



**Groundwater Sample Results,  
Level 2 Laboratory Report, Level 4 Laboratory Report,  
Electronic Data Deliverable, Data Validation Report,  
and the Sample Location Report, SDG 1412119**

*Norfolk Naval Base  
Norfolk, Virginia*

July 2019



***ANALYTICAL SUMMARY DATA PACKAGE***

SDG # 1412119

**PROJECT NAME:** NSN CTO-WE79  
**PROJECT LOCATION:** NORFOLK, VA  
**CONTRACT #:** N62470-11-D-8012

**SUBMITTAL TO:**

Juliana Dean  
CH2M HILL  
5701 Cleveland St, Suite 200  
Virginia Beach, VA 23462

**SUBMITTAL BY:**

Empirical Laboratories, LLC (EL)  
621 Mainstream Drive, Suite 270  
Nashville, TN 37228  
Tel (615)345-1115  
Fax (866)417-0548

**LABORATORY CONTACT PERSON:**

Project Manager: Sonya Gordon  
Tel (615)345-1115  
Fax (866)417-0548  
Email: sgordon@empirlabs.com

Original Report Date: December 24, 2014  
Report Revision #: N/A  
Revision Date: N/A  
Total # of Pages: 45

**THIS DOCUMENT MEETS DoD QSM 4.2 STANDARDS**

*The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Technical Lab Director, Mr. Rick Davis, is responsible for the final data produced and reported. His signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.*

**L-A-B Accredited - Certificate Number L2226 - Testing**

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## Sample Delivery Group Case Narrative

### **Receipt Information:**

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. Samples were subcontracted to Accutest Laboratories for EPA 537 Mod.

### **Changes to the Revision:**

This is an original submittal of the final report package.

### **Statement of Data Authenticity:**

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.



Lorraine Noronha for

Mr. Rick D. Davis

Laboratory Technical Director / VP Operations

**Empirical Laboratories, LLC**  
**Certifications/Approvals**  
(Revised 12/08/2014)

**DoD ELAP QSM5.0, Certificate Number L2226**

- Aqueous
- Non-aqueous
- Expires: 11/30/2015

**State of Florida, Department of Health – NELAP, Lab ID: E87646**

- Clean Water Act
- RCRA/CERCLA
- Expires: 06/30/2015

**State of Georgia, Environmental Protection Agency – NELAP, Self Certification**

- Expires: 06/30/2015

**State of Illinois, Environmental Protection Agency – NELAP, Certificate Number: 003464**

- Groundwater
- Solid and Hazardous Waste
- Expires: 09/13/2015

**Commonwealth of Kentucky, Energy and Environment Cabinet – WWLCP, Laboratory Number: 98017**

- Wastewater
- Valid: 01/01/2015-12/31/2015

**Commonwealth of Kentucky, Department of Environmental Protection – UST, Certificate Number: 77**

- Aqueous
- Non-aqueous
- Expires: 06/30/2015

**State of New Jersey, Department of Environmental Protection – NELAP Primary, Lab ID: TN473**

- Water Pollution
- Solid and Hazardous Waste
- Expires: 06/30/2015

**State of North Carolina, Department of Environment and Natural Resources - Certificate Number: 643**

- Aqueous
- Non-aqueous
- Expires: 12/31/2015

**State of North Dakota, Department of Health – NELAP, Certificate No.: R-204**

- Aqueous
- Non-aqueous
- Expires: Extension Letter Pending Renewal of Certification

**Commonwealth of Pennsylvania, Department of Environmental Protection – NELAP, Lab ID: 68-05374**

- Aqueous
- Non-aqueous
- Expires: 10/31/2015

**State of Texas, Commission on Environmental Quality – NELAP, Certificate Number: T104704307-14-10**

- Aqueous
- Non-aqueous
- Expires: 12/31/2014

**State of Utah, Department of Health – NELAP, Certificate Number: TN0042014-6**

- Aqueous
- Non-aqueous
- Expires: 07/31/2015

**Commonwealth of Virginia, Department of General Services – NELAP, Certificate Number: 2633, Lab ID: 460243**

- Aqueous
- Non-aqueous
- Expires: 12/14/2015

**State of Washington, Department of Ecology – NELAP, Lab ID: C934-14**

- Groundwater
- Solid and Hazardous Waste
- Expires: 03/18/2015

# Sample Receipt Information

**SUBCONTRACT ORDER**  
**Empirical Laboratories, LLC**  
**1412119**

**SENDING LABORATORY:**

Empirical Laboratories, LLC  
 621 Mainstream Drive, Suite 270  
 Nashville, TN 37228  
 Phone: 615.345.1115  
 Fax: 866.417.0548  
 Project Manager: Sonya Gordon

**RECEIVING LABORATORY:**

Accutest Laboratories (SUB)  
 4405 Vineland Rd  
 Orlando, FL 32811  
 Phone :(407) 425-6700  
 Fax: (407) 425-0707

Analysis	Due	Expires	Laboratory ID	Comments
<b>Sample ID: NBS01-A-MW30B-R15</b>				
<b>Reference No: 1412119-01</b>	<b>Water</b>	<b>Sampled:12/01/2014 12:20</b>		
SUB_SPECIALTY	12/30/2014 14:00	05/30/2015 11:20		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-A-MW12-R15</b>				
<b>Reference No: 1412119-02</b>	<b>Water</b>	<b>Sampled:12/02/2014 15:05</b>		
SUB_SPECIALTY	12/30/2014 14:00	05/31/2015 14:05		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-A-MW12P-R15</b>				
<b>Reference No: 1412119-03</b>	<b>Water</b>	<b>Sampled:12/02/2014 15:10</b>		
SUB_SPECIALTY	12/30/2014 14:00	05/31/2015 14:10		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-A1-MW6A-R15</b>				
<b>Reference No: 1412119-04</b>	<b>Water</b>	<b>Sampled:12/03/2014 14:20</b>		<b>MS/MSD</b>
SUB_SPECIALTY	12/30/2014 14:00	06/01/2015 13:20		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-EB01-120314</b>				
<b>Reference No: 1412119-05</b>	<b>Water</b>	<b>Sampled:12/03/2014 16:15</b>		
SUB_SPECIALTY	12/30/2014 14:00	06/01/2015 15:15		Select PFC
<i>Containers Supplied:</i>				

Released By	Date	Received By	Date

19996

# EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD

SHIP TO: 621 Mainstream Drive, Suite 270 + Nashville, TN 37228 + 615-345-1115 + (fax) 615-846-5426

30

Send Results to:	Send Invoice to:	Analysis Requirements:					Lab Use Only:
Name <u>JULIANA DEAN</u> Company <u>CHAM HILL</u> Address <u>501 CLEVELAND ST</u> City <u>VA BEACH</u> <u>SUITE 200</u> State, Zip VA, 23462 Phone (757) 671-6232 Fax E-mail <u>ju.dean@ellan.com</u>	Name <u>JULIANA DEAN</u> Company <u>CHAM HILL</u> Address _____ City _____ State, Zip _____ Phone _____ Fax _____ E-mail _____	<u>FA20402</u>					VOA Headspace Y Field Filtered Y Correct Containers Y Discrepancies Y Cust. Seals Intact Y Containers Intact Y
Project No./Name: <u>470612-ET-EX-01/NSU SITE 1</u>	Sampler's (Signature): <u>[Signature]</u>	PFCs (EPA 537 MOD)			No. of Bottles	Lab Use Only Containers/Pres.	
					2		
1			NBSD1-A-MW30B-RIS	G-W	2		
2			NBSD1-A-MW12-RIS	↓	2		
3			NBSD1-A-MW12P-RIS	↓	2		
(4)			NBSD1-A1-MW6A-RIS	↓	2		
5		NBSD1-A1-MW6A-RIS-MS	↓	2			
		NBSD1-A1-MW6A-RIS-SD	G-W	2			
		NBSD1-EB01-120314	DI	2			

Sample Kit Prep'd by: (Signature)	Date/Time	Received By: (Signature)	Date/Time
[Signature]	12-3-14 1700	[Signature]	1000
Relinquished by: (Signature)		Received By: (Signature)	
[Signature]		[Signature]	
Received for Laboratory by: (Signature)		Date/Time	
[Signature]	12-04-14		

**REMARKS:**

P.O. 954774

Page 1 of 1  
Cooler No. 1 of 1  
Date Shipped 12-3-14  
Shipped By JM  
Turnaround \_\_\_\_\_

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers. 30



ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA20402 CLIENT: CH2M Hill PROJECT: 9547724

DATE/TIME RECEIVED: 120414 1000 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1

METHOD OF DELIVERY: (FEDEX) UPS ACCUTEST COURIER DELIVERY OTHER: \_\_\_\_\_

AIRBILL NUMBERS: 7720 8225 3247

COOLER INFORMATION

<input type="checkbox"/>	CUSTODY SEAL NOT PRESENT OR NOT INTACT
<input type="checkbox"/>	CHAIN OF CUSTODY NOT RECEIVED (COC)
<input type="checkbox"/>	ANALYSIS REQUESTED IS UNCLEAR OR MISSING
<input type="checkbox"/>	SAMPLE DATES OR TIMES UNCLEAR OR MISSING
<input type="checkbox"/>	TEMPERATURE CRITERIA NOT MET

TRIP BLANK INFORMATION

<input type="checkbox"/>	TRIP BLANK PROVIDED
<input checked="" type="checkbox"/>	TRIP BLANK NOT PROVIDED
<input checked="" type="checkbox"/>	TRIP BLANK NOT ON COC
<input type="checkbox"/>	TRIP BLANK INTACT
<input type="checkbox"/>	TRIP BLANK NOT INTACT
<input type="checkbox"/>	RECEIVED WATER TRIP BLANK
<input type="checkbox"/>	RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM 5-GRAM

NUMBER OF 5035 FIELD KITS ? \_\_\_\_\_

NUMBER OF LAB FILTERED METALS ? \_\_\_\_\_

pH PAPER LOT#s WIDE RANGE A036122 NARROW RANGE HC421754

OTHER (specify) 405-230010

SUMMARY OF COMMENTS: \_\_\_\_\_

TEMPERATURE INFORMATION

<input type="checkbox"/>	IR THERM ID <u>1</u> CORR. FACTOR <u>16.4</u>
<input type="checkbox"/>	OBSERVED TEMPS: <u>2.6</u>
<input type="checkbox"/>	CORRECTED TEMPS: <u>3.0</u>

SAMPLE INFORMATION

<input type="checkbox"/>	INCORRECT NUMBER OF CONTAINERS USED
<input type="checkbox"/>	SAMPLE RECEIVED IMPROPERLY PRESERVED
<input type="checkbox"/>	INSUFFICIENT VOLUME FOR ANALYSIS
<input type="checkbox"/>	DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
<input type="checkbox"/>	ID'S ON COC DO NOT MATCH LABEL
<input type="checkbox"/>	VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
<input type="checkbox"/>	BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
<input type="checkbox"/>	NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
<input type="checkbox"/>	UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
<input type="checkbox"/>	SAMPLE CONTAINER(S) RECEIVED BROKEN
<input type="checkbox"/>	5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
<input type="checkbox"/>	BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
<input type="checkbox"/>	% SOLIDS JAR NOT RECEIVED
<input type="checkbox"/>	RESIDUAL CHLORINE PRESENT LOT# _____

{APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS}

TECHNICIAN SIGNATURE/DATE [Signature] 120414 REVIEWER SIGNATURE/DATE [Signature] 12-4-14

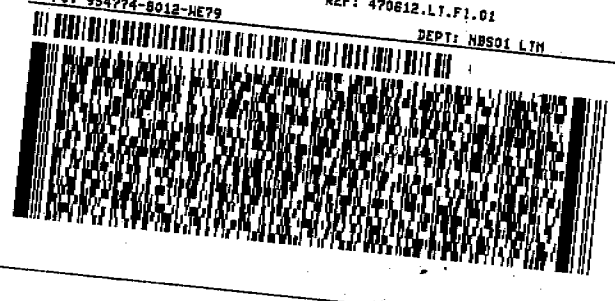
ORIGIN ID:NTUA (757) 518-9666  
TOBY STEWART  
CH2M HILL  
5701 CLEVELAND STREET STE 200  
VIRGINIA BEACH, VA 23462  
UNITED STATES US

SHIP DATE: 03DEC14  
ACTWGT: 35.0 LB  
CAD: 104391162/INET3550  
DIMS: 20x14x16 IN  
BILL SENDER

TO: **MUNA MOHAMMED**  
**ACCUTEST LABS - ORLANDO**  
**4405 VINELAND RD**

**ORLANDO FL 32811**

(407) 426-8700  
YHU:  
PO: 954774-8018-NE79  
REF: 470812.LT.FI.01  
DEPT: NBS01 LTM



TRK# 7720 8225 3247  
0201

THU - 04 DEC 10:30A  
PRIORITY OVERNIGHT

**XH TIXA**

32811  
FL-US MCO



1412119

**Empirical Laboratories, LLC**

<b>Client:</b> CH2M Hill, Inc. <b>Project:</b> NSN CTO-WE79	<b>Project Manager:</b> Sonya Gordon <b>Project Number:</b> CH2_NSN_WE79
--	---

<b>Report To:</b> CH2M Hill, Inc. Juliana Dean 5701 Cleveland Street, Suite 200 Virginia Beach, VA 23462 Phone: (757) 671-6232 Fax: (303) 771-0952	<b>Invoice To:</b> CH2M Hill, Inc. Accounts Payable P.O.Box 241329 Denver, CO 80224-____ Phone : (303) 771-0952 Fax: (303) 771-0952
--	---

Due to Client:	01/06/2015 16:00	<i>This is the projected due date to the client, at the time of receipt, and is for report delivery via upload, and/or email, and/or shipment to meet TAT as setup by project</i>	
Received By:	Sonya Gordon	Date Received:	12/04/2014 10:00
Logged In By:	Sonya Gordon	Date Logged In:	12/10/2014 17:34

Samples Received at:	3°C		
Custody Seals	No	Received On Ice	No
Containers Intact	No		
COC/Labels Agree	No		
Preservation Confirmed	No		

Method	Test Code	Due	TAT	Expires	Comments
<b>Accutest Laboratories (SUB)</b>					
	<b>1412119-01 NBS01-A-MW30B-R15 [Water]</b>	<b>Sampled 12/01/2014 12:20 Eastern</b>			
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	05/30/2015 11:20	Select PFC
	<b>1412119-02 NBS01-A-MW12-R15 [Water]</b>	<b>Sampled 12/02/2014 15:05 Eastern</b>			
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	05/31/2015 14:05	Select PFC
	<b>1412119-03 NBS01-A-MW12P-R15 [Water]</b>	<b>Sampled 12/02/2014 15:10 Eastern</b>			
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	05/31/2015 14:10	Select PFC
	<b>1412119-04 NBS01-A1-MW6A-R15 [Water]</b>	<b>Sampled 12/03/2014 14:20 Eastern</b>			<b>MS/MSD</b>
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	06/01/2015 13:20	Select PFC
	<b>1412119-05 NBS01-EB01-120314 [Water]</b>	<b>Sampled 12/03/2014 16:15 Eastern</b>			
	<b>'Equipment Blank'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	06/01/2015 15:15	Select PFC

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Job Number: FA20402 Client project: 470612.IT.FT.01  
 Account: ELTNN Empirical Labs  
 Project: ELTNN24982 NSN Site 1 LTM  
 Report to: HC Date: 18-DEC-14 Deliv: FULLT StateCode: VA Program: DOD-QSM4

Sample Number	Client ID	Site	Matx	Receive Date	Collect Date/Time	Due TAT Date	Samp By	Product List
FA20402-1	NBS01-A-MW30B-R15	GW	04-DEC-14	01-DEC-14 12:20	14 18-DEC-14	JM	ENERGY,LC537UCMR3	
FA20402-2	NBS01-A-MW12-R15	GW	04-DEC-14	02-DEC-14 15:05	14 18-DEC-14	JM	LC537UCMR3	
FA20402-3	NBS01-A-MW12P-R15	GW	04-DEC-14	02-DEC-14 15:10	14 18-DEC-14	JM	LC537UCMR3	
FA20402-4	NBS01-A1-MW6A-R15	GW	04-DEC-14	03-DEC-14 14:20	14 18-DEC-14	JM	LC537UCMR3	
FA20402-4D	NBS01-A1-MW6A-R15	WDP	04-DEC-14	03-DEC-14 14:20	14 18-DEC-14	JM	LC537UCMR3	
FA20402-4S	NBS01-A1-MW6A-R15	WMS	04-DEC-14	03-DEC-14 14:20	14 18-DEC-14	JM	LC537UCMR3	
FA20402-5	NBS01-EB01-120314	WEB	04-DEC-14	03-DEC-14 16:15	14 18-DEC-14	JM	LC537UCMR3	

EMAIL Address:  
 Sonya Gordon  
 Empirical Labs  
 621 Mainstream Dr  
 Suite 270  
 Nashville, TN 37228 (615)345-1115  
 sgordon@empirlabs.com

INVOICE/UD Address:  
 Accounts Payable  
 Empirical Labs  
 621 Mainstream Dr  
 Suite 270  
 Nashville, TN 37228 (615)345-1115  
 ap@empirlabs.com

PO Number: 954774

EDDS: ELTNN ELTNN24982 SNEDDCH2 EMAIL sgordon@empirlabs.com  
 Distribution2 Sample Receipts ELTNN mwalker@empirlabs.com;sgordon@empirlabs.com;rvogel@empirlabs.com

Login: \_\_\_\_\_ Date: \_\_\_\_\_  
 Login Review: \_\_\_\_\_ Date: \_\_\_\_\_  
 CS Review: \_\_\_\_\_ Date: \_\_\_\_\_  
 ID Review: \_\_\_\_\_ Date: \_\_\_\_\_

## Sample Delivery Group Assignment Form

CLIENT: CH2M Hill, Inc.

PROJECT NAME: NSN CTO-WE79

SDG #: 1412119

QC LEVEL: Level IV

Report Due: 1/6/2015

Client Sample Count: 4

Sample Type	Sampled	Received	Lab ID	Client ID	Report Matrix	SUB_SPECIALTY
Client Sample	12/1/2014	12/4/2014	1412119-01	NBS01-A-MW30B-R15	Ground Water	X
Client Sample	12/2/2014	12/4/2014	1412119-02	NBS01-A-MW12-R15	Ground Water	X
Client Sample	12/2/2014	12/4/2014	1412119-03	NBS01-A-MW12P-R15	Ground Water	X
Client Sample	12/3/2014	12/4/2014	1412119-04	NBS01-A1-MW6A-R15	Ground Water	MS/MSD
Equipment Blank	12/3/2014	12/4/2014	1412119-05	NBS01-EB01-120314	Water	X

# Subcontractor Data Package

**Technical Report for**

**Empirical Labs**

NSN Site 1 LTM

470612.LT.FT.01

Accutest Job Number: FA20402

Sampling Dates: 12/01/14 - 12/03/14

**Report to:**

Empirical Labs  
621 Mainstream Dr Suite 270  
Nashville, TN 37228  
sgordon@empirlabs.com

ATTN: Sonya Gordon

Total number of pages in report: **233**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



**Norm Farmer**  
Technical Director

**Client Service contact: Muna Mohammed 407-425-6700**

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001)  
DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177),  
AK, AR, GA, KY, MA, NV, OK, UT, WA

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

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## Sample Summary

**Empirical Labs**

**Job No: FA20402**

**NSN Site 1 LTM  
Project No: 470612.LT.FT.01**

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
FA20402-1	12/01/14	12:20 JM	12/04/14	AQ	Ground Water	NBS01-A-MW30B-R15
FA20402-2	12/02/14	15:05 JM	12/04/14	AQ	Ground Water	NBS01-A-MW12-R15
FA20402-3	12/02/14	15:10 JM	12/04/14	AQ	Ground Water	NBS01-A-MW12P-R15
FA20402-4	12/03/14	14:20 JM	12/04/14	AQ	Ground Water	NBS01-A1-MW6A-R15
FA20402-4D	12/03/14	14:20 JM	12/04/14	AQ	Water Dup/MSD	NBS01-A1-MW6A-R15
FA20402-4S	12/03/14	14:20 JM	12/04/14	AQ	Water Matrix Spike	NBS01-A1-MW6A-R15
FA20402-5	12/03/14	16:15 JM	12/04/14	AQ	Equipment Blank	NBS01-EB01-120314

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Empirical Labs

**Job No:** FA20402

**Site:** NSN Site 1 LTM

**Report Date:** 12/16/2014 2:55:51 PM

5 Sample(s) were collected on between 12/01/2014 and 12/03/2014 and were received at Accutest SE on 12/04/2014 properly preserved, at 3 Deg. C and intact. These Samples received an Accutest job number of FA20402. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Extractables by GCMS By Method EPA 537 MOD

**Matrix:** AQ

**Batch ID:** OP54151

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA20402-4MS, FA20402-4MSD were used as the QC samples indicated.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Date: December 16, 2014

\_\_\_\_\_  
Kim Benham, Client Services (signature on file)

### Manual Integration Summary

Lab Sample ID	Analysis Type	File ID	Manual
FA20402-2	MSSEMI	Q8694.D	Perfluorooctanoic acid
FA20402-2	MSSEMI	Q8771.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid
FA20402-3	MSSEMI	Q8695.D	Perfluorooctanoic acid
FA20402-3	MSSEMI	Q8772.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid
FA20402-4	MSSEMI	Q8788.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid
OP54151-BS	MSSEMI	Q8690.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid
OP54151-MS	MSSEMI	Q8697.D	Perfluorohexanesulfonic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid
OP54151-MSD	MSSEMI	Q8698.D	Perfluorohexanesulfonic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid
SQ280-ICV280	MSSEMI	Q8642.D	Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic Acid

9 Manual Integrations were found for FA20402

Tuesday, December 16, 2014

Page 1 of 1

## Summary of Hits

**Job Number:** FA20402  
**Account:** Empirical Labs  
**Project:** NSN Site 1 LTM  
**Collected:** 12/01/14 thru 12/03/14



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FA20402-1 NBS01-A-MW30B-R15

No hits reported in this sample.

FA20402-2 NBS01-A-MW12-R15

Perfluoroheptanoic acid	0.214	0.021	0.017	ug/l	EPA 537 MOD
Perfluorooctanoic acid	0.320	0.042	0.033	ug/l	EPA 537 MOD
Perfluorononanoic acid	0.0344	0.021	0.017	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid	0.157	0.021	0.017	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid	1.53	0.42	0.33	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid	2.99	0.42	0.33	ug/l	EPA 537 MOD

FA20402-3 NBS01-A-MW12P-R15

Perfluoroheptanoic acid	0.219	0.021	0.017	ug/l	EPA 537 MOD
Perfluorooctanoic acid	0.323	0.042	0.033	ug/l	EPA 537 MOD
Perfluorononanoic acid	0.0319	0.021	0.017	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid	0.157	0.021	0.017	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid	1.58	0.42	0.33	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid	3.05	0.42	0.33	ug/l	EPA 537 MOD

FA20402-4 NBS01-A1-MW6A-R15

Perfluorooctanoic acid	0.0792	0.042	0.033	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid	0.0140 J	0.021	0.017	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid	0.312	0.021	0.017	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid	0.0157 J	0.021	0.017	ug/l	EPA 537 MOD

FA20402-5 NBS01-EB01-120314

No hits reported in this sample.

**Sample Results**

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**Report of Analysis**

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Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b> NBS01-A-MW30B-R15	<b>Date Sampled:</b> 12/01/14
<b>Lab Sample ID:</b> FA20402-1	<b>Date Received:</b> 12/04/14
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 537 MOD EPA 537 MOD	
<b>Project:</b> NSN Site 1 LTM	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8693.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

**Perfluorinated Carboxylic Acids and Sulfonates**

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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**PERFLUOROALKYLCARBOXYLIC ACIDS**

375-85-9	Perfluoroheptanoic acid	0.016 U	0.020	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.032 U	0.040	0.032	0.016	ug/l	
375-95-1	Perfluorononanoic acid	0.016 U	0.020	0.016	0.0080	ug/l	

**PERFLUOROALKYLSULFONATES**

375-73-5	Perfluorobutanesulfonic acid	0.016 U	0.020	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.016 U	0.020	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.016 U	0.020	0.016	0.0080	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
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	13C2-PFHxA	103%		70-130%
	13C2-PFDA	92%		70-130%

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	NBS01-A-MW12-R15		
<b>Lab Sample ID:</b>	FA20402-2	<b>Date Sampled:</b>	12/02/14
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b>	12/04/14
<b>Method:</b>	EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	NSN Site 1 LTM		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8694.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2	Q8771.D	20	12/15/14	NAF	12/08/14	OP54151	SQ284

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

### Perfluorinated Carboxylic Acids and Sulfonates

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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#### PERFLUOROALKYL CARBOXYLIC ACIDS

375-85-9	Perfluoroheptanoic acid	0.214	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.320	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.0344	0.021	0.017	0.0083	ug/l	

#### PERFLUOROALKYL SULFONATES

375-73-5	Perfluorobutanesulfonic acid	0.157	0.021	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.53 <sup>a</sup>	0.42	0.33	0.17	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	2.99 <sup>a</sup>	0.42	0.33	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
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	13C2-PFHxA	86%	103%	70-130%
	13C2-PFDA	117%	84%	70-130%

(a) Result is from Run# 2

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b> NBS01-A-MW12P-R15	
<b>Lab Sample ID:</b> FA20402-3	<b>Date Sampled:</b> 12/02/14
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 12/04/14
<b>Method:</b> EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b> n/a
<b>Project:</b> NSN Site 1 LTM	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8695.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2	Q8772.D	20	12/15/14	NAF	12/08/14	OP54151	SQ284

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

### Perfluorinated Carboxylic Acids and Sulfonates

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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#### PERFLUOROALKYL CARBOXYLIC ACIDS

375-85-9	Perfluoroheptanoic acid	0.219	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.323	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.0319	0.021	0.017	0.0083	ug/l	

#### PERFLUOROALKYL SULFONATES

375-73-5	Perfluorobutanesulfonic acid	0.157	0.021	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.58 <sup>a</sup>	0.42	0.33	0.17	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.05 <sup>a</sup>	0.42	0.33	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%	112%	70-130%
	13C2-PFDA	114%	86%	70-130%

(a) Result is from Run# 2

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	NBS01-A1-MW6A-R15		
<b>Lab Sample ID:</b>	FA20402-4	<b>Date Sampled:</b>	12/03/14
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b>	12/04/14
<b>Method:</b>	EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	NSN Site 1 LTM		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8788.D	1	12/15/14	NAF	12/08/14	OP54151	SQ284
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

**Perfluorinated Carboxylic Acids and Sulfonates**

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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**PERFLUOROALKYLCARBOXYLIC ACIDS**

375-85-9	Perfluoroheptanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0792	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	

**PERFLUOROALKYLSULFONATES**

375-73-5	Perfluorobutanesulfonic acid	0.0140	0.021	0.017	0.0083	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.312	0.021	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0157	0.021	0.017	0.0083	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
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	13C2-PFHxA	95%		70-130%
	13C2-PFDA	84%		70-130%

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b> NBS01-EB01-120314		<b>Date Sampled:</b> 12/03/14
<b>Lab Sample ID:</b> FA20402-5	<b>Date Received:</b> 12/04/14	
<b>Matrix:</b> AQ - Equipment Blank	<b>Percent Solids:</b> n/a	
<b>Method:</b> EPA 537 MOD EPA 537 MOD		
<b>Project:</b> NSN Site 1 LTM		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8699.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

**Perfluorinated Carboxylic Acids and Sulfonates**

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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**PERFLUOROALKYLCARBOXYLIC ACIDS**

375-85-9	Perfluoroheptanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.033 U	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	

**PERFLUOROALKYLSULFONATES**

375-73-5	Perfluorobutanesulfonic acid	0.017 U	0.021	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.017 U	0.021	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.017 U	0.021	0.017	0.0083	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
---------	----------------------	--------	--------	--------

	13C2-PFHxA	107%		70-130%
	13C2-PFDA	101%		70-130%

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U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Misc. Forms

5

Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody

CTO WETA

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD  
SHIP TO: 621 Mainstream Drive, Suite 270 + Nashville, TN 37228 + 615-345-1115 + (fax) 615-846-5426

19996

<b>Send Results to:</b> Name <u>JULIANA DEAN</u> Company <u>CHAM HILL</u> Address <u>5701 CLEVELAND ST</u> City <u>VA BEACH</u> <u>SUITE 200</u> State, Zip <u>VA</u> <u>23462</u> Phone <u>(757) 671-6232</u> Fax _____ E-mail <u>juliana.dean@cham.com</u>		<b>Send Invoice to:</b> Name <u>JULIANA DEAN</u> Company <u>CHAM HILL</u> Address _____ City _____ State, Zip _____ Phone _____ Fax _____ E-mail _____		<b>Analysis Requirements:</b> <b>FA20402</b>			<b>Lab Use Only:</b> VOA Headspace Y N NA Field Filtered Y N NA Correct Containers Y N NA Discrepancies Y N NA Cust. Seals Intact Y N NA Containers Intact Y N NA  Airbill #: _____ CAR #: _____					
<b>Project No./Name:</b> <u>470612-ET.FE.01/NSUSDE1</u>		<b>Sampler's (Signature):</b> <u>[Signature]</u>		PFGs (EPA 537.100)								
<b>Lab Use Only Lab #</b>	<b>Date/Time Sampled</b>	<b>Sample Description</b>	<b>Sample Matrix</b>				<b>Comments</b>	<b>No. of Bottles</b>	<b>Lab Use Only Containers/Pres.</b>			
1	12-01-14 1230	NBS01-A-MW30B-R15	GW				2	2				
2	12-02-14 1505	NBS01-A-MW12-R15	↓				2	2				
3	12-02-14 1510	NBS01-A-MW12P-R15	↓				2	2				
4	12-03-14 1420	NBS01-A1-MW6A-R15	↓				2	2				
	12-03-14 1420	NBS01-A1-MW6A-R15-MS	↓				2	2				
5	12-03-14 1615	NBS01-A1-MW6A-R15-SD	GW	2	2							
<b>Sample Kit Prep'd by: (Signature)</b>		<b>Date/Time</b>	<b>Received By: (Signature)</b>		<b>REMARKS:</b> P.O. 954774			<b>Details:</b>				
<b>Relinquished by: (Signature)</b>		<b>Date/Time</b>	<b>Received By: (Signature)</b>					Page <u>1</u> of <u>1</u>				
<b>Relinquished by: (Signature)</b>		<b>Date/Time</b>	<b>Received By: (Signature)</b>					Cooler No. <u>1</u> of <u>1</u>				
<b>Received for Laboratory by: (Signature)</b>		<b>Date/Time</b>	<b>Temperature</b>					Date Shipped <u>12-3-14</u>				
								Shipped By <u>SM</u>				
								Turnaround _____				

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers. 30

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**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: FA20402 CLIENT: CH2M Hill PROJECT: 954724  
 DATE/TIME RECEIVED: 12-04-14 1000 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1  
 METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER DELIVERY OTHER: \_\_\_\_\_  
 AIRBILL NUMBERS: 7720 8225 3247

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? 25-GRAM \_\_\_\_\_ 5-GRAM \_\_\_\_\_  
 NUMBER OF 5035 FIELD KITS ? \_\_\_\_\_  
 NUMBER OF LAB FILTERED METALS ? \_\_\_\_\_

pH PAPER LOT#s WIDE RANGE A036122 NARROW RANGE HC421754 OTHER (specify) 405-230010

SUMMARY OF COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TEMPERATURE INFORMATION**

IR THERM ID 1 CORR. FACTOR 40.4  
 OBSERVED TEMPS: 2.6  
 CORRECTED TEMPS: 3.0

**SAMPLE INFORMATION**

- INCORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- ID'S ON COC DO NOT MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- SAMPLE CONTAINER(S) RECEIVED BROKEN
- 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- % SOLIDS JAR NOT RECEIVED
- RESIDUAL CHLORINE PRESENT LOT# \_\_\_\_\_

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

TECHNICIAN SIGNATURE/DATE [Signature] 12-04-14 REVIEWER SIGNATURE/DATE Jey Sen 12-4-14

NF 10/14

receipt confirmation 102914.xls

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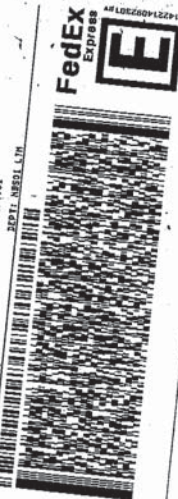
ORIGIN: EDINBUR (757) 518-9668  
TOBY STEWART  
CROWN HILL  
5701 CLEVELAND STREET STE 200  
VIRGINIA BEACH, VA 23462  
UNITED STATES US

SHIP DATE: 08DEC14  
ACTIVITY: 55  
DIMS: 10433162/INET3550  
DIMS: 20X14X16 IN  
BILL SENDER

TO: MUNA MOHAMMED  
ACCUTEST LABS - ORLANDO  
4405 VINELAND RD

ORLANDO FL 32811

(407) 426-8700  
REF: 479812.L1.F1.01  
PS: 954245-012-UC79  
FEDEX LABEL LN



TRK# 7720 8225 3247  
0201  
THU - 04 DEC 10:30A  
PRIORITY OVERNIGHT

XH TIXA

32811  
FL-US MCO



## GC/MS Semi-volatiles

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### QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries



### Method Blank Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP54151-MB	Q8691.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281

The QC reported here applies to the following samples:

Method: EPA 537 MOD

FA20402-1, FA20402-2, FA20402-3, FA20402-4, FA20402-5

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CAS No.	Compound	Result	RL	MDL	Units	Q
375-85-9	Perfluoroheptanoic acid	ND	0.020	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.040	0.016	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.020	0.0080	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.020	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.020	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.020	0.0080	ug/l	

CAS No.	Surrogate Recoveries	Limits	
	13C2-PFHxA	107%	70-130%
	13C2-PFDA	102%	70-130%

## Blank Spike Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP54151-BS	Q8690.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281

The QC reported here applies to the following samples:

Method: EPA 537 MOD

FA20402-1, FA20402-2, FA20402-3, FA20402-4, FA20402-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-85-9	Perfluoroheptanoic acid	0.16	0.144	90	70-130
335-67-1	Perfluorooctanoic acid	0.16	0.154	96	70-130
375-95-1	Perfluorononanoic acid	0.16	0.151	94	70-130
375-73-5	Perfluorobutanesulfonic acid	0.16	0.196	123	70-130
355-46-4	Perfluorohexanesulfonic acid	0.16	0.181	113	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.158	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	113%	70-130%
	13C2-PFDA	108%	70-130%

\* = Outside of Control Limits.



### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP54151-MS	Q8697.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
OP54151-MSD	Q8698.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
FA20402-4	Q8788.D	1	12/15/14	NAF	12/08/14	OP54151	SQ284

The QC reported here applies to the following samples:

Method: EPA 537 MOD

FA20402-1, FA20402-2, FA20402-3, FA20402-4, FA20402-5

CAS No.	Compound	FA20402-4		MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD	
		ug/l	Q								
375-85-9	Perfluoroheptanoic acid	0.021	U	0.16	0.132	83	0.16	0.123	77	7	70-130/30
335-67-1	Perfluorooctanoic acid	0.0792		0.16	0.252	108	0.16	0.224	91	12	70-130/30
375-95-1	Perfluorononanoic acid	0.021	U	0.16	0.139	87	0.16	0.146	91	5	70-130/30
375-73-5	Perfluorobutanesulfonic acid	0.0140	J	0.16	0.178	103	0.16	0.168	96	6	70-130/30
355-46-4	Perfluorohexanesulfonic acid	0.312		0.16	0.461	93	0.16	0.455	89	1	70-130/30
1763-23-1	Perfluorooctanesulfonic acid	0.0157	J	0.16	0.142	79	0.16	0.162	91	13	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	FA20402-4	Limits
	13C2-PFHxA	92%	97%	95%	70-130%
	13C2-PFDA	91%	112%	84%	70-130%

\* = Outside of Control Limits.

6.3.1  
**6**

# Semivolatile Internal Standard Area Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Check Std:	SQ281-CC280	Injection Date:	12/09/14
Lab File ID:	Q8688.D	Injection Time:	14:59
Instrument ID:	GCMSQ	Method:	EPA 537 MOD

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Initial Cal <sup>a</sup>	27803	6.28	12737	6.86	70625	9.25
Check Std <sup>b</sup>	25171	6.27	12019	6.86	61923	9.31
Upper Limit <sup>c</sup>	41705	7.27	19106	7.86	105938	10.31
Lower Limit <sup>d</sup>	13902	5.27	6369	5.86	35313	8.31

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
OP54151-BS	26534	6.27	11559	6.86	63494	9.30
OP54151-MB	30866	6.27	12853	6.86	67451	9.30
ZZZZZZ	25037	6.27	10831	6.84	63933	9.30
FA20402-1	29223	6.27	12208	6.86	65186	9.30
FA20402-2	22392	6.25	7620	6.83	64814	9.28
FA20402-3	22298	6.25	7996	6.83	65200	9.28
OP54151-MS	28000	6.26	12166	6.86	67604	9.28
OP54151-MSD	28201	6.26	12216	6.84	68139	9.28
FA20402-5	32116	6.27	13214	6.86	69350	9.28

IS 1 = 13C2-PFOA  
 IS 2 = 13C4-PFOS  
 IS 3 = 13C2-PFDoDA

- (a) Initial Cal is: SQ280-ICC280 Q8637.D 12/08/14 14:34. Area is AVERAGE of initial cal points.
- (b) Check Std Limit = -50 to + 50% of initial cal area.
- (c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
- (d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

6.4.1  
6

# Semivolatile Internal Standard Area Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Check Std:	SQ284-CC280	Injection Date:	12/15/14
Lab File ID:	Q8768.D	Injection Time:	14:32
Instrument ID:	GCMSQ	Method:	EPA 537 MOD

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Initial Cal <sup>a</sup>	27803	6.28	12737	6.86	70625	9.25
Check Std <sup>b</sup>	24500	6.32	12787	6.92	52482	9.63
Upper Limit <sup>c</sup>	41705	7.32	19106	7.92	105938	10.63
Lower Limit <sup>d</sup>	13902	5.32	6369	5.92	35313	8.63

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
FA20402-2	29529	6.32	13866	6.92	57929	9.62
FA20402-3	28782	6.31	13749	6.92	59787	9.62

IS 1 = 13C2-PFOA  
 IS 2 = 13C4-PFOS  
 IS 3 = 13C2-PFDoDA

- (a) Initial Cal is: SQ280-ICC280 Q8637.D 12/08/14 14:34. Area is AVERAGE of initial cal points.
- (b) Check Std Limit = -50 to + 50% of initial cal area.
- (c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
- (d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

6.4.2  
6

# Semivolatile Internal Standard Area Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Check Std:	SQ284-CC280	Injection Date:	12/15/14
Lab File ID:	Q8786.D	Injection Time:	21:00
Instrument ID:	GCMSQ	Method:	EPA 537 MOD

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Initial Cal <sup>a</sup>	27803	6.28	12737	6.86	70625	9.25
Check Std <sup>b</sup>	27830	6.31	13391	6.91	54601	9.62
Upper Limit <sup>c</sup>	41705	7.31	19106	7.91	105938	10.62
Lower Limit <sup>d</sup>	13902	5.31	6369	5.91	35313	8.62

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
FA20402-4	29156	6.31	13323	6.91	58336	9.61
ZZZZZZ	29823	6.31	13437	6.91	55102	9.61
ZZZZZZ	30238	6.31	13921	6.91	57099	9.61
ZZZZZZ	28260	6.30	13776	6.89	60917	9.60

IS 1 = 13C2-PFOA  
 IS 2 = 13C4-PFOS  
 IS 3 = 13C2-PFDoDA

- (a) Initial Cal is: SQ280-ICC280 Q8637.D 12/08/14 14:34. Area is AVERAGE of initial cal points.
- (b) Check Std Limit = -50 to + 50% of initial cal area.
- (c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
- (d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

6.4.3  
6

# Semivolatile Surrogate Recovery Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Method: EPA 537 MOD	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
FA20402-1	Q8693.D	103	92
FA20402-2	Q8771.D	103	84
FA20402-2	Q8694.D	86	117
FA20402-3	Q8772.D	112	86
FA20402-3	Q8695.D	85	114
FA20402-4	Q8788.D	95	84
FA20402-5	Q8699.D	107	101
OP54151-BS	Q8690.D	113	108
OP54151-MB	Q8691.D	107	102
OP54151-MS	Q8697.D	92	91
OP54151-MSD	Q8698.D	97	112

Surrogate Compounds	Recovery Limits
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S1 = 13C2-PFHxA	70-130%
S2 = 13C2-PFDA	70-130%

6.5.1  
**9**

# Initial Calibration Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample: SQ280-ICC280  
 Lab FileID: Q8637.D

Initial Calibration ReSponse Factors - D:\MassHunter\Data\1208\_PFC\_SQ280\SQ280.batch.bin

Level ID : Calibration File

- 1 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d
- 2 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d
- 3 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d
- 4 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d
- 5 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d
- 6 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d
- 7 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Compound	1	2	3	4	5	6	7	AvgRF	%RSD	r <sup>2</sup>
2) 13C2-PFDoDA	-----ISTD-----									
8) PFDA	0.3251	0.3361	0.3301	0.3289	0.3141	0.3053	0.2930	0.3189	4.857	0.9957
9) PFDoDA	0.4603	0.4426	0.4354	0.4603	0.4457	0.4431	0.4509	0.4483	2.093	0.9996
10) PFDS	0.0868	0.0867	0.0857	0.0888	0.0868	0.0862	0.0875	0.0869	1.134	0.9998
19) PFTeDA	0.3909	0.3106	0.2911	0.3109	0.2973	0.3053	0.3113	0.3168	10.599	0.9989
20) PFTrDA	0.4850	0.4312	0.4171	0.4406	0.4255	0.4322	0.4411	0.4390	5.002	0.9994
21) PFUnDA	0.4351	0.4414	0.4386	0.4455	0.4384	0.4272	0.4319	0.4369	1.391	0.9996
4) 13C2-PFOA	-----ISTD-----									
1) 13C2-PFDA	0.8288	0.8369	0.8377	0.8875	0.8437	0.8530	0.8521	0.8485	2.265	0.9996
3) 13C2-PFHxA	0.3411	0.3338	0.3260	0.3465	0.3310	0.3220	0.3296	0.3329	2.554	0.9990
6) PFBA	0.2261	0.2312	0.2239	0.2482	0.2386	0.2408	0.2394	0.2355	3.703	0.9995
11) PFHpA	0.3470	0.3502	0.3434	0.3534	0.3361	0.3309	0.3337	0.3421	2.534	0.9992
13) PFHxA	0.3613	0.3553	0.3484	0.3632	0.3463	0.3400	0.3453	0.3514	2.486	0.9992
15) PFNA	0.6051	0.5868	0.5897	0.6312	0.5972	0.6050	0.5986	0.6020	2.434	0.9994
16) PFOA	1.0720	1.0447	0.9968	1.0544	1.0038	1.0085	1.0131	1.0276	2.829	0.9996
18) PFPeA	0.1184	0.1173	0.1165	0.1235	0.1191	0.1206	0.1194	0.1193	1.935	0.9997
5) 13C4-PFOS	-----ISTD-----									
7) PFBS	0.2927	0.3054	0.2863	0.3113	0.2949	0.2976	0.2921	0.2972	2.876	0.9991
12) PFHpS	0.5828	0.6032	0.5878	0.6236	0.5903	0.5813	0.5963	0.5950	2.472	0.9991
14) PFHxS	0.4562	0.4748	0.4703	0.4963	0.4710	0.4559	0.4845	0.4727	3.072	0.9977
17) PFOS	1.0080	1.0181	0.9947	1.0553	0.9978	0.9835	1.0032	1.0087	2.305	0.9991

\*(value) - Average RF below (value)

6.6.1  
9

# Initial Calibration Verification

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ280-ICV280  
Lab FileID: Q8641.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1208\_PFC\_SQ280\SQ280.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8641  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	0.000		
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	0.000		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.132	5.7	105.7
PFBS	20.000	22.749	13.7	113.7
PFDA	20.000	23.915	19.6	119.6
PFDoDA	20.000	24.075	20.4	120.4
PFDS	20.000	23.692	18.5	118.5
PFHpA	20.000	20.775	3.9	103.9
PFHpS	20.000	0.000		
PFHxA	20.000	21.363	6.8	106.8
PFHxS	20.000	21.395	7.0	107.0
PFNA	20.000	19.475	-2.6	97.4
PFOA	20.000	20.861	4.3	104.3
PFOS	20.000	21.021	5.1	105.1
PFPeA	20.000	20.786	3.9	103.9
PFTeDA	20.000	27.964	# 39.8	139.8
PFTrDA	20.000	26.260	# 31.3	131.3
PFUnDA	20.000	22.320	11.6	111.6

CC Criteria: +/- 25%

6.6.2  
6

# Initial Calibration Verification

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample: SQ280-ICV280  
 Lab FileID: Q8642.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1208\_PFC\_SQ280\SQ280.batch.bin

Level ID: Calibration File  
 1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
 2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
 3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
 4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
 5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
 6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
 7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8642  
 Type : QC  
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	0.000		
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	0.000		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	0.000		
PFBS	20.000	23.312	16.6	116.6
PFDA	20.000	0.000		
PFDoDA	20.000	0.000		
PFDS	20.000	0.000		
PFHpA	20.000	18.151	-9.2	90.8
PFHpS	20.000	0.000		
PFHxA	20.000	0.000		
PFHxS	20.000	22.032	10.2	110.2
PFNA	20.000	19.117	-4.4	95.6
PFOA	20.000	18.958	-5.2	94.8
PFOS	20.000	19.895	-0.5	99.5
PFPeA	20.000	0.000		
PFTeDA	20.000	0.000		
PFTTrDA	20.000	0.000		
PFOUnDA	20.000	0.000		

CC Criteria: +/- 25%

6.6.3  
6



# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ281-CC280  
Lab FileID: Q8688.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1209\_PFC\_SQ281\SQ281.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8688  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	20.522	2.6	102.6
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	20.574	2.9	102.9
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.517	7.6	107.6
PFBS	20.000	21.144	5.7	105.7
PFDA	20.000	22.350	11.7	111.7
PFDoDA	20.000	20.244	1.2	101.2
PFDS	20.000	21.242	6.2	106.2
PFHpA	20.000	20.509	2.5	102.5
PFHpS	20.000	20.814	4.1	104.1
PFHxA	20.000	20.718	3.6	103.6
PFHxS	20.000	21.097	5.5	105.5
PFNA	20.000	19.219	-3.9	96.1
PFOA	20.000	20.444	2.2	102.2
PFOS	20.000	20.559	2.8	102.8
PFPeA	20.000	20.973	4.9	104.9
PFTeDA	20.000	20.698	3.5	103.5
PFTTrDA	20.000	19.934	-0.3	99.7
PFUnDA	20.000	21.102	5.5	105.5

CC Criteria: +/- 25%

6.6.4  
6

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ281-CC280  
Lab FileID: Q8700.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1209\_PFC\_SQ281\SQ281.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8700  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	20.513	2.6	102.6
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	19.507	-2.5	97.5
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.009	5.0	105.0
PFBS	20.000	22.934	14.7	114.7
PFDA	20.000	23.435	17.2	117.2
PFDoDA	20.000	20.020	0.1	100.1
PFDS	20.000	20.307	1.5	101.5
PFHpA	20.000	20.259	1.3	101.3
PFHpS	20.000	21.453	7.3	107.3
PFHxA	20.000	19.433	-2.8	97.2
PFHxS	20.000	21.965	9.8	109.8
PFNA	20.000	19.113	-4.4	95.6
PFOA	20.000	20.261	1.3	101.3
PFOS	20.000	20.741	3.7	103.7
PFPeA	20.000	20.784	3.9	103.9
PFTeDA	20.000	17.259	-13.7	86.3
PFTrDA	20.000	19.010	-5.0	95.0
PFUnDA	20.000	22.121	10.6	110.6

CC Criteria: +/- 25%

6.6.5  
9

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ284-CC280  
Lab FileID: Q8768.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8768  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	18.741	-6.3	93.7
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	22.370	11.9	111.9
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	22.481	12.4	112.4
PFBS	20.000	21.560	7.8	107.8
PFDA	20.000	23.474	17.4	117.4
PFDoDA	20.000	19.136	-4.3	95.7
PFDS	20.000	24.982	24.9	124.9
PFHpA	20.000	21.097	5.5	105.5
PFHpS	20.000	19.880	-0.6	99.4
PFHxA	20.000	22.653	13.3	113.3
PFHxS	20.000	20.392	2.0	102.0
PFNA	20.000	18.347	-8.3	91.7
PFOA	20.000	19.979	-0.1	99.9
PFOS	20.000	20.100	0.5	100.5
PFPeA	20.000	22.916	14.6	114.6
PFTeDA	20.000	18.336	-8.3	91.7
PFTrDA	20.000	17.140	-14.3	85.7
PFUnDA	20.000	21.261	6.3	106.3

CC Criteria: +/- 25%

6.6  
9

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ284-CC280  
Lab FileID: Q8774.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8774  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	18.872	-5.6	94.4
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	20.993	5.0	105.0
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.379	6.9	106.9
PFBS	20.000	21.746	8.7	108.7
PFDA	20.000	24.142	20.7	120.7
PFDoDA	20.000	20.092	0.5	100.5
PFDS	20.000	25.207	# 26.0	126.0
PFHpA	20.000	20.248	1.2	101.2
PFHpS	20.000	20.273	1.4	101.4
PFHxA	20.000	21.236	6.2	106.2
PFHxS	20.000	20.636	3.2	103.2
PFNA	20.000	17.865	-10.7	89.3
PFOA	20.000	20.023	0.1	100.1
PFOS	20.000	20.289	1.4	101.4
PFPeA	20.000	20.867	4.3	104.3
PFTeDA	20.000	16.241	-18.8	81.2
PFTTrDA	20.000	18.208	-9.0	91.0
PFUnDA	20.000	22.950	14.7	114.7

CC Criteria: +/- 25%

6.6.7  
6

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ284-CC280  
Lab FileID: Q8786.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

- Level ID: Calibration File
- 1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d
- 2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d
- 3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d
- 4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d
- 5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d
- 6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d
- 7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8786  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	17.647	-11.8	88.2
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	20.029	0.1	100.1
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.226	6.1	106.1
PFBS	20.000	21.385	6.9	106.9
PFDA	20.000	24.106	20.5	120.5
PFDoDA	20.000	20.006	0.0	100.0
PFDS	20.000	26.118	# 30.6	130.6
PFHpA	20.000	19.870	-0.6	99.4
PFHpS	20.000	20.569	2.8	102.8
PFHxA	20.000	20.080	0.4	100.4
PFHxS	20.000	20.657	3.3	103.3
PFNA	20.000	17.079	-14.6	85.4
PFOA	20.000	19.765	-1.2	98.8
PFOS	20.000	20.374	1.9	101.9
PFPeA	20.000	20.172	0.9	100.9
PFTeDA	20.000	16.599	-17.0	83.0
PFTTrDA	20.000	18.251	-8.7	91.3
PFUnDA	20.000	25.885	# 29.4	129.4

CC Criteria: +/- 25%

6.6.8  
9

# Continuing Calibration Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample: SQ284-CC280  
 Lab FileID: Q8793.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

Level ID: Calibration File

- 1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d
- 2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d
- 3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d
- 4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d
- 5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d
- 6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d
- 7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8793  
 Type : QC  
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	17.818	-10.9	89.1
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	19.828	-0.9	99.1
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	20.259	1.3	101.3
PFBS	20.000	20.580	2.9	102.9
PFDA	20.000	24.009	20.0	120.0
PFDoDA	20.000	20.232	1.2	101.2
PFDS	20.000	26.139	# 30.7	130.7
PFHpA	20.000	19.222	-3.9	96.1
PFHpS	20.000	19.888	-0.6	99.4
PFHxA	20.000	19.743	-1.3	98.7
PFHxS	20.000	19.796	-1.0	99.0
PFNA	20.000	17.630	-11.8	88.2
PFOA	20.000	19.970	-0.1	99.9
PFOS	20.000	19.950	-0.3	99.7
PFPeA	20.000	20.015	0.1	100.1
PFTeDA	20.000	16.359	-18.2	81.8
PFTrDA	20.000	18.160	-9.2	90.8
PFUnDA	20.000	25.585	# 27.9	127.9

CC Criteria: +/- 25%

6.6.9  
9



***ANALYTICAL DATA PACKAGE***

SDG # 1412119

**PROJECT NAME:** NSN CTO-WE79  
**PROJECT LOCATION:** NORFOLK, VA  
**CONTRACT #:** N62470-11-D-8012

**SUBMITTAL TO:**

Juliana Dean  
CH2M HILL  
5701 Cleveland St, Suite 200  
Virginia Beach, VA 23462

**SUBMITTAL BY:**

Empirical Laboratories, LLC (EL)  
621 Mainstream Drive, Suite 270  
Nashville, TN 37228  
Tel (615)345-1115  
Fax (866)417-0548

**LABORATORY CONTACT PERSON:**

Project Manager: Sonya Gordon  
Tel (615)345-1115  
Fax (866)417-0548  
Email: [sgordon@empirlabs.com](mailto:sgordon@empirlabs.com)

Original Report Date: December 24, 2014  
Report Revision #: N/A  
Revision Date: N/A  
Total # of Pages: 246

**THIS DOCUMENT MEETS DoD QSM 4.2 STANDARDS**

*The results relate to only the samples associated with the referenced SDG and the submitted data has been produced in accordance with laboratory procedures. The Laboratory's Technical Lab Director, Mr. Rick Davis, is responsible for the final data produced and reported. His signature is listed at the end of the Case Narrative within the Analytical Data Package. If applicable to this report package, details on report revisions and the information on subcontracted analysis are listed in the package Case Narrative. This report shall not be reproduced, except in full, without the written approval of Empirical Laboratories, LLC.*

**L-A-B Accredited - Certificate Number L2226 - Testing**

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## Sample Delivery Group Case Narrative

### **Receipt Information:**

The samples were received within the preservation guidelines for the associated methods. The information associated with sample receipt and the Sample Delivery Group (SDG) are included within section 4 of this package, which also provides information on the link between the client sample ID listed on the COC and laboratory's assigned unique sample ID or WorkOrder #. The sample is tracked through the laboratory for all analysis via the assigned WorkOrder #.

All samples that were received were analyzed and none of the samples were placed on hold without analyses. Samples were subcontracted to Accutest Laboratories for EPA 537 Mod.

### **Changes to the Revision:**

This is an original submittal of the final report package.

### **Statement of Data Authenticity:**

I certify that, based upon my inquiry of those individuals immediately responsible for obtaining the information and to the best of my knowledge, the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, with the exception of the conditions detailed in this Case Narrative, as verified by my signature below. During absences, the Data Quality Manager, Technical Directors or Project Managers are authorized to sign this Statement of Data Authenticity.



Lorraine Noronha for

Mr. Rick D. Davis

Laboratory Technical Director / VP Operations

**Empirical Laboratories, LLC**  
**Certifications/Approvals**  
(Revised 12/08/2014)

**DoD ELAP QSM5.0, Certificate Number L2226**

- Aqueous
- Non-aqueous
- Expires: 11/30/2015

**State of Florida, Department of Health – NELAP, Lab ID: E87646**

- Clean Water Act
- RCRA/CERCLA
- Expires: 06/30/2015

**State of Georgia, Environmental Protection Agency – NELAP, Self Certification**

- Expires: 06/30/2015

**State of Illinois, Environmental Protection Agency – NELAP, Certificate Number: 003464**

- Groundwater
- Solid and Hazardous Waste
- Expires: 09/13/2015

**Commonwealth of Kentucky, Energy and Environment Cabinet – WWLCP, Laboratory Number: 98017**

- Wastewater
- Valid: 01/01/2015-12/31/2015

**Commonwealth of Kentucky, Department of Environmental Protection – UST, Certificate Number: 77**

- Aqueous
- Non-aqueous
- Expires: 06/30/2015

**State of New Jersey, Department of Environmental Protection – NELAP Primary, Lab ID: TN473**

- Water Pollution
- Solid and Hazardous Waste
- Expires: 06/30/2015

**State of North Carolina, Department of Environment and Natural Resources - Certificate Number: 643**

- Aqueous
- Non-aqueous
- Expires: 12/31/2015

**State of North Dakota, Department of Health – NELAP, Certificate No.: R-204**

- Aqueous
- Non-aqueous
- Expires: Extension Letter Pending Renewal of Certification

**Commonwealth of Pennsylvania, Department of Environmental Protection – NELAP, Lab ID: 68-05374**

- Aqueous
- Non-aqueous
- Expires: 10/31/2015

**State of Texas, Commission on Environmental Quality – NELAP, Certificate Number: T104704307-14-10**

- Aqueous
- Non-aqueous
- Expires: 12/31/2014

**State of Utah, Department of Health – NELAP, Certificate Number: TN0042014-6**

- Aqueous
- Non-aqueous
- Expires: 07/31/2015

**Commonwealth of Virginia, Department of General Services – NELAP, Certificate Number: 2633, Lab ID: 460243**

- Aqueous
- Non-aqueous
- Expires: 12/14/2015

**State of Washington, Department of Ecology – NELAP, Lab ID: C934-14**

- Groundwater
- Solid and Hazardous Waste
- Expires: 03/18/2015

# Sample Receipt Information

**SUBCONTRACT ORDER**  
**Empirical Laboratories, LLC**  
**1412119**

**SENDING LABORATORY:**

Empirical Laboratories, LLC  
 621 Mainstream Drive, Suite 270  
 Nashville, TN 37228  
 Phone: 615.345.1115  
 Fax: 866.417.0548  
 Project Manager: Sonya Gordon

**RECEIVING LABORATORY:**

Accutest Laboratories (SUB)  
 4405 Vineland Rd  
 Orlando, FL 32811  
 Phone : (407) 425-6700  
 Fax: (407) 425-0707

Analysis	Due	Expires	Laboratory ID	Comments
<b>Sample ID: NBS01-A-MW30B-R15</b>				
<b>Reference No: 1412119-01</b>	<b>Water</b>	<b>Sampled:12/01/2014 12:20</b>		
SUB_SPECIALTY	12/30/2014 14:00	05/30/2015 11:20		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-A-MW12-R15</b>				
<b>Reference No: 1412119-02</b>	<b>Water</b>	<b>Sampled:12/02/2014 15:05</b>		
SUB_SPECIALTY	12/30/2014 14:00	05/31/2015 14:05		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-A-MW12P-R15</b>				
<b>Reference No: 1412119-03</b>	<b>Water</b>	<b>Sampled:12/02/2014 15:10</b>		
SUB_SPECIALTY	12/30/2014 14:00	05/31/2015 14:10		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-A1-MW6A-R15</b>				
<b>Reference No: 1412119-04</b>	<b>Water</b>	<b>Sampled:12/03/2014 14:20</b>		<b>MS/MSD</b>
SUB_SPECIALTY	12/30/2014 14:00	06/01/2015 13:20		Select PFC
<i>Containers Supplied:</i>				
<b>Sample ID: NBS01-EB01-120314</b>				
<b>Reference No: 1412119-05</b>	<b>Water</b>	<b>Sampled:12/03/2014 16:15</b>		
SUB_SPECIALTY	12/30/2014 14:00	06/01/2015 15:15		Select PFC
<i>Containers Supplied:</i>				

Released By	Date	Received By	Date

**Send Results to:**  
 Name JULIANA DEAN  
 Company CHAM HILL  
 Address 5701 CLEVELAND ST  
 City VA BEACH SUITE 200  
 State, Zip VA, 23462  
 Phone (757) 671-6232  
 Fax \_\_\_\_\_  
 E-mail juliana.dean@clham.com

**Send Invoice to:**  
 Name JULIANA DEAN  
 Company CHAM HILL  
 Address \_\_\_\_\_  
 City \_\_\_\_\_  
 State, Zip \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Fax \_\_\_\_\_  
 E-mail \_\_\_\_\_

**Project No./Name:**  
470612-ET.FI.01/NSUSPE1

Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix	Analysis Requirements:	Lab Use Only	
1	12-01-14 12:20	NBS01-A-MW308-R15	G-W	PFCs (EPA 537 MOD) <b>FA20402</b>	VOA Headspace Y Field Filtered Y Correct Containers Y Discrepancies Y Cust. Seals Intact Y Containers Intact Y	
2	12-02-14 1505	NBS01-A-MW12-R15			No. of Bottles 2	N N
3	12-02-14 1510	NBS01-A-MW12P-R15			No. of Bottles 2	N N
4	12-03-14 1420	NBS01-A1-MW6A-R15			No. of Bottles 2	N N
	12-03-14 1420	NBS01-A1-MW6A-R15-MS	↓		No. of Bottles 2	N N
5	12-03-14 1420	NBS01-A1-MW6A-R15-SD	G-W	No. of Bottles 2	N N	
	12-03-14 1615	NBS01-EB01-120314	DI	No. of Bottles 2	N N	

**REMARKS:**  
 P.O. 954774

**Sample Kit Prep'd by:** (Signature) \_\_\_\_\_ Date/Time \_\_\_\_\_ Received By: (Signature) \_\_\_\_\_

**Relinquished by:** (Signature) \_\_\_\_\_ Date/Time 12-3-14 Received By: (Signature) \_\_\_\_\_

**Relinquished by:** (Signature) \_\_\_\_\_ Date/Time 1700 Received By: (Signature) \_\_\_\_\_

**Received for Laboratory by:** (Signature) FF 12-04-14 Date/Time 1000 Received By: (Signature) \_\_\_\_\_ Temperature \_\_\_\_\_

**Details:**  
 Page 1 of 1  
 Cooler No. 1 of 1  
 Date Shipped 12-3-14  
 Shipped By SM  
 Turnaround \_\_\_\_\_

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: FA20402 CLIENT: CH2M HILL PROJECT: 9547724  
DATE/TIME RECEIVED: 12-04-14 10:00 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1  
METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER DELIVERY OTHER:  
AIRBILL NUMBERS: 7720 8225 3247

COOLER INFORMATION

CUSTODY SEAL NOT PRESENT OR NOT INTACT  
CHAIN OF CUSTODY NOT RECEIVED (COC)  
ANALYSIS REQUESTED IS UNCLEAR OR MISSING  
SAMPLE DATES OR TIMES UNCLEAR OR MISSING  
TEMPERATURE CRITERIA NOT MET

TEMPERATURE INFORMATION

IR THERM ID 1 CORR. FACTOR 16.4  
OBSERVED TEMPS: 2.6  
CORRECTED TEMPS: 3.0

SAMPLE INFORMATION

INCORRECT NUMBER OF CONTAINERS USED  
SAMPLE RECEIVED IMPROPERLY PRESERVED  
INSUFFICIENT VOLUME FOR ANALYSIS  
DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL  
ID'S ON COC DO NOT MATCH LABEL  
VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)  
BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED  
NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED  
UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS  
SAMPLE CONTAINER(S) RECEIVED BROKEN  
5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS  
BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS  
% SOLIDS JAR NOT RECEIVED  
RESIDUAL CHLORINE PRESENT LOT#

TRIP BLANK INFORMATION

TRIP BLANK PROVIDED  
TRIP BLANK NOT PROVIDED  
TRIP BLANK NOT ON COC  
TRIP BLANK INTACT  
TRIP BLANK NOT INTACT  
RECEIVED WATER TRIP BLANK  
RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? 25-GRAM 5-GRAM  
NUMBER OF 5035 FIELD KITS ?  
NUMBER OF LAB FILTERED METALS ?

PH PAPER LOT#s WIDE RANGE A036122 NARROW RANGE HC421754 OTHER (specify) 405-230010

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE [Signature] 12-04-14 REVIEWER SIGNATURE/DATE [Signature] 12-4-14

ORIGIN ID:NTUA (757) 518-9666  
TOBY STEWART  
CH2M HILL  
5701 CLEVELAND STREET STE 200

VIRGINIA BEACH, VA 23462  
UNITED STATES US

SHIP DATE: 03DEC14  
ACTWGT: 35.0 LB  
CAD: 104391162/INET3550  
DIMS: 20x14x16 IN

BILL SENDER

TO: **MUNA MOHAMMED**  
**ACCUTEST LABS - ORLANDO**  
**4405 VINELAND RD**

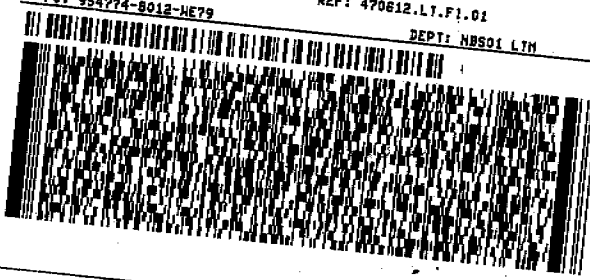
**ORLANDO FL 32811**

(407) 426-8700

PHU:  
PO: 954774-8018-NE79

REF: 470812.LT.FI.01

DEPT: NBS01 LTM



**FedEx**  
Express



J142214092307 JY

TRK# 7720 8225 3247  
0201

THU - 04 DEC 10:30A  
PRIORITY OVERNIGHT

**XH TIXA**

32811

FL-US MCO



POSTNET 95041-4092307 0114

1412119

**Empirical Laboratories, LLC**

<b>Client:</b> CH2M Hill, Inc. <b>Project:</b> NSN CTO-WE79	<b>Project Manager:</b> Sonya Gordon <b>Project Number:</b> CH2_NSN_WE79
--	---

<b>Report To:</b> CH2M Hill, Inc. Juliana Dean 5701 Cleveland Street, Suite 200 Virginia Beach, VA 23462 Phone: (757) 671-6232 Fax: (303) 771-0952	<b>Invoice To:</b> CH2M Hill, Inc. Accounts Payable P.O.Box 241329 Denver, CO 80224-____ Phone : (303) 771-0952 Fax: (303) 771-0952
--	---

Due to Client:	01/06/2015 16:00	<i>This is the projected due date to the client, at the time of receipt, and is for report delivery via upload, and/or email, and/or shipment to meet TAT as setup by project</i>	
Received By:	Sonya Gordon	Date Received:	12/04/2014 10:00
Logged In By:	Sonya Gordon	Date Logged In:	12/10/2014 17:34

Samples Received at:	3°C		
Custody Seals	No	Received On Ice	No
Containers Intact	No		
COC/Labels Agree	No		
Preservation Confirmed	No		

Method	Test Code	Due	TAT	Expires	Comments
<b>Accutest Laboratories (SUB)</b>					
	<b>1412119-01 NBS01-A-MW30B-R15 [Water]</b>	<b>Sampled 12/01/2014 12:20 Eastern</b>			
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	05/30/2015 11:20	Select PFC
	<b>1412119-02 NBS01-A-MW12-R15 [Water]</b>	<b>Sampled 12/02/2014 15:05 Eastern</b>			
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	05/31/2015 14:05	Select PFC
	<b>1412119-03 NBS01-A-MW12P-R15 [Water]</b>	<b>Sampled 12/02/2014 15:10 Eastern</b>			
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	05/31/2015 14:10	Select PFC
	<b>1412119-04 NBS01-A1-MW6A-R15 [Water]</b>	<b>Sampled 12/03/2014 14:20 Eastern</b>			<b>MS/MSD</b>
	<b>'Client Sample'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	06/01/2015 13:20	Select PFC
	<b>1412119-05 NBS01-EB01-120314 [Water]</b>	<b>Sampled 12/03/2014 16:15 Eastern</b>			
	<b>'Equipment Blank'</b>				
SUB_SPECIAL	SUB_SPECIALTY	12/30/2014 14:00	20	06/01/2015 15:15	Select PFC

Reviewed By \_\_\_\_\_

Date \_\_\_\_\_



Job Number: FA20402 Client project: 470612.IT.FT.01

Account: ELTNN Empirical Labs

Project: ELTNN24982 NSN Site 1 LTM

Report to: HC Date: 18-DEC-14 Deliv: FULLT StateCode: VA Program: DOD-QSM4

CHECK
Client
Project
Deliverables
Matrix
TAT
Tests
Metals SW646

Sample Number	Client ID	Site	Matx	Receive Date	Collect Date/Time	Due TAT Date	Samp By	Product List
FA20402-1	NBS01-A-MW30B-R15		GW	04-DEC-14	01-DEC-14 12:20	14 18-DEC-14	JM	ENERGY,LC537UCMR3
FA20402-2	NBS01-A-MW12-R15		GW	04-DEC-14	02-DEC-14 15:05	14 18-DEC-14	JM	LC537UCMR3
FA20402-3	NBS01-A-MW12P-R15		GW	04-DEC-14	02-DEC-14 15:10	14 18-DEC-14	JM	LC537UCMR3
FA20402-4	NBS01-A1-MW6A-R15		GW	04-DEC-14	03-DEC-14 14:20	14 18-DEC-14	JM	LC537UCMR3
FA20402-4D	NBS01-A1-MW6A-R15		WDP	04-DEC-14	03-DEC-14 14:20	14 18-DEC-14	JM	LC537UCMR3
FA20402-4S	NBS01-A1-MW6A-R15		WMS	04-DEC-14	03-DEC-14 14:20	14 18-DEC-14	JM	LC537UCMR3
FA20402-5	NBS01-EB01-120314		WEB	04-DEC-14	03-DEC-14 16:15	14 18-DEC-14	JM	LC537UCMR3

EMAIL Address:  
 Sonya Gordon  
 Empirical Labs  
 621 Mainstream Dr  
 Suite 270  
 Nashville, TN 37228 (615)345-1115  
 sgordon@empirlabs.com

INVOICE/UD Address:  
 Accounts Payable  
 Empirical Labs  
 621 Mainstream Dr  
 Suite 270  
 Nashville, TN 37228 (615)345-1115  
 ap@empirlabs.com

PO Number: 954774

EDDS: ELTNN ELTNN24982 SNEDDCH2 EMAIL sgordon@empirlabs.com  
 Distribution2 Sample Receipts ELTNN mwalker@empirlabs.com;sgordon@empirlabs.com;rvogel@empirlabs.com

Login: \_\_\_\_\_ Date: \_\_\_\_\_  
 Login Review: \_\_\_\_\_ Date: \_\_\_\_\_  
 CS Review: \_\_\_\_\_ Date: \_\_\_\_\_  
 ID Review: \_\_\_\_\_ Date: \_\_\_\_\_

### Sample Delivery Group Assignment Form

CLIENT: CH2M Hill, Inc.  
 PROJECT NAME: NSN CTO-WE79  
 SDG #: 1412119

QC LEVEL: Level IV  
 Report Due: 1/6/2015  
 Client Sample Count: 4

Sample Type	Sampled	Received	Lab ID	Client ID	Report Matrix	SUB_SPECIALTY
Client Sample	12/1/2014	12/4/2014	1412119-01	NBS01-A-MW30B-R15	Ground Water	X
Client Sample	12/2/2014	12/4/2014	1412119-02	NBS01-A-MW12-R15	Ground Water	X
Client Sample	12/2/2014	12/4/2014	1412119-03	NBS01-A-MW12P-R15	Ground Water	X
Client Sample	12/3/2014	12/4/2014	1412119-04	NBS01-A1-MW6A-R15	Ground Water	MS/MSD
Equipment Blank	12/3/2014	12/4/2014	1412119-05	NBS01-EB01-120314	Water	X

# Subcontractor Data Package

Technical Report for

Empirical Labs

NSN Site 1 LTM

470612.LT.FT.01

Accutest Job Number: FA20402

Sampling Dates: 12/01/14 - 12/03/14

Report to:

Empirical Labs  
621 Mainstream Dr Suite 270  
Nashville, TN 37228  
sgordon@empirlabs.com

ATTN: Sonya Gordon

Total number of pages in report: **233**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



Norm Farmer  
Technical Director

Client Service contact: Muna Mohammed 407-425-6700

Certifications: FL (E83510), LA (03051), KS (E-10327), IA (366), IL (200063), NC (573), NJ (FL002), SC (96038001)  
DoD ELAP (L-A-B L2229), CA (2937), TX (T104704404), PA (68-03573), VA (460177),  
AK, AR, GA, KY, MA, NV, OK, UT, WA

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

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## Sample Summary

**Empirical Labs**

**Job No: FA20402**

**NSN Site 1 LTM  
Project No: 470612.LT.FT.01**

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
FA20402-1	12/01/14	12:20 JM	12/04/14	AQ	Ground Water	NBS01-A-MW30B-R15
FA20402-2	12/02/14	15:05 JM	12/04/14	AQ	Ground Water	NBS01-A-MW12-R15
FA20402-3	12/02/14	15:10 JM	12/04/14	AQ	Ground Water	NBS01-A-MW12P-R15
FA20402-4	12/03/14	14:20 JM	12/04/14	AQ	Ground Water	NBS01-A1-MW6A-R15
FA20402-4D	12/03/14	14:20 JM	12/04/14	AQ	Water Dup/MSD	NBS01-A1-MW6A-R15
FA20402-4S	12/03/14	14:20 JM	12/04/14	AQ	Water Matrix Spike	NBS01-A1-MW6A-R15
FA20402-5	12/03/14	16:15 JM	12/04/14	AQ	Equipment Blank	NBS01-EB01-120314

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Empirical Labs

**Job No:** FA20402

**Site:** NSN Site 1 LTM

**Report Date:** 12/16/2014 2:55:51 PM

5 Sample(s) were collected on between 12/01/2014 and 12/03/2014 and were received at Accutest SE on 12/04/2014 properly preserved, at 3 Deg. C and intact. These Samples received an Accutest job number of FA20402. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Extractables by GCMS By Method EPA 537 MOD

**Matrix:** AQ

**Batch ID:** OP54151

All samples were extracted within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA20402-4MS, FA20402-4MSD were used as the QC samples indicated.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Date: December 16, 2014

\_\_\_\_\_  
Kim Benham, Client Services (signature on file)

### Manual Integration Summary

Lab Sample ID	Analysis Type	File ID	Manual
FA20402-2	MSSEMI	Q8694.D	Perfluorooctanoic acid
FA20402-2	MSSEMI	Q8771.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid
FA20402-3	MSSEMI	Q8695.D	Perfluorooctanoic acid
FA20402-3	MSSEMI	Q8772.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid
FA20402-4	MSSEMI	Q8788.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid
OP54151-BS	MSSEMI	Q8690.D	Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid
OP54151-MS	MSSEMI	Q8697.D	Perfluorohexanesulfonic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid
OP54151-MSD	MSSEMI	Q8698.D	Perfluorohexanesulfonic acid, Perfluorohexanoic acid, Perfluorooctanesulfonic acid, Perfluorooctanoic acid
SQ280-ICV280	MSSEMI	Q8642.D	Perfluorodecanesulfonic acid, Perfluorododecanoic acid, Perfluorohexanesulfonic acid, Perfluorooctanesulfonic acid, Perfluorotetradecanoic acid, Perfluorotridecanoic acid, Perfluoroundecanoic Acid

9 Manual Integrations were found for FA20402

Tuesday, December 16, 2014

Page 1 of 1

## Summary of Hits

**Job Number:** FA20402  
**Account:** Empirical Labs  
**Project:** NSN Site 1 LTM  
**Collected:** 12/01/14 thru 12/03/14



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
---------------	------------------	-----------------	-----	-----	-------	--------

FA20402-1 NBS01-A-MW30B-R15

No hits reported in this sample.

FA20402-2 NBS01-A-MW12-R15

Perfluoroheptanoic acid	0.214	0.021	0.017	ug/l	EPA 537 MOD
Perfluorooctanoic acid	0.320	0.042	0.033	ug/l	EPA 537 MOD
Perfluorononanoic acid	0.0344	0.021	0.017	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid	0.157	0.021	0.017	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid	1.53	0.42	0.33	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid	2.99	0.42	0.33	ug/l	EPA 537 MOD

FA20402-3 NBS01-A-MW12P-R15

Perfluoroheptanoic acid	0.219	0.021	0.017	ug/l	EPA 537 MOD
Perfluorooctanoic acid	0.323	0.042	0.033	ug/l	EPA 537 MOD
Perfluorononanoic acid	0.0319	0.021	0.017	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid	0.157	0.021	0.017	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid	1.58	0.42	0.33	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid	3.05	0.42	0.33	ug/l	EPA 537 MOD

FA20402-4 NBS01-A1-MW6A-R15

Perfluorooctanoic acid	0.0792	0.042	0.033	ug/l	EPA 537 MOD
Perfluorobutanesulfonic acid	0.0140 J	0.021	0.017	ug/l	EPA 537 MOD
Perfluorohexanesulfonic acid	0.312	0.021	0.017	ug/l	EPA 537 MOD
Perfluorooctanesulfonic acid	0.0157 J	0.021	0.017	ug/l	EPA 537 MOD

FA20402-5 NBS01-EB01-120314

No hits reported in this sample.



