/A*******
Perfluorobutanoic acid	ug/L	101.84889	96.54625	0	0.02	N/A*******	N/A*******
Perfluorobutane Sulfonate (PFBS)	ug/L	99.94490	95.23645	0	0.02	0	0
Perfluorodecane Sulfonate	ug/L	95.49618	91.47724	0	0.02	N/A*******	N/A*******
Perfluoroheptanoic Acid (PFHpA)	ug/L	101.20211	97.66971	0	0.02	0	0
Perfluoroheptane sulfonate	ug/L	100.54555	95.77802	0	0.02	N/A*******	N/A*******
Perfluorohexanoic Acid (PFHxA)	ug/L	102.23774	98.04883	0	0.02	0	0
Perfluorohexane Sulfonate (PFHxS)	ug/L	99.47451	95.83218	0	0.02	0	0
Perfluorononanoic Acid (PFNA)	ug/L	101.91869	97.03890	0	0.02	0	0
Perfluorooctane Sulfonamide (PFOSA)	ug/L	100.62655	93.74168	0	0.02	N/A*******	N/A*******
Perfluoropentanoic Acid (PFPeA)	ug/L	100.60896	93.53667	0	0.02	N/A*******	N/A*******
Perfluorotetradecanoic Acid	ug/L	97.65608	95.71883	0	0.02	0	0
Perfluorotridecanoic Acid	ug/L	97.81869	94.88902	0	0.02	0	0
Perfluoroundecanoic Acid (PFUnA)	ug/L	101.76657	97.04860	0	0.02	0	0
Perfluorodecanoic Acid (PFDA)	ug/L	101.57911	96.39092	0	0.02	0	0
Perfluorododecanoic Acid (PFDoA)	ug/L	99.68566	96.54616	0	0.02	0	0
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	100.82601	93.04823	0	0.02	0	0
Perfluorooctane Sulfonate (PFOS)	ug/L	93.56564	89.07530	0	0.02	0	0
13C2-6:2 Fluorotelomer sulfonate	ug/L	90.2394233	86.3739676	98.1844315		N/A*******	N/A*******
13C2-8:2 Fluorotelomer sulfonate	ug/L	93.6886438	91.7616061	100.063590		N/A*******	N/A*******
13C2-perfluorotetradecanoic acid	ug/L	86.9683168	86.0560262	59.2746676		71.5263656	68.6579787
13C4-Perfluorobutanoic acid	ug/L	94.7046166	89.8906169	92.9082723		79.1202093	87.6579322
D3-MeFOSAA	ug/L	82.0579643	80.9393422	79.5421718		68.6670046	71.6868896
D5-EtFOSAA	ug/L	80.9608075	81.0146367	78.9027987		69.8135863	76.1813234
N-methyl-d3-perfluorooctane sulfona	ug/L	81.6762038	81.2085707	80.2362533		N/A*******	N/A*******
N-ethyl-d5-perfluorooctane sulfonam	ug/L	79.1690924	79.5350091	73.7879893		N/A*******	N/A*******
13C2-Perfluorodecanoic acid	ug/L	90.6935769	91.0796240	89.0560102		76.9552398	81.3306112
13C2-Perfluorododecanoic acid	ug/L	85.8620249	85.6294883	78.7345557		74.1671823	76.9810847
13C2-Perfluorohexanoic acid	ug/L	93.3665648	89.5419282	90.2623030		83.3435392	86.2650565
13C2-Perfluoroundecanoic acid	ug/L	93.7582768	91.3118860	81.0124165		74.5608641	82.2347457
13C4-Perfluoroheptanoic acid	ug/L	94.5889622	88.9712218	95.3709703		85.6403967	89.3127112
13C5-Perfluorononanoic acid	ug/L	96.2047478	92.2878838	94.7468779		82.7707429	89.5377948
13C4-Perfluorooctanoic acid	ug/L	96.2861022	93.1018004	91.0240530		86.8200367	85.0179160
13C4-Perfluorooctanesulfonate	ug/L	101.530310	96.5670537	91.2636689		84.7854428	83.4608760
13C5-Perfluoropentanoic acid	ug/L	95.0326155	90.9540704	92.8172540		N/A*******	N/A*******
13C8-Perfluorooctane Sulfonamide	ug/L	83.3326156	84.8790351	78.1523843		N/A*******	N/A*******
18O2-Perfluorohexanesulfonate	ug/L	99.5749928	91.6083456	93.2121122		86.8861427	84.8884017

PFOS and PFOA in water by SPE/LCMS - Water
ug/L

Parameter Name	B850056 GEZ791	B850056 GEZ792	B850056 GEZ793	DL	B851133 GFF357	B851133 GFF358	B851133 GFF359
6:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
8:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
N-ethylperfluorooctane sulfonamide	N/A*******	N/A*******	N/A*******	0.02	0	0	0
EtFOSAA	0	0	0	0.02	N/A*******	N/A*******	N/A*******
N-ethylperfluorooctane sulfonamidoe	N/A*******	N/A*******	N/A*******	0.02	0	0	0
N-methylperfluorooctane sulfonamide	N/A*******	N/A*******	N/A*******	0.02	0	0	0
MeFOSAA	0	0	0	0.02	N/A*******	N/A*******	N/A*******
N-methylperfluorooctanesulfonamidol	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluorobutanoic acid	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluorobutane Sulfonate (PFBS)	0	0.02126936	0	0.02	0.01804501	0	0
Perfluorodecane Sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluoroheptanoic Acid (PFHpA)	0	0.01885637	0	0.02	0	0	0
Perfluoroheptane sulfonate	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluorohexanoic Acid (PFHxA)	0	0.09338009	0	0.02	0	0.02182360	0
Perfluorohexane Sulfonate (PFHxS)	0	0.32528917	0	0.02	0	0.07125338	0
Perfluorononanoic Acid (PFNA)	0	0	0	0.02	0	0	0
Perfluorooctane Sulfonamide (PFOSA)	N/A*******	N/A*******	N/A*******	0.02	0	0	0
Perfluoropentanoic Acid (PFPeA)	N/A*******	N/A*******	N/A*******	0.02	0	0.02169510	0
Perfluorotetradecanoic Acid	0	0	0	0.02	0	0	0
Perfluorotridecanoic Acid	0	0	0	0.02	0	0	0
Perfluoroundecanoic Acid (PFUnA)	0	0	0	0.02	0	0	0
Perfluorodecanoic Acid (PFDA)	0	0	0	0.02	0	0	0
Perfluorododecanoic Acid (PFDoA)	0	0	0	0.02	0	0	0
Perfluoro-n-Octanoic Acid (PFOA)	0	0.11983741	0	0.02	0	0.01911887	0
Perfluorooctane Sulfonate (PFOS)	0	0.06189031	0	0.02	0	0.02652927	0
13C2-6:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******		79.7383287	93.2919108	92.9184083
13C2-8:2 Fluorotelomer sulfonate	N/A*******	N/A*******	N/A*******		66.0640414	80.7656884	82.1673337
13C2-perfluorotetradecanoic acid	68.7875445	!! 46.2914	76.7508346		63.6090427	71.6815585	76.0321377
13C4-Perfluorobutanoic acid	81.0171398	77.9559777	89.4584289		72.5423765	80.0199670	78.1004746
D3-MeFOSAA	68.5533931	68.3375659	77.6776684		N/A*******	N/A*******	N/A*******
D5-EtFOSAA	66.9605577	65.8132201	73.2158397		N/A*******	N/A*******	N/A*******
N-methyl-d3-perfluorooctane sulfona	N/A*******	N/A*******	N/A*******		60.8151491	72.6738516	68.3404037
N-ethyl-d5-perfluorooctane sulfonam	N/A*******	N/A*******	N/A*******		61.8743264	69.7410306	71.8603892
13C2-Perfluorodecanoic acid	80.7462376	90.0094824	90.2716863		71.9636201	83.5609029	80.7504463
13C2-Perfluorododecanoic acid	75.6476370	66.4280196	76.2084129		66.1130751	73.9369925	71.6944349
13C2-Perfluorohexanoic acid	85.0182458	93.3442415	90.7967558		74.3319169	79.9593627	80.4168961
13C2-Perfluoroundecanoic acid	76.1557734	74.0507030	77.7699031		70.4512785	74.8681137	70.5071124
13C4-Perfluoroheptanoic acid	87.3518034	96.1733869	93.7497345		73.2439125	81.2774396	83.1996851
13C5-Perfluorononanoic acid	80.6930454	97.2891340	95.9748178		71.4752853	83.6609242	85.5771409
13C4-Perfluorooctanoic acid	83.7035374	94.0774004	94.1006568		74.8959021	81.9147215	82.3509335
13C4-Perfluorooctanesulfonate	85.8737675	92.9672289	92.5091700		73.5204571	84.3746769	82.5352698
13C5-Perfluoropentanoic acid	N/A*******	N/A*******	N/A*******		73.8716699	81.1975001	80.9698015
13C8-Perfluorooctane Sulfonamide	N/A*******	N/A*******	N/A*******		66.7083930	76.3442056	77.0898995
18O2-Perfluorohexanesulfonate	90.7517312	100.920073	91.0380119		77.8673676	84.9045760	84.1405076

PFOS and PFOA in water by SPE/LCMS - Water
ug/L

Parameter Name	B851133 GFF360	DL	RDL	MDL	IDL		
6:2 Fluorotelomer sulfonate	0	0.02	0.02	0.0066	0		
8:2 Fluorotelomer sulfonate	0	0.02	0.02	0.0066	0		
N-ethylperfluorooctane sulfonamide	0	0.04	0.02	0.01	0		
EtFOSAA	N/A*******	0.02	0.02	0.0033	0		
N-ethylperfluorooctane sulfonamidoe	0	0.04	0.02	0.0079	0		
N-methylperfluorooctane sulfonamide	0	0.04	0.02	0.013	0		
MeFOSAA	N/A*******	0.02	0.02	0.0029	0		
N-methylperfluorooctanesulfonamidol	0	0.04	0.02	0.012	0		
Perfluorobutanoic acid	0	0.02	0.02	0.0055	0		
Perfluorobutane Sulfonate (PFBS)	0	0.02	0.02	0.0054	0		
Perfluorodecane Sulfonate	0	0.02	0.02	0.006	0		
Perfluoroheptanoic Acid (PFHpA)	0	0.02	0.02	0.0074	0		
Perfluoroheptane sulfonate	0	0.02	0.02	0.008	0		
Perfluorohexanoic Acid (PFHxA)	0	0.02	0.02	0.0035	0		
Perfluorohexane Sulfonate (PFHxS)	0.02021588	0.02	0.02	0.0056	0		
Perfluorononanoic Acid (PFNA)	0	0.02	0.02	0.0087	0		
Perfluorooctane Sulfonamide (PFOSA)	0	0.02	0.02	0.0034	0		
Perfluoropentanoic Acid (PFPeA)	0	0.02	0.02	0.0075	0		
Perfluorotetradecanoic Acid	0	0.02	0.02	0.0027	0		
Perfluorotridecanoic Acid	0	0.02	0.02	0.0038	0		
Perfluoroundecanoic Acid (PFUnA)	0	0.02	0.02	0.0025	0		
Perfluorodecanoic Acid (PFDA)	0	0.02	0.02	0.0061	0		
Perfluorododecanoic Acid (PFDoA)	0	0.02	0.02	0.005	0		
Perfluoro-n-Octanoic Acid (PFOA)	0	0.02	0.02	0.0033	0		
Perfluorooctane Sulfonate (PFOS)	0.01260828	0.02	0.02	0.006	0		
13C2-6:2 Fluorotelomer sulfonate	81.7035621						
13C2-8:2 Fluorotelomer sulfonate	79.3307548						
13C2-perfluorotetradecanoic acid	76.4182250						
13C4-Perfluorobutanoic acid	79.4947002						
D3-MeFOSAA	N/A*******						
D5-EtFOSAA	N/A*******						
N-methyl-d3-perfluorooctane sulfona	79.7424109						
N-ethyl-d5-perfluorooctane sulfonam	77.3132198						
13C2-Perfluorodecanoic acid	82.9234288						
13C2-Perfluorododecanoic acid	77.5529557						
13C2-Perfluorohexanoic acid	82.6226887						
13C2-Perfluoroundecanoic acid	79.8239358						
13C4-Perfluoroheptanoic acid	86.4092676						
13C5-Perfluorononanoic acid	88.8968101						
13C4-Perfluorooctanoic acid	82.9646903						
13C4-Perfluorooctanesulfonate	82.9313860						
13C5-Perfluoropentanoic acid	84.8030678						
13C8-Perfluorooctane Sulfonamide	77.0144639						
18O2-Perfluorohexanesulfonate	86.6502881						



Manual Calculation for SRK

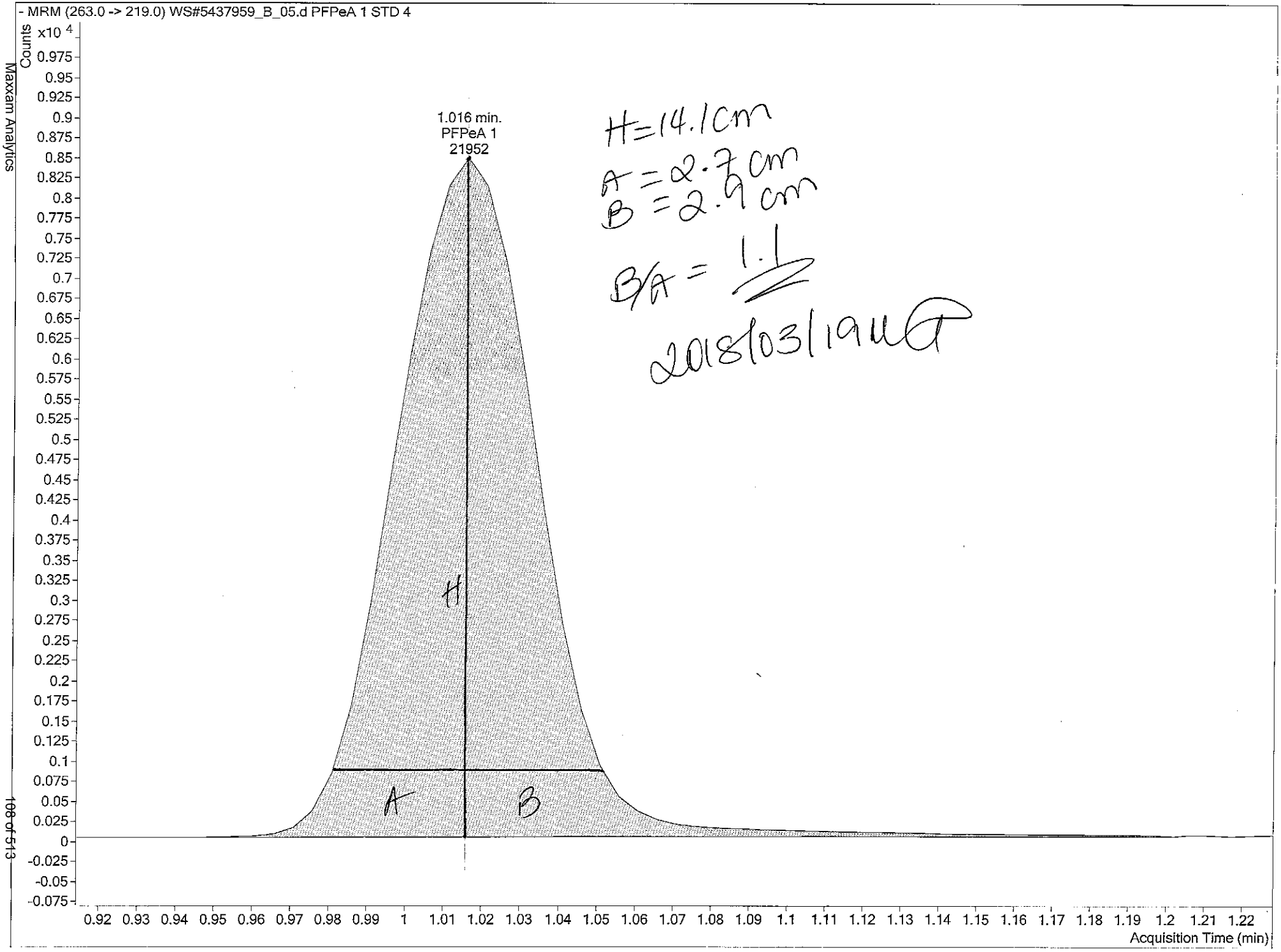
$9.0376 = 0.431790X - 0.032293$

$X = 21.00533 \times 0.024$

$X = \underline{0.504128}$ ug/L

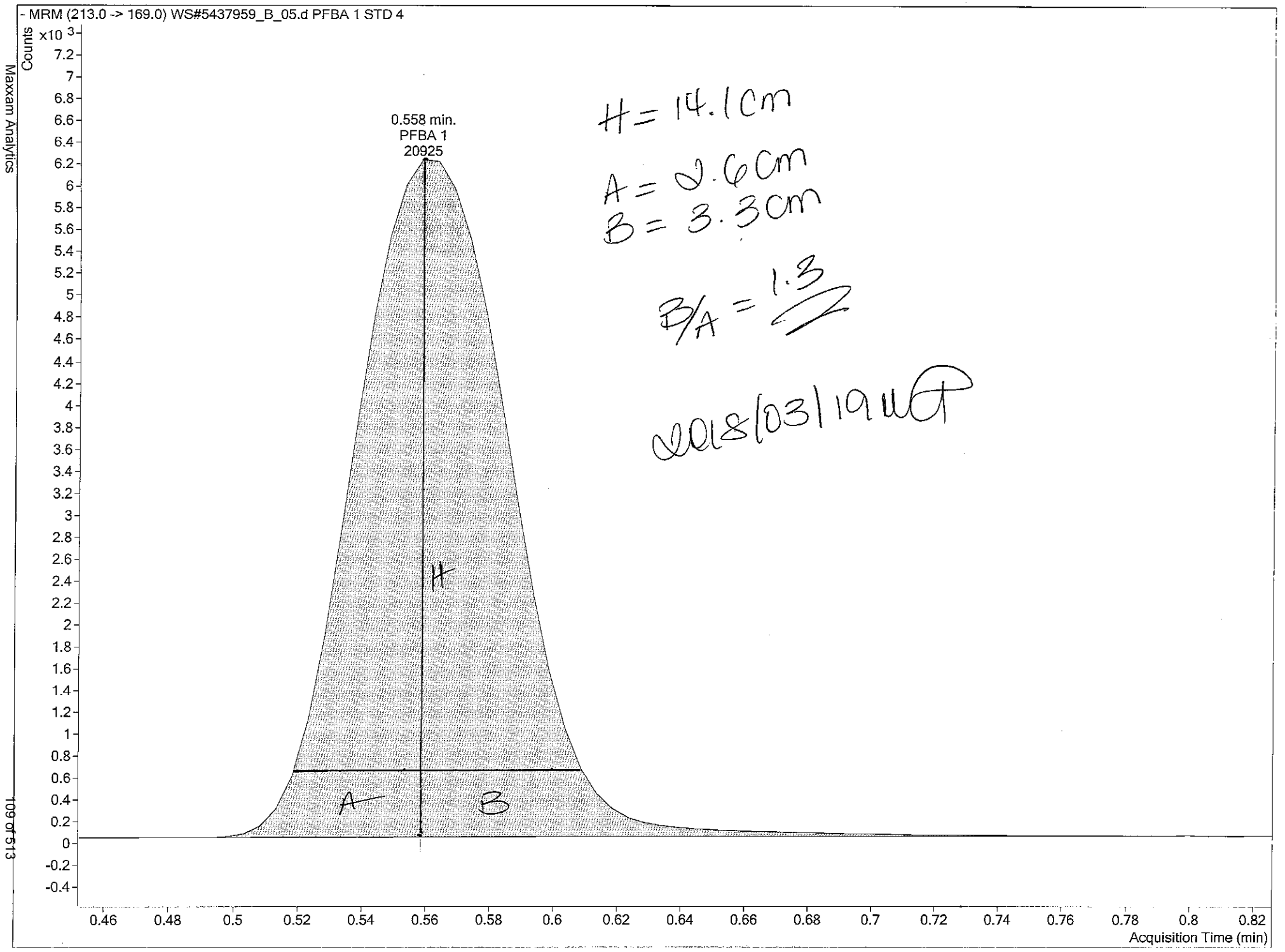
2018/03/19 MG

C 01/03/20



H=14.1cm
A=2.7cm
B=2.9cm
B/A = 1.1
2018/03/19 AT

Maxxam Analytics



H = 14.1 cm

A = 9.6 cm

B = 3.3 cm

B/A = 1.3

2018/03/19

Report Name: Worksheet - Parameter Lists

Report Date: 2018/03/13

Test Code: **PFOSALCM-W**

Worksheet Number: **5437959**

Sample Number	Parameter Code	Parameter	
GEZ789-01	ETFOSAA	EtFOSAA	*
GEZ790-01	MEFOSAA	MeFOSAA	*
GEZ791-01	PFBS	Perfluorobutane Sulfonate (PFBS)	
GEZ792-01	PFHPA	Perfluoroheptanoic Acid (PFHpA)	
GEZ793-01	PFHXA	Perfluorohexanoic Acid (PFHxA)	
	PFHXS	Perfluorohexane Sulfonate (PFHxS)	
	PFNA	Perfluorononanoic Acid (PFNA)	
	PFTEDA	Perfluorotetradecanoic Acid	
	PFTRDA	Perfluorotridecanoic Acid	
	PFUNA	Perfluoroundecanoic Acid (PFUnA)	
	PFDA	Perfluorodecanoic Acid (PFDA)	
	PFDOA	Perfluorododecanoic Acid (PFDoA)	
	PFOA	Perfluoro-n-Octanoic Acid (PFOA)	
	PFOS	Perfluorooctane Sulfonate (PFOS)	
GFF357-01	6:2FTS	6:2 Fluorotelomer sulfonate	*
GFF358-01	8:2FTS	8:2 Fluorotelomer sulfonate	*
GFF359-01	ETFOSA	N-ethylperfluorooctane sulfonamide	*
GFF360-01	ETFOSE	N-ethylperfluorooctane sulfonamidoe	*
	MEFOSA	N-methylperfluorooctane sulfonamide	*
	MEFOSE	N-methylperfluorooctanesulfonamidol	*
	PFBA	Perfluorobutanoic acid	
	PFBS	Perfluorobutane Sulfonate (PFBS)	
	PFDS	Perfluorodecane Sulfonate	
	PFHPA	Perfluoroheptanoic Acid (PFHpA)	

* - This parameter is usually off, but will be reported for this group of samples!

Report Name: Worksheet - Parameter Lists

Report Date: 2018/03/13

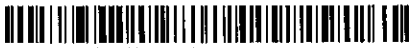
Test Code: **PFOSALCM-W**

Worksheet Number: **5437959**

Sample Number	Parameter Code	Parameter
	PFHPS	Perfluoroheptane sulfonate
	PFHXA	Perfluorohexanoic Acid (PFHxA)
	PFHXS	Perfluorohexane Sulfonate (PFHxS)
	PFNA	Perfluorononanoic Acid (PFNA)
	PFOSA	Perfluorooctane Sulfonamide (PFOSA)
	PFPEA	Perfluoropentanoic Acid (PFPeA)
	PFTEDA	Perfluorotetradecanoic Acid
	PFTRDA	Perfluorotridecanoic Acid
	PFUNA	Perfluoroundecanoic Acid (PFUnA)
	PFDA	Perfluorodecanoic Acid (PFDA)
	PFDOA	Perfluorododecanoic Acid (PFDoA)
	PFOA	Perfluoro-n-Octanoic Acid (PFOA)
	PFOS	Perfluorooctane Sulfonate (PFOS)

* - This parameter is usually off, but will be reported for this group of samples!