**Sample Results**

---

**Report of Analysis**

---

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b> NBS01-A-MW30B-R15	
<b>Lab Sample ID:</b> FA20402-1	<b>Date Sampled:</b> 12/01/14
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 12/04/14
<b>Method:</b> EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b> n/a
<b>Project:</b> NSN Site 1 LTM	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8693.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2							

	Initial Volume	Final Volume
Run #1	125 ml	1.0 ml
Run #2		

**Perfluorinated Carboxylic Acids and Sulfonates**

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

**PERFLUOROALKYLCARBOXYLIC ACIDS**

375-85-9	Perfluoroheptanoic acid	0.016 U	0.020	0.016	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	0.032 U	0.040	0.032	0.016	ug/l	
375-95-1	Perfluorononanoic acid	0.016 U	0.020	0.016	0.0080	ug/l	

**PERFLUOROALKYLSULFONATES**

375-73-5	Perfluorobutanesulfonic acid	0.016 U	0.020	0.016	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.016 U	0.020	0.016	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.016 U	0.020	0.016	0.0080	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
---------	----------------------	--------	--------	--------

	13C2-PFHxA	103%		70-130%
	13C2-PFDA	92%		70-130%

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.1  
4

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	NBS01-A-MW12-R15		
<b>Lab Sample ID:</b>	FA20402-2	<b>Date Sampled:</b>	12/02/14
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b>	12/04/14
<b>Method:</b>	EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	NSN Site 1 LTM		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8694.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2	Q8771.D	20	12/15/14	NAF	12/08/14	OP54151	SQ284

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

### Perfluorinated Carboxylic Acids and Sulfonates

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

#### PERFLUOROALKYL CARBOXYLIC ACIDS

375-85-9	Perfluoroheptanoic acid	0.214	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.320	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.0344	0.021	0.017	0.0083	ug/l	

#### PERFLUOROALKYL SULFONATES

375-73-5	Perfluorobutanesulfonic acid	0.157	0.021	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.53 <sup>a</sup>	0.42	0.33	0.17	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	2.99 <sup>a</sup>	0.42	0.33	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
---------	----------------------	--------	--------	--------

	13C2-PFHxA	86%	103%	70-130%
	13C2-PFDA	117%	84%	70-130%

(a) Result is from Run# 2

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	NBS01-A-MW12P-R15		
<b>Lab Sample ID:</b>	FA20402-3	<b>Date Sampled:</b>	12/02/14
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b>	12/04/14
<b>Method:</b>	EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	NSN Site 1 LTM		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8695.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2	Q8772.D	20	12/15/14	NAF	12/08/14	OP54151	SQ284

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2	120 ml	1.0 ml

### Perfluorinated Carboxylic Acids and Sulfonates

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

#### PERFLUOROALKYL CARBOXYLIC ACIDS

375-85-9	Perfluoroheptanoic acid	0.219	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.323	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.0319	0.021	0.017	0.0083	ug/l	

#### PERFLUOROALKYL SULFONATES

375-73-5	Perfluorobutanesulfonic acid	0.157	0.021	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	1.58 <sup>a</sup>	0.42	0.33	0.17	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	3.05 <sup>a</sup>	0.42	0.33	0.17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	13C2-PFHxA	85%	112%	70-130%
	13C2-PFDA	114%	86%	70-130%

(a) Result is from Run# 2

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	NBS01-A1-MW6A-R15		
<b>Lab Sample ID:</b>	FA20402-4	<b>Date Sampled:</b>	12/03/14
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b>	12/04/14
<b>Method:</b>	EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	NSN Site 1 LTM		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8788.D	1	12/15/14	NAF	12/08/14	OP54151	SQ284
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

**Perfluorinated Carboxylic Acids and Sulfonates**

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

**PERFLUOROALKYLCARBOXYLIC ACIDS**

375-85-9	Perfluoroheptanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.0792	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	

**PERFLUOROALKYLSULFONATES**

375-73-5	Perfluorobutanesulfonic acid	0.0140	0.021	0.017	0.0083	ug/l	J
355-46-4	Perfluorohexanesulfonic acid	0.312	0.021	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.0157	0.021	0.017	0.0083	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
---------	----------------------	--------	--------	--------

	13C2-PFHxA	95%		70-130%
	13C2-PFDA	84%		70-130%

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

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Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	NBS01-EB01-120314		
<b>Lab Sample ID:</b>	FA20402-5	<b>Date Sampled:</b>	12/03/14
<b>Matrix:</b>	AQ - Equipment Blank	<b>Date Received:</b>	12/04/14
<b>Method:</b>	EPA 537 MOD EPA 537 MOD	<b>Percent Solids:</b>	n/a
<b>Project:</b>	NSN Site 1 LTM		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Q8699.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
Run #2							

	Initial Volume	Final Volume
Run #1	120 ml	1.0 ml
Run #2		

**Perfluorinated Carboxylic Acids and Sulfonates**

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

**PERFLUOROALKYLCARBOXYLIC ACIDS**

375-85-9	Perfluoroheptanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	
335-67-1	Perfluorooctanoic acid	0.033 U	0.042	0.033	0.017	ug/l	
375-95-1	Perfluorononanoic acid	0.017 U	0.021	0.017	0.0083	ug/l	

**PERFLUOROALKYLSULFONATES**

375-73-5	Perfluorobutanesulfonic acid	0.017 U	0.021	0.017	0.0083	ug/l	
355-46-4	Perfluorohexanesulfonic acid	0.017 U	0.021	0.017	0.0083	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	0.017 U	0.021	0.017	0.0083	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
---------	----------------------	--------	--------	--------

	13C2-PFHxA	107%		70-130%
	13C2-PFDA	101%		70-130%

U = Not detected      LOD = Limit of Detection      J = Indicates an estimated value  
 LOQ = Limit of Quantitation      DL = Detection Limit      B = Indicates analyte found in associated method blank  
 E = Indicates value exceeds calibration range      N = Indicates presumptive evidence of a compound

4.5  
4

Misc. Forms

5

Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody

CTO WETA

EMPIRICAL LABORATORIES, LLC - CHAIN OF CUSTODY RECORD  
SHIP TO: 621 Mainstream Drive, Suite 270 + Nashville, TN 37228 + 615-345-1115 + (fax) 615-846-5426

19996

<b>Send Results to:</b>		<b>Send Invoice to:</b>		<b>Analysis Requirements:</b>			<b>Lab Use Only:</b>			
Name <u>JULIANA DEAN</u>		Name <u>JULIANA DEAN</u>		<b>FA20402</b>			VOA Headspace	Y	N	NA
Company <u>CHAM HILL</u>		Company <u>CHAM HILL</u>					Field Filtered	Y	N	NA
Address <u>5701 CLEVELAND ST</u>		Address _____					Correct Containers	Y	N	NA
City <u>VA BEACH</u> <u>SUITE 200</u>		City _____					Discrepancies	Y	N	NA
State, Zip <u>VA</u> <u>23462</u>		State, Zip _____					Cust. Seals Intact	Y	N	NA
Phone <u>(757) 671-6232</u>		Phone _____		Containers Intact	Y	N	NA			
Fax _____		Fax _____		Airbill #: _____			CAR #: _____			
E-mail <u>juliana.dean@cham.com</u>		E-mail _____		Project No./Name: <u>470612-LT.FX.01/NSUSPE1</u>			Sampler's (Signature): <u>[Signature]</u>			
Lab Use Only Lab #	Date/Time Sampled	Sample Description	Sample Matrix				Comments	No. of Bottles	Lab Use Only Containers/Pres.	
1	12-01-14 1230	NBS01-A-MW30B-RIS	GW	2				2		
2	12-02-14 1505	NBS01-A-MW12-RIS		2				2		
3	12-02-14 1510	NBS01-A-MW12P-RIS		2				2		
4	12-03-14 1420	NBS01-A1-MW6A-RIS		2				2		
	12-03-14 1420	NBS01-A1-MW6A-RIS-MS		2				2		
5	12-03-14 1420	NBS01-A1-MW6A-RIS-SD	GW	2				2		
	12-03-14 1615	NBS01-EB01-120314	DI	2				2		
Sample Kit Prep'd by: (Signature)		Date/Time	Received By: (Signature)		<b>REMARKS:</b>  P.O. 954774					
Relinquished by: (Signature)		Date/Time	Received By: (Signature)							
Relinquished by: (Signature)		Date/Time	Received By: (Signature)							
Received for Laboratory by: (Signature)		Date/Time	Temperature							
					Details: Page <u>1</u> of <u>1</u> Cooler No. <u>1</u> of <u>1</u> Date Shipped <u>12-3-14</u> Shipped By <u>SM</u> Turnaround _____					

Distribution: Original and yellow copies accompany sample shipment to laboratory; Pink retained by samplers. 30

51  
5



**ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION**

ACCUTEST'S JOB NUMBER: FA20402 CLIENT: CH2M Hill PROJECT: 954724  
 DATE/TIME RECEIVED: 12-04-14 1000 {MM/DD/YY 24:00} NUMBER OF COOLERS RECEIVED: 1  
 METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER DELIVERY OTHER: \_\_\_\_\_  
 AIRBILL NUMBERS: 7720 8225 3247

**COOLER INFORMATION**

- CUSTODY SEAL NOT PRESENT OR NOT INTACT
- CHAIN OF CUSTODY NOT RECEIVED (COC)
- ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- TEMPERATURE CRITERIA NOT MET

**TRIP BLANK INFORMATION**

- TRIP BLANK PROVIDED
- TRIP BLANK NOT PROVIDED
- TRIP BLANK NOT ON COC
- TRIP BLANK INTACT
- TRIP BLANK NOT INTACT
- RECEIVED WATER TRIP BLANK
- RECEIVED SOIL TRIP BLANK

**MISC. INFORMATION**

NUMBER OF ENCORES ? 25-GRAM \_\_\_\_\_ 5-GRAM \_\_\_\_\_  
 NUMBER OF 5035 FIELD KITS ? \_\_\_\_\_  
 NUMBER OF LAB FILTERED METALS ? \_\_\_\_\_

pH PAPER LOT#s WIDE RANGE A036122 NARROW RANGE HC421754 OTHER (specify) 405-230010

SUMMARY OF COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TEMPERATURE INFORMATION**

IR THERM ID 1 CORR. FACTOR 40.4  
 OBSERVED TEMPS: 2.6  
 CORRECTED TEMPS: 3.0

**SAMPLE INFORMATION**

- INCORRECT NUMBER OF CONTAINERS USED
- SAMPLE RECEIVED IMPROPERLY PRESERVED
- INSUFFICIENT VOLUME FOR ANALYSIS
- DATES/TIMES ON COC DO NOT MATCH SAMPLE LABEL
- ID'S ON COC DO NOT MATCH LABEL
- VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- UNCLEAR FILTERING OR COMPOSITING INSTRUCTIONS
- SAMPLE CONTAINER(S) RECEIVED BROKEN
- 5035 FIELD KITS NOT RECEIVED WITHIN 48 HOURS
- BULK VOA SOIL JARS NOT RECEIVED WITHIN 48 HOURS
- % SOLIDS JAR NOT RECEIVED
- RESIDUAL CHLORINE PRESENT LOT# \_\_\_\_\_

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

TECHNICIAN SIGNATURE/DATE [Signature] 12-04-14 REVIEWER SIGNATURE/DATE Jey Sun 12-4-14  
 NF 10/14 receipt confirmation 102914.xls

5.1  
5

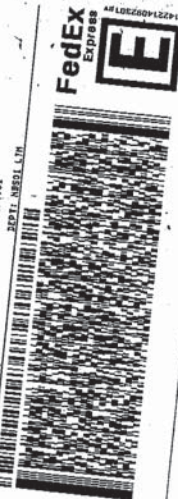
ORIGIN: EDINBUR (757) 518-9668  
TOBY STEWART  
CROWN HILL  
5701 CLEVELAND STREET STE 200  
VIRGINIA BEACH, VA 23462  
UNITED STATES US

SHIP DATE: 08DEC14  
ACTIVITY: 55  
DUNS: 10433162/INET3550  
DUNS: 20014116 IN  
BILL SENDER

TO: MUNA MOHAMMED  
ACCUTEST LABS - ORLANDO  
4405 VINELAND RD

ORLANDO FL 32811

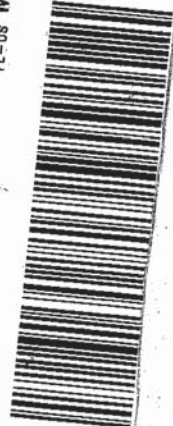
(407) 426-8700  
REF: 479812.L1.F1.01  
PS: 954245-012-UC79  
FEDEX LABEL LN



TRK 7720 8225 3247  
0201  
THU - 04 DEC 10:30A  
PRIORITY OVERNIGHT

XH TIXA

32811  
FL-US MCO



## GC/MS Semi-volatiles

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### QC Data Summaries

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

## Method Blank Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP54151-MB	Q8691.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281

The QC reported here applies to the following samples:

Method: EPA 537 MOD

FA20402-1, FA20402-2, FA20402-3, FA20402-4, FA20402-5

6.1.1  
6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-85-9	Perfluoroheptanoic acid	ND	0.020	0.0080	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.040	0.016	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.020	0.0080	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.020	0.0080	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.020	0.0080	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.020	0.0080	ug/l	

CAS No.	Surrogate Recoveries	Limits	
	13C2-PFHxA	107%	70-130%
	13C2-PFDA	102%	70-130%

## Blank Spike Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP54151-BS	Q8690.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281

The QC reported here applies to the following samples:

Method: EPA 537 MOD

FA20402-1, FA20402-2, FA20402-3, FA20402-4, FA20402-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-85-9	Perfluoroheptanoic acid	0.16	0.144	90	70-130
335-67-1	Perfluorooctanoic acid	0.16	0.154	96	70-130
375-95-1	Perfluorononanoic acid	0.16	0.151	94	70-130
375-73-5	Perfluorobutanesulfonic acid	0.16	0.196	123	70-130
355-46-4	Perfluorohexanesulfonic acid	0.16	0.181	113	70-130
1763-23-1	Perfluorooctanesulfonic acid	0.16	0.158	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
	13C2-PFHxA	113%	70-130%
	13C2-PFDA	108%	70-130%

\* = Outside of Control Limits.

6.2.1  
**6**

### Matrix Spike/Matrix Spike Duplicate Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP54151-MS	Q8697.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
OP54151-MSD	Q8698.D	1	12/09/14	NAF	12/08/14	OP54151	SQ281
FA20402-4	Q8788.D	1	12/15/14	NAF	12/08/14	OP54151	SQ284

The QC reported here applies to the following samples:

Method: EPA 537 MOD

FA20402-1, FA20402-2, FA20402-3, FA20402-4, FA20402-5

CAS No.	Compound	FA20402-4		Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
		ug/l	Q								
375-85-9	Perfluoroheptanoic acid	0.021	U	0.16	0.132	83	0.16	0.123	77	7	70-130/30
335-67-1	Perfluorooctanoic acid	0.0792		0.16	0.252	108	0.16	0.224	91	12	70-130/30
375-95-1	Perfluorononanoic acid	0.021	U	0.16	0.139	87	0.16	0.146	91	5	70-130/30
375-73-5	Perfluorobutanesulfonic acid	0.0140	J	0.16	0.178	103	0.16	0.168	96	6	70-130/30
355-46-4	Perfluorohexanesulfonic acid	0.312		0.16	0.461	93	0.16	0.455	89	1	70-130/30
1763-23-1	Perfluorooctanesulfonic acid	0.0157	J	0.16	0.142	79	0.16	0.162	91	13	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	FA20402-4	Limits
	13C2-PFHxA	92%	97%	95%	70-130%
	13C2-PFDA	91%	112%	84%	70-130%

\* = Outside of Control Limits.

# Semivolatile Internal Standard Area Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Check Std:	SQ281-CC280	Injection Date:	12/09/14
Lab File ID:	Q8688.D	Injection Time:	14:59
Instrument ID:	GCMSQ	Method:	EPA 537 MOD

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Initial Cal <sup>a</sup>	27803	6.28	12737	6.86	70625	9.25
Check Std <sup>b</sup>	25171	6.27	12019	6.86	61923	9.31
Upper Limit <sup>c</sup>	41705	7.27	19106	7.86	105938	10.31
Lower Limit <sup>d</sup>	13902	5.27	6369	5.86	35313	8.31

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
OP54151-BS	26534	6.27	11559	6.86	63494	9.30
OP54151-MB	30866	6.27	12853	6.86	67451	9.30
ZZZZZZ	25037	6.27	10831	6.84	63933	9.30
FA20402-1	29223	6.27	12208	6.86	65186	9.30
FA20402-2	22392	6.25	7620	6.83	64814	9.28
FA20402-3	22298	6.25	7996	6.83	65200	9.28
OP54151-MS	28000	6.26	12166	6.86	67604	9.28
OP54151-MSD	28201	6.26	12216	6.84	68139	9.28
FA20402-5	32116	6.27	13214	6.86	69350	9.28

IS 1 = 13C2-PFOA  
 IS 2 = 13C4-PFOS  
 IS 3 = 13C2-PFDoDA

- (a) Initial Cal is: SQ280-ICC280 Q8637.D 12/08/14 14:34. Area is AVERAGE of initial cal points.
- (b) Check Std Limit = -50 to + 50% of initial cal area.
- (c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
- (d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

6.4.1  
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# Semivolatile Internal Standard Area Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Check Std:	SQ284-CC280	Injection Date:	12/15/14
Lab File ID:	Q8768.D	Injection Time:	14:32
Instrument ID:	GCMSQ	Method:	EPA 537 MOD

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Initial Cal <sup>a</sup>	27803	6.28	12737	6.86	70625	9.25
Check Std <sup>b</sup>	24500	6.32	12787	6.92	52482	9.63
Upper Limit <sup>c</sup>	41705	7.32	19106	7.92	105938	10.63
Lower Limit <sup>d</sup>	13902	5.32	6369	5.92	35313	8.63

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
FA20402-2	29529	6.32	13866	6.92	57929	9.62
FA20402-3	28782	6.31	13749	6.92	59787	9.62

IS 1 = 13C2-PFOA  
 IS 2 = 13C4-PFOS  
 IS 3 = 13C2-PFDoDA

- (a) Initial Cal is: SQ280-ICC280 Q8637.D 12/08/14 14:34. Area is AVERAGE of initial cal points.
- (b) Check Std Limit = -50 to + 50% of initial cal area.
- (c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
- (d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

6.4.2  
6



# Semivolatile Internal Standard Area Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Check Std:	SQ284-CC280	Injection Date:	12/15/14
Lab File ID:	Q8786.D	Injection Time:	21:00
Instrument ID:	GCMSQ	Method:	EPA 537 MOD

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
Initial Cal <sup>a</sup>	27803	6.28	12737	6.86	70625	9.25
Check Std <sup>b</sup>	27830	6.31	13391	6.91	54601	9.62
Upper Limit <sup>c</sup>	41705	7.31	19106	7.91	105938	10.62
Lower Limit <sup>d</sup>	13902	5.31	6369	5.91	35313	8.62

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT
FA20402-4	29156	6.31	13323	6.91	58336	9.61
ZZZZZZ	29823	6.31	13437	6.91	55102	9.61
ZZZZZZ	30238	6.31	13921	6.91	57099	9.61
ZZZZZZ	28260	6.30	13776	6.89	60917	9.60

IS 1 = 13C2-PFOA  
 IS 2 = 13C4-PFOS  
 IS 3 = 13C2-PFDoDA

- (a) Initial Cal is: SQ280-ICC280 Q8637.D 12/08/14 14:34. Area is AVERAGE of initial cal points.
- (b) Check Std Limit = -50 to + 50% of initial cal area.
- (c) Upper Limit = + 50% of initial standard area; Retention time + 1 minutes of check standard.
- (d) Lower Limit = -50% of initial standard area; Retention time -1 minutes of check standard.

6.4.3  
6

# Semivolatile Surrogate Recovery Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Method: EPA 537 MOD	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2
FA20402-1	Q8693.D	103	92
FA20402-2	Q8771.D	103	84
FA20402-2	Q8694.D	86	117
FA20402-3	Q8772.D	112	86
FA20402-3	Q8695.D	85	114
FA20402-4	Q8788.D	95	84
FA20402-5	Q8699.D	107	101
OP54151-BS	Q8690.D	113	108
OP54151-MB	Q8691.D	107	102
OP54151-MS	Q8697.D	92	91
OP54151-MSD	Q8698.D	97	112

Surrogate Compounds	Recovery Limits
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S1 = 13C2-PFHxA	70-130%
S2 = 13C2-PFDA	70-130%

6.5.1  
**9**

# Initial Calibration Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample: SQ280-ICC280  
 Lab FileID: Q8637.D

Initial Calibration ReSponse Factors - D:\MassHunter\Data\1208\_PFC\_SQ280\SQ280.batch.bin

Level ID : Calibration File

- 1 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d
- 2 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d
- 3 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d
- 4 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d
- 5 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d
- 6 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d
- 7 : D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Compound	1	2	3	4	5	6	7	AvgRF	%RSD	r <sup>2</sup>
2) 13C2-PFDoDA	-----ISTD-----									
8) PFDA	0.3251	0.3361	0.3301	0.3289	0.3141	0.3053	0.2930	0.3189	4.857	0.9957
9) PFDoDA	0.4603	0.4426	0.4354	0.4603	0.4457	0.4431	0.4509	0.4483	2.093	0.9996
10) PFDS	0.0868	0.0867	0.0857	0.0888	0.0868	0.0862	0.0875	0.0869	1.134	0.9998
19) PFTeDA	0.3909	0.3106	0.2911	0.3109	0.2973	0.3053	0.3113	0.3168	10.599	0.9989
20) PFTrDA	0.4850	0.4312	0.4171	0.4406	0.4255	0.4322	0.4411	0.4390	5.002	0.9994
21) PFUnDA	0.4351	0.4414	0.4386	0.4455	0.4384	0.4272	0.4319	0.4369	1.391	0.9996
4) 13C2-PFOA	-----ISTD-----									
1) 13C2-PFDA	0.8288	0.8369	0.8377	0.8875	0.8437	0.8530	0.8521	0.8485	2.265	0.9996
3) 13C2-PFHxA	0.3411	0.3338	0.3260	0.3465	0.3310	0.3220	0.3296	0.3329	2.554	0.9990
6) PFBA	0.2261	0.2312	0.2239	0.2482	0.2386	0.2408	0.2394	0.2355	3.703	0.9995
11) PFHpA	0.3470	0.3502	0.3434	0.3534	0.3361	0.3309	0.3337	0.3421	2.534	0.9992
13) PFHxA	0.3613	0.3553	0.3484	0.3632	0.3463	0.3400	0.3453	0.3514	2.486	0.9992
15) PFNA	0.6051	0.5868	0.5897	0.6312	0.5972	0.6050	0.5986	0.6020	2.434	0.9994
16) PFOA	1.0720	1.0447	0.9968	1.0544	1.0038	1.0085	1.0131	1.0276	2.829	0.9996
18) PFPeA	0.1184	0.1173	0.1165	0.1235	0.1191	0.1206	0.1194	0.1193	1.935	0.9997
5) 13C4-PFOS	-----ISTD-----									
7) PFBS	0.2927	0.3054	0.2863	0.3113	0.2949	0.2976	0.2921	0.2972	2.876	0.9991
12) PFHpS	0.5828	0.6032	0.5878	0.6236	0.5903	0.5813	0.5963	0.5950	2.472	0.9991
14) PFHxS	0.4562	0.4748	0.4703	0.4963	0.4710	0.4559	0.4845	0.4727	3.072	0.9977
17) PFOS	1.0080	1.0181	0.9947	1.0553	0.9978	0.9835	1.0032	1.0087	2.305	0.9991

\*(value) - Average RF below (value)

6.6.1  
9

# Initial Calibration Verification

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ280-ICV280  
Lab FileID: Q8641.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1208\_PFC\_SQ280\SQ280.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8641  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	0.000		
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	0.000		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.132	5.7	105.7
PFBS	20.000	22.749	13.7	113.7
PFDA	20.000	23.915	19.6	119.6
PFDoDA	20.000	24.075	20.4	120.4
PFDS	20.000	23.692	18.5	118.5
PFHpA	20.000	20.775	3.9	103.9
PFHpS	20.000	0.000		
PFHxA	20.000	21.363	6.8	106.8
PFHxS	20.000	21.395	7.0	107.0
PFNA	20.000	19.475	-2.6	97.4
PFOA	20.000	20.861	4.3	104.3
PFOS	20.000	21.021	5.1	105.1
PFPeA	20.000	20.786	3.9	103.9
PFTeDA	20.000	27.964	# 39.8	139.8
PFTrDA	20.000	26.260	# 31.3	131.3
PFUnDA	20.000	22.320	11.6	111.6

CC Criteria: +/- 25%

6.6.2  
6

# Initial Calibration Verification

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample: SQ280-ICV280  
 Lab FileID: Q8642.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1208\_PFC\_SQ280\SQ280.batch.bin

Level ID: Calibration File  
 1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
 2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
 3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
 4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
 5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
 6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
 7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8642  
 Type : QC  
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	0.000		
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	0.000		
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	0.000		
PFBS	20.000	23.312	16.6	116.6
PFDA	20.000	0.000		
PFDoDA	20.000	0.000		
PFDS	20.000	0.000		
PFHpA	20.000	18.151	-9.2	90.8
PFHpS	20.000	0.000		
PFHxA	20.000	0.000		
PFHxS	20.000	22.032	10.2	110.2
PFNA	20.000	19.117	-4.4	95.6
PFOA	20.000	18.958	-5.2	94.8
PFOS	20.000	19.895	-0.5	99.5
PFPeA	20.000	0.000		
PFTeDA	20.000	0.000		
PFTTrDA	20.000	0.000		
PFOUnDA	20.000	0.000		

CC Criteria: +/- 25%

6.6.3  
6

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ281-CC280  
Lab FileID: Q8688.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1209\_PFC\_SQ281\SQ281.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8688  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	20.522	2.6	102.6
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	20.574	2.9	102.9
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.517	7.6	107.6
PFBS	20.000	21.144	5.7	105.7
PFDA	20.000	22.350	11.7	111.7
PFDoDA	20.000	20.244	1.2	101.2
PFDS	20.000	21.242	6.2	106.2
PFHpA	20.000	20.509	2.5	102.5
PFHpS	20.000	20.814	4.1	104.1
PFHxA	20.000	20.718	3.6	103.6
PFHxS	20.000	21.097	5.5	105.5
PFNA	20.000	19.219	-3.9	96.1
PFOA	20.000	20.444	2.2	102.2
PFOS	20.000	20.559	2.8	102.8
PFPeA	20.000	20.973	4.9	104.9
PFTeDA	20.000	20.698	3.5	103.5
PFTTrDA	20.000	19.934	-0.3	99.7
PFUnDA	20.000	21.102	5.5	105.5

CC Criteria: +/- 25%

6.6.4  
6

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ281-CC280  
Lab FileID: Q8700.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1209\_PFC\_SQ281\SQ281.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8700  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	20.513	2.6	102.6
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	19.507	-2.5	97.5
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.009	5.0	105.0
PFBS	20.000	22.934	14.7	114.7
PFDA	20.000	23.435	17.2	117.2
PFDoDA	20.000	20.020	0.1	100.1
PFDS	20.000	20.307	1.5	101.5
PFHpA	20.000	20.259	1.3	101.3
PFHpS	20.000	21.453	7.3	107.3
PFHxA	20.000	19.433	-2.8	97.2
PFHxS	20.000	21.965	9.8	109.8
PFNA	20.000	19.113	-4.4	95.6
PFOA	20.000	20.261	1.3	101.3
PFOS	20.000	20.741	3.7	103.7
PFPeA	20.000	20.784	3.9	103.9
PFTeDA	20.000	17.259	-13.7	86.3
PFTTrDA	20.000	19.010	-5.0	95.0
PFUnDA	20.000	22.121	10.6	110.6

CC Criteria: +/- 25%

6.6.5  
9

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ284-CC280  
Lab FileID: Q8768.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8768  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	18.741	-6.3	93.7
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	22.370	11.9	111.9
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	22.481	12.4	112.4
PFBS	20.000	21.560	7.8	107.8
PFDA	20.000	23.474	17.4	117.4
PFDoDA	20.000	19.136	-4.3	95.7
PFDS	20.000	24.982	24.9	124.9
PFHpA	20.000	21.097	5.5	105.5
PFHpS	20.000	19.880	-0.6	99.4
PFHxA	20.000	22.653	13.3	113.3
PFHxS	20.000	20.392	2.0	102.0
PFNA	20.000	18.347	-8.3	91.7
PFOA	20.000	19.979	-0.1	99.9
PFOS	20.000	20.100	0.5	100.5
PFPeA	20.000	22.916	14.6	114.6
PFTeDA	20.000	18.336	-8.3	91.7
PFTrDA	20.000	17.140	-14.3	85.7
PUnDA	20.000	21.261	6.3	106.3

CC Criteria: +/- 25%

6.6  
9



# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ284-CC280  
Lab FileID: Q8774.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

Level ID: Calibration File  
1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d  
2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d  
3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d  
4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d  
5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d  
6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d  
7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8774  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	18.872	-5.6	94.4
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	20.993	5.0	105.0
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.379	6.9	106.9
PFBS	20.000	21.746	8.7	108.7
PFDA	20.000	24.142	20.7	120.7
PFDoDA	20.000	20.092	0.5	100.5
PFDS	20.000	25.207	# 26.0	126.0
PFHpA	20.000	20.248	1.2	101.2
PFHpS	20.000	20.273	1.4	101.4
PFHxA	20.000	21.236	6.2	106.2
PFHxS	20.000	20.636	3.2	103.2
PFNA	20.000	17.865	-10.7	89.3
PFOA	20.000	20.023	0.1	100.1
PFOS	20.000	20.289	1.4	101.4
PFPeA	20.000	20.867	4.3	104.3
PFTeDA	20.000	16.241	-18.8	81.2
PFTrDA	20.000	18.208	-9.0	91.0
PFUnDA	20.000	22.950	14.7	114.7

CC Criteria: +/- 25%

6.6.7  
6

# Continuing Calibration Summary

Job Number: FA20402  
Account: ELTNN Empirical Labs  
Project: NSN Site 1 LTM

Sample: SQ284-CC280  
Lab FileID: Q8786.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

- Level ID: Calibration File
- 1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d
  - 2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d
  - 3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d
  - 4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d
  - 5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d
  - 6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d
  - 7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8786  
Type : QC  
Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	17.647	-11.8	88.2
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	20.029	0.1	100.1
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	21.226	6.1	106.1
PFBS	20.000	21.385	6.9	106.9
PFDA	20.000	24.106	20.5	120.5
PFDoDA	20.000	20.006	0.0	100.0
PFDS	20.000	26.118	# 30.6	130.6
PFHpA	20.000	19.870	-0.6	99.4
PFHpS	20.000	20.569	2.8	102.8
PFHxA	20.000	20.080	0.4	100.4
PFHxS	20.000	20.657	3.3	103.3
PFNA	20.000	17.079	-14.6	85.4
PFOA	20.000	19.765	-1.2	98.8
PFOS	20.000	20.374	1.9	101.9
PFPeA	20.000	20.172	0.9	100.9
PFTeDA	20.000	16.599	-17.0	83.0
PFTTrDA	20.000	18.251	-8.7	91.3
PFUnDA	20.000	25.885	# 29.4	129.4

CC Criteria: +/- 25%

6.6.8  
9

# Continuing Calibration Summary

Job Number: FA20402  
 Account: ELTNN Empirical Labs  
 Project: NSN Site 1 LTM

Sample: SQ284-CC280  
 Lab FileID: Q8793.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\1215\_PFC\_SQ284\SQ284.batch.bin

### Level ID: Calibration File

- 1:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8634.d
- 2:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8635.d
- 3:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8636.d
- 4:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8637.d
- 5:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8638.d
- 6:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8639.d
- 7:D:\MassHunter\Data\1208\_PFC\_SQ280\Q8640.d

Data File: Q8793  
 Type : QC  
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-PFDA	20.000	17.818	-10.9	89.1
13C2-PFDoDA	---	--ISTD--		
13C2-PFHxA	20.000	19.828	-0.9	99.1
13C2-PFOA	---	--ISTD--		
13C4-PFOS	---	--ISTD--		
PFBA	20.000	20.259	1.3	101.3
PFBS	20.000	20.580	2.9	102.9
PFDA	20.000	24.009	20.0	120.0
PFDoDA	20.000	20.232	1.2	101.2
PFDS	20.000	26.139	# 30.7	130.7
PFHpA	20.000	19.222	-3.9	96.1
PFHpS	20.000	19.888	-0.6	99.4
PFHxA	20.000	19.743	-1.3	98.7
PFHxS	20.000	19.796	-1.0	99.0
PFNA	20.000	17.630	-11.8	88.2
PFOA	20.000	19.970	-0.1	99.9
PFOS	20.000	19.950	-0.3	99.7
PFPeA	20.000	20.015	0.1	100.1
PFTeDA	20.000	16.359	-18.2	81.8
PFTrDA	20.000	18.160	-9.2	90.8
PFUnDA	20.000	25.585	# 27.9	127.9

CC Criteria: +/- 25%

6.6.9  
9

GC/MS Semi-volatiles

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Raw Data

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7

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8693.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 16:43  
 Sample Name : FA20402-1  
 Vial : Vial 8  
 Sample Info : OP54151,SQ281,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17

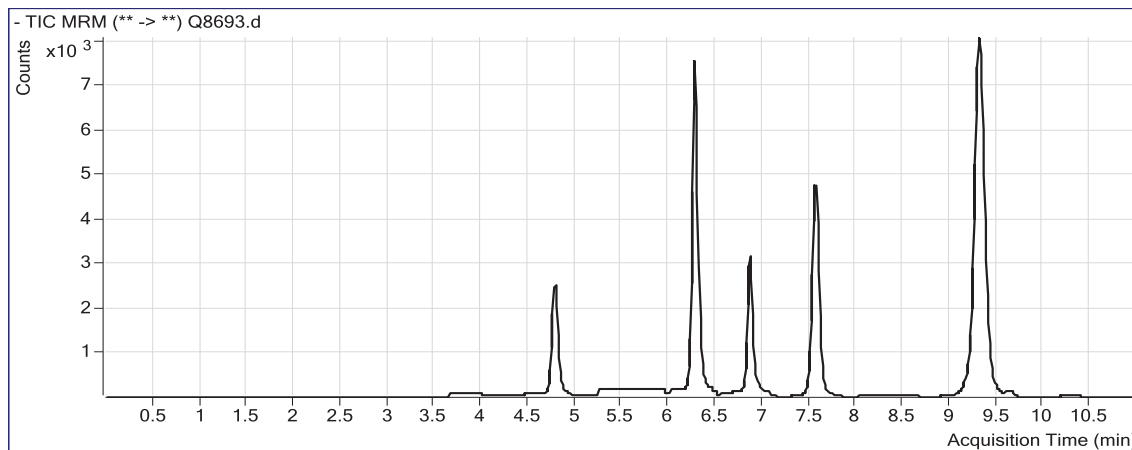
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
13C2-PFOA	6.271	415.0 -> 370.0	29223	20.000	µg/L	0.025
13C4-PFOS	6.857	503.0 -> 80.0	12208	20.000	µg/L	0.038
13C2-PFDoDA	9.297	615.0 -> 570.0	65186	20.000	µg/L	0.025
<b>System Monitoring Compounds</b>						
13C2-PFHxA	4.779	315.0 -> 270.0	9945	20.70	µg/L	0.025
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 103.48%			
13C2-PFDA	7.558	515.0 -> 470.0	22963	18.42	µg/L	0.050
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 92.10%			
<b>Target Compounds</b>						
PFOA	6.274	413.0 -> 369.0	361	0.244	µg/L	<b>Qvalue</b> 69

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

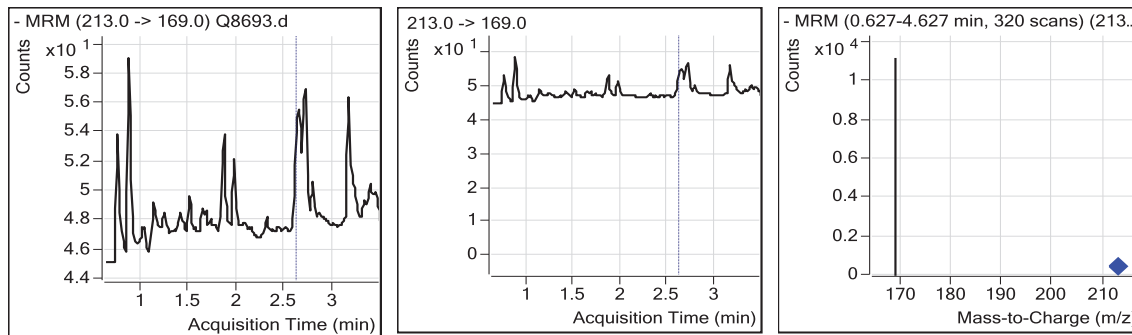
7.1.1  
7

## Perfluorinated Compounds by LC/MS/MS.

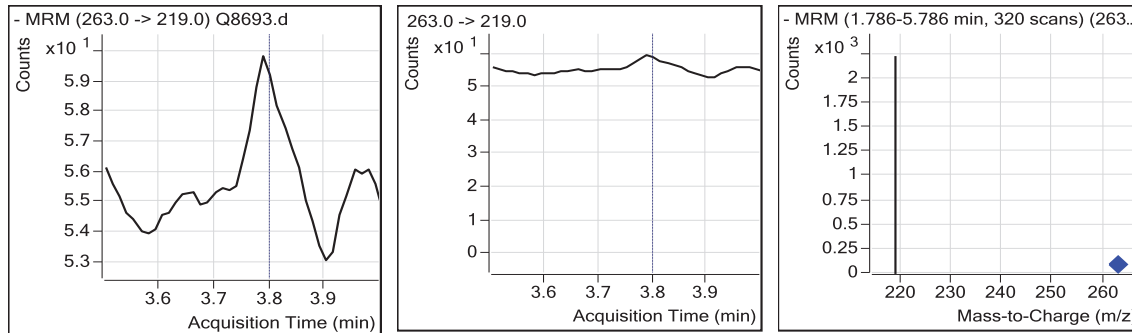
Data File : Q8693.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 16:43  
 Sample Name : FA20402-1  
 Vial : Vial 8  
 Sample Info : OP54151,SQ281,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



**PFBA**

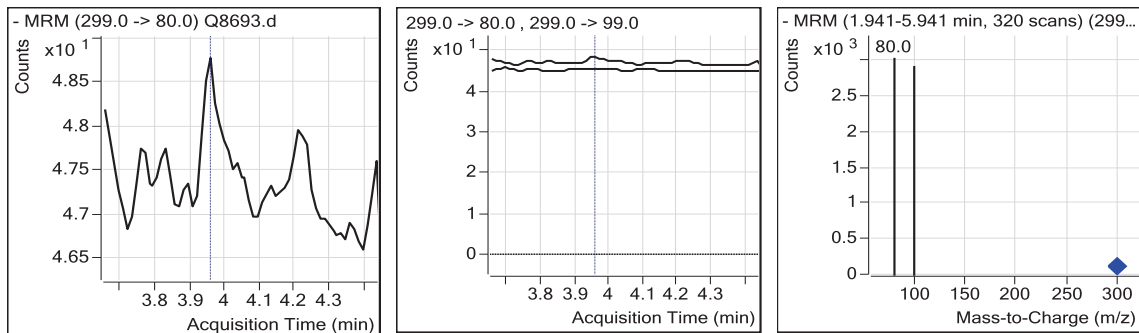


**PFPeA**

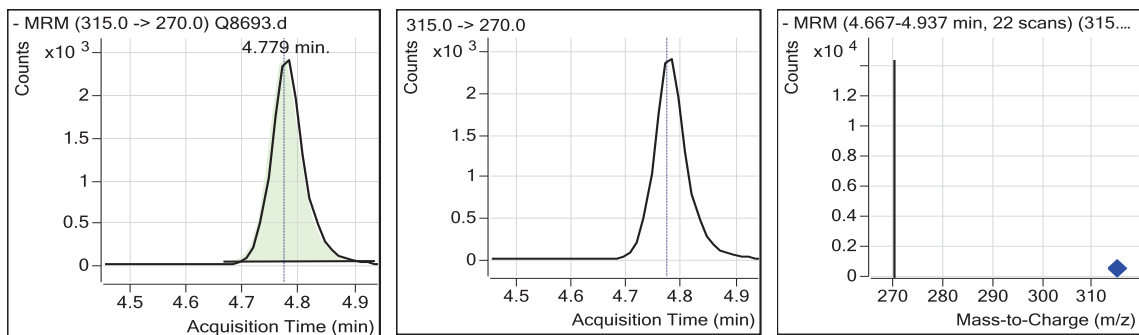


## Perfluorinated Compounds by LC/MS/MS.

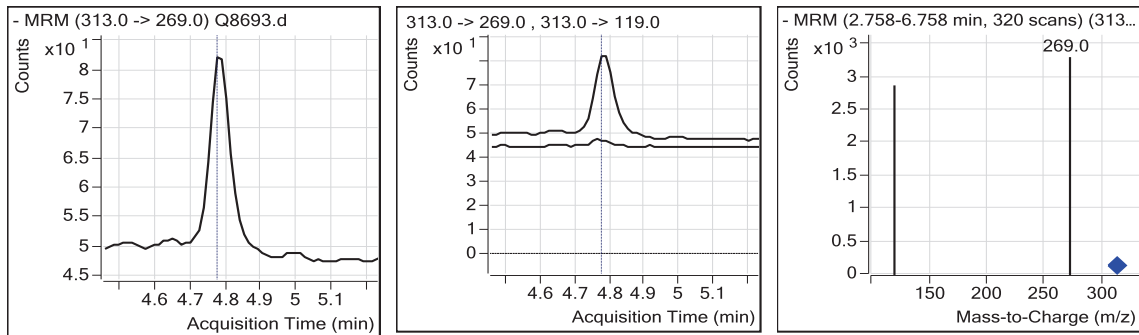
PFBS



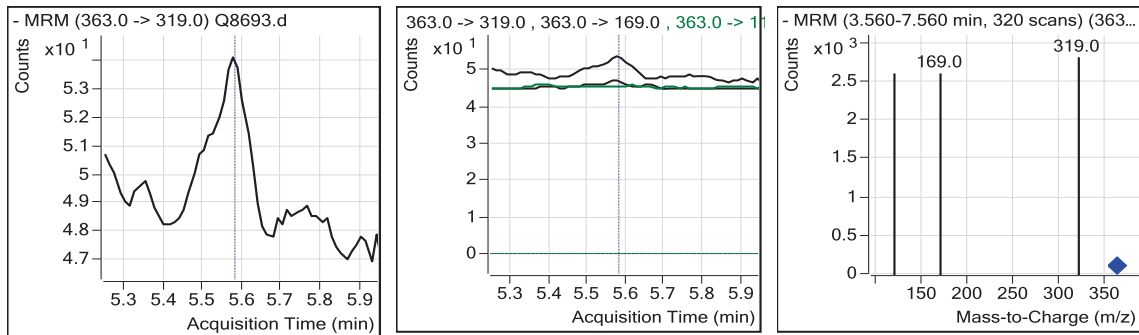
13C2-PFHxA



PFHxA



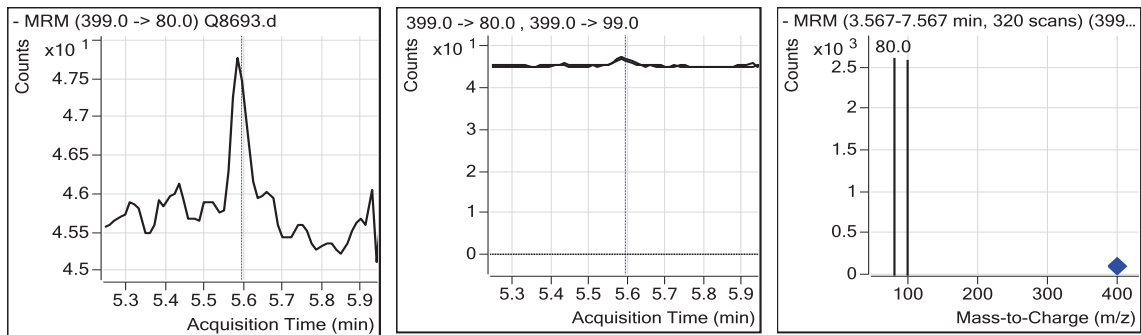
PFHpA



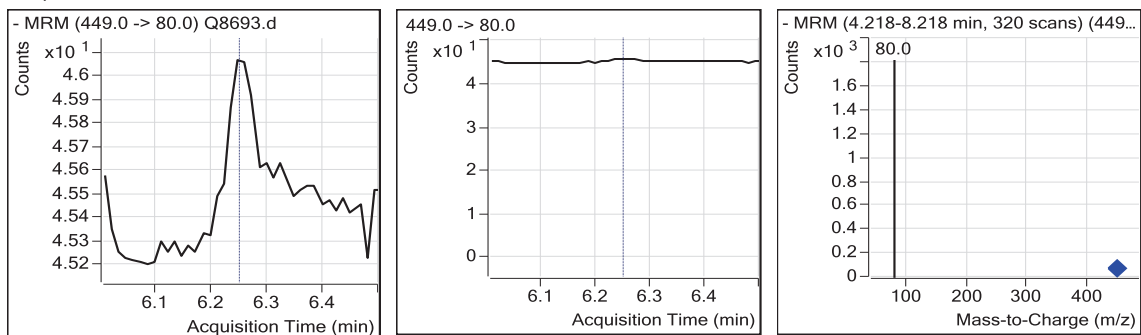
7.1.1  
7

## Perfluorinated Compounds by LC/MS/MS.

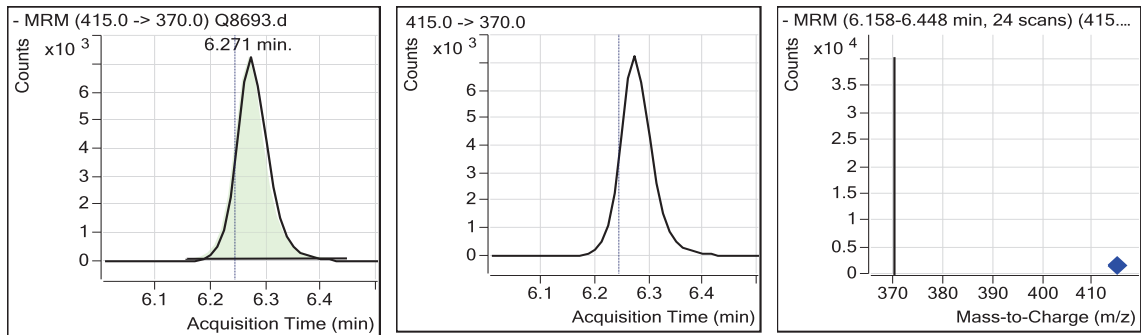
PFHxS



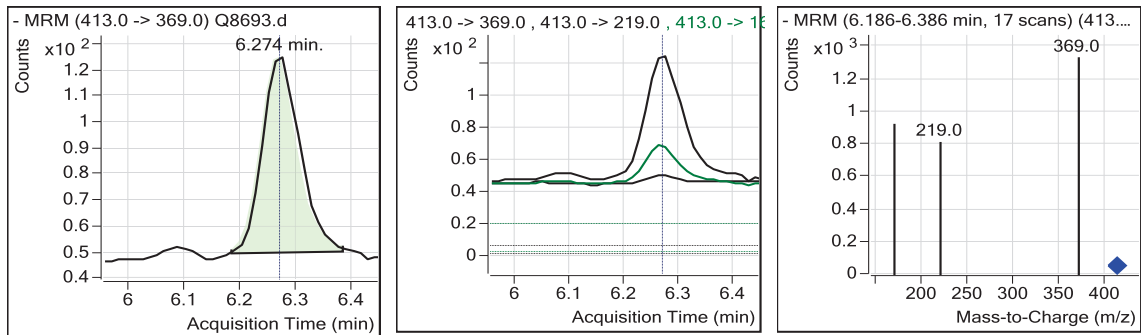
PFHpS



13C2-PFOA



PFOA

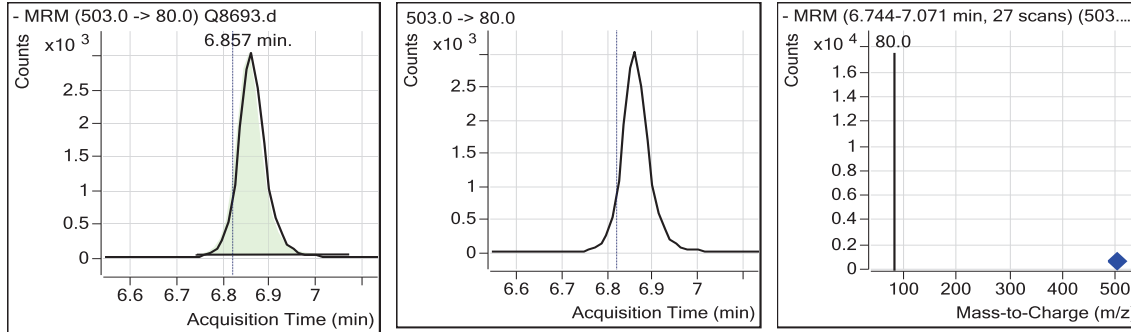


7.1.1

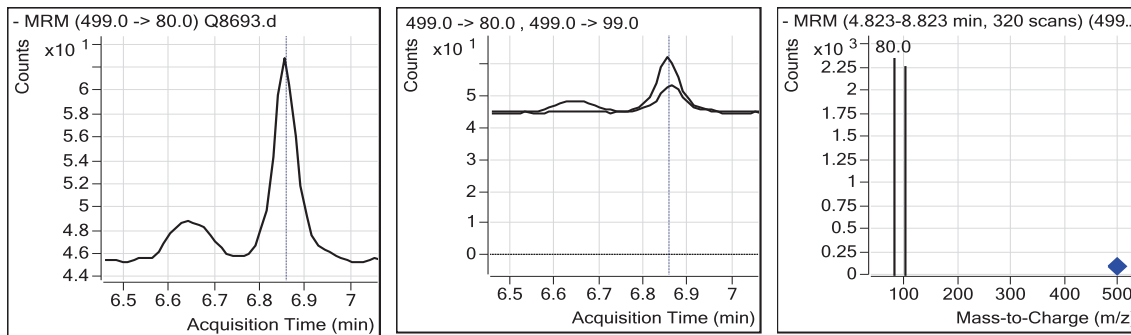


## Perfluorinated Compounds by LC/MS/MS.

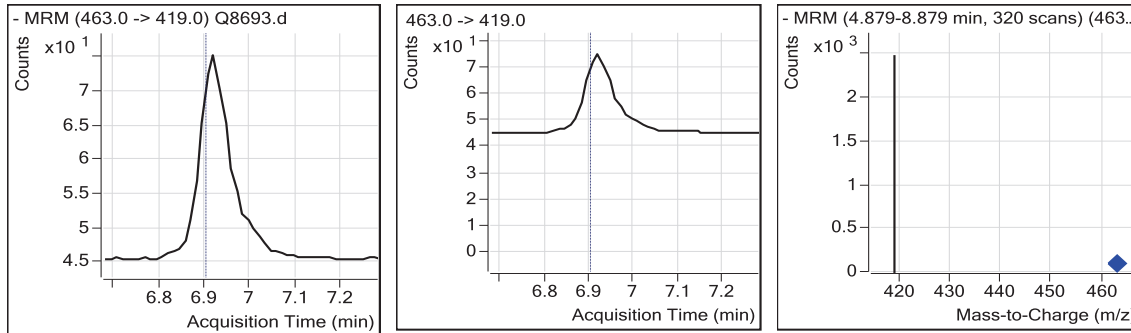
### 13C4-PFOS



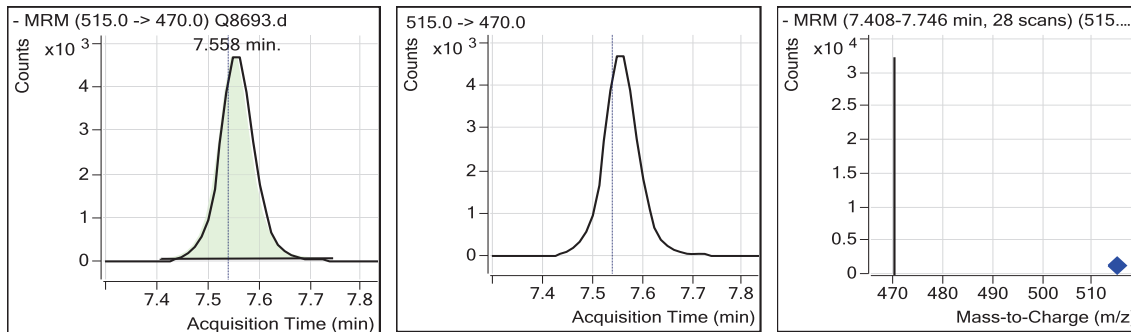
### PFOS



### PFNA



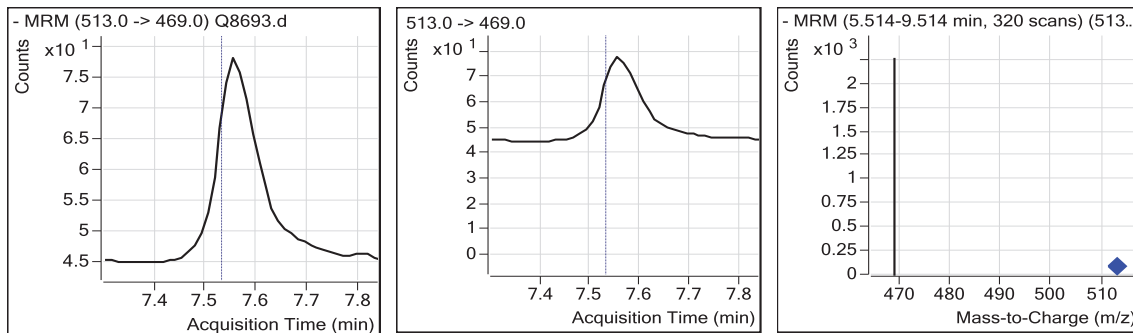
### 13C2-PFDA



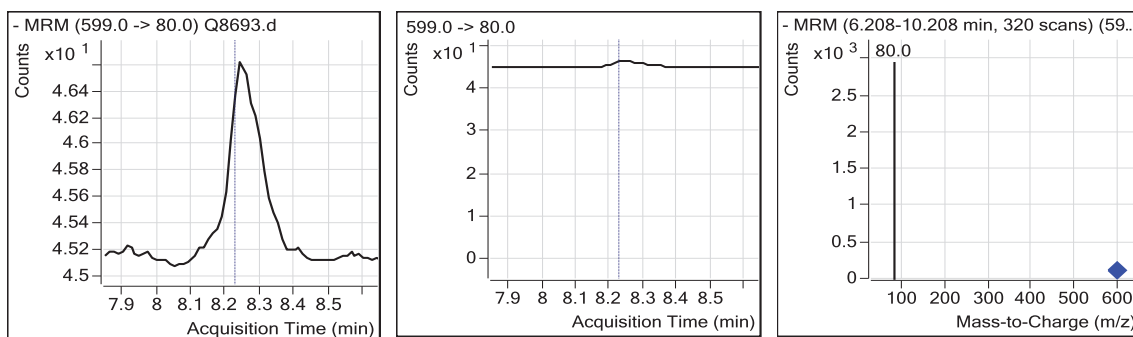
7.1.1  
7

## Perfluorinated Compounds by LC/MS/MS.

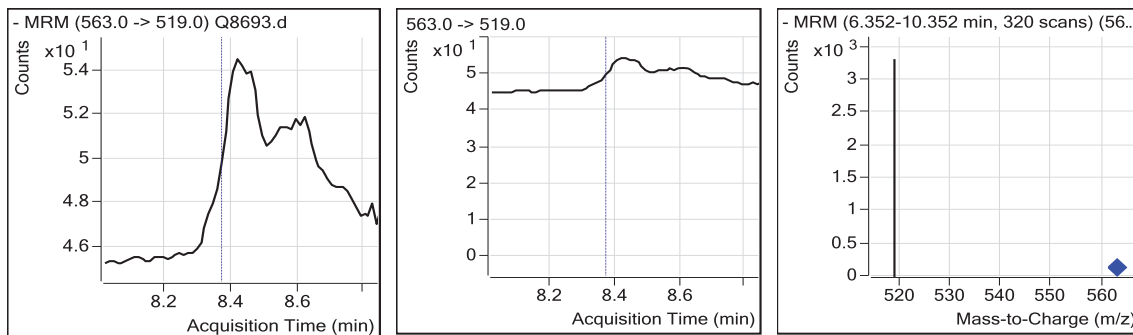
PFDA



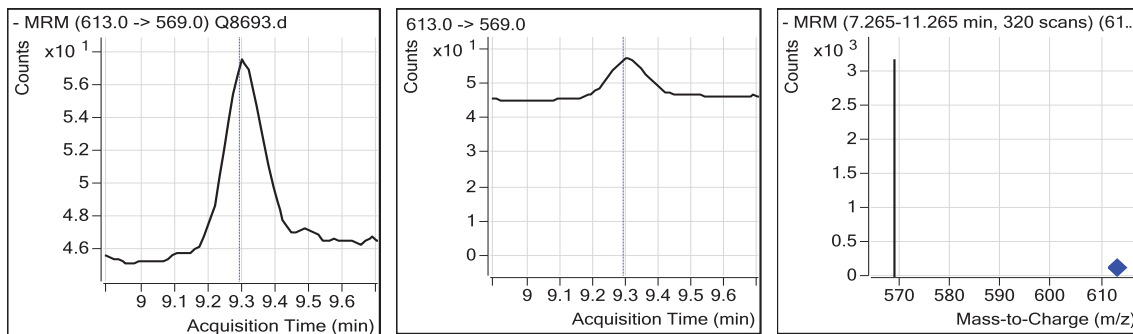
PFDS



PFUnDA

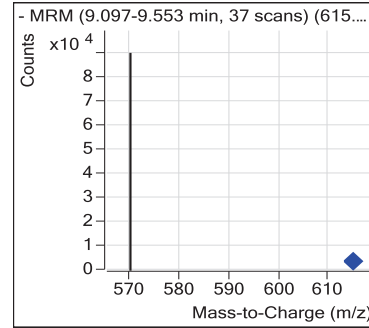
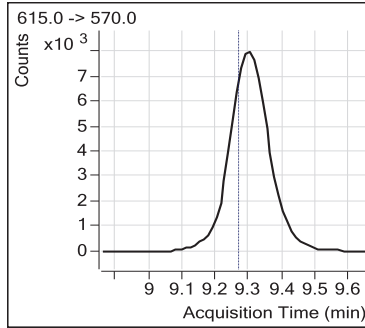
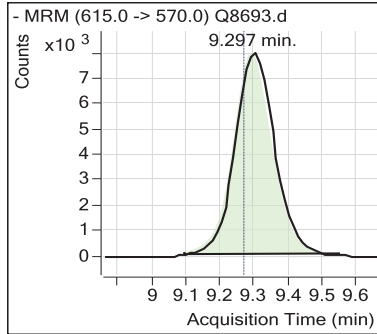


PFDoDA

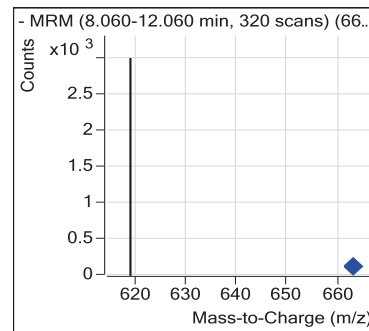
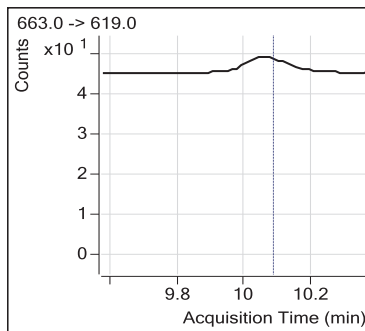
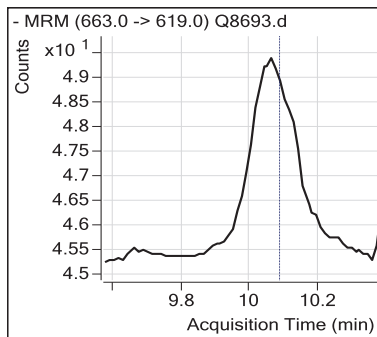


## Perfluorinated Compounds by LC/MS/MS.

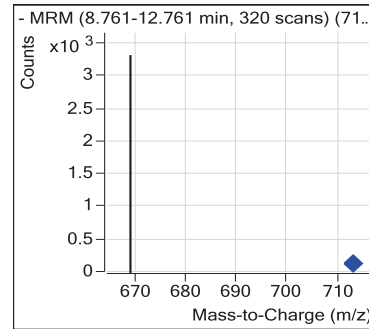
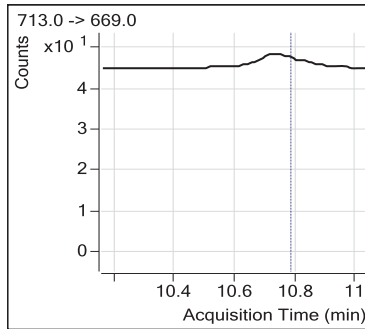
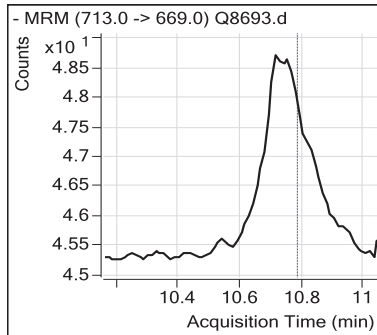
13C2-PFDoDA



PFTTrDA



PFTeDA



7.1.1  
7

**Perfluorinated Compounds by LC/MS/MS.**

Data File : Q8694.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 17:04  
 Sample Name : FA20402-2  
 Vial : Vial 9  
 Sample Info : OP54151,SQ281,120,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
 Last Calib Update : 2014-12-08 16:17

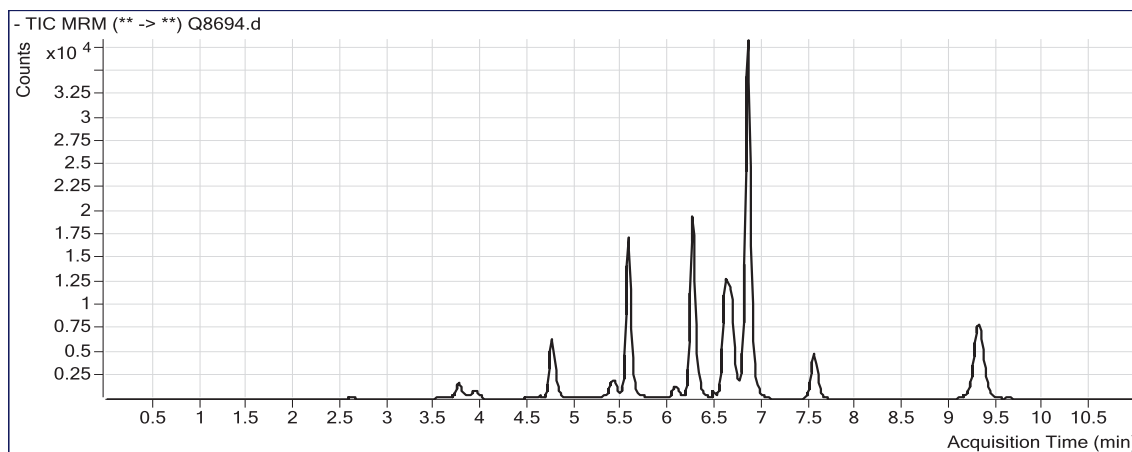
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.246	415.0 -> 370.0	22392	20.000	µg/L	0.000	
13C4-PFOS	6.832	503.0 -> 80.0	7620	20.000	µg/L	0.012	
13C2-PFDoDA	9.284	615.0 -> 570.0	64814	20.000	µg/L	0.012	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.754	315.0 -> 270.0	6333	17.20	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 86.01%				
13C2-PFDA	7.533	515.0 -> 470.0	22439	23.49	µg/L	0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 117.45%				
<b>Target Compounds</b>							
PFBA	2.614	213.0 -> 169.0	732	2.725	µg/L		100
PFPeA	3.761	263.0 -> 219.0	6552	48.794	µg/L		100
PFBS	3.916	299.0 -> 80.0	2122	18.850	µg/L		97
PFHxA	4.746	313.0 -> 269.0	19495	50.427	µg/L	m	100
PFHpA	5.547	363.0 -> 319.0	9618	25.646	µg/L		99
PFHxS	5.555	399.0 -> 80.0	42901	237.281	µg/L	m	90
PFHpS	6.231	449.0 -> 80.0	1943	8.602	µg/L		100
PFOA	6.249	413.0 -> 369.0	43526	38.371	µg/L	m	76
PFOS	6.835	499.0 -> 80.0	174909	458.942	µg/L	m	100
PFNA	6.891	463.0 -> 419.0	2784	4.128	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

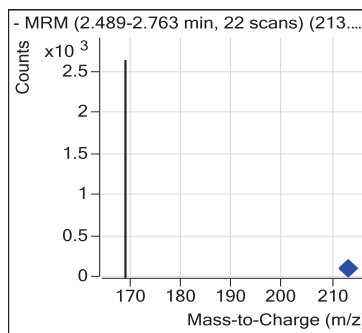
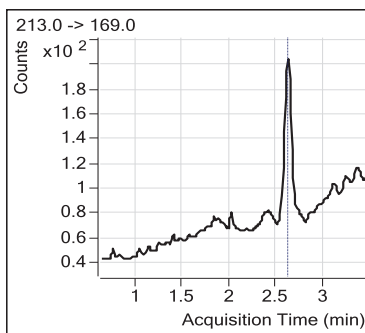
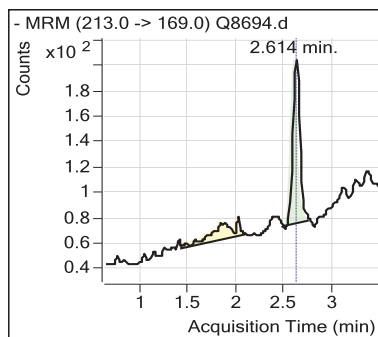
7.12  
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## Perfluorinated Compounds by LC/MS/MS.

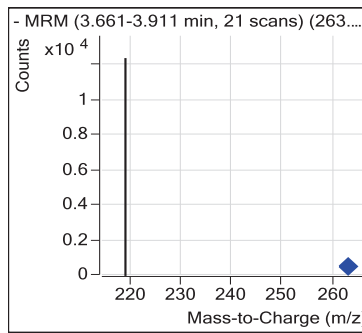
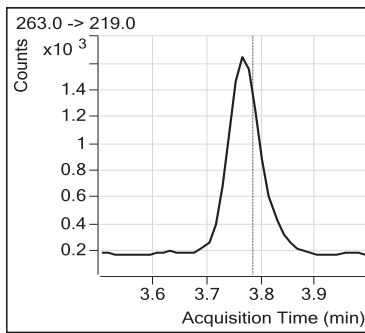
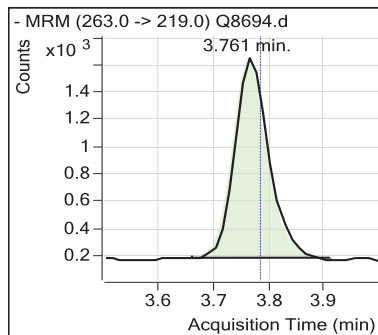
Data File : Q8694.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 17:04  
 Sample Name : FA20402-2  
 Vial : Vial 9  
 Sample Info : OP54151,SQ281,120,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



### PFBA

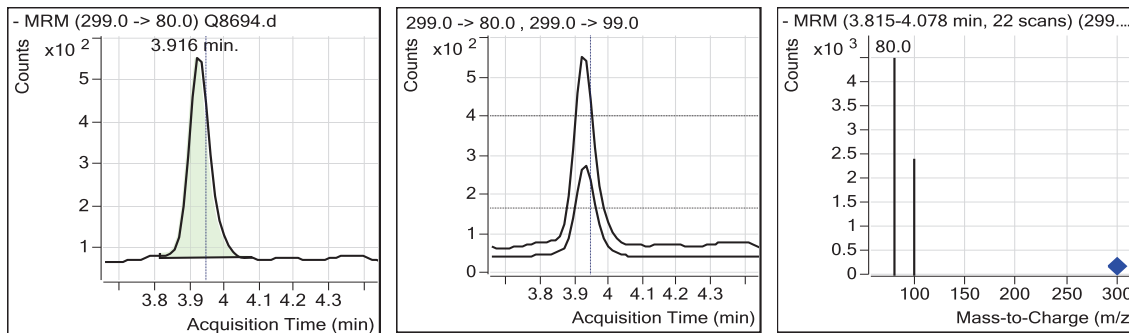


### PFPeA

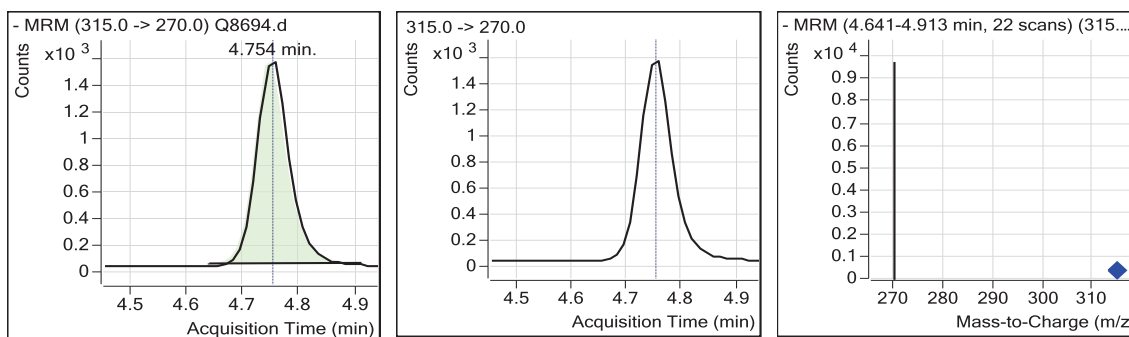


### Perfluorinated Compounds by LC/MS/MS.

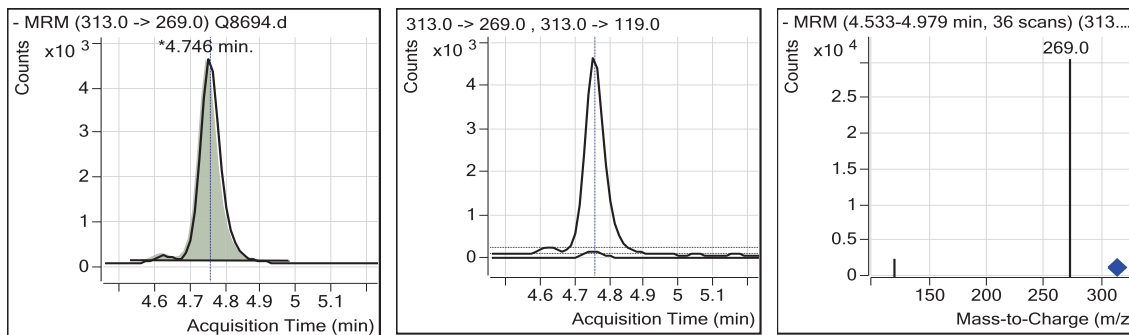
PFBS



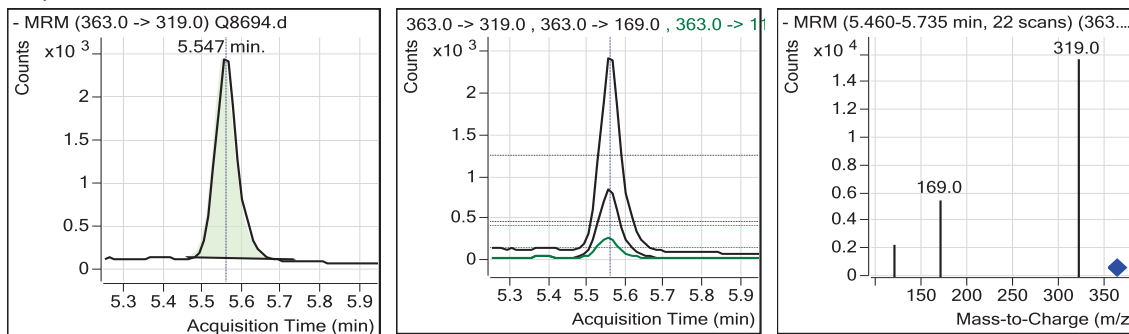
13C2-PFHxA



PFHxA

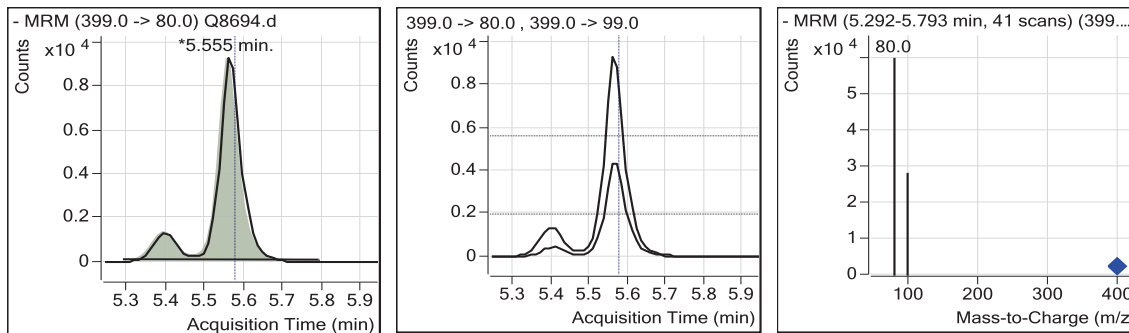


PFHpA

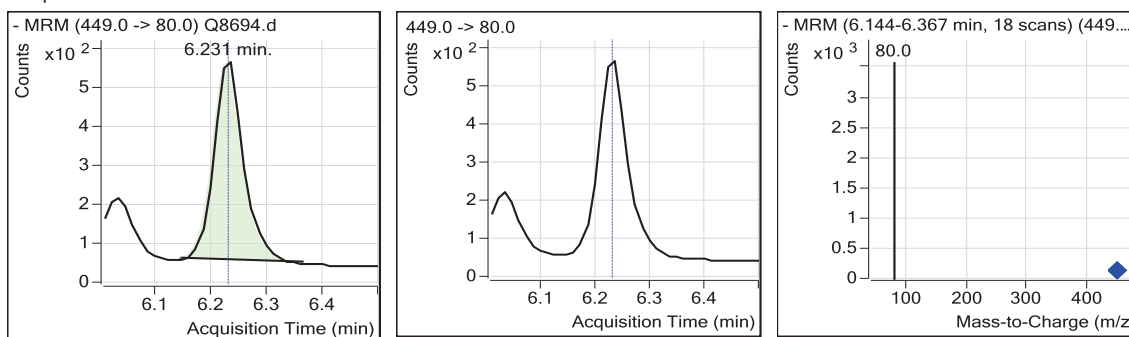


### Perfluorinated Compounds by LC/MS/MS.

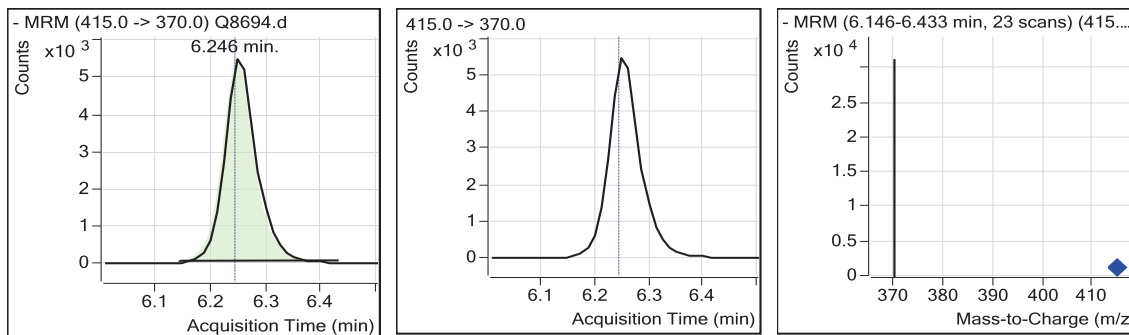
PFHxS



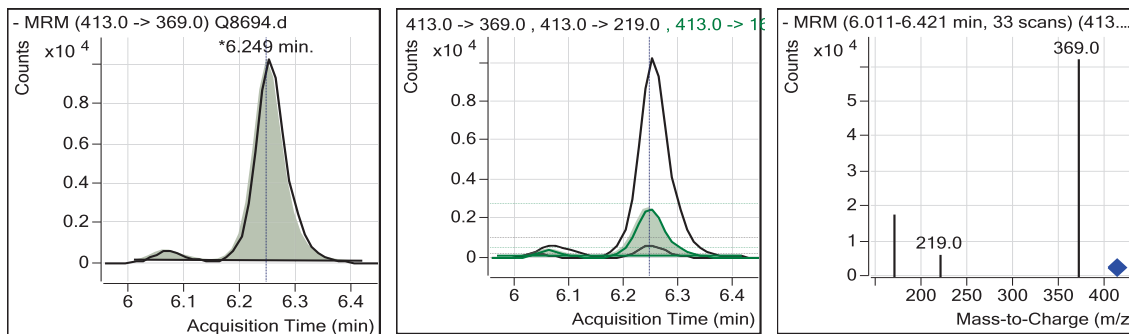
PFHpS



13C2-PFOA



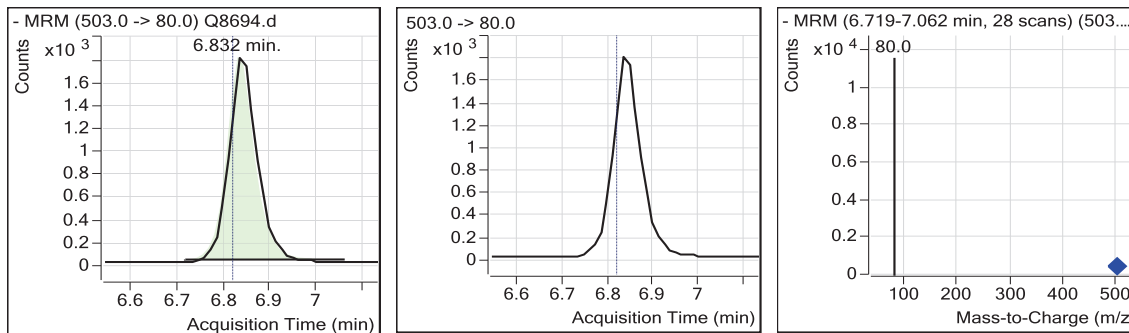
PFOA



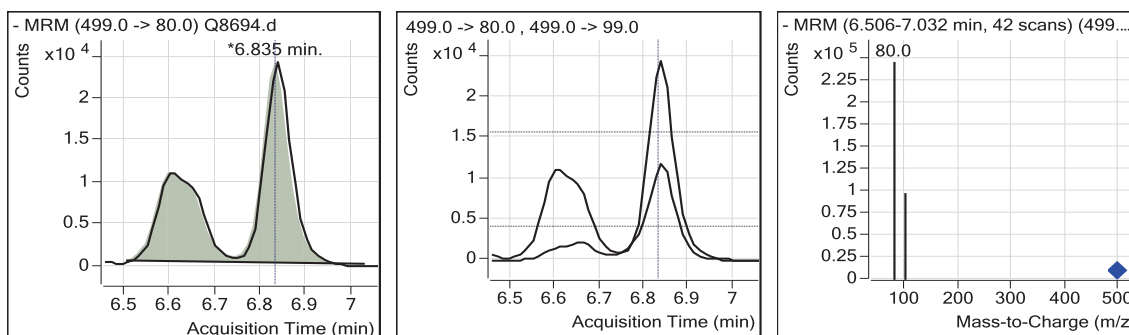
7.1.2  
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### Perfluorinated Compounds by LC/MS/MS.

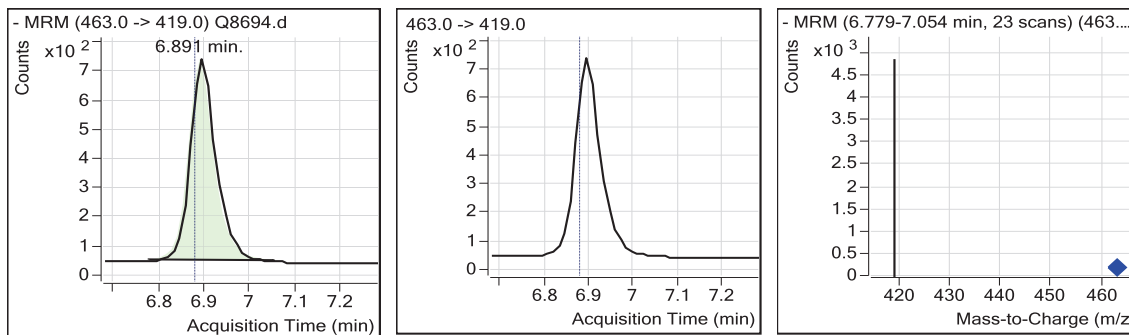
13C4-PFOS



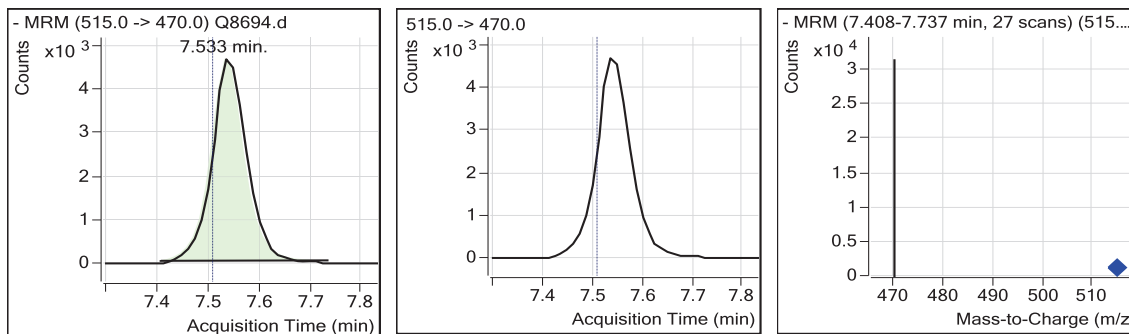
PFOS



PFNA



13C2-PFDA

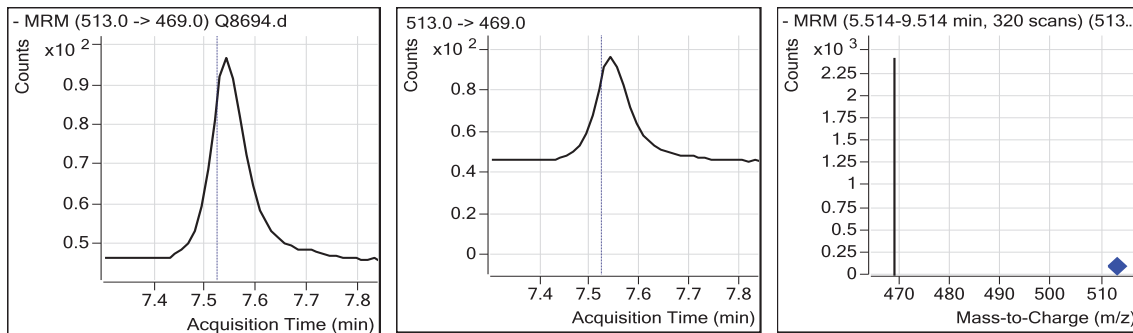


7.12  
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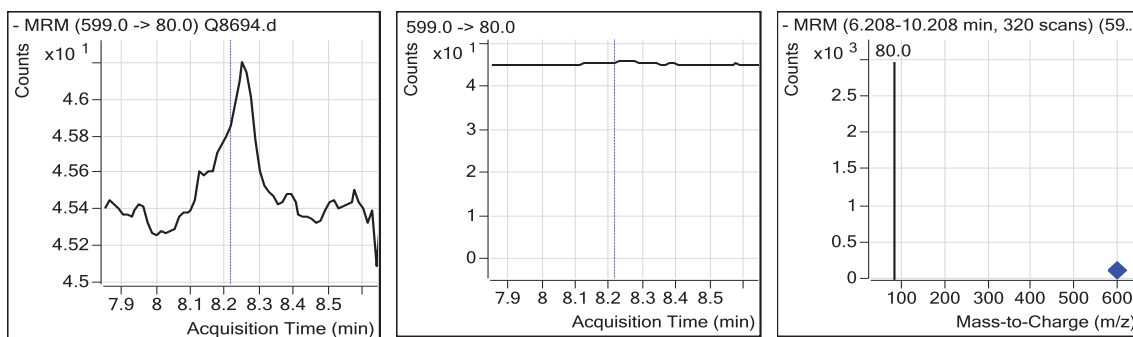


### Perfluorinated Compounds by LC/MS/MS.

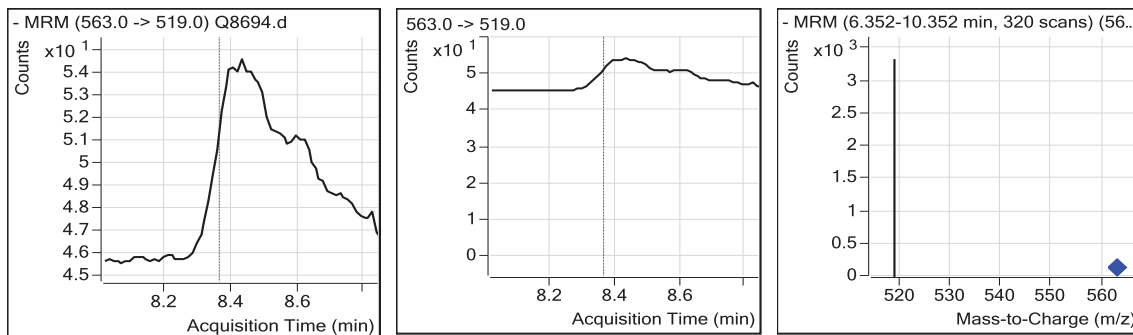
PFDA



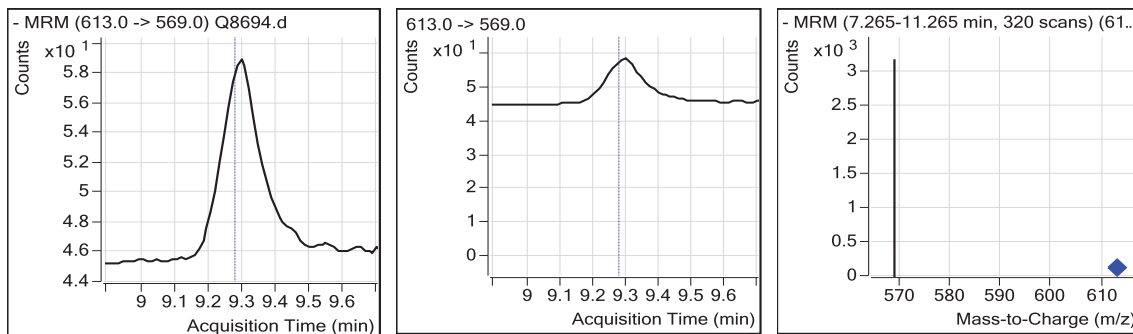
PFDS



PFUnDA



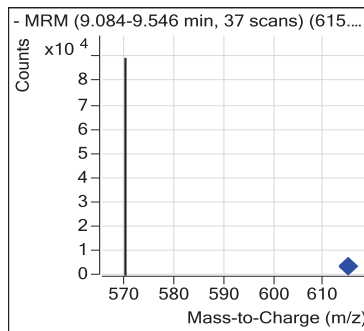
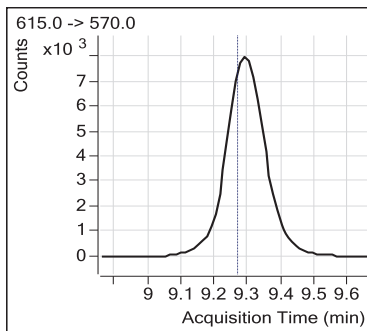
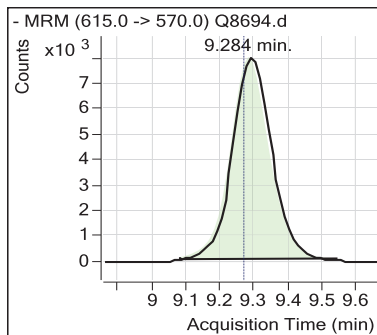
PFDoDA



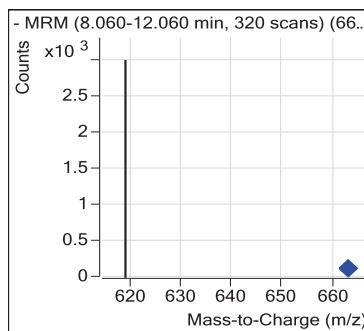
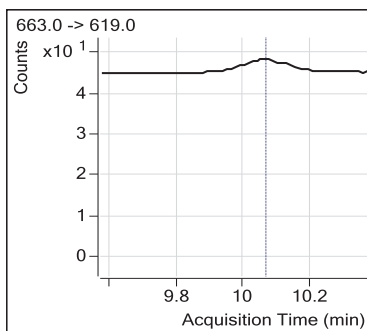
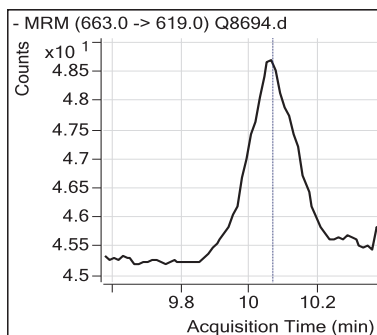
7.1.2  
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### Perfluorinated Compounds by LC/MS/MS.

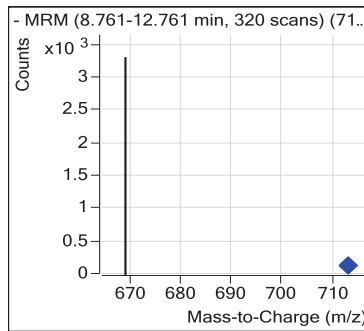
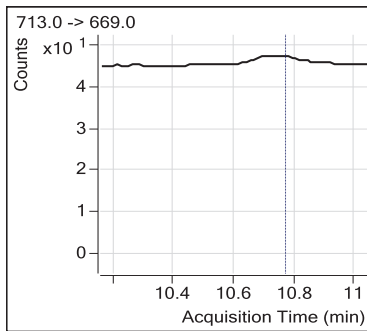
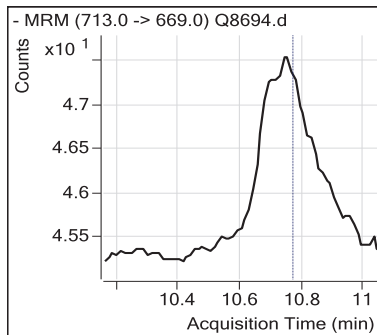
13C2-PFDoDA



PFTTrDA



PFTeDA



7.1.2  
7

# Manual Integration Approval Summary

Sample Number: FA20402-2      Method: EPA 537 MOD  
Lab FileID: Q8694.D      Analyst approved: 12/16/14 09:32 Nancy Saunders  
Injection Time: 12/09/14 17:04      Supervisor approved: 12/16/14 10:16 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanoic acid	307-24-4		4.75	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.55	Split peak
Perfluorooctanoic acid	335-67-1		6.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.83	Split peak

7.1.2.1  
7

## Perfluorinated Compounds by LC/MS/MS.

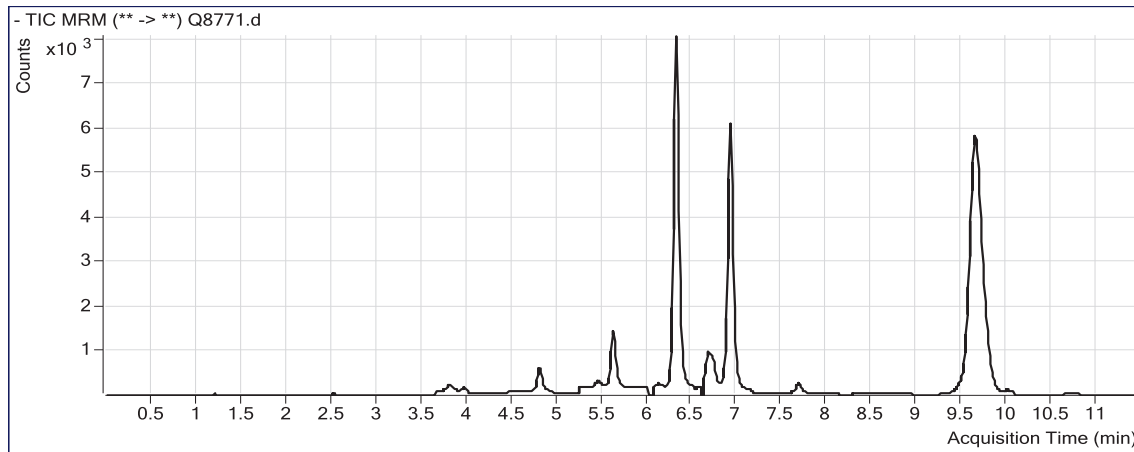
Data File : Q8771.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 15:49  
 Sample Name : FA20402-2  
 Vial : Vial 4  
 Sample Info : OP54151,SQ284,120,,,1,20,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
 Last Calib Update : 2014-12-10 09:24

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.321	415.0 -> 370.0	29529	20.000	µg/L	0.013	
13C4-PFOS	6.920	503.0 -> 80.0	13866	20.000	µg/L	0.013	
13C2-PFDoDA	9.622	615.0 -> 570.0	57929	20.000	µg/L	0.012	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.804	315.0 -> 270.0	501	1.03	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 5.16%				
13C2-PFDA	7.670	515.0 -> 470.0	1062	0.84	µg/L	0.013	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 4.22%				
<b>Target Compounds</b>							
PFPeA	3.811	263.0 -> 219.0	524	2.957	µg/L		100
PFHxA	4.796	313.0 -> 269.0	1572	3.084	µg/L		100
PFHpA	5.610	363.0 -> 319.0	779	1.574	µg/L		100
PFHxS	5.618	399.0 -> 80.0	3027	9.200	µg/L	m	91
PFOA	6.311	413.0 -> 369.0	2594	1.734	µg/L	m	74
PFOS	6.910	499.0 -> 80.0	12446	17.946	µg/L	m	100

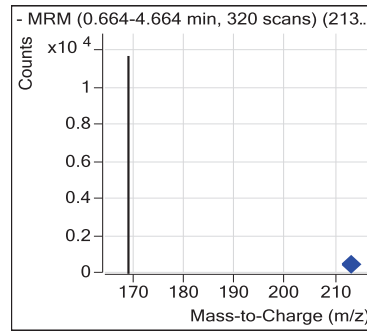
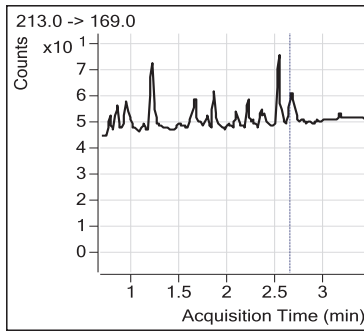
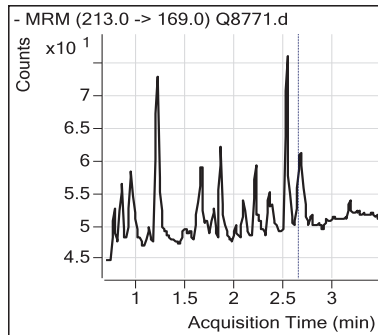
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

### Perfluorinated Compounds by LC/MS/MS.

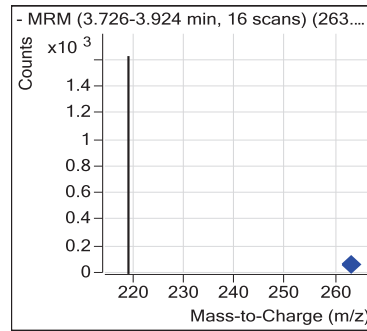
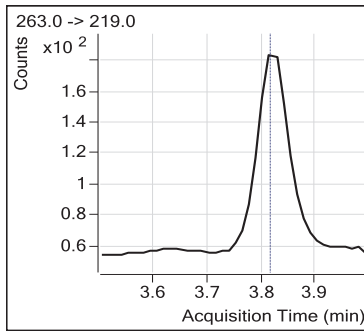
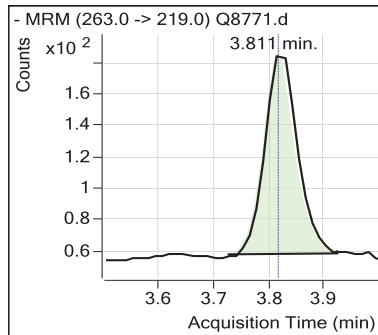
Data File : Q8771.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 15:49  
 Sample Name : FA20402-2  
 Vial : Vial 4  
 Sample Info : OP54151,SQ284,120,,,1,20,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
**Last Calib Update** : 2014-12-10 09:24



PFBA



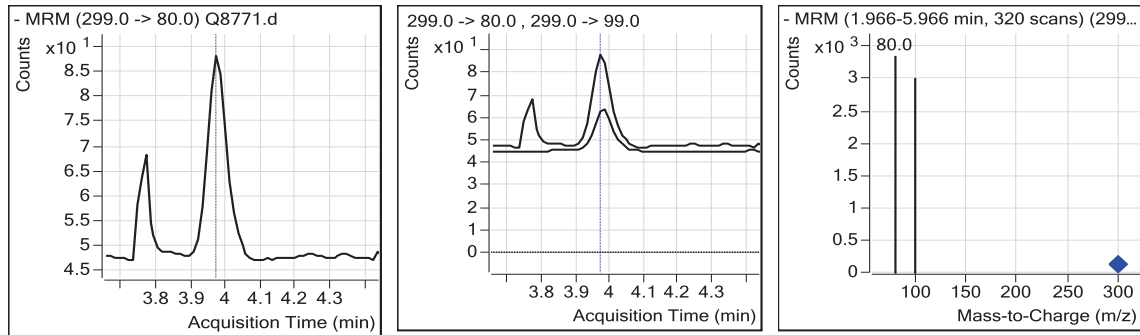
PFPeA



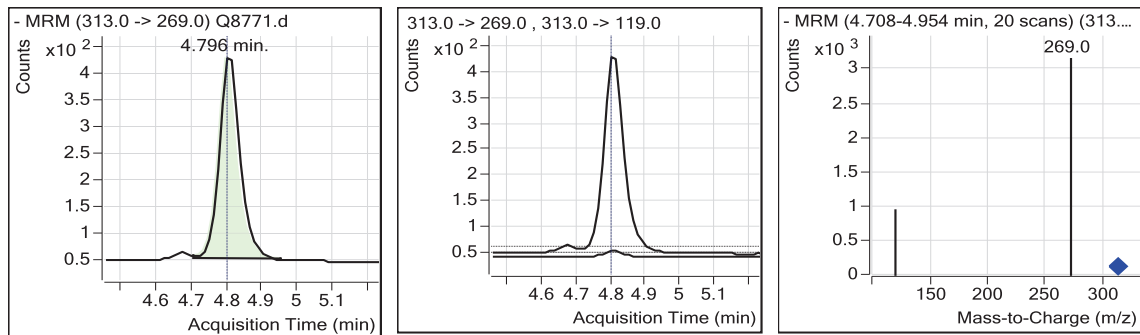
7.1.3  
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### Perfluorinated Compounds by LC/MS/MS.

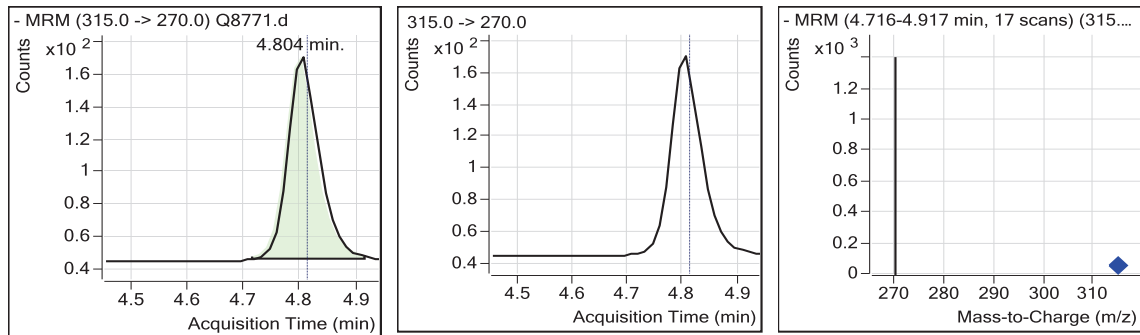
PFBS



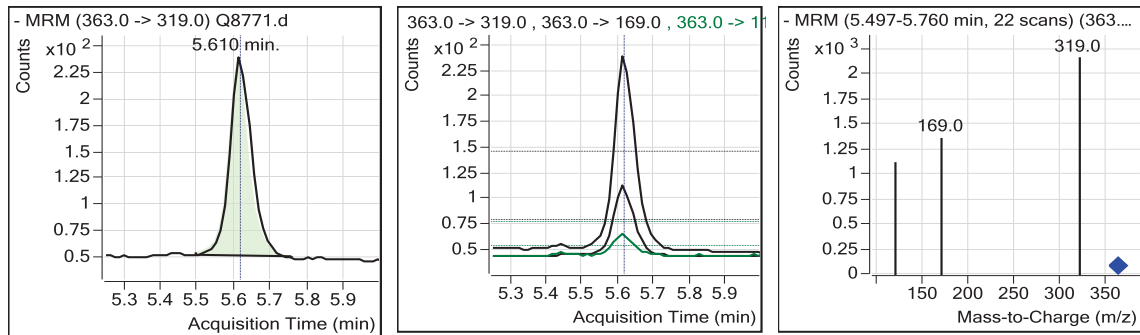
PFHxA



13C2-PFHxA



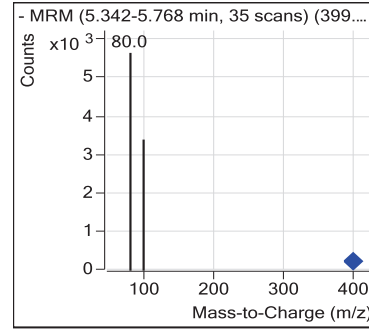
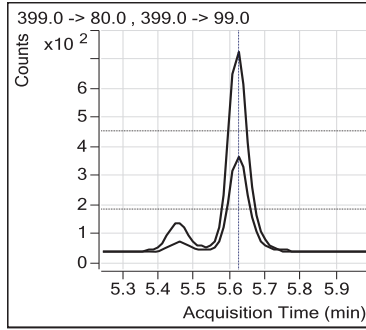
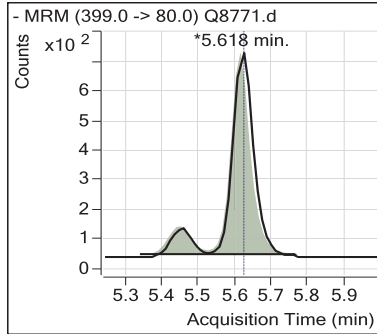
PFHpA



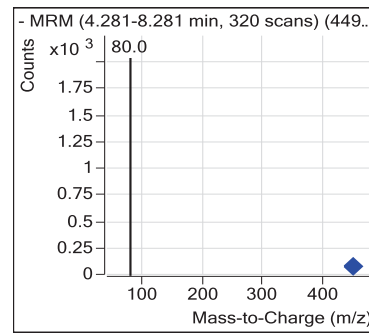
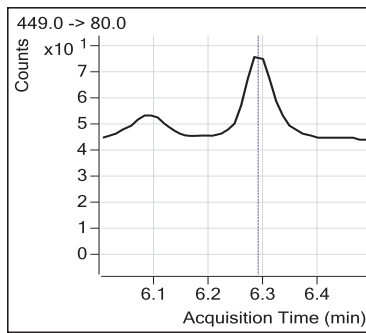
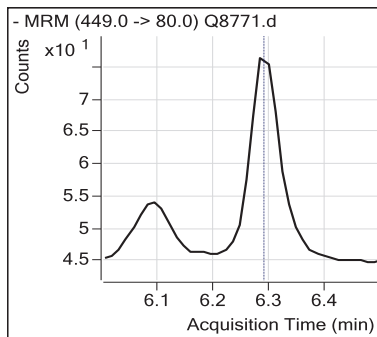
7.1.3  
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### Perfluorinated Compounds by LC/MS/MS.

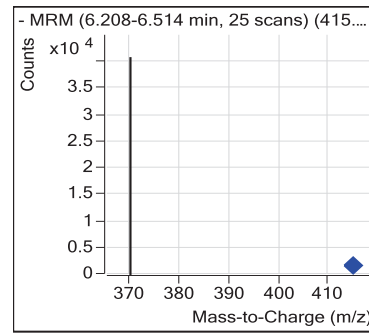
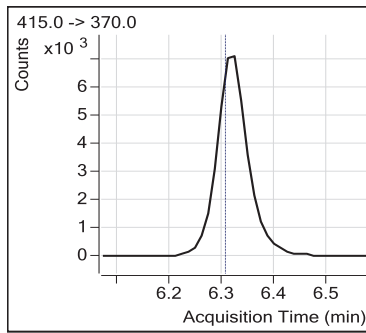
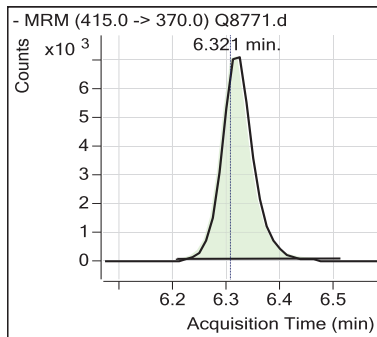
PFHxS



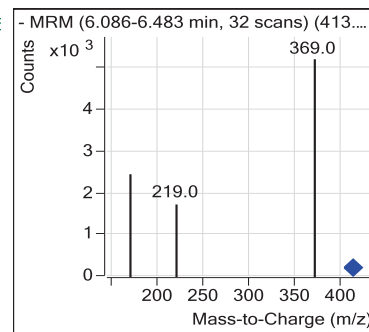
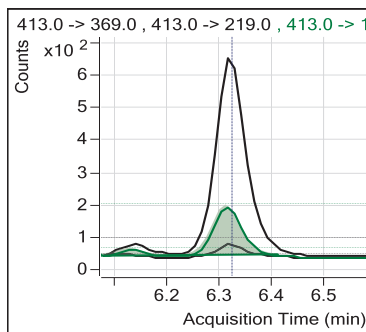
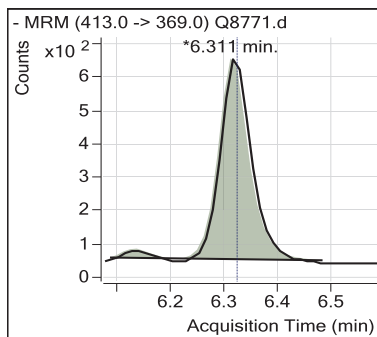
PFHpS



13C2-PFOA

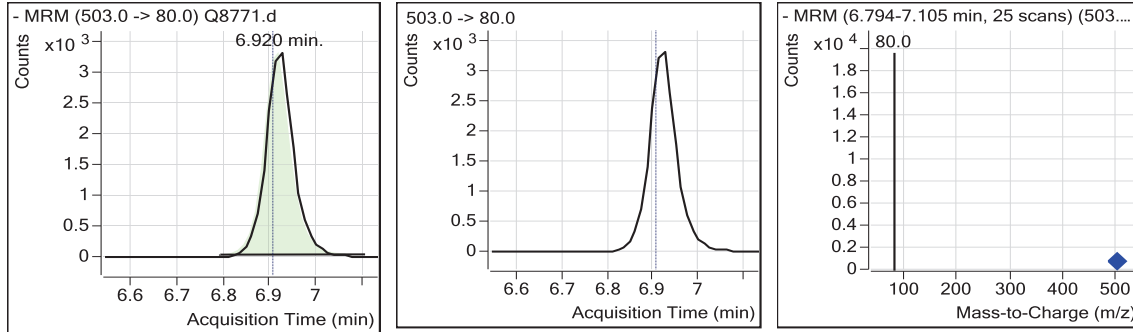


PFOA

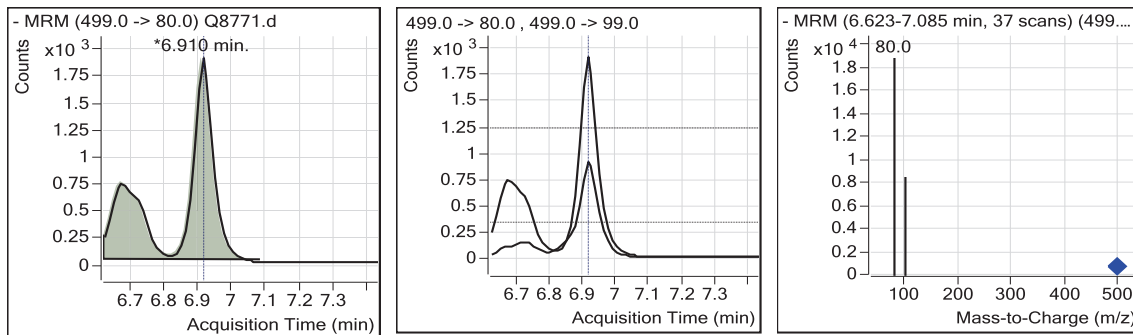


### Perfluorinated Compounds by LC/MS/MS.

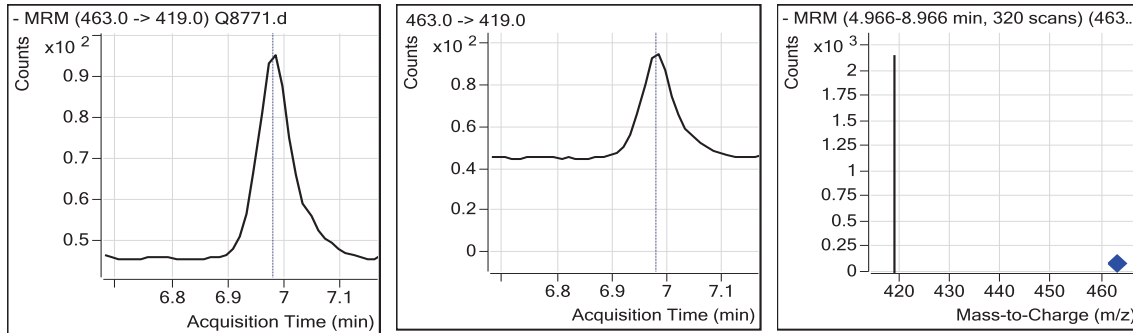
13C4-PFOS



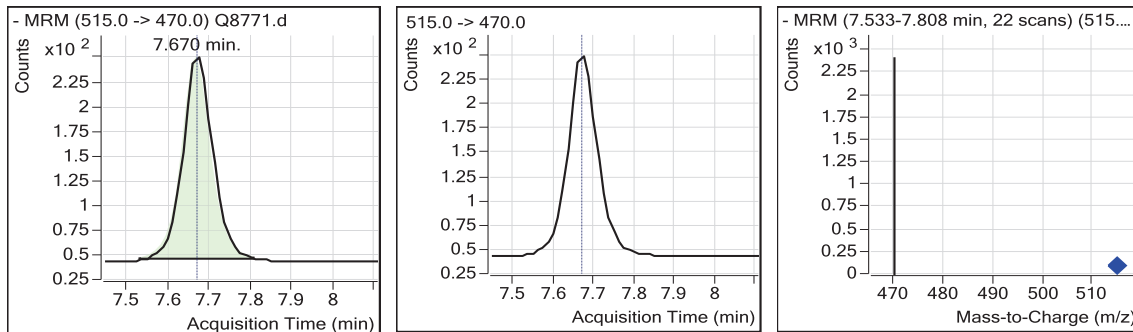
PFOS



PFNA



13C2-PFDA

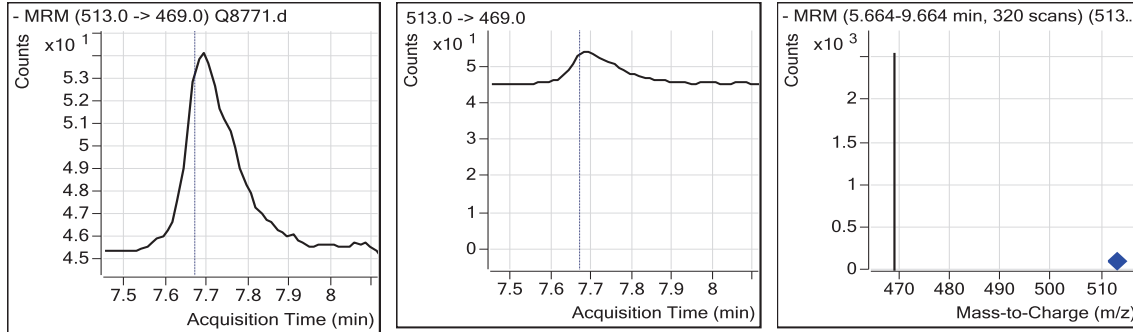


7.1.3  
7

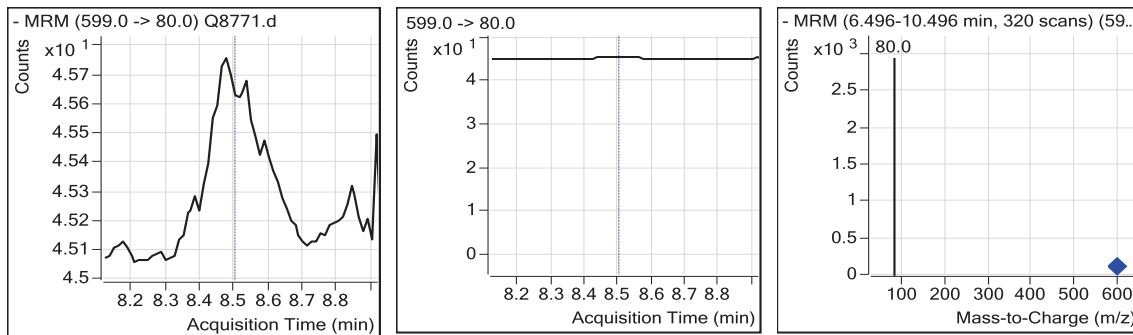


### Perfluorinated Compounds by LC/MS/MS.

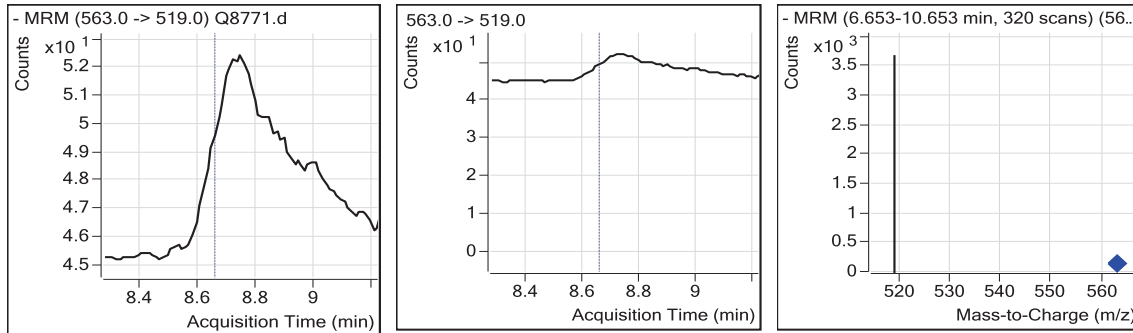
PFDA



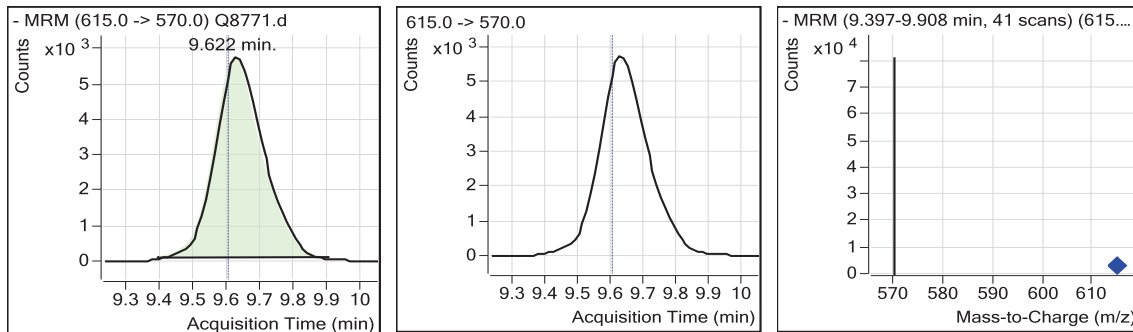
PFDS



PFUnDA



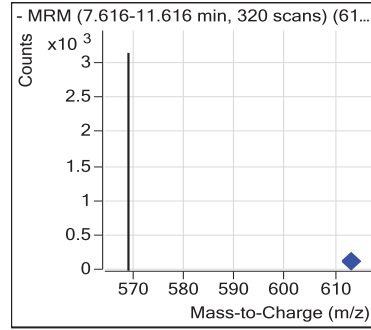
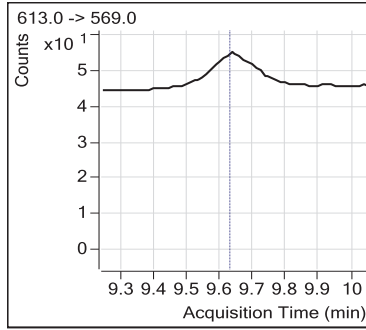
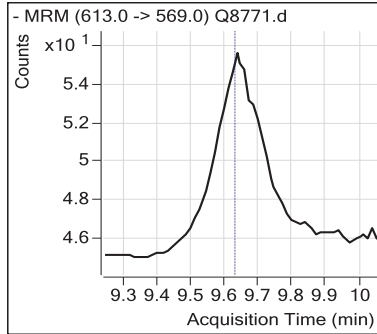
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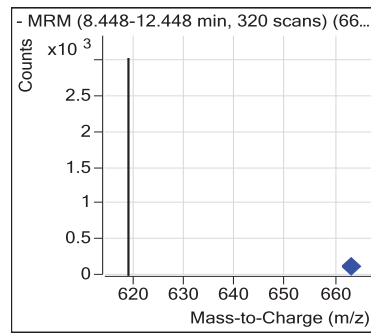
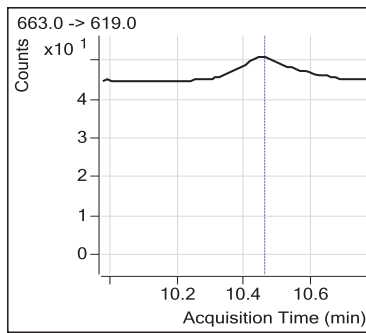
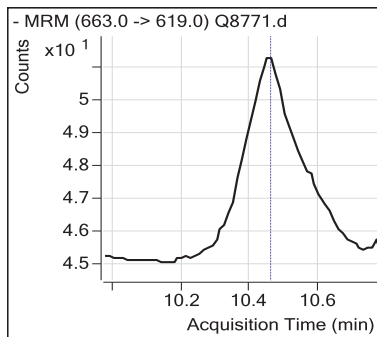
7.1.3  
7

### Perfluorinated Compounds by LC/MS/MS.

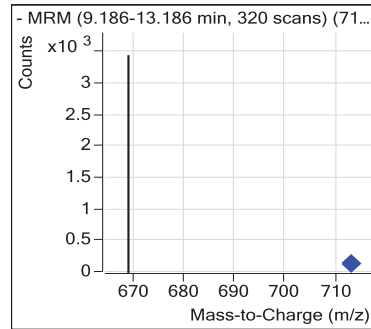
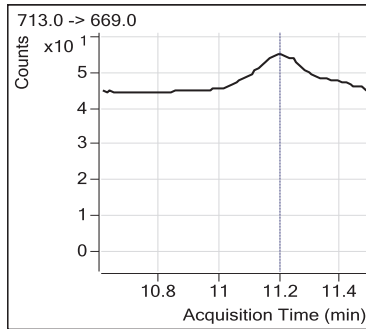
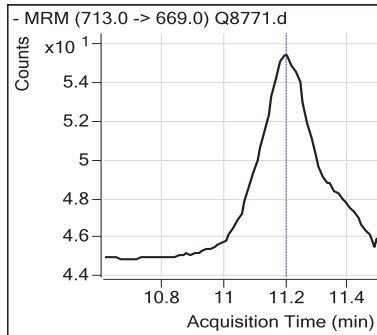
PFDODA



PFTrDA



PFTeDA



7.1.3  
7

# Manual Integration Approval Summary

Sample Number: FA20402-2      Method: EPA 537 MOD  
Lab FileID: Q8771.D      Analyst approved: 12/16/14 09:32 Nancy Saunders  
Injection Time: 12/15/14 15:49      Supervisor approved: 12/16/14 10:16 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.62	Split peak
Perfluorooctanoic acid	335-67-1		6.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.91	Split peak

7.1.3.1

7

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8695.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 17:25  
 Sample Name : FA20402-3  
 Vial : Vial 10  
 Sample Info : OP54151,SQ281,120,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17

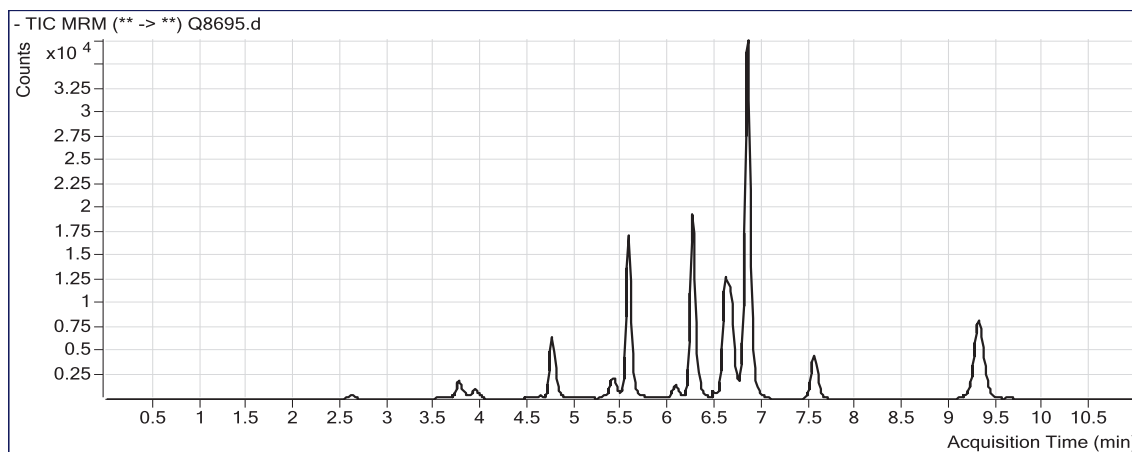
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.246	415.0 -> 370.0	22298	20.000	µg/L	0.000	
13C4-PFOS	6.832	503.0 -> 80.0	7996	20.000	µg/L	0.012	
13C2-PFDoDA	9.284	615.0 -> 570.0	65200	20.000	µg/L	0.012	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.754	315.0 -> 270.0	6236	17.01	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 85.05%				
13C2-PFDA	7.533	515.0 -> 470.0	21676	22.79	µg/L	0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 113.93%				
<b>Target Compounds</b>							
PFBA	2.602	213.0 -> 169.0	2079	7.771	µg/L		100
PFPeA	3.761	263.0 -> 219.0	7289	54.512	µg/L		100
PFBS	3.928	299.0 -> 80.0	2232	18.896	µg/L		96
PFHxA	4.746	313.0 -> 269.0	20236	52.562	µg/L	m	99
PFHxS	5.555	399.0 -> 80.0	43751	230.592	µg/L	m	90
PFHpA	5.560	363.0 -> 319.0	9826	26.311	µg/L		99
PFHpS	6.231	449.0 -> 80.0	1951	8.232	µg/L		100
PFOA	6.249	413.0 -> 369.0	43819	38.792	µg/L	m	76
PFOS	6.835	499.0 -> 80.0	173380	433.516	µg/L	m	99
PFNA	6.891	463.0 -> 419.0	2572	3.830	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

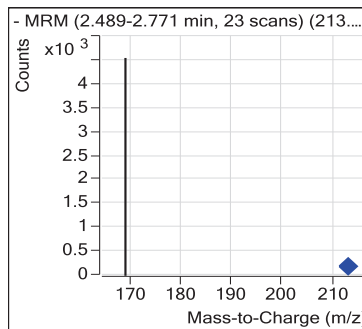
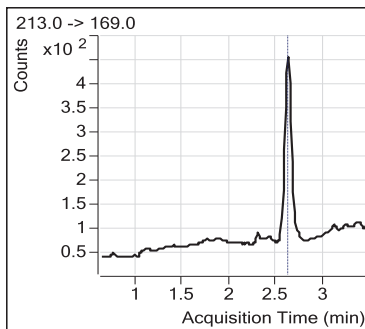
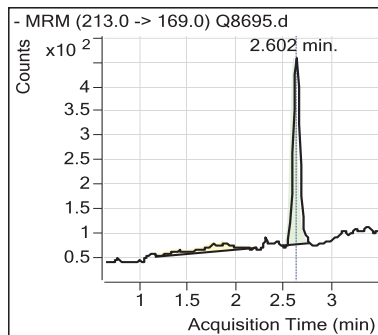
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## Perfluorinated Compounds by LC/MS/MS.

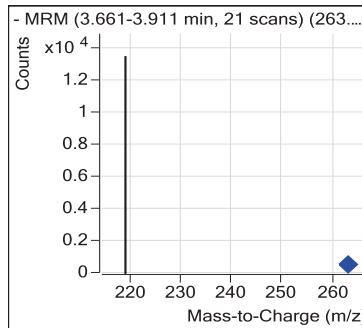
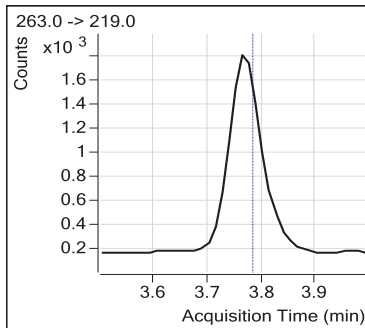
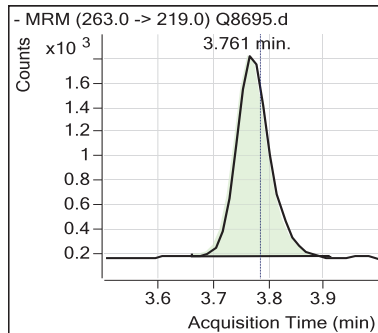
Data File : Q8695.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 17:25  
 Sample Name : FA20402-3  
 Vial : Vial 10  
 Sample Info : OP54151,SQ281,120,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



### PFBA

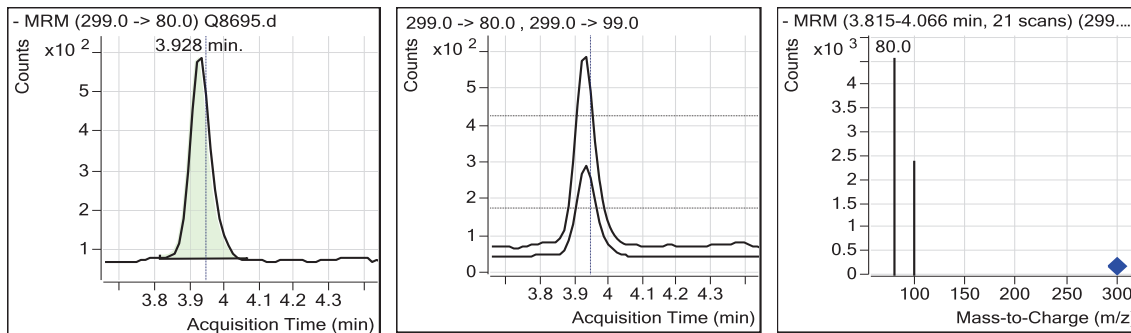


### PFPeA

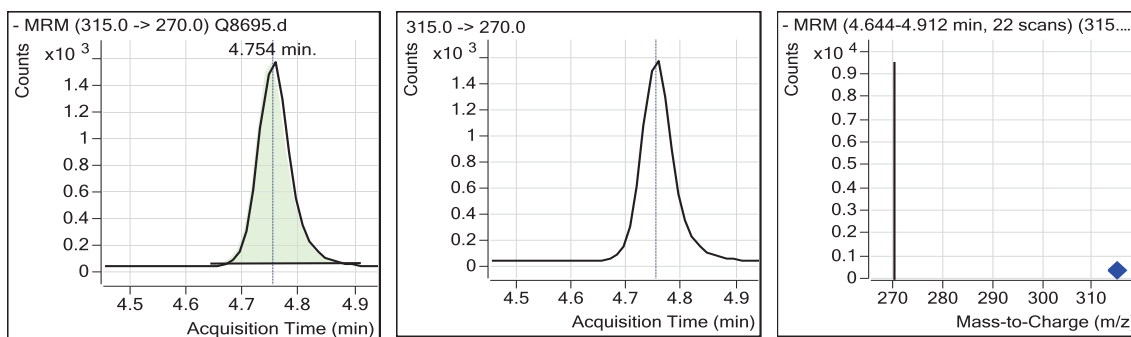


## Perfluorinated Compounds by LC/MS/MS.

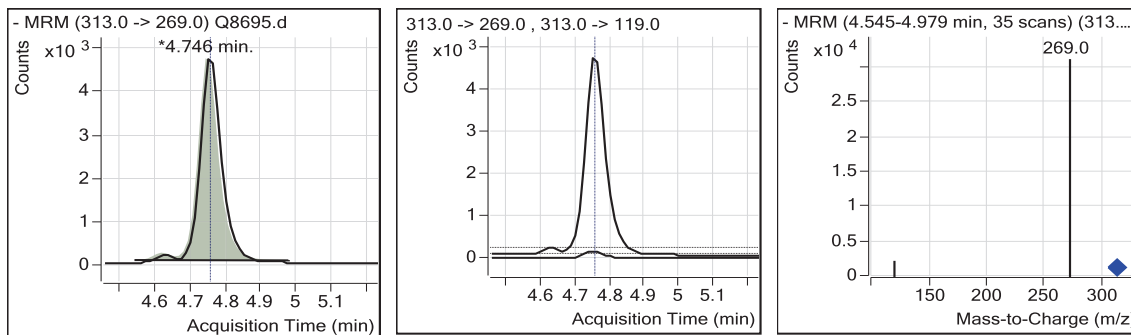
PFBS



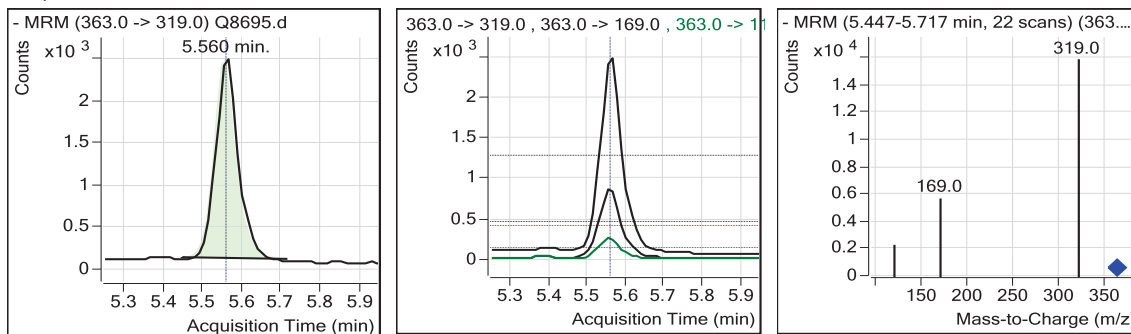
13C2-PFHxA



PFHxA



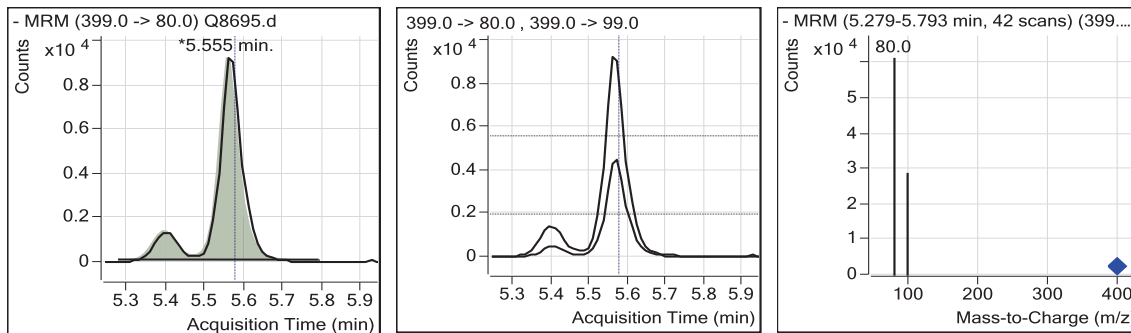
PFHpA



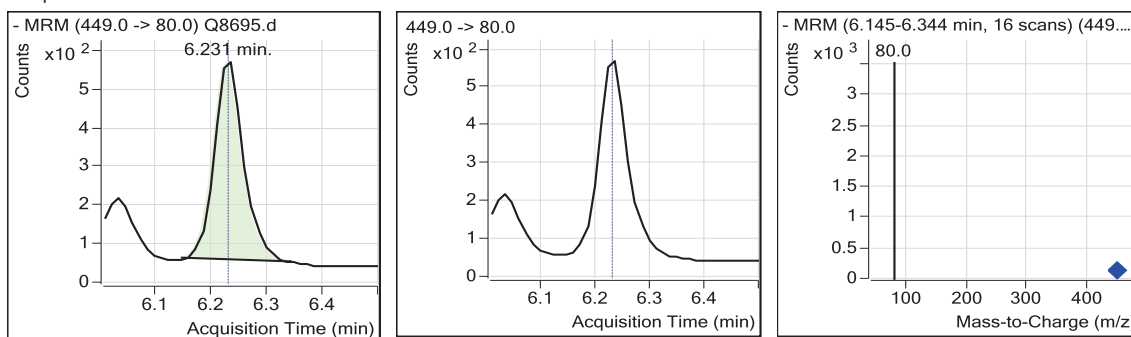
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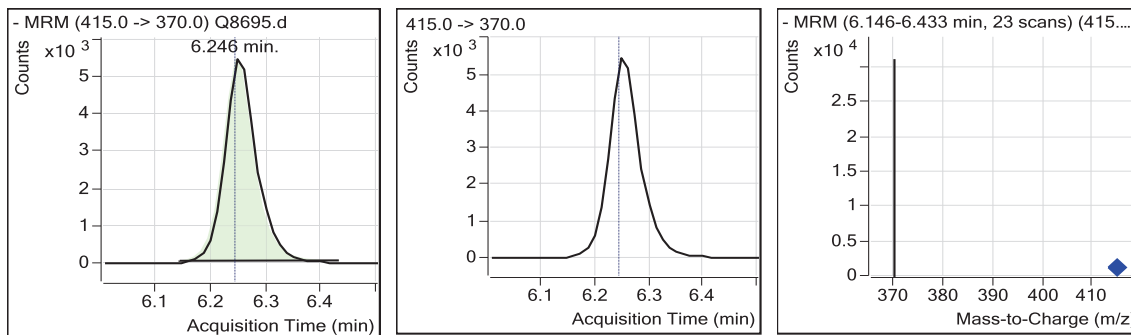
PFHxS



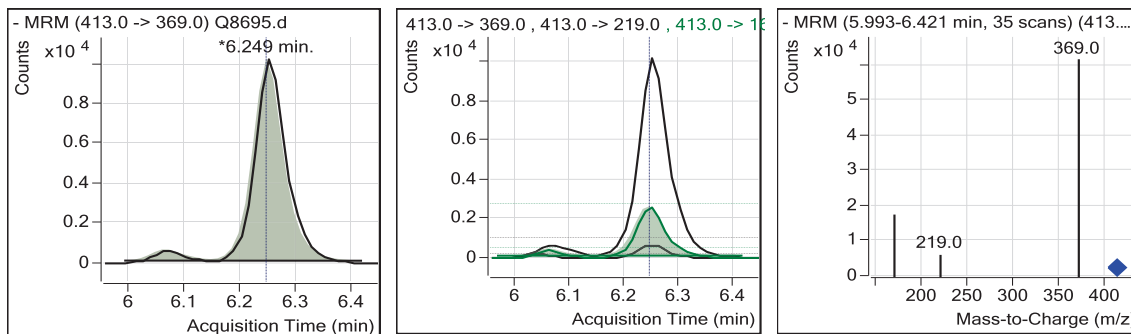
PFHpS



13C2-PFOA



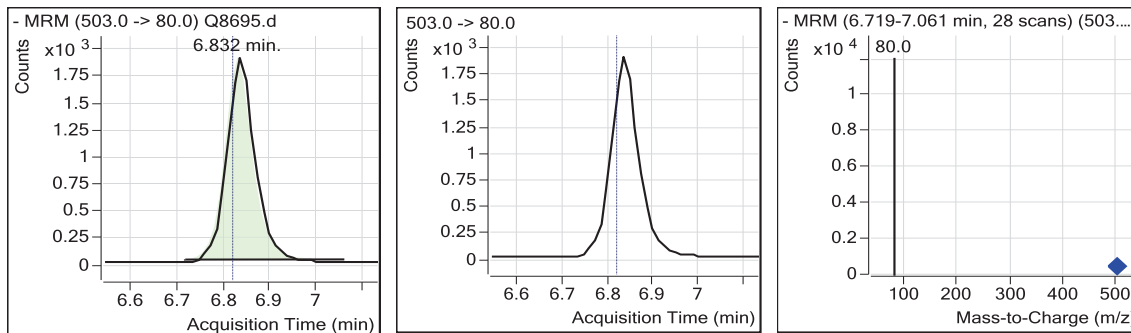
PFOA



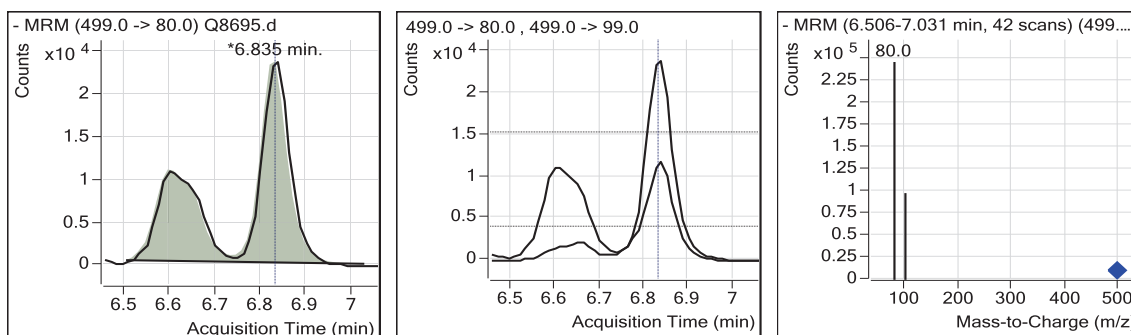
7.1.4

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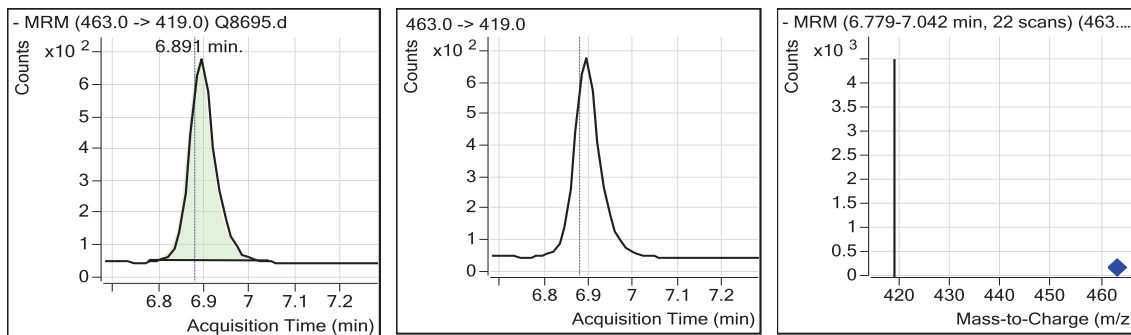
#### 13C4-PFOS



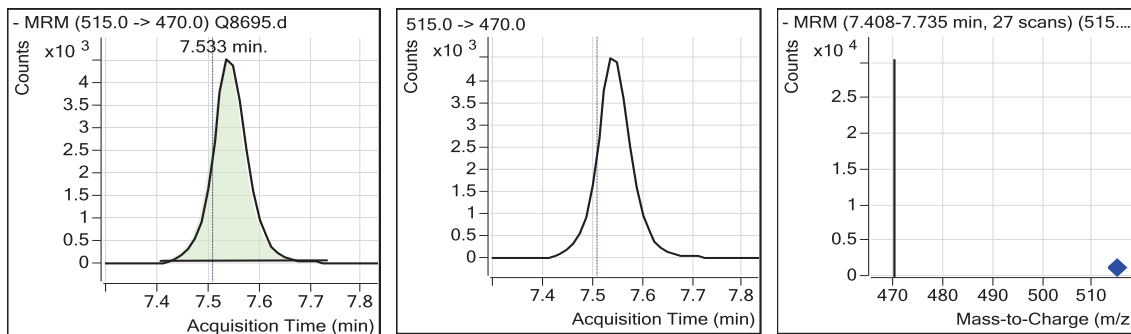
#### PFOS



#### PFNA



#### 13C2-PFDA

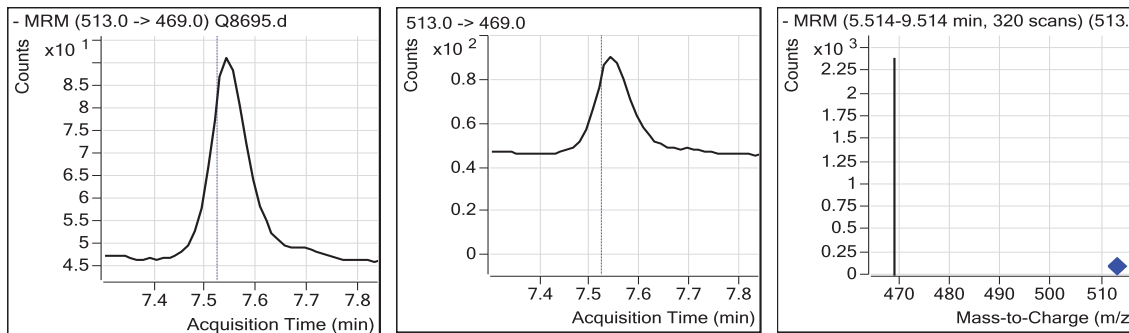


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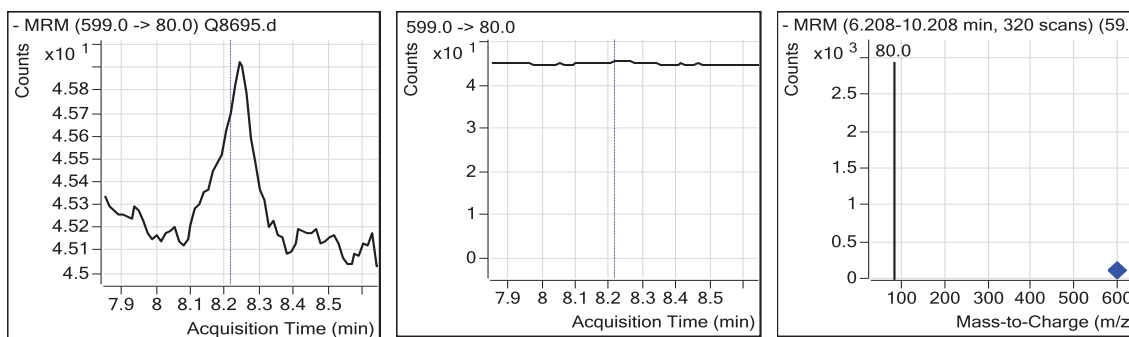


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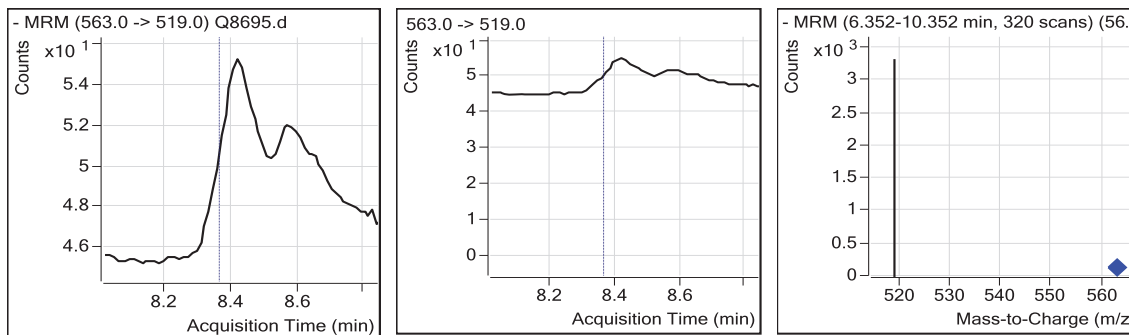
PFDA



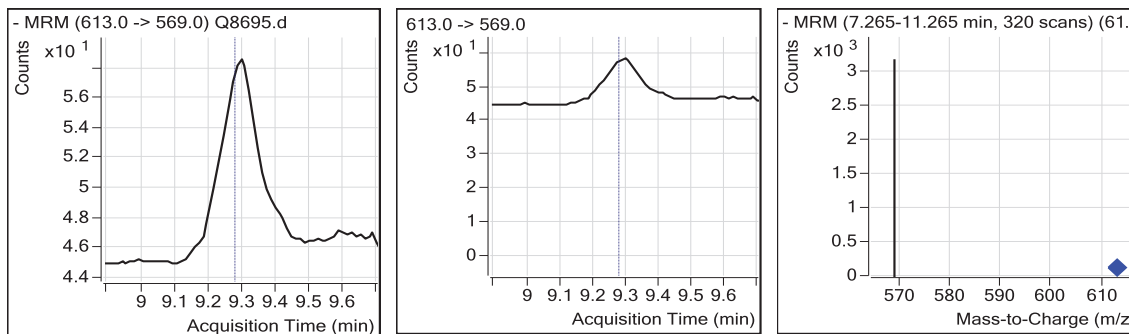
PFDS



PFUnDA



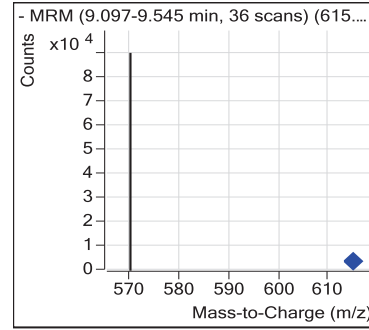
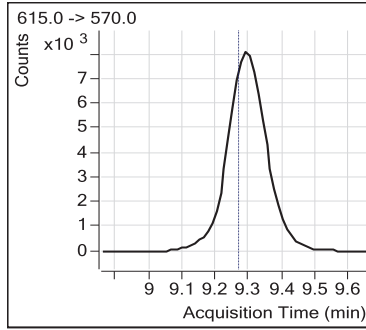
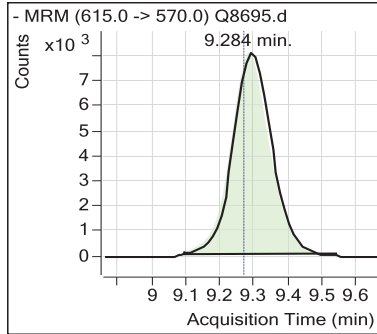
PFDoDA



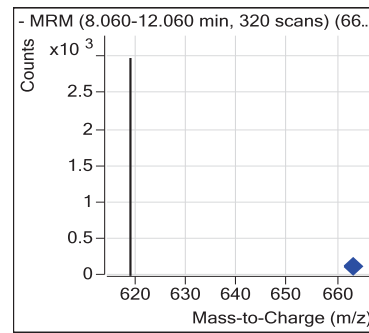
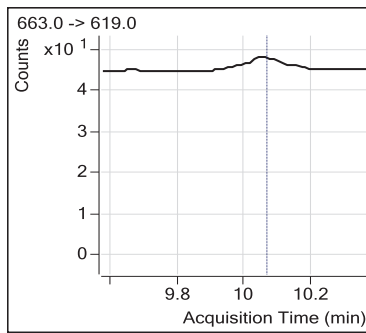
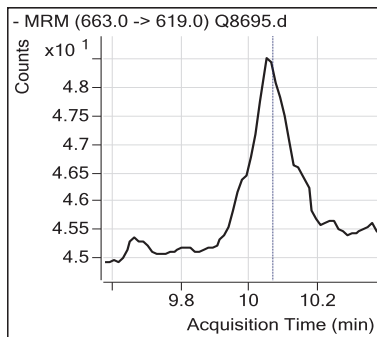
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### Perfluorinated Compounds by LC/MS/MS.

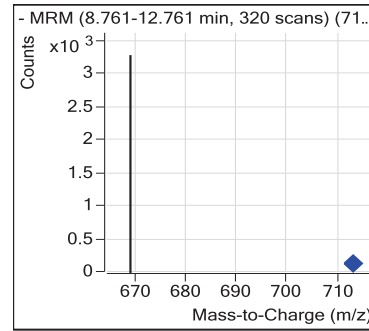
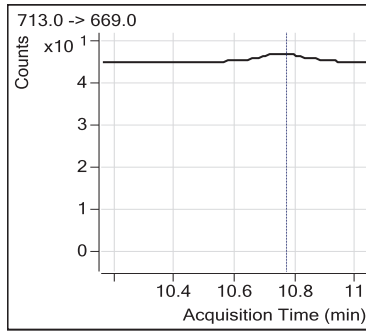
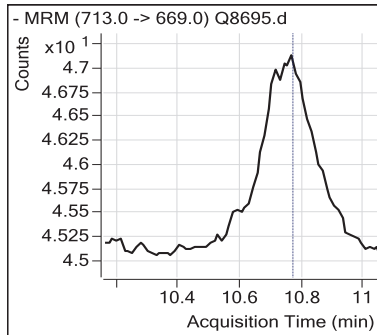
13C2-PFDoDA



PFTTrDA



PFTTeDA



7.1.4  
7

# Manual Integration Approval Summary

Sample Number: FA20402-3      Method: EPA 537 MOD  
Lab FileID: Q8695.D      Analyst approved: 12/16/14 09:32 Nancy Saunders  
Injection Time: 12/09/14 17:25      Supervisor approved: 12/16/14 10:16 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanoic acid	307-24-4		4.75	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.55	Split peak
Perfluorooctanoic acid	335-67-1		6.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.83	Split peak

7.1.4.1  
7

## Perfluorinated Compounds by LC/MS/MS.

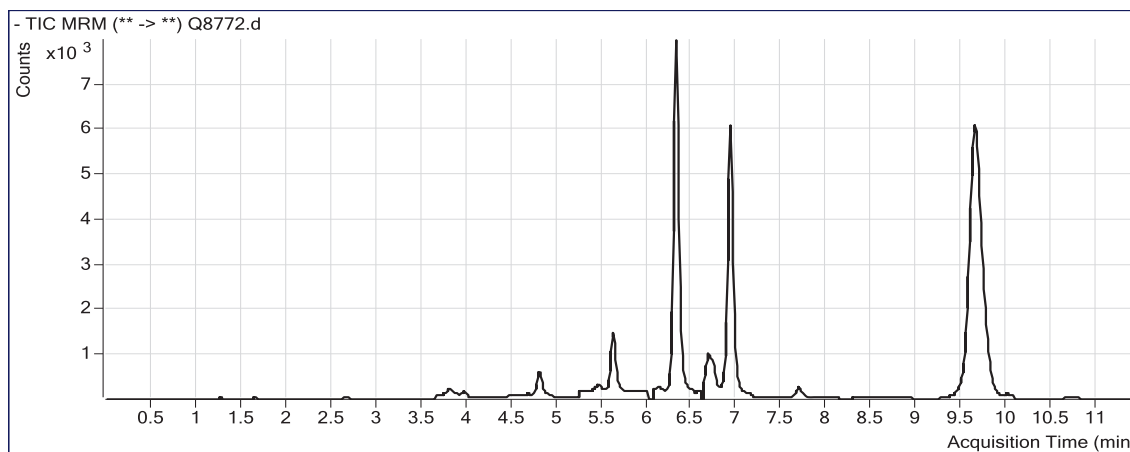
Data File : Q8772.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 16:09  
 Sample Name : FA20402-3  
 Vial : Vial 5  
 Sample Info : OP54151,SQ284,120,,,1,20,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
 Last Calib Update : 2014-12-10 09:24

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.309	415.0 -> 370.0	28782	20.000	µg/L	0.000	
13C4-PFOS	6.920	503.0 -> 80.0	13749	20.000	µg/L	0.013	
13C2-PFDoDA	9.622	615.0 -> 570.0	59787	20.000	µg/L	0.012	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.804	315.0 -> 270.0	528	1.12	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 5.58%				
13C2-PFDA	7.670	515.0 -> 470.0	1061	0.86	µg/L	0.013	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 4.32%				
<b>Target Compounds</b>							
PFPeA	3.811	263.0 -> 219.0	581	3.364	µg/L		100
PFHxA	4.796	313.0 -> 269.0	1603	3.225	µg/L		99
PFHpA	5.610	363.0 -> 319.0	782	1.622	µg/L		96
PFHxS	5.618	399.0 -> 80.0	3098	9.497	µg/L	m	89
PFOA	6.311	413.0 -> 369.0	2734	1.875	µg/L	m	78
PFOS	6.910	499.0 -> 80.0	12577	18.289	µg/L	m	93

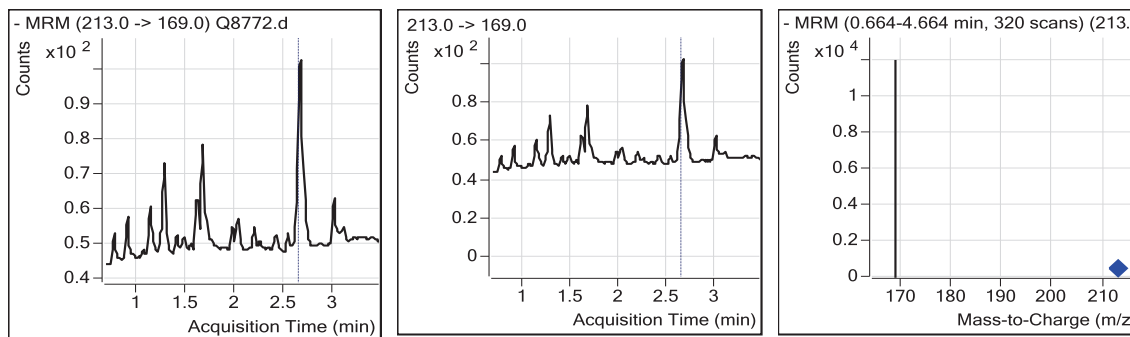
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

### Perfluorinated Compounds by LC/MS/MS.

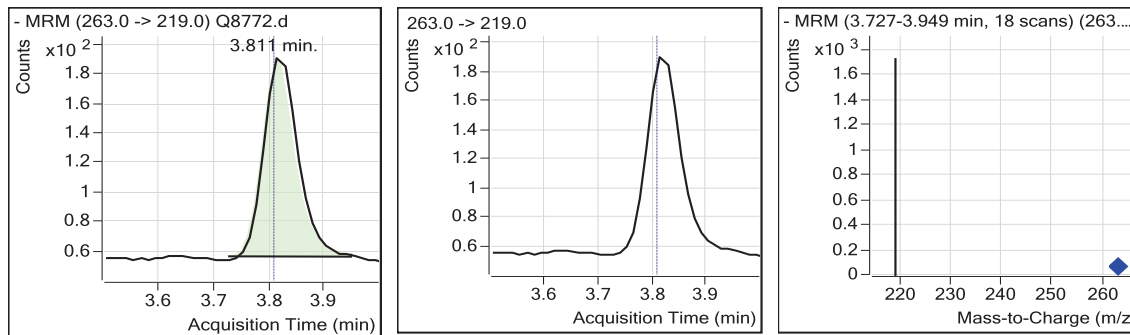
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Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-15 16:09  
Sample Name : FA20402-3  
Vial : Vial 5  
Sample Info : OP54151,SQ284,120,,,1,20,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ284.batch.bin  
Last Calib Update : 2014-12-10 09:24



#### PFBA

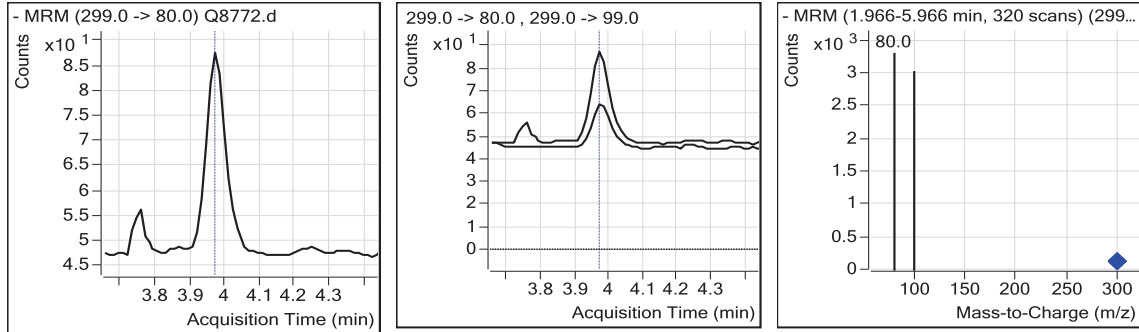


#### PFPeA

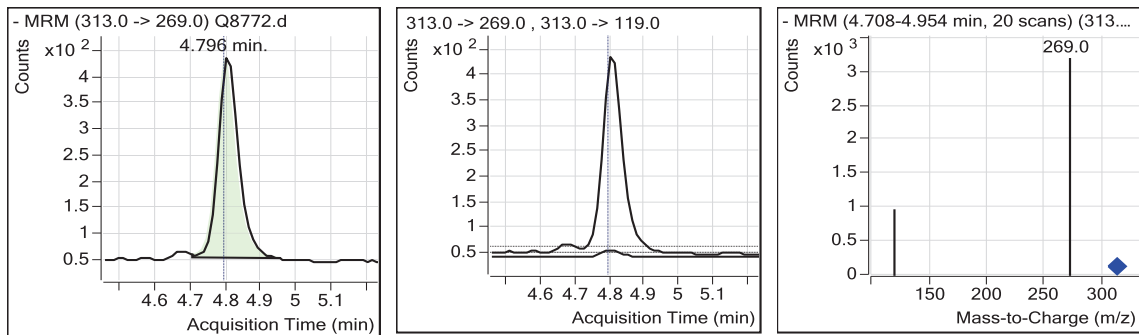


### Perfluorinated Compounds by LC/MS/MS.

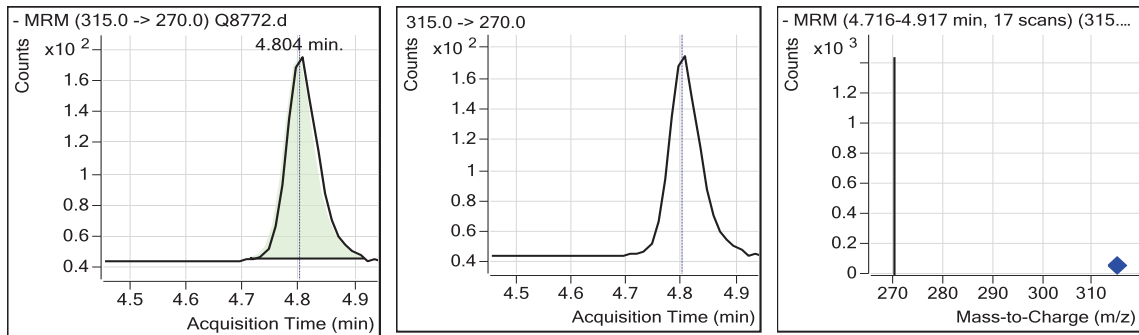
PFBS



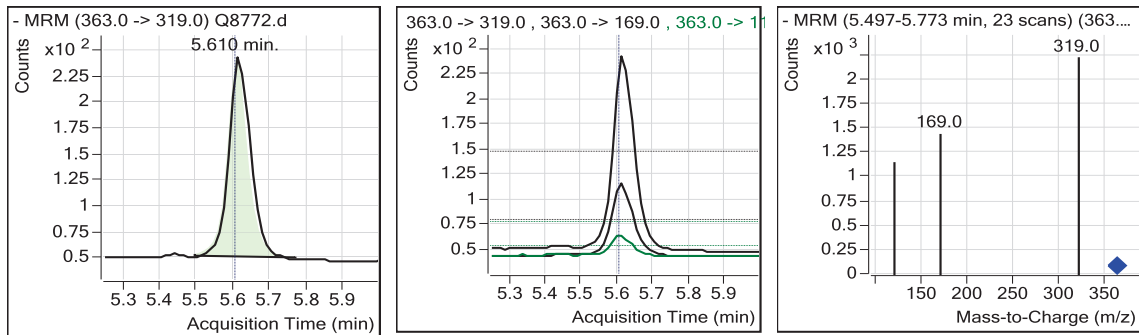
PFHxA



13C2-PFHxA



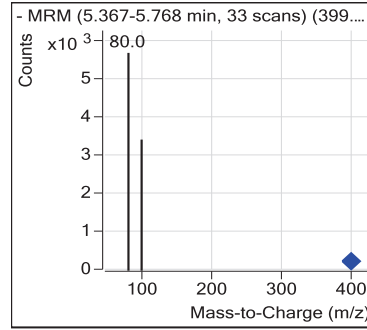
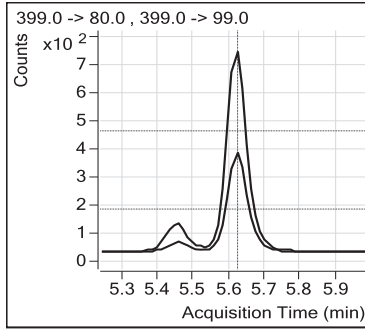
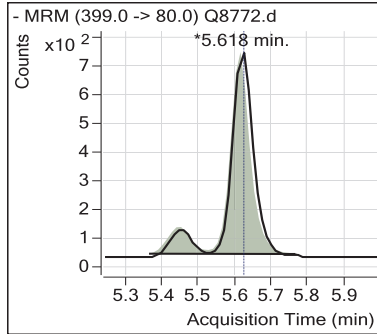
PFHpA



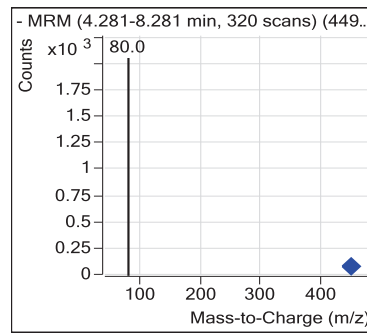
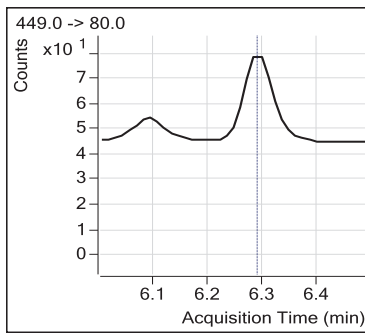
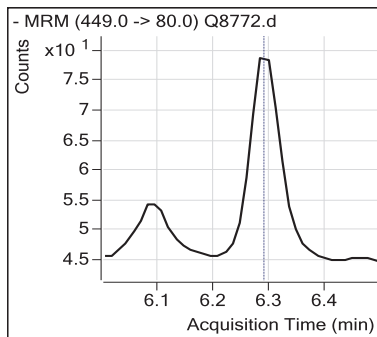
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### Perfluorinated Compounds by LC/MS/MS.