WorkSheet 5437959 Instrument Sequences

1.	 5437959:SPIKE	SPIKE
2.	 5437959:SPIKE:D1	SPIKE :D1
3.	 5437959:BLANK	BLANK
4.	 5437959:GEZ789-01	CEF-CS01AR-0318
5.	 5437959:GEZ790-01	FB-CEF-CS-030218
6.	 5437959:GEZ791-01	CEF-CS10-0318
7.	 5437959:GEZ792-01	CEF-013-085-0318
8.	 5437959:GEZ793-01	CEF-003-425-0318
9.	 5437959:GFF357-01	[redacted]
10.	 5437959:GFF358-01	[redacted]
11.	 5437959:GFF359-01	[redacted]
12.	 5437959:GFF360-01	[redacted]

Worklist Report

Agilent Technologies

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFC_180313_Low.wkl

Waxman Analytics

Operator Name: ---
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\Data\PFC\20180313\WS#5437959
Pre-Worklist Script: ---
Post-Worklist Script: SCP_InstrumentStandby(){MH_Acq_Scripts.exe}
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: Column #209
MP A1: Solution# 296 (FSRE18)
MP B1: Methanol lot# SHBJ8485, Sigma

Plate Barcode: None

2018/03/13 MG
verified 2018/03/13

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
1	Solvent	P2-A1	PFC_Water_Low.m	WS#5437959_01.d	Sample		As Method	-
2	STD 1	P2-A2	PFC_Water_Low.m	WS#5437959_02.d	Calibration	STD 1	As Method	-
3	STD 2	P2-A3	PFC_Water_Low.m	WS#5437959_03.d	Calibration	STD 2	As Method	-
4	STD 3	P2-A4	PFC_Water_Low.m	WS#5437959_04.d	Calibration	STD 3	As Method	-
5	STD 4	P2-A5	PFC_Water_Low.m	WS#5437959_05.d	Calibration	STD 4	As Method	-
6	STD 5	P2-A6	PFC_Water_Low.m	WS#5437959_06.d	Calibration	STD 5	As Method	-
7	STD 6	P2-A7	PFC_Water_Low.m	WS#5437959_07.d	Calibration	STD 6	As Method	-

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Worklist Report

Agilent Technologies

Maxxam Analytics

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
8	IB	P2-A8	PFC_Water_Low.m	WS#5437959_08.d	Sample		As Method	-
9	ICV	P2-A9	PFC_Water_Low.m	WS#5437959_09.d	QC	ICV	As Method	-
10	ISC	P2-A2	PFC_Water_Low.m	WS#5437959_10.d	ConCal	STD 1	As Method	-
11	5437959:BLANK	P2-B1	PFC_Water_Low.m	WS#5437959_11.d	Sample		As Method	-
12	5437959:SPIKE	P2-B2	PFC_Water_Low.m	WS#5437959_12.d	QC	ICV	As Method	-
13	5437959:SPIKE:D1	P2-B3	PFC_Water_Low.m	WS#5437959_13.d	QC	ICV	As Method	-
14	5437959:GEZ789-01	P2-B4	PFC_Water_Low.m	WS#5437959_14.d	Sample		As Method	-
15	5437959:GEZ790-01	P2-B5	PFC_Water_Low.m	WS#5437959_15.d	Sample		As Method	-
16	5437959:GEZ791-01	P2-B6	PFC_Water_Low.m	WS#5437959_16.d	Sample		As Method	-
17	5437959:GEZ792-01	P2-B7	PFC_Water_Low.m	WS#5437959_17.d	Sample		As Method	-
18	5437959:GEZ793-01	P2-B8	PFC_Water_Low.m	WS#5437959_18.d	Sample		As Method	-
19	5437959:GFF357-01	P2-B9	PFC_Water_Low.m	WS#5437959_19.d	Sample		As Method	-
20	5437959:GFF358-01	P2-C1	PFC_Water_Low.m	WS#5437959_20.d	Sample		As Method	-
21	5437959:GFF359-01	P2-C2	PFC_Water_Low.m	WS#5437959_21.d	Sample		As Method	-
22	5437959:GFF360-01	P2-C3	PFC_Water_Low.m	WS#5437959_22.d	Sample		As Method	-
23	CCV	P2-A5	PFC_Water_Low.m	WS#5437959_23.d	ConCal	STD 4	As Method	-

Worklist Report

Agilent Technologies

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFC_180313_Low_FOSAA.wkl

Waxman Analytics

Operator Name: ---
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\Data\PFC\20180313\WS#5437959_FOSAA
Pre-Worklist Script: ---
Post-Worklist Script: SCP_InstrumentStandby(){MH_Acq_Scripts.exe}
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: Column #209
MP A1: Solution# 296 (FSRE18)
MP B2: Solution# 300 (FSRE18)

20180313134

Plate Barcode:

Plate	Barcode
P2	

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
1	Solvent	P2-A1	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_01.d	Sample		As Method	-
2	STD 1	P2-A2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_02.d	Calibration	STD 1	As Method	-
3	STD 2	P2-A3	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_03.d	Calibration	STD 2	As Method	-
4	STD 3	P2-A4	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_04.d	Calibration	STD 3	As Method	-
5	STD 4	P2-A5	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_05.d	Calibration	STD 4	As Method	-
6	STD 5	P2-A6	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_06.d	Calibration	STD 5	As Method	-
7	STD 6	P2-A7	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_07.d	Calibration	STD 6	As Method	-
8	IB	P2-A8	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_08.d	Sample		As Method	-

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Worklist Report

Agilent Technologies

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
9	ICV	P2-A9	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_09.d	QC	ICV	As Method	-
10	ISC	P2-A2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_10.d	ConCal	STD 1	As Method	-
11	5437959:BLANK	P2-B1	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_11.d	Sample		As Method	-
12	5437959:SPIKE	P2-B2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_12.d	QC	ICV	As Method	-
13	5437959:SPIKE:D1	P2-B3	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_13.d	QC	ICV	As Method	-
14	5437959:GEZ789-01	P2-B4	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_14.d	Sample		As Method	-
15	5437959:GEZ790-01	P2-B5	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_15.d	Sample		As Method	-
16	5437959:GEZ791-01	P2-B6	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_16.d	Sample		As Method	-
17	5437959:GEZ792-01	P2-B7	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_17.d	Sample		As Method	-
18	5437959:GEZ793-01	P2-B8	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_18.d	Sample		As Method	-
19	5437959:GFF357-01	P2-B9	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_19.d	Sample		As Method	-
20	5437959:GFF358-01	P2-C1	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_20.d	Sample		As Method	-
21	5437959:GFF359-01	P2-C2	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_21.d	Sample		As Method	-
22	5437959:GFF360-01	P2-C3	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_22.d	Sample		As Method	-
23	CCV	P2-A5	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_23.d	ConCal	STD 4	As Method	-

FINAL INJECTION SEQUENCE

Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
STD 1	-	2018/03/15 4:46 PM	PFC_Water_Low.m	WS#5437959_B_02.d	P2-A2
STD 2	-	2018/03/15 4:51 PM	PFC_Water_Low.m	WS#5437959_B_03.d	P2-A3
STD 3	-	2018/03/15 4:56 PM	PFC_Water_Low.m	WS#5437959_B_04.d	P2-A4
STD 4	-	2018/03/15 5:01 PM	PFC_Water_Low.m	WS#5437959_B_05.d	P2-A5
STD 5	-	2018/03/15 5:06 PM	PFC_Water_Low.m	WS#5437959_B_06.d	P2-A6
STD 6	-	2018/03/15 5:11 PM	PFC_Water_Low.m	WS#5437959_B_07.d	P2-A7
IB	-	2018/03/15 5:16 PM	PFC_Water_Low.m	WS#5437959_B_08.d	P2-A8
ICV	-	2018/03/15 5:21 PM	PFC_Water_Low.m	WS#5437959_B_09.d	P2-A9
ISC	-	2018/03/15 5:27 PM	PFC_Water_Low.m	WS#5437959_B_10.d	P2-A2
5437959:BLANK	-	2018/03/15 5:32 PM	PFC_Water_Low.m	WS#5437959_B_11.d	P2-B1
5437959:SPIKE	-	2018/03/15 5:37 PM	PFC_Water_Low.m	WS#5437959_B_12.d	P2-B2
5437959:SPIKE:D1	-	2018/03/15 5:42 PM	PFC_Water_Low.m	WS#5437959_B_13.d	P2-B3
5437959:GEZ789-01	-	2018/03/15 5:47 PM	PFC_Water_Low.m	WS#5437959_B_14.d	P2-B4
5437959:GEZ790-01	-	2018/03/15 5:52 PM	PFC_Water_Low.m	WS#5437959_B_15.d	P2-B5
5437959:GEZ791-01	-	2018/03/15 5:57 PM	PFC_Water_Low.m	WS#5437959_B_16.d	P2-B6
5437959:GEZ792-01	-	2018/03/15 6:02 PM	PFC_Water_Low.m	WS#5437959_B_17.d	P2-B7
5437959:GEZ793-01	-	2018/03/15 6:07 PM	PFC_Water_Low.m	WS#5437959_B_18.d	P2-B8
5437959:GFF357-01	-	2018/03/15 6:12 PM	PFC_Water_Low.m	WS#5437959_B_19.d	P2-B9
5437959:GFF358-01	-	2018/03/15 6:17 PM	PFC_Water_Low.m	WS#5437959_B_20.d	P2-C1
5437959:GFF359-01	-	2018/03/15 6:22 PM	PFC_Water_Low.m	WS#5437959_B_21.d	P2-C2
5437959:GFF360-01	-	2018/03/15 6:27 PM	PFC_Water_Low.m	WS#5437959_B_22.d	P2-C3
CCV	-	2018/03/15 6:32 PM	PFC_Water_Low.m	WS#5437959_B_23.d	P2-A5

FINAL INJECTION SEQUENCE

Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
STD 1	-	2018/03/13 8:37 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_02.d	P2-A2
STD 2	-	2018/03/13 8:39 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_03.d	P2-A3
STD 3	-	2018/03/13 8:42 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_04.d	P2-A4
STD 4	-	2018/03/13 8:44 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_05.d	P2-A5
STD 5	-	2018/03/13 8:47 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_06.d	P2-A6
STD 6	-	2018/03/13 8:49 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_07.d	P2-A7
IB	-	2018/03/13 8:51 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_08.d	P2-A8
ICV	-	2018/03/13 8:54 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_09.d	P2-A9
ISC	-	2018/03/13 8:56 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_10.d	P2-A2
5437959:BLANK	-	2018/03/13 8:59 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_11.d	P2-B1
5437959:SPIKE	-	2018/03/13 9:01 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_12.d	P2-B2
5437959:SPIKE:D1	-	2018/03/13 9:03 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_13.d	P2-B3
5437959:GEZ789-01	-	2018/03/13 9:06 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_14.d	P2-B4
5437959:GEZ790-01	-	2018/03/13 9:08 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_15.d	P2-B5
5437959:GEZ791-01	-	2018/03/13 9:11 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_16.d	P2-B6
5437959:GEZ792-01	-	2018/03/13 9:13 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_17.d	P2-B7
5437959:GEZ793-01	-	2018/03/13 9:16 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_18.d	P2-B8
5437959:GFF357-01	-	2018/03/13 9:18 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_19.d	P2-B9
5437959:GFF358-01	-	2018/03/13 9:20 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_20.d	P2-C1
5437959:GFF359-01	-	2018/03/13 9:23 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_21.d	P2-C2
5437959:GFF360-01	-	2018/03/13 9:25 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_22.d	P2-C3
CCV	-	2018/03/13 9:28 PM	PFC_Water_Low_FOSAA.m	WS#5437959_FOSAA_23.d	P2-A5

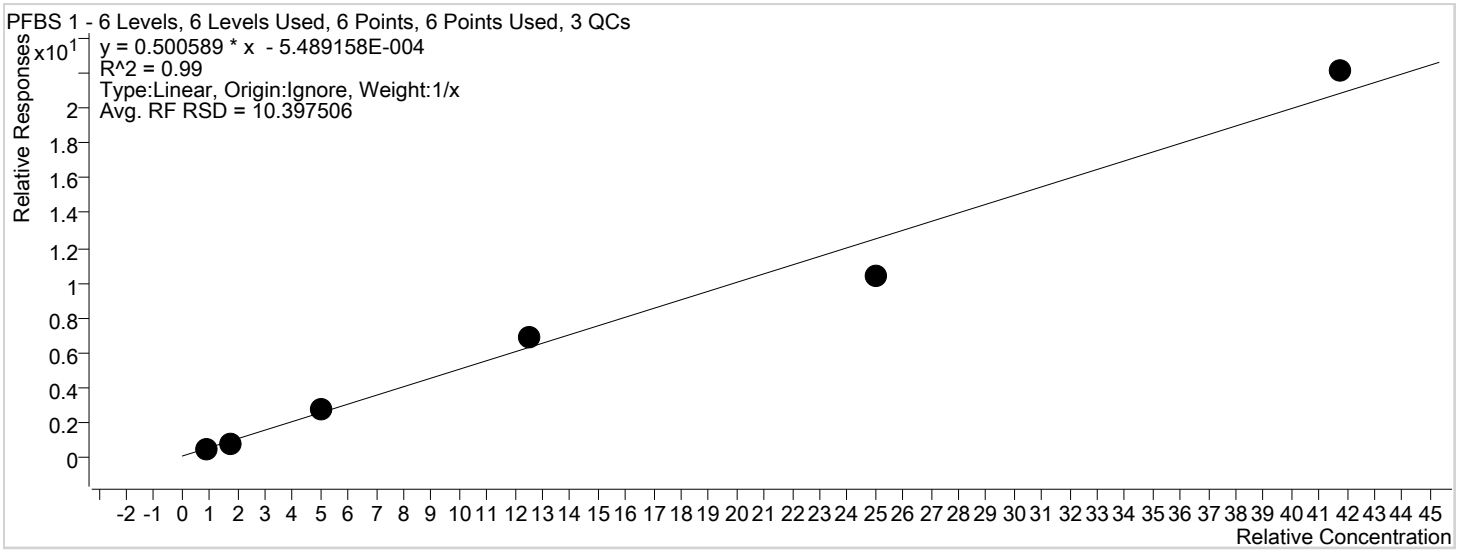
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFBS 1

Internal Standard: MPFHxS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.85	409	0.5091	94	101.8
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.56	811	0.4587	142	91.7
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.30	2585	0.5308	347	106.1
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	13.84	7204	0.5542	492	110.7
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	20.85	11050	0.4174	384	83.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.34	23660	0.5323	517	106.3

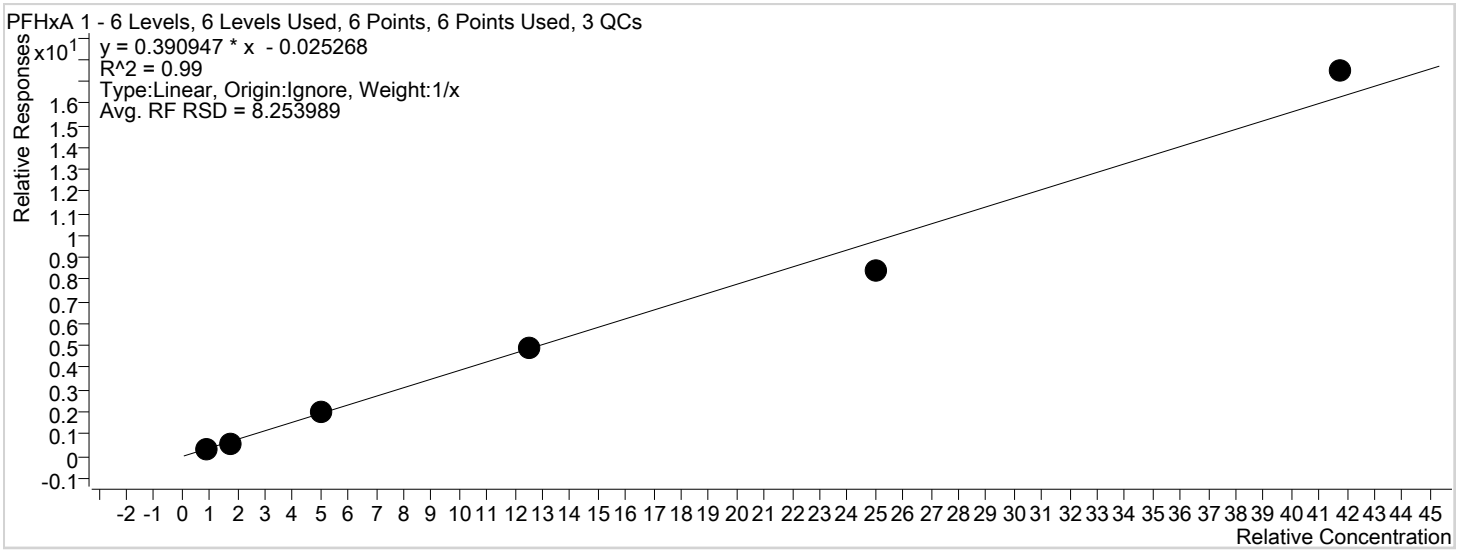
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFHxA 1

Internal Standard: MPFHxA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.90	1569	0.3928	175	108.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.58	3057	0.3485	158	92.9
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.22	9394	0.4027	297	104.3
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.52	27042	0.3896	304	100.2
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.74	42378	0.3389	378	86.9
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.78	90045	0.4192	356	107.4

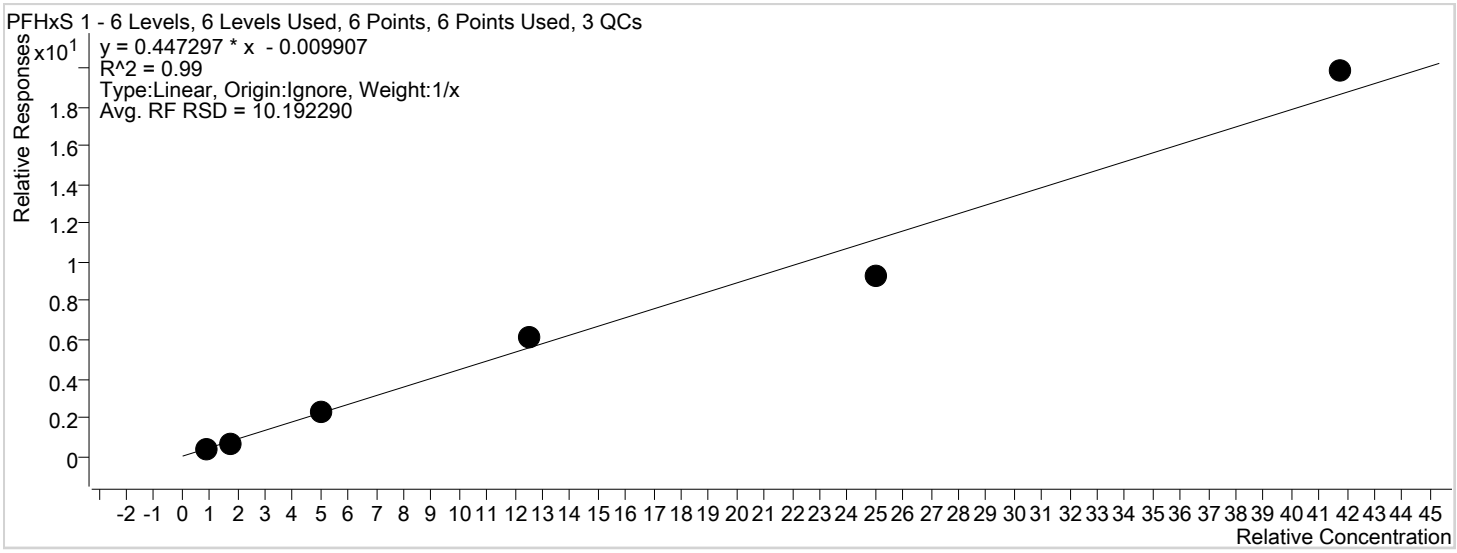
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFHxS 1

Internal Standard: MPFHxS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.87	366	0.4555	102	104.5
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.55	711	0.4021	73	91.2
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.22	2265	0.4651	194	104.4
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	13.68	6353	0.4887	840	109.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	20.95	9914	0.3745	724	83.8
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.46	21189	0.4767	1026	106.6

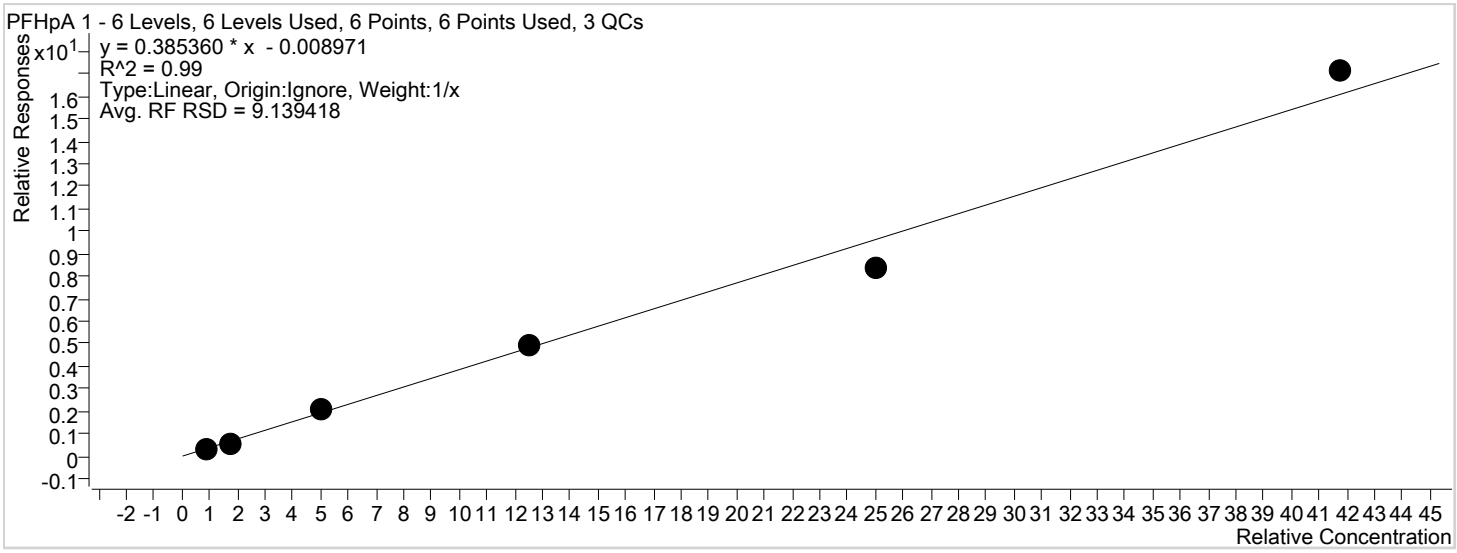
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFHpA 1

Internal Standard: MPFHpA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.86	1791	0.3893	52	103.8
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.55	3597	0.3472	84	91.5
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.48	10921	0.4204	294	109.6
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.76	31165	0.3926	436	102.1
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.61	48752	0.3328	319	86.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.47	102484	0.4107	582	106.6

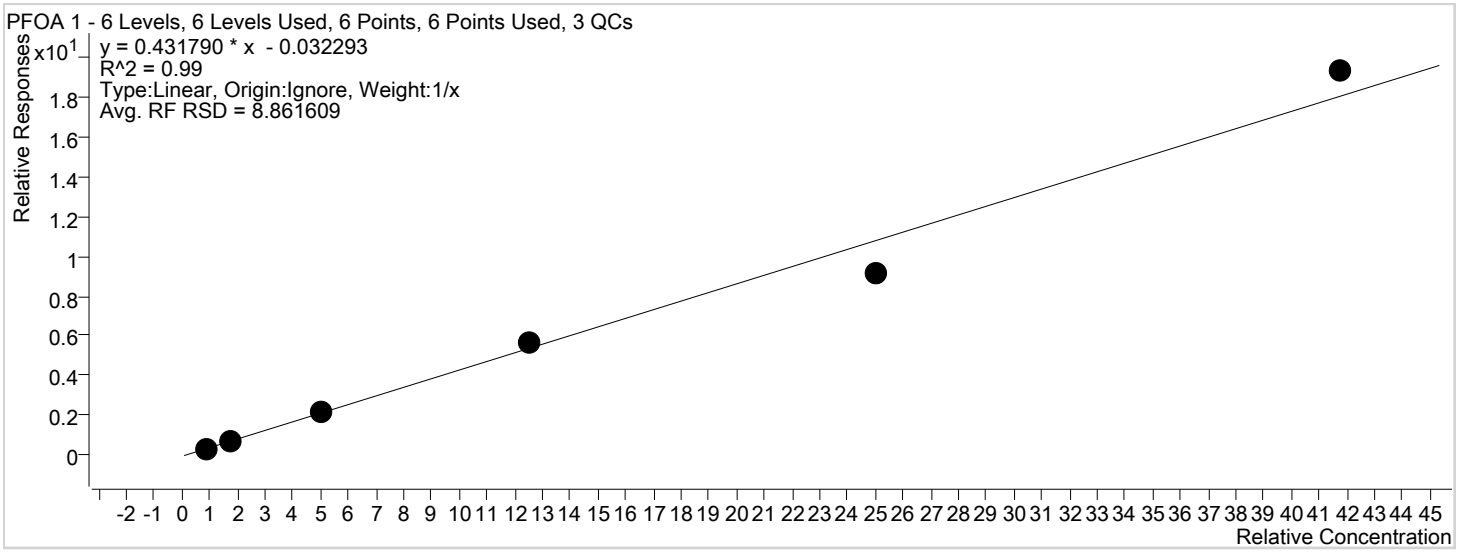
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFOA 1

Internal Standard: MPFOA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.86	2025	0.4107	25	104.1
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.62	4237	0.3931	117	95.4
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.15	12161	0.4383	225	103.0
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	13.17	36482	0.4522	417	105.3
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.23	56751	0.3654	902	84.9
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.70	118690	0.4621	1632	107.2

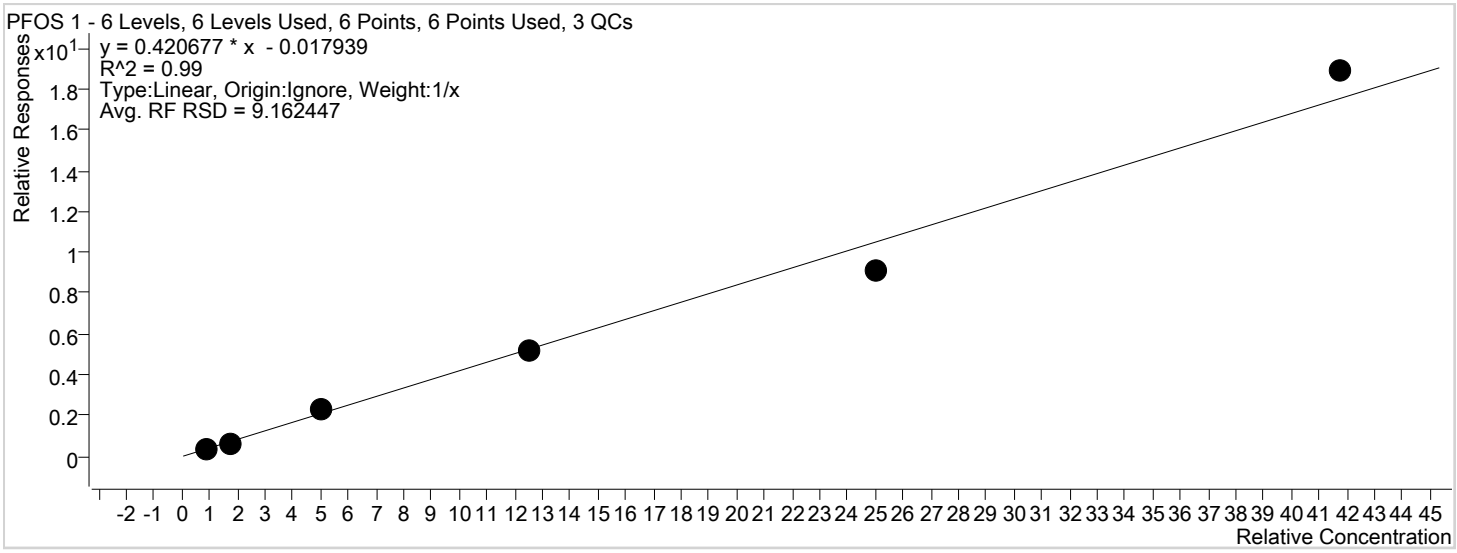
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFOS 1

Internal Standard: MPFOS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.90	425	0.4339	68	108.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.56	819	0.3746	268	91.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.36	2568	0.4474	423	107.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.33	7103	0.4136	459	98.7
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.61	10962	0.3630	790	86.5
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.97	23719	0.4532	1105	107.8