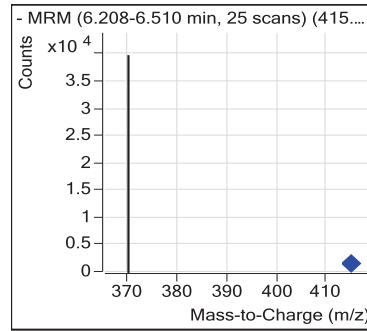
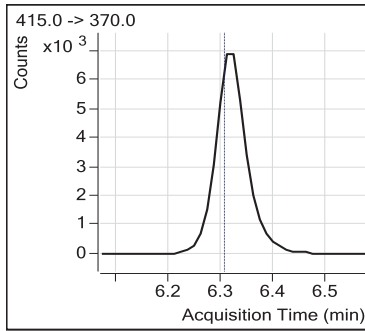
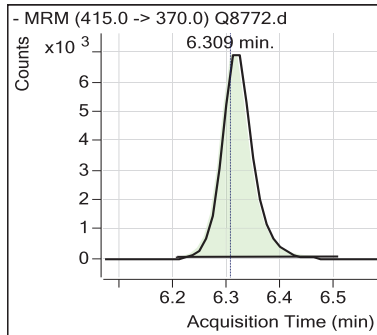
PFHxS



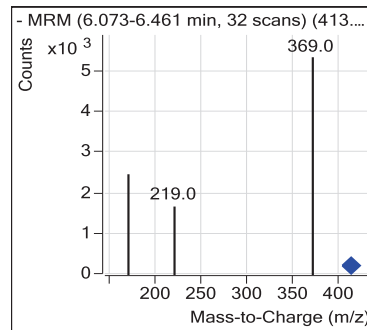
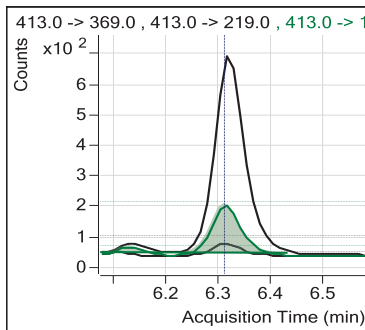
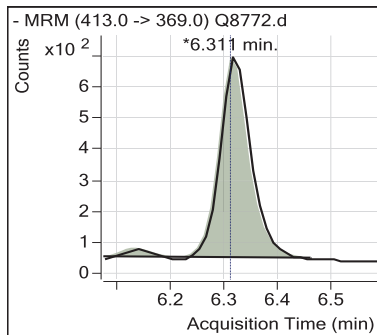
PFHpS



13C2-PFOA

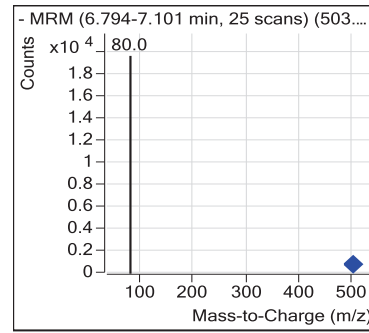
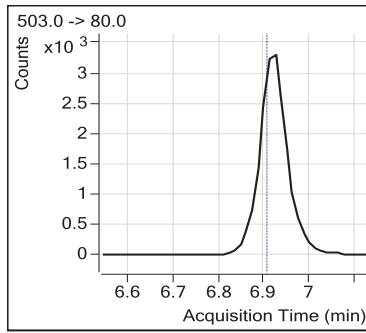
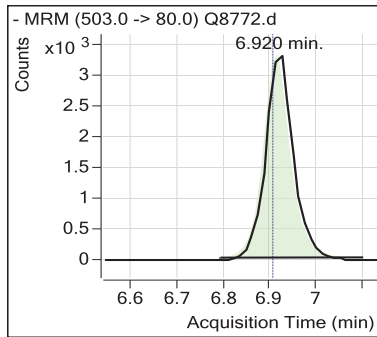


PFOA

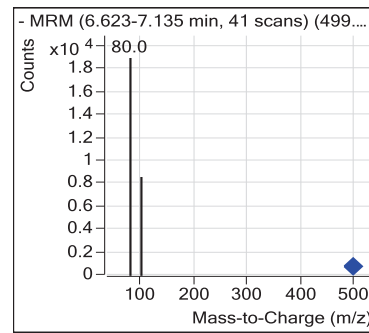
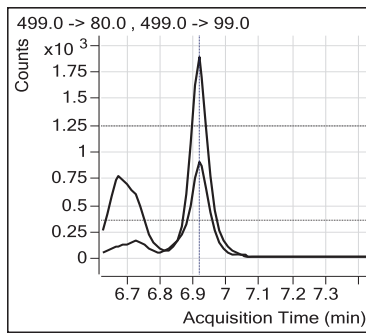
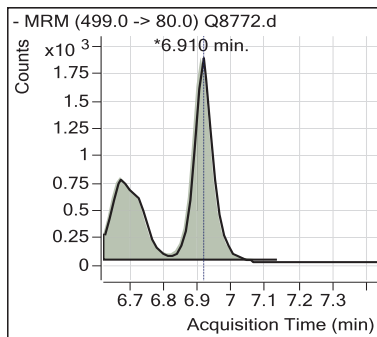


### Perfluorinated Compounds by LC/MS/MS.

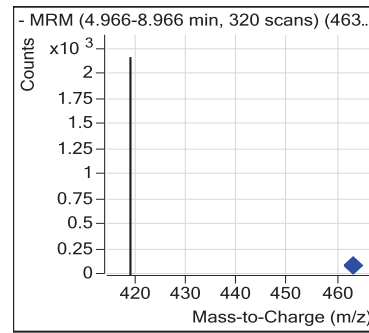
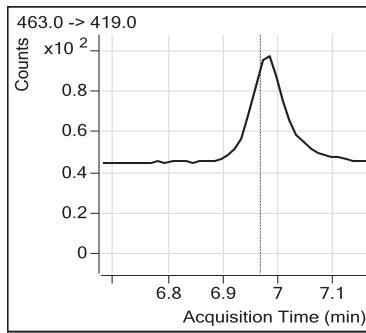
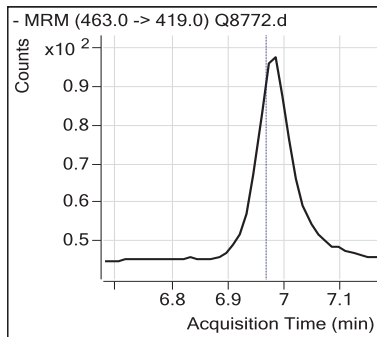
13C4-PFOS



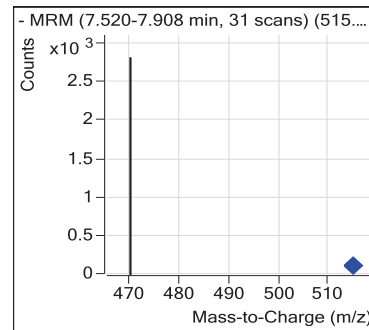
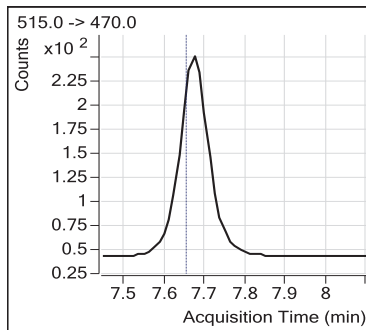
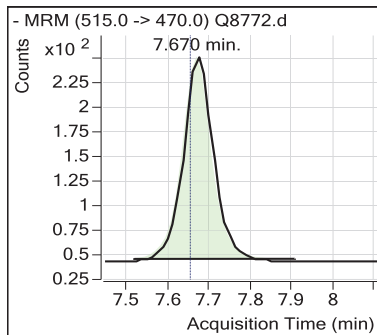
PFOS



PFNA



13C2-PFDA

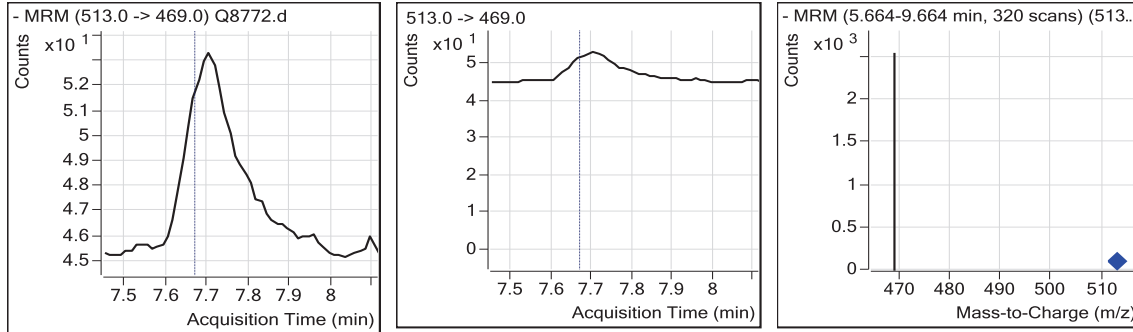


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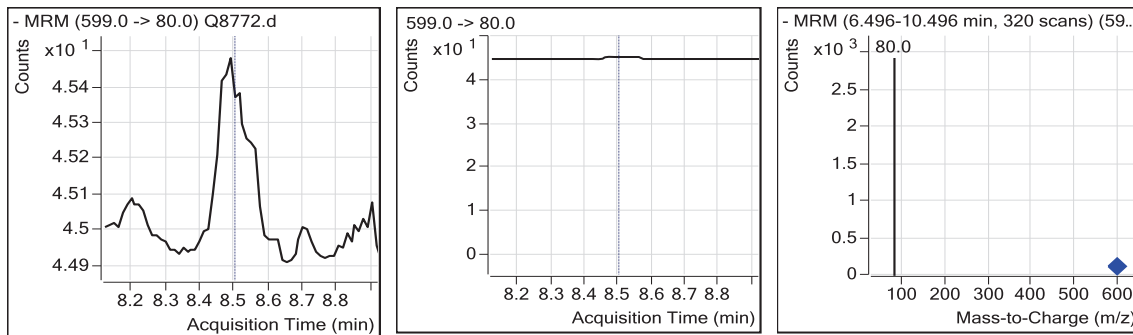


### Perfluorinated Compounds by LC/MS/MS.

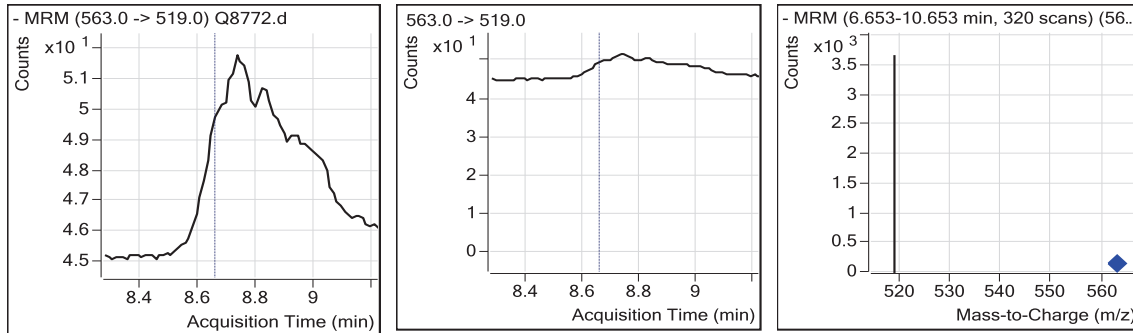
PFDA



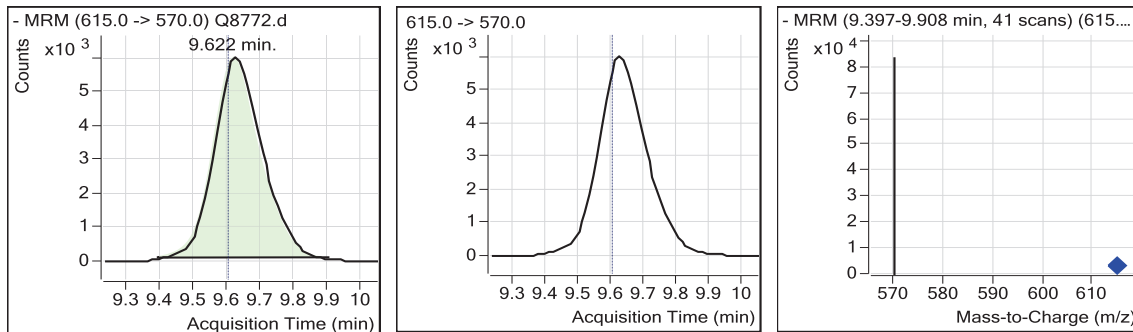
PFDS



PFUnDA



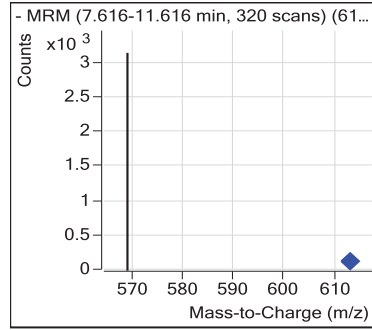
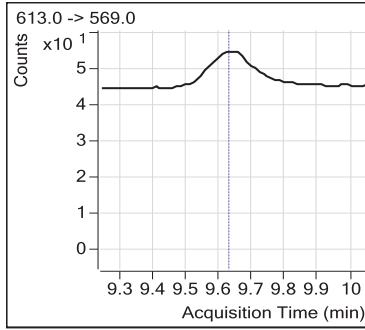
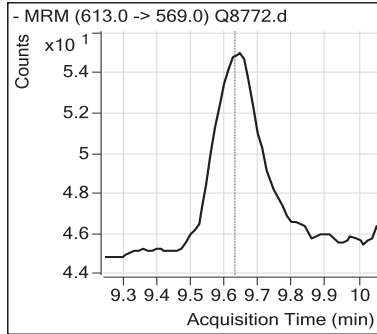
13C2-PFDoDA



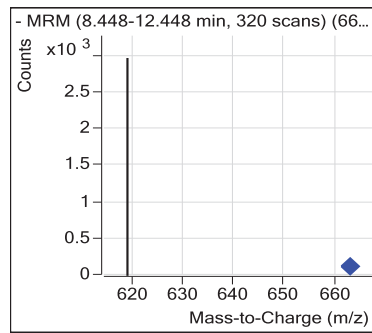
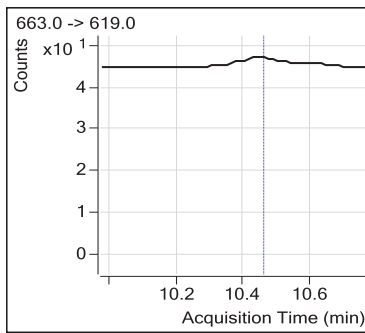
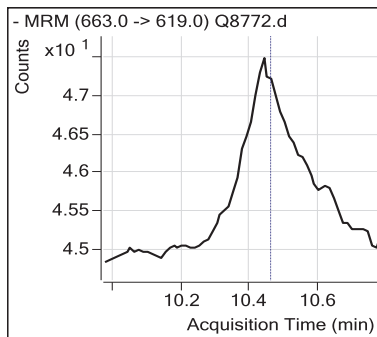
7.15  
7

### Perfluorinated Compounds by LC/MS/MS.

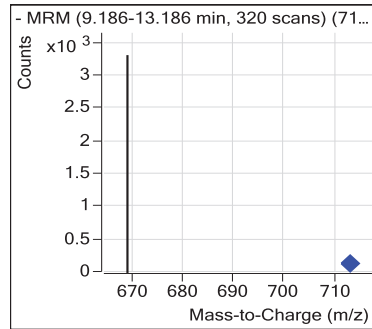
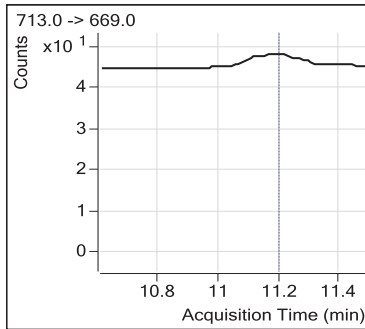
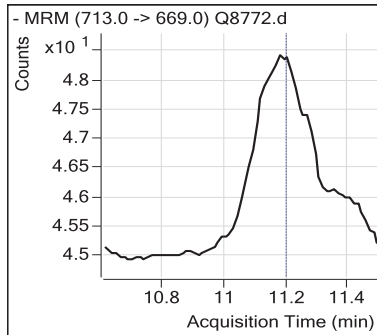
PFD<sub>o</sub>DA



PFTrDA



PFTeDA



7.15  
7

# Manual Integration Approval Summary

Sample Number: FA20402-3      Method: EPA 537 MOD  
Lab FileID: Q8772.D      Analyst approved: 12/16/14 09:32 Nancy Saunders  
Injection Time: 12/15/14 16:09      Supervisor approved: 12/16/14 10:16 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.62	Split peak
Perfluorooctanoic acid	335-67-1		6.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.91	Split peak

7.1.5.1  
7

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8788.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 21:41  
 Sample Name : FA20402-4  
 Vial : Vial 6  
 Sample Info : OP54151,SQ284,120,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
**Last Calib Update** : 2014-12-10 09:24

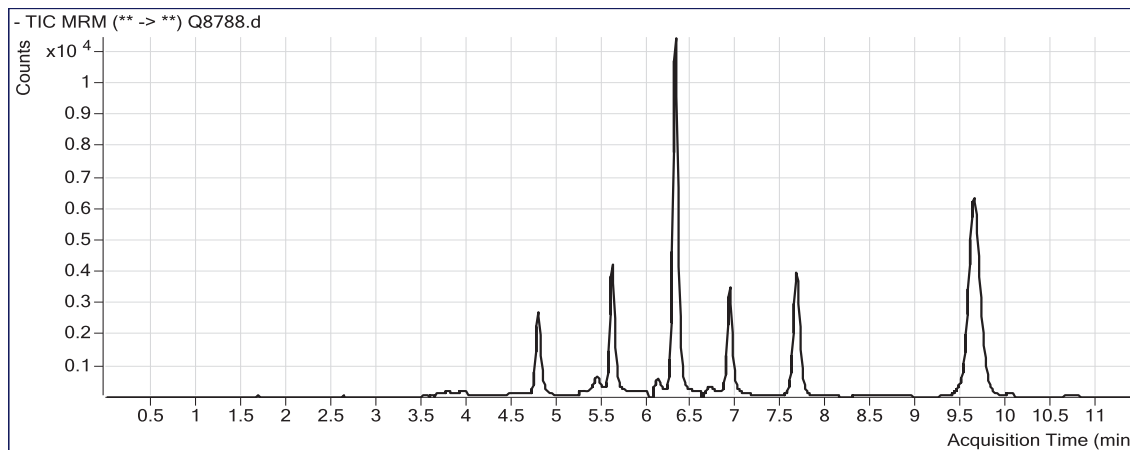
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.309	415.0 -> 370.0	29156	20.000	µg/L	0.000	
13C4-PFOS	6.907	503.0 -> 80.0	13323	20.000	µg/L	0.000	
13C2-PFDoDA	9.610	615.0 -> 570.0	58336	20.000	µg/L	0.000	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.779	315.0 -> 270.0	9105	18.99	µg/L	-0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 94.96%				
13C2-PFDA	7.645	515.0 -> 470.0	20806	16.73	µg/L	-0.013	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 83.64%				
<b>Target Compounds</b>							
PFPeA	3.786	263.0 -> 219.0	202	1.154	µg/L		100
PFBS	3.941	299.0 -> 80.0	331	1.683	µg/L		87
PFHxA	4.783	313.0 -> 269.0	1701	3.380	µg/L		91
PFHpA	5.597	363.0 -> 319.0	455	0.931	µg/L		92
PFHxS	5.605	399.0 -> 80.0	11827	37.412	µg/L	m	90
PFOA	6.311	413.0 -> 369.0	14037	9.504	µg/L	m	75
PFOS	6.685	499.0 -> 80.0	1259	1.889	µg/L	m	70

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

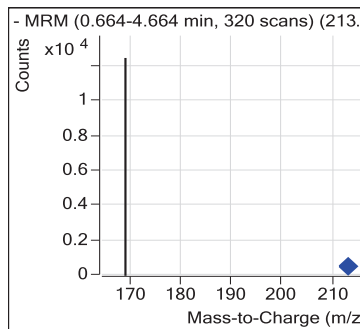
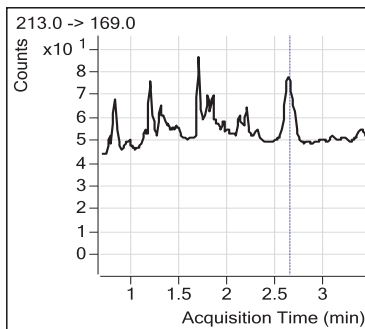
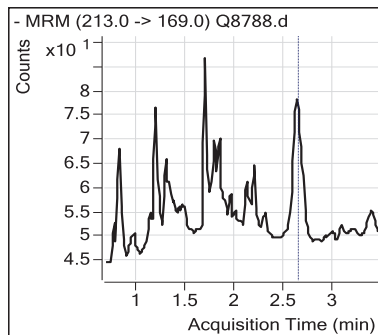
7.1.6  
7

## Perfluorinated Compounds by LC/MS/MS.

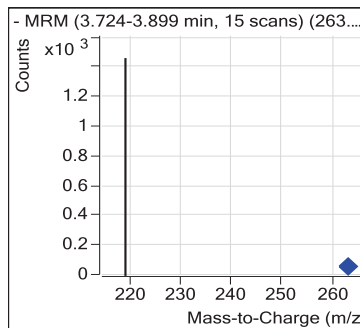
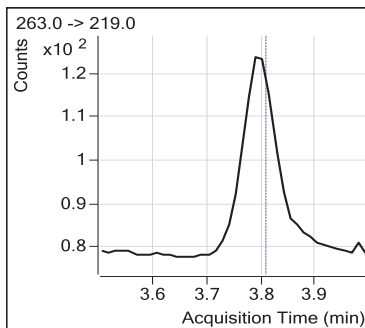
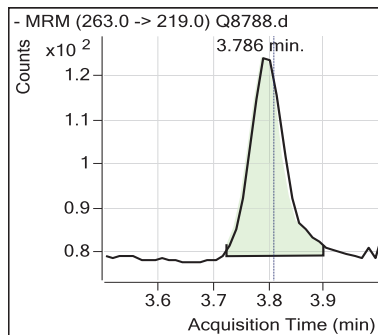
Data File : Q8788.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 21:41  
 Sample Name : FA20402-4  
 Vial : Vial 6  
 Sample Info : OP54151,SQ284,120,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
**Last Calib Update** : 2014-12-10 09:24



### PFBA



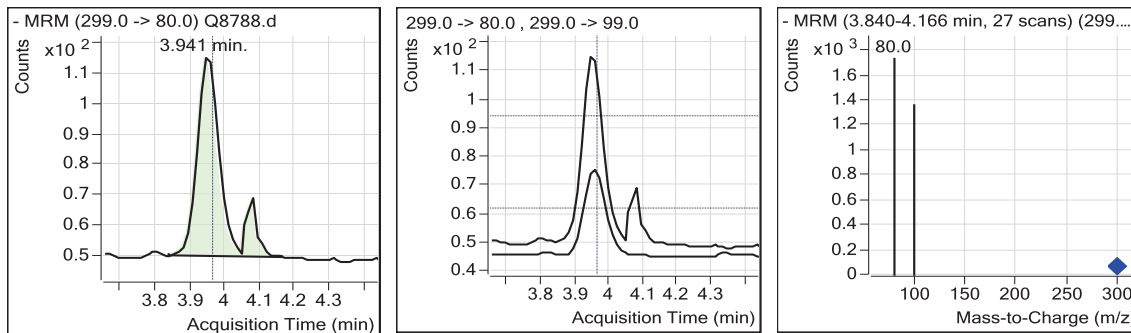
### PFPeA



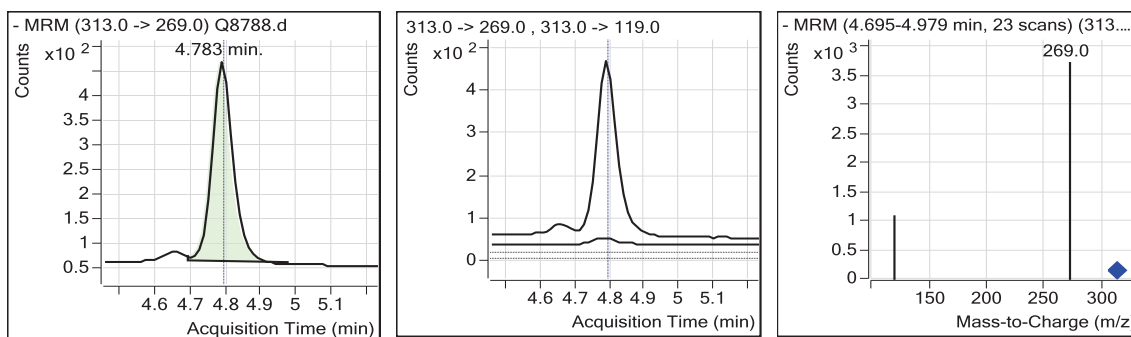
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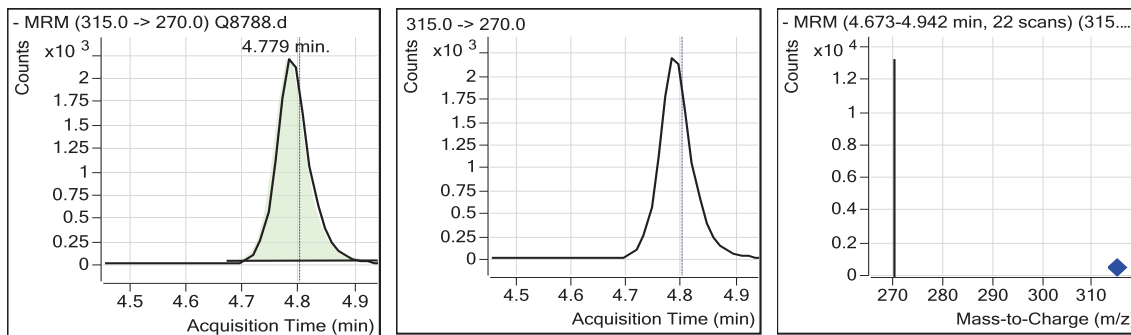
PFBS



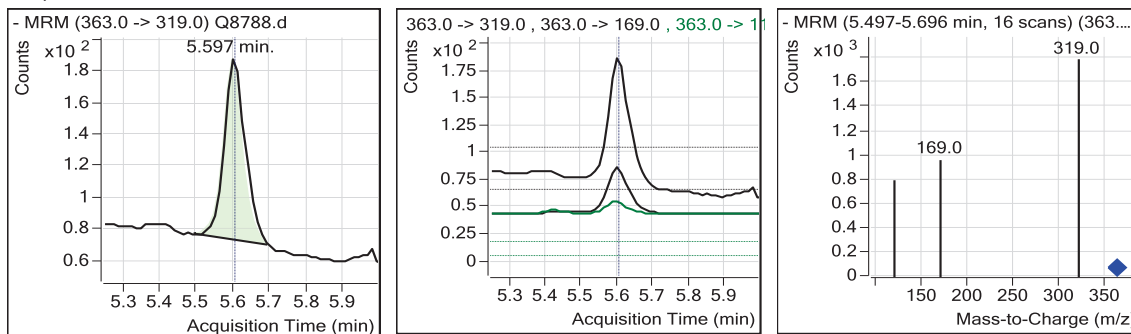
PFHxA



13C2-PFHxA



PFHpA

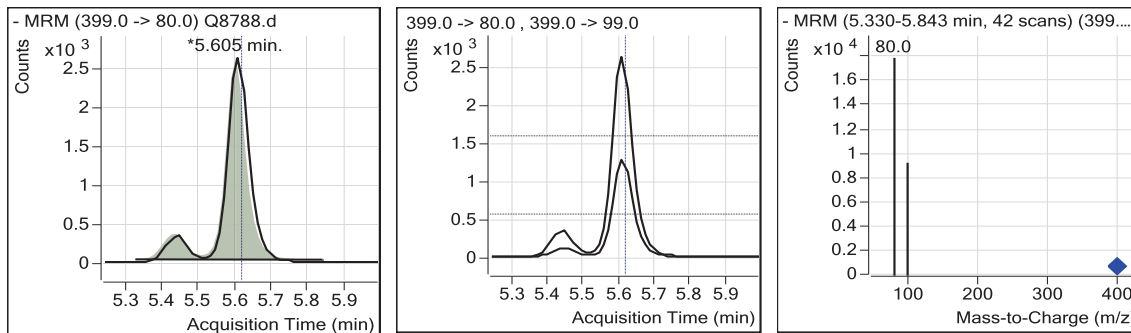


7.1.6

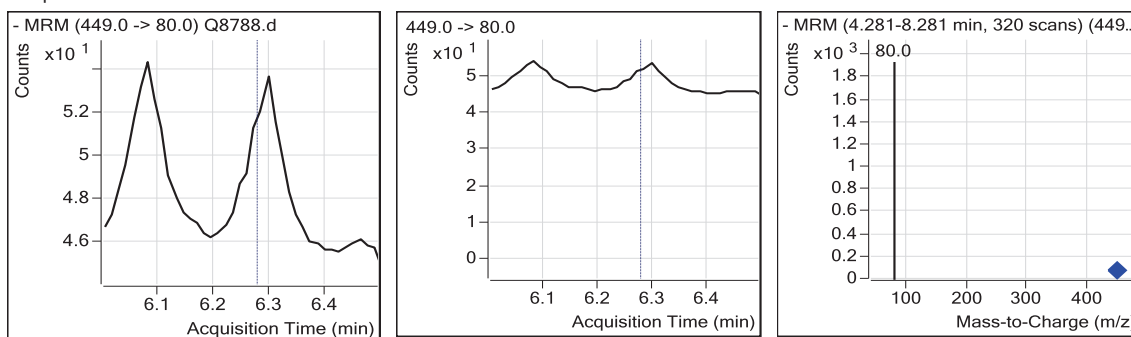
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### Perfluorinated Compounds by LC/MS/MS.

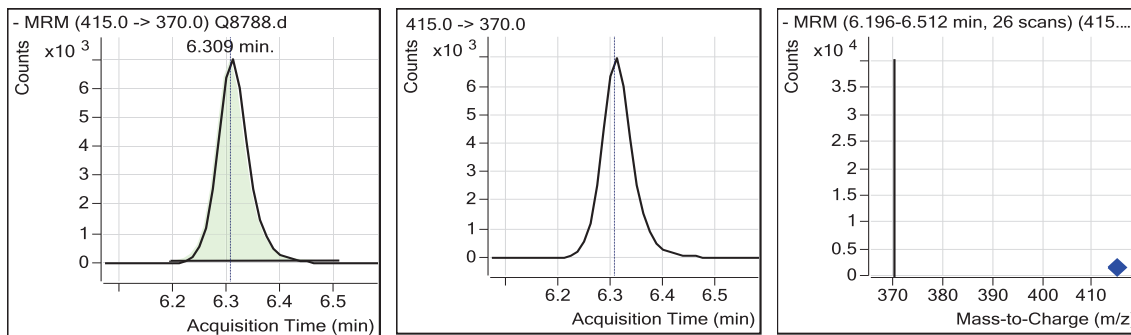
PFHxS



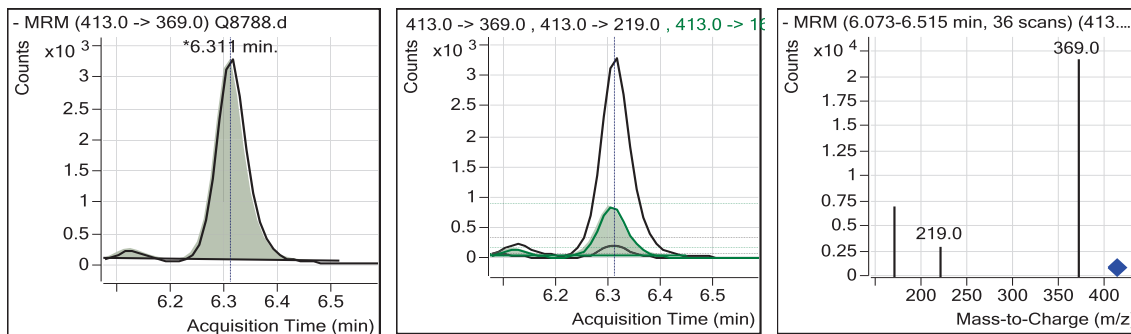
PFHpS



13C2-PFOA



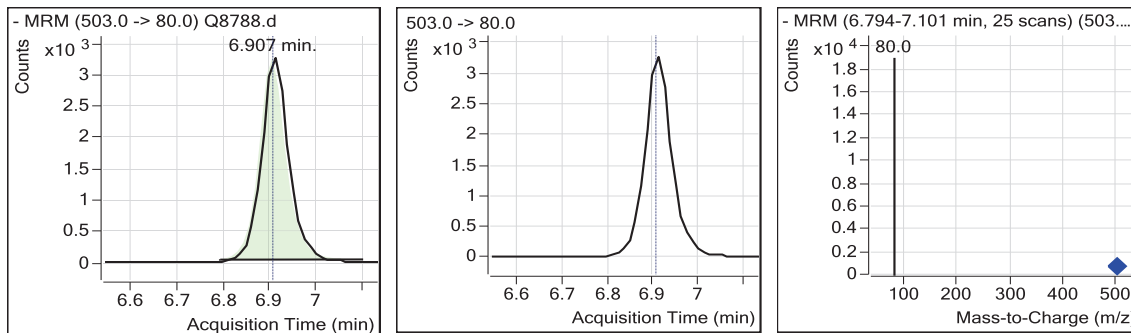
PFOA



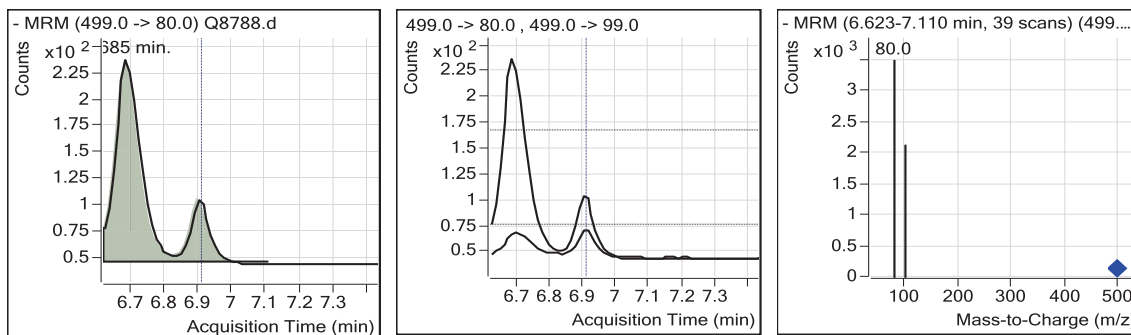
7.1.6  
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### Perfluorinated Compounds by LC/MS/MS.

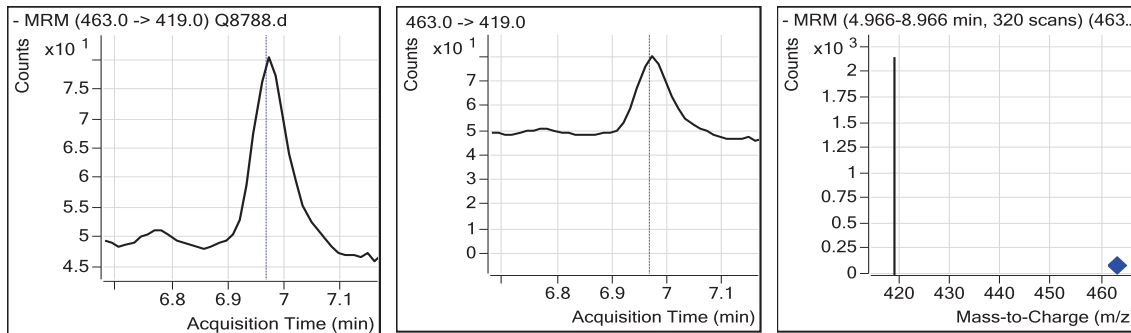
13C4-PFOS



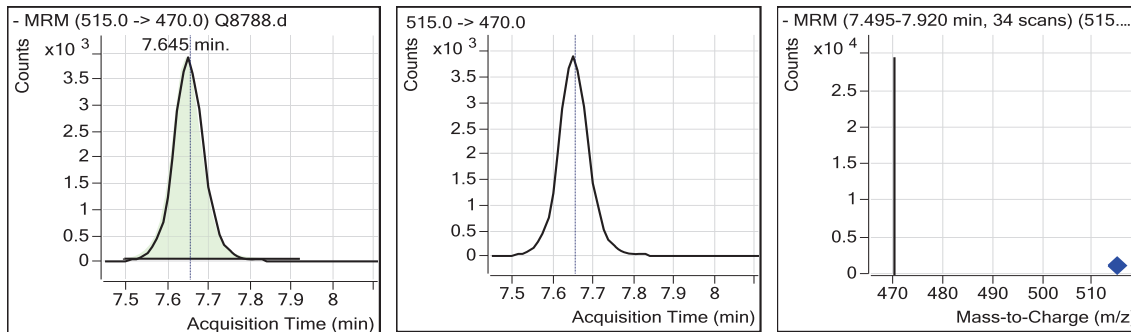
PFOS



PFNA



13C2-PFDA

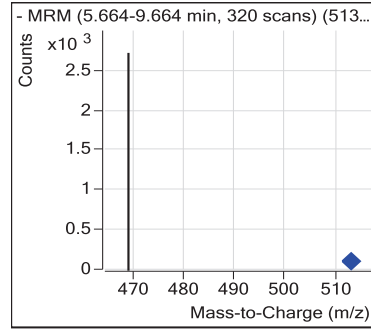
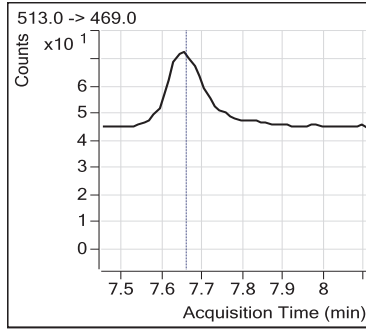
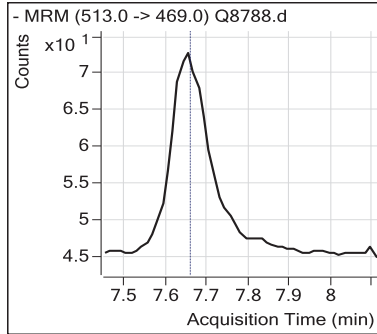


7.1.6  
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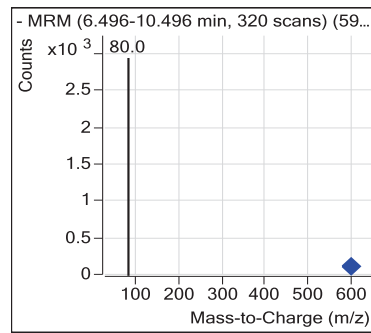
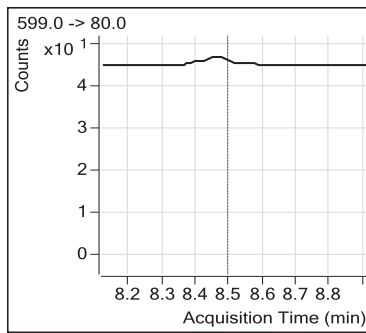
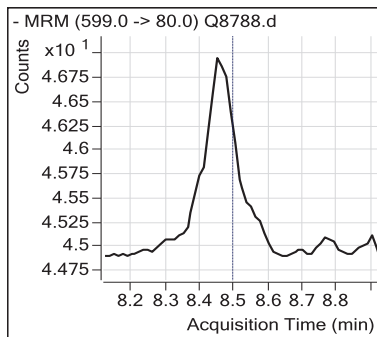


## Perfluorinated Compounds by LC/MS/MS.

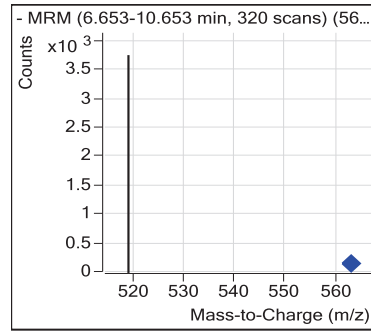
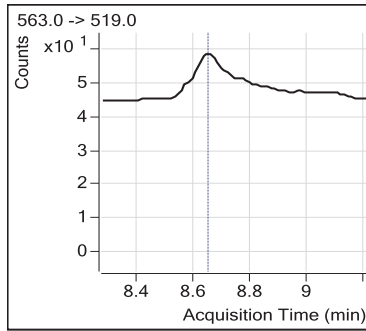
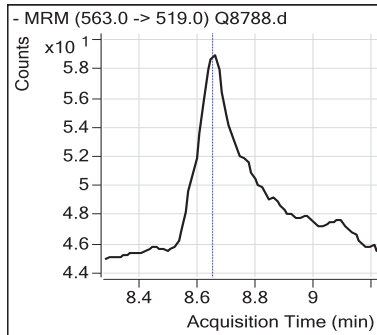
PFDA



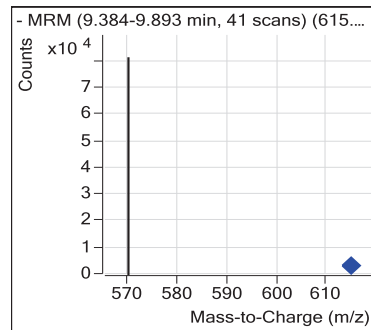
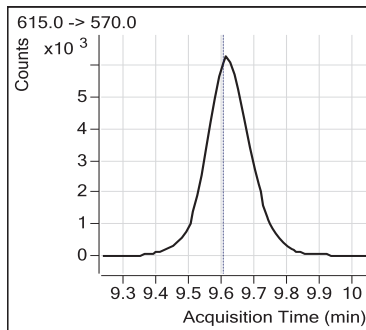
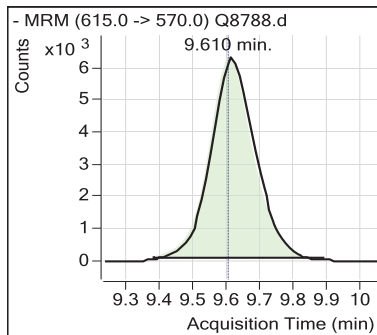
PFDS



PFUnDA



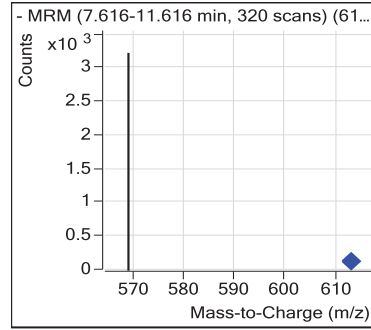
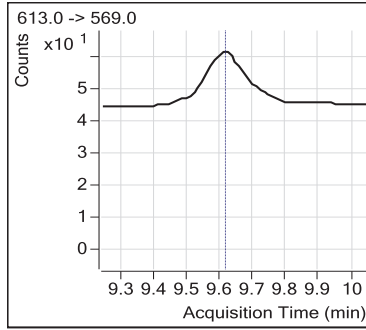
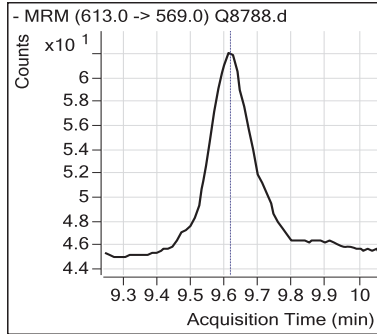
13C2-PFDoDA



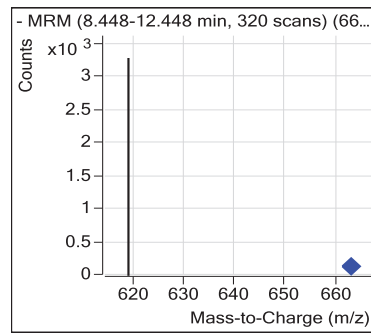
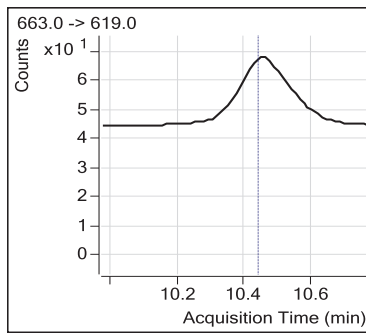
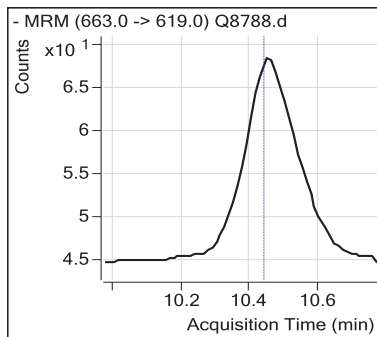
7.1.6  
7

### Perfluorinated Compounds by LC/MS/MS.

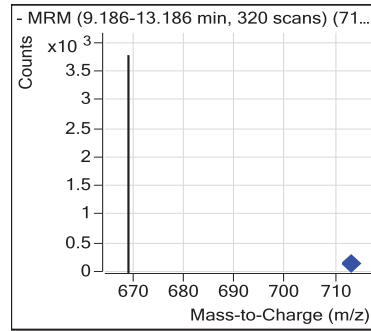
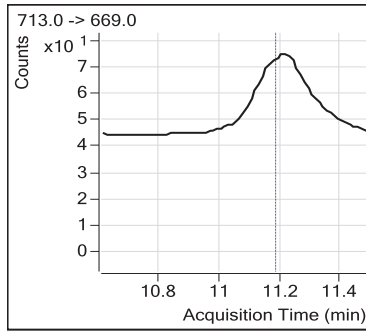
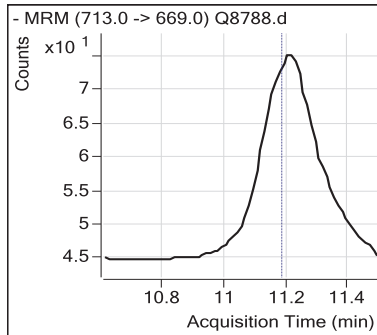
PFD<sub>o</sub>DA



PFT<sub>r</sub>DA



PFT<sub>e</sub>DA



7.1.6  
7

# Manual Integration Approval Summary

Sample Number: FA20402-4      Method: EPA 537 MOD  
Lab FileID: Q8788.D      Analyst approved: 12/16/14 09:32 Nancy Saunders  
Injection Time: 12/15/14 21:41      Supervisor approved: 12/16/14 10:17 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.61	Split peak
Perfluorooctanoic acid	335-67-1		6.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.68	Split peak

7.1.6.1

7

## Perfluorinated Compounds by LC/MS/MS.

```

Data File           : Q8699.d
Operator           : nancyf
Acq Method Name    : dMRM_PFOA_PFOS.m
Acquisition date   : 2014-12-09 18:48
Sample Name        : FA20402-5
Vial               : Vial 14
Sample Info        : OP54151,SQ281,120,,,1,1,WATER
Quant Method       : PFC_1208_SQ280.quantmethod.xml
Quant Batch Name   : SQ281.batch.bin
Last Calib Update  : 2014-12-08 16:17
    
```

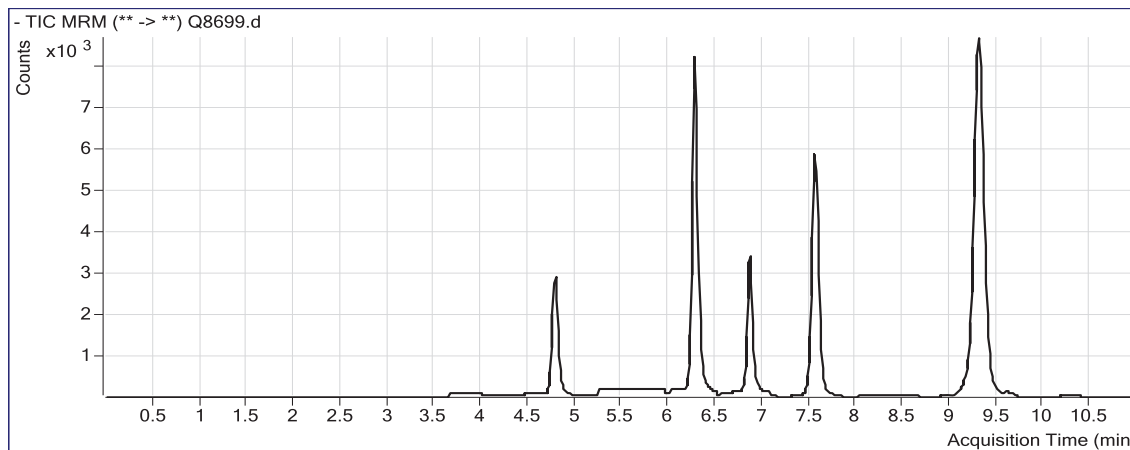
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
13C2-PFOA	6.271	415.0 -> 370.0	32116	20.000	µg/L	0.025
13C4-PFOS	6.857	503.0 -> 80.0	13214	20.000	µg/L	0.038
13C2-PFDoDA	9.284	615.0 -> 570.0	69350	20.000	µg/L	0.012
<b>System Monitoring Compounds</b>						
13C2-PFHxA	4.779	315.0 -> 270.0	11269	21.34	µg/L	0.025
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 106.71%			
13C2-PFDA	7.545	515.0 -> 470.0	27677	20.20	µg/L	0.037
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 101.01%			
<b>Target Compounds</b>						
PFOA	6.274	413.0 -> 369.0	425	0.261	µg/L	<b>Qvalue</b> 69

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

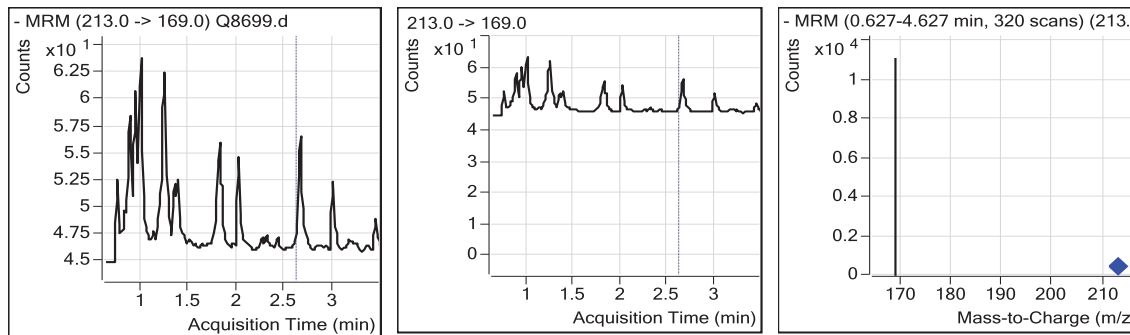
7.1.7  
7

## Perfluorinated Compounds by LC/MS/MS.

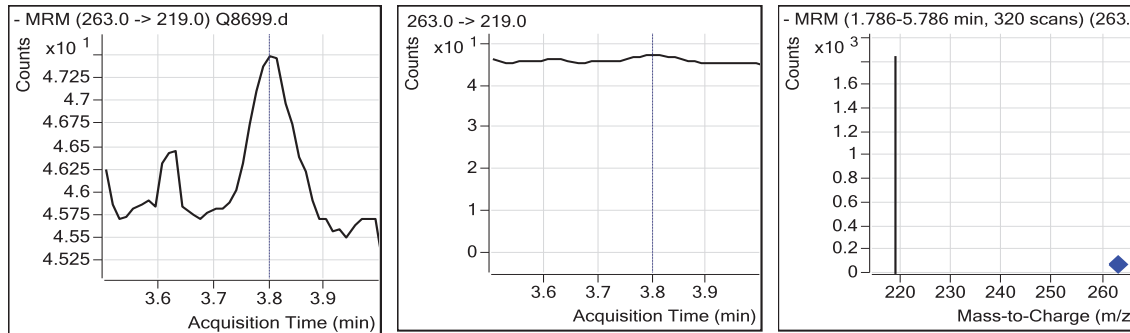
Data File : Q8699.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 18:48  
 Sample Name : FA20402-5  
 Vial : Vial 14  
 Sample Info : OP54151,SQ281,120,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



**PFBA**



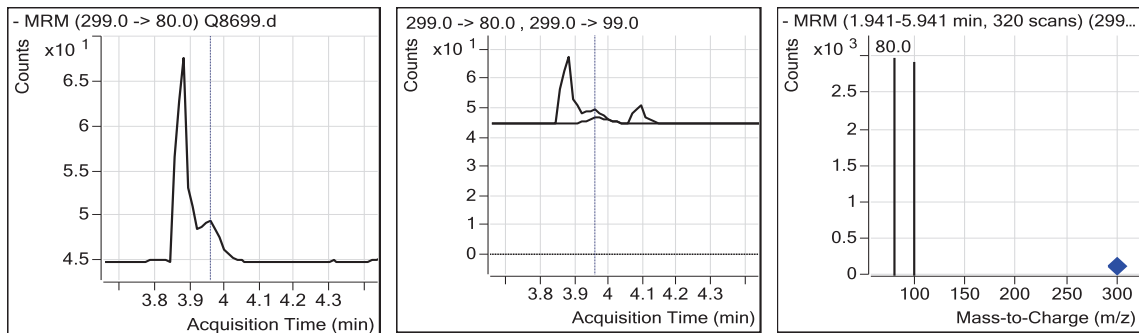
**PFPeA**



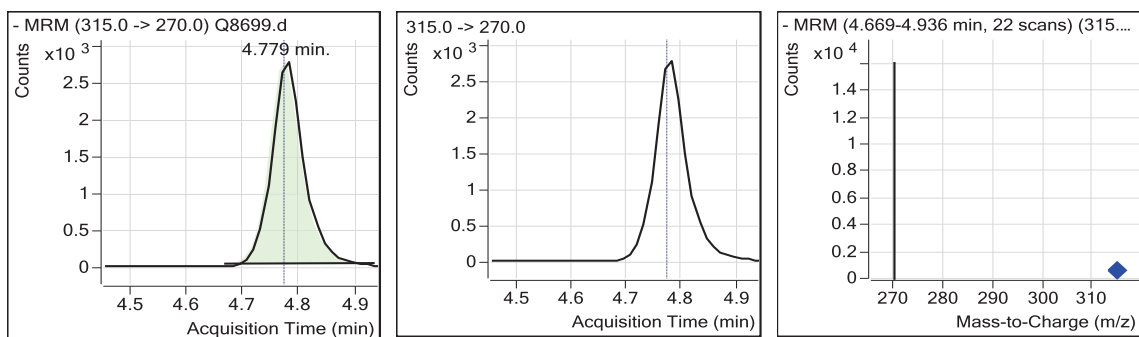
7.1.7  
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## Perfluorinated Compounds by LC/MS/MS.

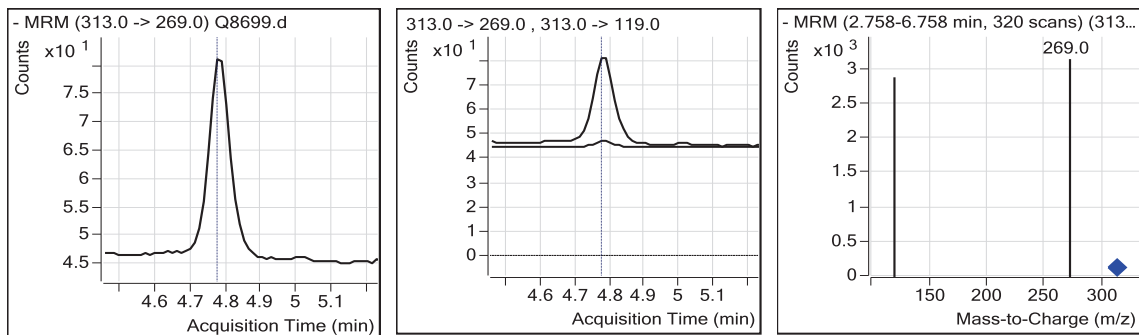
PFBS



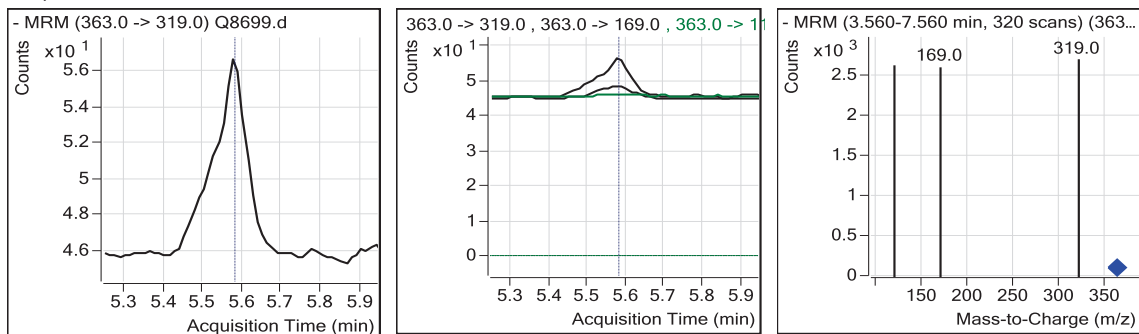
13C2-PFHxA



PFHxA

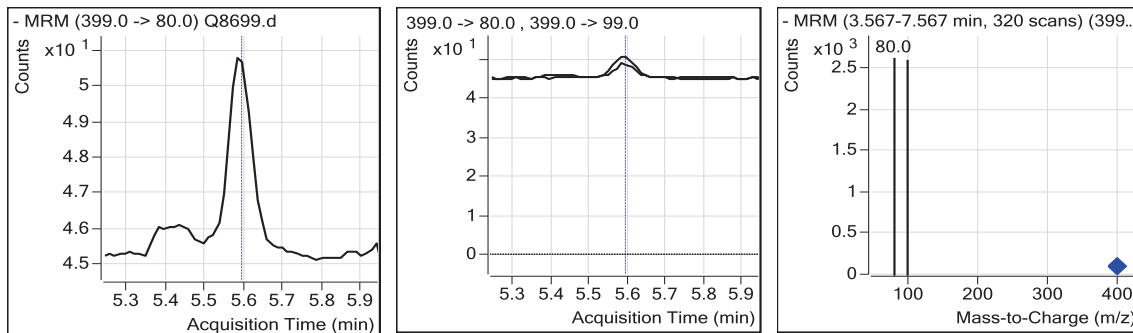


PFHpA

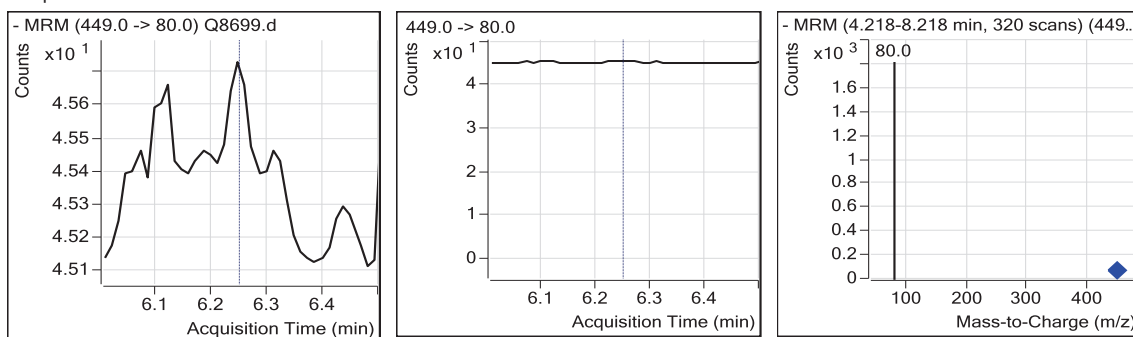


## Perfluorinated Compounds by LC/MS/MS.

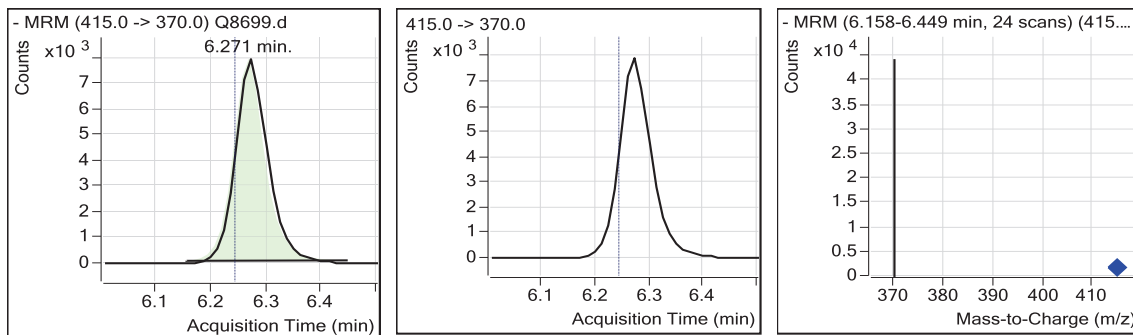
PFHxS



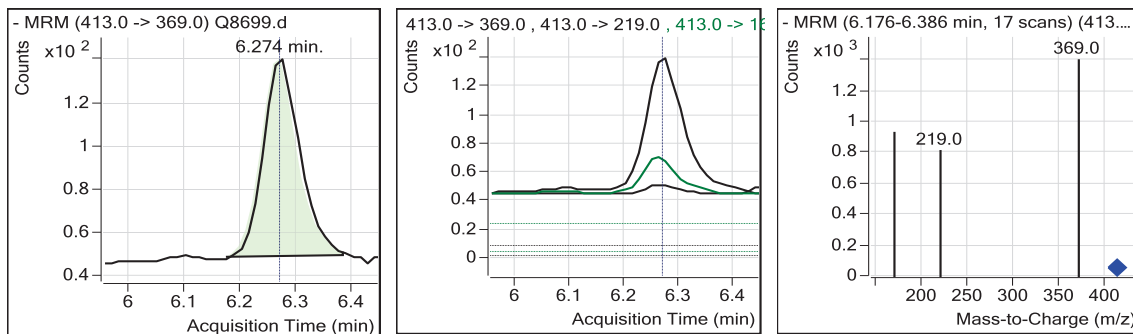
PFHpS



13C2-PFOA

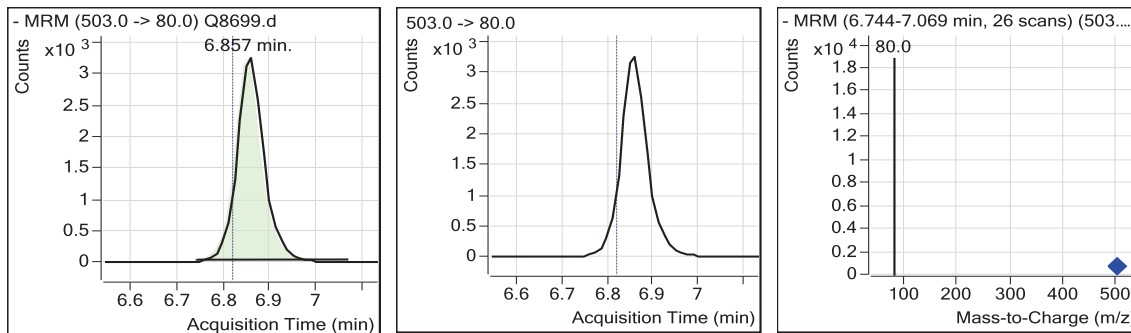


PFOA

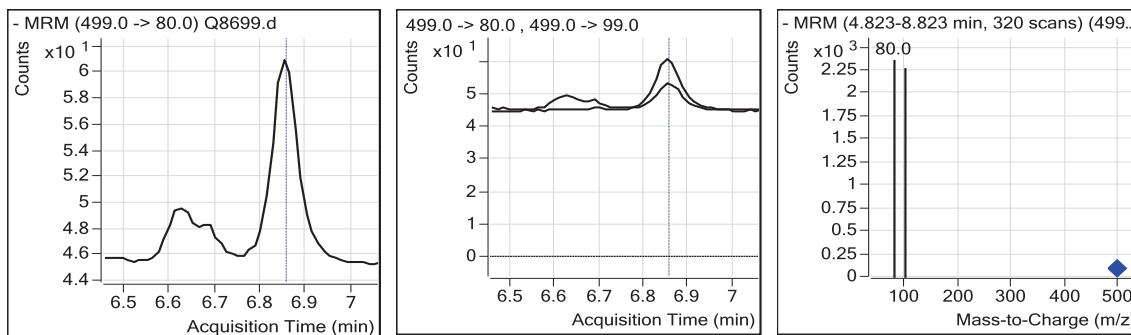


### Perfluorinated Compounds by LC/MS/MS.

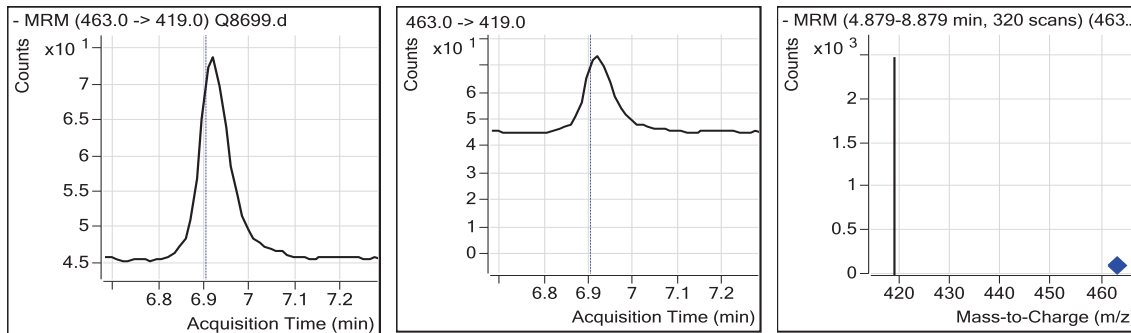
#### 13C4-PFOS



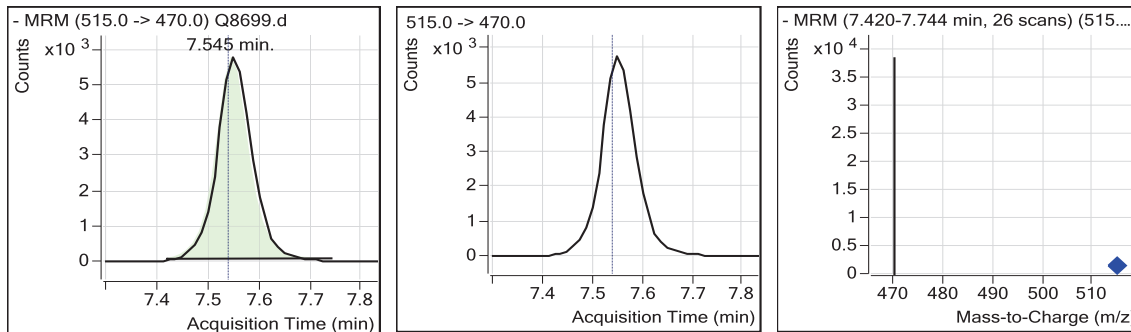
#### PFOS



#### PFNA



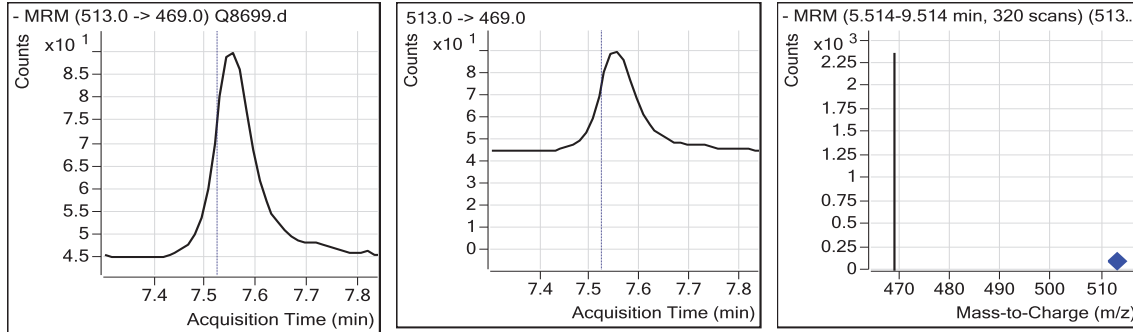
#### 13C2-PFDA



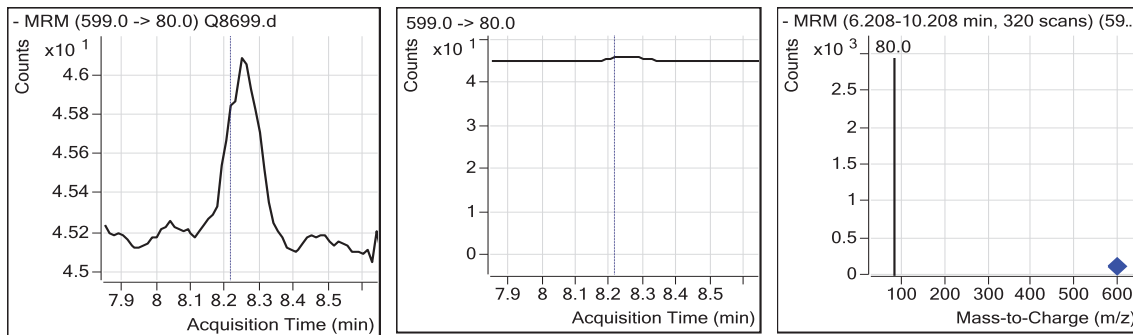


## Perfluorinated Compounds by LC/MS/MS.

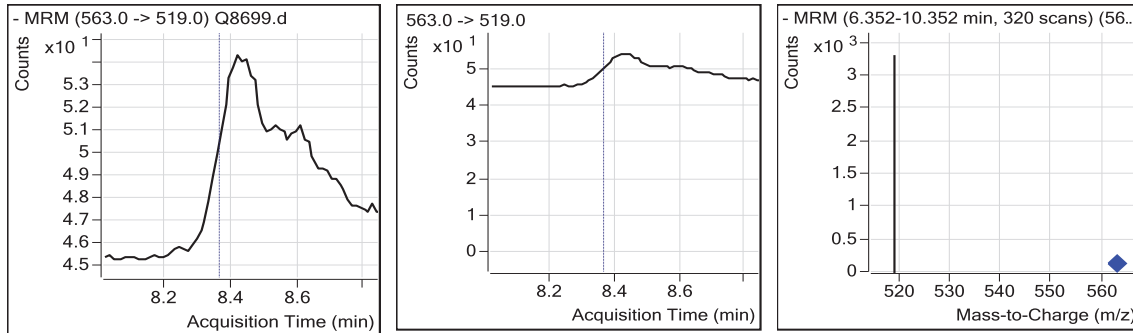
PFDA



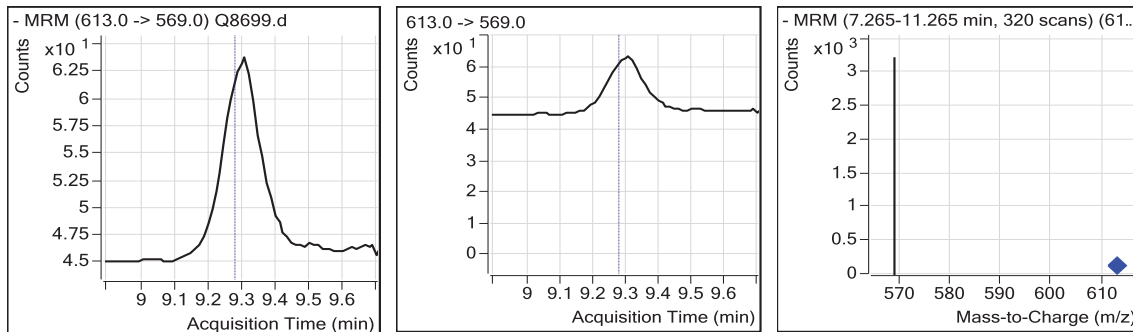
PFDS



PFUnDA



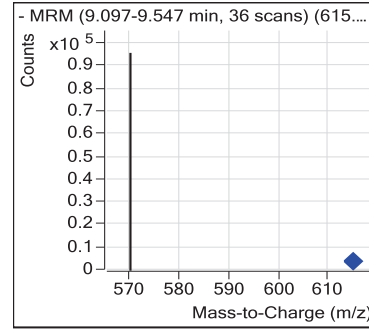
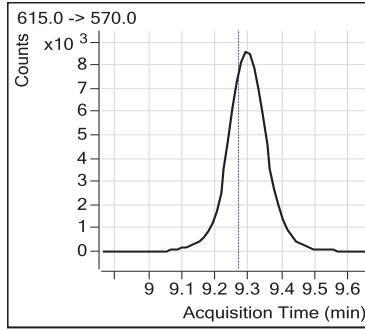
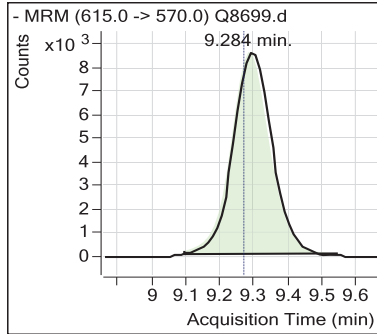
PFDoDA



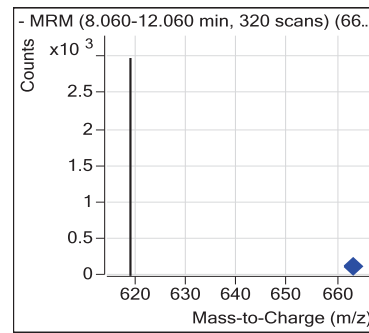
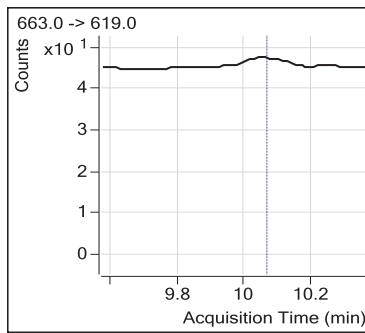
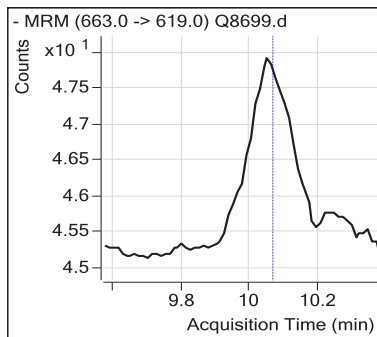
7.1.7  
7

## Perfluorinated Compounds by LC/MS/MS.

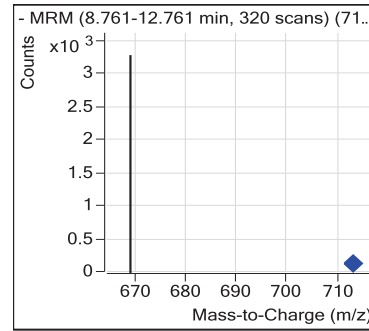
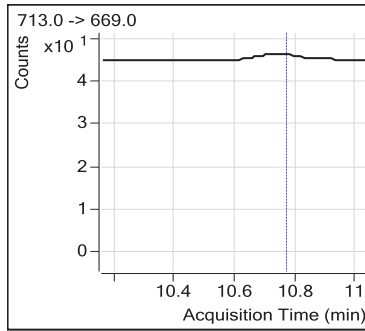
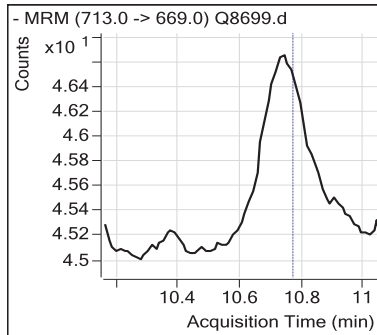
13C2-PFDoDA