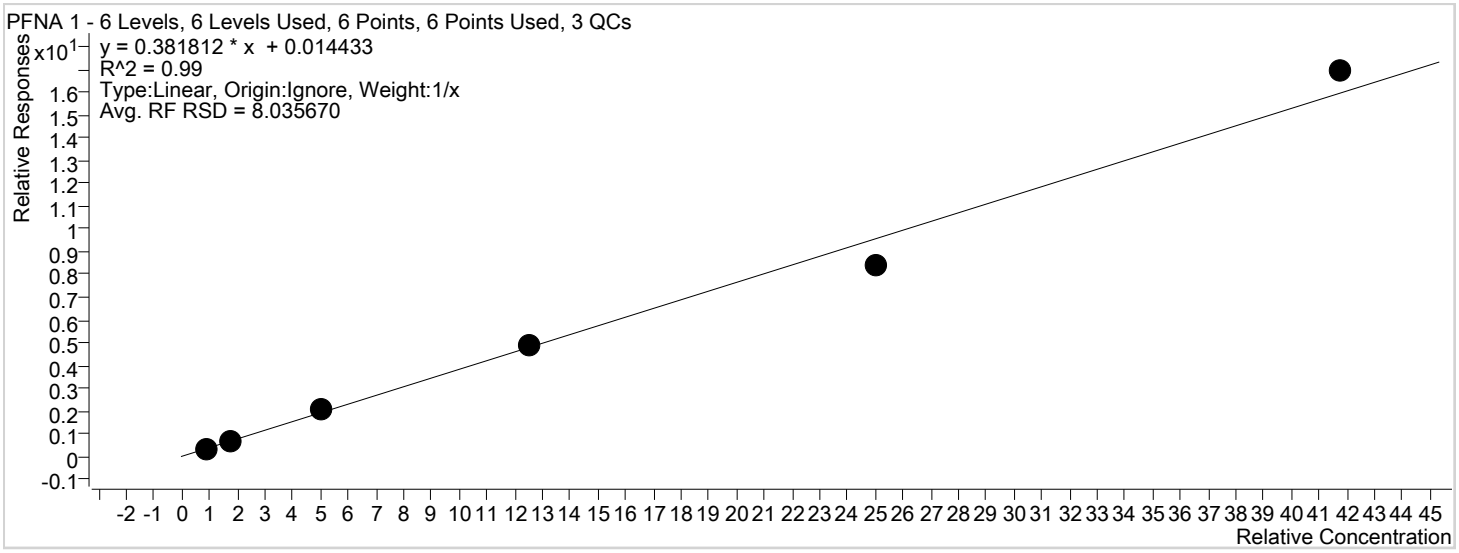
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFNA 1

Internal Standard: MPFNA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.86	1824	0.4119	38	103.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.59	3722	0.3666	75	93.8
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.35	10698	0.4111	188	106.9
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.80	31739	0.3921	1051	102.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.82	48967	0.3338	1075	87.3
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.31	101154	0.4061	3066	106.3

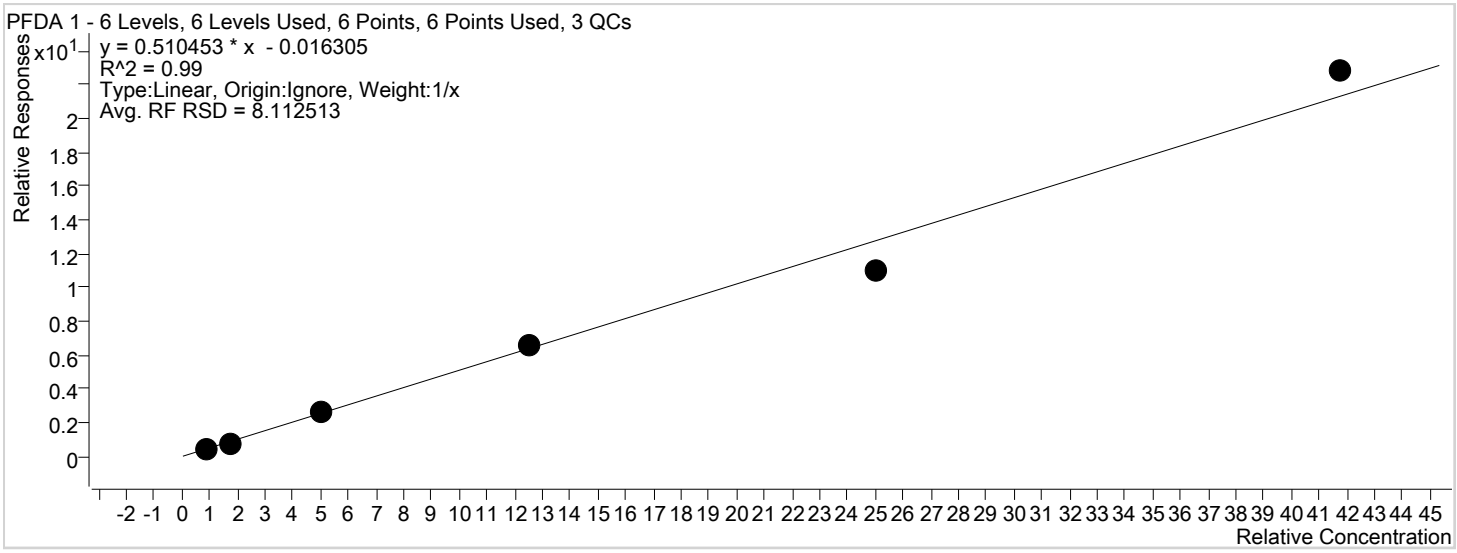
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFDA 1

Internal Standard: MPFDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.89	2113	0.5286	57	107.4
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.59	4097	0.4680	116	93.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.16	12334	0.5234	162	103.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.78	35078	0.5204	791	102.2
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.62	54737	0.4407	410	86.5
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.70	116138	0.5467	1275	107.2

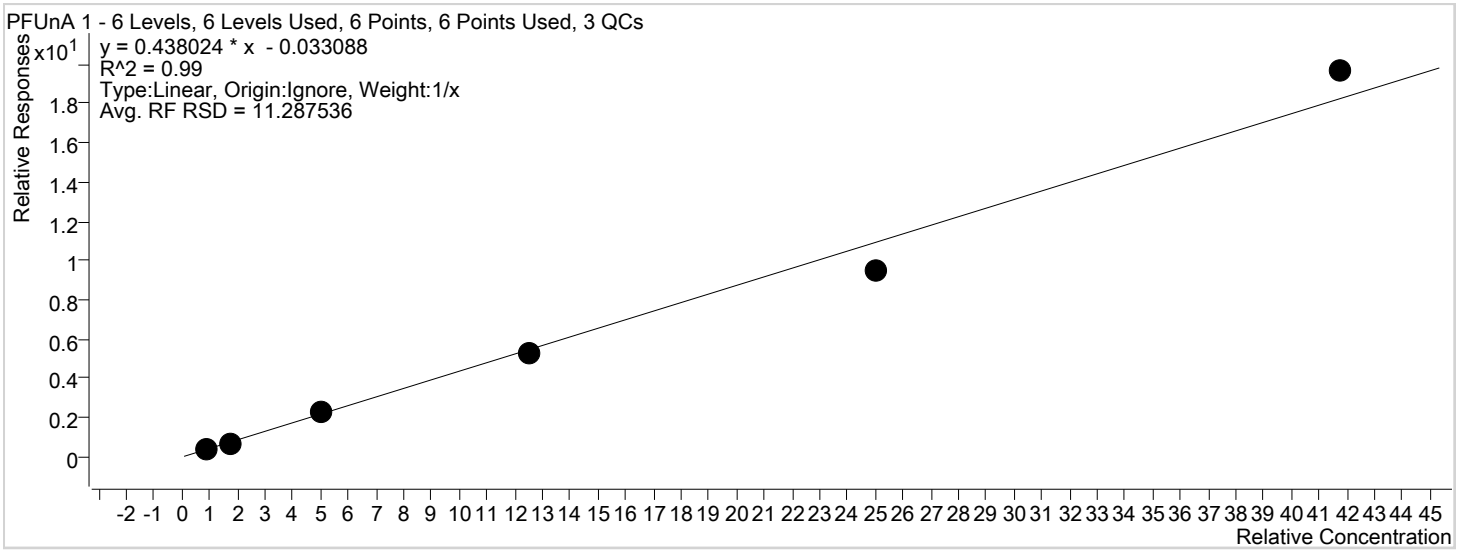
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFUnA 1

Internal Standard: MPFUnA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.96	2245	0.4654	53	115.3
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.46	4232	0.3562	84	85.8
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.31	13019	0.4587	233	106.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.17	36961	0.4239	454	97.4
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.84	61502	0.3814	1287	87.4
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.99	124796	0.4717	983	107.9

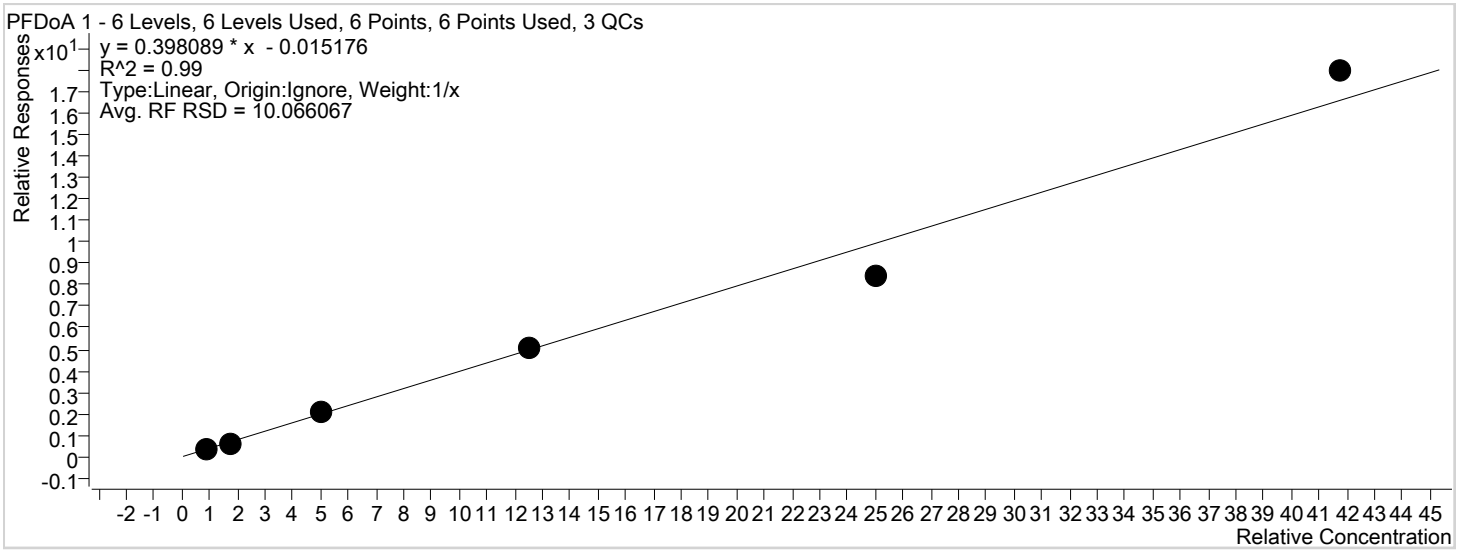
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFDoA 1

Internal Standard: MPFDoA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.93	2976	0.4285	23	112.2
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.54	5524	0.3513	46	90.5
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.11	16968	0.4036	125	102.2
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.73	49229	0.4043	307	101.9
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	21.21	75981	0.3372	626	84.8
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	45.21	167153	0.4312	1156	108.4

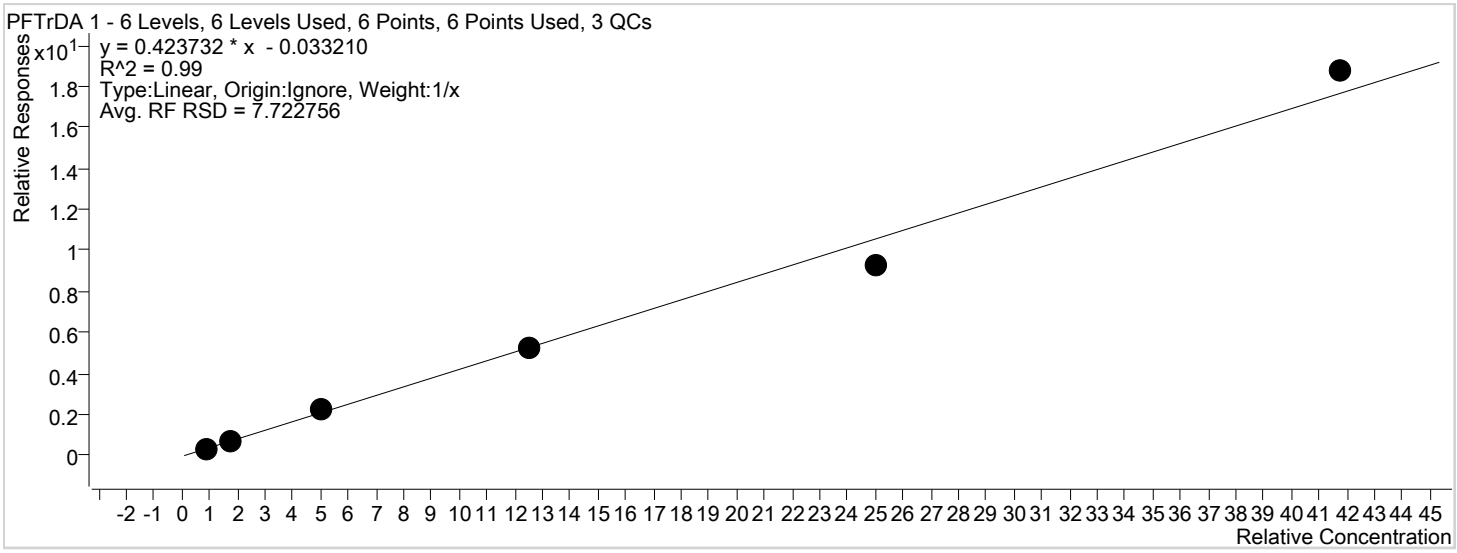
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFTrDA 1

Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.87	3072	0.4024	26	104.4
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.61	6214	0.3814	61	94.6
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.29	19565	0.4418	210	105.8
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.58	55859	0.4237	545	100.6
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	22.04	87280	0.3723	923	88.2
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.34	185359	0.4498	1417	106.3

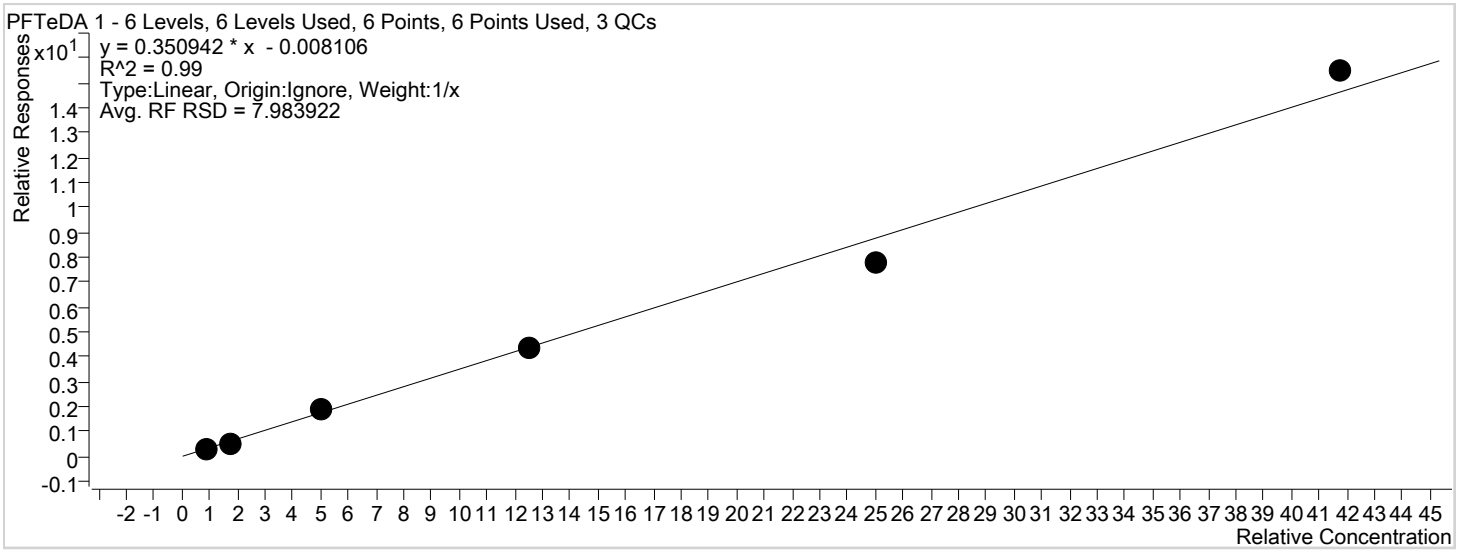
Batch Path T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics.batch.bin

Last Calib Update 2018/03/22 7:58:36 AM

Instrument: LCMS04

Analyte: PFTeDA 1

Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/15 4:46:29 PM	0.83	0.88	2753	0.3606	22	105.5
STD 2	STD 2	x	2018/03/15 4:51:26 PM	1.70	1.56	5165	0.3170	41	91.7
STD 3	STD 3	x	2018/03/15 4:56:23 PM	5.00	5.40	16706	0.3773	139	108.0
STD 4	STD 4	x	2018/03/15 5:01:20 PM	12.50	12.50	46166	0.3502	371	100.0
STD 5	STD 5	x	2018/03/15 5:06:17 PM	25.00	22.23	73062	0.3117	639	88.9
STD 6	STD 6	x	2018/03/15 5:11:14 PM	41.70	44.18	153139	0.3716	898	105.9

By Compound Report

Agilent Technologies

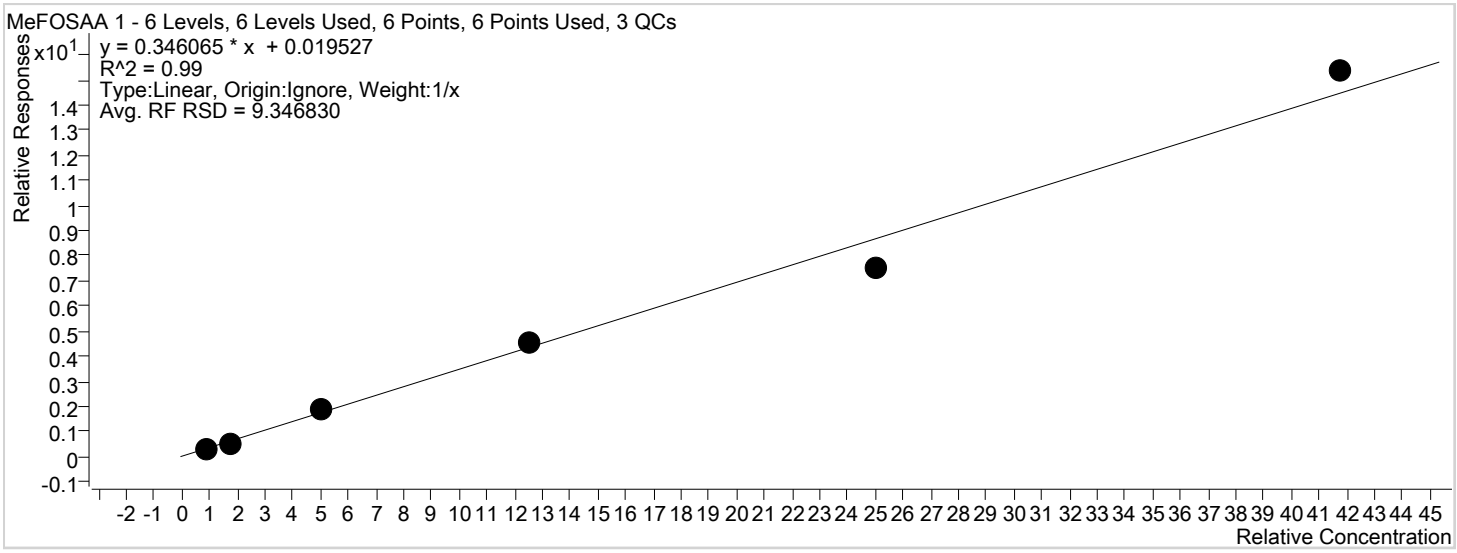
Batch Path T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETox ics.batch.bin

Last Calib Update 2018/03/19 11:16:39 AM

Instrument: LCMS04

Analyte: MeFOSAA 1

Internal Standard: D3-MeFOSAA IS



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/13 8:37:22 PM	0.83	0.85	528	0.3769	135	102.1
STD 2	STD 2	x	2018/03/13 8:39:48 PM	1.70	1.56	972	0.3282	219	91.5
STD 3	STD 3	x	2018/03/13 8:42:13 PM	5.00	5.52	3158	0.3858	365	110.4
STD 4	STD 4	x	2018/03/13 8:44:38 PM	12.50	12.94	7404	0.3599	293	103.5
STD 5	STD 5	x	2018/03/13 8:47:02 PM	25.00	21.55	12159	0.2991	356	86.2
STD 6	STD 6	x	2018/03/13 8:49:27 PM	41.70	44.32	24369	0.3682	363	106.3

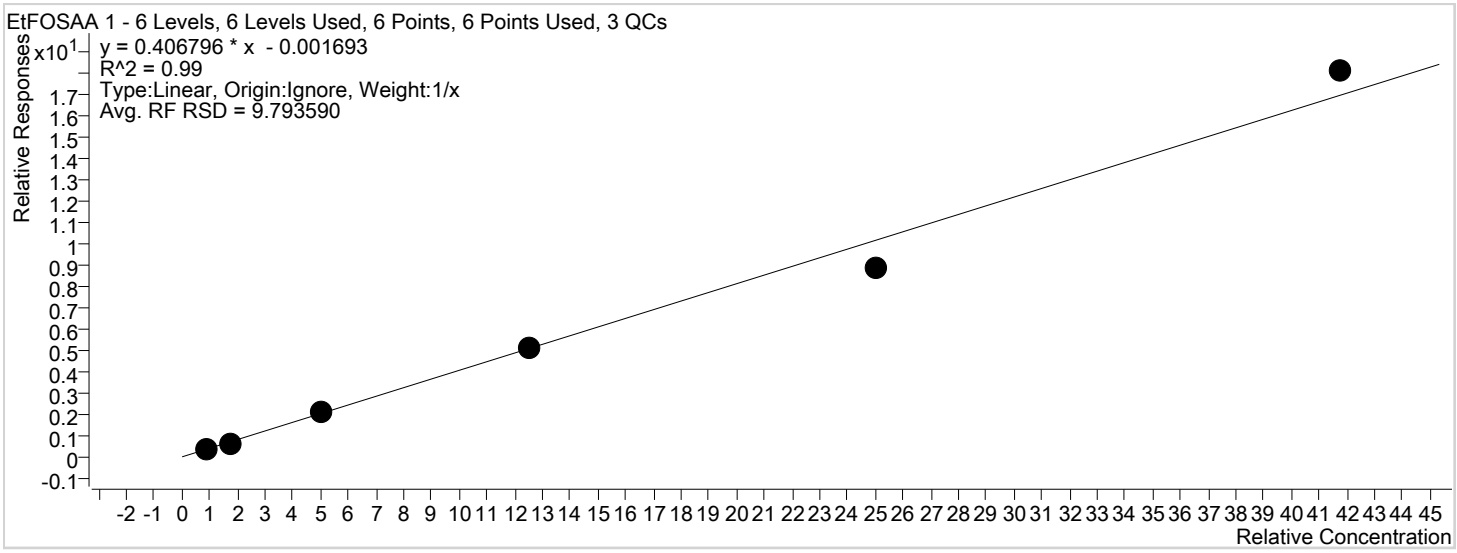
Batch Path T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETox ics.batch.bin

Last Calib Update 2018/03/19 11:16:39 AM

Instrument: LCMS04

Analyte: EtFOSAA 1

Internal Standard: D5-EtFOSAA IS



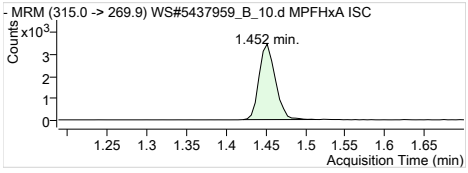
Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/13 8:37:22 PM	0.83	0.93	514	0.4557	93	112.5
STD 2	STD 2	x	2018/03/13 8:39:48 PM	1.70	1.51	911	0.3606	160	88.9
STD 3	STD 3	x	2018/03/13 8:42:13 PM	5.00	5.15	3003	0.4188	442	103.0
STD 4	STD 4	x	2018/03/13 8:44:38 PM	12.50	12.60	7406	0.4100	985	100.8
STD 5	STD 5	x	2018/03/13 8:47:02 PM	25.00	21.96	12191	0.3572	979	87.8
STD 6	STD 6	x	2018/03/13 8:49:27 PM	41.70	44.57	24783	0.4348	1997	106.9

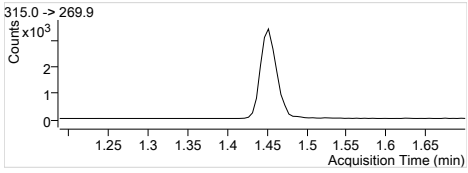
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**ISC**	**Instrument**	LCMS04
Data File	WS#5437959_B_10.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A2
Acq. Date	2018/03/15 5:27:21 PM	**Injection Volume**	Per Method
Sample Annotation	-		

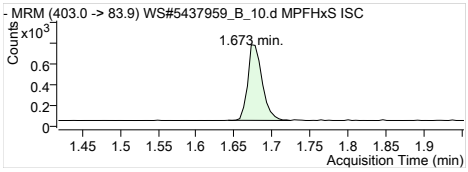
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	4770	1.45	1 µg/L		
MPFHxS	971	1.67	1 µg/L		
MPFHpA	5507	1.70	1 µg/L		
MPFOA	5668	1.89	1 µg/L		
MPFOS	1220	1.97	1 µg/L		
MPFNA	5519	2.03	1 µg/L		
MPFDA	4524	2.14	1 µg/L		
MPFUnA	5671	2.24	1 µg/L		
MPFDoA	8145	2.33	1 µg/L		
MPFTeDA	8570	2.47	1 µg/L		
13C6-PFHxA IS	18281	1.45	1 µg/L		
13C9-PFDA IS	21247	2.14	1 µg/L		

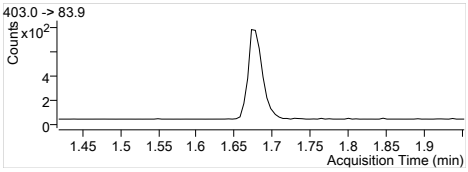
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	410	1.11	0.83	0.84 µg/L	101.76
PFHxA 1	1587	1.45	0.83	0.92 µg/L	110.32
PFHxS 1	401	1.68	0.83	0.95 µg/L	113.91
PFHpA 1	1716	1.71	0.83	0.83 µg/L	100.23
PFOA 1	2042	1.89	0.83	0.91 µg/L	109.54
PFOS 1	442	1.97	0.83	0.90 µg/L	108.90
PFNA 1	1748	2.03	0.83	0.79 µg/L	95.39
PFDA 1	1890	2.14	0.83	0.85 µg/L	102.45
PFUnA 1	2093	2.24	0.83	0.92 µg/L	110.62
PFDoA 1	2838	2.33	0.83	0.91 µg/L	110.05
PFTrDA 1	3228	2.40	0.83	0.97 µg/L	116.54
PFTeDA 1	2714	2.47	0.83	0.93 µg/L	111.50
13C2-PFHxA	4770	1.45	100.00	95.74 µg/L	95.74
18O2-PFHxS	971	1.67	100.00	96.17 µg/L	96.17
13C4-PFHpA	5507	1.70	100.00	95.75 µg/L	95.75
13C4-PFOA	5668	1.89	100.00	94.13 µg/L	94.13
13C4-PFOS	1220	1.97	100.00	99.72 µg/L	99.72
13C5-PFNA	5441	2.03	100.00	94.13 µg/L	94.13
13C2-PFDA	4432	2.14	100.00	94.47 µg/L	94.47
13C2-PFUnA	5671	2.24	100.00	95.03 µg/L	95.03
13C2-PFDoA	8145	2.33	100.00	96.48 µg/L	96.48
13C2-PFTeDA	8539	2.47	100.00	95.51 µg/L	95.51
13C6-PFHxA	18281	1.45	100.00	98.55 µg/L	98.55
13C9-PFDA	21247	2.14	100.00	93.70 µg/L	93.70



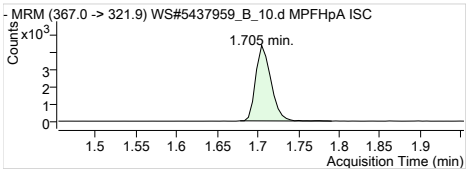


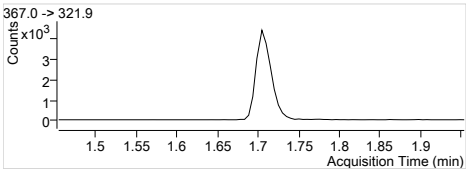
MPFHxA	Internal Standard
RT (Exp. RT):	1.452 (1.452)
Concentration:	1 µg/L
Sample type:	CC



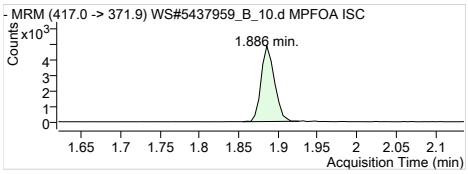


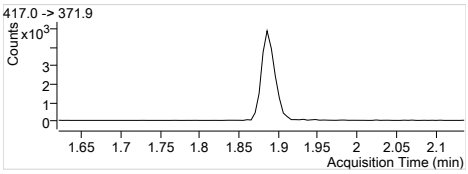
MPFHxS Internal Standard
RT (Exp. RT): 1.673 (1.678)
Concentration: 1 µg/L
Sample type: CC



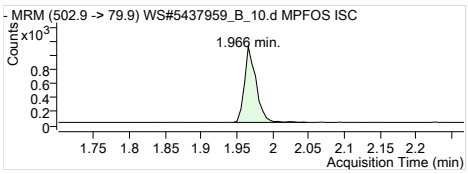


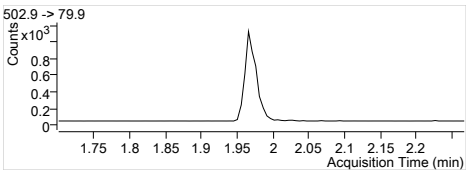
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: CC



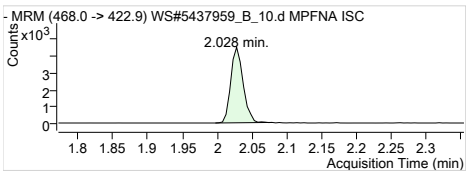


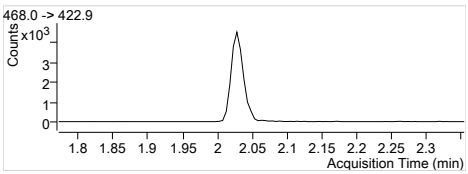
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: CC



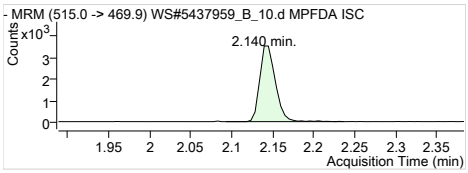


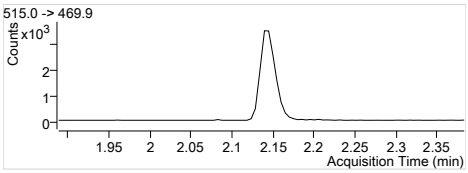
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: CC



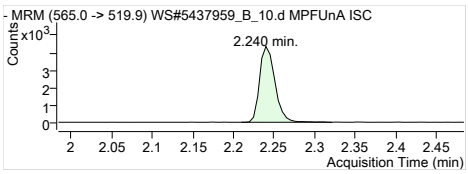


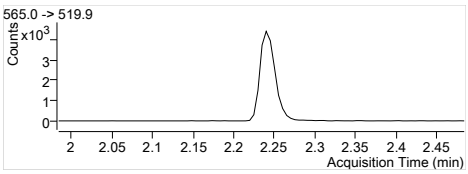
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: CC



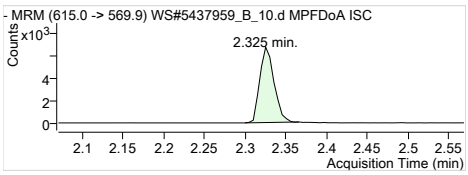


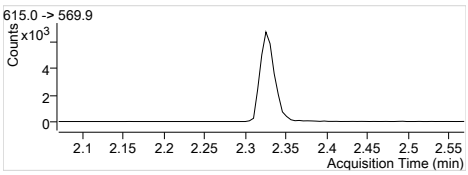
MPFDA Internal Standard
RT (Exp. RT): 2.140 (2.145)
Concentration: 1 µg/L
Sample type: CC



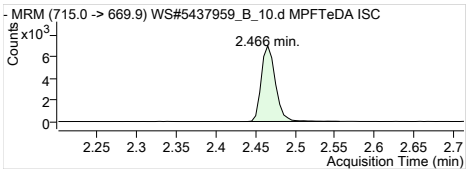


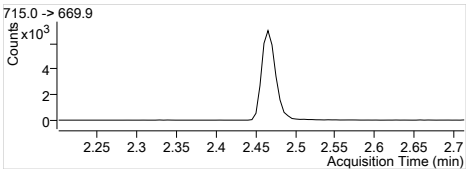
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: CC



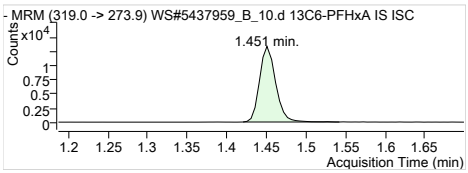


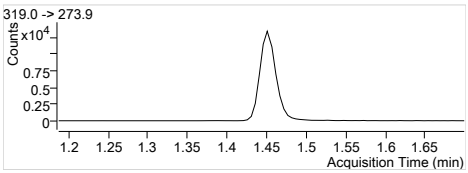
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: CC



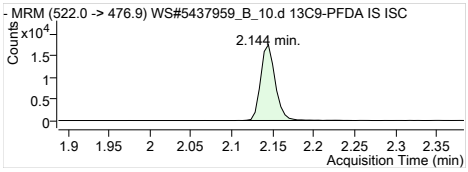


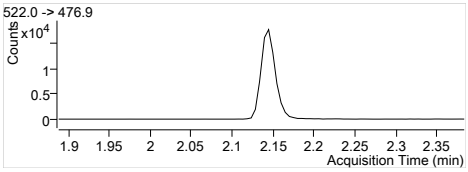
MPFTeDA Internal Standard
RT (Exp. RT): 2.466 (2.466)
Concentration: 1 µg/L
Sample type: CC



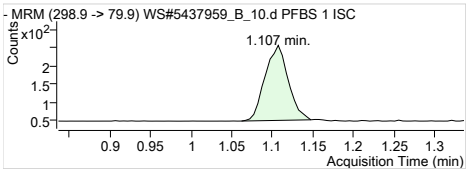


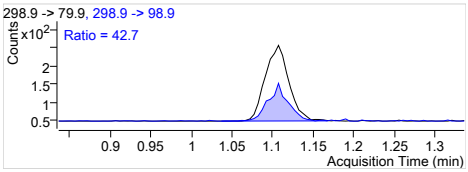
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: CC



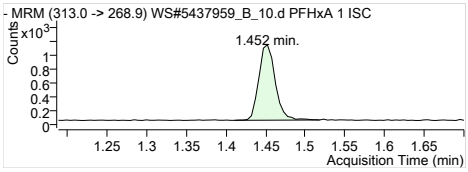


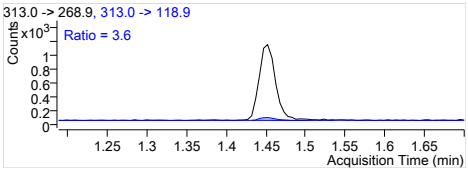
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.144 (2.144)
Concentration: 1 µg/L
Sample type: CC



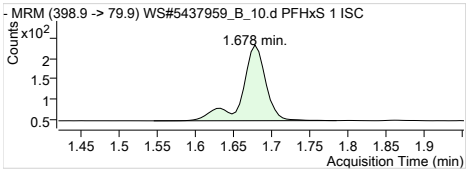


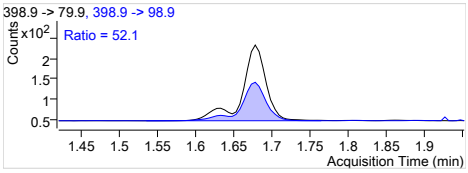
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.107 (1.107)
Calc. conc. 0.84 µg/L
Area ratio: 0.42225
Sample type: CC



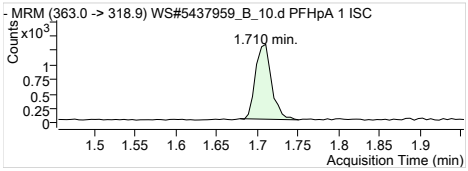


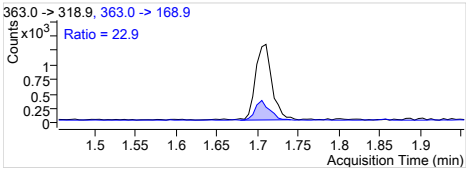
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 0.92 µg/L
Area ratio: 0.33270
Sample type: CC



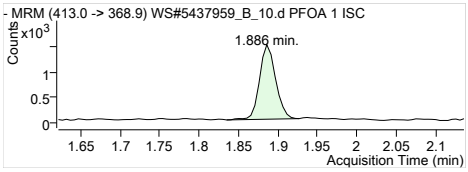


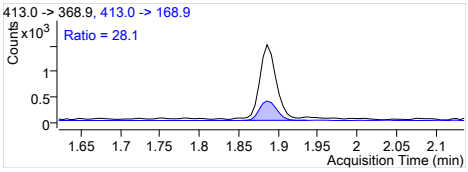
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 0.95 µg/L
Area ratio: 0.41298
Sample type: CC



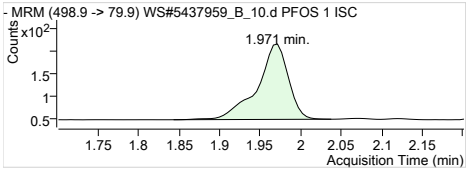


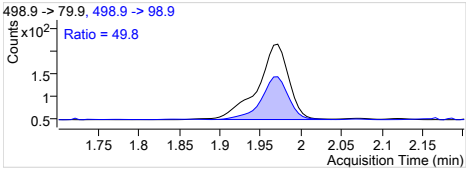
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.710 (1.705)
Calc. conc. 0.83 µg/L
Area ratio: 0.31160
Sample type: CC



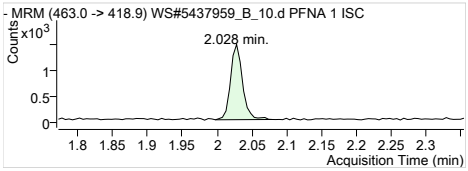


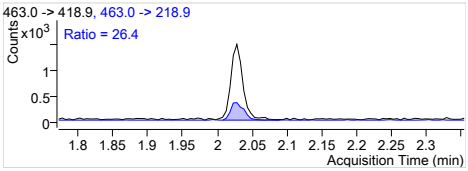
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 0.91 µg/L
Area ratio: 0.36027
Sample type: CC



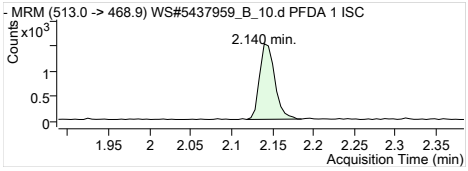


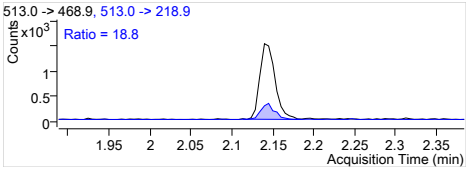
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.971 (1.971)
Calc. conc. 0.90 µg/L
Area ratio: 0.36230
Sample type: CC



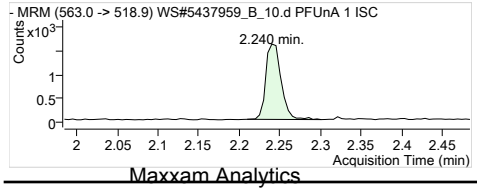


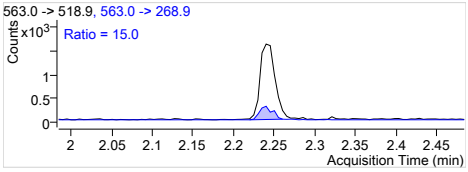
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 0.79 µg/L
Area ratio: 0.31672
Sample type: CC



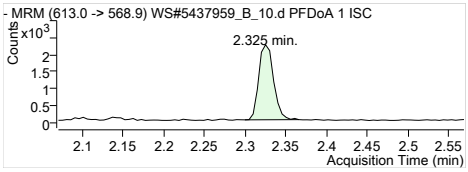


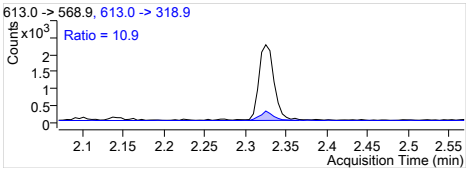
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.140 (2.145)
Calc. conc. 0.85 µg/L
Area ratio: 0.41777
Sample type: CC



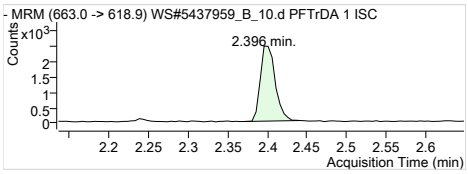


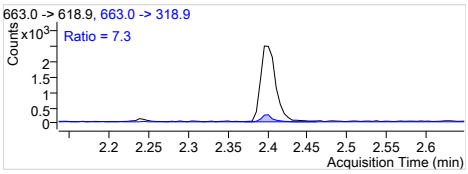
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 0.92 µg/L
Area ratio: 0.36907
Sample type: CC



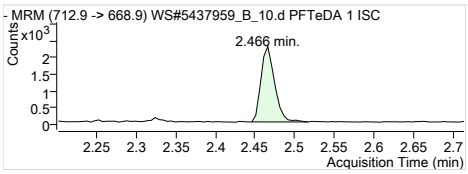


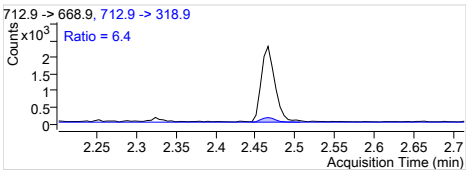
PFDoA 1 613.0 -> 568.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 0.91 µg/L
Area ratio: 0.34843
Sample type: CC



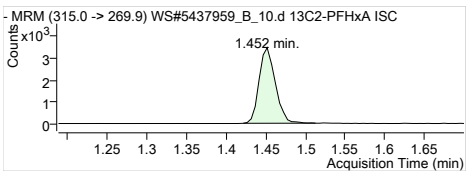


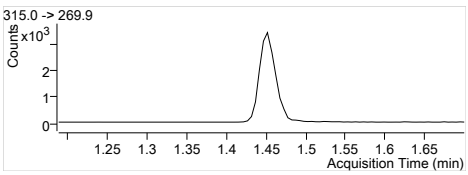
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.396 (2.401)
Calc. conc. 0.97 µg/L
Area ratio: 0.37666
Sample type: CC



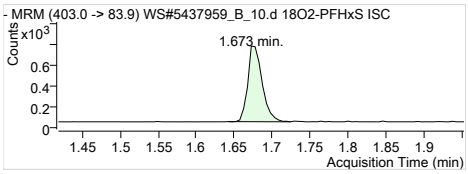


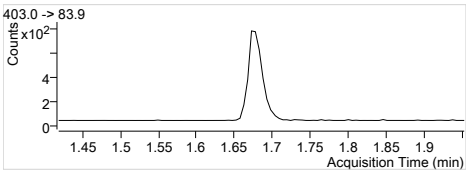
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 0.93 µg/L
Area ratio: 0.31669
Sample type: CC



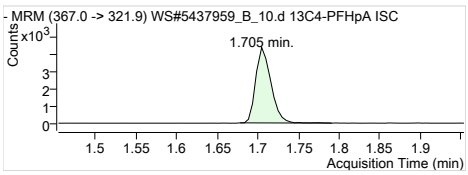


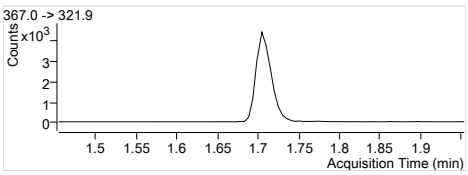
13C2-PFHxA 315.0 -> 269.9
RT (Exp. RT): 1.452 (1.452)
Calc. conc. 95.74 µg/L
Area ratio: 0.26093
Sample type: CC



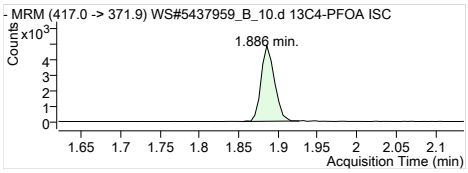


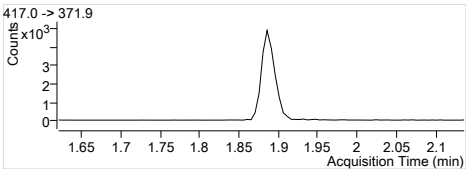
18O2-PFHxS 403.0 -> 83.9
RT (Exp. RT): 1.673 (1.678)
Calc. conc. 96.17 µg/L
Area ratio: 0.05312
Sample type: CC



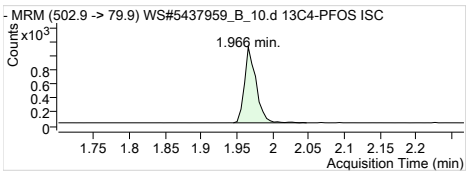


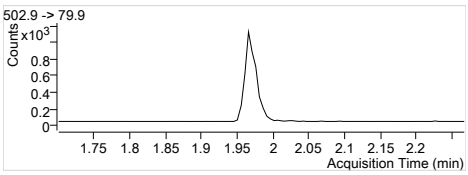
13C4-PFHpA 367.0 -> 321.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 95.75 µg/L
Area ratio: 0.30124
Sample type: CC



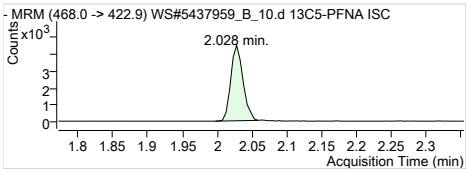


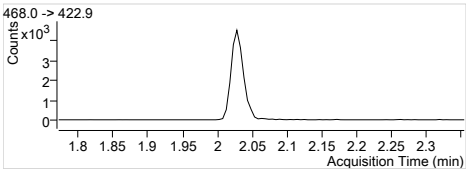
13C4-PFOA 417.0 -> 371.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 94.13 µg/L
Area ratio: 0.31005
Sample type: CC



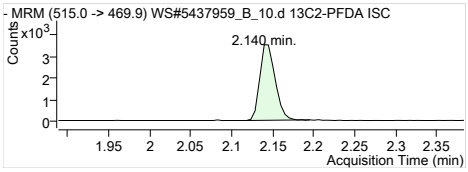


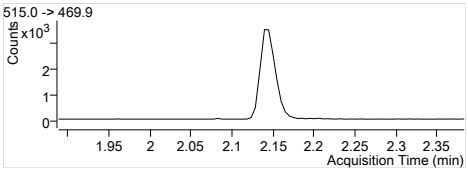
13C4-PFOS 502.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 99.72 µg/L
Area ratio: 0.06674
Sample type: CC



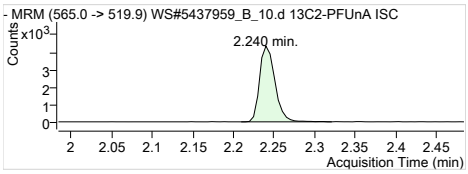


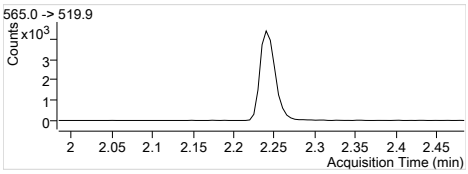
13C5-PFNA 468.0 -> 422.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 94.13 µg/L
Area ratio: 0.29763
Sample type: CC



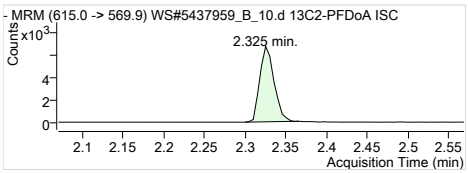


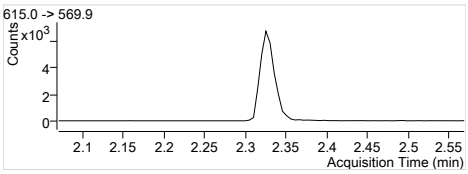
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.140 (2.145)
Calc. conc. 94.47 µg/L
Area ratio: 0.20859
Sample type: CC



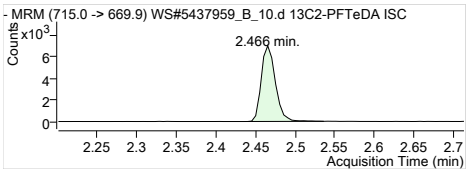


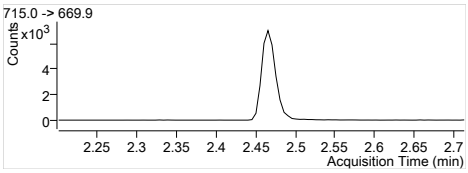
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 95.03 µg/L
Area ratio: 0.26691
Sample type: CC



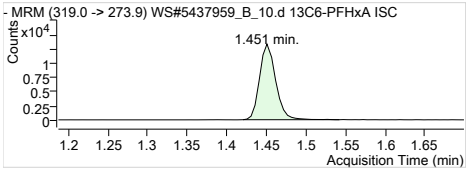


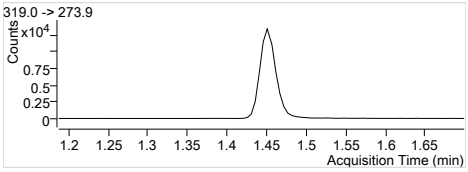
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 96.48 µg/L
Area ratio: 0.38335
Sample type: CC



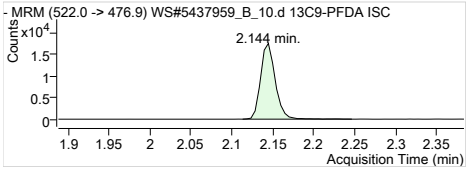


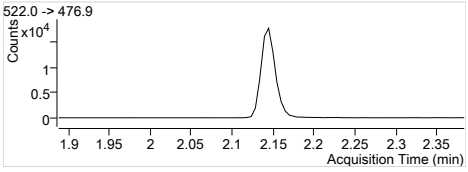
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.466 (2.466)
Calc. conc. 95.51 µg/L
Area ratio: 0.40189
Sample type: CC





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 98.55 µg/L
Area ratio: 0
Sample type: CC





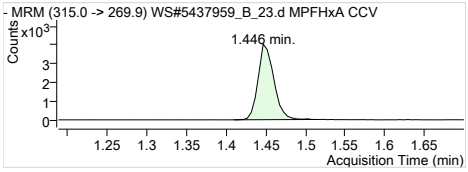
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.144 (2.144)
Calc. conc. 93.70 µg/L
Area ratio: 0
Sample type: CC

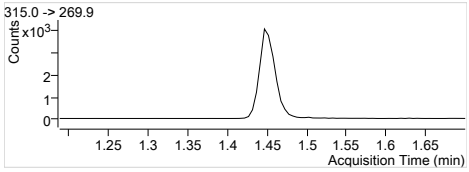
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_B\QuantResults\PFC_Water_Low_180315_WS#5437959_B_Re-integrated_EToxics

Sample Name	**CCV**	**Instrument**	LCMS04
Data File	WS#5437959_B_23.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P2-A5
Acq. Date	2018/03/15 6:32:01 PM	**Injection Volume**	Per Method
Sample Annotation	-		

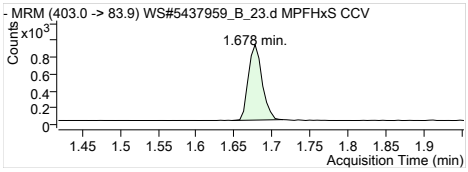
ISTD Compounds	Response	RT	Target conc.		
MPFHxA	5517	1.45	1 µg/L		
MPFHxS	1137	1.68	1 µg/L		
MPFHpA	6340	1.70	1 µg/L		
MPFOA	6648	1.89	1 µg/L		
MPFOS	1345	1.97	1 µg/L		
MPFNA	6304	2.03	1 µg/L		
MPFDA	5299	2.14	1 µg/L		
MPFUnA	6600	2.24	1 µg/L		
MPFDoA	9429	2.33	1 µg/L		
MPFTeDA	10206	2.46	1 µg/L		
13C6-PFHxA IS	19946	1.45	1 µg/L		
13C9-PFDA IS	22645	2.14	1 µg/L		