PFTrDA



PFTeDA



7.1.7

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8691.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 16:02  
 Sample Name : OP54151-MB  
 Vial : Vial 6  
 Sample Info : OP54151,SQ281,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17

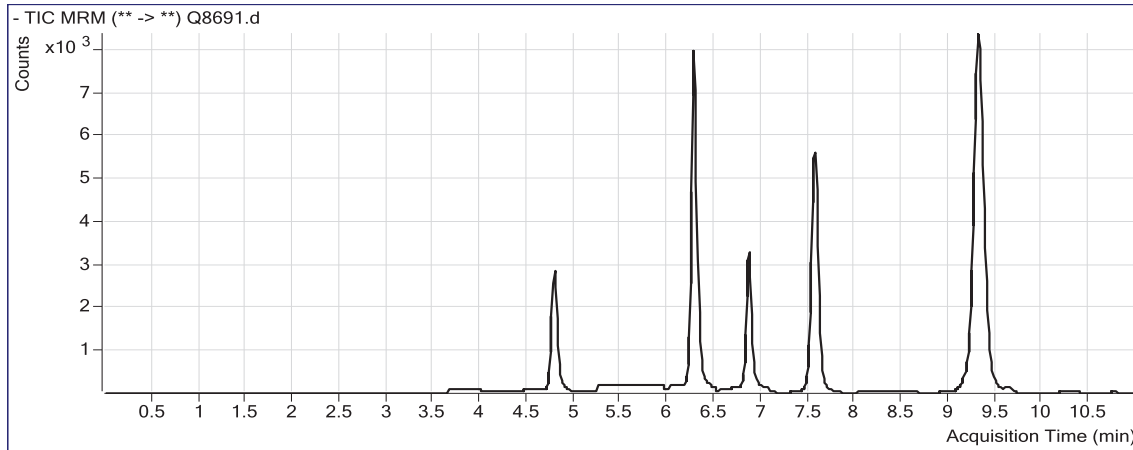
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
13C2-PFOA	6.271	415.0 -> 370.0	30866	20.000	µg/L	0.025
13C4-PFOS	6.857	503.0 -> 80.0	12853	20.000	µg/L	0.038
13C2-PFDoDA	9.297	615.0 -> 570.0	67451	20.000	µg/L	0.025
<b>System Monitoring Compounds</b>						
13C2-PFHxA	4.779	315.0 -> 270.0	10873	21.43	µg/L	0.025
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 107.13%			
13C2-PFDA	7.558	515.0 -> 470.0	26753	20.32	µg/L	0.050
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 101.59%			
<b>Target Compounds</b>						
PFOA	6.274	413.0 -> 369.0	351	0.224	µg/L	<b>Qvalue</b> 69

**(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed**

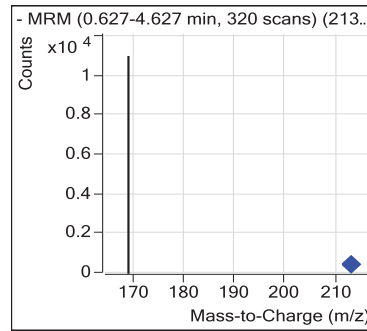
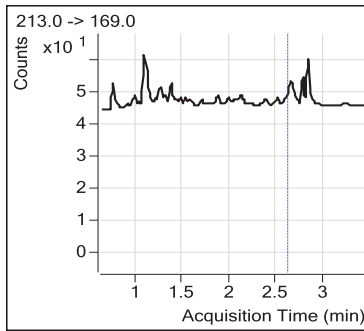
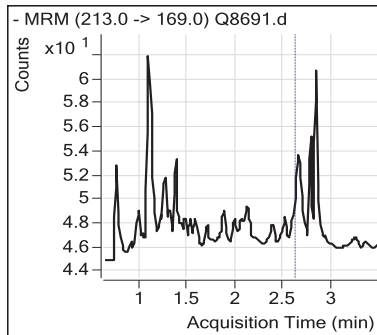
7.2.1  
7

### Perfluorinated Compounds by LC/MS/MS.

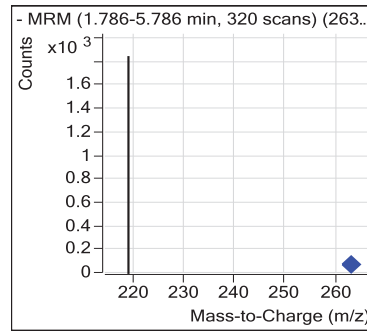
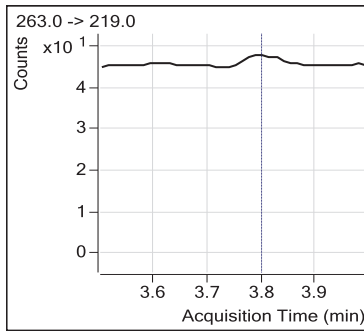
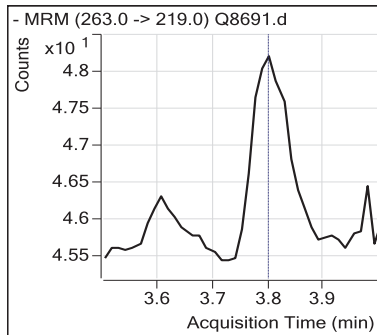
Data File : Q8691.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-09 16:02  
Sample Name : OP54151-MB  
Vial : Vial 6  
Sample Info : OP54151,SQ281,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ281.batch.bin  
Last Calib Update : 2014-12-08 16:17



#### PFBA



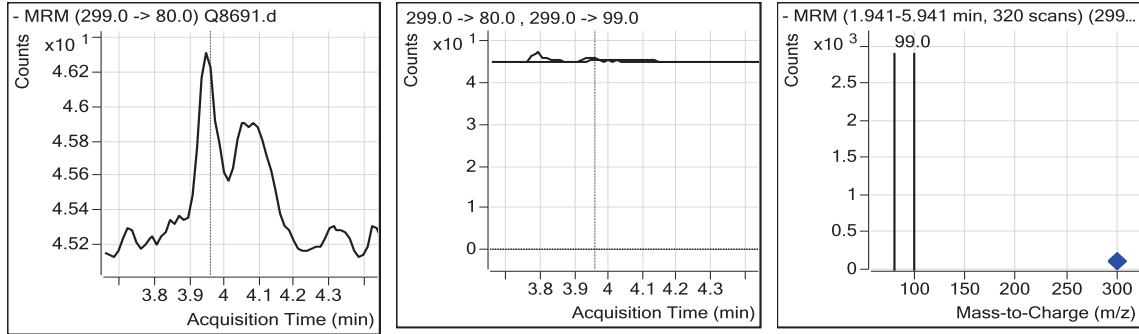
#### PFPeA



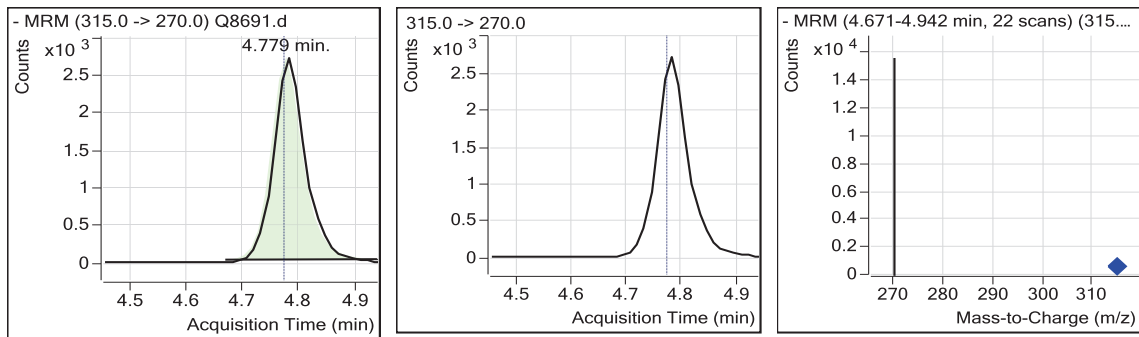
7.2.1  
7

## Perfluorinated Compounds by LC/MS/MS.

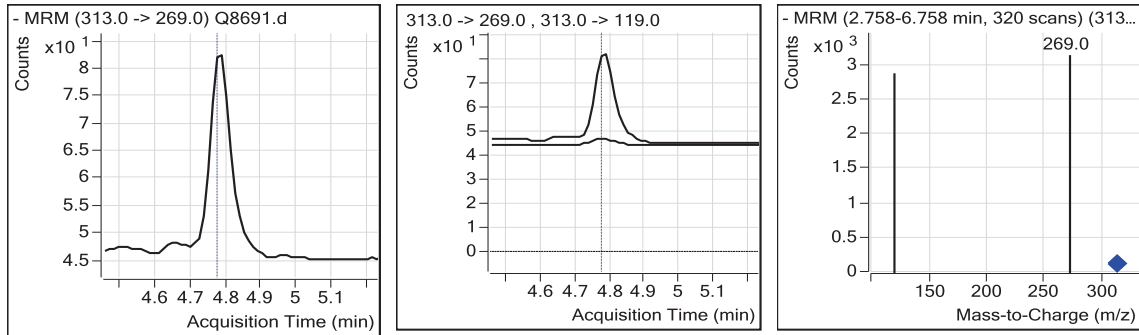
PFBS



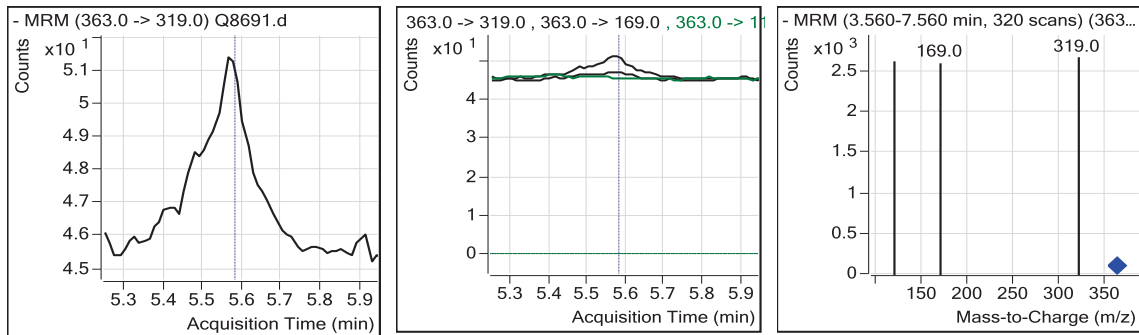
13C2-PFHxA



PFHxA



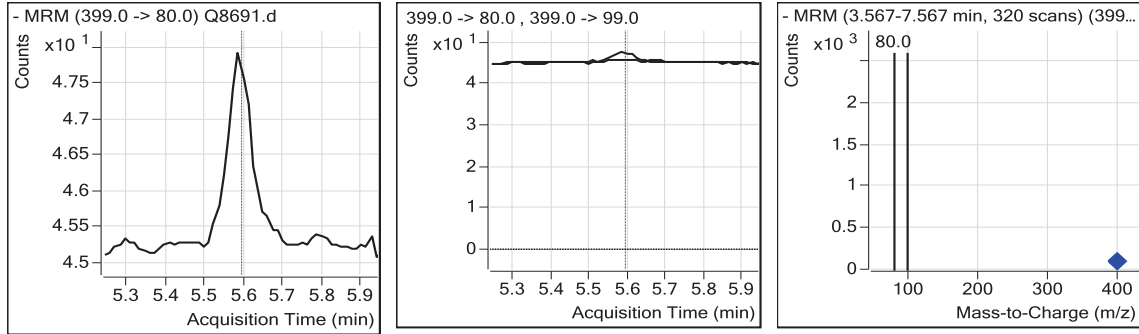
PFHpA



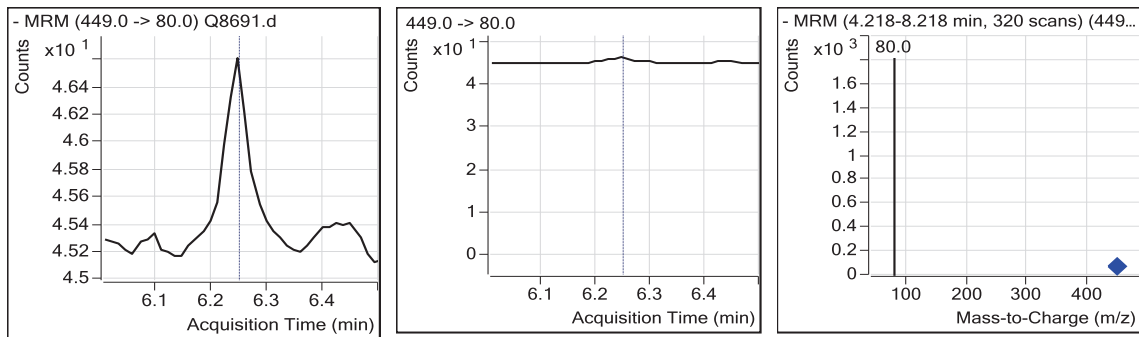
7.2.1  
7

### Perfluorinated Compounds by LC/MS/MS.

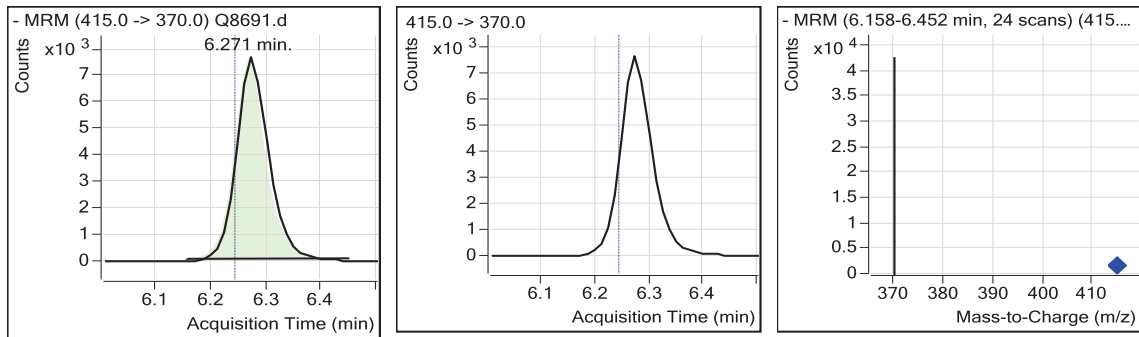
PFHxS



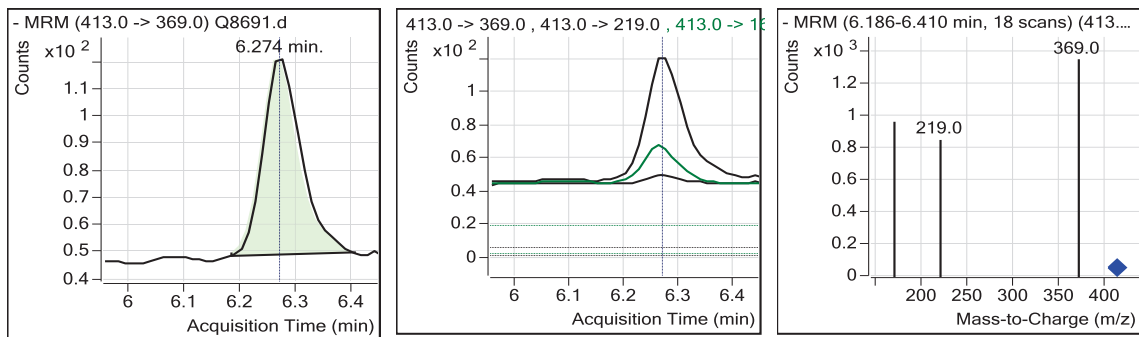
PFHpS



13C2-PFOA



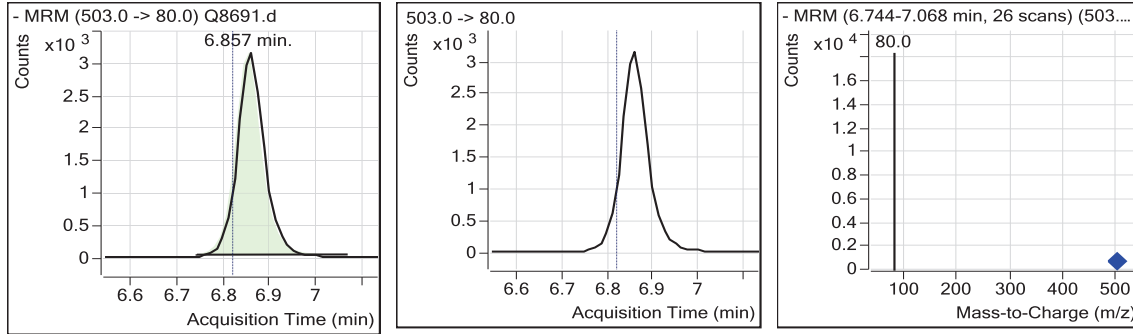
PFOA



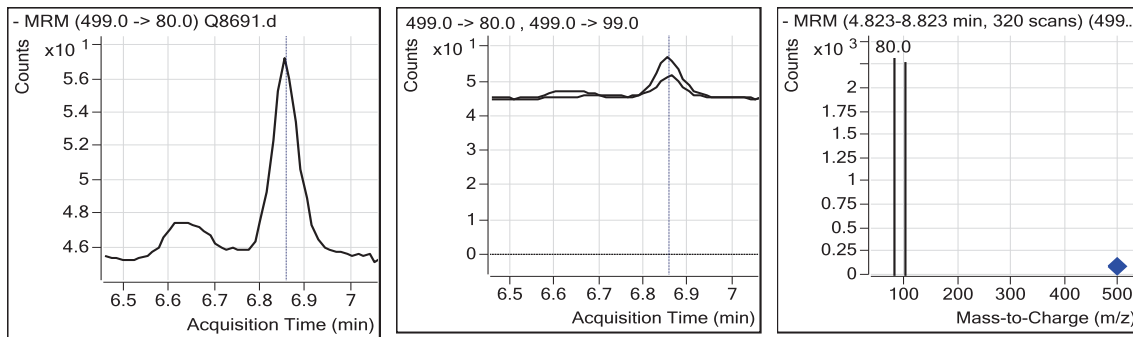
7.2.1  
7

### Perfluorinated Compounds by LC/MS/MS.

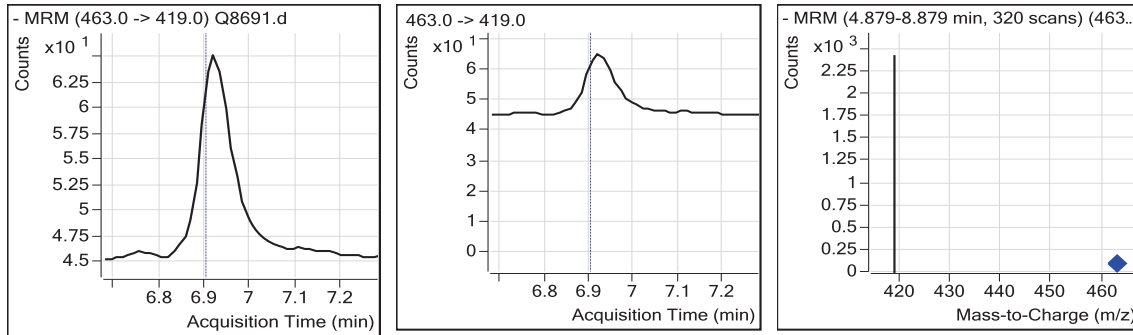
13C4-PFOS



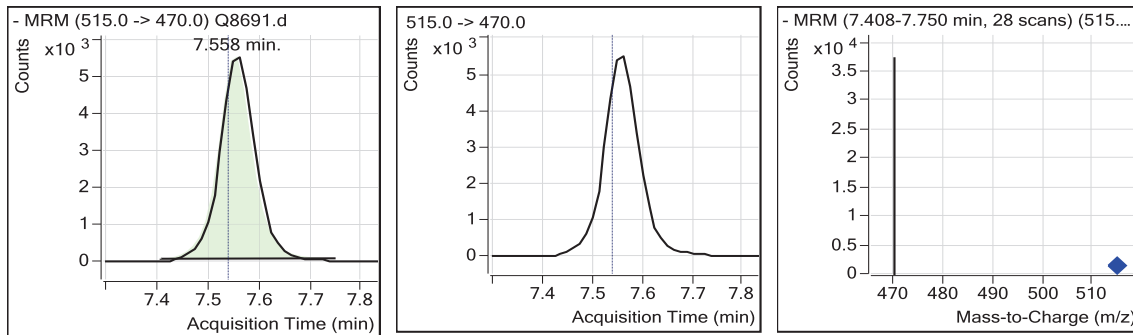
PFOS



PFNA



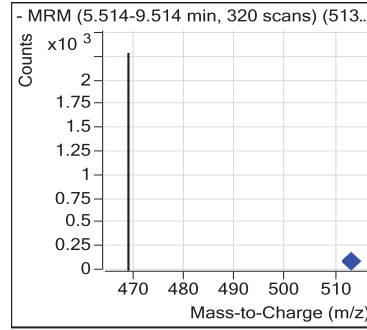
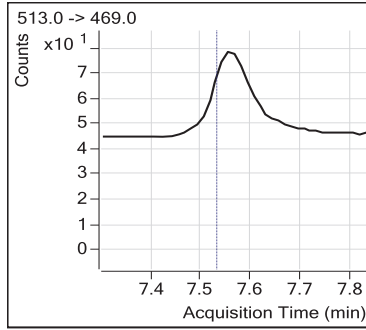
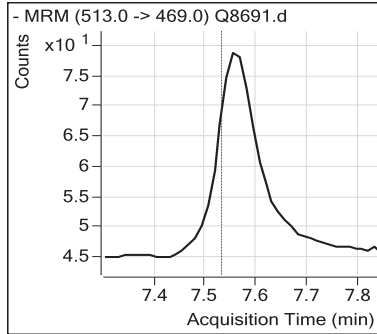
13C2-PFDA



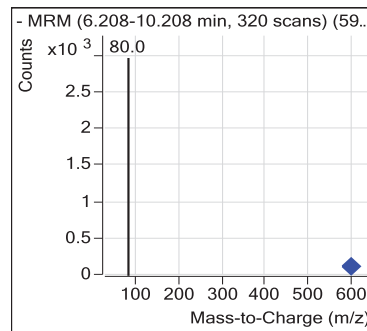
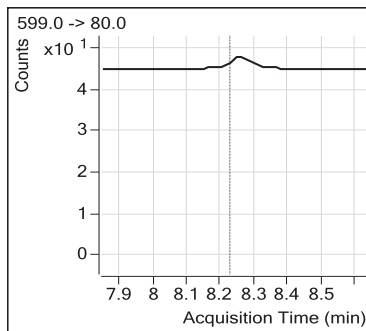
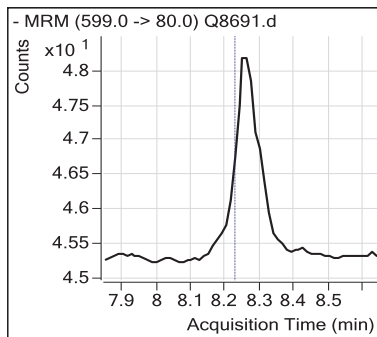
7.2.1  
7

## Perfluorinated Compounds by LC/MS/MS.

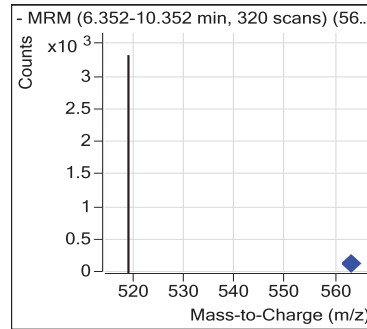
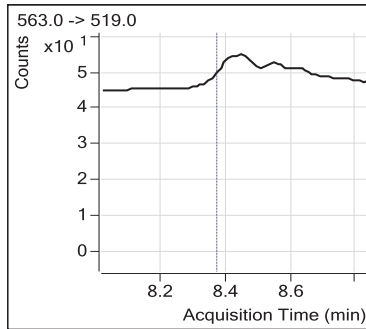
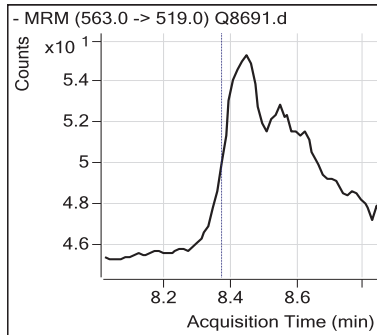
PFDA



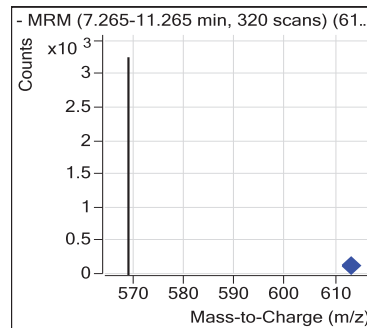
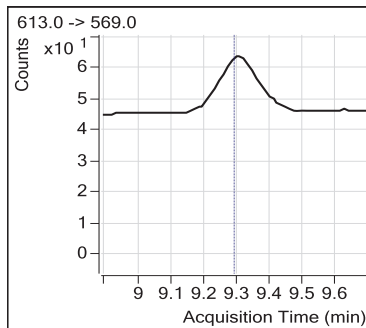
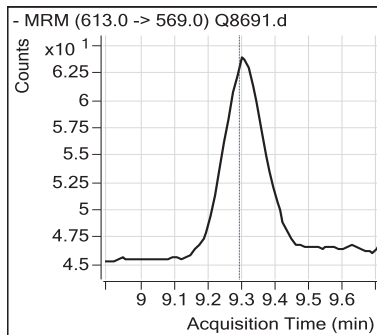
PFDS



PFUnDA



PFDoDA

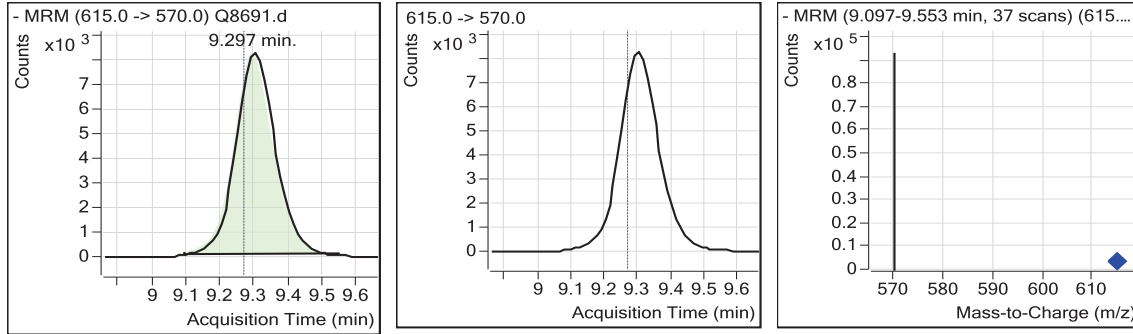


7.2.1  
7

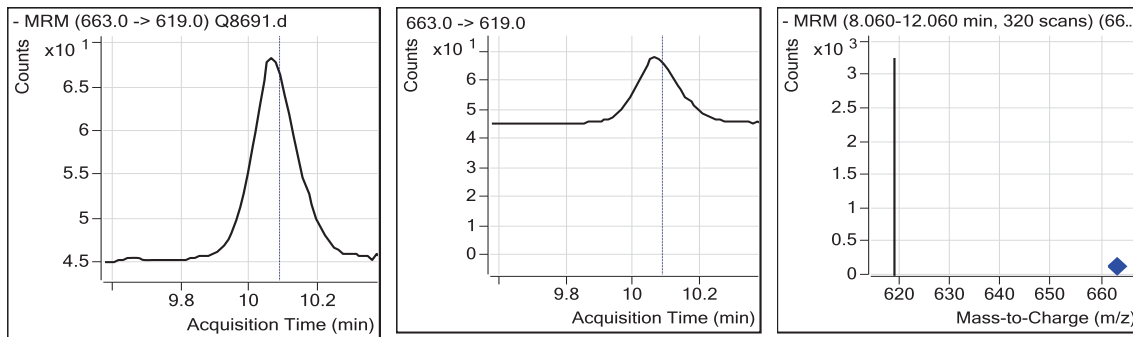


### Perfluorinated Compounds by LC/MS/MS.

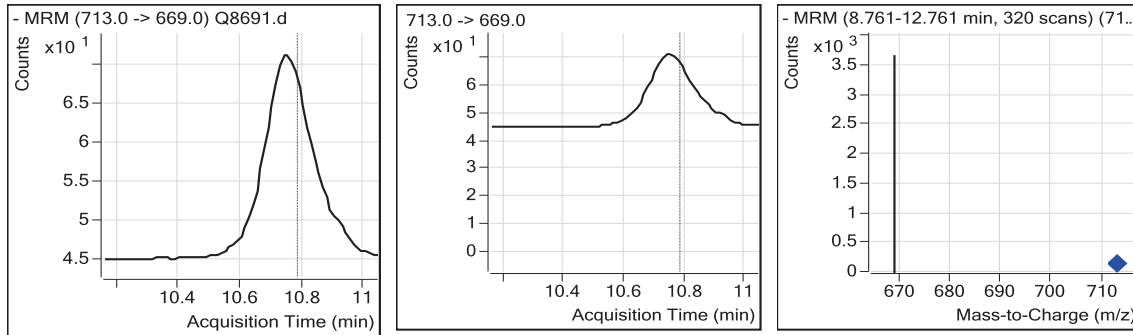
13C2-PFDoDA



PFTrDA



PFTeDA



7.2.1  
7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Mike Eger  
 12/10/14 09:51

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8690.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 15:41  
 Sample Name : OP54151-BS  
 Vial : Vial 5  
 Sample Info : OP54151,SQ281,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17

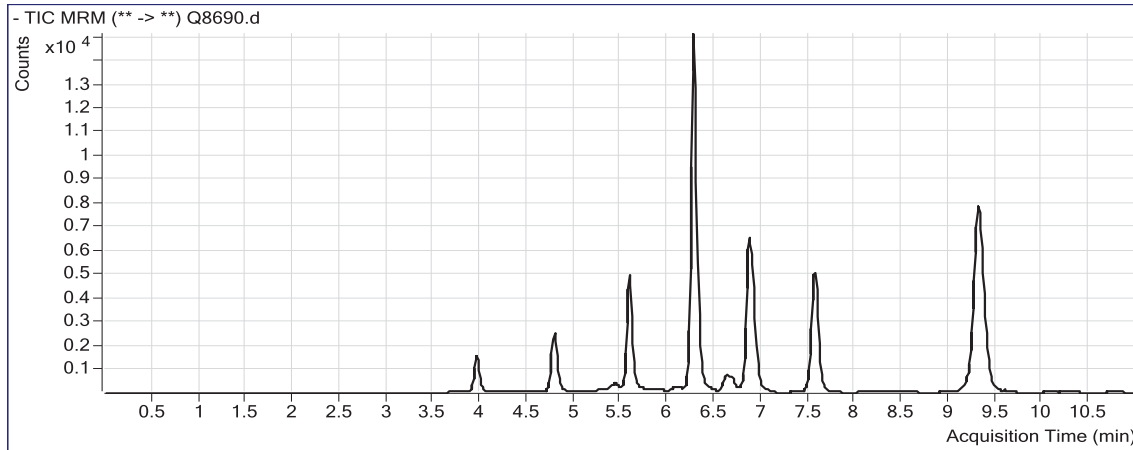
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.271	415.0 -> 370.0	26534	20.000	µg/L	0.025	
13C4-PFOS	6.857	503.0 -> 80.0	11559	20.000	µg/L	0.038	
13C2-PFDoDA	9.297	615.0 -> 570.0	63494	20.000	µg/L	0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.779	315.0 -> 270.0	9825	22.52	µg/L	0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 112.60%				
13C2-PFDA	7.558	515.0 -> 470.0	24370	21.53	µg/L	0.050	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 107.65%				
<b>Target Compounds</b>							
PFBS	3.953	299.0 -> 80.0	4178	24.464	µg/L		99
PFHxS	5.580	399.0 -> 80.0	6202	22.613	µg/L	m	89
PFHpA	5.585	363.0 -> 319.0	8009	18.022	µg/L		98
PFOA	6.274	413.0 -> 369.0	25895	19.265	µg/L		80
PFOS	6.848	499.0 -> 80.0	11419	19.752	µg/L	m	90
PFNA	6.904	463.0 -> 419.0	15101	18.895	µg/L		100
PFDoDA	9.290	613.0 -> 569.0	468	0.329	µg/L		100
PFTTrDA	10.060	663.0 -> 619.0	960	0.695	µg/L		100
PFTeDA	10.748	713.0 -> 669.0	1022	1.049	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

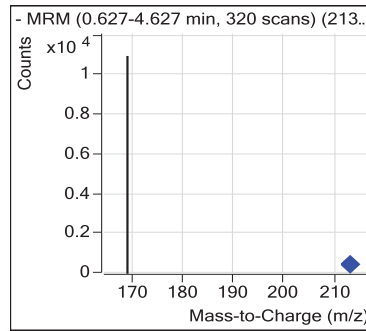
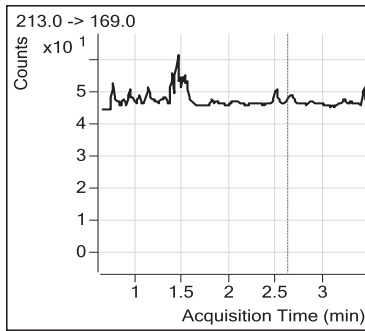
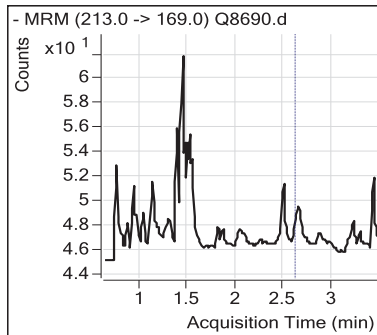
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS.

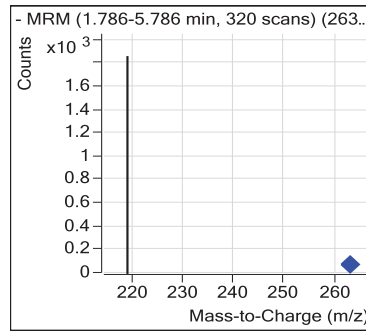
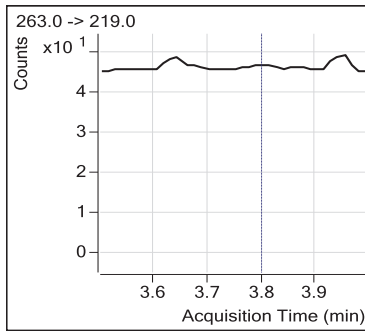
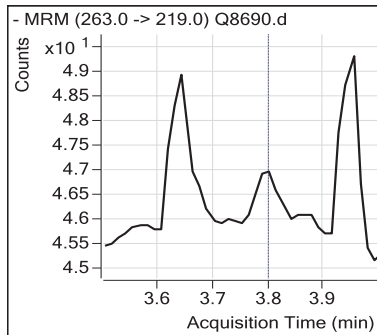
Data File : Q8690.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-09 15:41  
Sample Name : OP54151-BS  
Vial : Vial 5  
Sample Info : OP54151,SQ281,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



#### PFBA



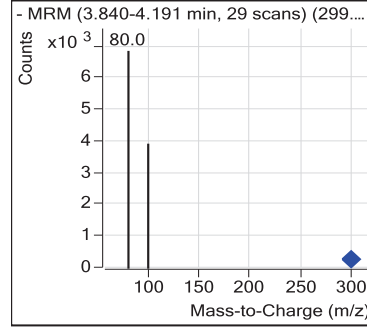
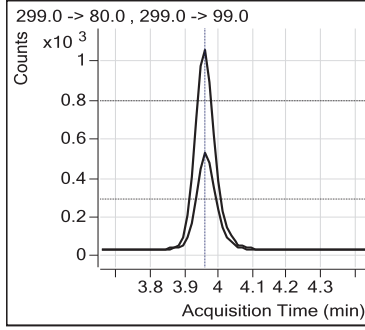
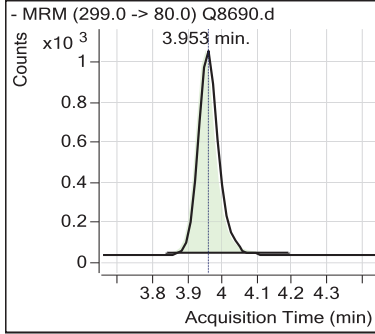
#### PFPeA



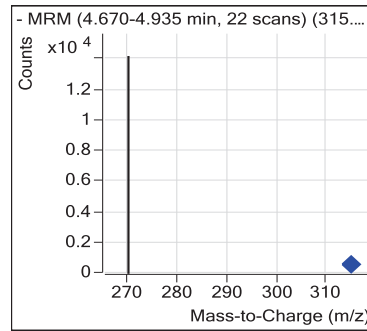
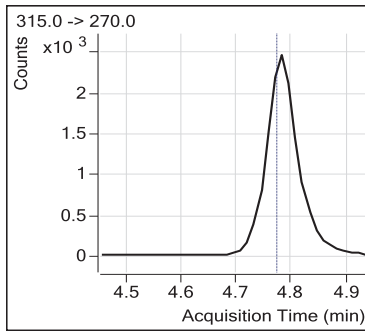
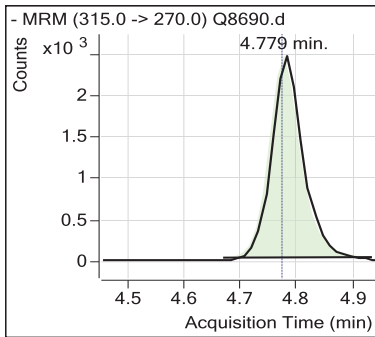
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS.

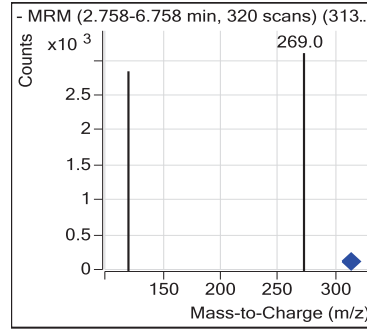
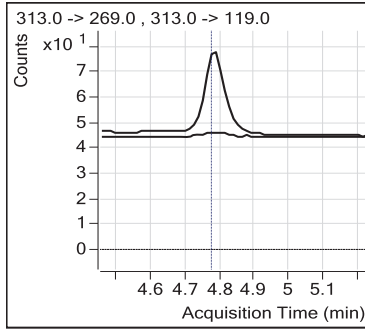
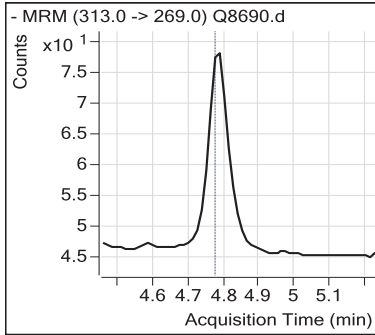
PFBS



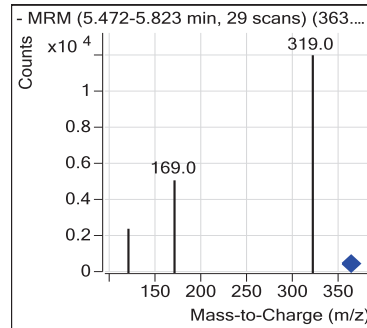
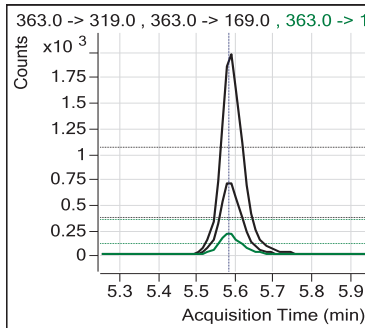
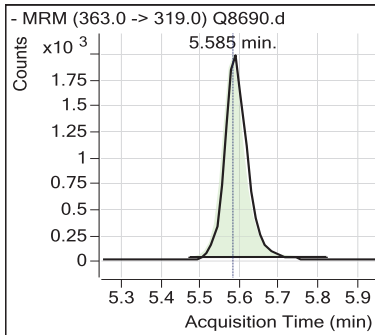
13C2-PFHxA



PFHxA



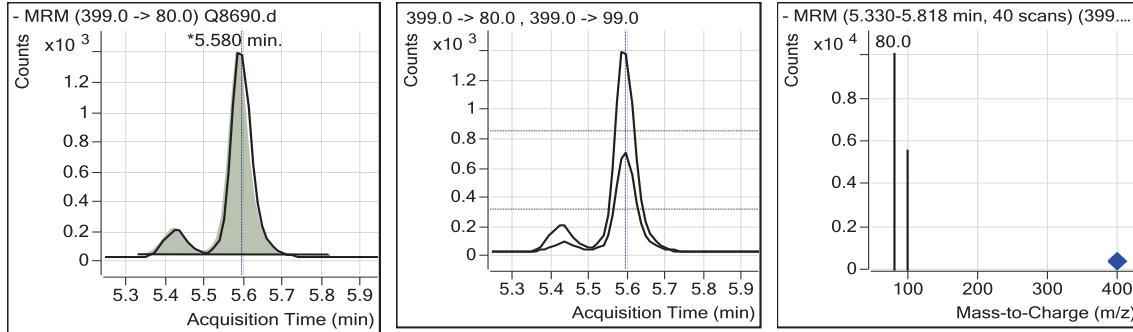
PFHpA



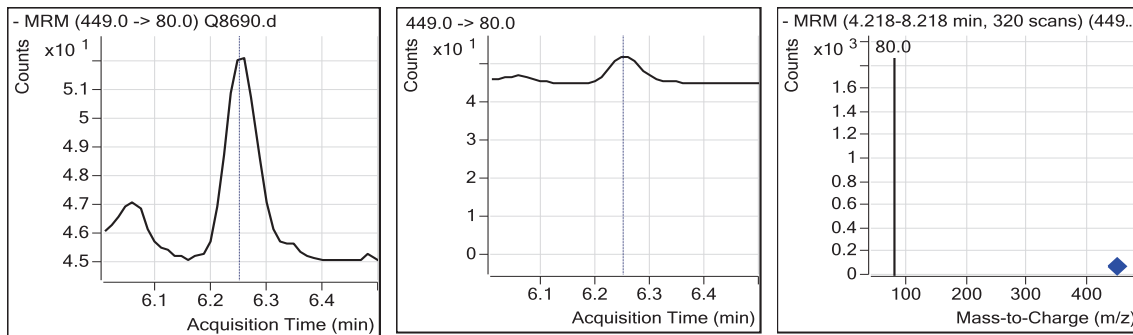
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS.

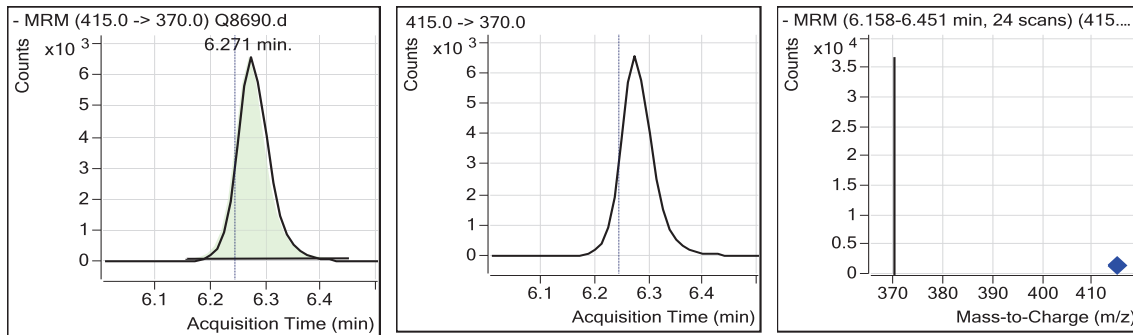
PFHxS



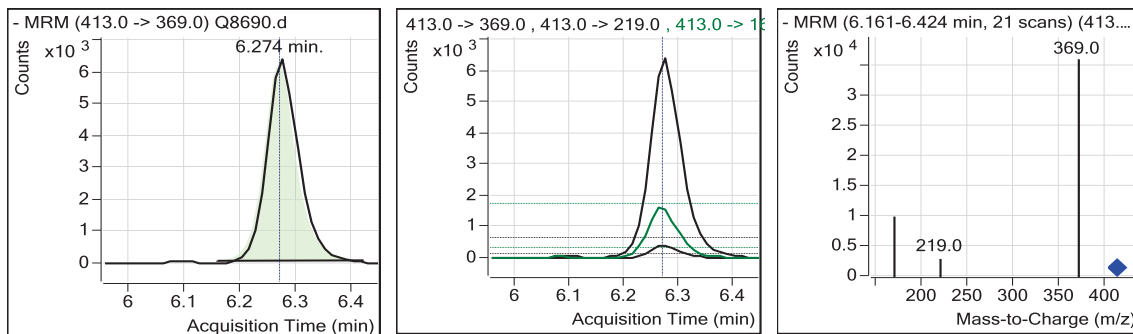
PFHpS



13C2-PFOA



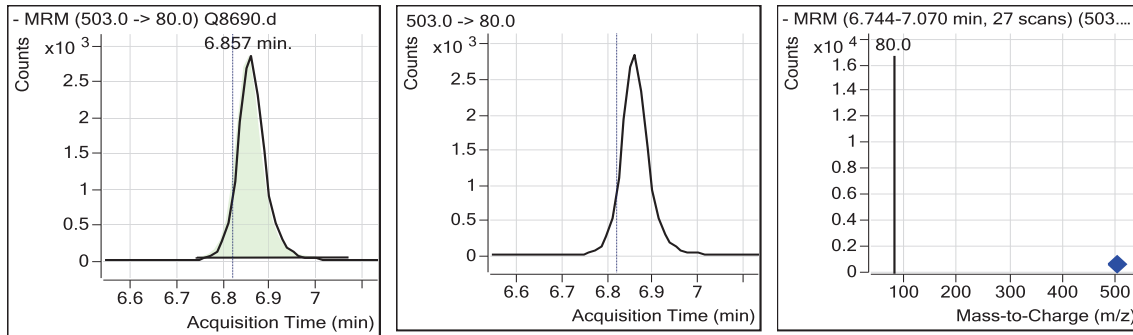
PFOA



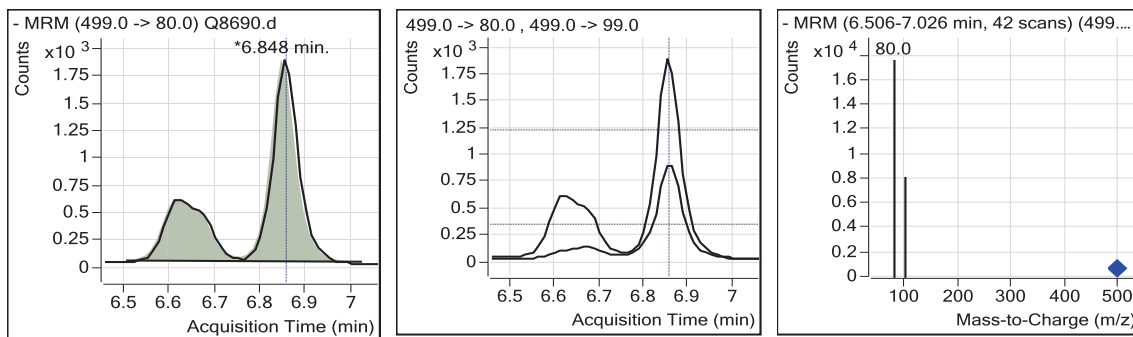
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS.

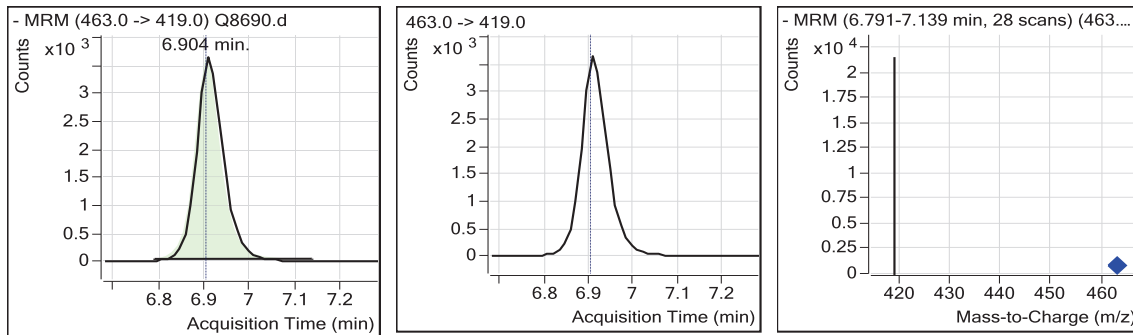
13C4-PFOS



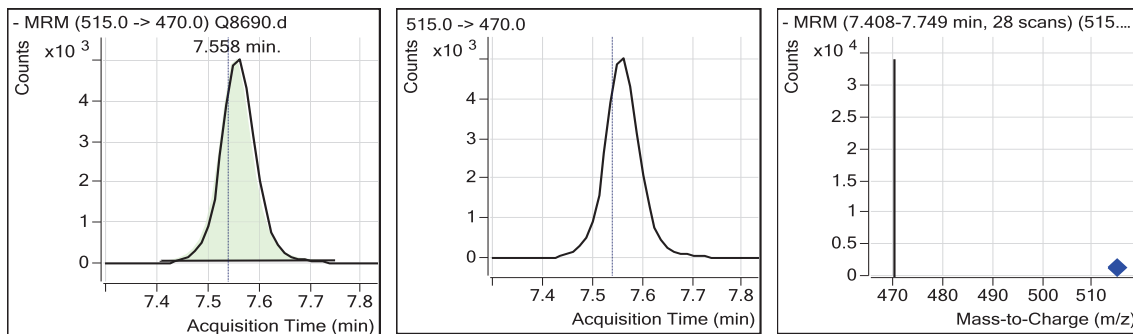
PFOS



PFNA



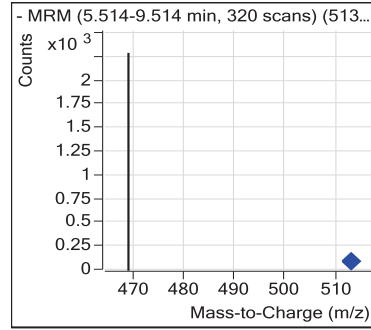
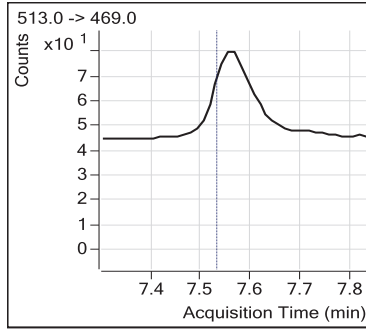
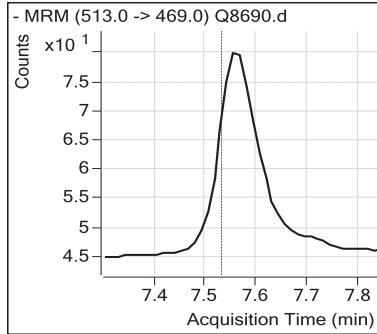
13C2-PFDA



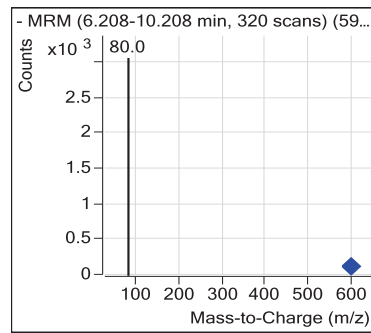
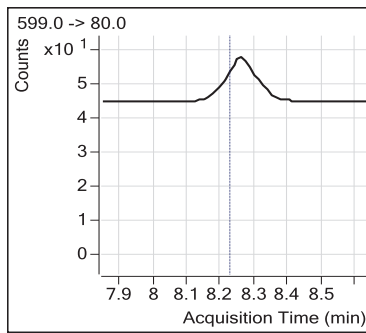
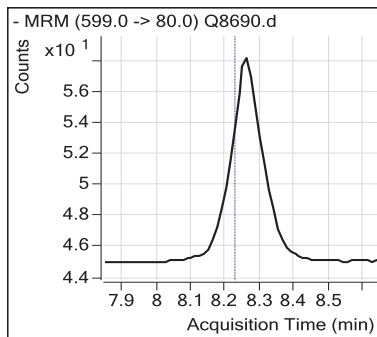
7.3.1  
7

## Perfluorinated Compounds by LC/MS/MS.

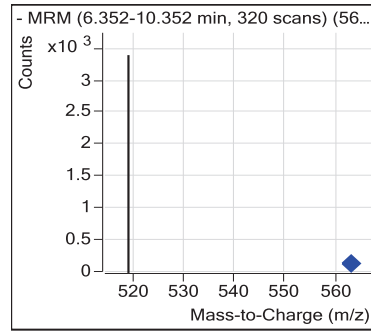
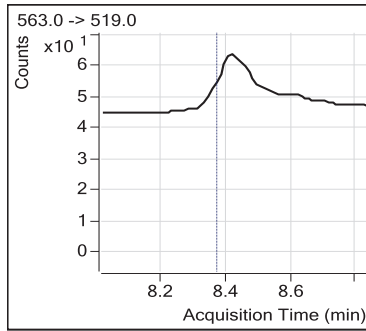
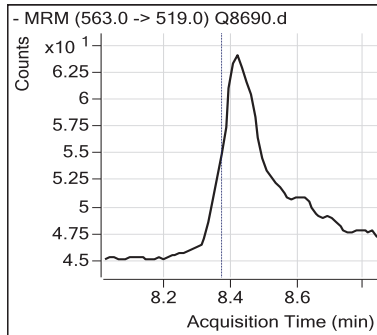
PFDA



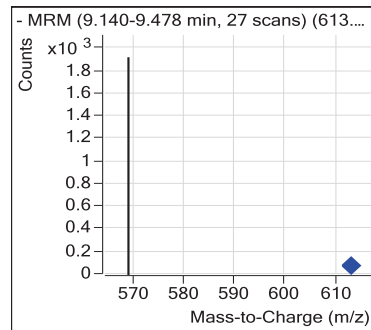
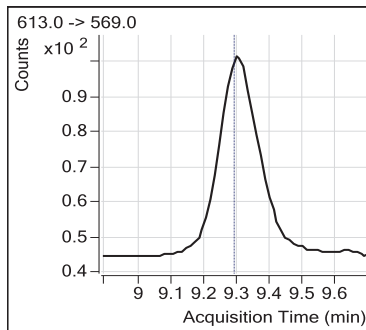
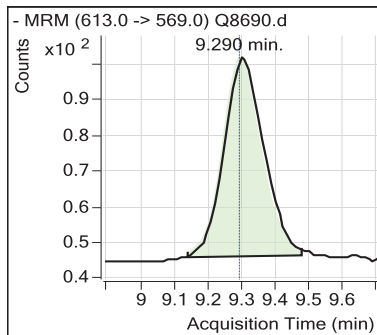
PFDS



PFUnDA



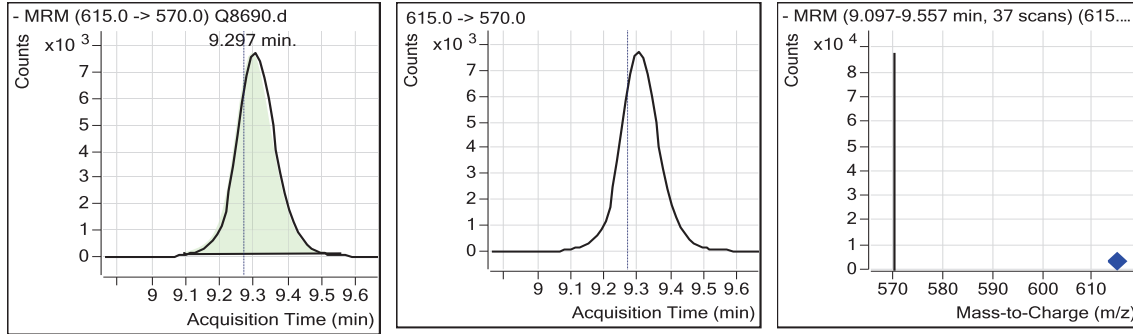
PFDoDA



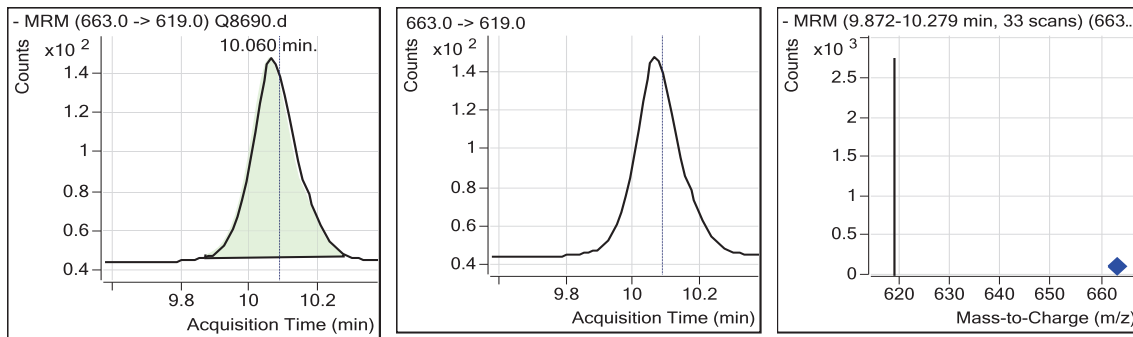
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS.

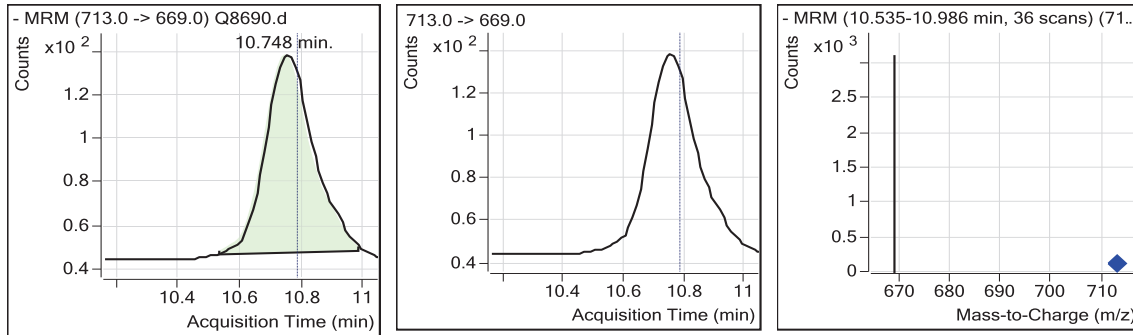
13C2-PFDoDA



PFTTrDA



PFTeDA



7.3.1  
7



# Manual Integration Approval Summary

Sample Number: OP54151-BS      Method: EPA 537 MOD  
Lab FileID: Q8690.D      Analyst approved: 12/10/14 09:30 Mike Eger  
Injection Time: 12/09/14 15:41      Supervisor approved: 12/10/14 09:51 Mike Eger

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.58	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.85	Split peak

7.3.1.1  
7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Naresh Jiawan  
 12/16/14 10:16

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8697.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 18:06  
 Sample Name : OP54151-MS  
 Vial : Vial 12  
 Sample Info : OP54151,SQ281,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17

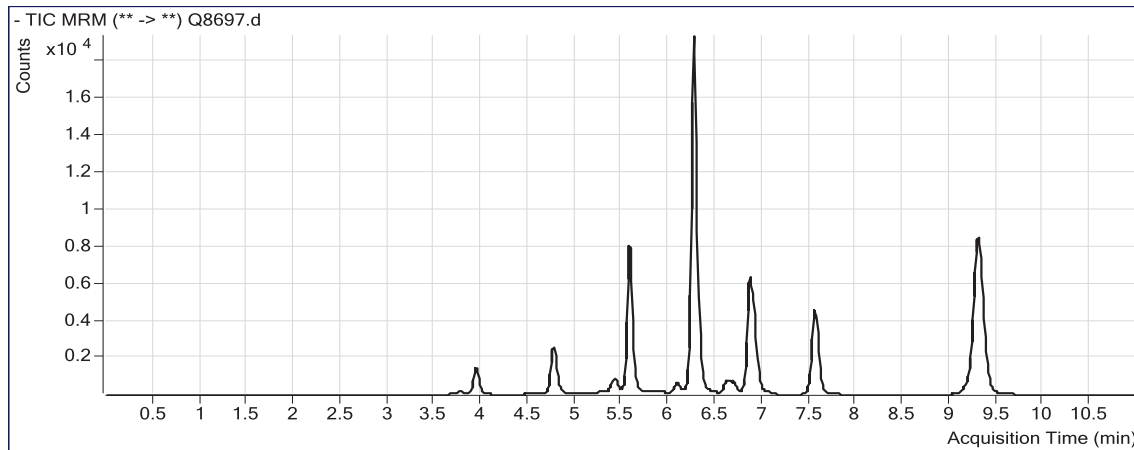
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
13C2-PFOA	6.259	415.0 -> 370.0	28000	20.000	µg/L	0.013
13C4-PFOS	6.857	503.0 -> 80.0	12166	20.000	µg/L	0.038
13C2-PFDoDA	9.284	615.0 -> 570.0	67604	20.000	µg/L	0.012
<b>System Monitoring Compounds</b>						
13C2-PFHxA	4.766	315.0 -> 270.0	8463	18.38	µg/L	0.013
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 91.92%			
13C2-PFDA	7.545	515.0 -> 470.0	21651	18.13	µg/L	0.037
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 90.63%			
<b>Target Compounds</b>						
						<b>Qvalue</b>
PFBA	1.589	213.0 -> 169.0	0	0.000	µg/L m	1
PFPeA	3.774	263.0 -> 219.0	219	1.302	µg/L	100
PFBS	3.928	299.0 -> 80.0	3998	22.241	µg/L	97
PFHxA	4.758	313.0 -> 269.0	1791	3.706	µg/L m	99
PFHpA	5.572	363.0 -> 319.0	7730	16.482	µg/L	99
PFHxS	5.580	399.0 -> 80.0	16641	57.647	µg/L m	91
PFOA	6.261	413.0 -> 369.0	44671	31.493	µg/L m	85
PFOS	6.848	499.0 -> 80.0	10809	17.764	µg/L m	99
PFNA	6.904	463.0 -> 419.0	14690	17.419	µg/L	100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

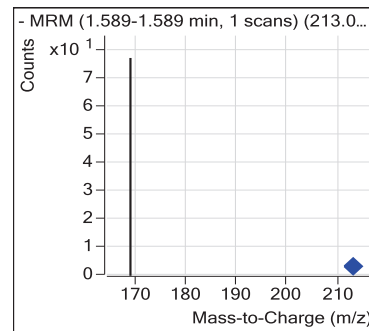
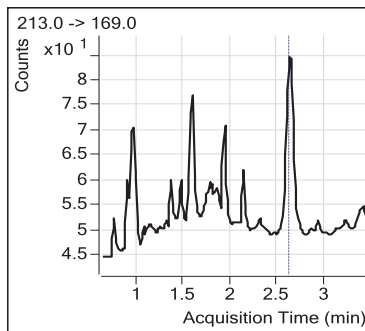
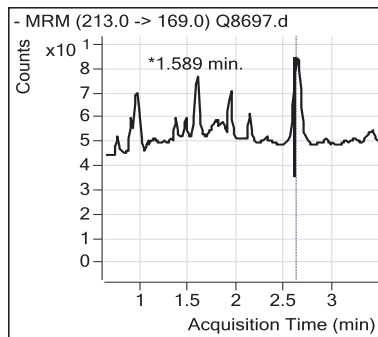
7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS.

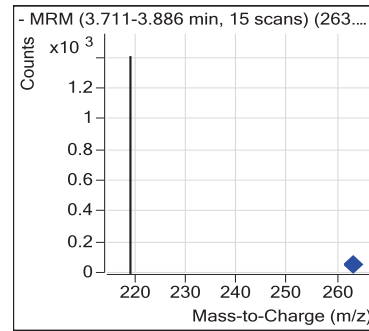
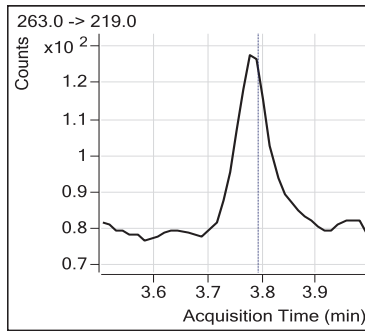
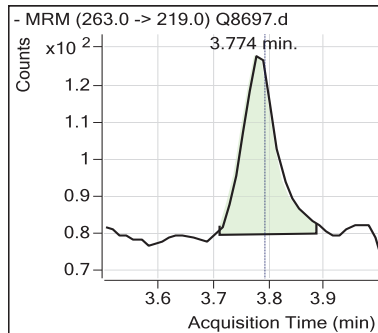
Data File : Q8697.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-09 18:06  
Sample Name : OP54151-MS  
Vial : Vial 12  
Sample Info : OP54151,SQ281,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



#### PFBA



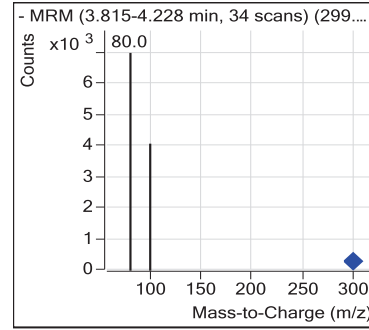
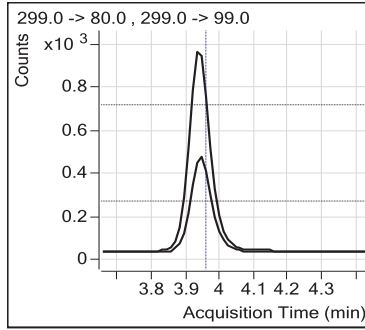
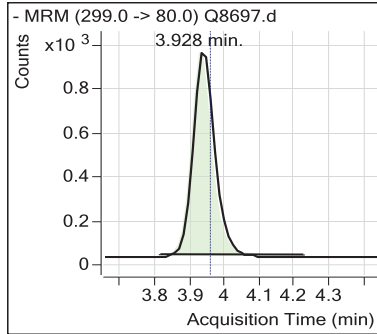
#### PFPeA



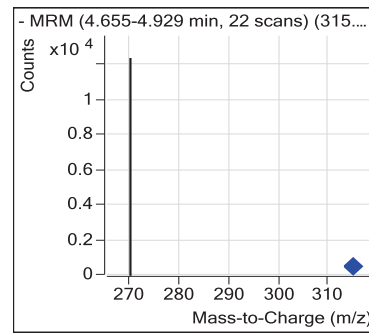
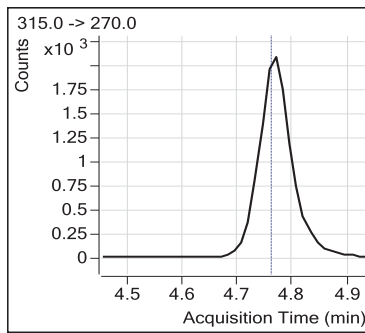
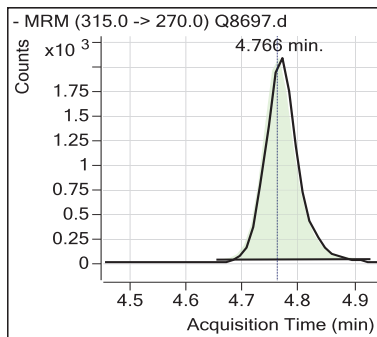
7.4.1  
7

## Perfluorinated Compounds by LC/MS/MS.

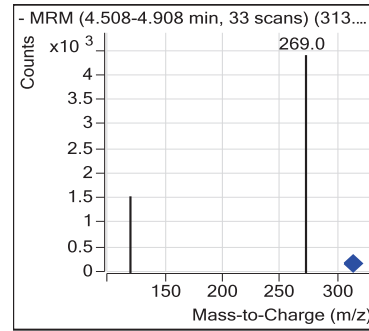
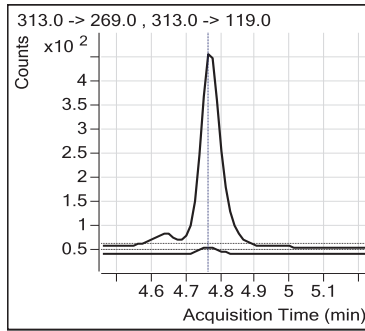
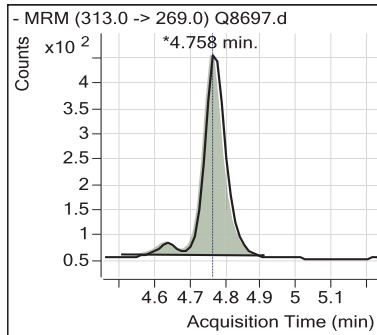
PFBS



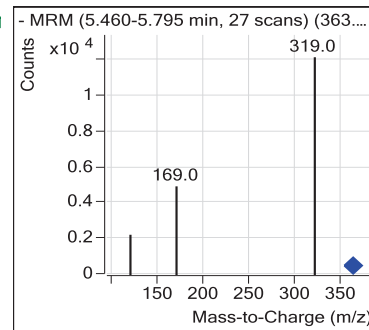
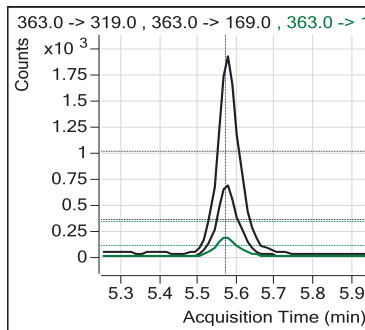
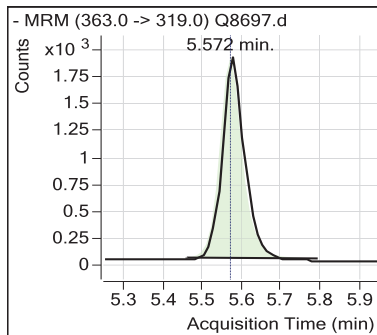
<sup>13</sup>C2-PFHxA



PFHxA



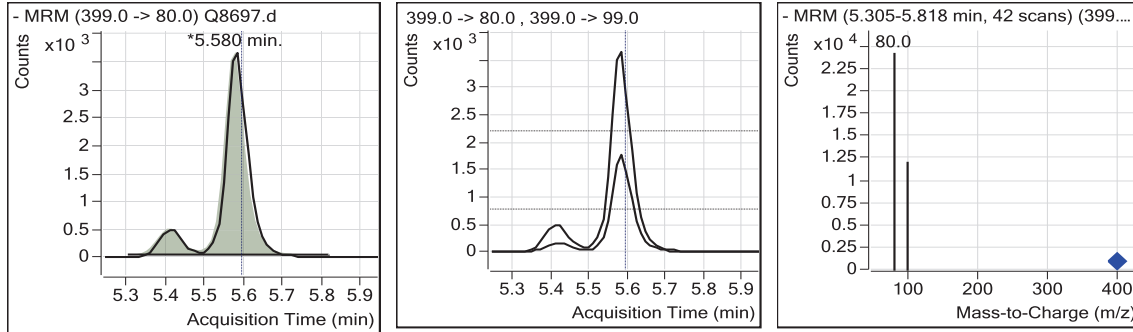
PFHpA



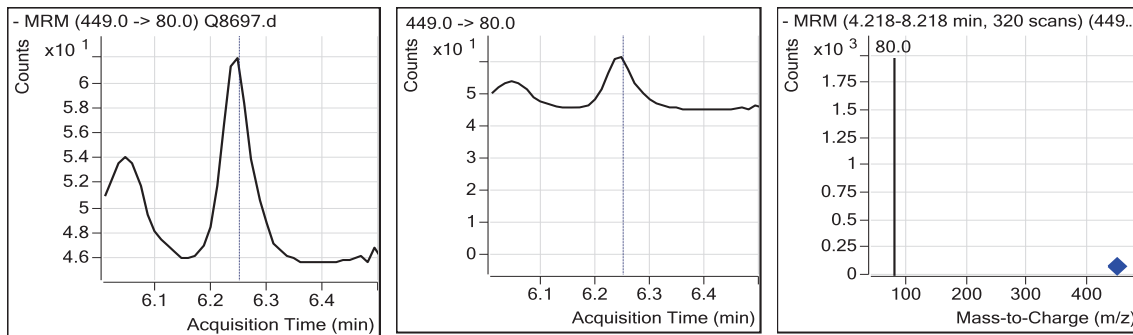
7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS.

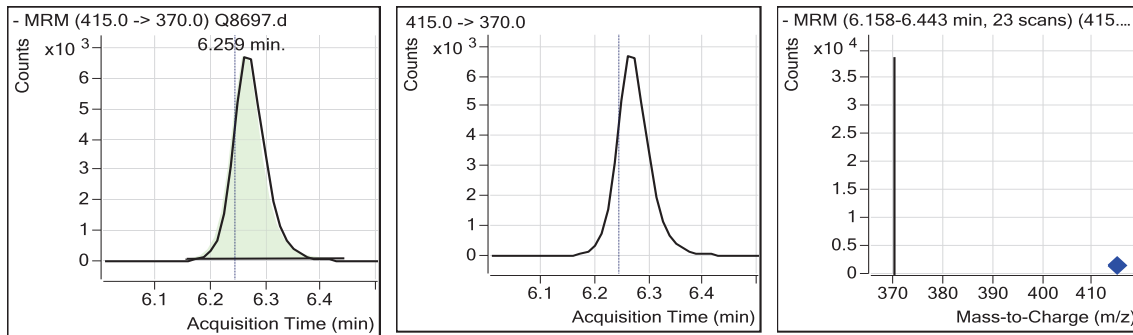
PFHxS



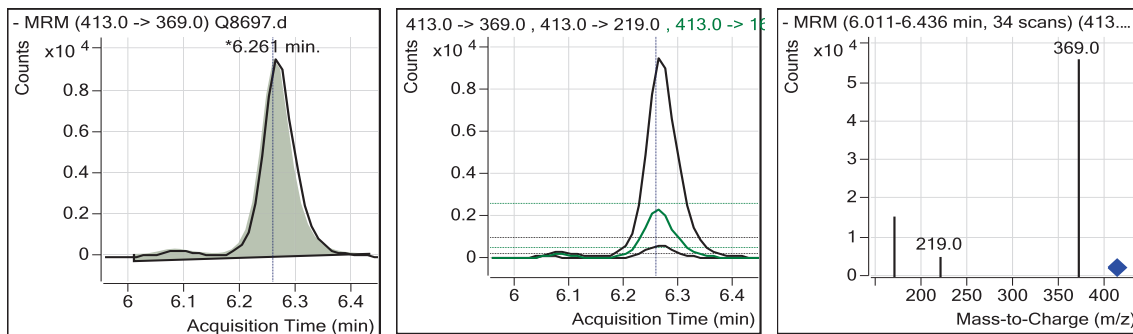
PFHpS



13C2-PFOA



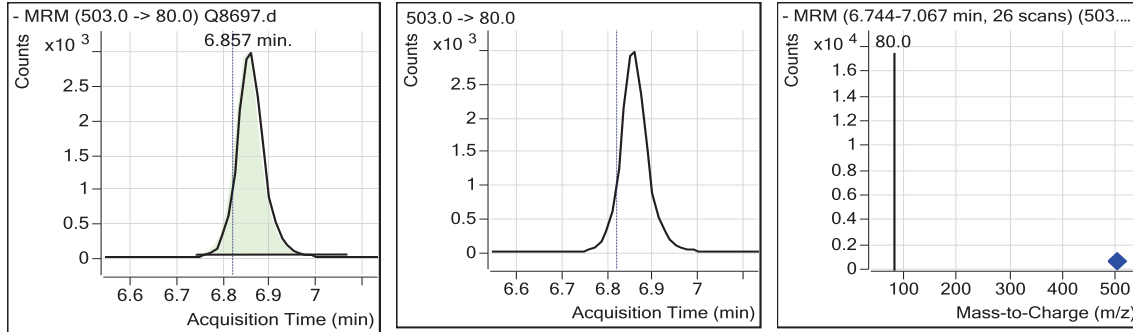
PFOA



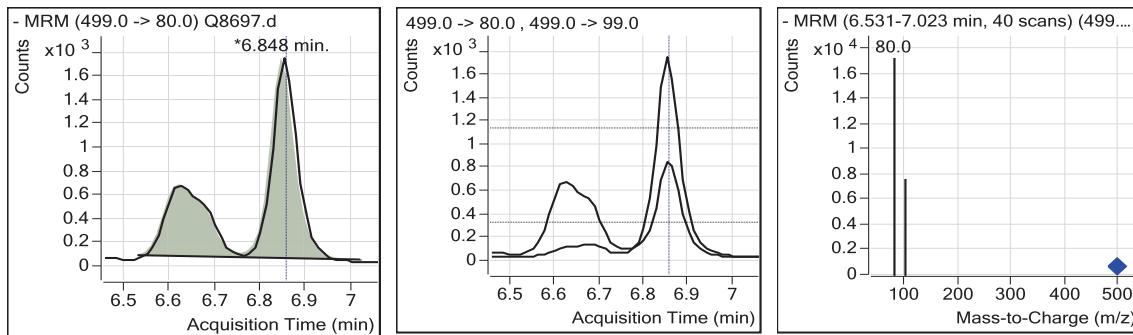
7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS.