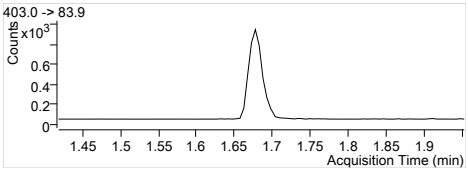
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFBS 1	7194	1.10	12.50	12.64 µg/L	101.12
PFHxA 1	27050	1.45	12.50	12.61 µg/L	100.85
PFHxS 1	6526	1.68	12.50	12.85 µg/L	102.83
PFHpA 1	31440	1.71	12.50	12.89 µg/L	103.13
PFOA 1	36245	1.89	12.50	12.70 µg/L	101.61
PFOS 1	7128	1.97	12.50	12.64 µg/L	101.12
PFNA 1	30702	2.03	12.50	12.72 µg/L	101.74
PFDA 1	34575	2.14	12.50	12.81 µg/L	102.51
PFUnA 1	36655	2.24	12.50	12.75 µg/L	102.04
PFDoA 1	48326	2.33	12.50	12.91 µg/L	103.30
PFTrDA 1	54730	2.40	12.50	12.73 µg/L	101.87
PFTeDA 1	44957	2.46	12.50	12.57 µg/L	100.60
13C2-PFHxA	5517	1.45	100.00	101.49 µg/L	101.49
18O2-PFHxS	1137	1.68	100.00	103.21 µg/L	103.21
13C4-PFHpA	6340	1.70	100.00	101.03 µg/L	101.03
13C4-PFOA	6648	1.89	100.00	101.19 µg/L	101.19
13C4-PFOS	1345	1.97	100.00	100.76 µg/L	100.76
13C5-PFNA	6145	2.03	100.00	97.44 µg/L	97.44
13C2-PFDA	5266	2.14	100.00	105.31 µg/L	105.31
13C2-PFUnA	6600	2.24	100.00	103.77 µg/L	103.77
13C2-PFDoA	9429	2.33	100.00	104.79 µg/L	104.79
13C2-PFTeDA	10212	2.46	100.00	107.17 µg/L	107.17
13C6-PFHxA	19946	1.45	100.00	107.52 µg/L	107.52
13C9-PFDA	22645	2.14	100.00	99.87 µg/L	99.87



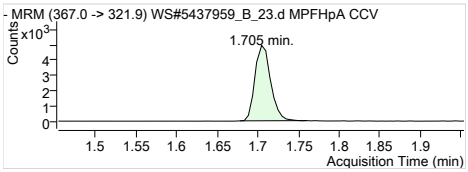


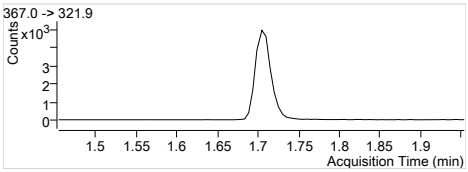
MPFHxA	Internal Standard
RT (Exp. RT):	1.446 (1.452)
Concentration:	1 µg/L
Sample type:	CC



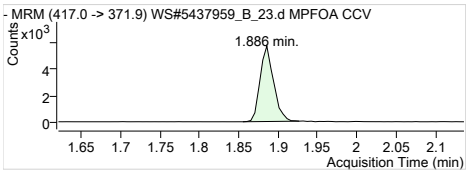


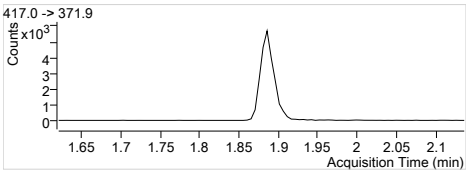
MPFHxS Internal Standard
RT (Exp. RT): 1.678 (1.678)
Concentration: 1 µg/L
Sample type: CC



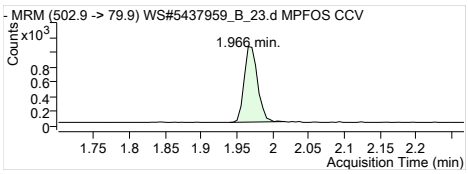


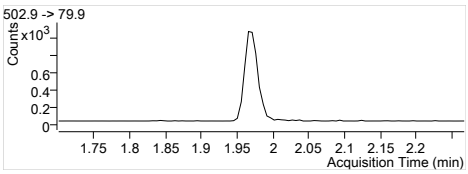
MPFHpA Internal Standard
RT (Exp. RT): 1.705 (1.705)
Concentration: 1 µg/L
Sample type: CC



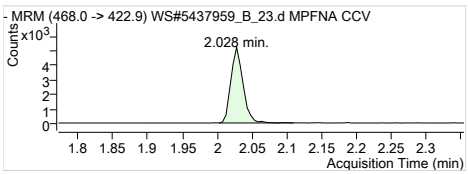


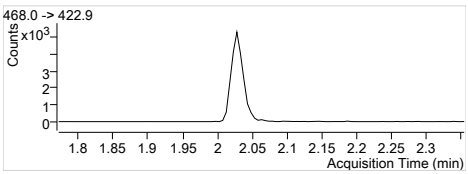
MPFOA Internal Standard
RT (Exp. RT): 1.886 (1.886)
Concentration: 1 µg/L
Sample type: CC



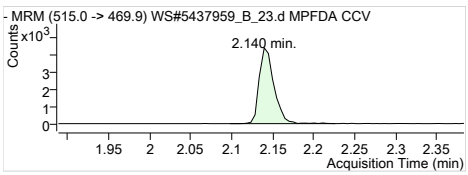


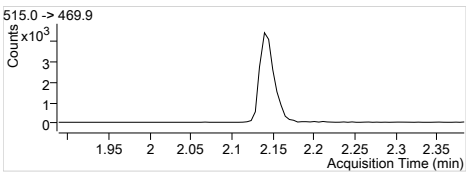
MPFOS Internal Standard
RT (Exp. RT): 1.966 (1.971)
Concentration: 1 µg/L
Sample type: CC



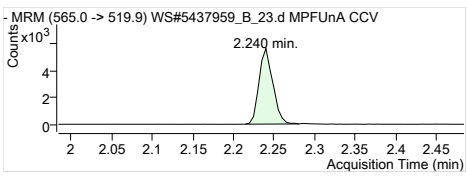


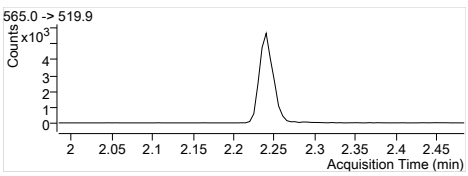
MPFNA Internal Standard
RT (Exp. RT): 2.028 (2.028)
Concentration: 1 µg/L
Sample type: CC



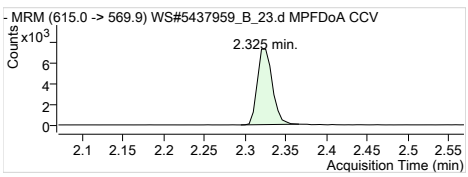


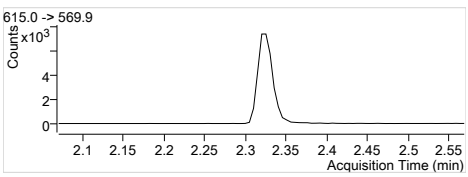
MPFDA Internal Standard
RT (Exp. RT): 2.140 (2.145)
Concentration: 1 µg/L
Sample type: CC



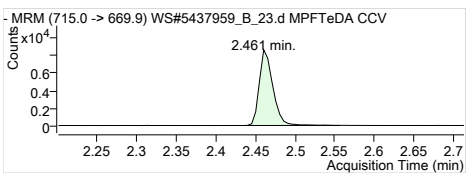


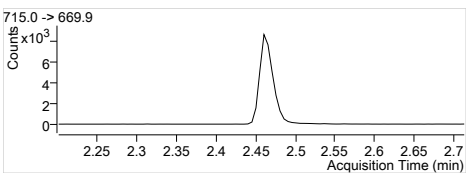
MPFUnA Internal Standard
RT (Exp. RT): 2.240 (2.240)
Concentration: 1 µg/L
Sample type: CC



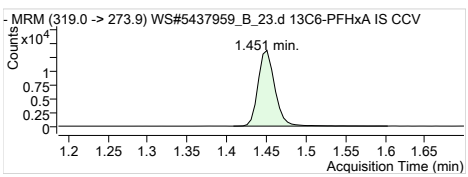


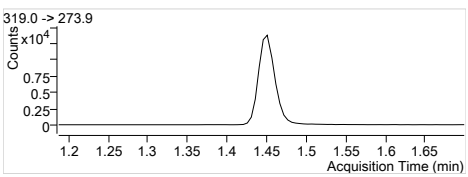
MPFDoA Internal Standard
RT (Exp. RT): 2.325 (2.325)
Concentration: 1 µg/L
Sample type: CC



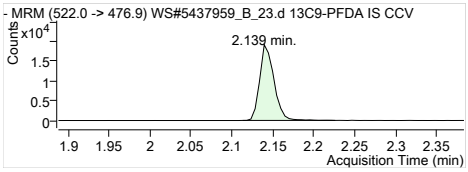


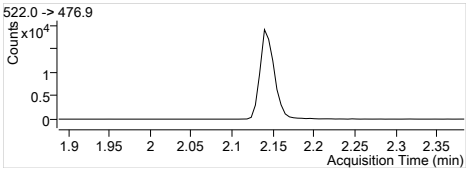
MPFTeDA Internal Standard
RT (Exp. RT): 2.461 (2.466)
Concentration: 1 µg/L
Sample type: CC



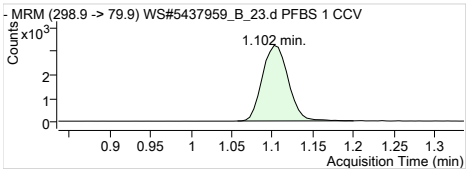


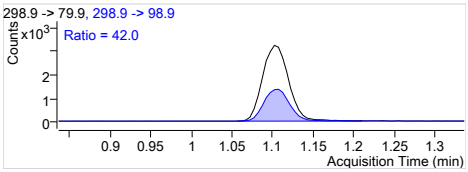
13C6-PFHxA IS Internal Standard
RT (Exp. RT): 1.451 (1.451)
Concentration: 1 µg/L
Sample type: CC



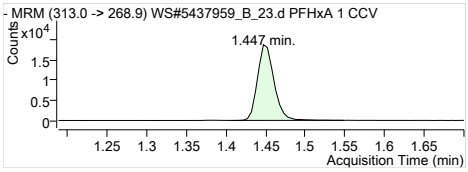


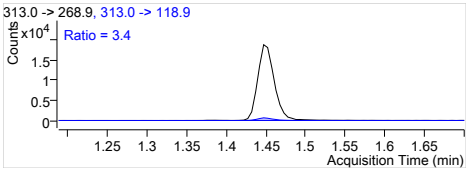
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.139 (2.144)
Concentration: 1 µg/L
Sample type: CC



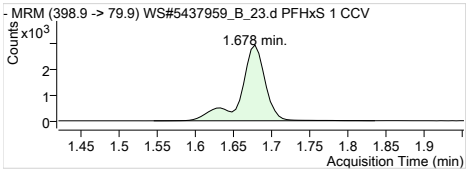


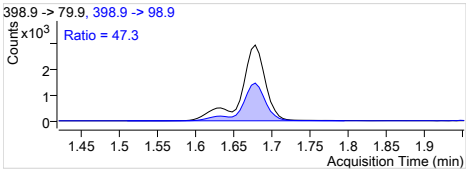
PFBS 1 298.9 -> 79.9
RT (Exp. RT): 1.102 (1.107)
Calc. conc. 12.64 µg/L
Area ratio: 6.32718
Sample type: CC



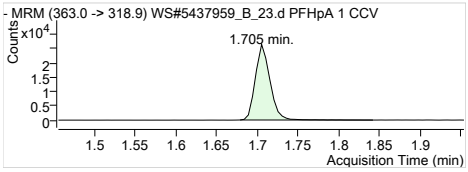


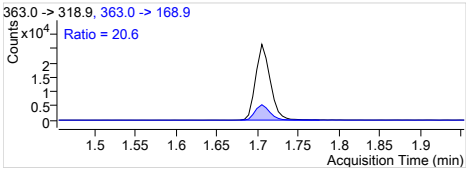
PFHxA 1 313.0 -> 268.9
RT (Exp. RT): 1.447 (1.452)
Calc. conc. 12.61 µg/L
Area ratio: 4.90303
Sample type: CC



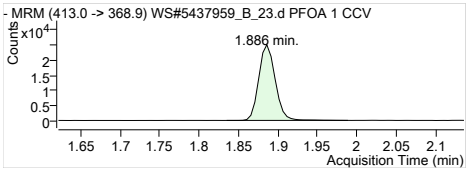


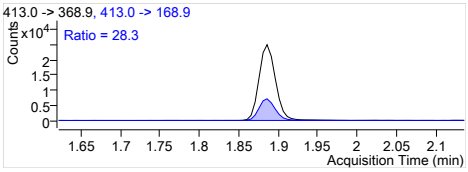
PFHxS 1 398.9 -> 79.9
RT (Exp. RT): 1.678 (1.678)
Calc. conc. 12.85 µg/L
Area ratio: 5.73967
Sample type: CC



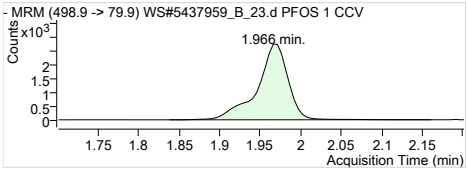


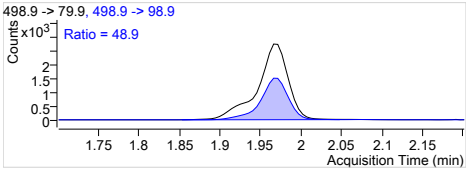
PFHpA 1 363.0 -> 318.9
RT (Exp. RT): 1.705 (1.705)
Calc. conc. 12.89 µg/L
Area ratio: 4.95899
Sample type: CC



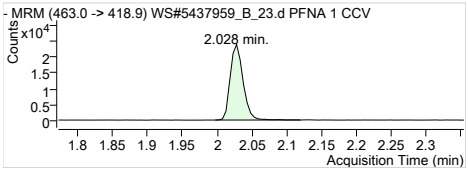


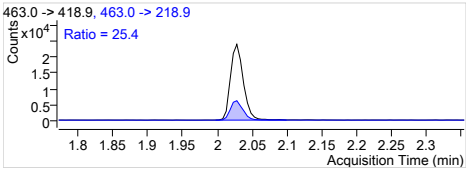
PFOA 1 413.0 -> 368.9
RT (Exp. RT): 1.886 (1.886)
Calc. conc. 12.70 µg/L
Area ratio: 5.45202
Sample type: CC



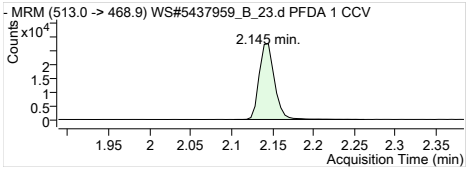


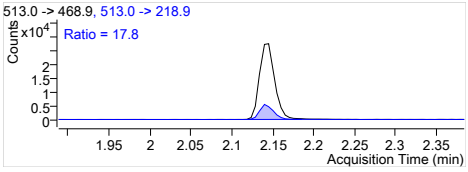
PFOS 1 498.9 -> 79.9
RT (Exp. RT): 1.966 (1.971)
Calc. conc. 12.64 µg/L
Area ratio: 5.29963
Sample type: CC



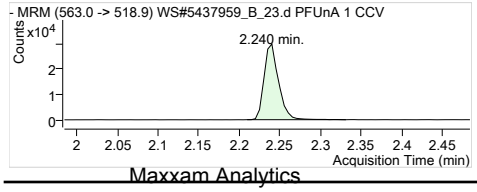


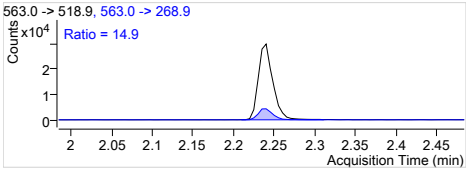
PFNA 1 463.0 -> 418.9
RT (Exp. RT): 2.028 (2.028)
Calc. conc. 12.72 µg/L
Area ratio: 4.87024
Sample type: CC



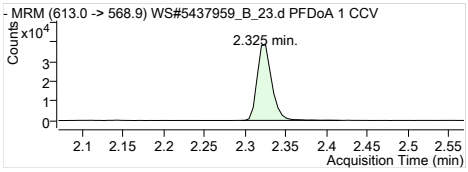


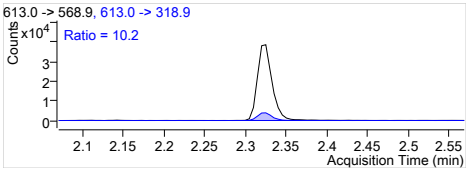
PFDA 1 513.0 -> 468.9
RT (Exp. RT): 2.145 (2.145)
Calc. conc. 12.81 µg/L
Area ratio: 6.52482
Sample type: CC



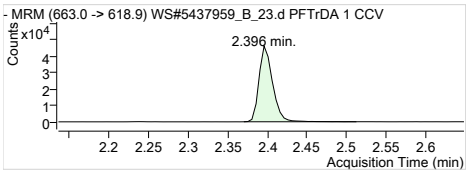


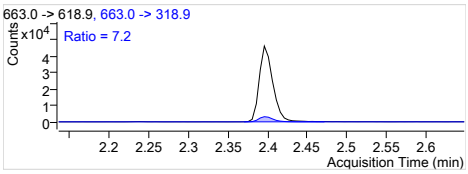
PFUnA 1 563.0 -> 518.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 12.75 µg/L
Area ratio: 5.55379
Sample type: CC



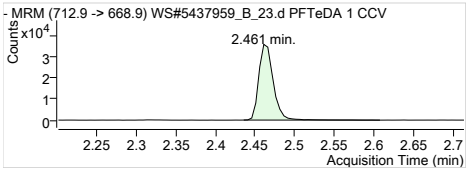


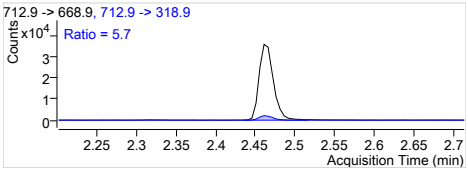
PFDoA 1	613.0 -> 568.9
RT (Exp. RT):	2.325 (2.325)
Calc. conc.	12.91 µg/L
Area ratio:	5.12525
Sample type:	CC



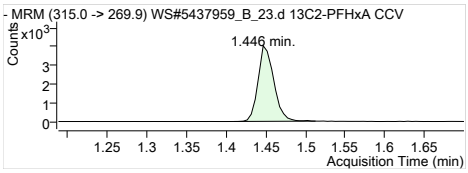


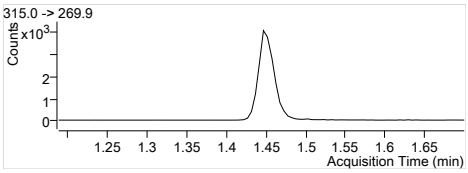
PFTrDA 1	663.0 -> 618.9
RT (Exp. RT):	2.396 (2.401)
Calc. conc.	12.73 µg/L
Area ratio:	5.36253
Sample type:	CC



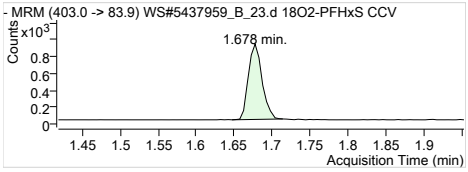


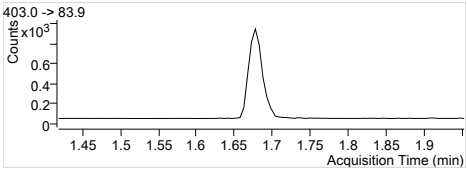
PFTeDA 1	712.9 -> 668.9
RT (Exp. RT):	2.461 (2.466)
Calc. conc.	12.57 µg/L
Area ratio:	4.40496
Sample type:	CC



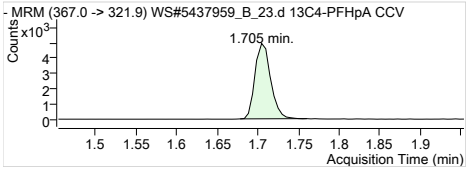


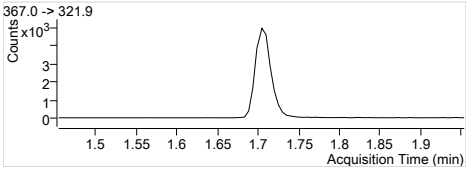
13C2-PFHxA	315.0 -> 269.9
RT (Exp. RT):	1.446 (1.452)
Calc. conc.	101.49 µg/L
Area ratio:	0.27660
Sample type:	CC



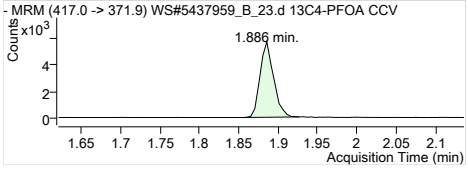


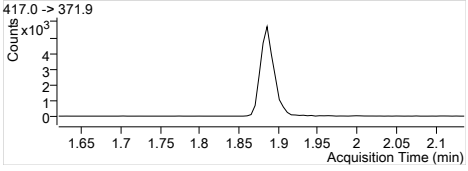
18O2-PFHxS	403.0 -> 83.9
RT (Exp. RT):	1.678 (1.678)
Calc. conc.	103.21 µg/L
Area ratio:	0.05700
Sample type:	CC



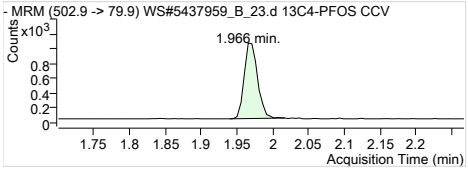


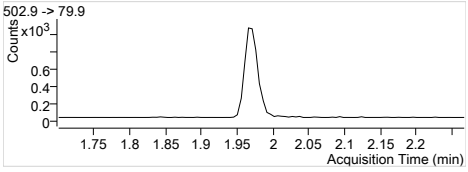
13C4-PFHpA	367.0 -> 321.9
RT (Exp. RT):	1.705 (1.705)
Calc. conc.	101.03 µg/L
Area ratio:	0.31786
Sample type:	CC



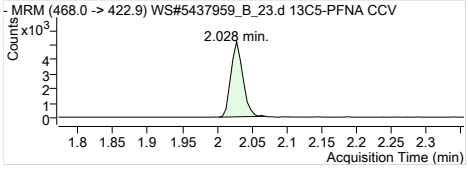


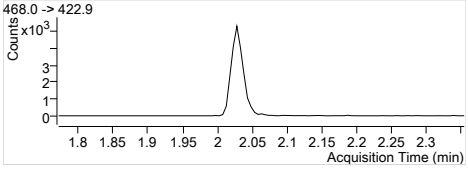
13C4-PFOA	417.0 -> 371.9
RT (Exp. RT):	1.886 (1.886)
Calc. conc.	101.19 µg/L
Area ratio:	0.33330
Sample type:	CC



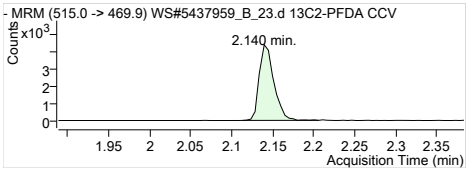


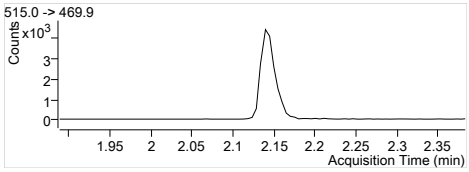
13C4-PFOS	502.9 -> 79.9
RT (Exp. RT):	1.966 (1.971)
Calc. conc.	100.76 µg/L
Area ratio:	0.06743
Sample type:	CC



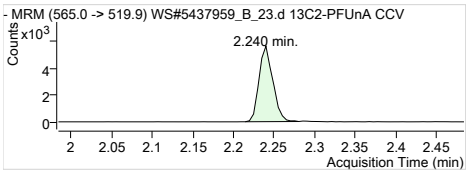


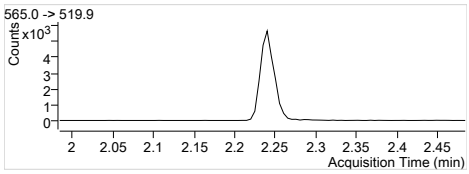
13C5-PFNA	468.0 -> 422.9
RT (Exp. RT):	2.028 (2.028)
Calc. conc.	97.44 µg/L
Area ratio:	0.30808
Sample type:	CC



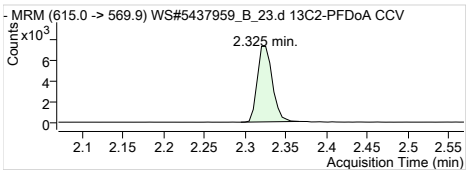


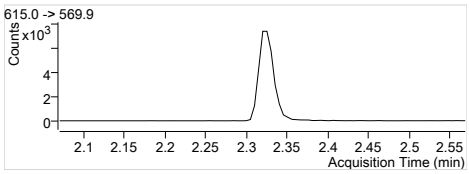
13C2-PFDA 515.0 -> 469.9
RT (Exp. RT): 2.140 (2.145)
Calc. conc. 105.31 µg/L
Area ratio: 0.23255
Sample type: CC



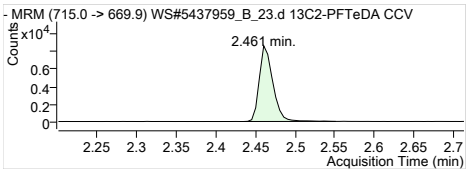


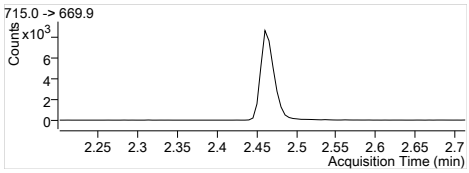
13C2-PFUnA 565.0 -> 519.9
RT (Exp. RT): 2.240 (2.240)
Calc. conc. 103.77 µg/L
Area ratio: 0.29146
Sample type: CC



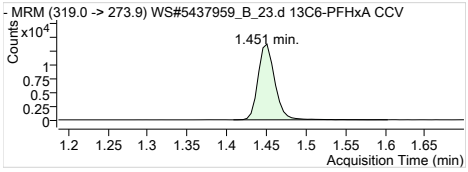


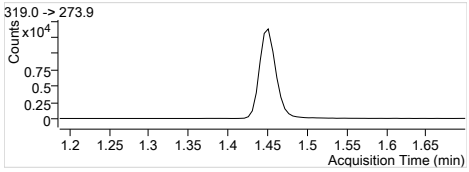
13C2-PFDoA 615.0 -> 569.9
RT (Exp. RT): 2.325 (2.325)
Calc. conc. 104.79 µg/L
Area ratio: 0.41638
Sample type: CC



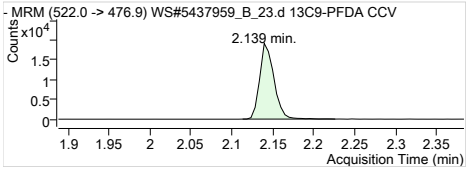


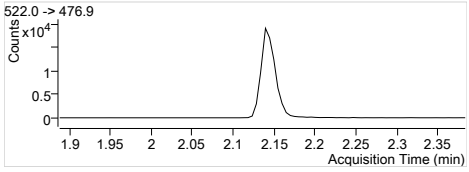
13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.461 (2.466)
Calc. conc. 107.17 µg/L
Area ratio: 0.45096
Sample type: CC





13C6-PFHxA 319.0 -> 273.9
RT (Exp. RT): 1.451 (1.451)
Calc. conc. 107.52 µg/L
Area ratio: 0
Sample type: CC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.139 (2.144)
Calc. conc. 99.87 µg/L
Area ratio: 0
Sample type: CC

Quantitation Results

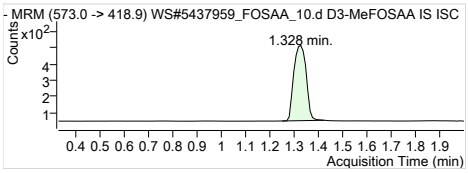
Agilent Technologies

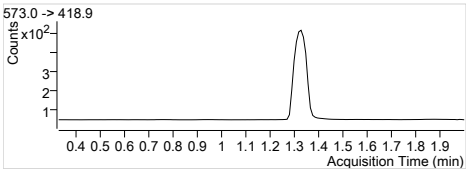
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**ISC**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_10.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A2
Acq. Date	2018/03/13 8:56:42 PM	**Injection Volume**	Per Method
Sample Annotation	-		

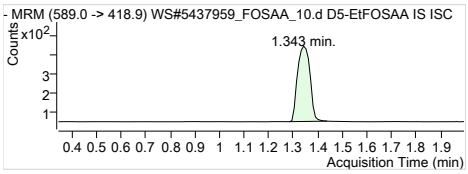
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1640	1.33	1 µg/L		
D5-EtFOSAA IS	1394	1.34	1 µg/L		
13C9-PFDA IS	18861	0.95	1 µg/L		

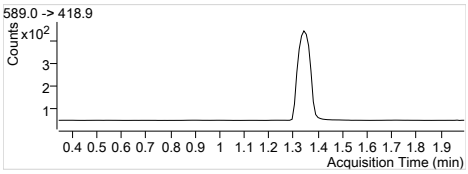
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	561	1.32	0.83	0.93 µg/L	112.29
EtFOSAA 1	542	1.34	0.83	0.96 µg/L	115.66
D3-MeFOSAA	1665	1.33	100.00	100.22 µg/L	100.22
D5-EtFOSAA	1413	1.34	100.00	99.47 µg/L	99.47
13C9-PFDA	18856	0.95	100.00	99.56 µg/L	99.56



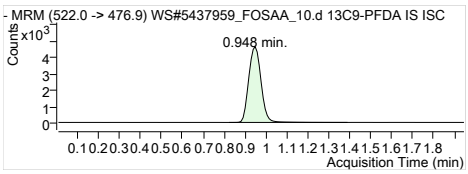


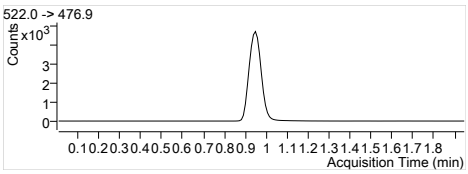
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: CC



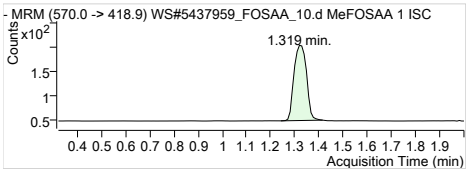


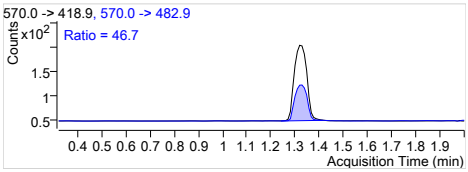
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: CC



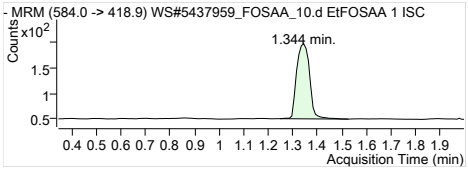


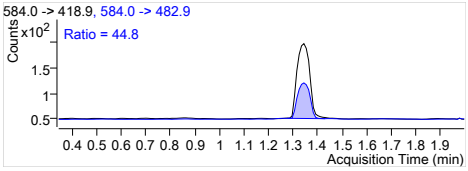
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: CC



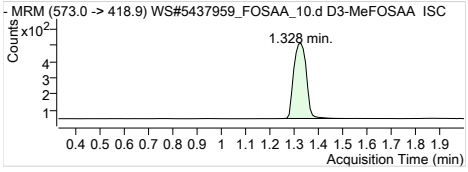


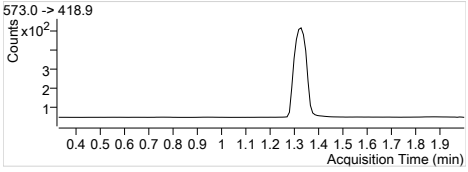
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.319 (1.319)
Calc. conc. 0.93 µg/L
Area ratio: 0.34207
Sample type: CC



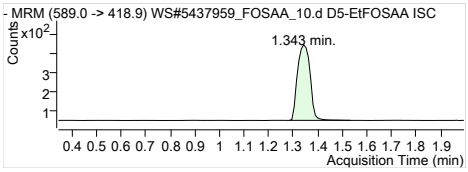


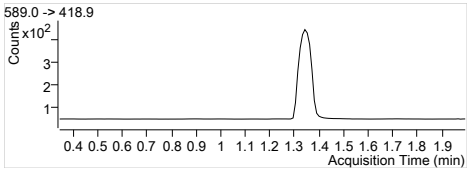
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 0.96 µg/L
Area ratio: 0.38881
Sample type: CC



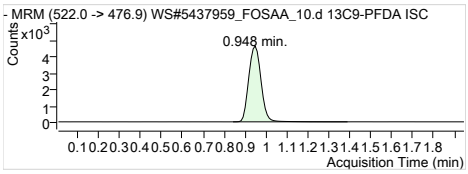


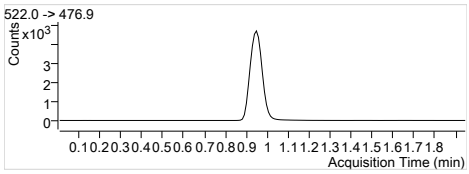
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 100.22 µg/L
Area ratio: 0.08828
Sample type: CC





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	99.47 µg/L
Area ratio:	0.07492
Sample type:	CC





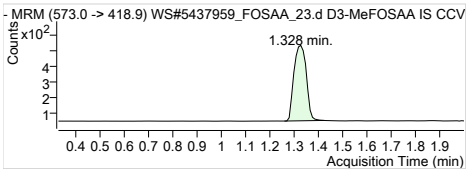
13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	99.56 µg/L
Area ratio:	0
Sample type:	CC

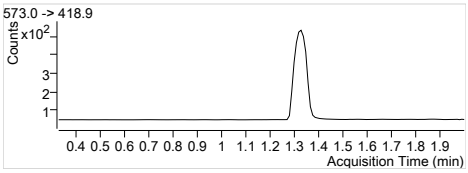
Batch Path	T:\lcms4\PFC\20180315\WS#5437959_FOSAA\QuantResults\PFC_Water_Low_180313_WS#5437959_FOSAA_ETOxics

Sample Name	**CCV**	**Instrument**	LCMS04
Data File	WS#5437959_FOSAA_23.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low_FOSAA.m	**Position**	P2-A5
Acq. Date	2018/03/13 9:28:04 PM	**Injection Volume**	Per Method
Sample Annotation	-		

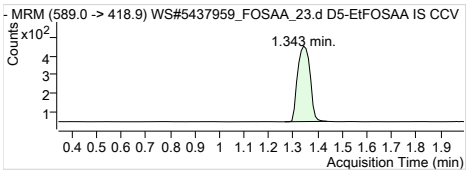
ISTD Compounds	Response	RT	Target conc.		
D3-MeFOSAA IS	1704	1.33	1 µg/L		
D5-EtFOSAA IS	1424	1.34	1 µg/L		
13C9-PFDA IS	18284	0.95	1 µg/L		

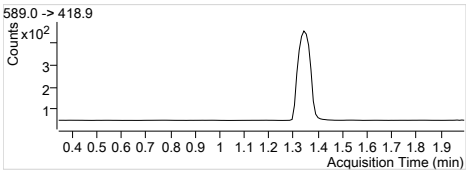
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
MeFOSAA 1	7363	1.33	12.50	12.43 µg/L	99.44
EtFOSAA 1	7276	1.34	12.50	12.56 µg/L	100.52
D3-MeFOSAA	1728	1.33	100.00	107.30 µg/L	107.30
D5-EtFOSAA	1433	1.34	100.00	104.06 µg/L	104.06
13C9-PFDA	17954	0.95	100.00	94.79 µg/L	94.79



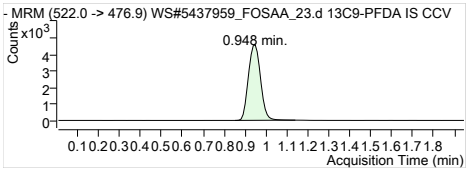


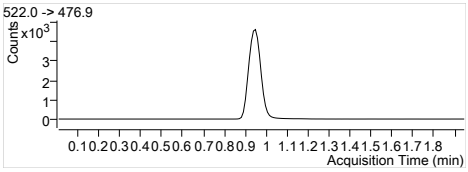
D3-MeFOSAA IS Internal Standard
RT (Exp. RT): 1.328 (1.328)
Concentration: 1 µg/L
Sample type: CC



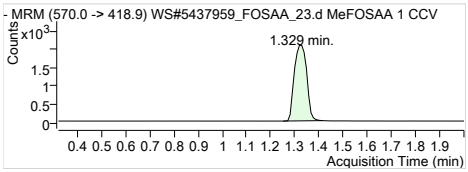


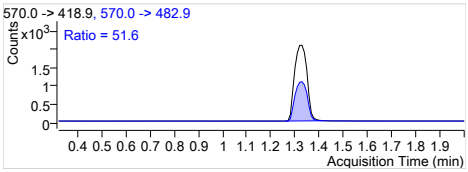
D5-EtFOSAA IS Internal Standard
RT (Exp. RT): 1.343 (1.343)
Concentration: 1 µg/L
Sample type: CC



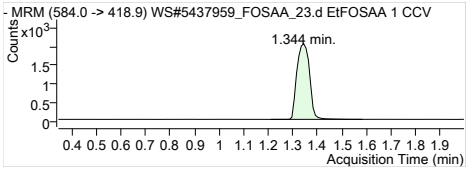


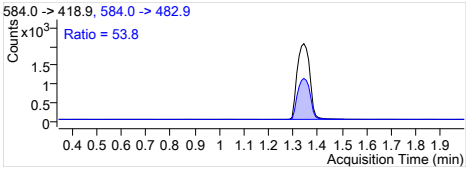
13C9-PFDA IS Internal Standard
RT (Exp. RT): 0.948 (0.948)
Concentration: 1 µg/L
Sample type: CC



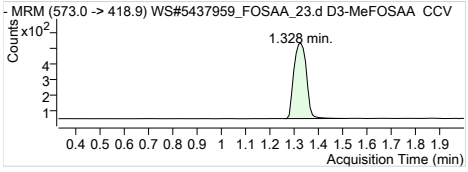


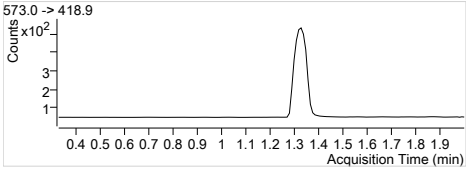
MeFOSAA 1 570.0 -> 418.9
RT (Exp. RT): 1.329 (1.319)
Calc. conc. 12.43 µg/L
Area ratio: 4.32101
Sample type: CC



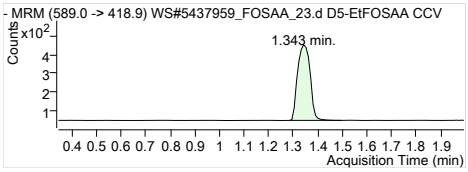


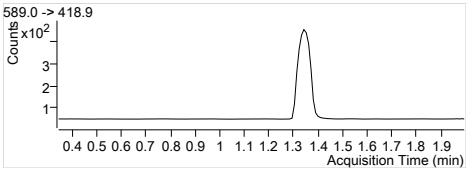
EtFOSAA 1 584.0 -> 418.9
RT (Exp. RT): 1.344 (1.344)
Calc. conc. 12.56 µg/L
Area ratio: 5.10955
Sample type: CC



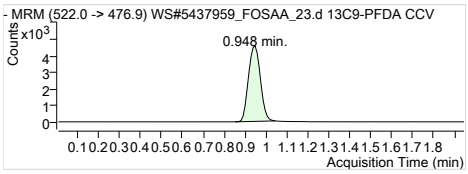


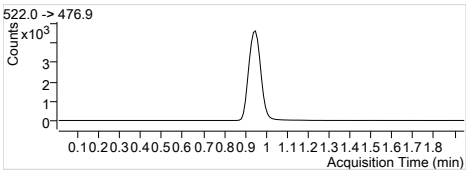
D3-MeFOSAA 573.0 -> 418.9
RT (Exp. RT): 1.328 (1.328)
Calc. conc. 107.30 µg/L
Area ratio: 0.09451
Sample type: CC





D5-EtFOSAA	589.0 -> 418.9
RT (Exp. RT):	1.343 (1.343)
Calc. conc.	104.06 µg/L
Area ratio:	0.07837
Sample type:	CC





13C9-PFDA	522.0 -> 476.9
RT (Exp. RT):	0.948 (0.948)
Calc. conc.	94.79 µg/L
Area ratio:	0
Sample type:	CC

DoD Projects - Internal Data Validation Checklist

Run date: 2018/03/21

Worksheet # (s): 5447939

Analysis: PFOSALCM-W

	Primary review by the analyst - 1st 100 % analysis review	1st 100% review yes	no	n/a	*2nd 100% review
1	Sample analyses meet hold time criteria		✓		
2	Analysis set-up meets method criteria	✓			
3	Tuning and correct calibration used - criteria meets method criteria	✓			
4	SQC/Control Charts updated, analysis in statistical/method control	✓			
5	Internal area counts checked (if applicable)	✓			
6	LCS, SRM are within acceptance criteria	✓			
7	Surrogate Recovery(s) is within acceptance criteria		✓		
8	Method Blank meets acceptance criteria	✓			
9	Matrix Spike recovery(s) meets acceptance criteria			✓	
10	Duplicate precision meets acceptance criteria	✓			
11	QC is documented on the run logs	✓			
12	Runs checked for carryover	✓			
13	Prep log / worksheet(s) are present, signed / dated by a prep / instrument analysts	✓			
14	Initial weights, splits, impringer volumes (where applicable) are documented	✓			
15	Standards and reagents traceable to Certificates of Analysis	✓			
16	Samples above calibration range diluted and reanalyzed	✓			
17	Dilution factors (where justified) have been checked for correctness and entered	✓			
18	Analytical observations/anomalies documented in LIMS	✓			
19	Random calculation checked and in correct units	✓			
20	If corrective actions were applied they are documented, initialed & dated			✓	
21	Manual integration – before & after data with a reason included, initialed & dated			✓	
22	Transferred data is validated in LIMS for correctness	✓			
23	Data package assembled (where required)	✓			

Reviewed by: [signature] Date: 2018/03/21

Comments:

	Secondary Supervisor/Qualified Data Review Staff - 2nd 100% verification review	yes	no	n/a
1	Repeats documented and referenced	✓		
2	Method and sample deviations noted, anomalies described (if applicable)			✓
3	Data and QC validated in LIMS	✓		
4	Random calculation checked	✓		
5	Benchsheet (s) signed and dated	✓		
6	Data Package (if required) checked for completeness	✓		

Reviewed by: [signature] Date: 2018/03/26

Comments: Sample GGT114 was re-analyzed due to low recovery of the extracted internal standard.

[signature] 2018/03/26

*Note: 2nd 100% verification review documented by secondary qualified data review
Primary and Secondary Internal Data Review Check must be performed by a different person

Worksheet Data Validation Checklist - Extractable Organics

Worksheet # 5447938 Testcode: PFOSALCM-W

Sample Preparation		yes	no	n/a
1	Samples extracted within hold time	✓		
2	Client sample ID verified against Lab ID (waters & oils)	✓		
3	Parameter list and Client comments reviewed, (Spiking solutions matched to parameter list)	✓		
4	Height of sediment or if sample was decanted, recorded on worksheet	✓		
5	Method required QC processed with samples, maximum batch size = 20 client samples.	✓		
6	Sample, duplicate, matrix spike appear similar, initial sample as well as final extract	✓		
7	Sample weight or initial volume and extract final volume, aliquot factor clearly recorded.	✓		
8	If performed any additional dilution clearly recorded	✓		
9	Matrix spike / Duplicate performed on IOL samples if present			✓
10	Spiking solutions valid (haven't expired), ID and volume used clearly identified on worksheet	✓		
11	Spiking process witnessed and signed off	✓		
12	Extraction type recorded (N3A2B = neutral, 3 x acidic, 2 x basic)			✓
13	Sample prep deviations documented within CompliantPro as a Policy Deviation			✓
14	Job Remarks reviewed on 2nd page of worksheet.	✓		
15	Worksheet and reagent tracking record completed and authorized.	✓		

Reviewed by: SAD Date: 2018/3/20

Comments:

Worksheet Approval		yes	no	n/a
1	Verified the position of the vials in autosampler against sequence list; signed off sequence list			
2	Calibration and CCV standards valid (haven't expired)			
3	Initial calibration curve and DFTPP tune (if applicable) acceptable			
4	Continuing and Final CCV and DFTPP tune (if applicable) acceptable			
5	System performance check acceptable (if applicable)			
6	Internal standard responses acceptable			
7	Method blank meets acceptance criteria			
8	Lab Control Samples recoveries meets acceptance criteria			
9	Duplicate RPD meets acceptance criteria			
10	Matrix spike recoveries meets acceptance criteria			
11	Surrogate recoveries meets acceptance criteria			
12	Appropriate control charts updated			
13	Samples above calibration range diluted and reanalyzed			
14	Dilutions clearly documented on tracking record, inst file and verified during data upload			
15	Samples following high level samples checked for carryover.			
16	Mass spectra ion ratios acceptable for positive results, hardcopy in file.			
17	Analytical observations / anomalies documented			
18	DQW comments entered in LIMS, hardcopy in file			
19	Sample Prep section (above) reviewed and verified.			
20	WS Approval performed in LIMS			

Reviewed by: Date:

Comments:

Worksheet Validation		yes	no	n/a
1	Calibration, QC and sample results reviewed and determined acceptable			
2	Manual integrations verified			
3	Random calculation checked			
4	Data and QC validated in LIMS			
5	Comments reviewed for appropriateness			
6	Reworks / relogs documented in file			
7	Worksheet signed and dated,			
8	Worksheet approved and validated within LIMS			

Reviewed by: Date:

Comments:

WS# : 5447939

Page #: 1/2

Report Name : Worksheet - (Liquids and Solids)

Assignment Date : Tuesday, March 20, 2018

Assigned to : Shahbaz Ahmad

Test Code : PFOSALCM-W

Instrument Id:

Test Description : PFOS and PFOA in water by LC-MS/MS

Sediment mL mL SAD 2018/3/20

Job Number	Sample Number	D	Sample ID	F	% Moisture	Wt or Vol	Final Vol	DF or AF	# Cont	Expiry Date	Test DeadLine	Criteria	Extract Date	
	SPIKE	0	PFOS		0	125	3	1X					2018/03/20	31.2
	SPIKE	1	PFOS		0	125	3	1X					2018/03/20	31.5
	BLANK				0	125	3	1X		SAD 2018/3/20			2018/03/20	28.7
B850056	*GEZ792-01R		CEF-013-085-0318	-	0	125	3	1X	21	2018/03/16	2018/03/19 23:00	DOD	2018/03/20	29.7
B857382	*GGI852-01R		[redacted]	-	0	125	3	1X	2	2018/03/26	2018/03/27 23:00	DOD	2018/03/20	30.0
B859762	*GGT090-01R		[redacted]	-	0	125	3	1X	2	2018/03/28	2018/03/29 23:00	DOD	2018/03/20	31.2
B859762	*GGT091-01R		[redacted]	-	0	125	3	1X	2	2018/03/28	2018/03/29 23:00	DOD	2018/03/20	31.4
B859770	*GGT113-01R		[redacted]	-	20.1	125	3	2X 20X	2	2018/03/29	2018/03/29 23:00	DOD	2018/03/20	31.8
B859770	*GGT114-01R		[redacted]	-	20.1	125	3	2X 20X	2	2018/03/29	2018/03/29 23:00	DOD	2018/03/20	29.6

SAD 2018/3/20

Remarks:

Samples extracted by: Shahbaz Ahmad SAD 2018/3/20

Instrumentation performed by: Date: 2018/03/21

Calculations performed by: Date: 2018/03/01

Validated by: Date: 2018/03/26

Job No.	Rep / Client Name / Remarks	Contact	Client Tier	National
GB850056	SP8 Earth Toxics Inc	Rick Carr	Tier 5 (Enviro.)	
GB857382	nreg, PFOSALCM-W Level IV Package and TetraTech EDD required *PM report results in ng/L Project #: JM10 CECIL			
GB859762	[redacted]			
GB859770				

SAD 2018/3/20

Job	Sample	Lab Comments
	SPIKE	
	SPIKE	
	BLANK	
B850056	GEZ792-01R	
B857382	GGI852-01R	
B859762	GGT090-01R	
B859762	GGT091-01R	
B859770	GGT113-01R	
B859770	GGT114-01R	

S1	2825	25	SR 7430 1/3
S2	2800	50	
S3	2700	150	
S4	2813	37.5	I-5315 2/3
S5	2775	75	
S6	2725	125	
IC4	2788	625	— I-5312 2/3
IB	2850	—	

Folder 20180321 — 2018/3/21

SAD 2018/3/20

Folder ~~20180321~~ 20180326 ~~20180321~~ 20180321\WS# 5447939. 20180326

Worksheet Reagent Tracking Record Worksheet # 5447939

Surrogate/Spike solutions	√	Solution ID #	Conc.	Volume (µL) Blk-Spk Solid	Blk-Spk Liquid	MS Solid	MS Liquid	Samples Solid	Samples Liquid
DGT Spike			100 ug/mL	60	30	60	30	NA	NA
Diquat Dibromide			50 ug/mL	NA	350	NA	350	NA	NA
Explosives Spiking solution A			20 ug/mL	250	100	250	100	NA	NA
Explosives Spiking solution B			20/80 ug/mL	250	100	250	100	NA	NA
Formaldehyde Spike			100 ug/mL	25	25	25	25	NA	NA
Glyphosate Spike			25 ug/mL	500	20	500	20	NA	NA
Nonylphenol Ethoxylate Spike			100 ug/mL	100	100	100	100	NA	NA
Nonylphenol Spike			10 ug/mL	100	100	100	100	NA	NA
Paraquat Cl Tetrahydrate			20 ug/mL	NA	125	NA	125	NA	NA
Perchlorate Standard Spike			10 ng/mL	NA	100	NA	100	NA	NA
Perchlorate Standard Spike			500 ng/mL	40	NA	40	NA	NA	NA
Perchlorate O-18 Internal Standard			0.10 ng/uL	20	20	20	20	20	20
Morpholine Second Source Working Std			2500 ug/L	NA	80	NA	80	NA	NA
Morpholine-D8 Internal Standard			10 ug/mL	NA	50	NA	50	NA	50
Steril Second Source Spiking Solution			NA	20	NA	20	NA	NA	NA
Sterilants Comp. IS Working Solution			3 ug/mL	50	NA	50	NA	50	NA
Comp. PFC Working Solution A	✓	I 5312 2/3	1ug/mL	75	21 (62.5)	75	21 (62.5)	NA	NA
PFC Internal Standard Solution	✓	SI 6819 2/4	50/125 ng/mL	200	100 (150)	200	100 (150)	200	100/150
PFC Injection IS	✓	SI 6807 1/4	400 ng/mL	20	(20)	20	20	20	(20)
ICV	✓	I 5312 2/3							

Solvent/Reagent	√	Lot No.	Date Opened	Solvent/Reagent	√	Lot No.	Date Opened/ Prepared
DCM				50% NaOH			
Ottawa Sand				o-Phosphoric Acid			
Methanol	✓	SHBBUS	2018/3/20	Borax			
2-Propanol (IPA)				Calcium Chloride			
Acetonitrile				EDTA			
Sodium Sulfate				Phosphate Buffer			
70:30 Methanol: Water				Sodium Thiosulphate			
60:40 Water: Methanol	✓	PRLRE	108-433	DNPH			
DCM:Ethyl Ether (75:25)				FMOC			
Hexane:IPA (98:2)				5M Acetate Buffer			
2% Formic Acid	✓	PRLRE	108-434	0.2% NH_4OH	✓	PRLRE	108-439
0.2% Formic Acid				Leachate Fluid			
0.05M KOH				Reagent Water	✓	SBOOM	2018/8/19
0.05M HCl							

*Spiked by: SHD

Spike Date: 2018/3/20

Spike Syringe/Pipette ID#: G2H3906

Int. Std Syringe/Pipette ID#: K19609D

*Spiking Witnessed by: EGI

Final pH:

Equipment & ID	√	Equipment	ID#	√	Equipment	Lot #
Pipettor G2H3906 K19609D	✓	SPE Cartridge	6034372407A		QC Balance ID	
		Filter			Thermometer ID &Temp	
Dispenser	✓	Centrifuge	42148683			
		Sonicator				