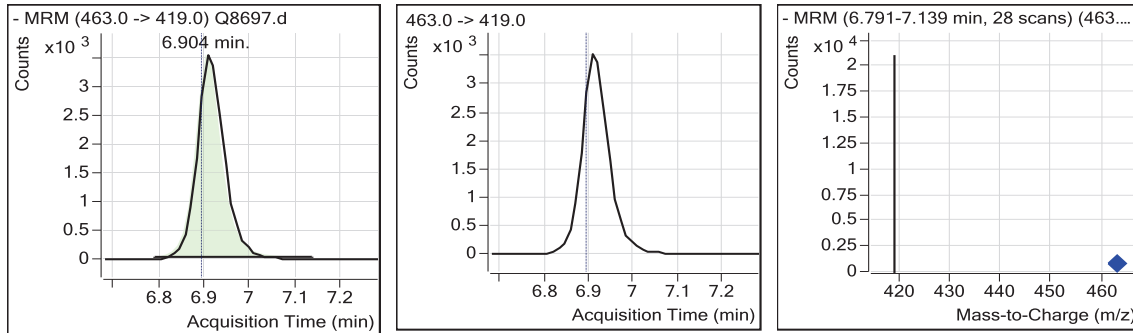
13C4-PFOS



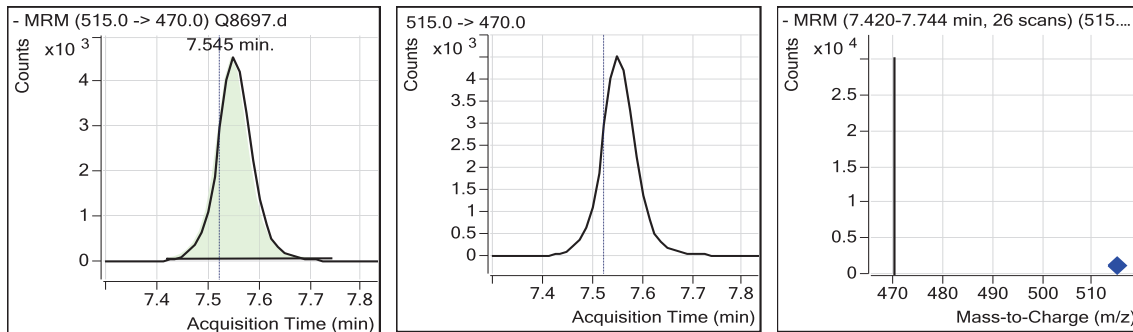
PFOS



PFNA



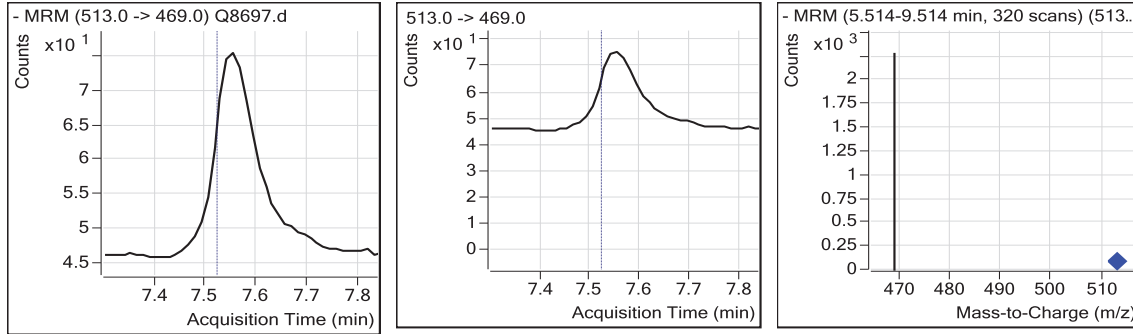
13C2-PFDA



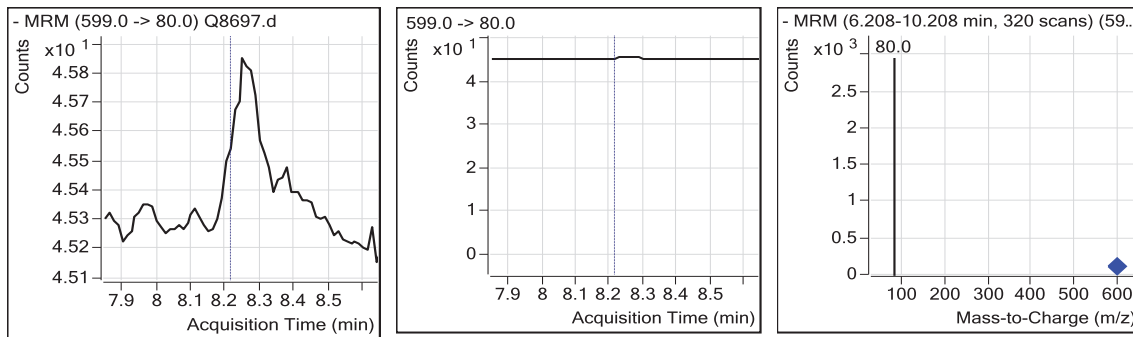
7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS.

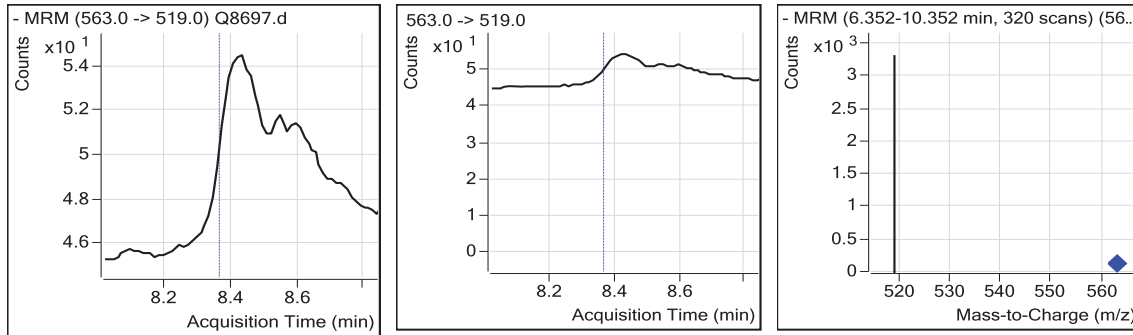
PFDA



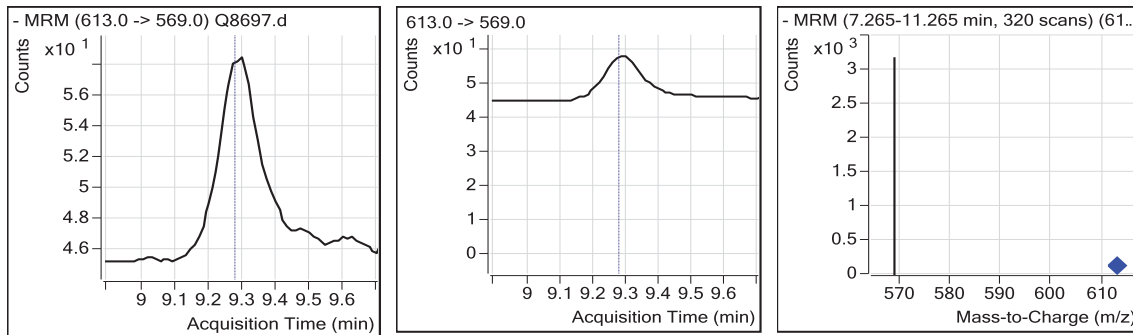
PFDS



PFUnDA



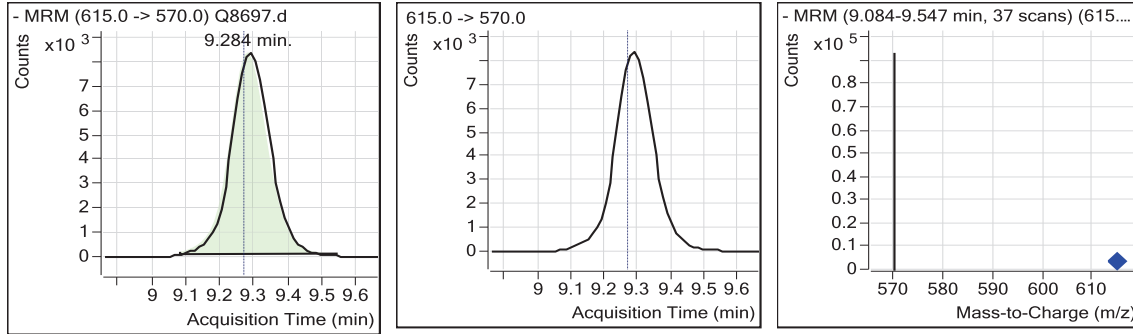
PFDoDA



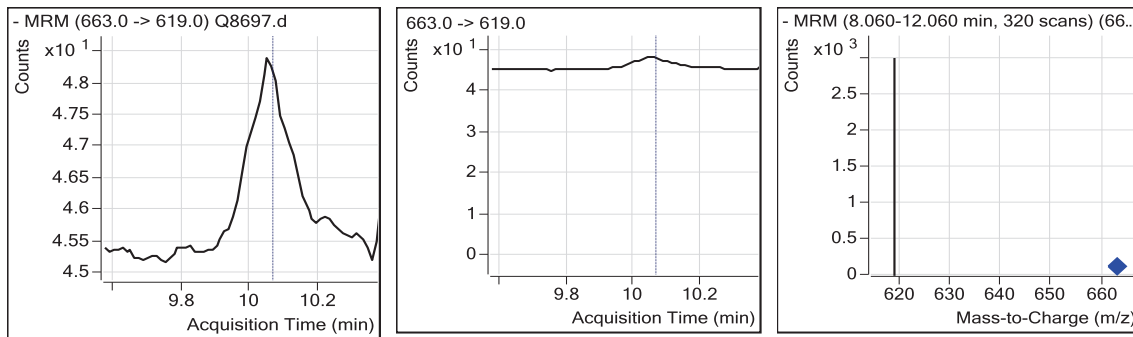
7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS.

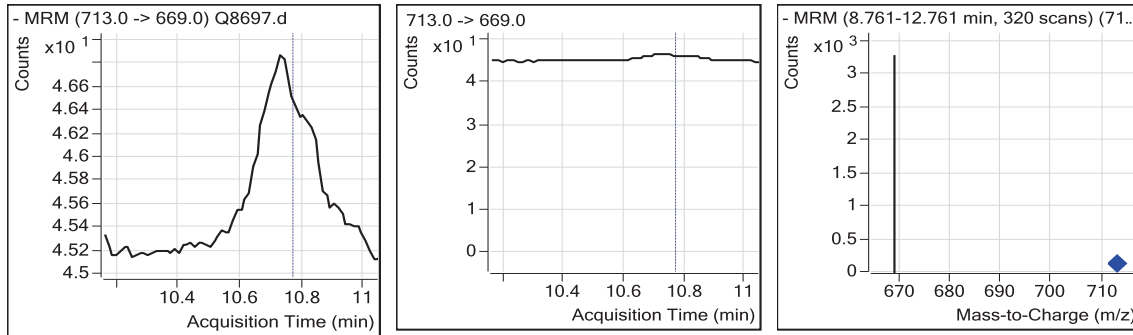
13C2-PFDoDA



PFTrDA



PFTeDA



7.4.1  
7



# Manual Integration Approval Summary

Sample Number: OP54151-MS      Method: EPA 537 MOD  
Lab FileID: Q8697.D      Analyst approved: 12/16/14 09:32 Nancy Saunders  
Injection Time: 12/09/14 18:06      Supervisor approved: 12/16/14 10:16 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		1.59	Split peak
Perfluorohexanoic acid	307-24-4		4.76	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.58	Split peak
Perfluorooctanoic acid	335-67-1		6.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.85	Split peak

7.4.1.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Naresh Jiawan  
 12/16/14 10:16

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8698.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 18:27  
 Sample Name : OP54151-MSD  
 Vial : Vial 13  
 Sample Info : OP54151,SQ281,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17

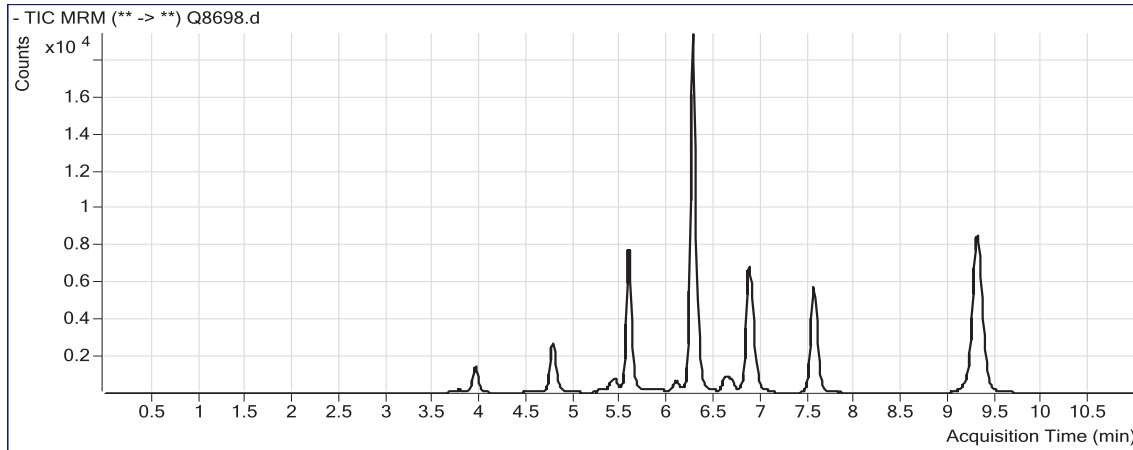
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.259	415.0 -> 370.0	28201	20.000	µg/L	0.013	
13C4-PFOS	6.844	503.0 -> 80.0	12216	20.000	µg/L	0.025	
13C2-PFDoDA	9.284	615.0 -> 570.0	68139	20.000	µg/L	0.012	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.766	315.0 -> 270.0	8953	19.31	µg/L	0.013	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 96.54%				
13C2-PFDA	7.545	515.0 -> 470.0	27062	22.49	µg/L	0.037	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 112.47%				
<b>Target Compounds</b>							
PFPeA	3.786	263.0 -> 219.0	193	1.141	µg/L		100
PFBS	3.941	299.0 -> 80.0	3798	21.045	µg/L		96
PFHxA	4.771	313.0 -> 269.0	1709	3.509	µg/L	m	99
PFHpA	5.572	363.0 -> 319.0	7274	15.400	µg/L		98
PFHxS	5.580	399.0 -> 80.0	16498	56.915	µg/L	m	91
PFOA	6.261	413.0 -> 369.0	39915	27.940	µg/L	m	79
PFOS	6.848	499.0 -> 80.0	12381	20.263	µg/L	m	98
PFNA	6.904	463.0 -> 419.0	15459	18.199	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

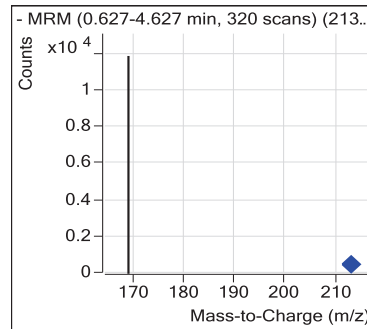
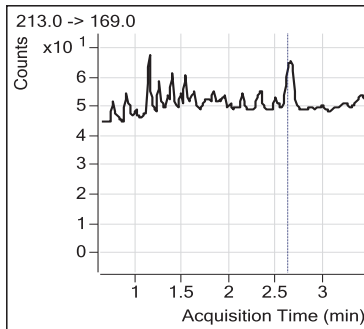
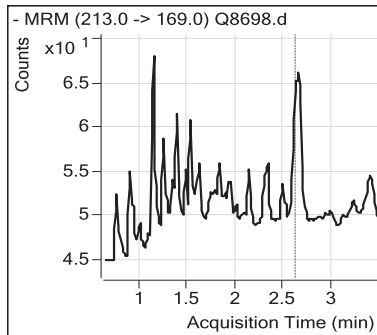
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS.

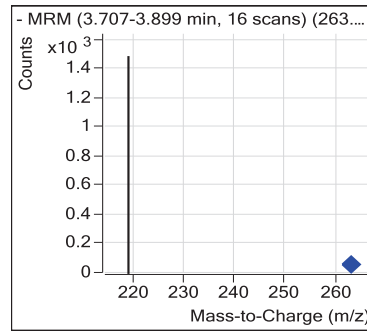
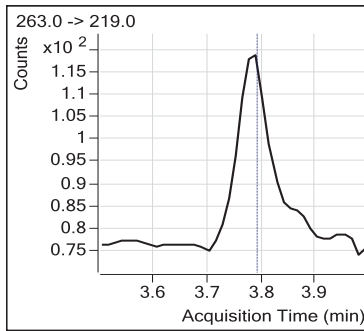
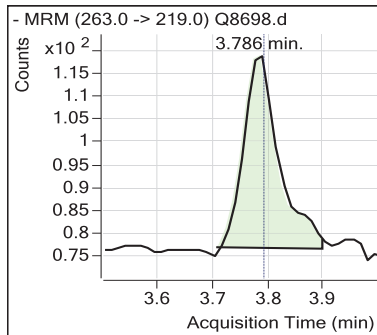
Data File : Q8698.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-09 18:27  
 Sample Name : OP54151-MSD  
 Vial : Vial 13  
 Sample Info : OP54151,SQ281,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



#### PFBA



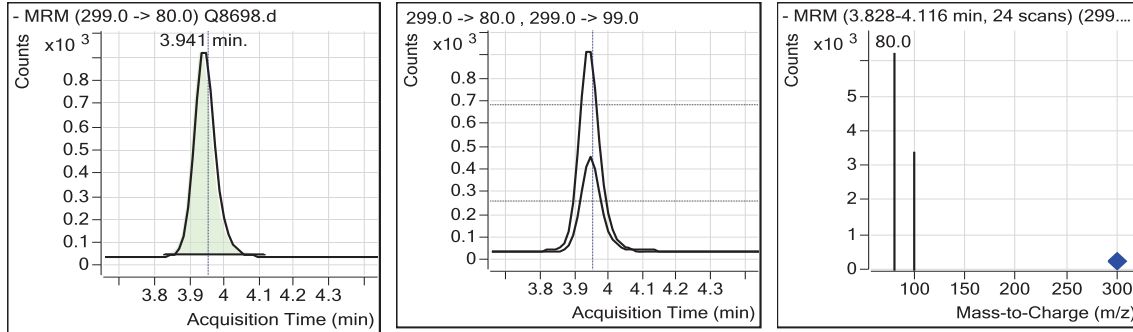
#### PFPeA



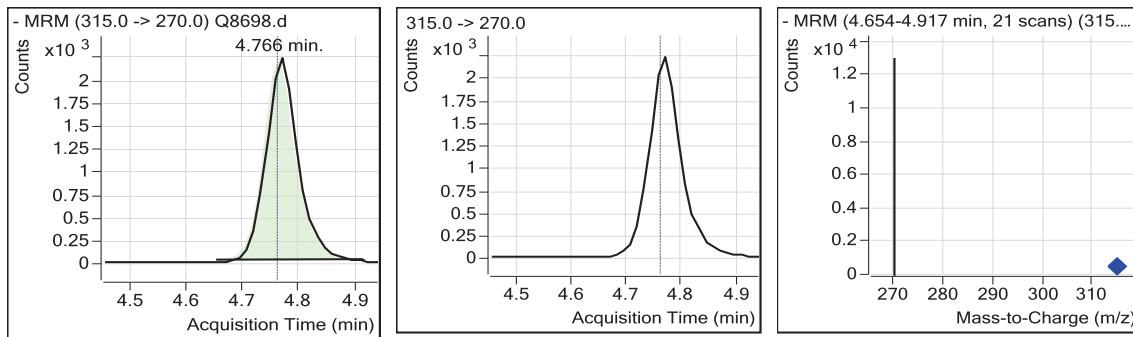
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS.

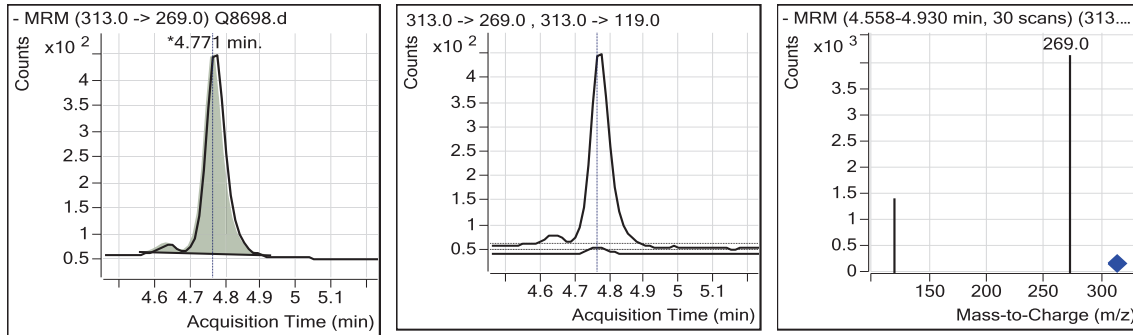
PFBS



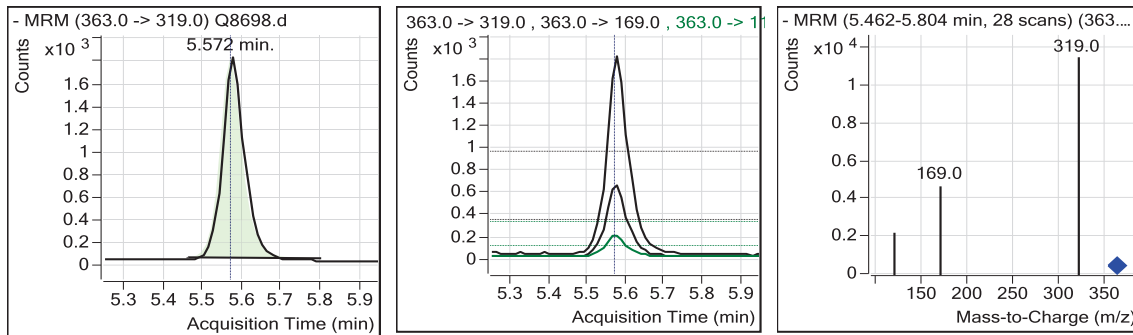
13C2-PFHxA



PFHxA



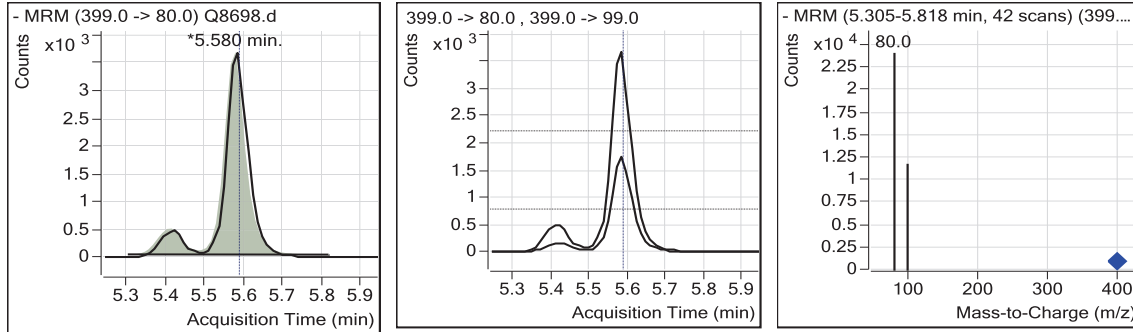
PFHpA



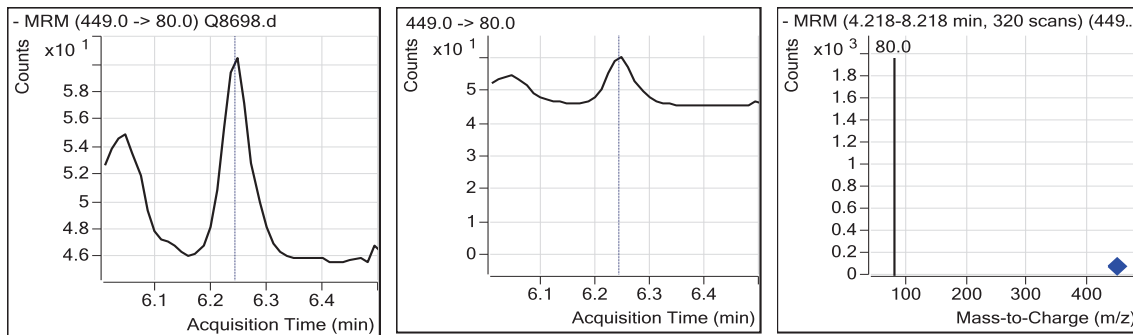
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS.

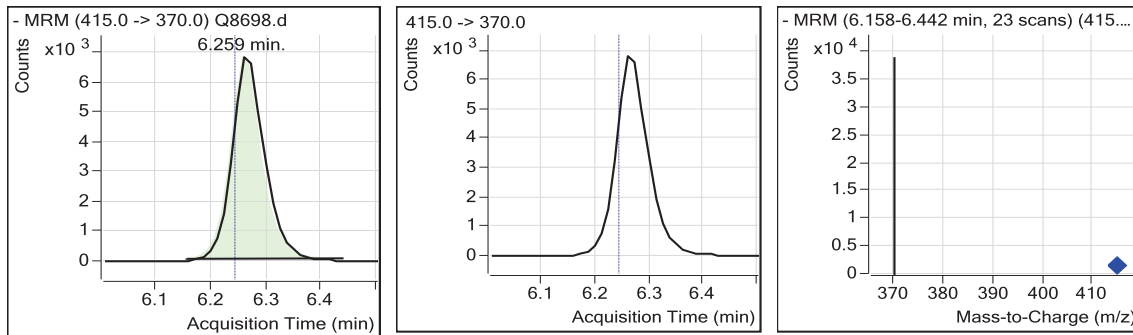
PFHxS



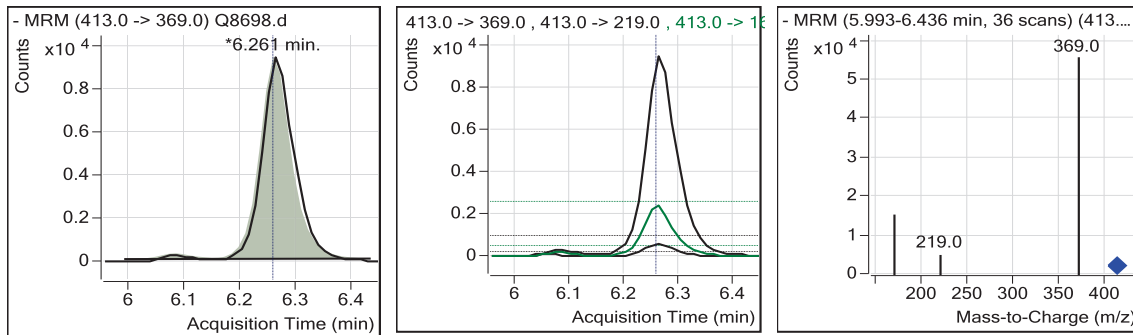
PFHpS



13C2-PFOA



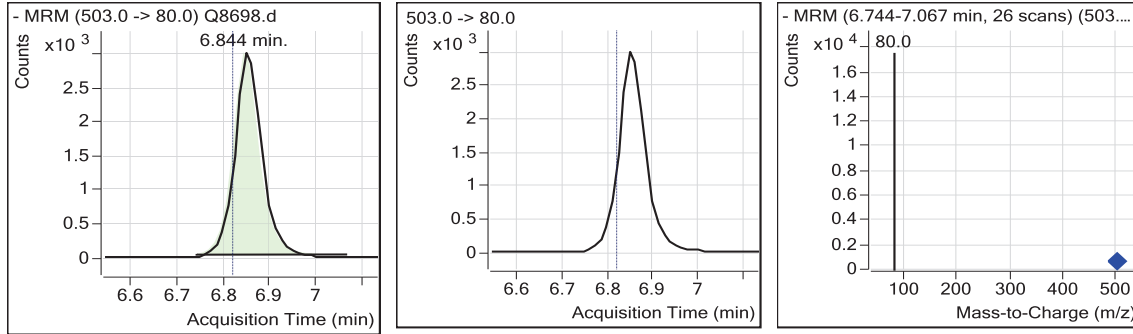
PFOA



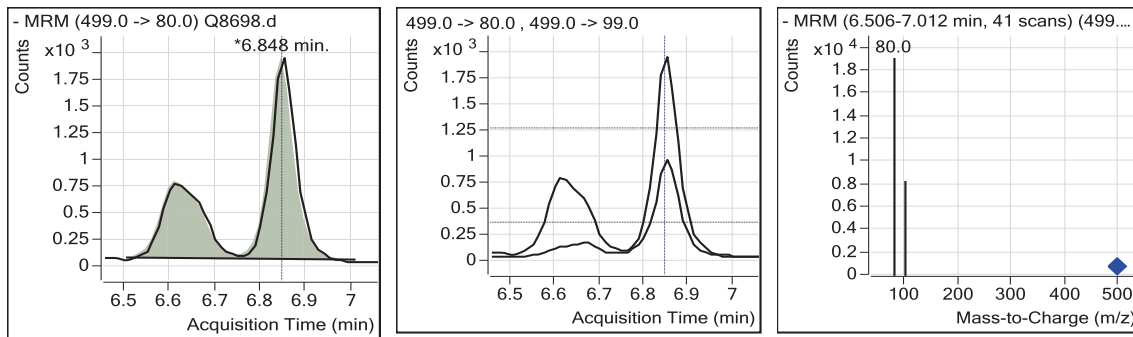
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS.

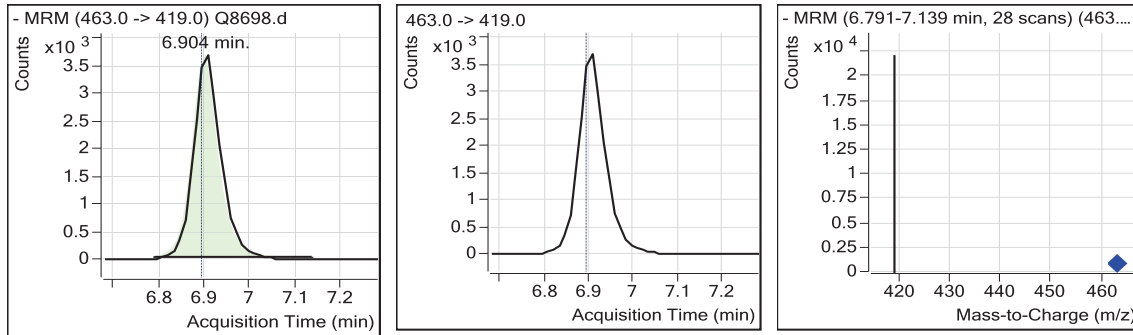
#### 13C4-PFOS



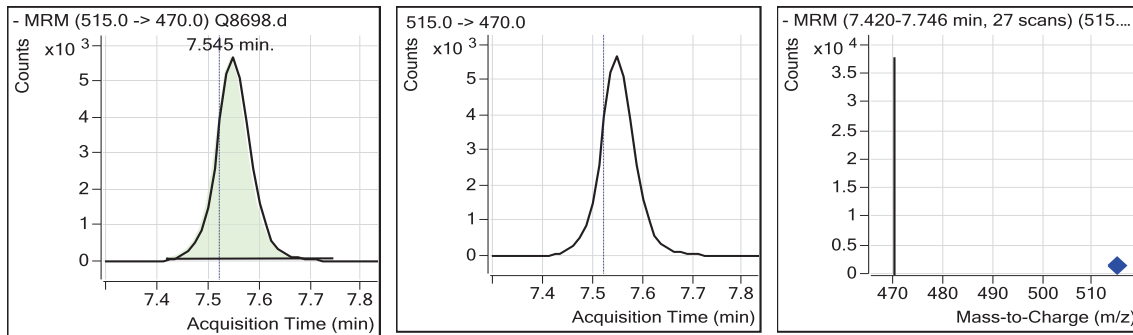
#### PFOS



#### PFNA



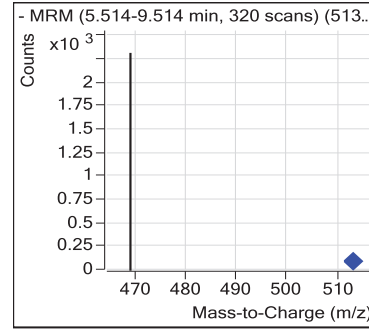
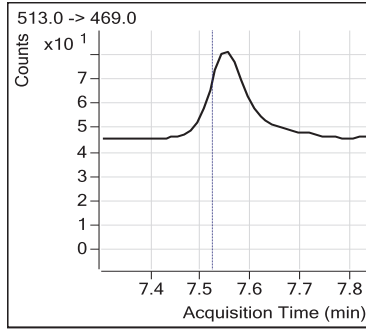
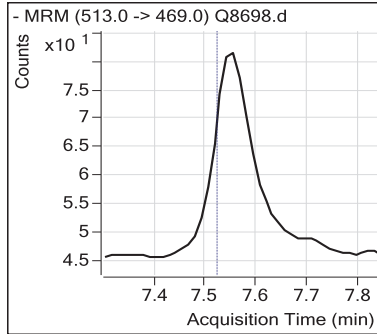
#### 13C2-PFDA



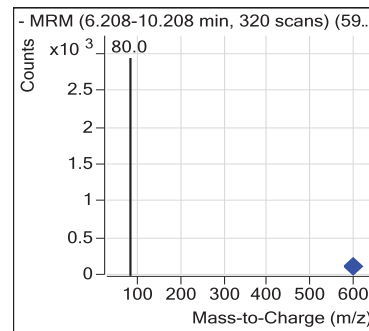
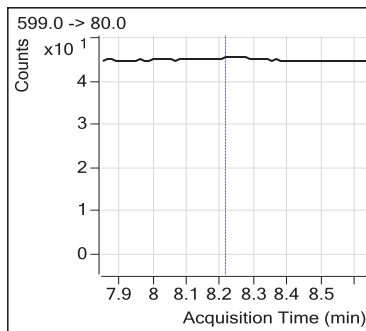
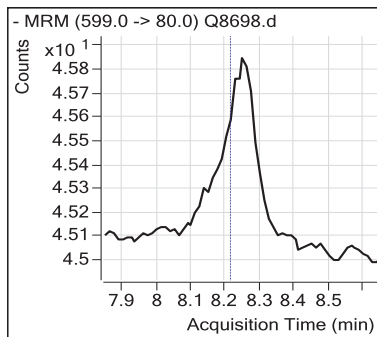
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS.

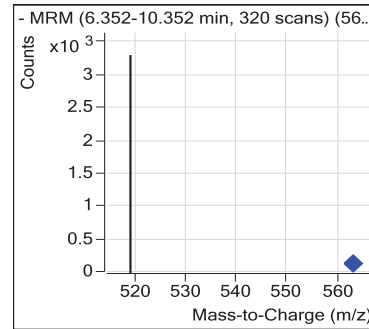
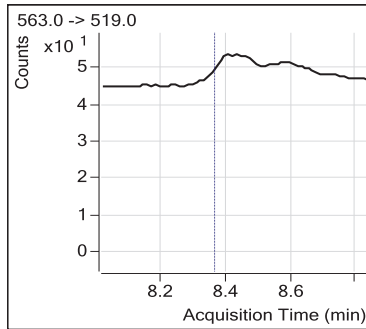
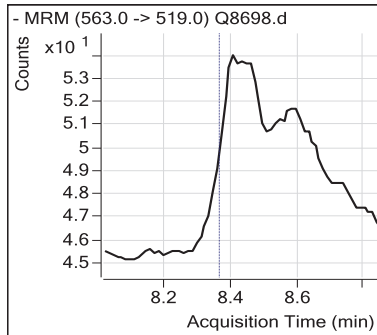
PFDA



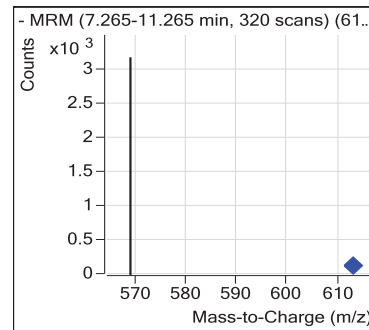
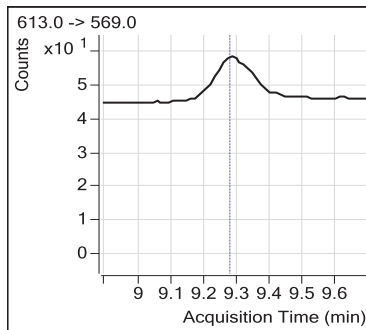
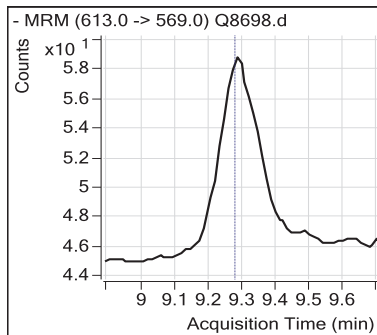
PFDS



PFUnDA



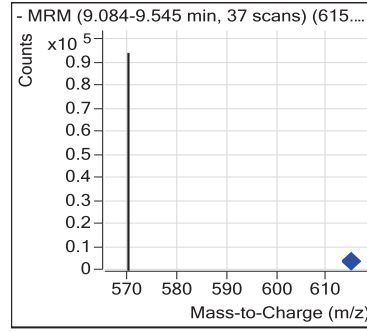
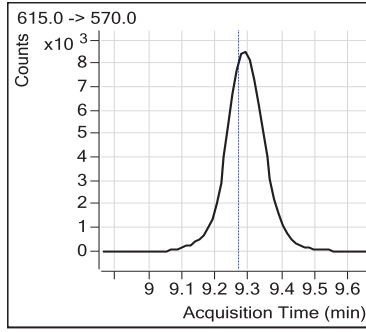
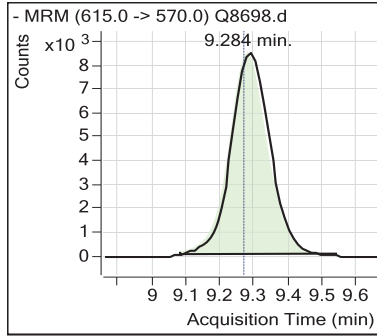
PFDoDA



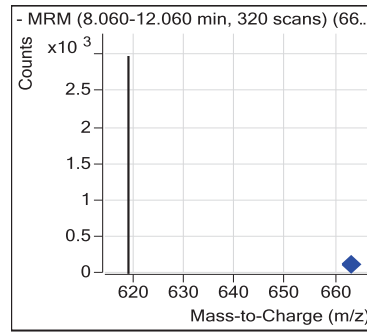
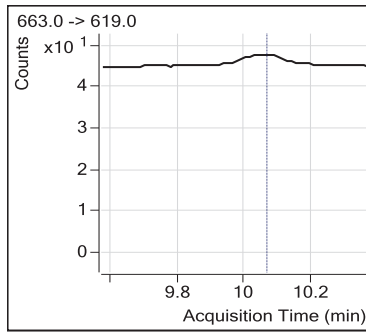
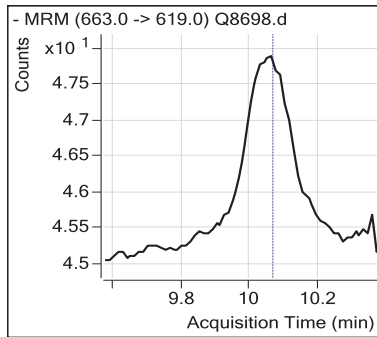
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS.

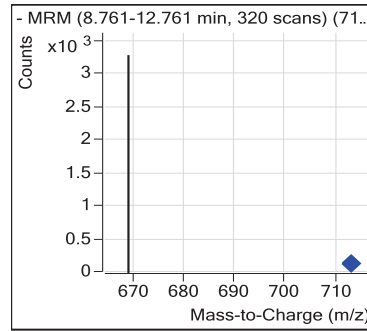
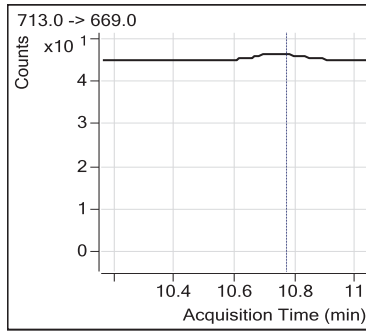
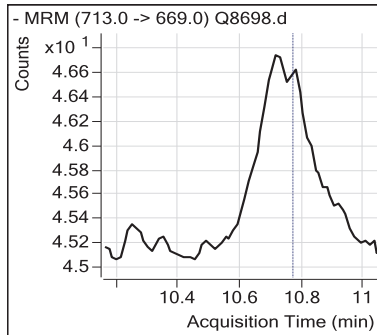
13C2-PFDoDA



PFTrDA



PFTeDA



7.4.2  
7



# Manual Integration Approval Summary

Sample Number: OP54151-MSD      Method: EPA 537 MOD  
Lab FileID: Q8698.D      Analyst approved: 12/16/14 09:32 Nancy Saunders  
Injection Time: 12/09/14 18:27      Supervisor approved: 12/16/14 10:16 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanoic acid	307-24-4		4.77	Split peak
Perfluorohexanesulfonic acid	355-46-4		5.58	Split peak
Perfluorooctanoic acid	335-67-1		6.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.85	Split peak

7.4.2.1  
7

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8634.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 13:34  
 Sample Name : IC280-2.5  
 Vial : Vial 2  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

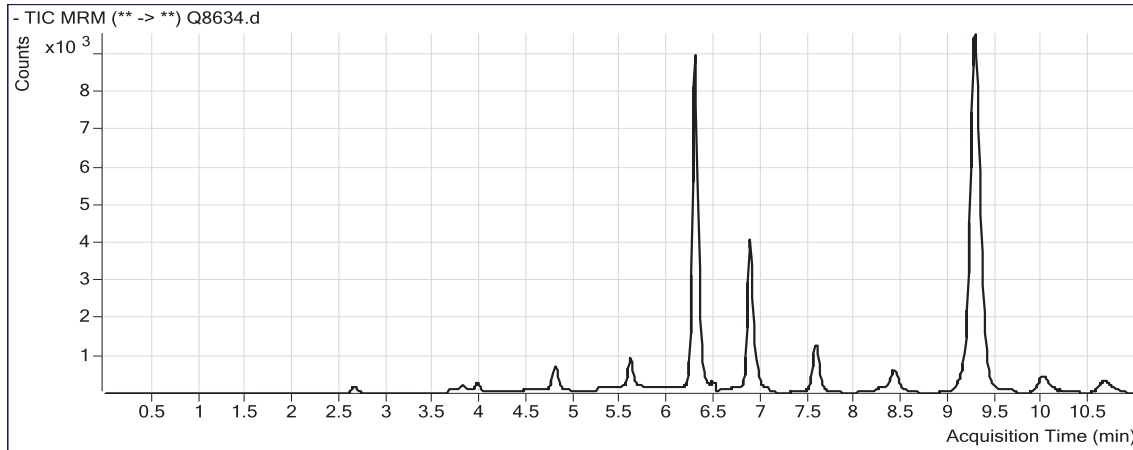
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.284	415.0 -> 370.0	29440	20.000	µg/L	0.038	
13C4-PFOS	6.869	503.0 -> 80.0	13200	20.000	µg/L	0.050	
13C2-PFDoDA	9.259	615.0 -> 570.0	72886	20.000	µg/L	-0.013	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.791	315.0 -> 270.0	1255	2.59	µg/L	0.038	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 12.97%				
13C2-PFDA	7.570	515.0 -> 470.0	3050	2.43	µg/L	0.063	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 12.14%				
<b>Target Compounds</b>							
PFBA	2.652	213.0 -> 169.0	832	2.355	µg/L	100	
PFPeA	3.811	263.0 -> 219.0	436	2.469	µg/L	100	
PFBS	3.966	299.0 -> 80.0	483	2.476	µg/L	99	
PFHxA	4.783	313.0 -> 269.0	1330	2.616	µg/L	99	
PFHxS	5.592	399.0 -> 80.0	753	2.403	µg/L	86	
PFHpA	5.597	363.0 -> 319.0	1277	2.589	µg/L	99	
PFHpS	6.256	449.0 -> 80.0	962	2.458	µg/L	100	
PFOA	6.286	413.0 -> 369.0	3945	2.645	µg/L	80	
PFOS	6.860	499.0 -> 80.0	1663	2.519	µg/L	87	
PFNA	6.916	463.0 -> 419.0	2227	2.511	µg/L	100	
PFDA	7.564	513.0 -> 469.0	2962	2.678	µg/L	100	
PFDS	8.258	599.0 -> 80.0	791	2.493	µg/L	100	
PFUnDA	8.402	563.0 -> 519.0	3964	2.514	µg/L	100	
PFDoDA	9.253	613.0 -> 569.0	4194	2.568	µg/L	100	
PFTTrDA	9.985	663.0 -> 619.0	4419	2.784	µg/L	100	
PFTeDA	10.648	713.0 -> 669.0	3561	3.183	µg/L	100	

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

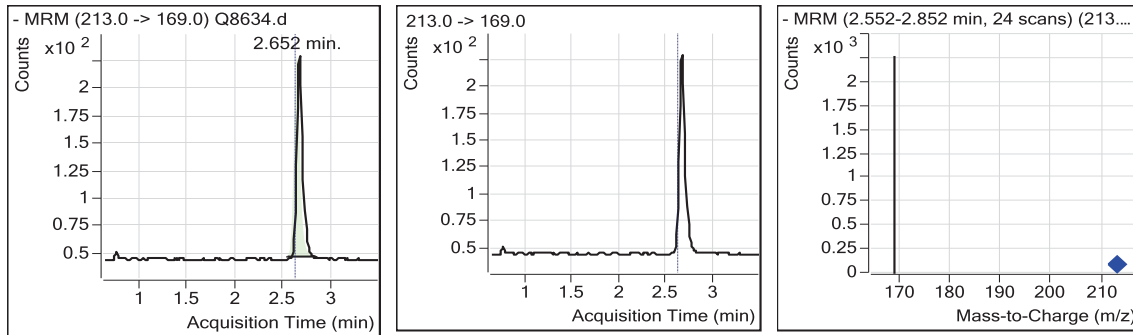
7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS.

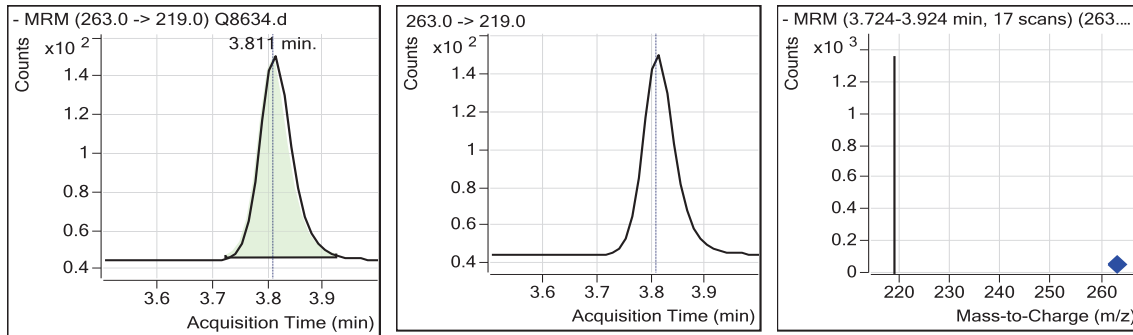
Data File : Q8634.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-08 13:34  
Sample Name : IC280-2.5  
Vial : Vial 2  
Sample Info : OP54098,SQ280,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01



#### PFBA



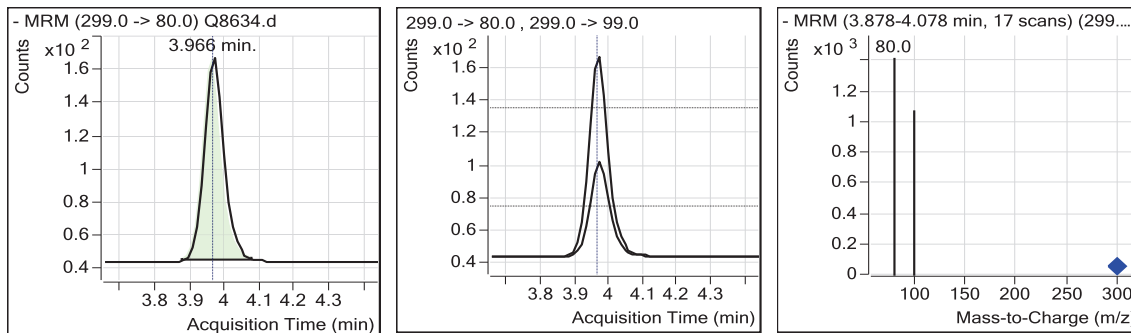
#### PFPeA



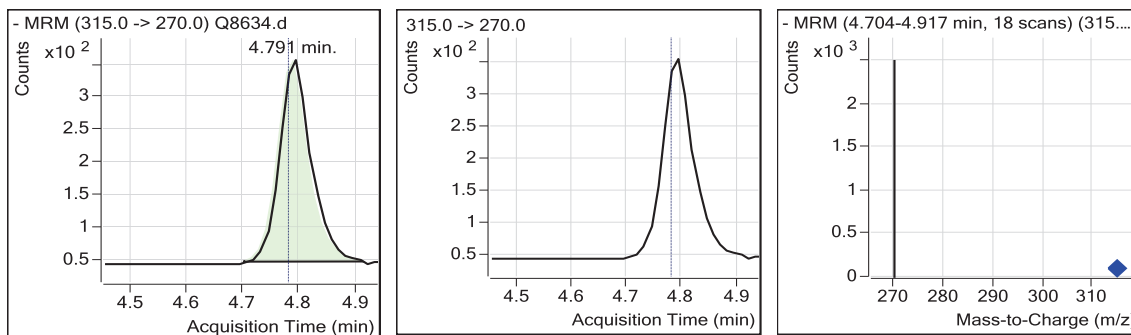
7.5.1  
7

## Perfluorinated Compounds by LC/MS/MS.

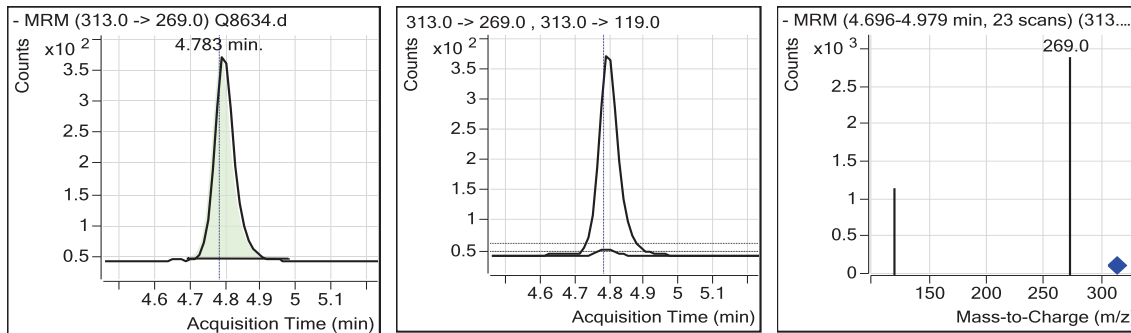
PFBS



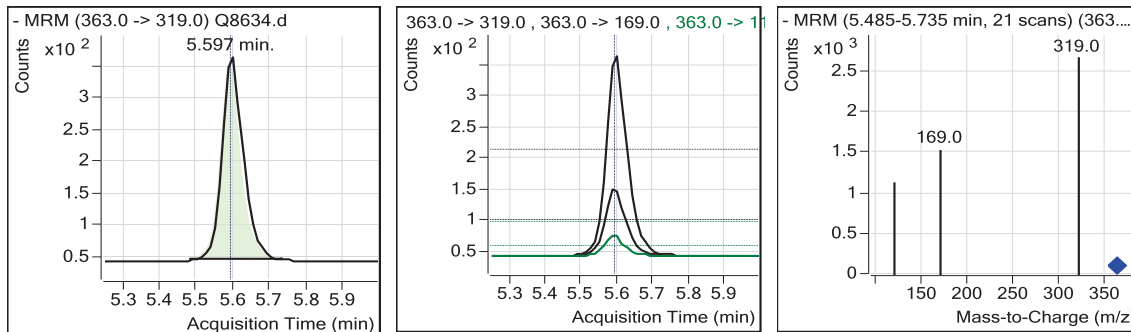
13C2-PFHxA



PFHxA



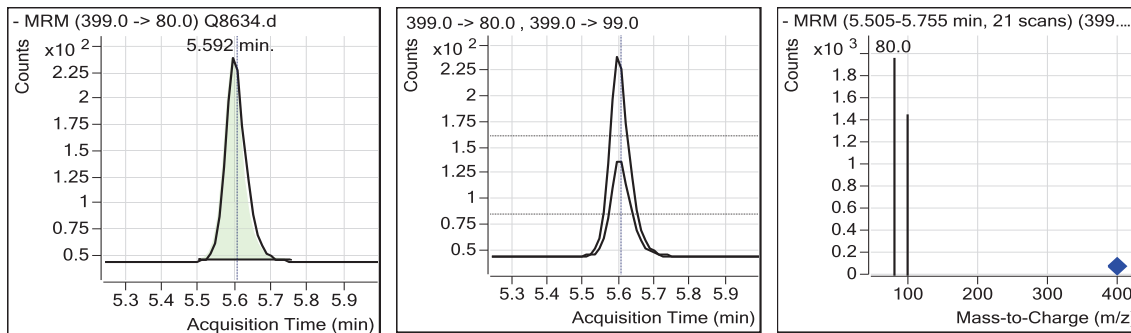
PFHpA



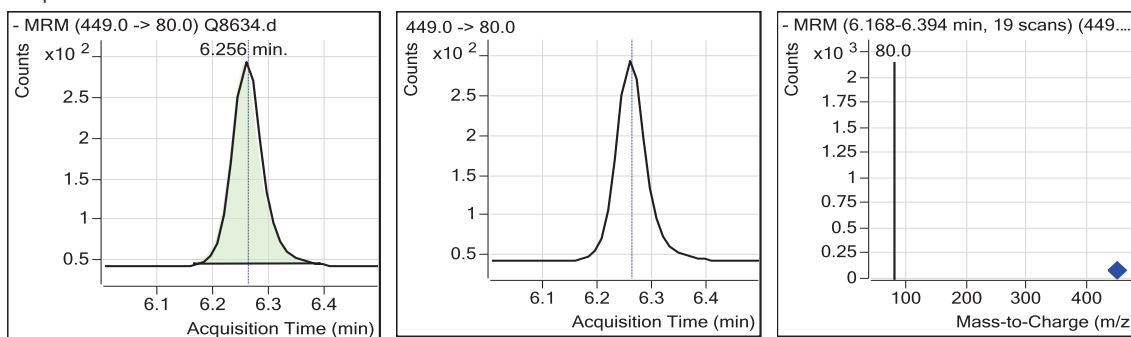
7.5.1  
7

## Perfluorinated Compounds by LC/MS/MS.

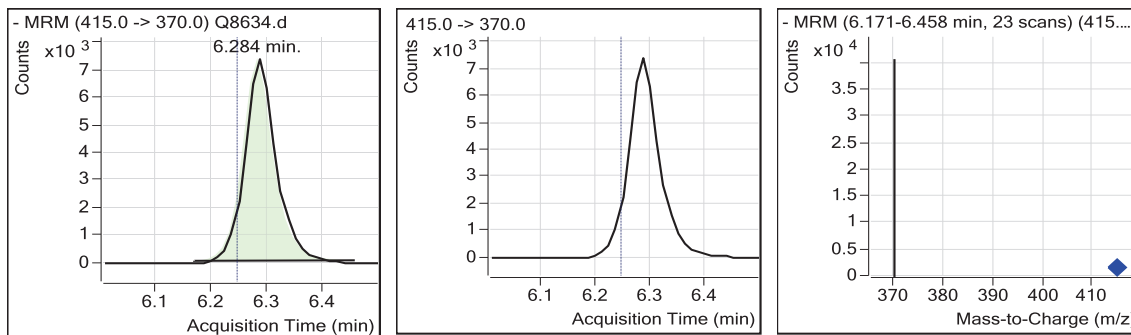
PFHxS



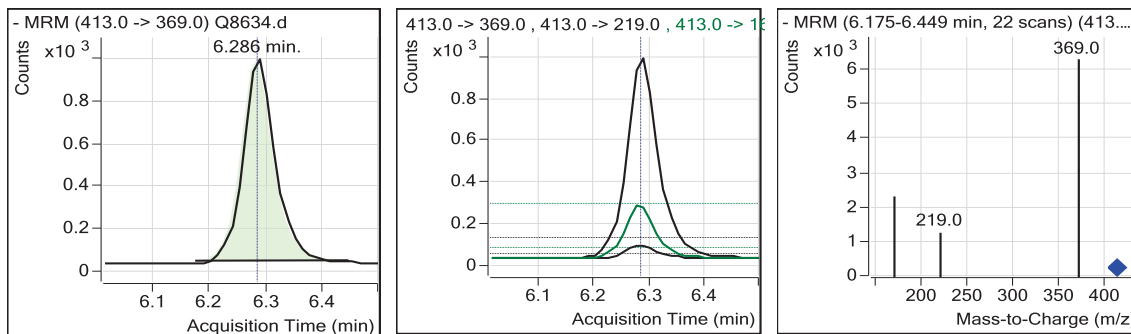
PFHpS



13C2-PFOA



PFOA

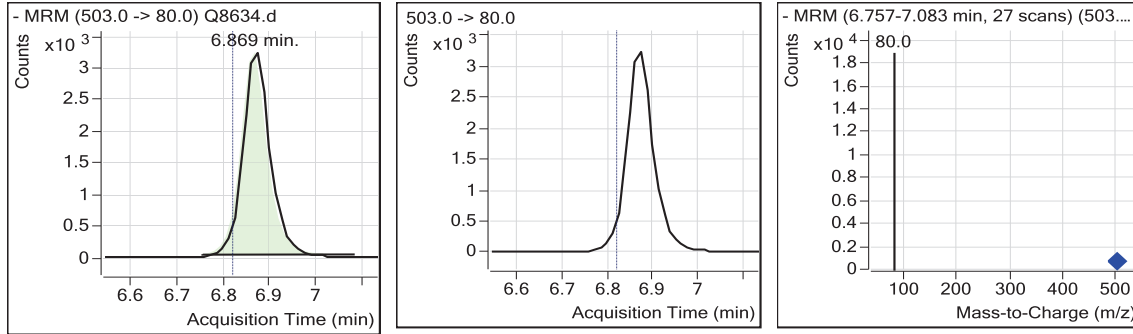


7.5.1

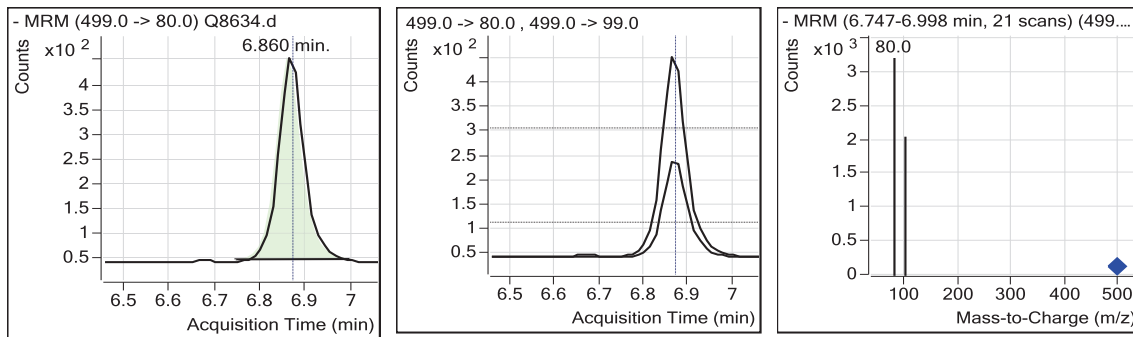
7

### Perfluorinated Compounds by LC/MS/MS.

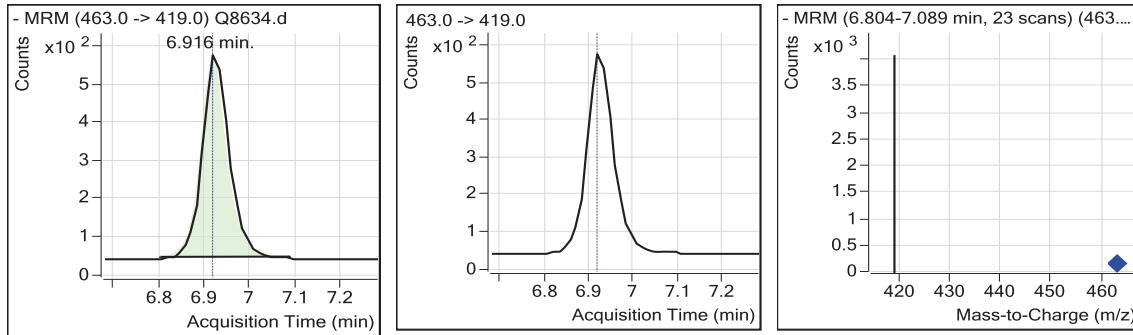
#### 13C4-PFOS



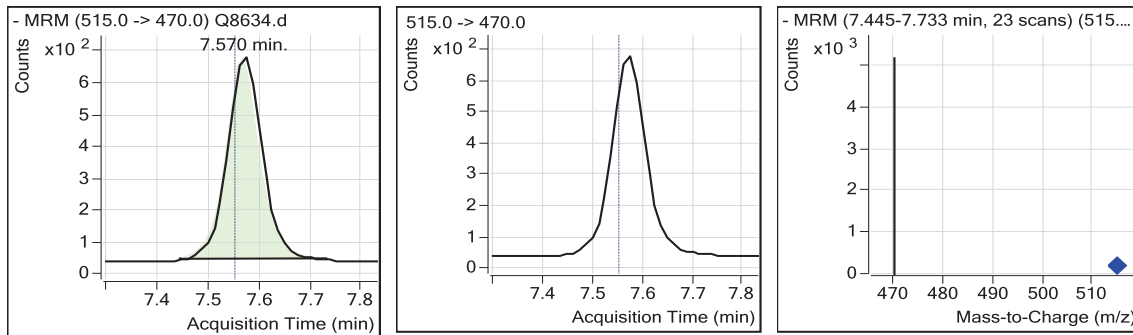
#### PFOS



#### PFNA



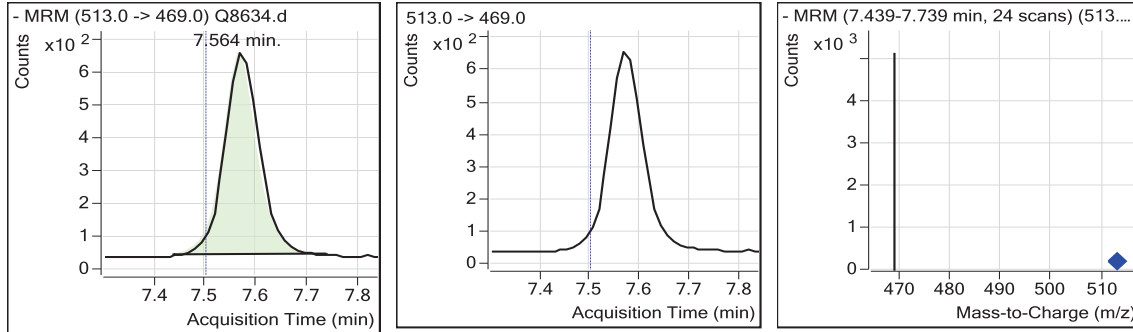
#### 13C2-PFDA



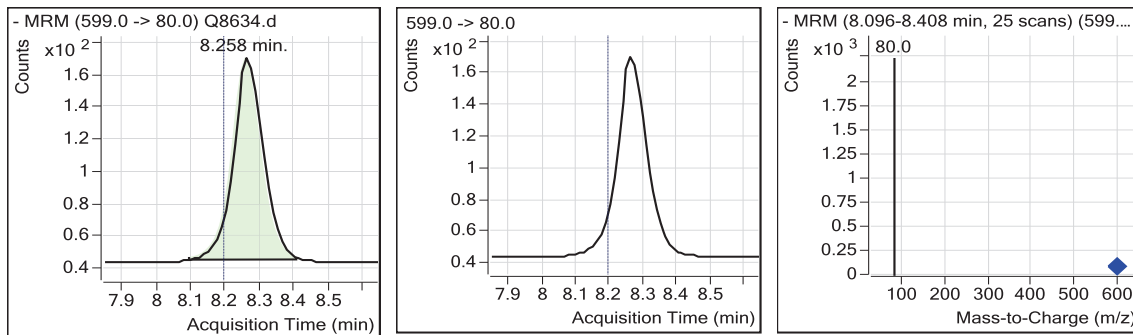
7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS.

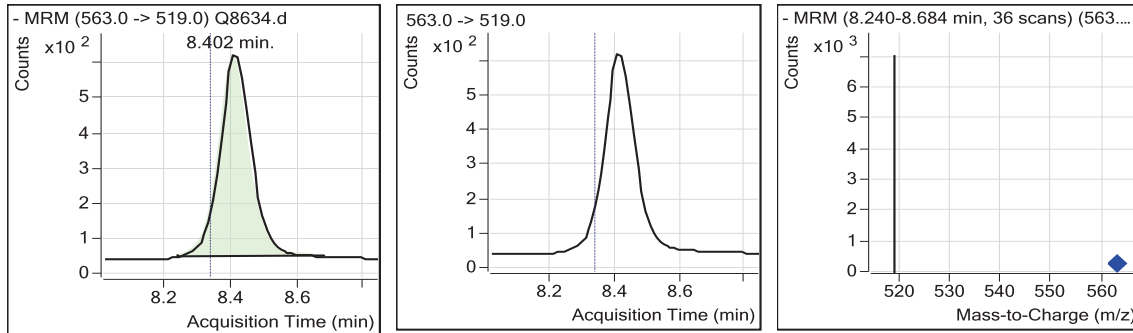
PFDA



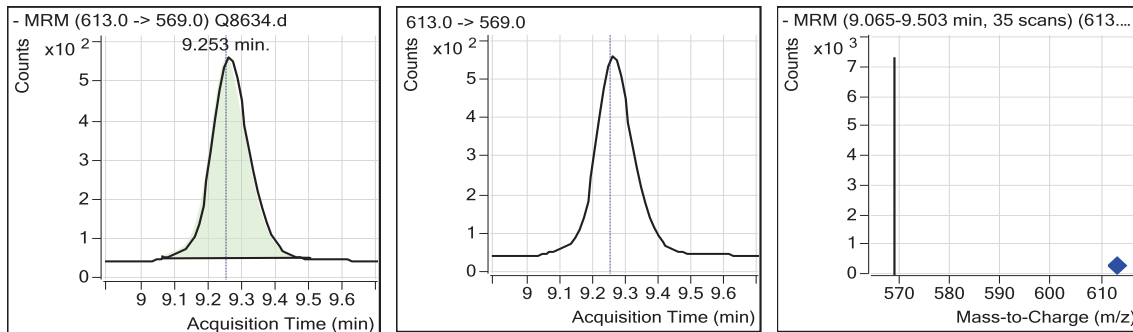
PFDS



PFUnDA



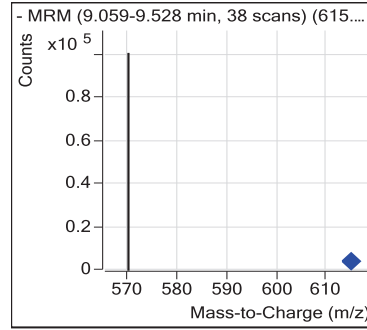
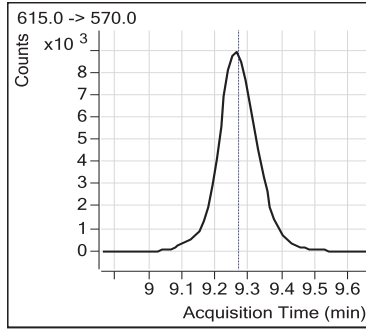
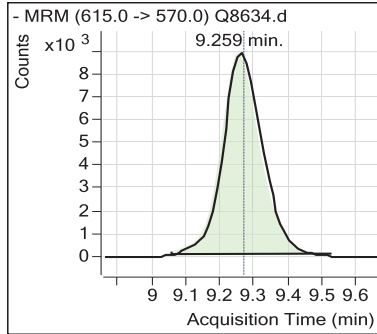
PFDoDA



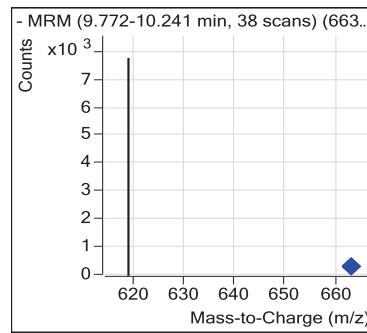
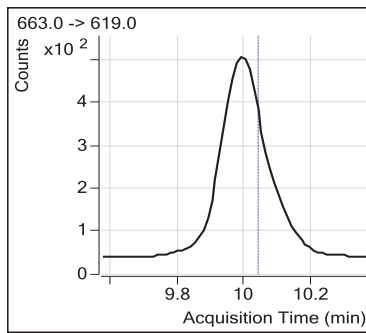
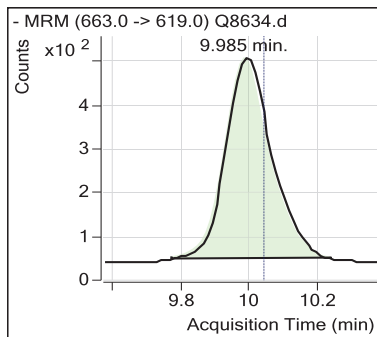
7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS.