Bottle Tracking SAP 2018/3/20

Bottle# 18778/18801

Cap# 18778

Systems plus Lot# 18-02-01

Comments: Env Can 96489

Worksheet Number: **5447939**

PFOS and PFOA in water by SPE/LCMS - Water

ug/L

Parameter Name	Units	SPIKE	SPIKE Dup1	BLANK	B850056 GEZ792 ReWork	B857382 GGI852	B859762 GGT090
6:2 Fluorotelomer sulfonate	ug/L	86.66952	96.74749	0	N/A*******	0	0
8:2 Fluorotelomer sulfonate	ug/L	86.87542	90.50406	0	N/A*******	0	0
N-ethylperfluorooctane sulfonamide	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
EtFOSAA	ug/L	84.62853	91.23744	0	N/A*******	0	0
N-ethylperfluorooctane sulfonamidoe	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
N-methylperfluorooctane sulfonamide	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
MeFOSAA	ug/L	89.67789	92.52755	0	N/A*******	0	0
N-methylperfluorooctanesulfonamidol	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
Perfluorobutanoic acid	ug/L	93.86159	97.96831	0	N/A*******	0	0
Perfluorobutane Sulfonate (PFBS)	ug/L	93.47805	88.14246	0	N/A*******	0	0
Perfluorodecane Sulfonate	ug/L	85.94943	86.31201	0	N/A*******	0	0
Perfluoroheptanoic Acid (PFHpA)	ug/L	92.81191	98.92247	0	N/A*******	0	0
Perfluoroheptane sulfonate	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
Perfluorohexanoic Acid (PFHxA)	ug/L	91.66486	95.16917	0	N/A*******	0	0
Perfluorohexane Sulfonate (PFHxS)	ug/L	93.20178	92.44287	0	N/A*******	0	0
Perfluorononanoic Acid (PFNA)	ug/L	87.49701	94.88860	0	N/A*******	0	0
Perfluorooctane Sulfonamide (PFOSA)	ug/L	88.95696	96.46715	0	N/A*******	0	0
Perfluoropentanoic Acid (PFPeA)	ug/L	87.22543	93.15077	0	N/A*******	0	0
Perfluorotetradecanoic Acid	ug/L	90.54473	100.21490	0	0	0	0
Perfluorotridecanoic Acid	ug/L	88.06048	97.25393	0	0	0	0
Perfluoroundecanoic Acid (PFUnA)	ug/L	93.98135	97.33334	0	N/A*******	0	0
Perfluorodecanoic Acid (PFDA)	ug/L	89.33317	95.51003	0	N/A*******	0	0
Perfluorododecanoic Acid (PFDoA)	ug/L	87.60730	96.59563	0	N/A*******	0	0
Perfluoro-n-Octanoic Acid (PFOA)	ug/L	94.79802	100.32860	0	N/A*******	0	0
Perfluorooctane Sulfonate (PFOS)	ug/L	94.47106	98.24379	0	N/A*******	0	0
13C2-6:2 Fluorotelomer sulfonate	ug/L	97.1375389	98.3827465	111.397265	N/A*******	111.281186	112.448451
13C2-8:2 Fluorotelomer sulfonate	ug/L	80.7118401	88.6072659	92.3028145	N/A*******	88.8315113	97.1426468
13C2-perfluorotetradecanoic acid	ug/L	75.4702371	77.4190309	79.5965168	54.4522547	66.3884418	81.9508801
13C4-Perfluorobutanoic acid	ug/L	83.8402360	89.4870741	92.1022358	N/A*******	89.7758531	87.6972968
D3-MeFOSAA	ug/L	68.9232393	69.6778090	75.0111093	N/A*******	73.5326972	75.3636349
D5-EtFOSAA	ug/L	69.2657445	71.1308849	75.5805992	N/A*******	71.5740836	73.7589094
N-methyl-d3-perfluorooctane sulfona	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
N-ethyl-d5-perfluorooctane sulfonam	ug/L	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******	N/A*******
13C2-Perfluorodecanoic acid	ug/L	82.5487873	90.3631495	89.5311882	N/A*******	84.9620722	96.0341897
13C2-Perfluorododecanoic acid	ug/L	79.3704986	81.5400846	83.3359674	N/A*******	76.5194296	84.8788083
13C2-Perfluorohexanoic acid	ug/L	82.7650921	90.7728364	90.1398797	N/A*******	88.1590040	92.4239075
13C2-Perfluoroundecanoic acid	ug/L	78.4711461	87.2657465	79.0172446	N/A*******	78.1022872	91.8516048
13C4-Perfluoroheptanoic acid	ug/L	81.9706712	86.9198492	92.1021832	N/A*******	88.2773346	96.0346305
13C5-Perfluorononanoic acid	ug/L	84.2352294	88.1139115	88.7884568	N/A*******	86.5456625	95.9542502
13C4-Perfluorooctanoic acid	ug/L	80.4532625	86.3358616	91.2040445	N/A*******	87.3384685	95.0174548
13C4-Perfluorooctanesulfonate	ug/L	78.6642232	86.2751974	79.5847148	N/A*******	78.3266267	88.1091365
13C5-Perfluoropentanoic acid	ug/L	84.7831519	90.4276669	93.2562419	N/A*******	89.9170139	92.8194762
13C8-Perfluorooctane Sulfonamide	ug/L	76.9507024	83.7908590	85.6916357	N/A*******	81.7616578	88.7283988
18O2-Perfluorohexanesulfonate	ug/L	81.5824737	89.7187500	87.5476956	N/A*******	89.5606393	84.6439768

PFOS and PFOA in water by SPE/LCMS - Water

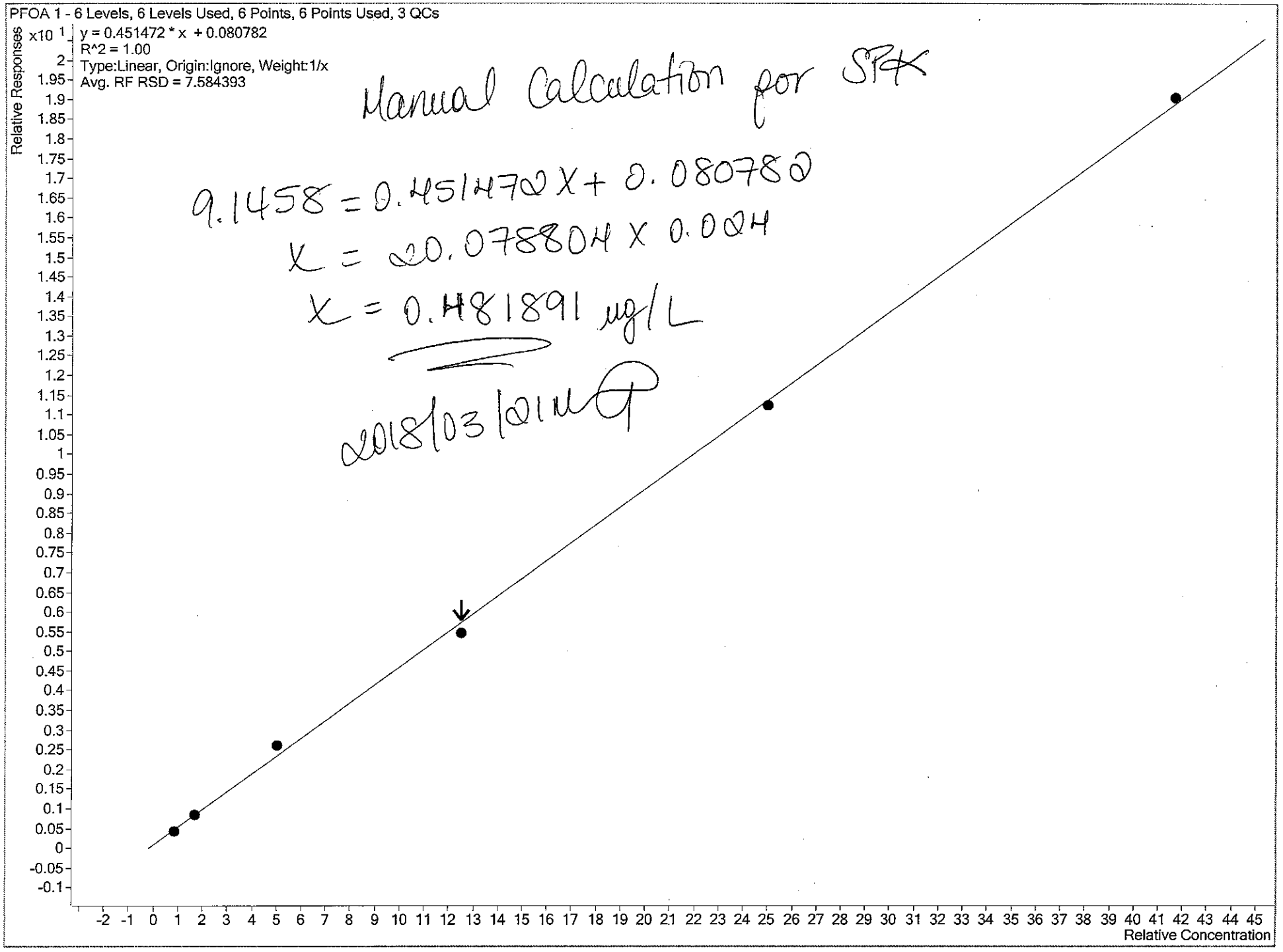
ug/L

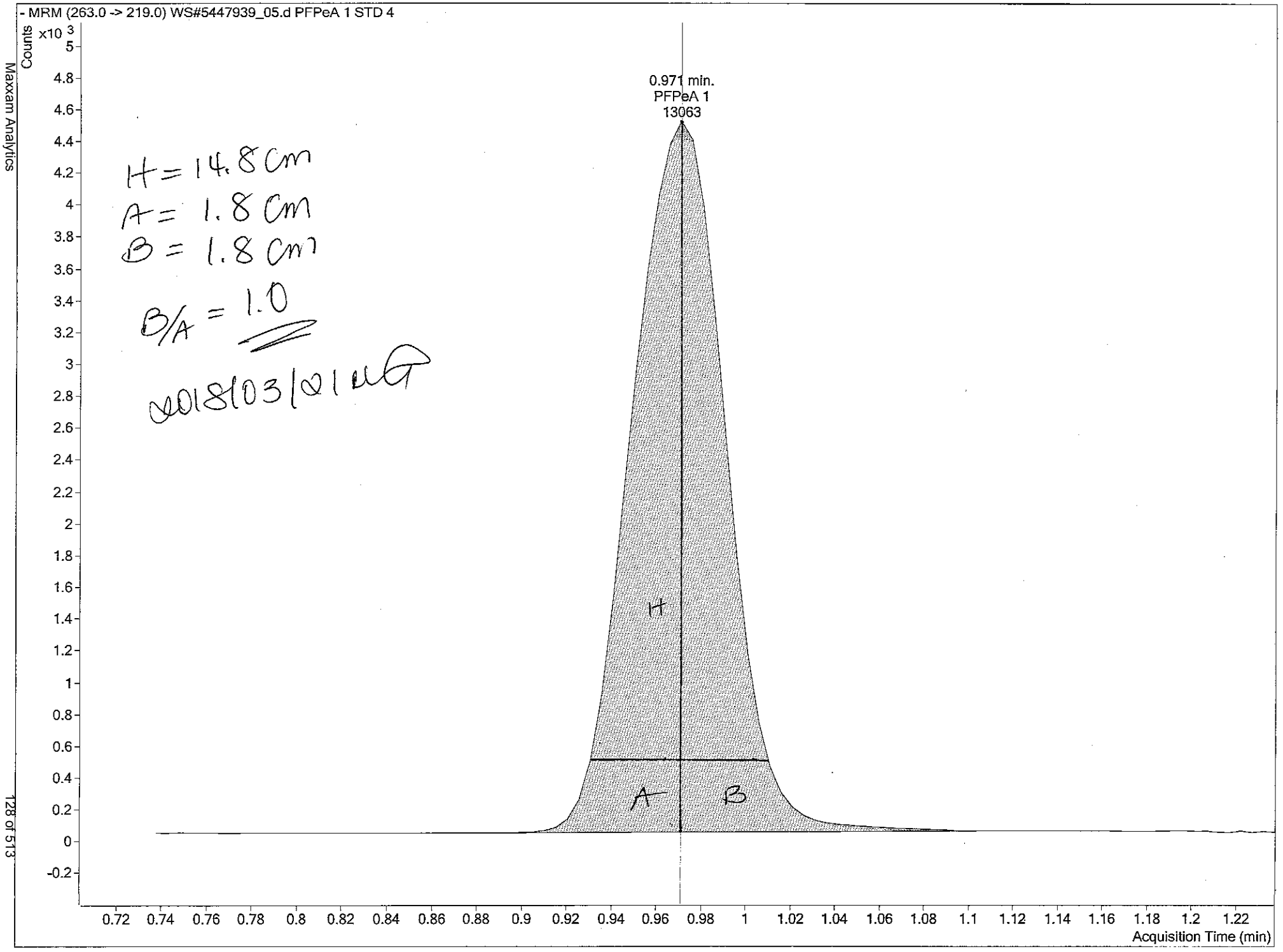
Parameter Name	B859762 GGT091	DL	B859770 GGT113	DL	B859770 GGT114	DL	RDL
6:2 Fluorotelomer sulfonate	0.00045260	0.02	1.72652684	0.04	2.42603428	0.4	0.02
8:2 Fluorotelomer sulfonate	0	0.02	0.24902161	0.04	0.16887924	0.04	0.02
N-ethylperfluorooctane sulfonamide	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
EtFOSAA	0	0.02	0	0.04	0	0.04	0.02
N-ethylperfluorooctane sulfonamidoe	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
N-methylperfluorooctane sulfonamide	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
MeFOSAA	0	0.02	0	0.04	0	0.04	0.02
N-methylperfluorooctanesulfonamidol	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
Perfluorobutanoic acid	0	0.02	0.37052172	0.04	0.68308683	0.04	0.02
Perfluorobutane Sulfonate (PFBS)	0	0.02	0.61624511	0.04	1.52525342	0.04	0.02
Perfluorodecane Sulfonate	0	0.02	0	0.04	0	0.04	0.02
Perfluoroheptanoic Acid (PFHpA)	0	0.02	0.38058931	0.04	0.74685532	0.04	0.02
Perfluoroheptane sulfonate	N/A*******	0.02	N/A*******	0.04	N/A*******	0.04	0.02
Perfluorohexanoic Acid (PFHxA)	0	0.02	1.90971467	0.04	3.71468595	0.4	0.02
Perfluorohexane Sulfonate (PFHxS)	0	0.02	5.16394589	0.4	8.49835173	0.4	0.02
Perfluorononanoic Acid (PFNA)	0	0.02	0.03812041	0.04	0	0.04	0.02
Perfluorooctane Sulfonamide (PFOSA)	0	0.02	0.05641908	0.04	0.00659638	0.04	0.02
Perfluoropentanoic Acid (PFPeA)	0	0.02	0.83662200	0.04	1.78169736	0.04	0.02
Perfluorotetradecanoic Acid	0	0.02	0	0.04	0	0.04	0.02
Perfluorotridecanoic Acid	0	0.02	0	0.04	0	0.04	0.02
Perfluoroundecanoic Acid (PFUnA)	0	0.02	0	0.04	0	0.04	0.02
Perfluorodecanoic Acid (PFDA)	0	0.02	0	0.04	0	0.04	0.02
Perfluorododecanoic Acid (PFDoA)	0	0.02	0	0.04	0	0.04	0.02
Perfluoro-n-Octanoic Acid (PFOA)	0	0.02	1.00464788	0.04	2.50060767	0.4	0.02
Perfluorooctane Sulfonate (PFOS)	0.00009326	0.02	10.4223255	0.4	5.70900648	0.4	0.02
13C2-6:2 Fluorotelomer sulfonate	113.861691		90.7861834		137.431611		
13C2-8:2 Fluorotelomer sulfonate	95.5202639		85.8231915		112.606411		
13C2-perfluorotetradecanoic acid	77.0870854		80.3028407		108.455845		
13C4-Perfluorobutanoic acid	94.5564481		91.8194118		110.624512		
D3-MeFOSAA	83.4468888		77.9364793		125.158719		
D5-EtFOSAA	82.7982545		82.5061906		133.294302		
N-methyl-d3-perfluorooctane sulfona	N/A*******		N/A*******		N/A*******		
N-ethyl-d5-perfluorooctane sulfonam	N/A*******		N/A*******		N/A*******		
13C2-Perfluorodecanoic acid	89.8824940		90.5547144		118.128232		
13C2-Perfluorododecanoic acid	82.0296333		80.5612934		114.974697		
13C2-Perfluorohexanoic acid	94.6865820		92.2951662		122.115769		
13C2-Perfluoroundecanoic acid	82.9571122		82.5161819		117.882043		
13C4-Perfluoroheptanoic acid	92.7965325		92.7014884		117.310048		
13C5-Perfluorononanoic acid	89.4148982		98.7996036		130.0671		
13C4-Perfluorooctanoic acid	95.4403752		95.4485686		102.489814		
13C4-Perfluorooctanesulfonate	86.8762937		91.4191632		118.719268		
13C5-Perfluoropentanoic acid	94.2345806		96.1939176		114.929700		
13C8-Perfluorooctane Sulfonamide	86.8943392		80.6449334		112.657011		
18O2-Perfluorohexanesulfonate	92.7783560		95.7160676		121.606767		

PFOS and PFOA in water by SPE/LCMS - Water

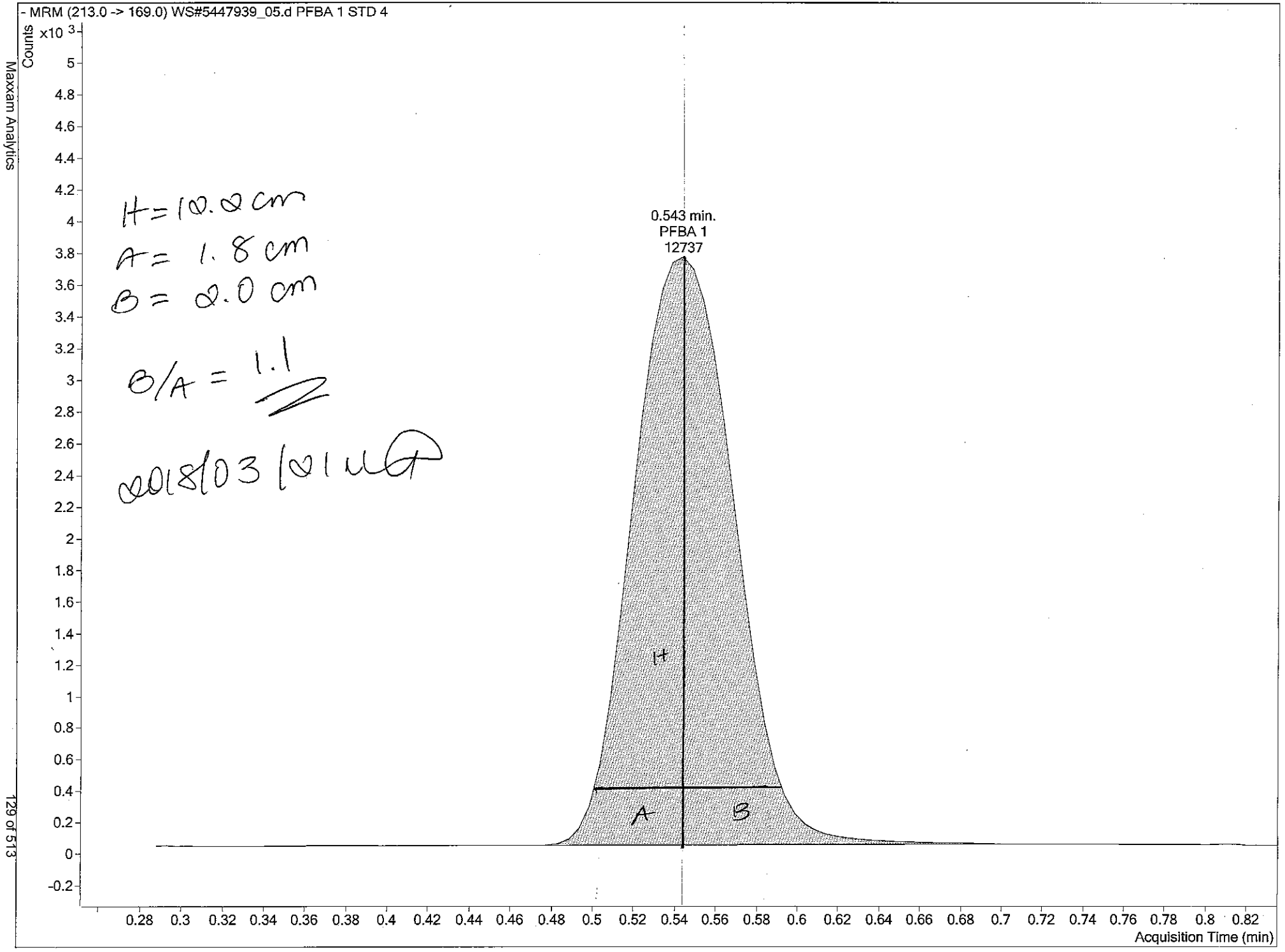
ug/L

Parameter Name	MDL	IDL					
6:2 Fluorotelomer sulfonate	0.0066	0					
8:2 Fluorotelomer sulfonate	0.0066	0					
N-ethylperfluorooctane sulfonamide	0.01	0					
EtFOSAA	0.0033	0					
N-ethylperfluorooctane sulfonamidoe	0.0079	0					
N-methylperfluorooctane sulfonamide	0.013	0					
MeFOSAA	0.0029	0					
N-methylperfluorooctanesulfonamidol	0.012	0					
Perfluorobutanoic acid	0.0055	0					
Perfluorobutane Sulfonate (PFBS)	0.0054	0					
Perfluorodecane Sulfonate	0.006	0					
Perfluoroheptanoic Acid (PFHpA)	0.0074	0					
Perfluoroheptane sulfonate	0.008	0					
Perfluorohexanoic Acid (PFHxA)	0.0035	0					
Perfluorohexane Sulfonate (PFHxS)	0.0056	0					
Perfluorononanoic Acid (PFNA)	0.0087	0					
Perfluorooctane Sulfonamide (PFOSA)	0.0034	0					
Perfluoropentanoic Acid (PFPeA)	0.0075	0					
Perfluorotetradecanoic Acid	0.0027	0					
Perfluorotridecanoic Acid	0.0038	0					
Perfluoroundecanoic Acid (PFUnA)	0.0025	0					
Perfluorodecanoic Acid (PFDA)	0.0061	0					
Perfluorododecanoic Acid (PFDoA)	0.005	0					
Perfluoro-n-Octanoic Acid (PFOA)	0.0033	0					
Perfluorooctane Sulfonate (PFOS)	0.006	0					
13C2-6:2 Fluorotelomer sulfonate							
13C2-8:2 Fluorotelomer sulfonate							
13C2-perfluorotetradecanoic acid							
13C4-Perfluorobutanoic acid							
D3-MeFOSAA							
D5-EtFOSAA							
N-methyl-d3-perfluorooctane sulfona							
N-ethyl-d5-perfluorooctane sulfonam							
13C2-Perfluorodecanoic acid							
13C2-Perfluorododecanoic acid							
13C2-Perfluorohexanoic acid							
13C2-Perfluoroundecanoic acid							
13C4-Perfluoroheptanoic acid							
13C5-Perfluorononanoic acid							
13C4-Perfluorooctanoic acid							
13C4-Perfluorooctanesulfonate							
13C5-Perfluoropentanoic acid							
13C8-Perfluorooctane Sulfonamide							
18O2-Perfluorohexanesulfonate							


PFOA 1 - 6 Levels, 6 Levels Used, 6 Points, 6 Points Used, 3 QCs
y = 0.451472 * x + 0.080782
R^2 = 1.00
Type:Linear, Origin:Ignore, Weight:1/x
Avg. RF RSD = 7.584393
Relative Responses
x10 1
Relative Concentration
Manual Calculation for SPK
9.1458 = 0.451472 X + 0.080782
X = 20.078804 X 0.024
X = 0.481891 µg/L
2018/03/21



H = 14.8 cm
A = 1.8 cm
B = 1.8 cm
B/A = 1.0
2018/03/21 [illegible]



Maxxam Analytics

Report Name: Worksheet - Parameter Lists

Report Date: 2018/03/20

Test Code: **PFOSALCM-W**

Worksheet Number: **5447939**

Sample Number	Parameter Code	Parameter	
GEZ792-01	PFTEDA	Perfluorotetradecanoic Acid	
	PFTRDA	Perfluorotridecanoic Acid	
GGI852-01	6:2FTS	6:2 Fluorotelomer sulfonate	*
GGT090-01	8:2FTS	8:2 Fluorotelomer sulfonate	*
GGT091-01	ETFOSAA	EtFOSAA	*
GGT113-01	MEFOSAA	MeFOSAA	*
GGT114-01	PFBA	Perfluorobutanoic acid	
	PFBS	Perfluorobutane Sulfonate (PFBS)	
	PFDS	Perfluorodecane Sulfonate	
	PFHPA	Perfluoroheptanoic Acid (PFHpA)	
	PFHXA	Perfluorohexanoic Acid (PFHxA)	
	PFHXS	Perfluorohexane Sulfonate (PFHxS)	
	PFNA	Perfluorononanoic Acid (PFNA)	
	PFOSA	Perfluorooctane Sulfonamide (PFOSA)	
	PFPEA	Perfluoropentanoic Acid (PFPeA)	
	PFTEDA	Perfluorotetradecanoic Acid	
	PFTRDA	Perfluorotridecanoic Acid	
	PFUNA	Perfluoroundecanoic Acid (PFUnA)	
	PFDA	Perfluorodecanoic Acid (PFDA)	
	PFDOA	Perfluorododecanoic Acid (PFDoA)	
	PFOA	Perfluoro-n-Octanoic Acid (PFOA)	
	PFOS	Perfluorooctane Sulfonate (PFOS)	

SAD
2018/3/20

* - This parameter is usually off, but will be reported for this group of samples!