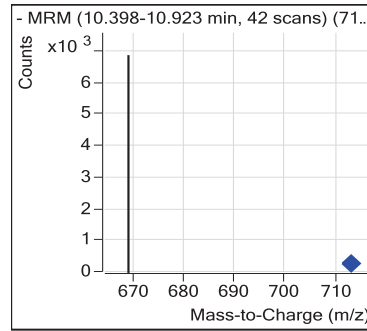
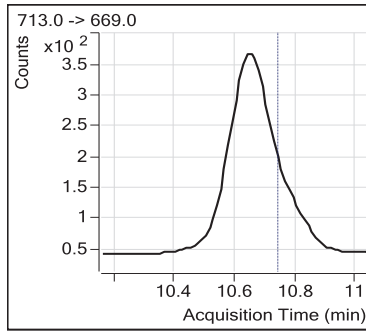
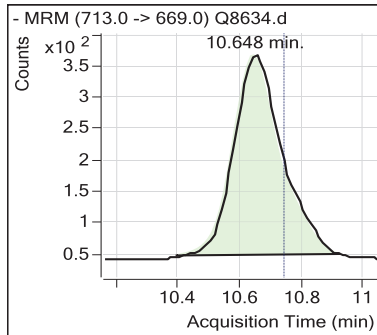
13C2-PFDoDA



PFTrDA



PFTeDA



7.5.1  
7



### Perfluorinated Compounds by LC/MS/MS.

Data File : Q8635.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 13:53  
 Sample Name : IC280-5.0  
 Vial : Vial 3  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

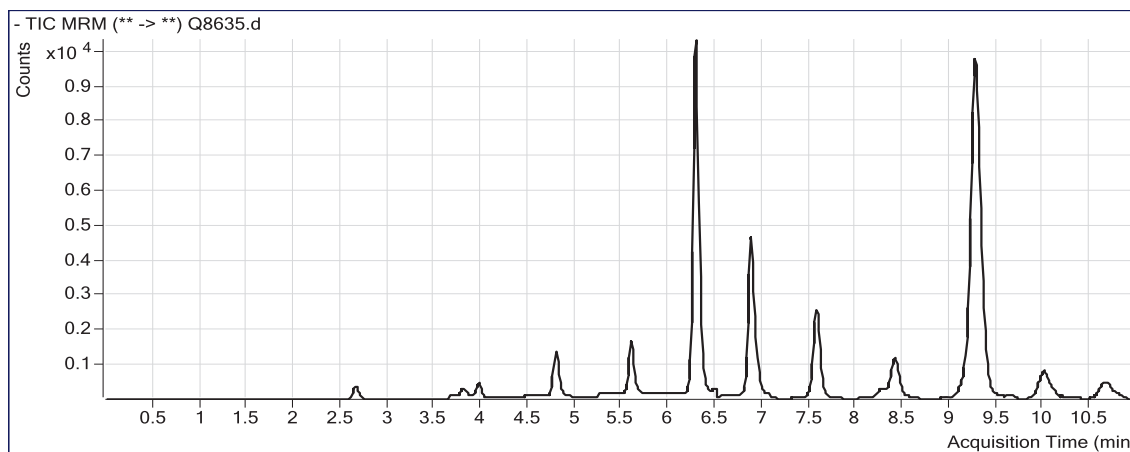
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.284	415.0 -> 370.0	29760	20.000	µg/L	0.038	
13C4-PFOS	6.869	503.0 -> 80.0	13017	20.000	µg/L	0.050	
13C2-PFDoDA	9.247	615.0 -> 570.0	70813	20.000	µg/L	-0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.791	315.0 -> 270.0	2484	5.08	µg/L	0.038	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 25.38%				
13C2-PFDA	7.570	515.0 -> 470.0	6226	4.90	µg/L	0.063	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 24.52%				
<b>Target Compounds</b>							
PFBA	2.652	213.0 -> 169.0	1720	4.816	µg/L	100	
PFPeA	3.811	263.0 -> 219.0	873	4.890	µg/L	100	
PFBS	3.966	299.0 -> 80.0	994	5.169	µg/L	98	
PFHxA	4.783	313.0 -> 269.0	2644	5.145	µg/L	100	
PFHxS	5.592	399.0 -> 80.0	1545	5.002	µg/L	85	
PFHpA	5.597	363.0 -> 319.0	2606	5.228	µg/L	100	
PFHpS	6.256	449.0 -> 80.0	1963	5.087	µg/L	100	
PFOA	6.286	413.0 -> 369.0	7772	5.156	µg/L	80	
PFOS	6.860	499.0 -> 80.0	3313	5.089	µg/L	89	
PFNA	6.916	463.0 -> 419.0	4366	4.871	µg/L	100	
PFDA	7.564	513.0 -> 469.0	5950	5.537	µg/L	100	
PFDS	8.258	599.0 -> 80.0	1535	4.981	µg/L	100	
PFUnDA	8.402	563.0 -> 519.0	7815	5.100	µg/L	100	
PFDoDA	9.253	613.0 -> 569.0	7835	4.938	µg/L	100	
PFTrDA	9.985	663.0 -> 619.0	7634	4.950	µg/L	100	
PFTeDA	10.648	713.0 -> 669.0	5499	5.059	µg/L	100	

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

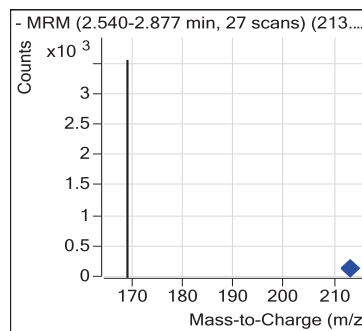
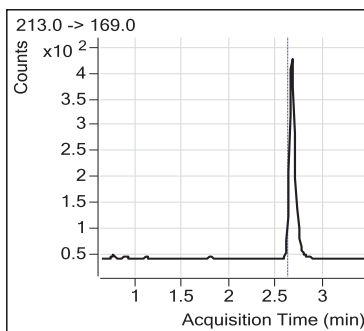
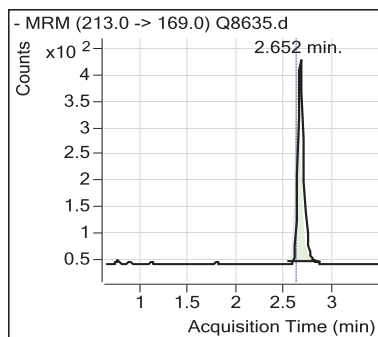
7.5.2  
7

### Perfluorinated Compounds by LC/MS/MS.

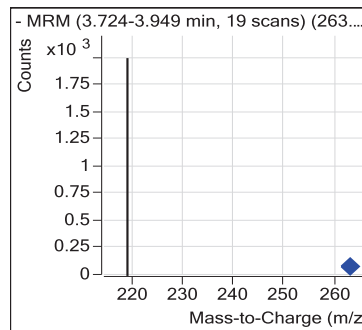
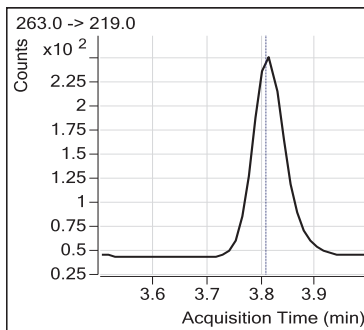
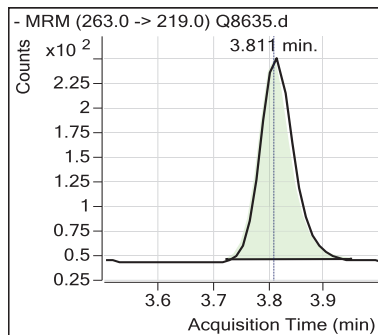
Data File : Q8635.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-08 13:53  
Sample Name : IC280-5.0  
Vial : Vial 3  
Sample Info : OP54098,SQ280,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01



#### PFBA

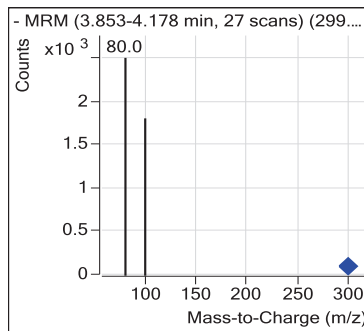
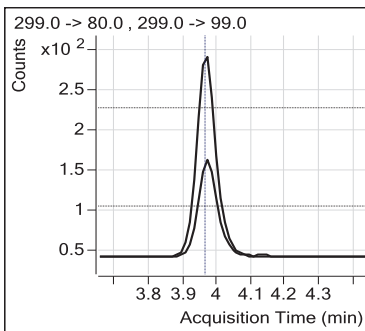
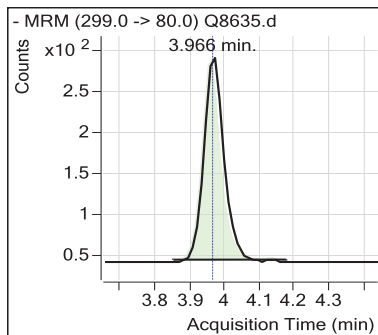


#### PFPeA

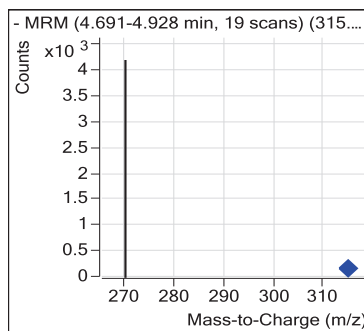
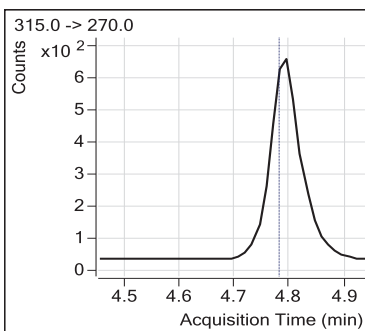
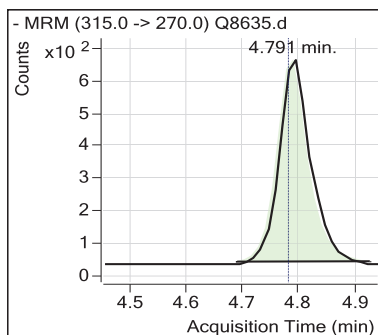


### Perfluorinated Compounds by LC/MS/MS.

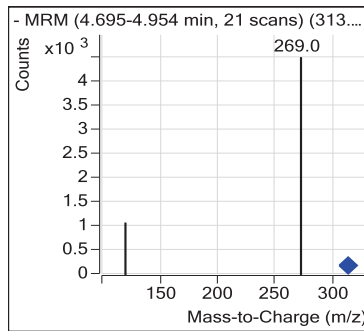
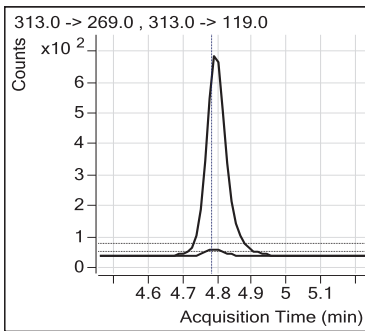
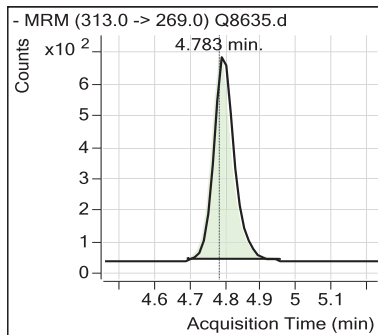
PFBS



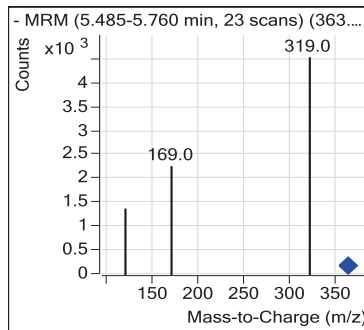
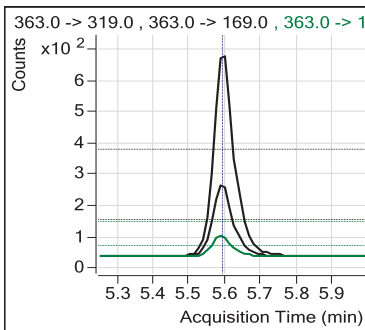
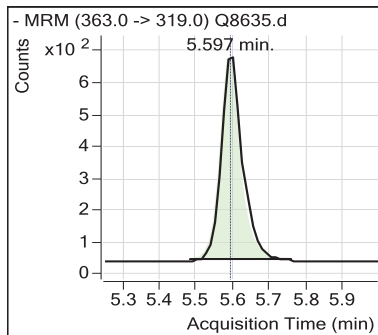
13C2-PFHxA



PFHxA



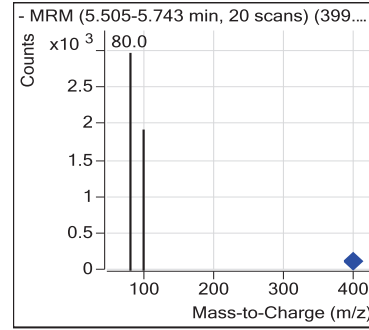
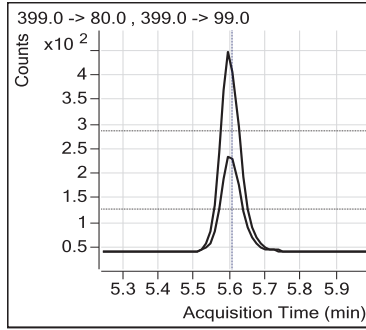
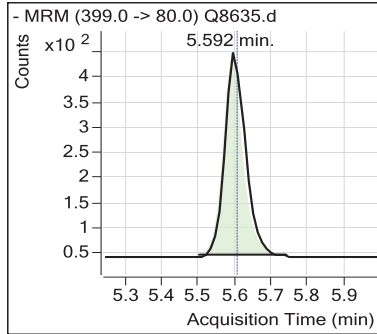
PFHpA



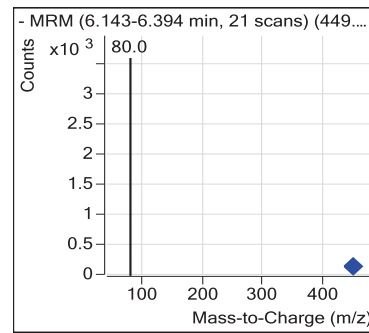
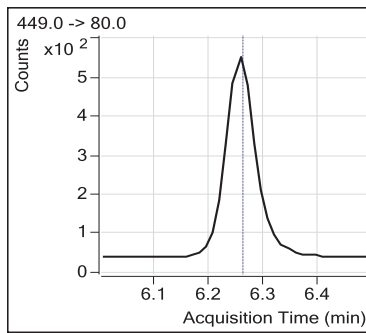
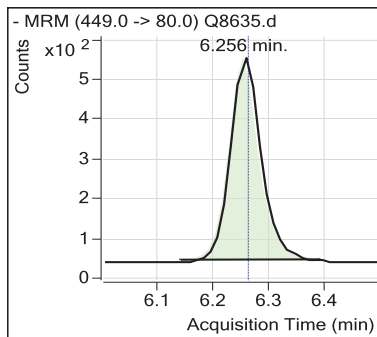
7.5.2

### Perfluorinated Compounds by LC/MS/MS.

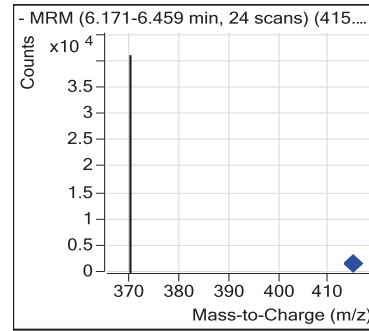
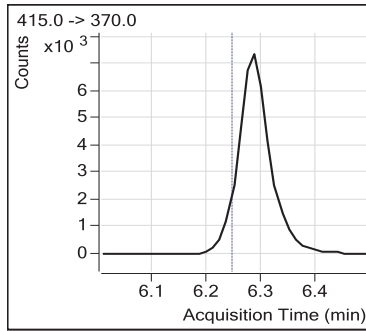
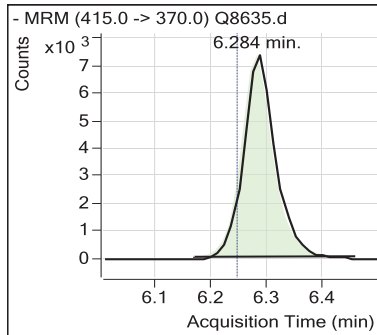
#### PFHxS



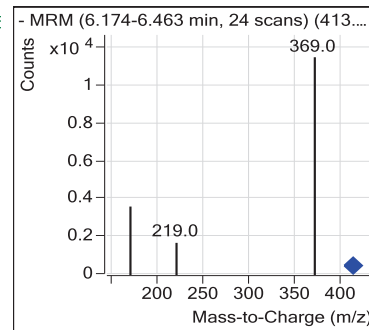
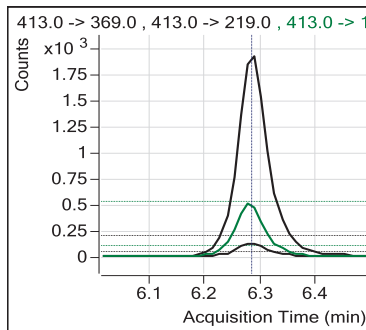
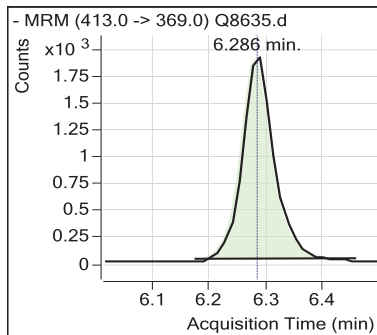
#### PFHpS



#### 13C2-PFOA



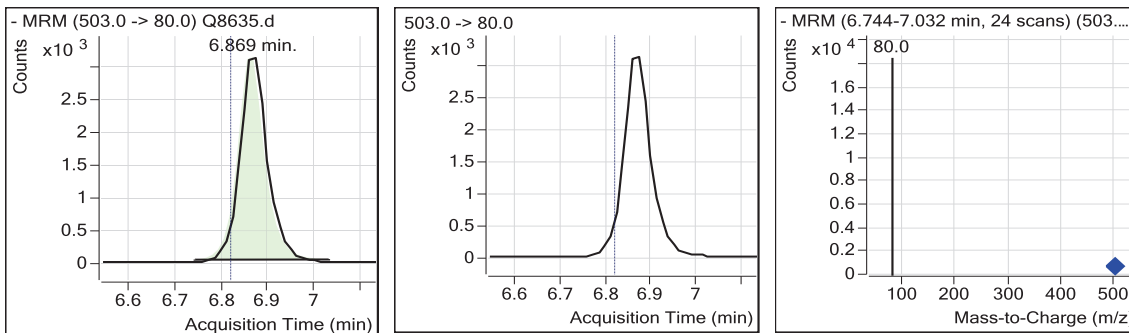
#### PFOA



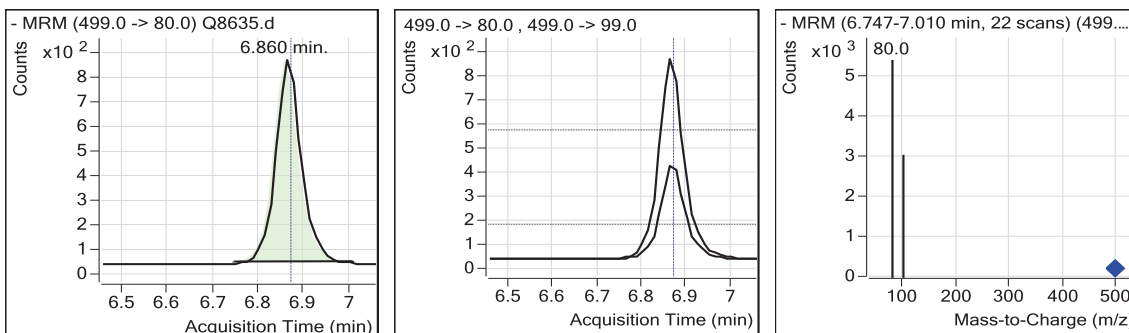
7.5.2  
7

### Perfluorinated Compounds by LC/MS/MS.

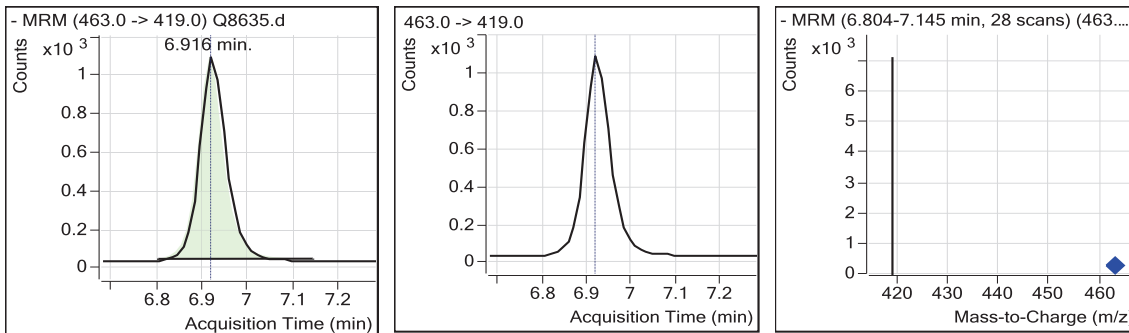
#### 13C4-PFOS



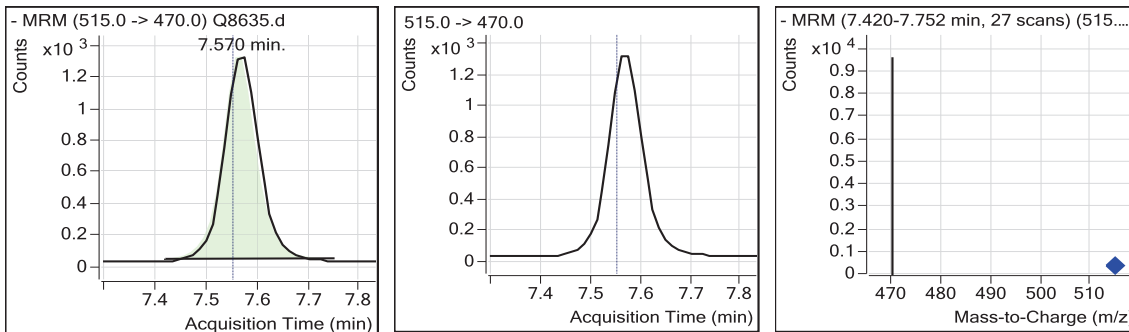
#### PFOS



#### PFNA



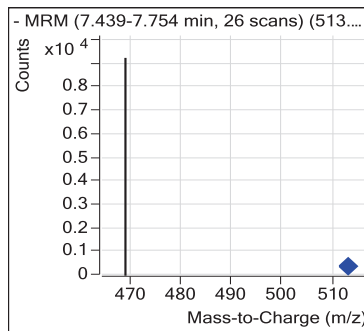
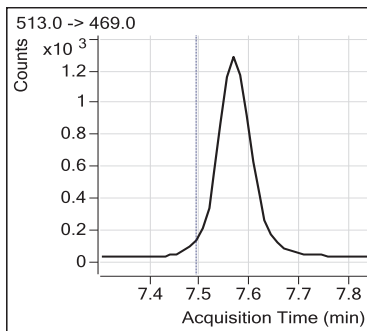
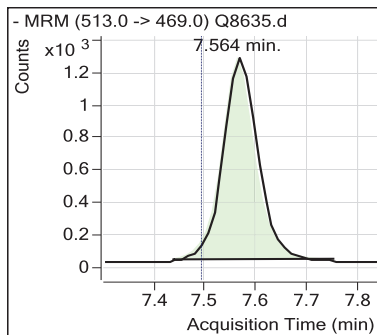
#### 13C2-PFDA



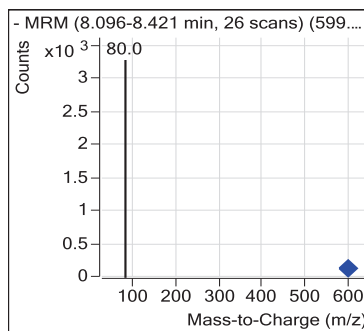
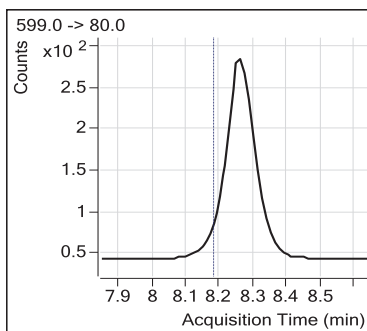
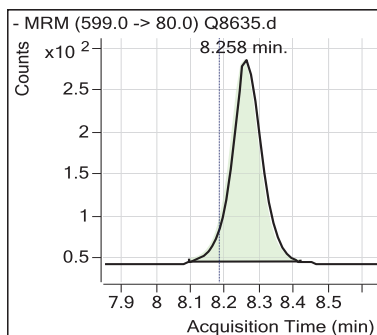
7.5.2  
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### Perfluorinated Compounds by LC/MS/MS.

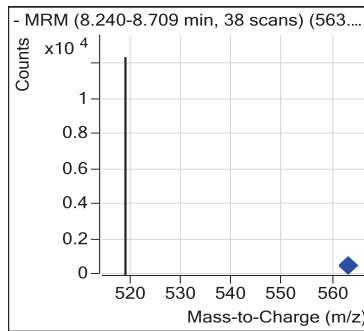
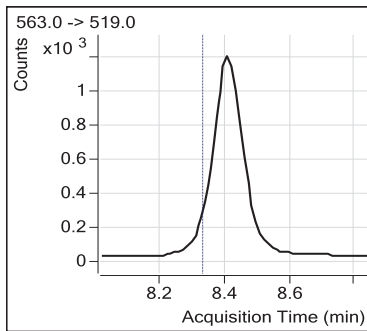
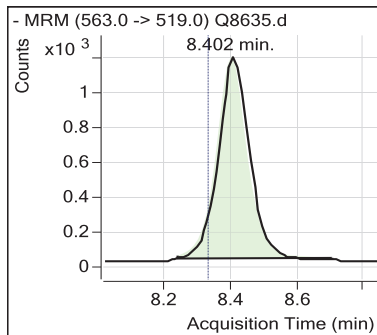
#### PFDA



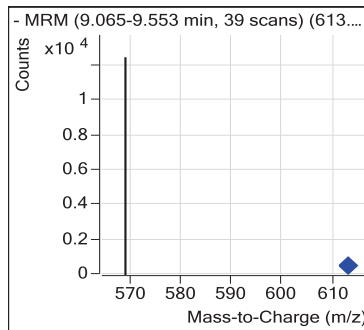
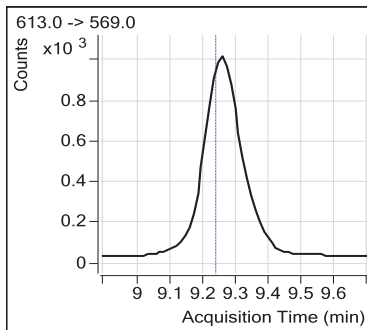
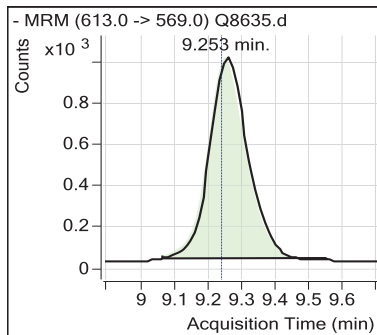
#### PFDS



#### PFUnDA



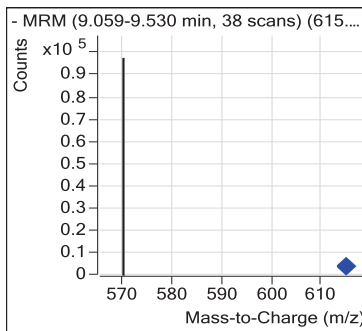
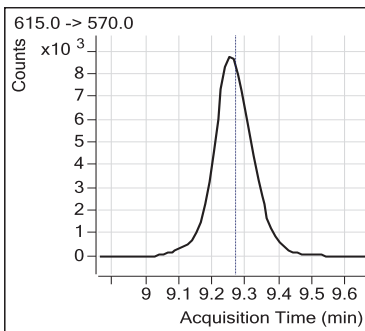
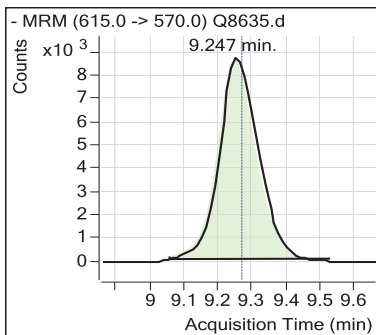
#### PFDoDA



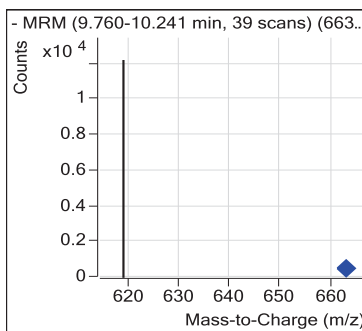
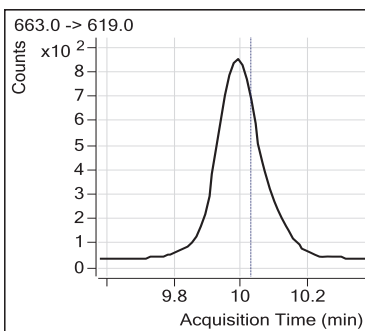
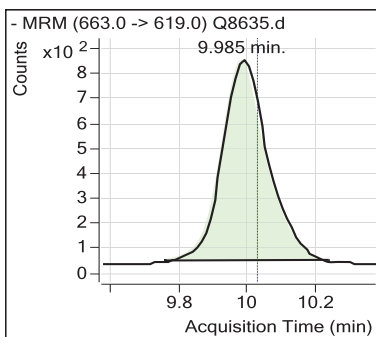
7.5.2  
7

### Perfluorinated Compounds by LC/MS/MS.

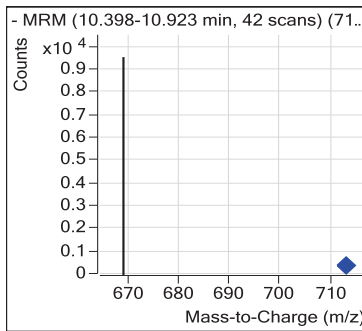
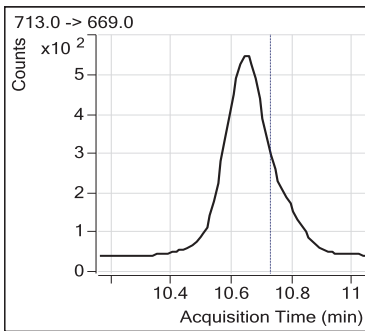
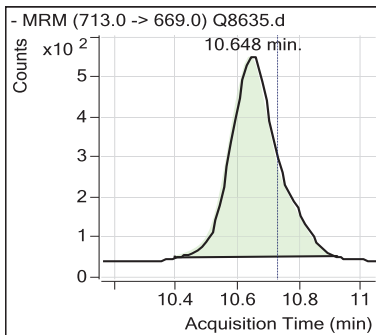
13C2-PFDoDA



PFTrDA



PFTeDA



7.5.2  
7

### Perfluorinated Compounds by LC/MS/MS.

Data File : Q8636.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 14:13  
 Sample Name : IC280-10  
 Vial : Vial 4  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.284	415.0 -> 370.0	29353	20.000	µg/L	0.038	
13C4-PFOS	6.857	503.0 -> 80.0	13312	20.000	µg/L	0.038	
13C2-PFDoDA	9.247	615.0 -> 570.0	70537	20.000	µg/L	-0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.791	315.0 -> 270.0	4784	9.91	µg/L	0.038	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 49.57%				
13C2-PFDA	7.558	515.0 -> 470.0	12294	9.82	µg/L	0.050	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 49.09%				
<b>Target Compounds</b>							
PFBA	2.652	213.0 -> 169.0	3286	9.330	µg/L		100
PFPeA	3.811	263.0 -> 219.0	1710	9.717	µg/L		100
PFBS	3.966	299.0 -> 80.0	1905	9.688	µg/L		98
PFHxA	4.783	313.0 -> 269.0	5113	10.088	µg/L		100
PFHpA	5.585	363.0 -> 319.0	5040	10.252	µg/L		98
PFHxS	5.592	399.0 -> 80.0	3130	9.909	µg/L		88
PFHpS	6.256	449.0 -> 80.0	3912	9.915	µg/L		100
PFOA	6.274	413.0 -> 369.0	14630	9.839	µg/L		80
PFOS	6.860	499.0 -> 80.0	6621	9.944	µg/L		88
PFNA	6.916	463.0 -> 419.0	8655	9.790	µg/L		100
PFDA	7.564	513.0 -> 469.0	11642	10.877	µg/L		100
PFDS	8.246	599.0 -> 80.0	3022	9.842	µg/L		100
PFUnDA	8.402	563.0 -> 519.0	15469	10.135	µg/L		100
PFDoDA	9.253	613.0 -> 569.0	15356	9.715	µg/L		100
PFTrDA	9.985	663.0 -> 619.0	14709	9.576	µg/L		100
PFTeDA	10.635	713.0 -> 669.0	10265	9.481	µg/L		100

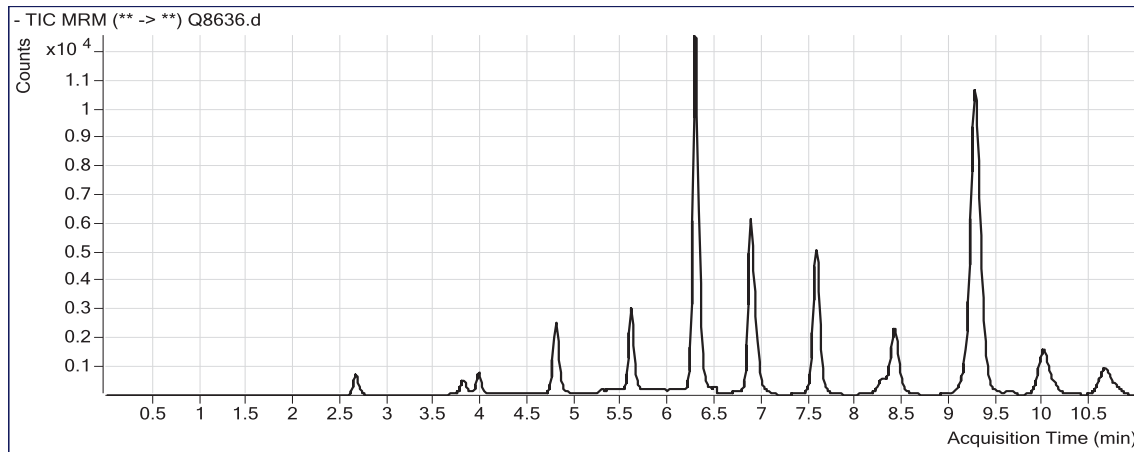
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

7.5.3  
7

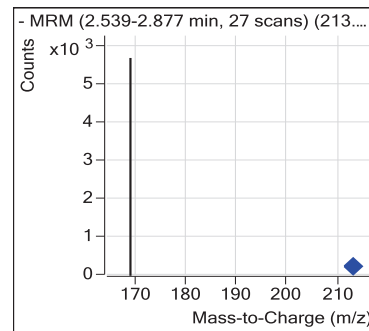
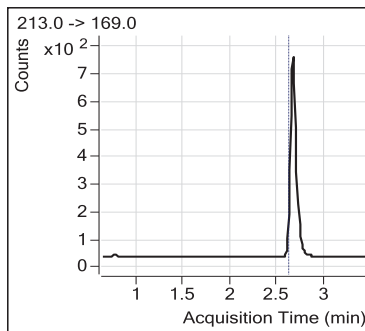
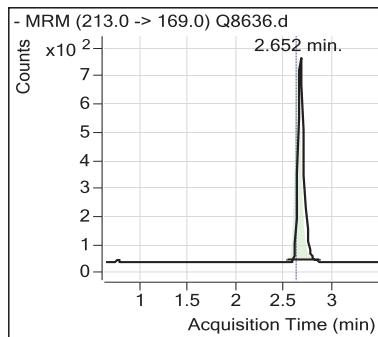


### Perfluorinated Compounds by LC/MS/MS.

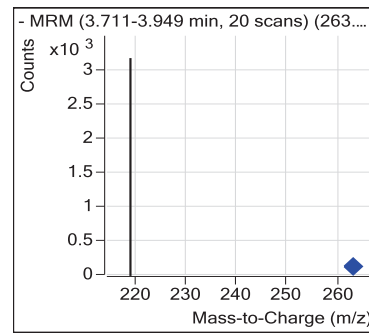
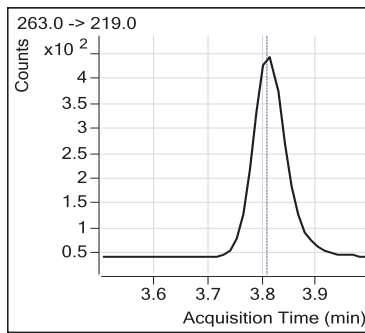
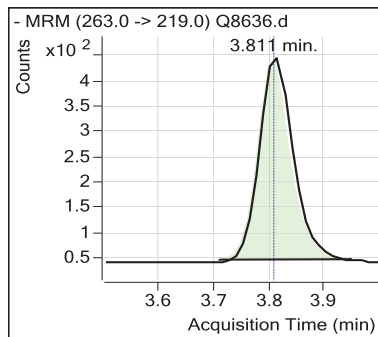
Data File : Q8636.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 14:13  
 Sample Name : IC280-10  
 Vial : Vial 4  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01



PFBA



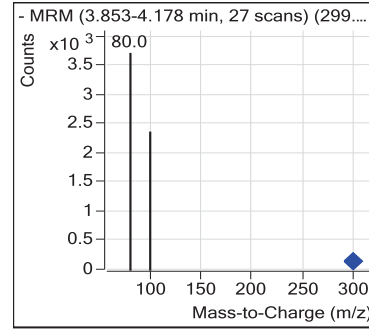
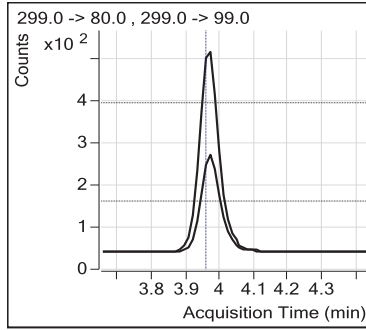
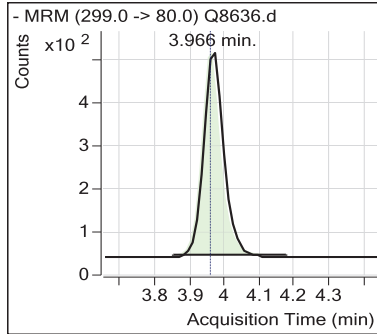
PFPeA



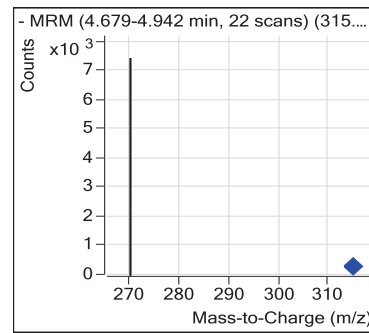
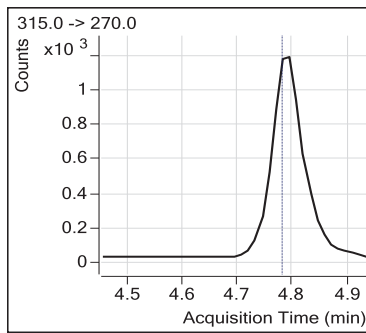
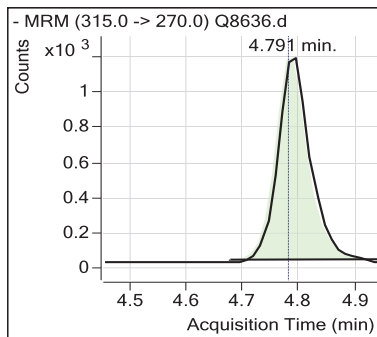
7.5.3  
7

### Perfluorinated Compounds by LC/MS/MS.

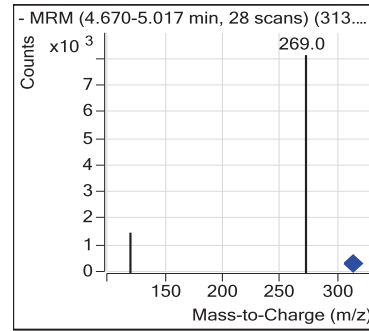
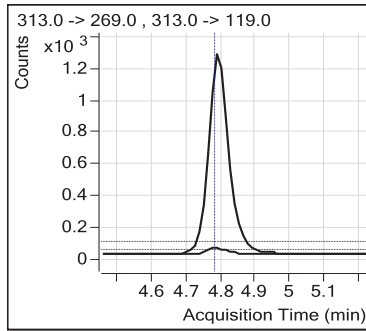
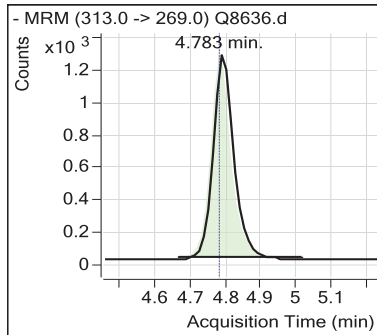
PFBS



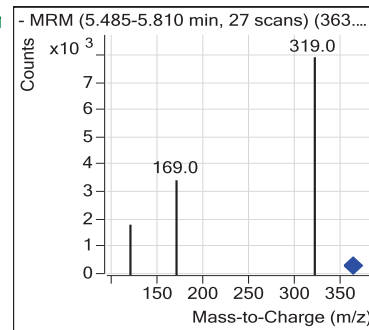
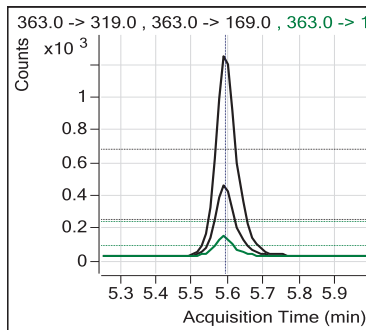
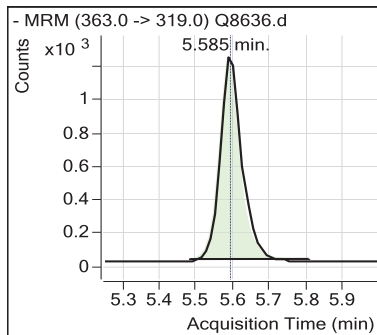
13C2-PFHxA



PFHxA



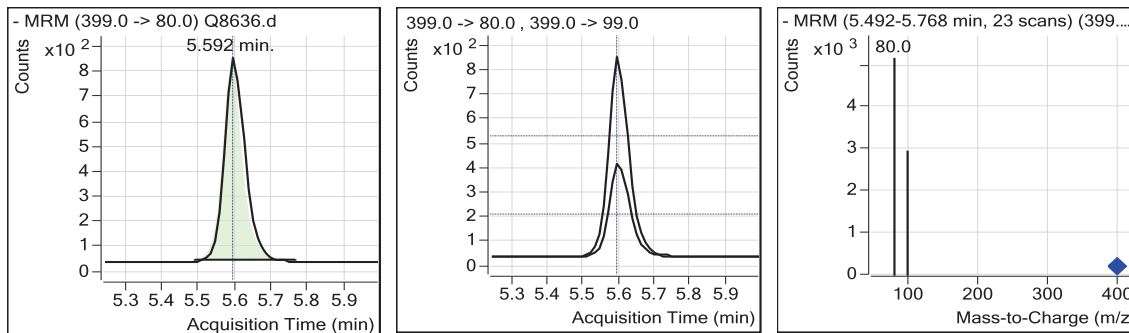
PFHpA



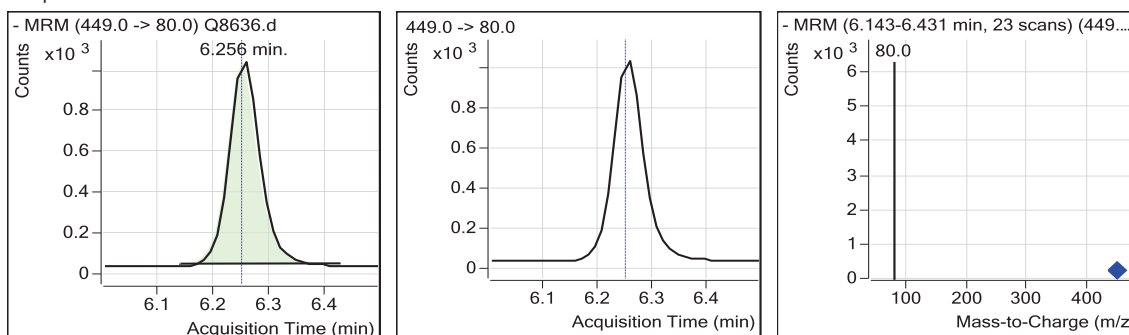
7.5.3  
7

### Perfluorinated Compounds by LC/MS/MS.

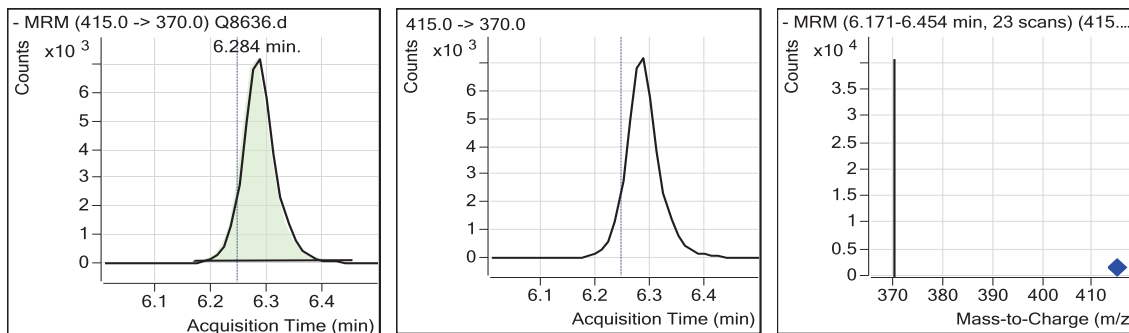
PFHxS



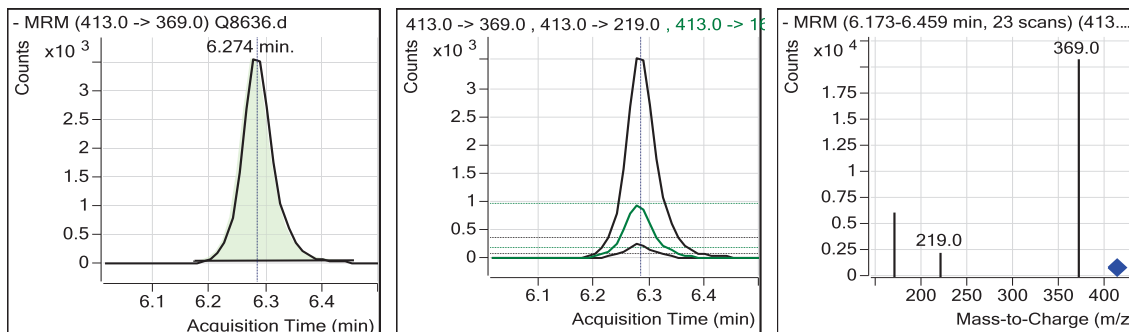
PFHpS



13C2-PFOA



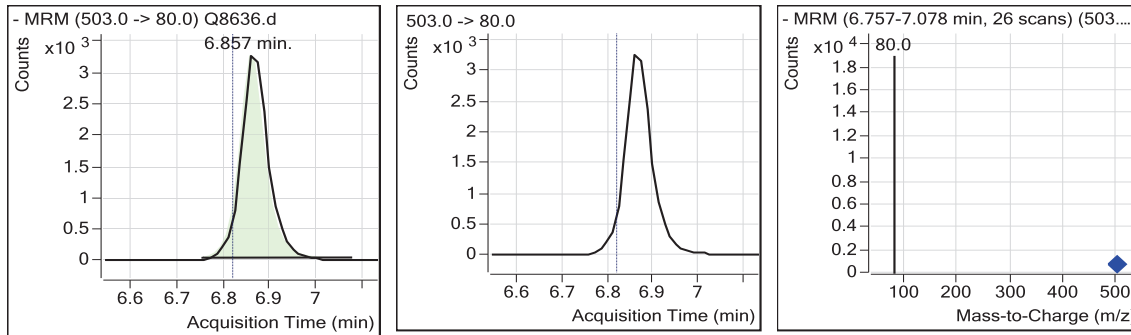
PFOA



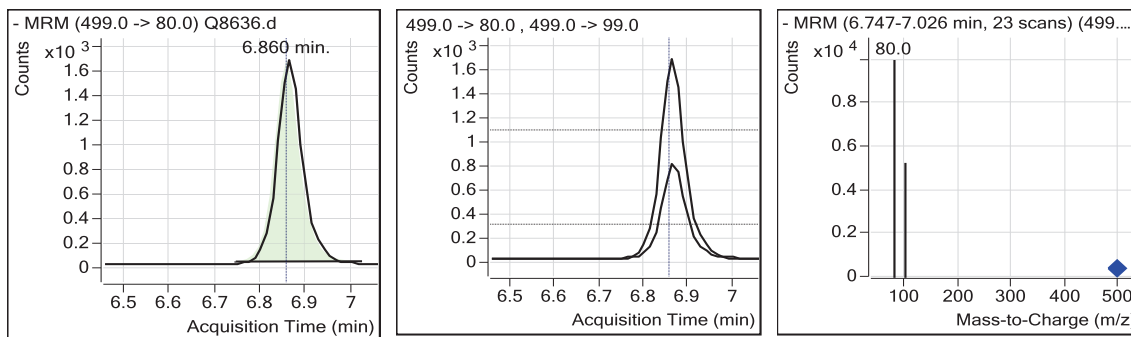
7.5.3  
7

### Perfluorinated Compounds by LC/MS/MS.

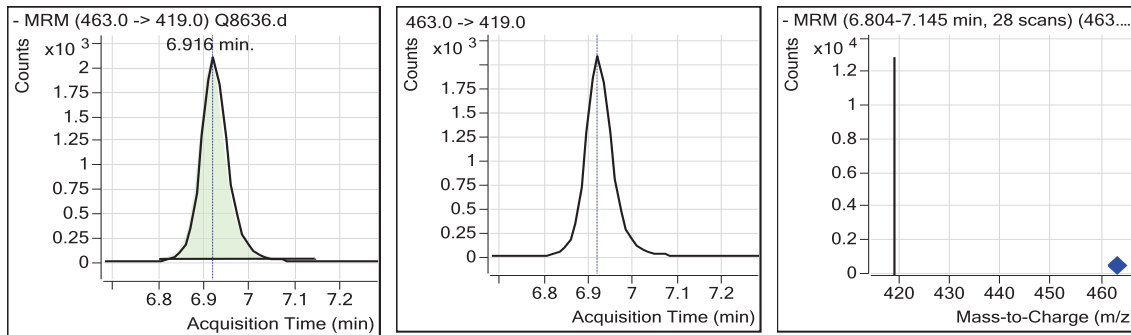
13C4-PFOS



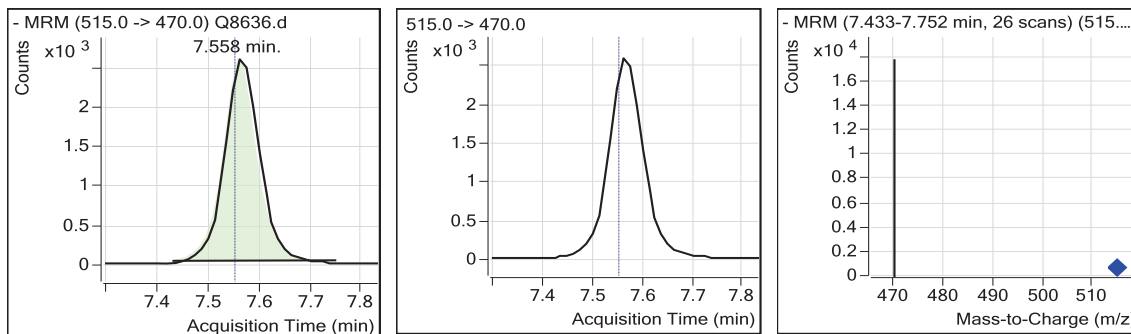
PFOS



PFNA



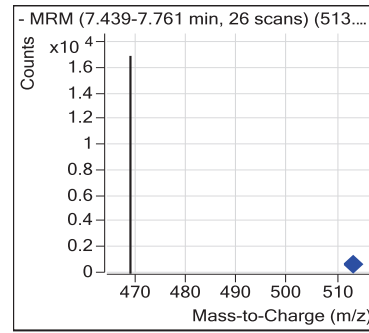
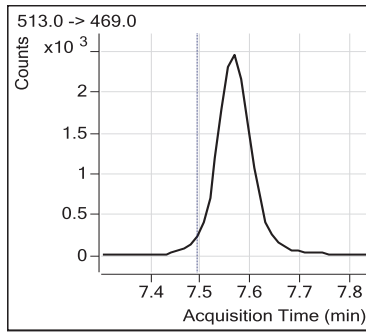
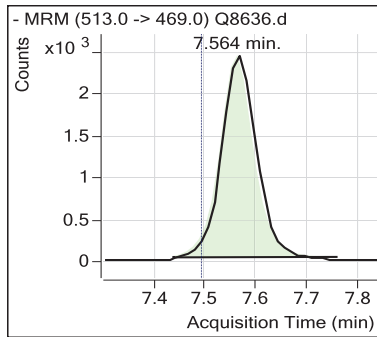
13C2-PFDA



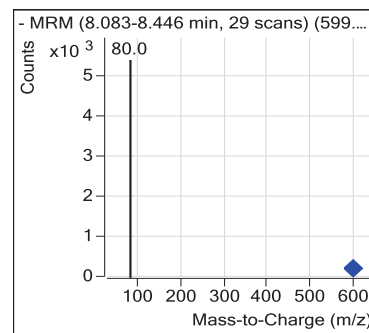
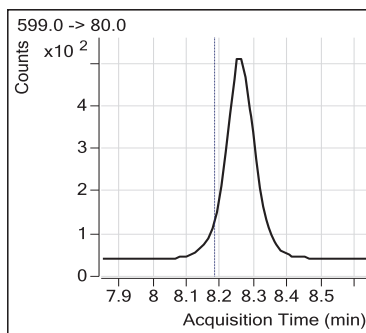
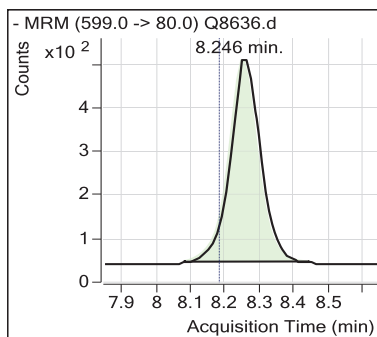
7.5.3  
7

### Perfluorinated Compounds by LC/MS/MS.

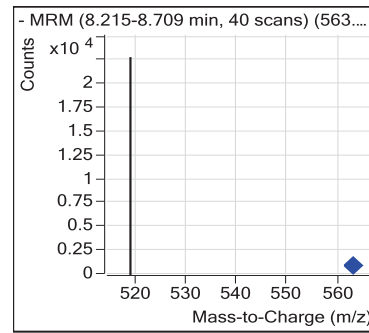
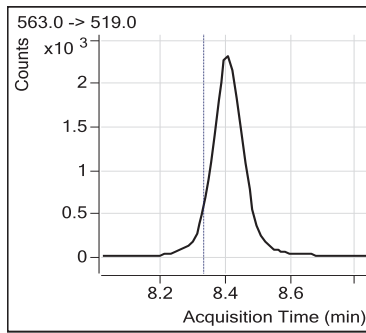
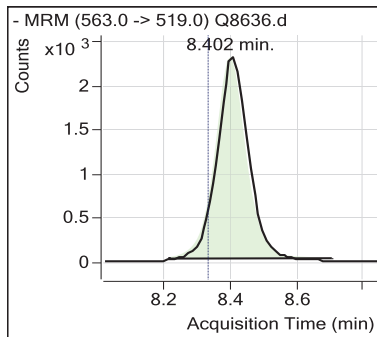
#### PFDA



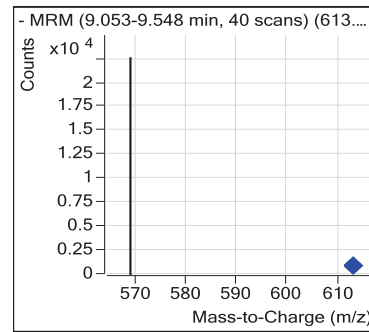
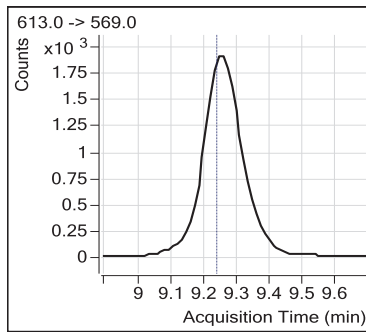
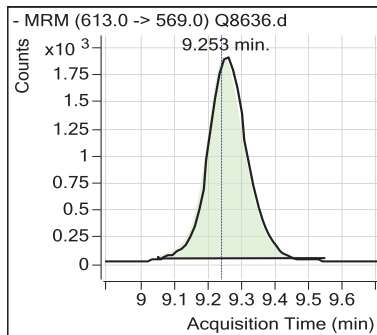
#### PFDS



#### PFUnDA



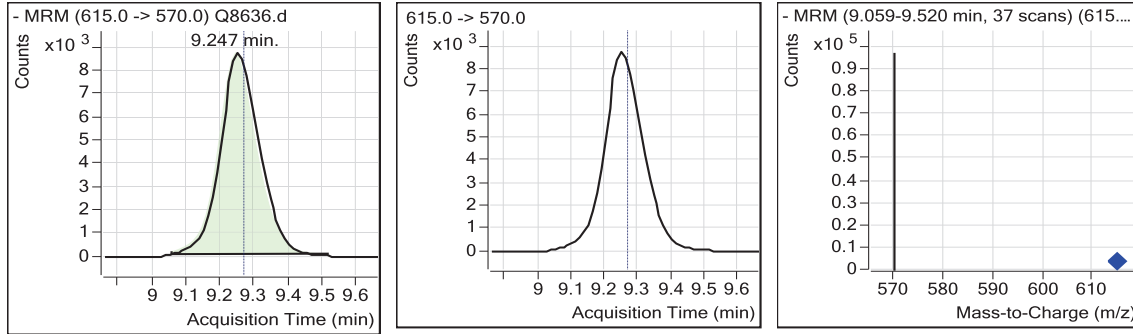
#### PFDoDA



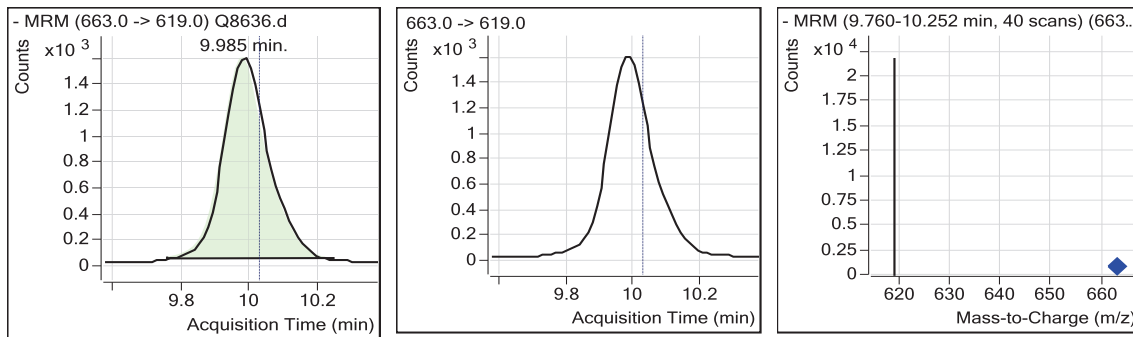
7.5.3  
7

### Perfluorinated Compounds by LC/MS/MS.

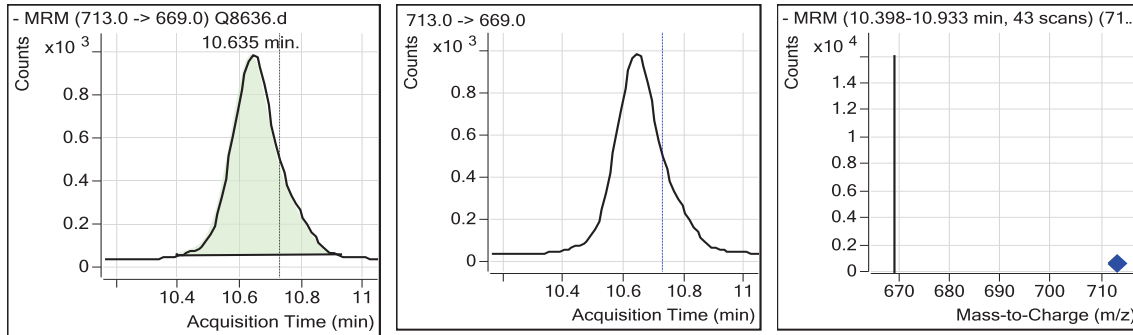
13C2-PFDoDA



PFTrDA



PFTeDA



7.5.3  
7

### Perfluorinated Compounds by LC/MS/MS.

Data File : Q8637.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 14:34  
 Sample Name : ICC280-20  
 Vial : Vial 5  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

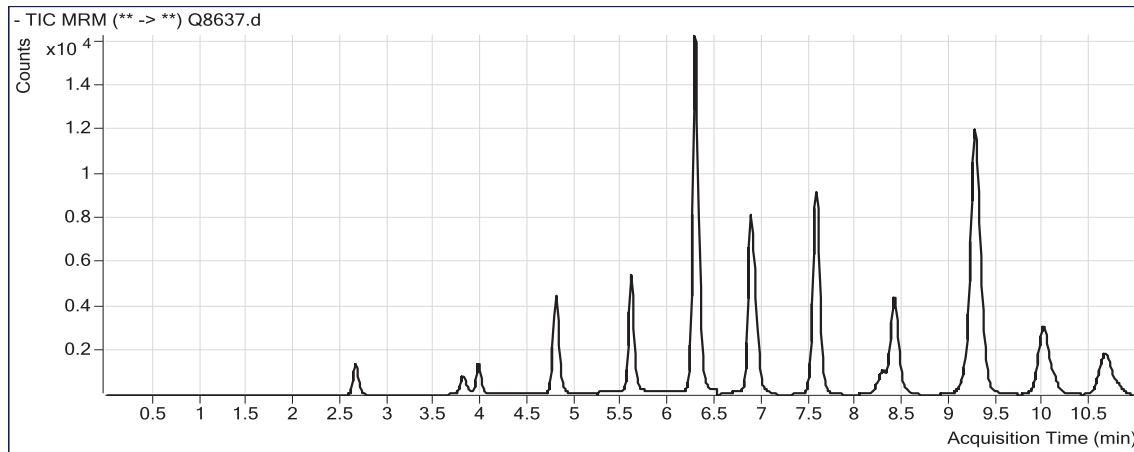
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.284	415.0 -> 370.0	25663	20.000	µg/L	0.038	
13C4-PFOS	6.857	503.0 -> 80.0	11700	20.000	µg/L	0.038	
13C2-PFDoDA	9.247	615.0 -> 570.0	66167	20.000	µg/L	-0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.791	315.0 -> 270.0	8892	21.07	µg/L	0.038	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 105.37%				
13C2-PFDA	7.558	515.0 -> 470.0	22775	20.80	µg/L	0.050	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 104.02%				
<b>Target Compounds</b>							
PFBA	2.652	213.0 -> 169.0	6371	20.687	µg/L	100	
PFPeA	3.811	263.0 -> 219.0	3170	20.597	µg/L	100	
PFBS	3.966	299.0 -> 80.0	3642	21.071	µg/L	97	
PFHxA	4.783	313.0 -> 269.0	9322	21.038	µg/L	100	
PFHpA	5.585	363.0 -> 319.0	9070	21.101	µg/L	99	
PFHxS	5.592	399.0 -> 80.0	5807	20.916	µg/L	87	
PFHpS	6.256	449.0 -> 80.0	7296	21.039	µg/L	100	
PFOA	6.286	413.0 -> 369.0	27060	20.815	µg/L	80	
PFOS	6.860	499.0 -> 80.0	12347	21.100	µg/L	87	
PFNA	6.916	463.0 -> 419.0	16199	20.957	µg/L	100	
PFDA	7.564	513.0 -> 469.0	21766	21.678	µg/L	100	
PFDS	8.246	599.0 -> 80.0	5872	20.391	µg/L	100	
PFUnDA	8.402	563.0 -> 519.0	29476	20.589	µg/L	100	
PFDoDA	9.253	613.0 -> 569.0	30454	20.540	µg/L	100	
PFTrDA	9.985	663.0 -> 619.0	29155	20.234	µg/L	100	
PFTeDA	10.635	713.0 -> 669.0	20569	20.254	µg/L	100	

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

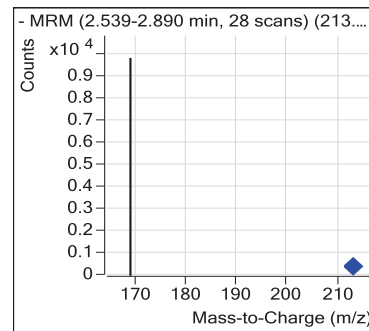
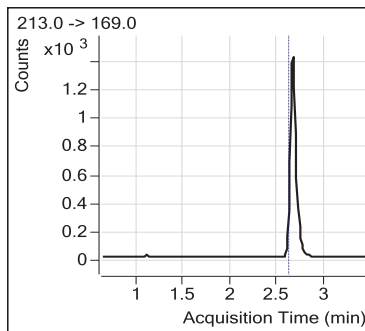
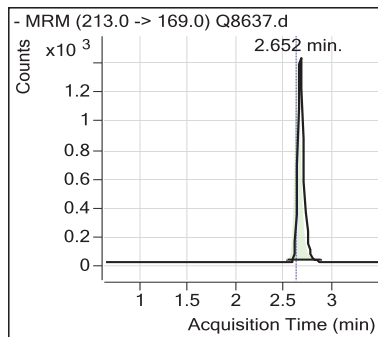
7.54  
7

### Perfluorinated Compounds by LC/MS/MS.

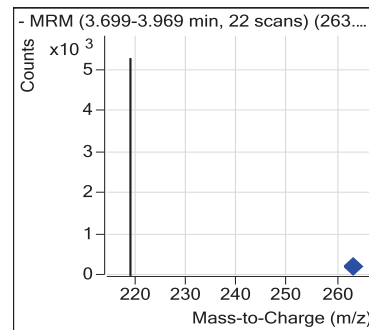
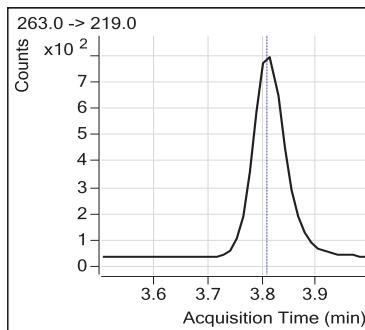
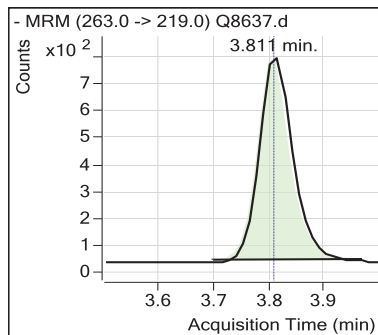
Data File : Q8637.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 14:34  
 Sample Name : ICC280-20  
 Vial : Vial 5  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01



PFBA



PFPeA

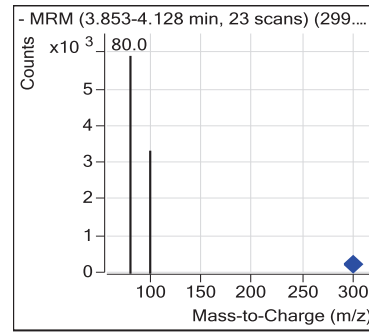
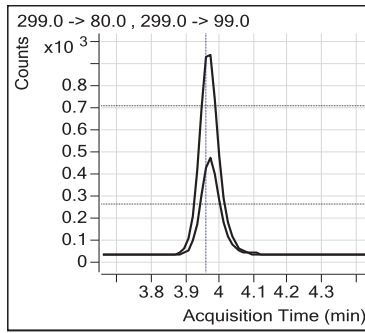
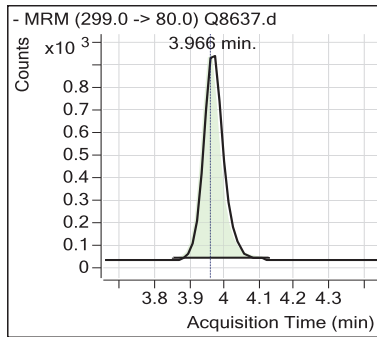


7.5.4  
7

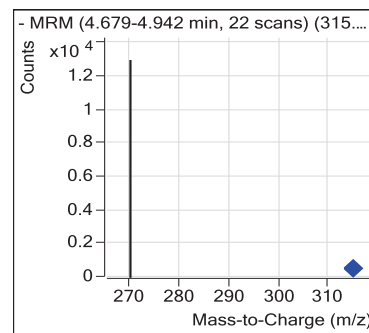
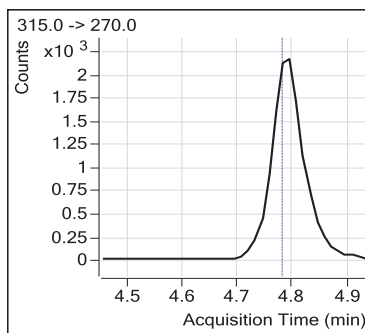
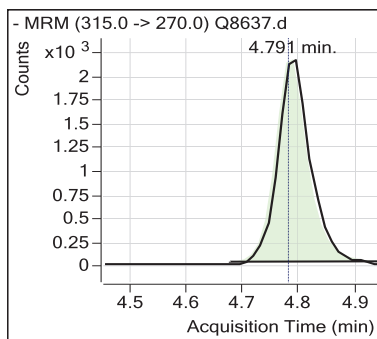


### Perfluorinated Compounds by LC/MS/MS.

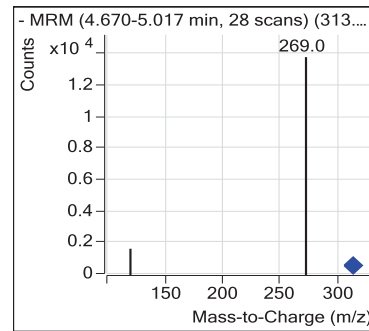
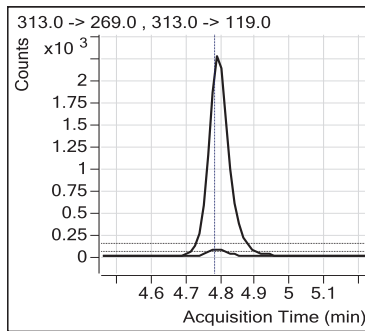
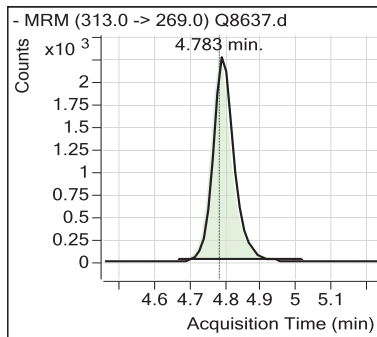
PFBS



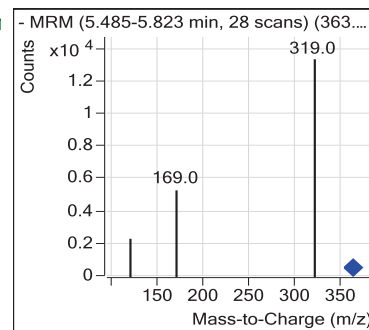
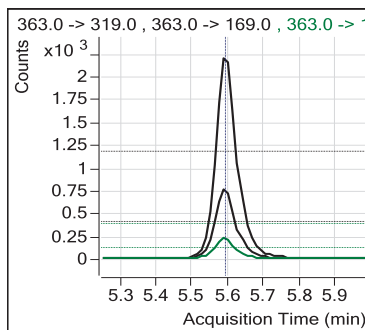
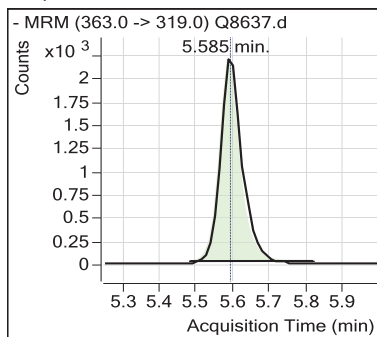
13C2-PFHxA



PFHxA



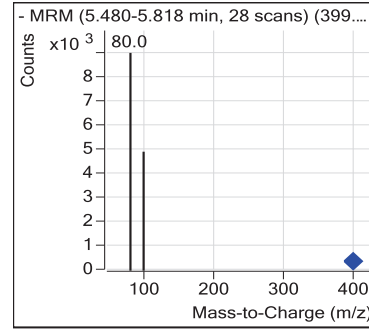
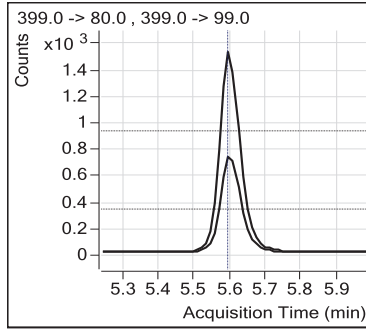
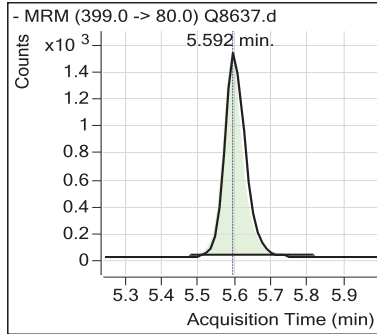
PFHpA



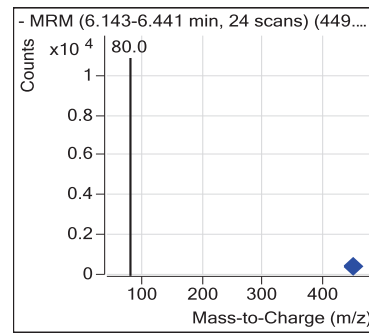
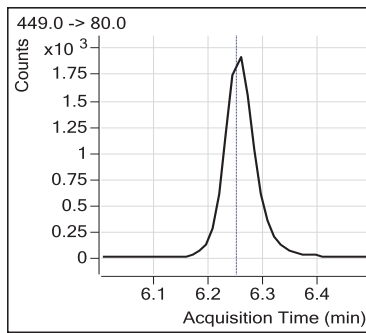
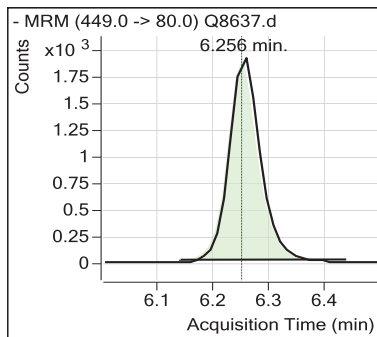
7.5.4  
7

### Perfluorinated Compounds by LC/MS/MS.

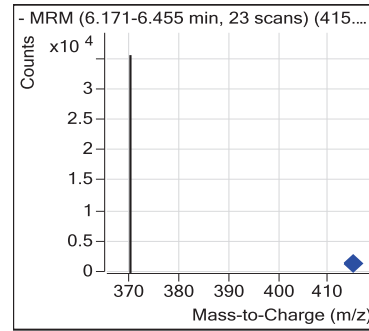
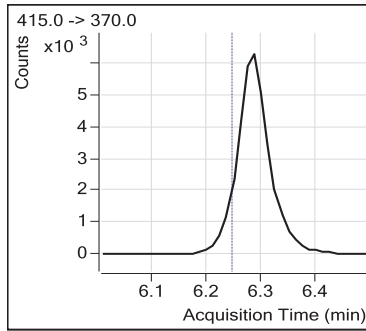
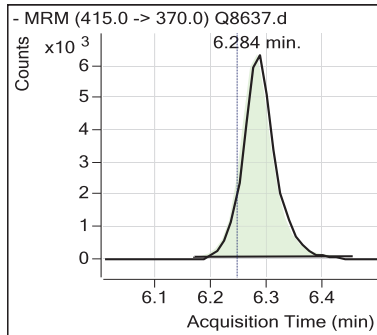
#### PFHxS



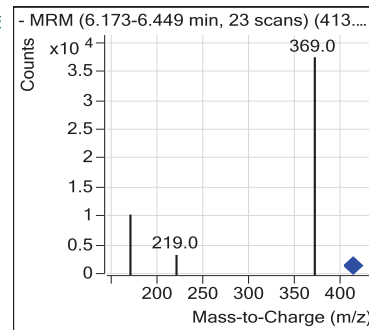
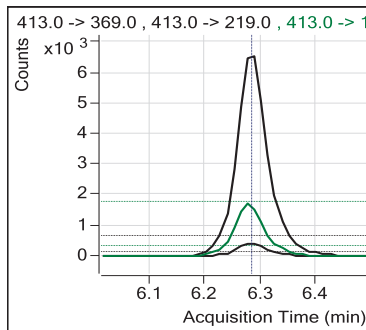
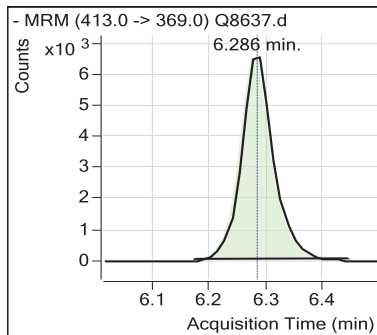
#### PFHpS



#### 13C2-PFOA



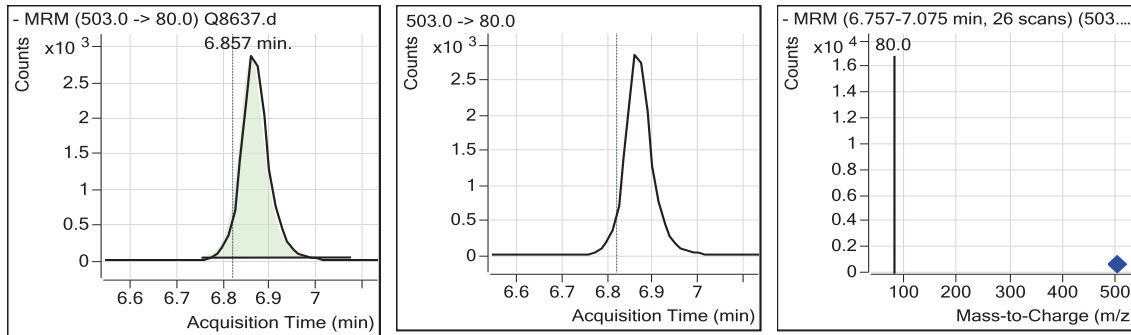
#### PFOA



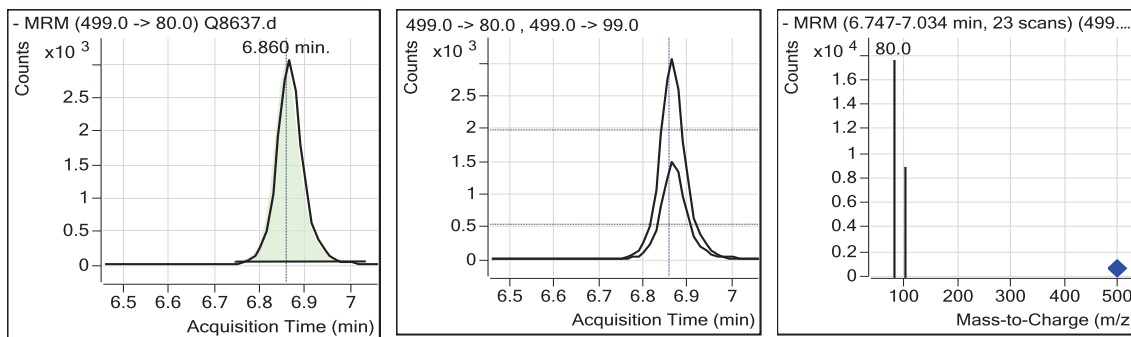
7.5.4  
7

### Perfluorinated Compounds by LC/MS/MS.

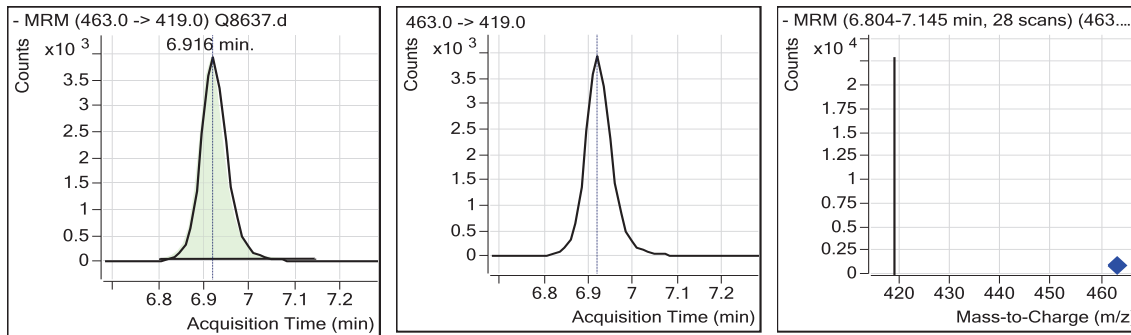
13C4-PFOS



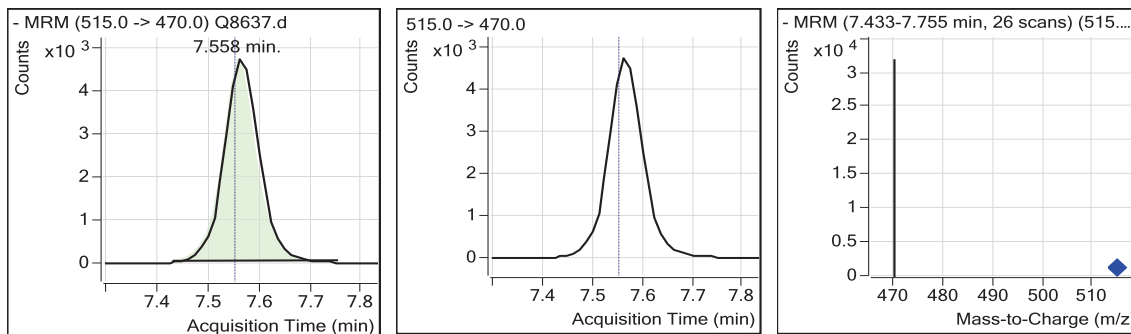
PFOS



PFNA



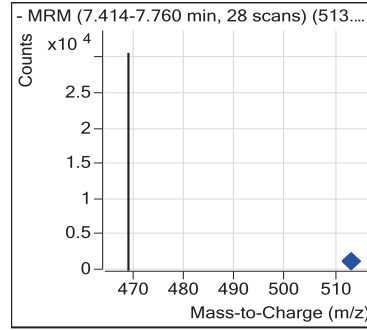
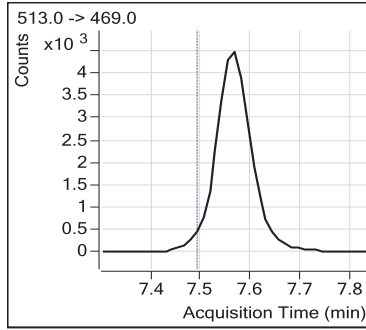
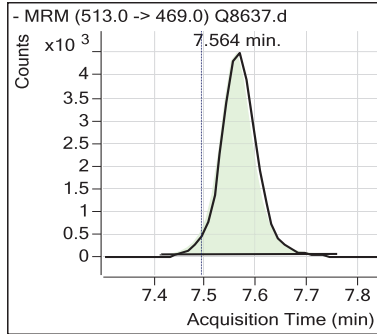
13C2-PFDA



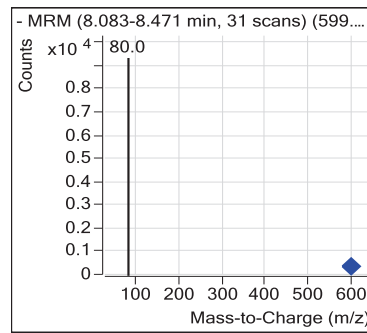
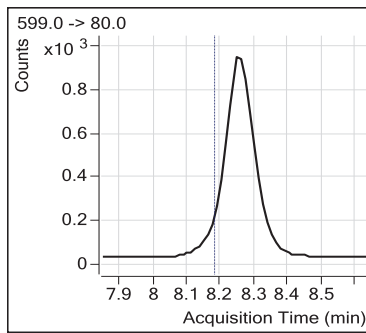
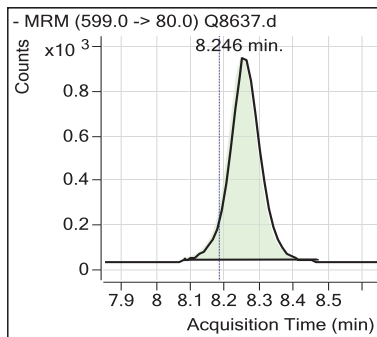
7.5.4  
7

### Perfluorinated Compounds by LC/MS/MS.

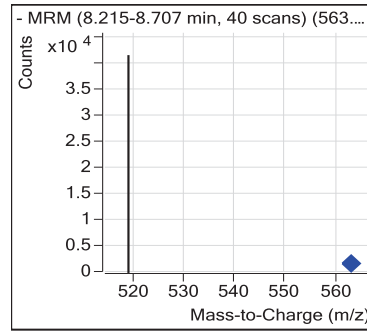
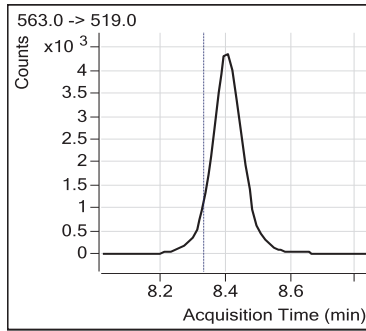
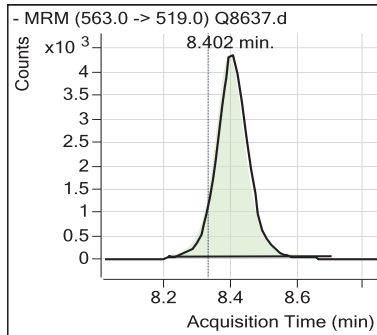
PFDA



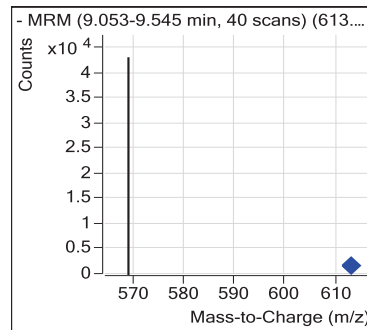
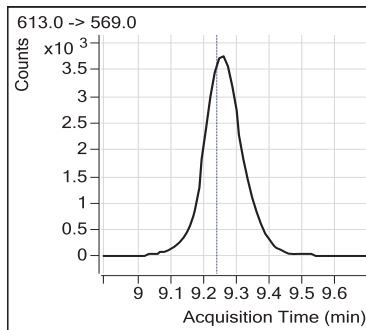
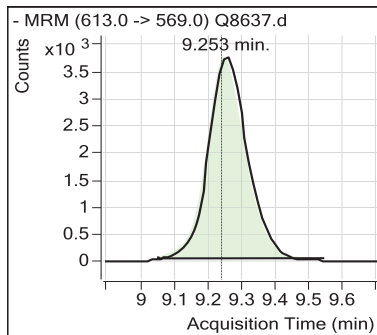
PFDS



PFUnDA



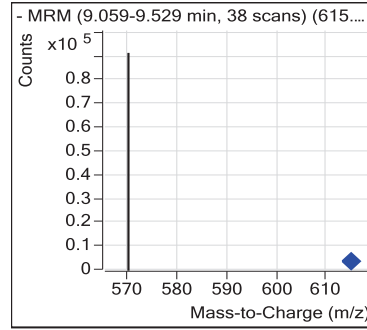
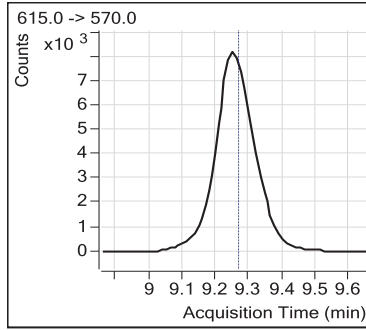
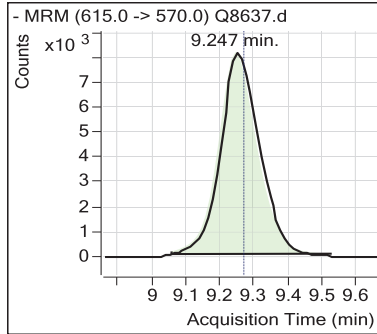
PFDoDA



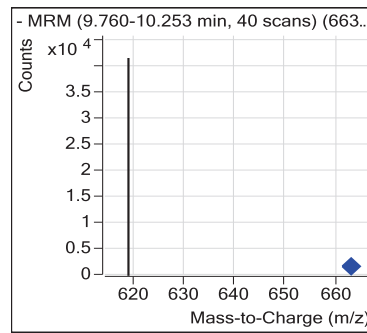
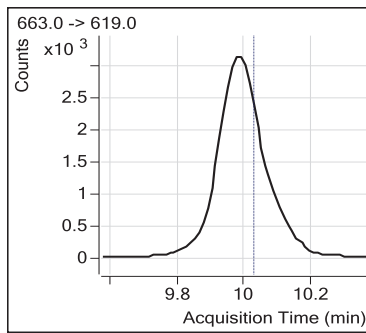
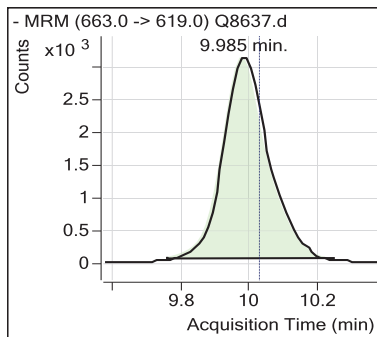
7.5.4  
7

### Perfluorinated Compounds by LC/MS/MS.

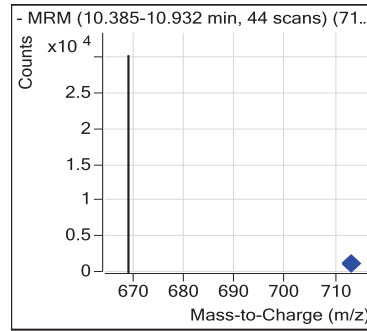
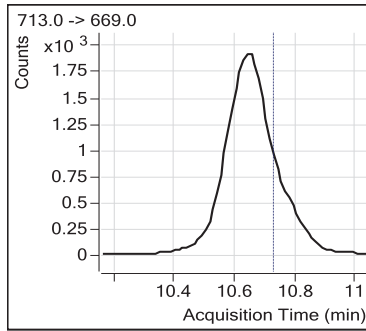
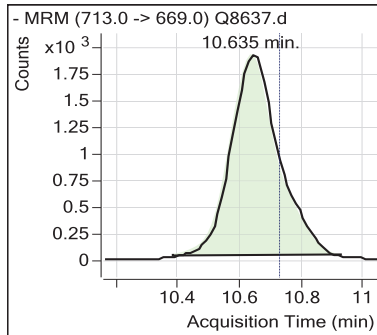
13C2-PFDoDA



PFTTrDA



PFTeDA



7.5.4  
7

### Perfluorinated Compounds by LC/MS/MS.

Data File : Q8638.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 14:53  
 Sample Name : IC280-30  
 Vial : Vial 6  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

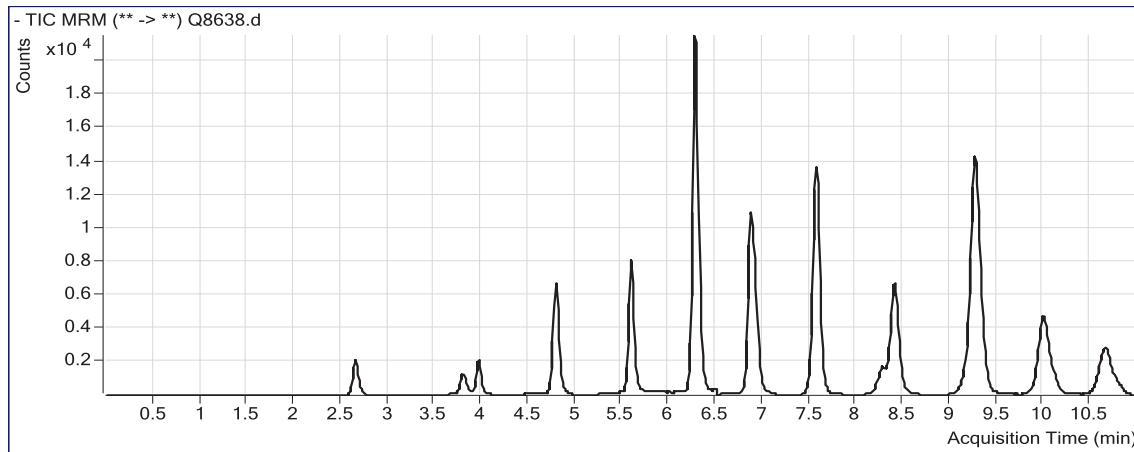
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
<b>Internal Standards</b>							
13C2-PFOA	6.284	415.0 -> 370.0	26973	20.000	µg/L	0.038	
13C4-PFOS	6.857	503.0 -> 80.0	12504	20.000	µg/L	0.038	
13C2-PFDoDA	9.247	615.0 -> 570.0	69164	20.000	µg/L	-0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.791	315.0 -> 270.0	13392	30.20	µg/L	0.038	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 150.98%				
13C2-PFDA	7.558	515.0 -> 470.0	34137	29.67	µg/L	0.050	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 148.34%				
<b>Target Compounds</b>							<b>Qvalue</b>
PFBA	2.652	213.0 -> 169.0	9654	29.826	µg/L		100
PFPeA	3.811	263.0 -> 219.0	4819	29.791	µg/L		100
PFBS	3.966	299.0 -> 80.0	5530	29.936	µg/L		97
PFHxA	4.783	313.0 -> 269.0	14010	30.083	µg/L		99
PFHpA	5.585	363.0 -> 319.0	13600	30.104	µg/L		98
PFHxS	5.592	399.0 -> 80.0	8833	29.773	µg/L		88
PFHpS	6.256	449.0 -> 80.0	11071	29.871	µg/L		100
PFOA	6.286	413.0 -> 369.0	40614	29.724	µg/L		81
PFOS	6.860	499.0 -> 80.0	18715	29.926	µg/L		89
PFNA	6.916	463.0 -> 419.0	24164	29.743	µg/L		100
PFDA	7.564	513.0 -> 469.0	32590	31.052	µg/L		100
PFDS	8.258	599.0 -> 80.0	9006	29.918	µg/L		100
PFUnDA	8.402	563.0 -> 519.0	45479	30.390	µg/L		100
PFDoDA	9.253	613.0 -> 569.0	46238	29.835	µg/L		100
PFTrDA	9.985	663.0 -> 619.0	44148	29.312	µg/L		100
PFTeDA	10.635	713.0 -> 669.0	30849	29.059	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

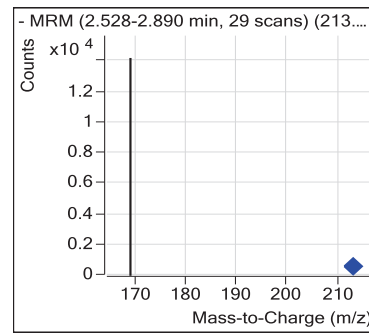
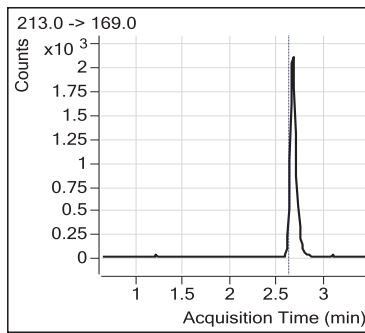
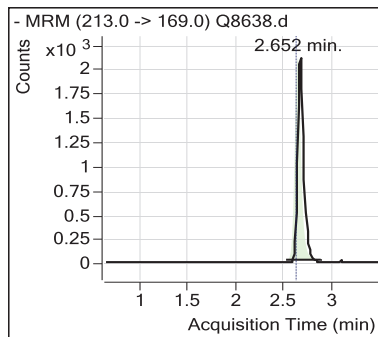
7.5.5  
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### Perfluorinated Compounds by LC/MS/MS.