WorkSheet 5447939 Instrument Sequences

1.	5447939:SPIKE	SPIKE
2.	5447939:SPIKE:D1	SPIKE :D1
3.	5447939:BLANK	BLANK
4.	5447939:GEZ792-01	CEF-013-085-0318
5.	5447939:GGI852-01	[redacted]
6.	5447939:GGT090-01	[redacted]
7.	5447939:GGT091-01	[redacted]
8.	5447939:GGT113-01	[redacted]
9.	5447939:GGT114-01	[redacted]

SAP
2018/5/30

Worklist Report

Agilent Technologies

Maxxam Analytics

Instrument Name: LCMS04 **Worklist Path:** D:\MassHunter\Worklists\PFCs\PFC_180321_Low.wkl

Operator Name: ---
Run Type: Standard Start
Part of Method to Run: Acquisition Only
Execution of Acquisition-DA: Synchronous
Acquisition Method Path: D:\MassHunter\Acquisition Method
DA Method Path: D:\MassHunter\methods
Data File Path: D:\MassHunter\Data\PFC\20180321\WS#5447939
Pre-Worklist Script: ---
Post-Worklist Script: SCP_InstrumentStandby(){MH_Acq_Scripts.exe}
Acquisition Clean Up Script: ---
Overlapped Injection: Yes
Clear Sample Selection After Run: Yes
Wait Time for Ready(Min): 10
Threshold Disk Value(GB): 10
Comment: Column #209
MP A1: Solution# 308 (FSRE18)
MP B1: Methanol (Lot# SHBJ8485), Sigma

2018/03/21

Verified by
AD
2018/03/21

Plate Barcode:

Plate	Barcode
P3	
P1	

Worklist Table

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
1	Solvent	P1-A1	PFC_Water_Low.m	WS#5447939_01.d	Sample		As Method	-
2	STD 1	P1-A2	PFC_Water_Low.m	WS#5447939_02.d	Calibration	STD 1	As Method	-
3	STD 2	P1-A3	PFC_Water_Low.m	WS#5447939_03.d	Calibration	STD 2	As Method	-
4	STD 3	P1-A4	PFC_Water_Low.m	WS#5447939_04.d	Calibration	STD 3	As Method	-
5	STD 4	P1-A5	PFC_Water_Low.m	WS#5447939_05.d	Calibration	STD 4	As Method	-
6	STD 5	P1-A6	PFC_Water_Low.m	WS#5447939_06.d	Calibration	STD 5	As Method	-

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Worklist Report

Agilent Technologies

Maxxam Analytics

	Sample Name	Sample Position	Method	Data File	Sample Type	Level Name	Inj Vol (µl)	Comment
7	STD 6	P1-A7	PFC_Water_Low.m	WS#5447939_07.d	Calibration	STD 6	As Method	-
8	IB	P1-A8	PFC_Water_Low.m	WS#5447939_08.d	Sample		As Method	-
9	ICV	P1-A9	PFC_Water_Low.m	WS#5447939_09.d	QC	ICV	As Method	-
10	ISC	P1-A2	PFC_Water_Low.m	WS#5447939_10.d	ConCal	STD 1	As Method	-
11	5447939:BLANK	P1-B1	PFC_Water_Low.m	WS#5447939_11.d	Sample		As Method	-
12	5447939:SPIKE	P1-B2	PFC_Water_Low.m	WS#5447939_12.d	QC	ICV	As Method	-
13	5447939:SPIKE:D1	P1-B3	PFC_Water_Low.m	WS#5447939_13.d	QC	ICV	As Method	-
14	5447939:GEZ792-01	P1-B4	PFC_Water_Low.m	WS#5447939_14.d	Sample		As Method	-
15	5447939:GGI852-01	P1-B5	PFC_Water_Low.m	WS#5447939_15.d	Sample		As Method	-
16	5447939:GGT090-01	P1-B6	PFC_Water_Low.m	WS#5447939_16.d	Sample		As Method	-
17	5447939:GGT091-01	P1-B7	PFC_Water_Low.m	WS#5447939_17.d	Sample		As Method	-
18	5447939:GGT113-01:20x	P1-B8	PFC_Water_Low.m	WS#5447939_18.d	Sample		As Method	-
19	5447939:GGT113-01:2x	P1-B9	PFC_Water_Low.m	WS#5447939_19.d	Sample		As Method	-
20	IB	P1-A8	PFC_Water_Low.m	WS#5447939_20.d	Sample		As Method	-
21	5447939:GGT114-01:20x	P1-C1	PFC_Water_Low.m	WS#5447939_21.d	Sample		As Method	-
22	5447939:GGT114-01:2x	P1-C2	PFC_Water_Low.m	WS#5447939_22.d	Sample		As Method	-
23	IB	P1-A8	PFC_Water_Low.m	WS#5447939_23.d	Sample		As Method	-
24	CCV	P1-A5	PFC_Water_Low.m	WS#5447939_24.d	ConCal	STD 4	As Method	-

FINAL INJECTION SEQUENCE

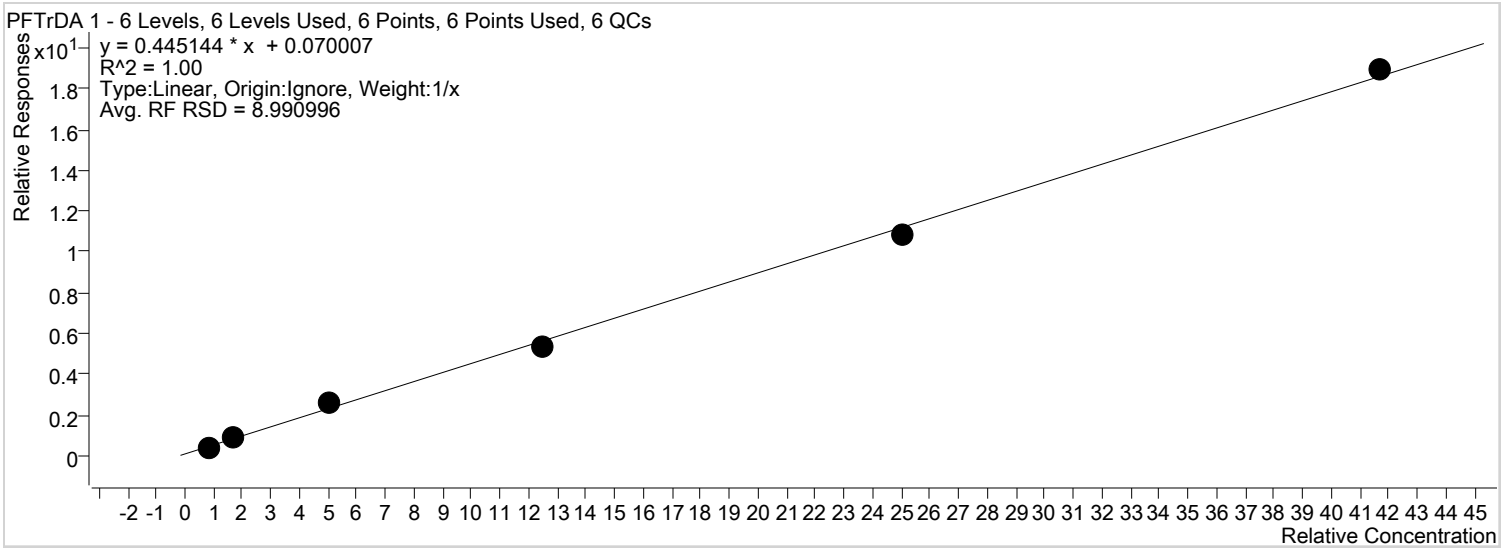
Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
STD 1	-	2018/03/21 1:49 PM	PFC_Water_Low.m	WS#5447939_02.d	P1-A2
STD 2	-	2018/03/21 1:54 PM	PFC_Water_Low.m	WS#5447939_03.d	P1-A3
STD 3	-	2018/03/21 1:59 PM	PFC_Water_Low.m	WS#5447939_04.d	P1-A4
STD 4	-	2018/03/21 2:04 PM	PFC_Water_Low.m	WS#5447939_05.d	P1-A5
STD 5	-	2018/03/21 2:09 PM	PFC_Water_Low.m	WS#5447939_06.d	P1-A6
STD 6	-	2018/03/21 2:14 PM	PFC_Water_Low.m	WS#5447939_07.d	P1-A7
IB	-	2018/03/21 2:19 PM	PFC_Water_Low.m	WS#5447939_08.d	P1-A8
ICV	-	2018/03/21 2:24 PM	PFC_Water_Low.m	WS#5447939_09.d	P1-A9
ISC	-	2018/03/21 2:29 PM	PFC_Water_Low.m	WS#5447939_10.d	P1-A2
5447939:BLANK	Reported for all except 6:2-FTS.	2018/03/21 2:34 PM	PFC_Water_Low.m	WS#5447939_11.d	P1-B1
5447939:SPIKE	Reported for all except 6:2-FTS.	2018/03/21 2:38 PM	PFC_Water_Low.m	WS#5447939_12.d	P1-B2
5447939:SPIKE:D1	Reported for all except 6:2-FTS.	2018/03/21 2:43 PM	PFC_Water_Low.m	WS#5447939_13.d	P1-B3
5447939:GEZ792-01	Reported for PFTeDA, PFTrDA only.	2018/03/21 2:53 PM	PFC_Water_Low.m	WS#5447939_14.d	P1-B4
5447939:GGI852-01	Reported for all except 6:2-FTS.	2018/03/21 2:58 PM	PFC_Water_Low.m	WS#5447939_15.d	P1-B5
5447939:GGT090-01	Reported for all except 6:2-FTS.	2018/03/21 3:03 PM	PFC_Water_Low.m	WS#5447939_16.d	P1-B6
5447939:GGT091-01	Reported for all except 6:2-FTS.	2018/03/21 3:08 PM	PFC_Water_Low.m	WS#5447939_17.d	P1-B7
5447939:GGT113-01:20x	Reported for PFHxS, PFOS only.	2018/03/21 3:13 PM	PFC_Water_Low.m	WS#5447939_18.d	P1-B8
5447939:GGT113-01:2x	Reported for all except 6:2-FTS, PFHxS, PFOS.	2018/03/21 3:18 PM	PFC_Water_Low.m	WS#5447939_19.d	P1-B9
IB	-	2018/03/21 3:22 PM	PFC_Water_Low.m	WS#5447939_20.d	P1-A8
5447939:GGT114-01:20x	Reported for PFHxA, PFHxS, PFOA, PFOS only.	2018/03/21 3:27 PM	PFC_Water_Low.m	WS#5447939_21.d	P1-C1
5447939:GGT114-01:2x	Reported for all except 6:2-FTS, PFHxA, PFHxS, PF	2018/03/21 3:32 PM	PFC_Water_Low.m	WS#5447939_22.d	P1-C2
IB	-	2018/03/21 3:37 PM	PFC_Water_Low.m	WS#5447939_23.d	P1-A8
CCV	-	2018/03/21 3:42 PM	PFC_Water_Low.m	WS#5447939_24.d	P1-A5
STD 6	-	2018/03/21 5:41 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_07.d	P1-A7
IB	-	2018/03/21 5:46 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_08.d	P1-A8
ISC	-	2018/03/21 5:56 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_10.d	P1-A2
5447939:BLANK	Reported for 6:2FTS only	2018/03/21 6:01 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_11.d	P1-B1
5447939:SPIKE	Reported for 6:2FTS only	2018/03/21 6:06 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_12.d	P1-B2
5447939:SPIKE:D1	Reported for 6:2FTS only	2018/03/21 6:11 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_13.d	P1-B3
5447939:GEZ792-01	Reported for 6:2FTS only	2018/03/21 6:15 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_14.d	P1-B4
5447939:GGI852-01	Reported for 6:2FTS only	2018/03/21 6:20 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_15.d	P1-B5
5447939:GGT090-01	Reported for 6:2FTS only	2018/03/21 6:25 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_16.d	P1-B6
5447939:GGT091-01	Reported for 6:2FTS only	2018/03/21 6:30 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_17.d	P1-B7

FINAL INJECTION SEQUENCE

Sample					
Name	Comment	Acq. Date-Time	Acq. Method File	Data File	Pos.
5447939:GGT113-01:20x	Not used	2018/03/21 6:35 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_18.d	P1-B8
5447939:GGT113-01:2x	Reported for 6:2FTS only	2018/03/21 6:40 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_19.d	P1-B9
IB	-	2018/03/21 6:45 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_20.d	P1-A8
5447939:GGT114-01:20x	Reported for 6:2FTS only	2018/03/21 6:50 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_21.d	P1-C1
5447939:GGT114-01:2x	Not used	2018/03/21 6:55 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_22.d	P1-C2
IB	-	2018/03/21 7:00 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_23.d	P1-A8
CCV	-	2018/03/21 7:05 PM	PFC_Water_Low.m	WS#5447939_6-2FTS_24.d	P1-A5

Batch Path T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics.batch.bin
Last Calib Update 2018/03/27 7:44:59 AM
Instrument: LCMS04

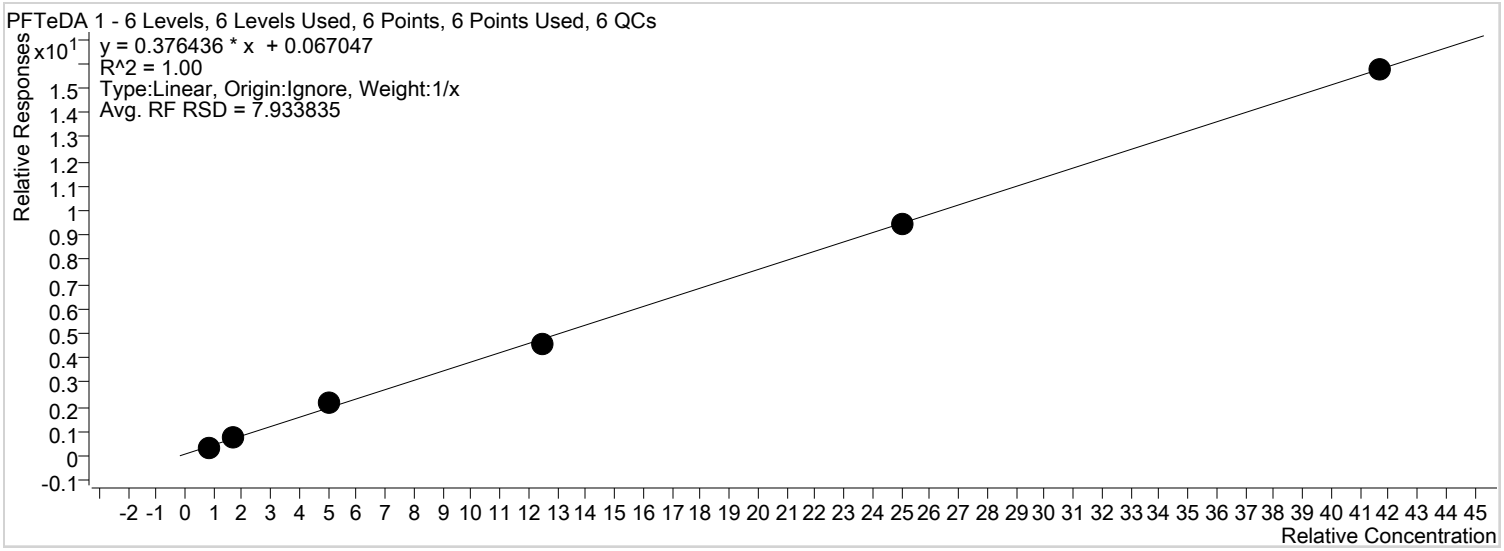
Analyte: PFTrDA 1
Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/21 1:49:36 PM	0.83	0.70	2534	0.4617	41	84.8
STD 2	STD 2	x	2018/03/21 1:54:31 PM	1.70	1.83	5864	0.5200	93	107.6
STD 3	STD 3	x	2018/03/21 1:59:26 PM	5.00	5.73	17877	0.5239	299	114.5
STD 4	STD 4	x	2018/03/21 2:04:21 PM	12.50	11.80	35196	0.4258	481	94.4
STD 5	STD 5	x	2018/03/21 2:09:18 PM	25.00	24.24	71299	0.4344	1092	97.0
STD 6	STD 6	x	2018/03/21 2:14:16 PM	41.70	42.43	130033	0.4546	1548	101.8

Batch Path T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics.batch.bin
Last Calib Update 2018/03/27 7:44:59 AM
Instrument: LCMS04

Analyte: PFTeDA 1
Internal Standard: MPFTeDA



Sample	Level	Enabled	Acquisition Time	Exp. Conc.	Concentration	Response	RF	S/N	Accuracy
STD 1	STD 1	x	2018/03/21 1:49:36 PM	0.83	0.71	2216	0.4038	36	85.8
STD 2	STD 2	x	2018/03/21 1:54:31 PM	1.70	1.80	4937	0.4378	84	105.8
STD 3	STD 3	x	2018/03/21 1:59:26 PM	5.00	5.64	14958	0.4383	324	112.9
STD 4	STD 4	x	2018/03/21 2:04:21 PM	12.50	11.97	30245	0.3659	470	95.8
STD 5	STD 5	x	2018/03/21 2:09:18 PM	25.00	24.96	62130	0.3786	947	99.8
STD 6	STD 6	x	2018/03/21 2:14:16 PM	41.70	41.64	107975	0.3775	1198	99.9

Quantitation Results

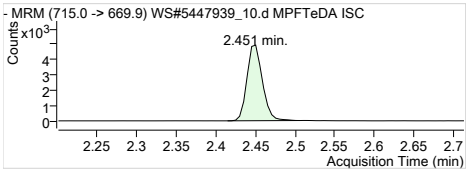
Agilent Technologies

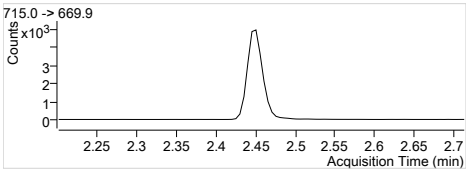
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**ISC**	**Instrument**	LCMS04
Data File	WS#5447939_10.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A2
Acq. Date	2018/03/21 2:29:06 PM	**Injection Volume**	Per Method
Sample Annotation	-		

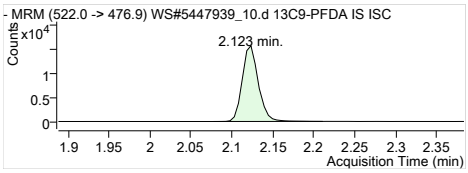
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6611	2.45	1 µg/L		
13C9-PFDA IS	21333	2.12	1 µg/L		

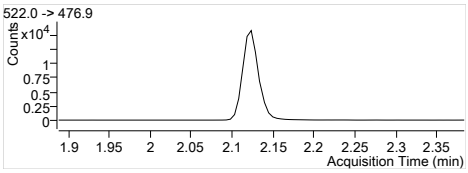
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	2620	2.38	0.83	0.73 µg/L	88.32
PFTeDA 1	2511	2.45	0.83	0.83 µg/L	100.11
13C2-PFTeDA	6611	2.45	100.00	96.56 µg/L	96.56
13C9-PFDA	21333	2.12	100.00	102.01 µg/L	102.01



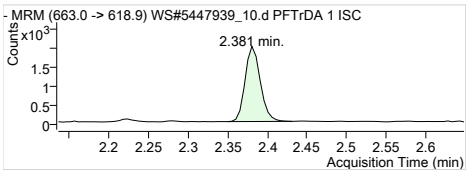


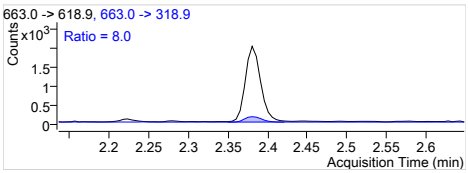
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: CC



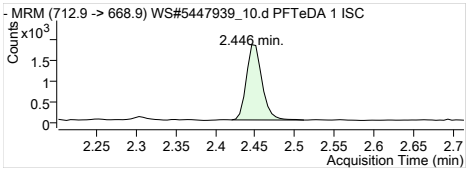


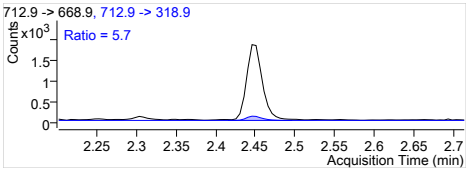
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: CC



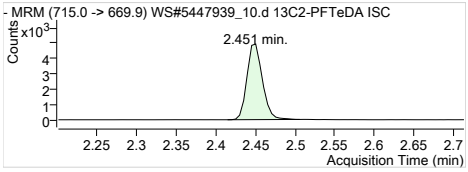


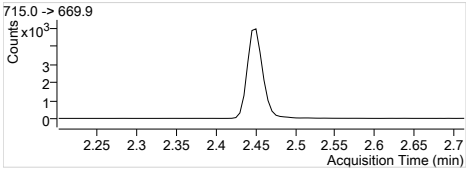
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 0.73 µg/L
Area ratio: 0.39631
Sample type: CC



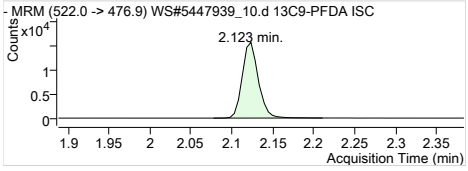


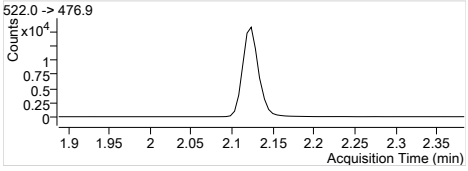
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.446 (2.446)
Calc. conc. 0.83 µg/L
Area ratio: 0.37982
Sample type: CC





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 96.56 µg/L
Area ratio: 0.30990
Sample type: CC





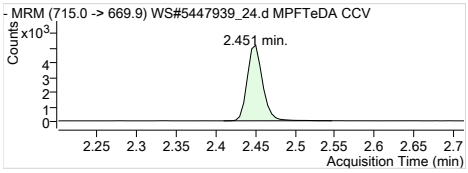
13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 102.01 µg/L
Area ratio: 0
Sample type: CC

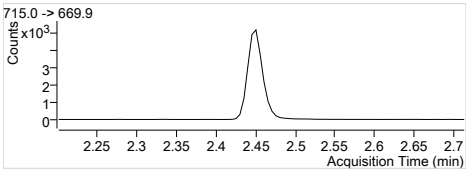
Batch Path	T:\lcms4\PFC\20180321\WS#5447939\QuantResults\PFC_Water_Low_180321_WS#5447939A_EToxics

Sample Name	**CCV**	**Instrument**	LCMS04
Data File	WS#5447939_24.d	**Operator**	
Sample Type	CC	**Dilution**	1
Acq. Method	PFC_Water_Low.m	**Position**	P1-A5
Acq. Date	2018/03/21 3:42:41 PM	**Injection Volume**	Per Method
Sample Annotation	-		

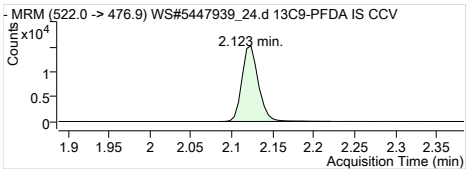
ISTD Compounds	Response	RT	Target conc.		
MPFTeDA	6927	2.45	1 µg/L		
13C9-PFDA IS	21028	2.12	1 µg/L		

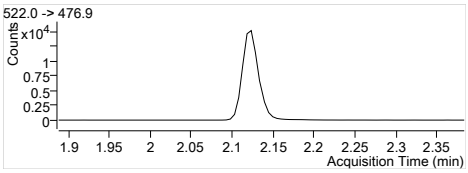
Compound	Response	RT	Target Conc.	Calc. Conc.	Accuracy
PFTrDA 1	35740	2.38	12.50	11.43 µg/L	91.47
PFTeDA 1	30951	2.45	12.50	11.69 µg/L	93.53
13C2-PFTeDA	6927	2.45	100.00	102.65 µg/L	102.65
13C9-PFDA	21028	2.12	100.00	100.56 µg/L	100.56



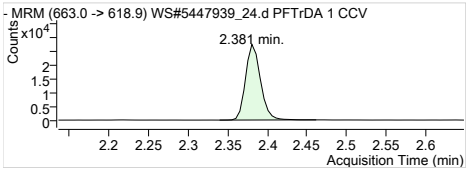


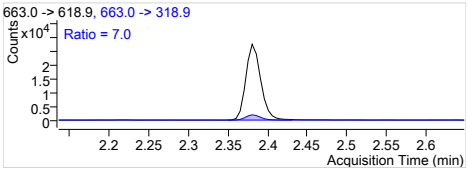
MPFTeDA Internal Standard
RT (Exp. RT): 2.451 (2.446)
Concentration: 1 µg/L
Sample type: CC



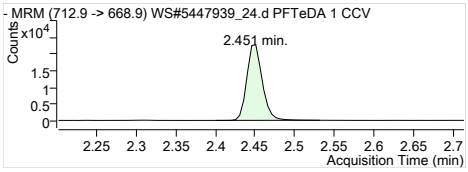


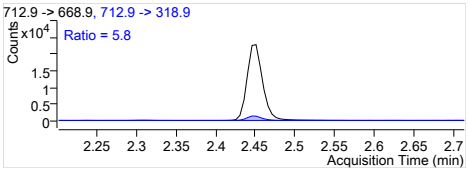
13C9-PFDA IS Internal Standard
RT (Exp. RT): 2.123 (2.118)
Concentration: 1 µg/L
Sample type: CC



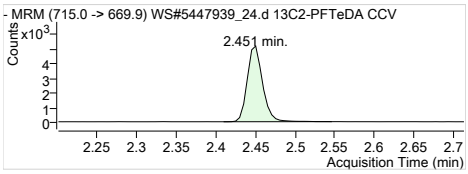


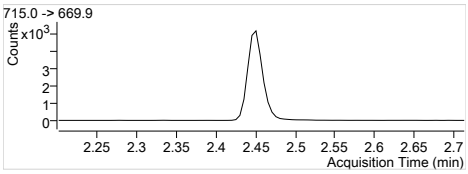
PFTrDA 1 663.0 -> 618.9
RT (Exp. RT): 2.381 (2.381)
Calc. conc. 11.43 µg/L
Area ratio: 5.15952
Sample type: CC



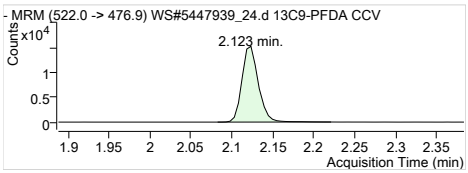


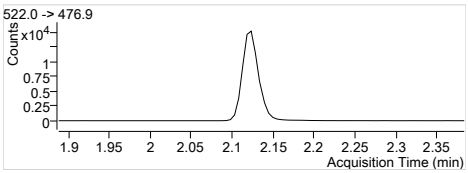
PFTeDA 1 712.9 -> 668.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 11.69 µg/L
Area ratio: 4.46817
Sample type: CC





13C2-PFTeDA 715.0 -> 669.9
RT (Exp. RT): 2.451 (2.446)
Calc. conc. 102.65 µg/L
Area ratio: 0.32942
Sample type: CC





13C9-PFDA 522.0 -> 476.9
RT (Exp. RT): 2.123 (2.118)
Calc. conc. 100.56 µg/L
Area ratio: 0
Sample type: CC

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE 00003	SITE 00003	CEF-003-42S	Monitoring well	372273.61	2140065.088	N6247008D1001	JM10	TETRA TECH NUS, INC.	CEF-003-42S-0318
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE 36/37	UST TNKDT2	CEF-013-08S	Monitoring well	376328.72	2141329.33	N6247008D1001	JM10	TETRA TECH NUS, INC.	CEF-013-08S-0318
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE CRASH	UST 000005	CEF-CS01AR	Borehole/Soil boring	397029.4373	1717457.758	N6247008D1001	JM10	TETRA TECH NUS, INC.	CEF-CS01AR-0318
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE CRASH	UST 000005	CEF-CS10	Monitoring well	397055.6667	1717477.374	N6247008D1001	JM10	TETRA TECH NUS, INC.	CEF-CS10-0318
SOUTHEAST	CECIL_FIELD_NAS	B850056							N6247008D1001	JM10	TETRA TECH NUS, INC.	FB-CEF-CS-030218

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC	RES_META_ID
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE 00003	Ground water	Normal (Regular)	2-Mar-18	537	Perfluoroalkyl Compounds	20190201053458.00
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE 36/37	Ground water	Normal (Regular)	2-Mar-18	537	Perfluoroalkyl Compounds	20190201053458.00
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE CRASH	Ground water	Normal (Regular)	2-Mar-18	537	Perfluoroalkyl Compounds	20190201053458.00
SOUTHEAST	CECIL_FIELD_NAS	B850056	SITE CRASH	Ground water	Normal (Regular)	2-Mar-18	537	Perfluoroalkyl Compounds	20190201053458.00
SOUTHEAST	CECIL_FIELD_NAS	B850056		Water for QC samples	QC Sample	2-Mar-18	537	Perfluoroalkyl Compounds	20190201053458.00