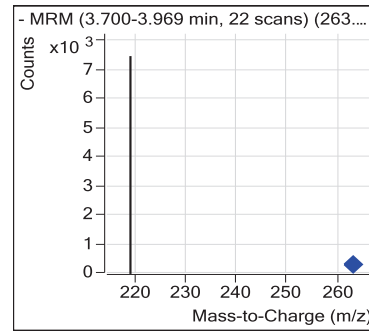
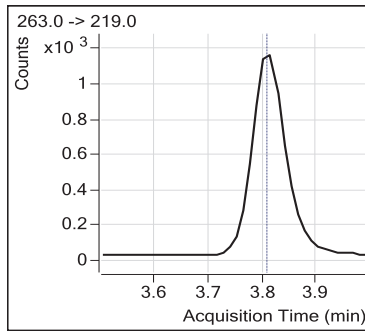
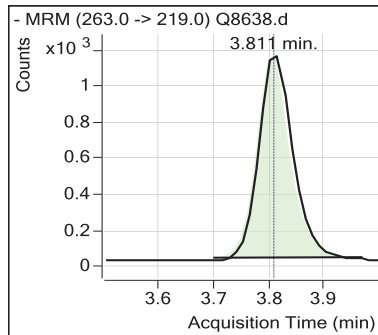
Data File : Q8638.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 14:53  
 Sample Name : IC280-30  
 Vial : Vial 6  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01



PFBA



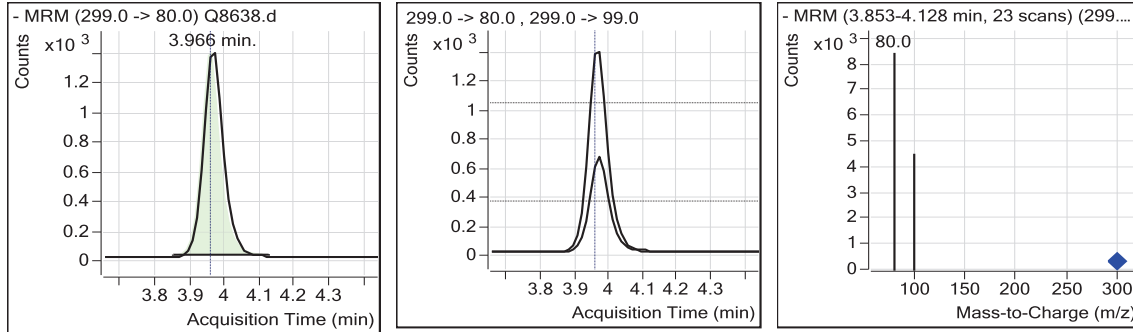
PFPeA



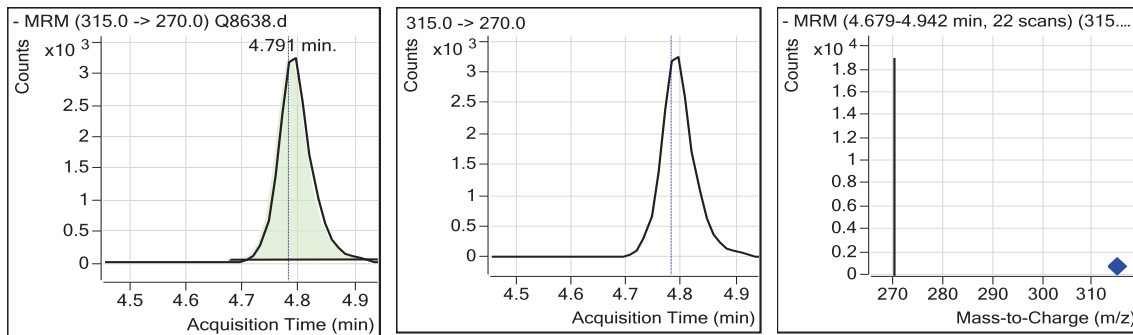
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### Perfluorinated Compounds by LC/MS/MS.

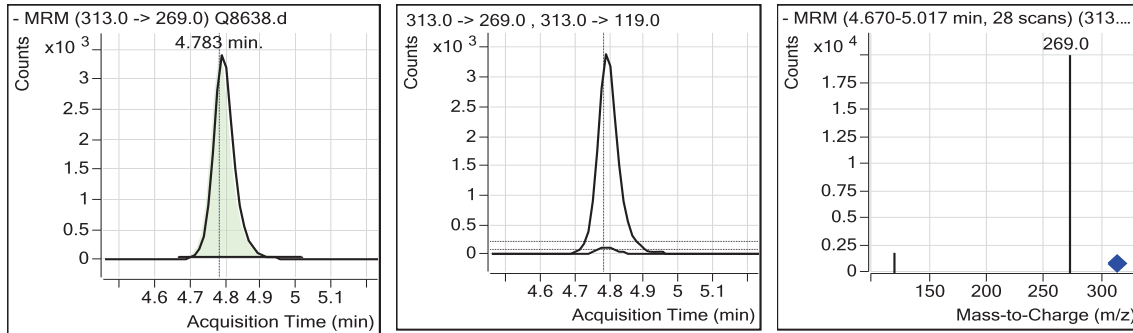
PFBS



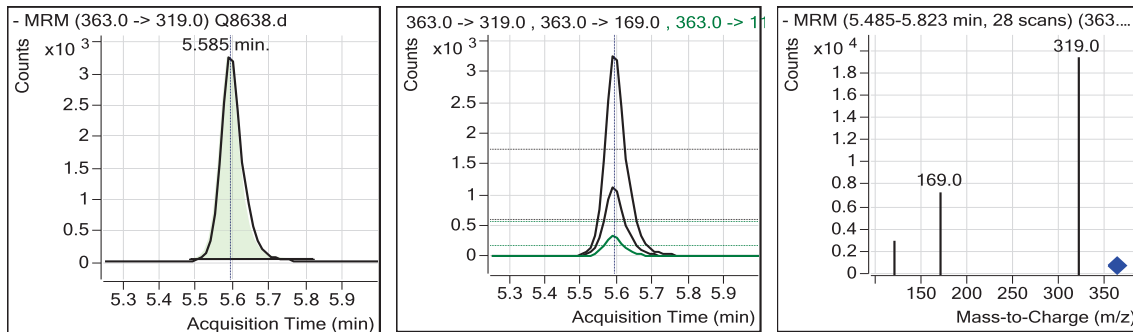
13C2-PFHxA



PFHxA



PFHpA

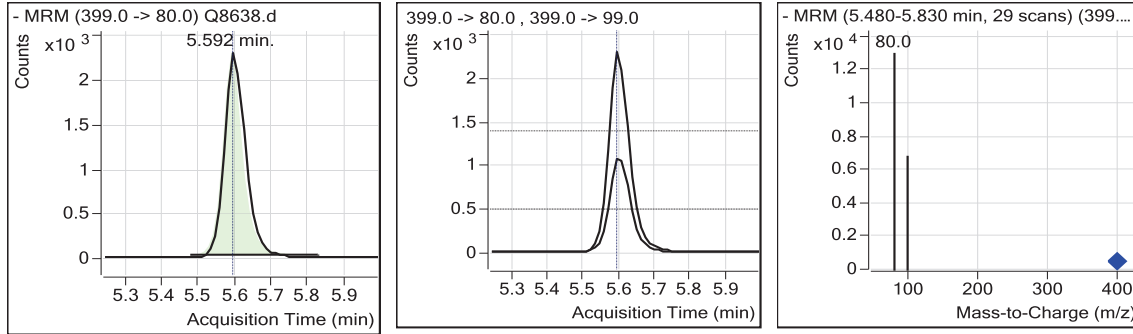


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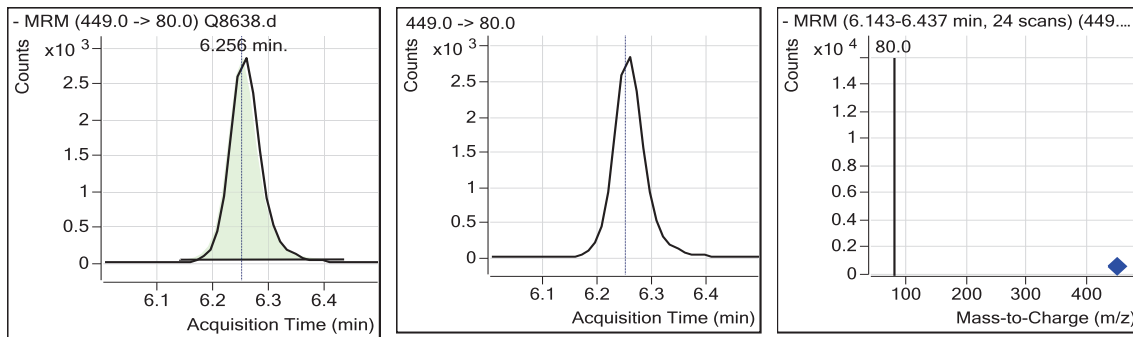


### Perfluorinated Compounds by LC/MS/MS.

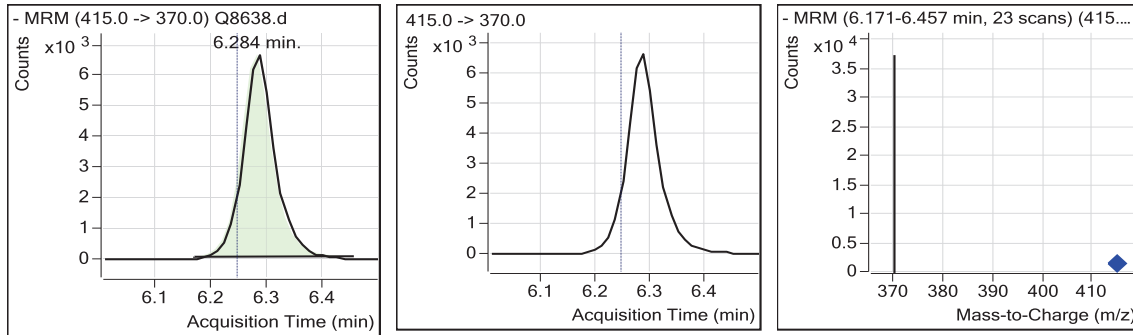
#### PFHxS



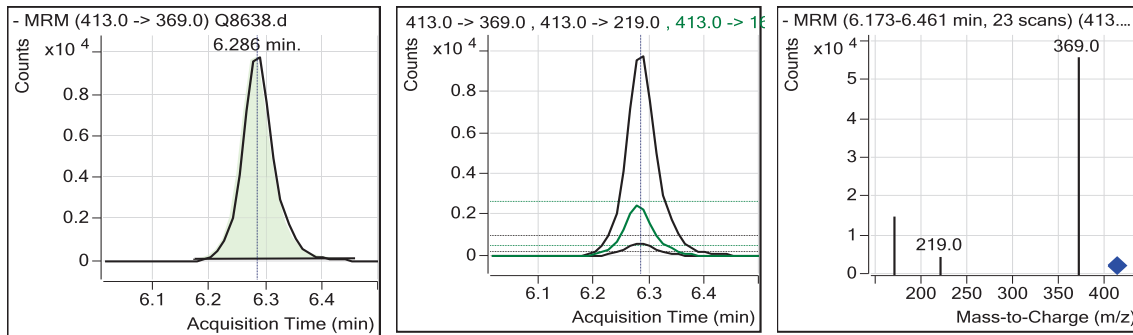
#### PFHpS



#### 13C2-PFOA



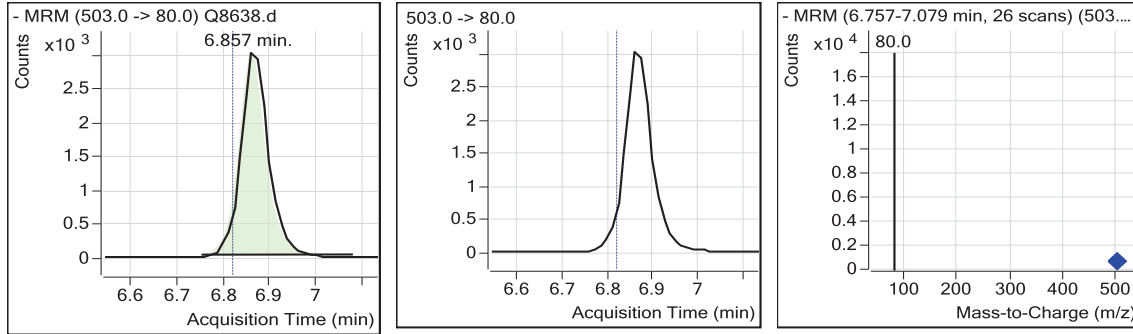
#### PFOA



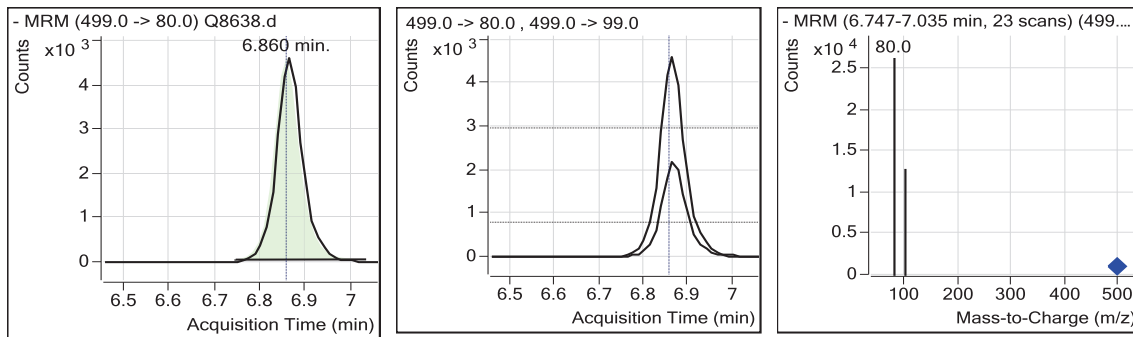
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### Perfluorinated Compounds by LC/MS/MS.

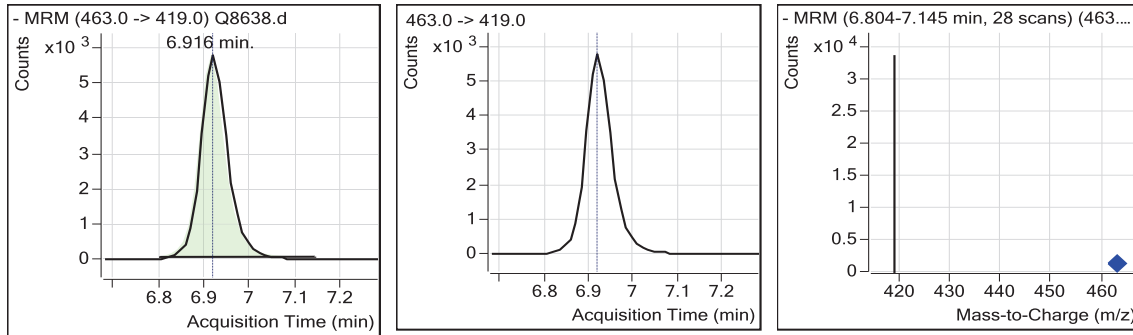
13C4-PFOS



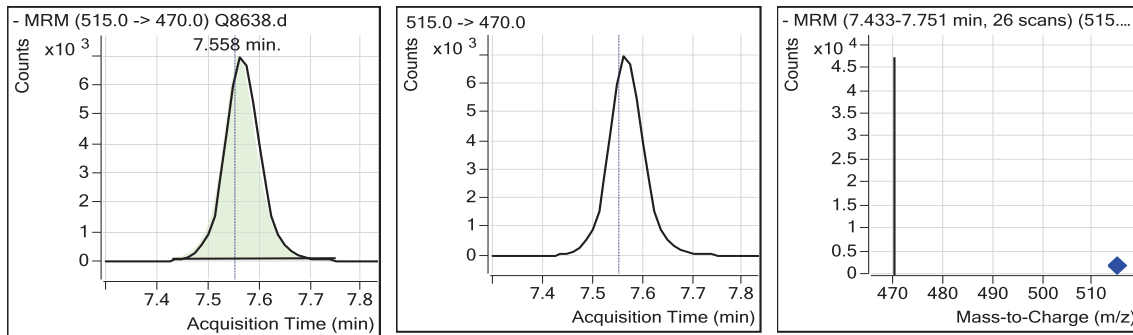
PFOS



PFNA



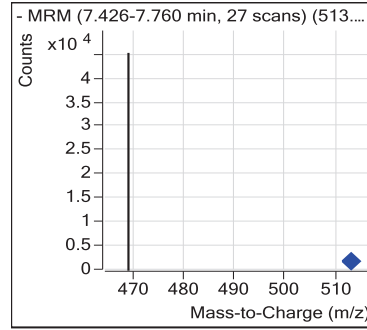
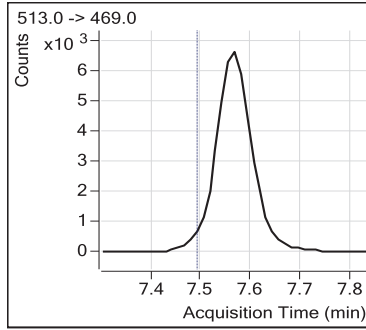
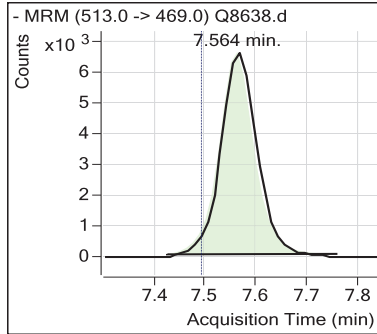
13C2-PFDA



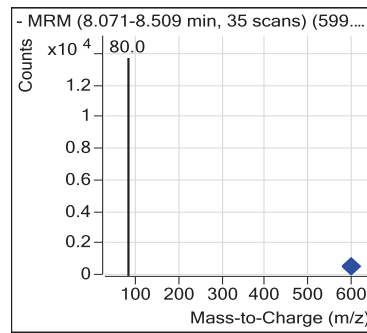
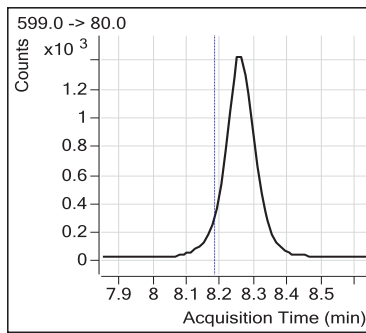
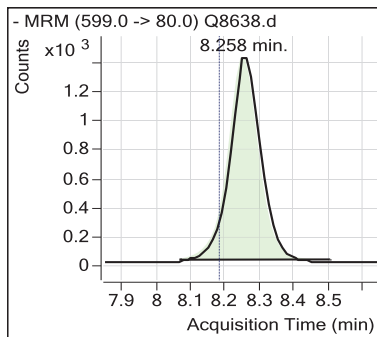
7.5.5  
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### Perfluorinated Compounds by LC/MS/MS.

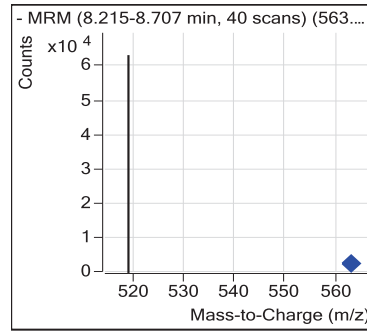
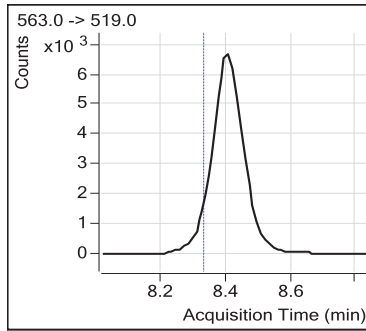
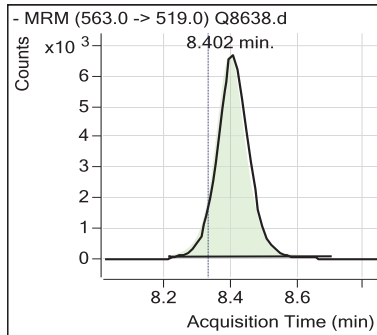
PFDA



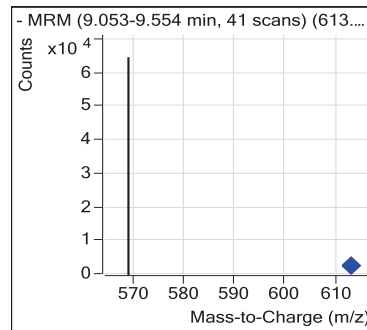
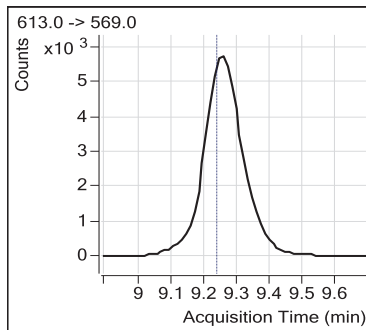
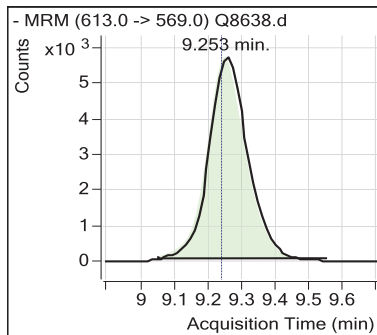
PFDS



PFUnDA



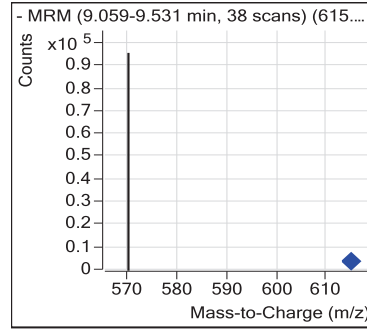
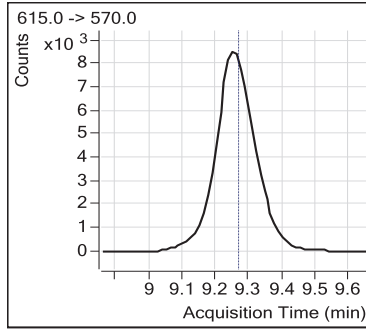
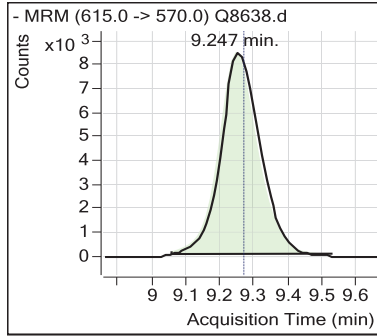
PFDoDA



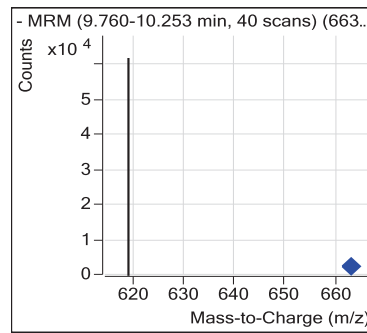
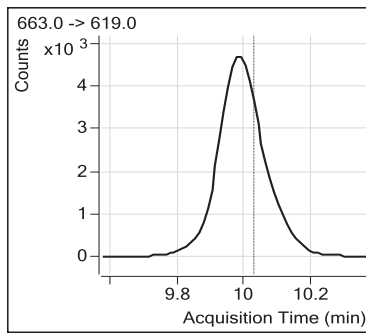
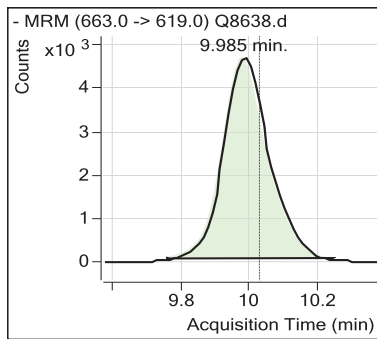
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### Perfluorinated Compounds by LC/MS/MS.

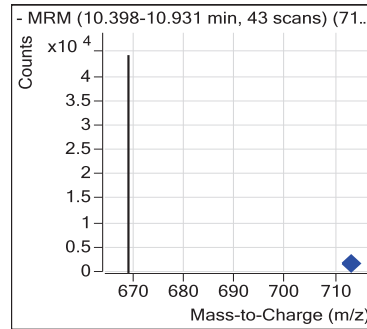
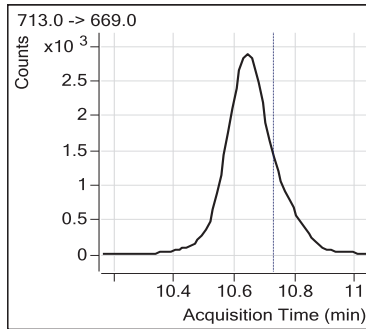
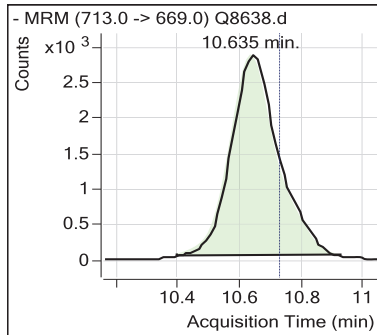
13C2-PFDoDA



PFTrDA



PFTeDA



7.5.5  
7

### Perfluorinated Compounds by LC/MS/MS.

Data File : Q8639.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 15:12  
 Sample Name : IC280-40  
 Vial : Vial 7  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

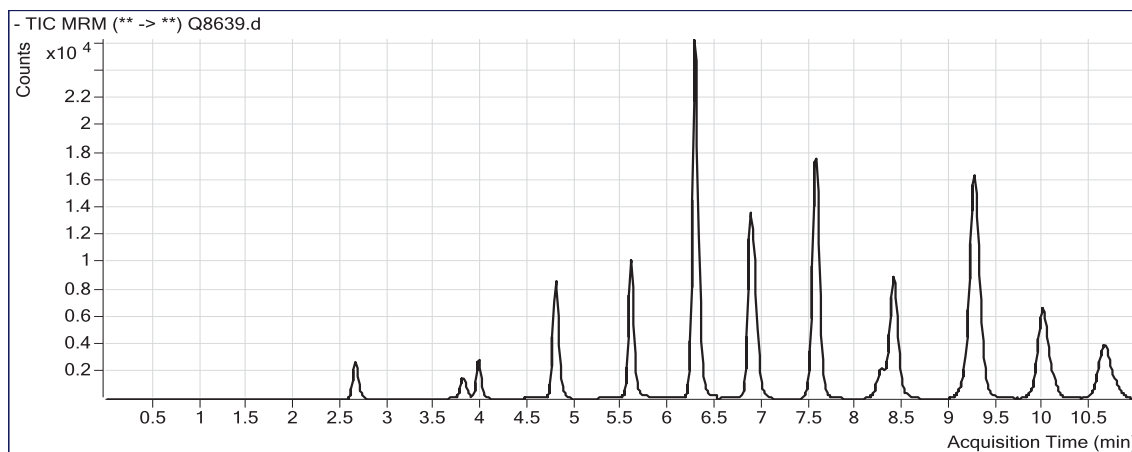
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.284	415.0 -> 370.0	26433	20.000	µg/L	0.038	
13C4-PFOS	6.857	503.0 -> 80.0	12665	20.000	µg/L	0.038	
13C2-PFDoDA	9.247	615.0 -> 570.0	70333	20.000	µg/L	-0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.779	315.0 -> 270.0	17024	39.17	µg/L	0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 195.85%				
13C2-PFDA	7.558	515.0 -> 470.0	45093	39.99	µg/L	0.050	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 199.95%				
<b>Target Compounds</b>							
PFBA	2.652	213.0 -> 169.0	12730	40.133	µg/L	100	
PFPeA	3.811	263.0 -> 219.0	6378	40.238	µg/L	100	
PFBS	3.953	299.0 -> 80.0	7537	40.280	µg/L	97	
PFHxA	4.783	313.0 -> 269.0	17974	39.382	µg/L	99	
PFHpA	5.585	363.0 -> 319.0	17495	39.517	µg/L	99	
PFHxS	5.592	399.0 -> 80.0	11548	38.426	µg/L	88	
PFHpS	6.256	449.0 -> 80.0	14725	39.223	µg/L	100	
PFOA	6.274	413.0 -> 369.0	53318	39.817	µg/L	81	
PFOS	6.860	499.0 -> 80.0	24911	39.327	µg/L	88	
PFNA	6.916	463.0 -> 419.0	31986	40.176	µg/L	100	
PFDA	7.551	513.0 -> 469.0	42943	40.236	µg/L	100	
PFDS	8.246	599.0 -> 80.0	12123	39.601	µg/L	100	
PFUnDA	8.390	563.0 -> 519.0	60094	39.489	µg/L	100	
PFDoDA	9.240	613.0 -> 569.0	62325	39.546	µg/L	100	
PFTrDA	9.972	663.0 -> 619.0	60798	39.695	µg/L	100	
PFTeDA	10.635	713.0 -> 669.0	42945	39.782	µg/L	100	

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

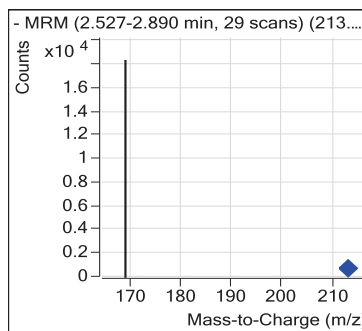
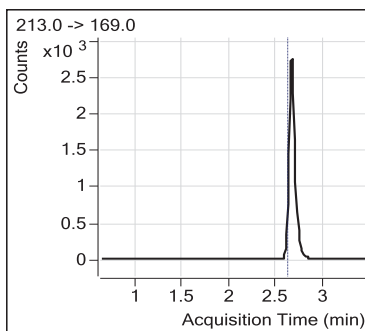
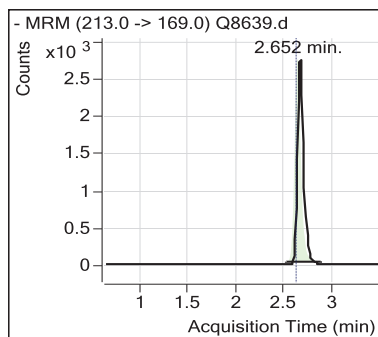
7.5.6  
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### Perfluorinated Compounds by LC/MS/MS.

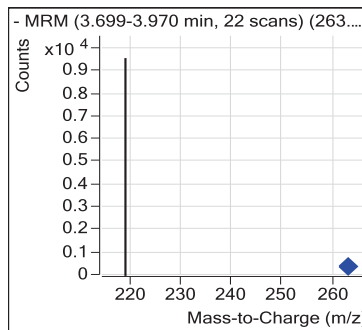
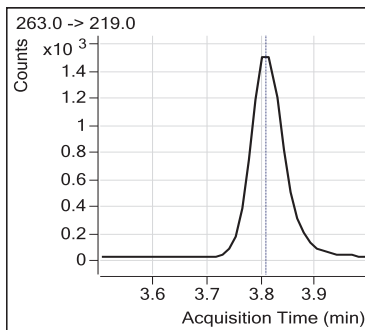
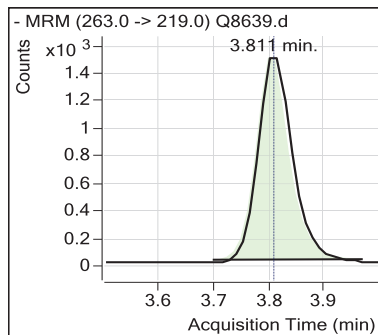
Data File : Q8639.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-08 15:12  
Sample Name : IC280-40  
Vial : Vial 7  
Sample Info : OP54098,SQ280,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ280.batch.bin  
Last Calib Update : 2014-12-09 08:01



#### PFBA

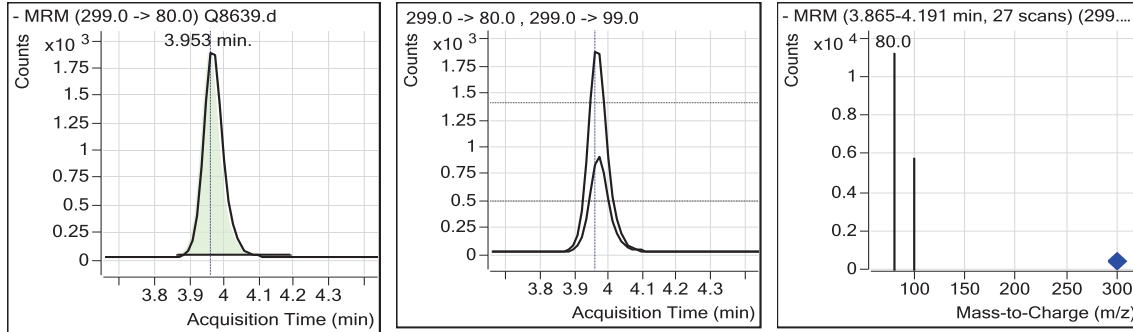


#### PFPeA

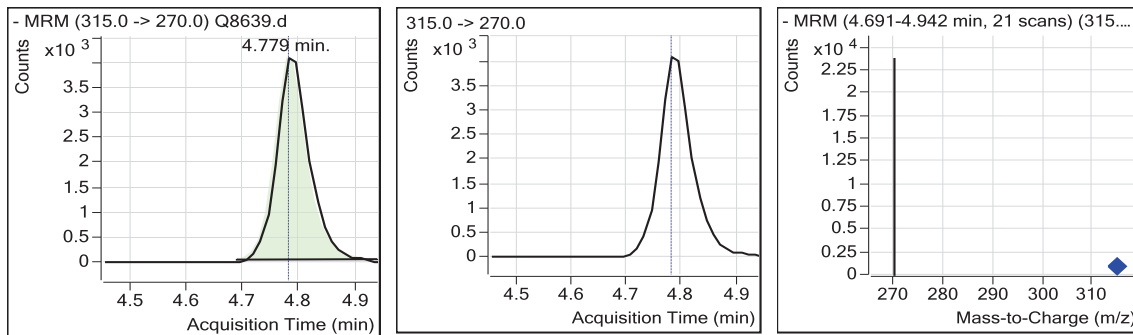


### Perfluorinated Compounds by LC/MS/MS.

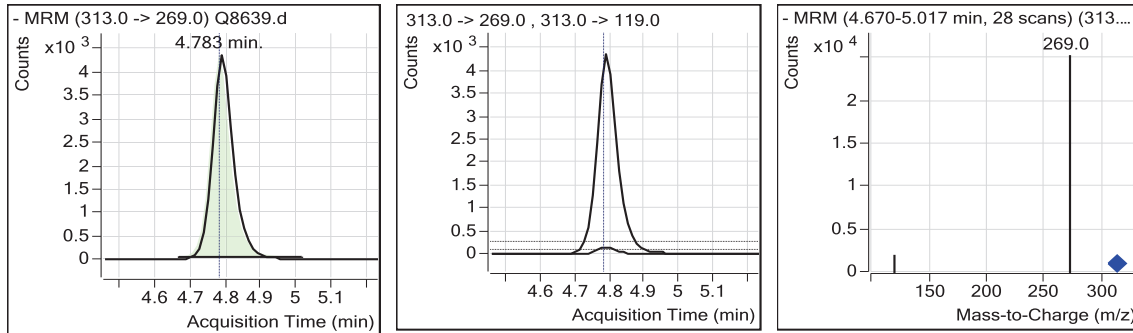
PFBS



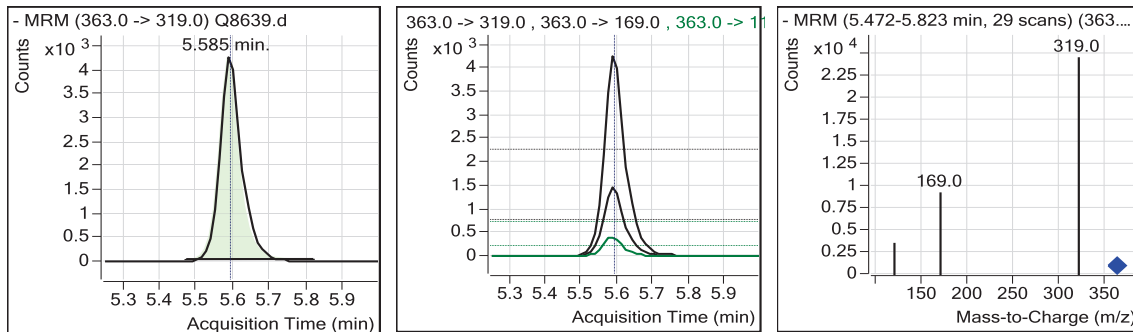
13C2-PFHxA



PFHxA



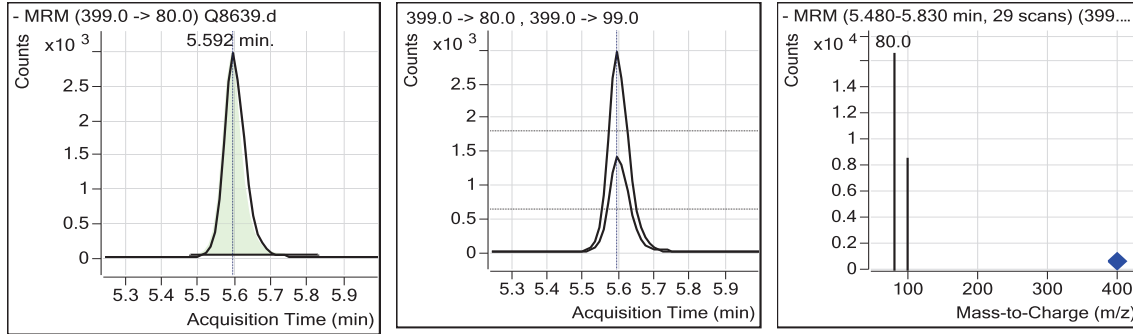
PFHpA



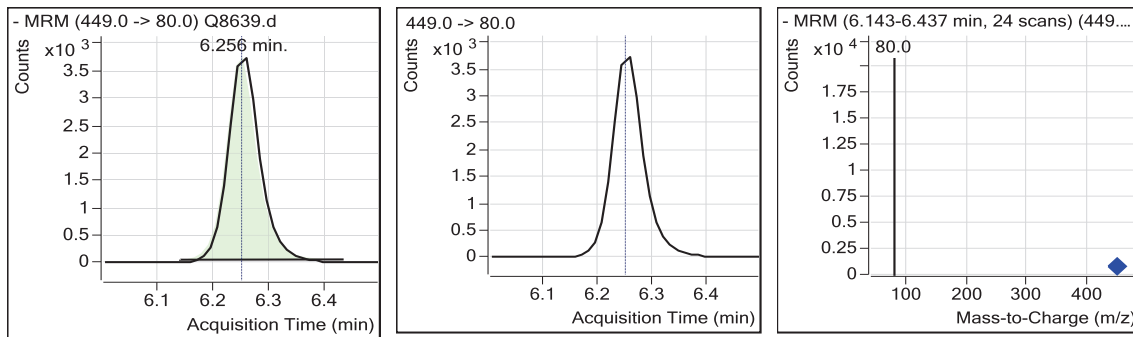
7.5.6  
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### Perfluorinated Compounds by LC/MS/MS.

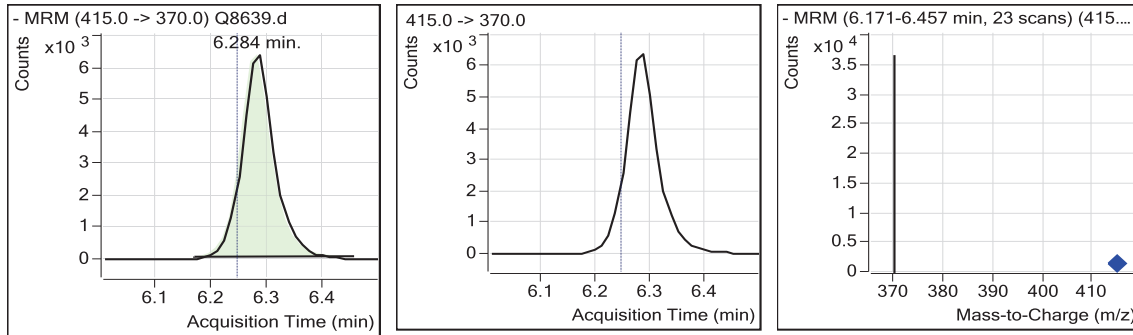
PFHxS



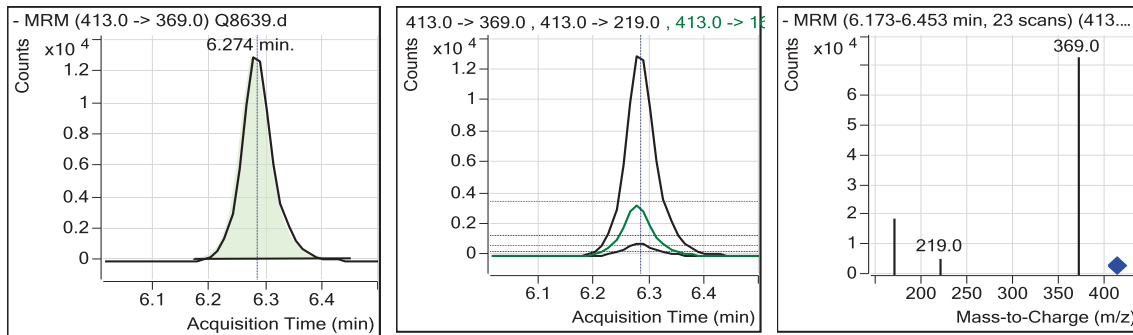
PFHpS



13C2-PFOA



PFOA

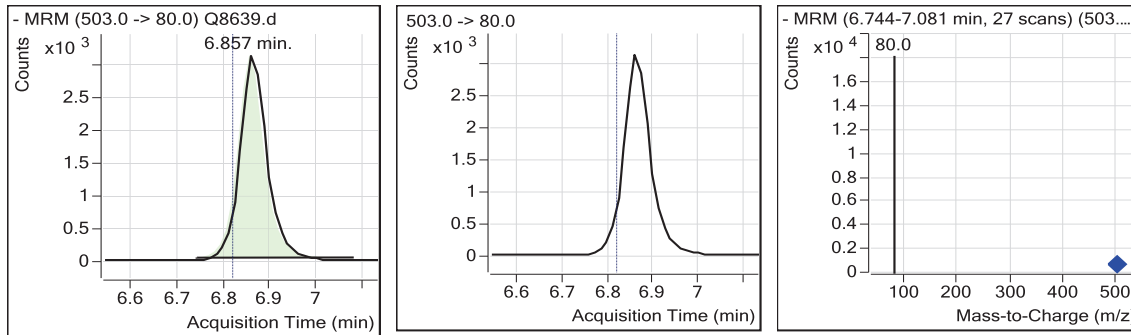


7.5.6  
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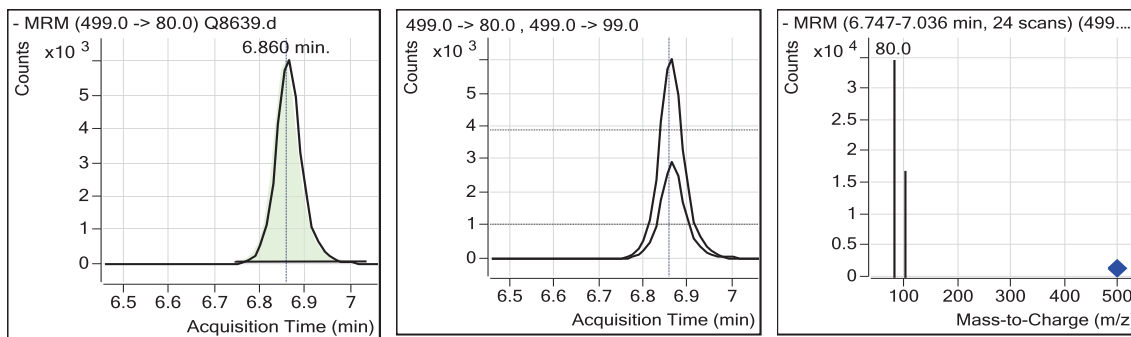


### Perfluorinated Compounds by LC/MS/MS.

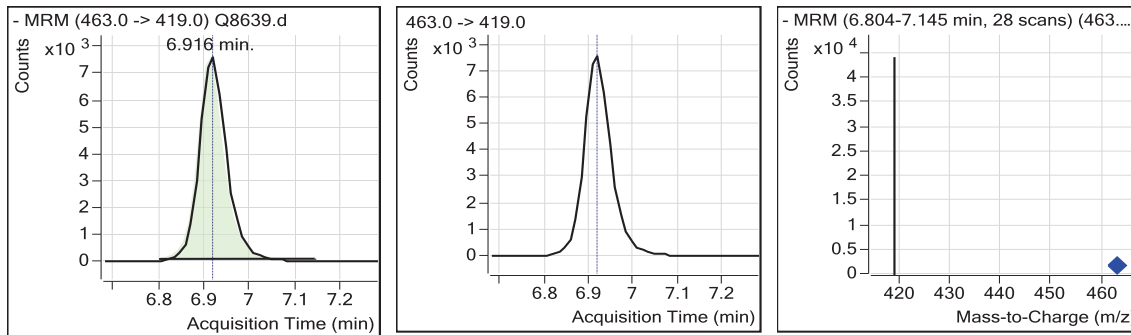
13C4-PFOS



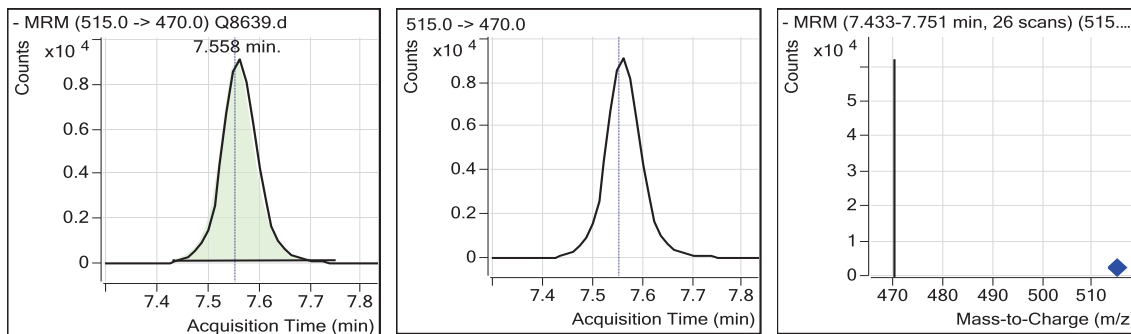
PFOS



PFNA



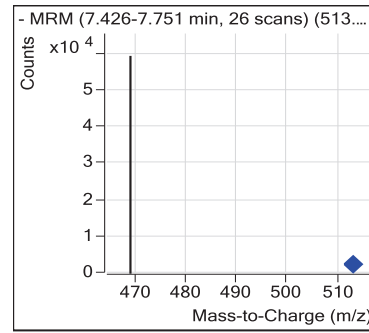
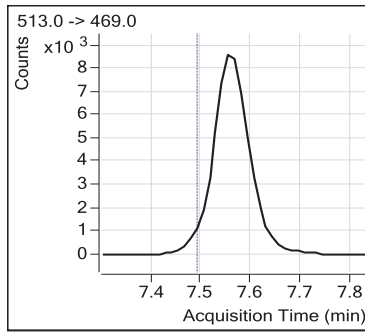
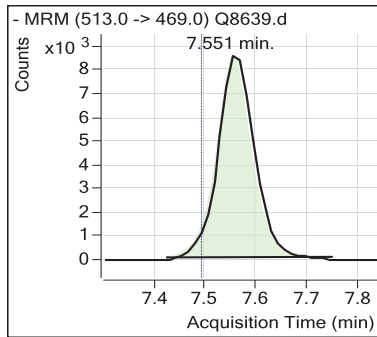
13C2-PFDA



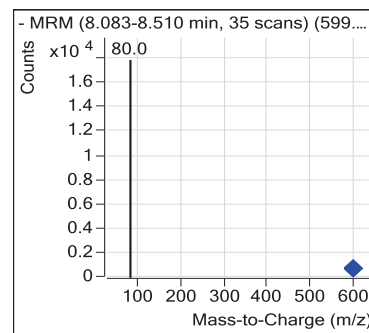
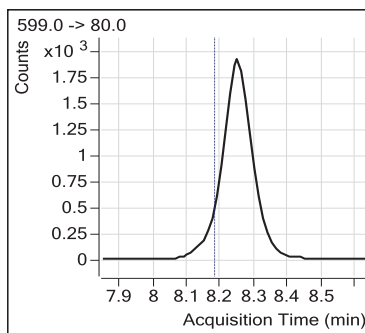
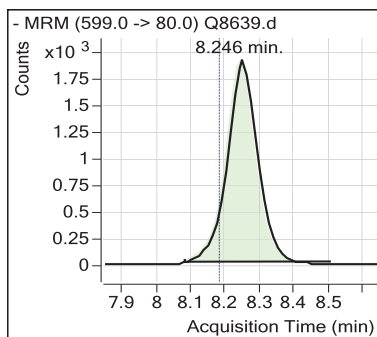
7.56  
7

### Perfluorinated Compounds by LC/MS/MS.

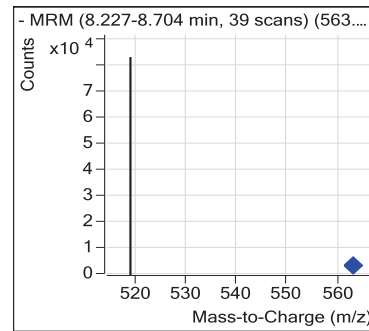
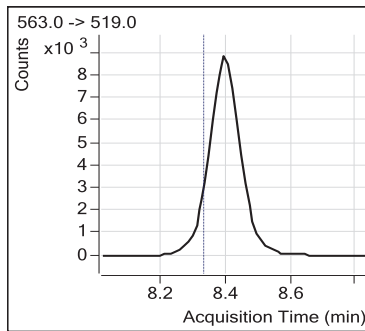
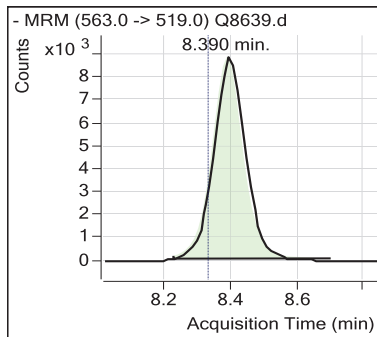
PFDA



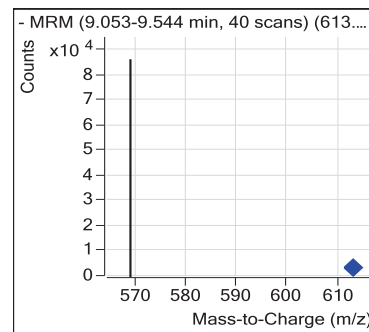
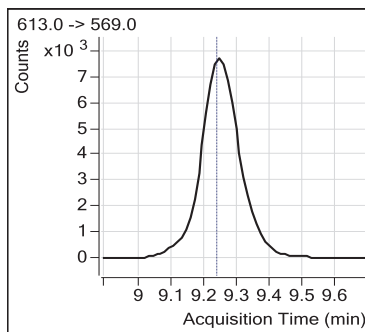
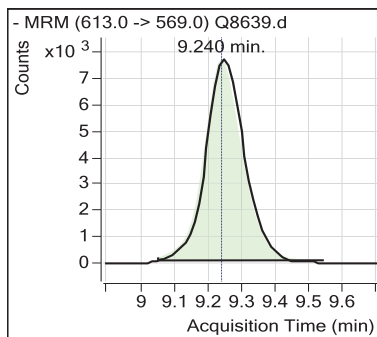
PFDS



PFUnDA



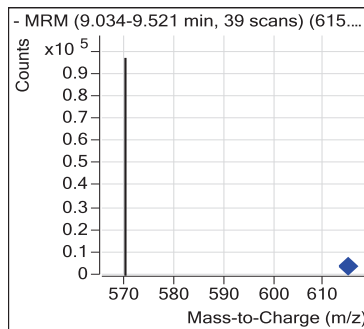
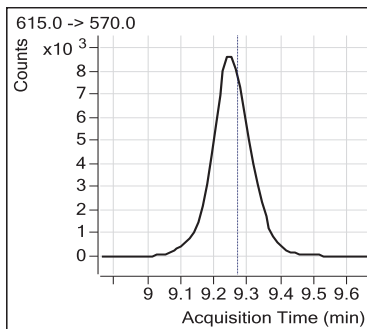
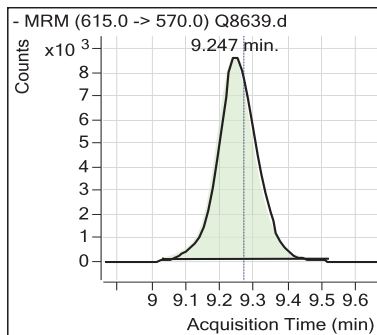
PFDoDA



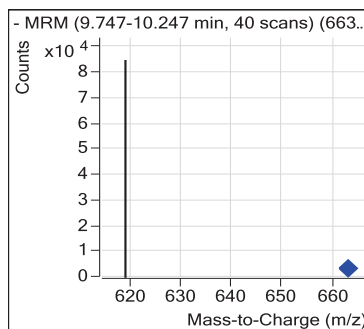
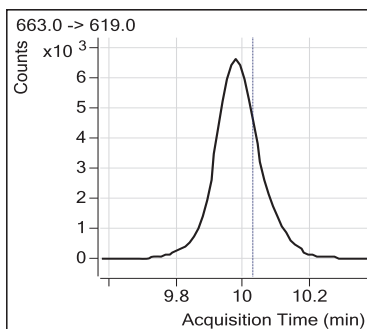
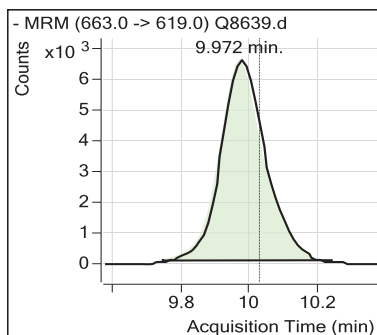
7.56

### Perfluorinated Compounds by LC/MS/MS.

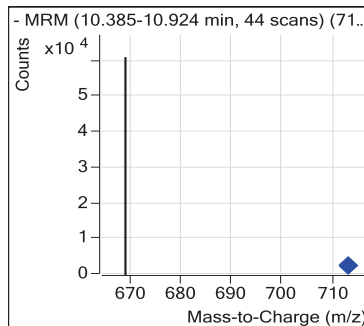
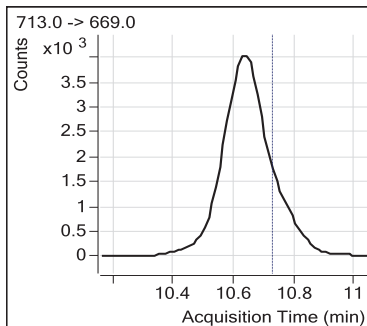
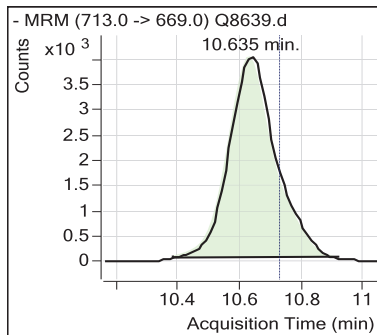
13C2-PFDoDA



PFTTrDA



PFTeDA



7.5.6  
7

### Perfluorinated Compounds by LC/MS/MS.

Data File : Q8640.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 15:31  
 Sample Name : IC280-50  
 Vial : Vial 8  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

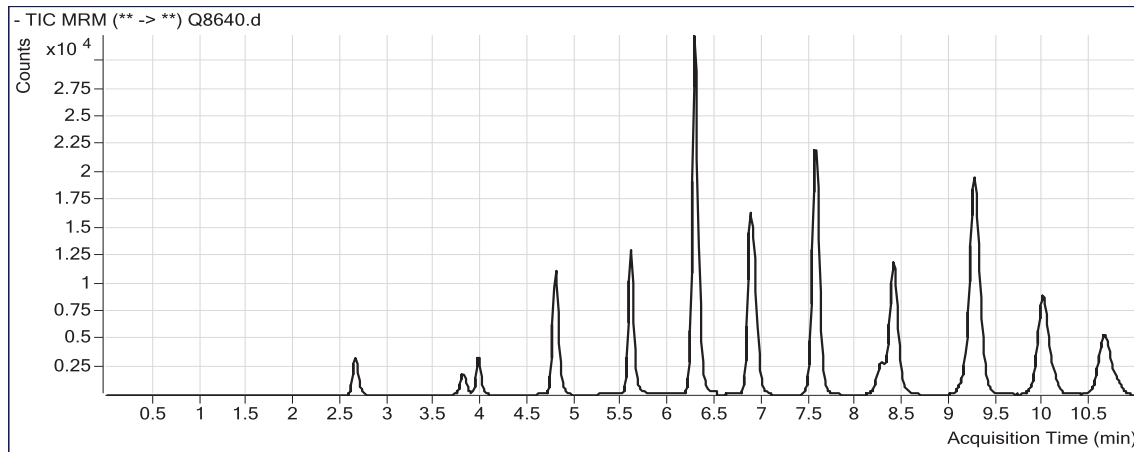
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.271	415.0 -> 370.0	26999	20.000	µg/L	0.025	
13C4-PFOS	6.857	503.0 -> 80.0	12759	20.000	µg/L	0.038	
13C2-PFDoDA	9.247	615.0 -> 570.0	74475	20.000	µg/L	-0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.779	315.0 -> 270.0	22250	50.12	µg/L	0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 250.61%				
13C2-PFDA	7.558	515.0 -> 470.0	57516	49.94	µg/L	0.050	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 249.68%				
<b>Target Compounds</b>							
PFBA	2.652	213.0 -> 169.0	16161	49.883	µg/L	100	
PFPeA	3.799	263.0 -> 219.0	8057	49.765	µg/L	100	
PFBS	3.953	299.0 -> 80.0	9318	49.433	µg/L	97	
PFHxA	4.783	313.0 -> 269.0	23304	49.991	µg/L	99	
PFHpA	5.585	363.0 -> 319.0	22522	49.806	µg/L	99	
PFHxS	5.592	399.0 -> 80.0	15456	51.051	µg/L	88	
PFHpS	6.256	449.0 -> 80.0	19022	50.294	µg/L	100	
PFOA	6.274	413.0 -> 369.0	68380	49.995	µg/L	81	
PFOS	6.860	499.0 -> 80.0	32001	50.145	µg/L	88	
PFNA	6.916	463.0 -> 419.0	40404	49.685	µg/L	100	
PFDA	7.551	513.0 -> 469.0	54551	48.270	µg/L	100	
PFDS	8.246	599.0 -> 80.0	16287	50.245	µg/L	100	
PFUnDA	8.390	563.0 -> 519.0	80411	49.901	µg/L	100	
PFDoDA	9.240	613.0 -> 569.0	83950	50.305	µg/L	100	
PFTrDA	9.972	663.0 -> 619.0	82127	50.639	µg/L	100	
PFTeDA	10.635	713.0 -> 669.0	57956	50.701	µg/L	100	

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

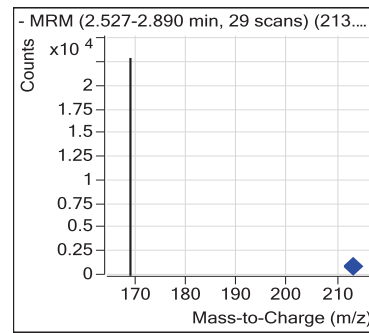
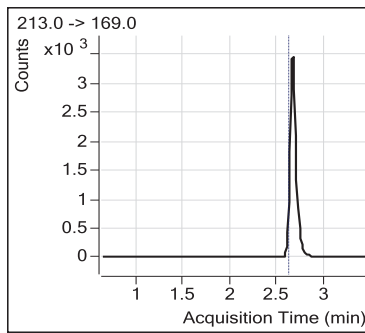
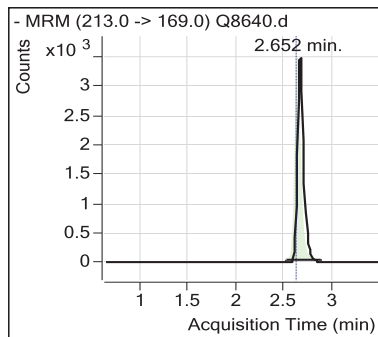
7.5.7  
7

### Perfluorinated Compounds by LC/MS/MS.

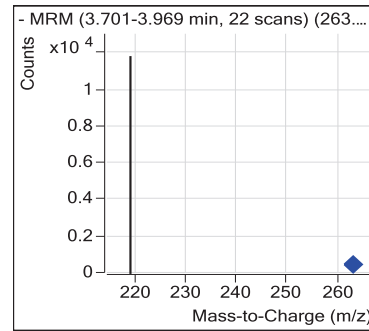
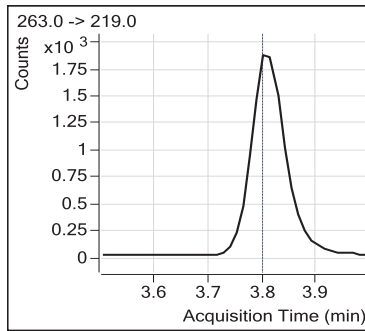
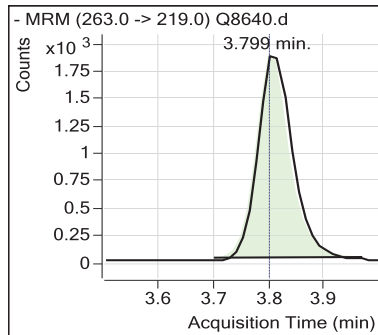
Data File : Q8640.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 15:31  
 Sample Name : IC280-50  
 Vial : Vial 8  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01



PFBA



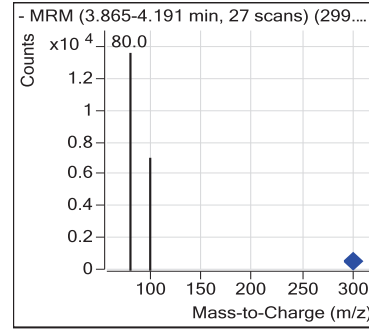
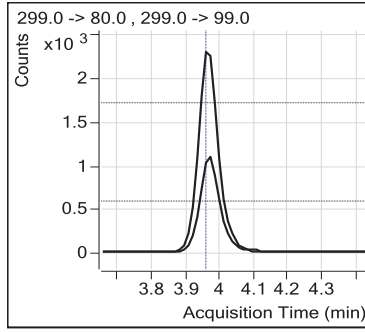
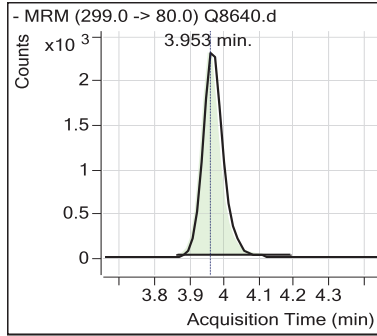
PFPeA



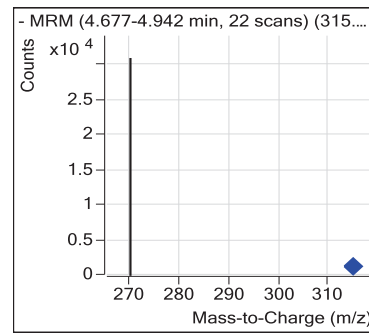
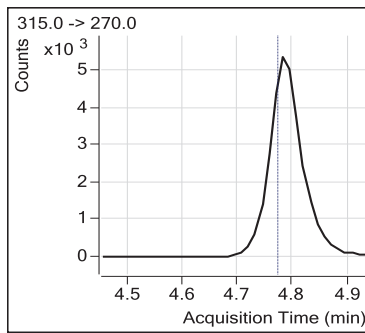
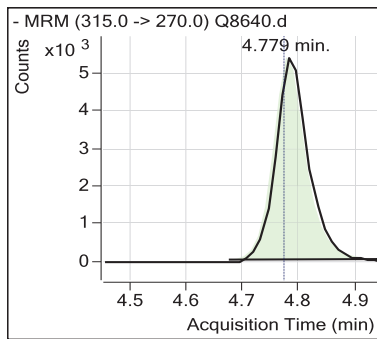
7.5.7  
7

### Perfluorinated Compounds by LC/MS/MS.

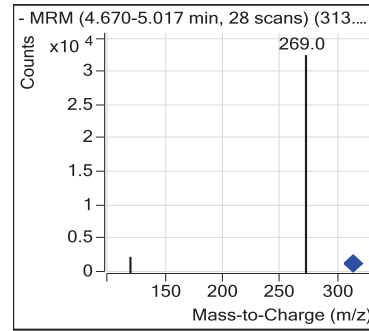
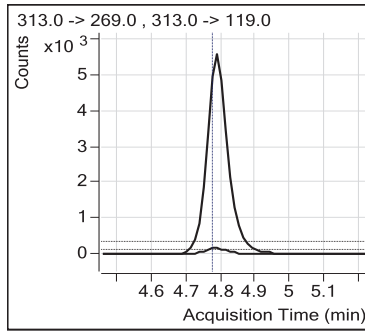
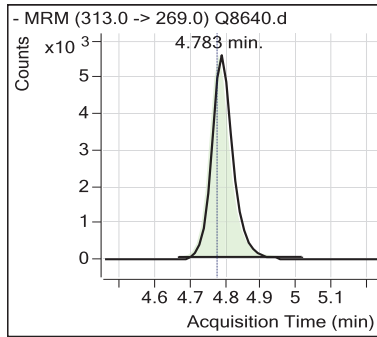
PFBS



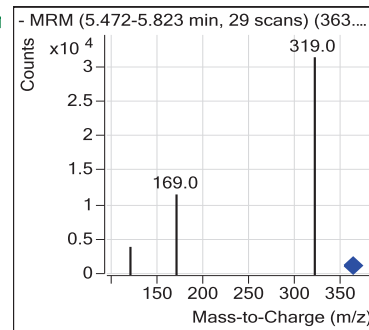
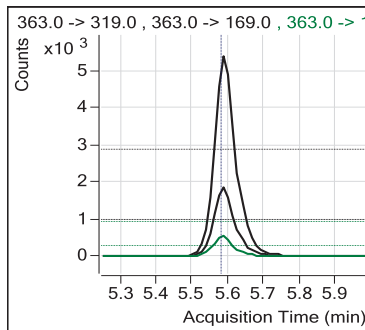
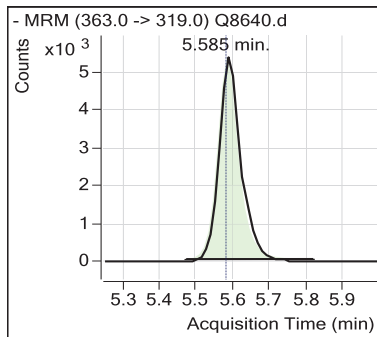
13C2-PFHxA



PFHxA



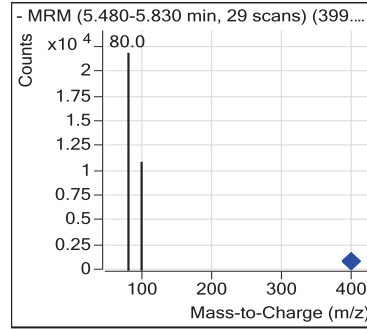
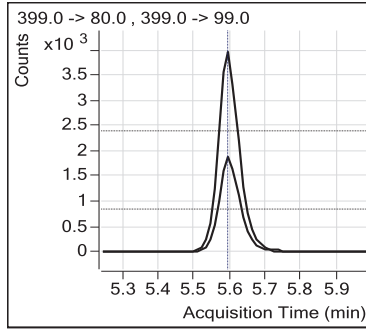
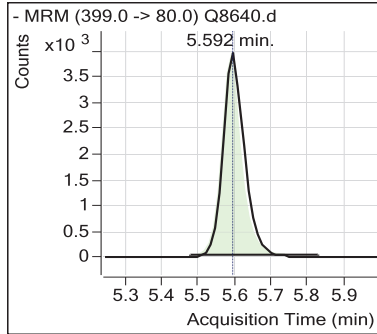
PFHpA



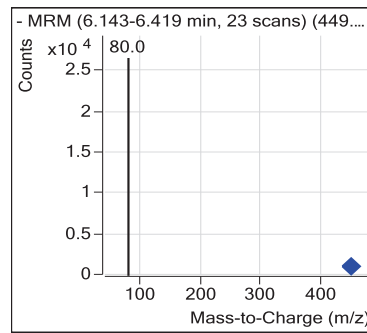
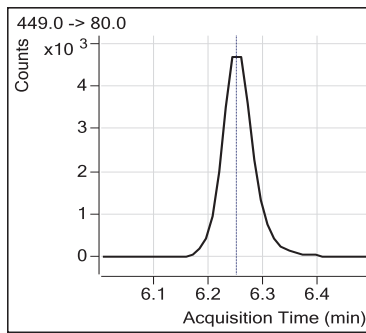
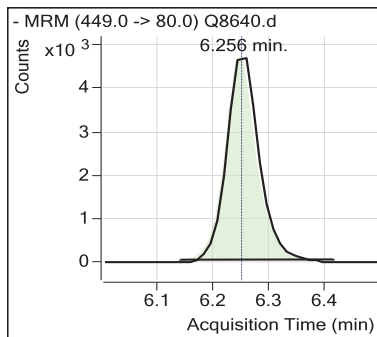
7.5.7  
7

### Perfluorinated Compounds by LC/MS/MS.

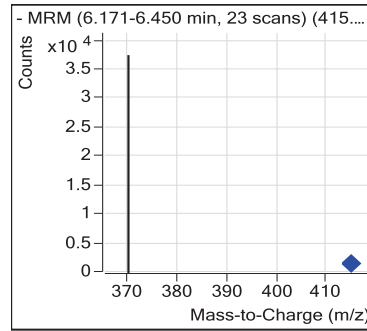
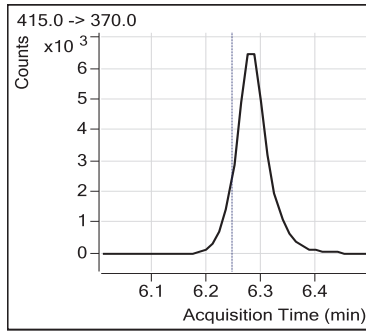
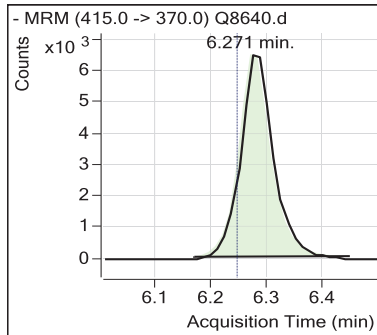
#### PFHxS



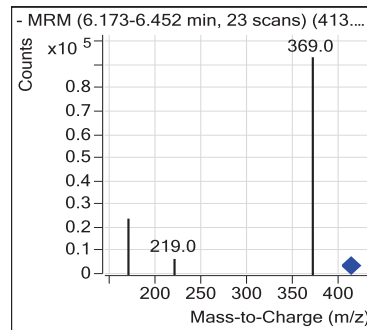
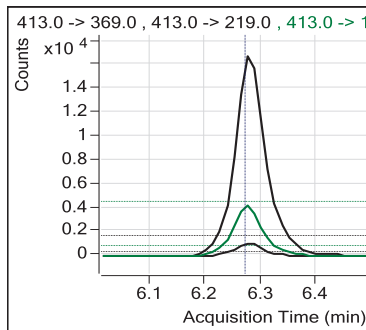
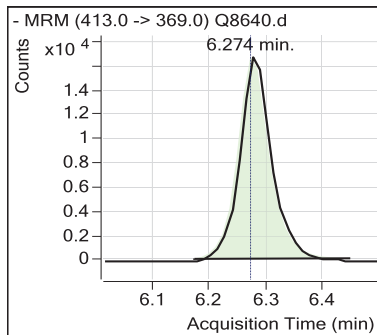
#### PFHpS



#### 13C2-PFOA



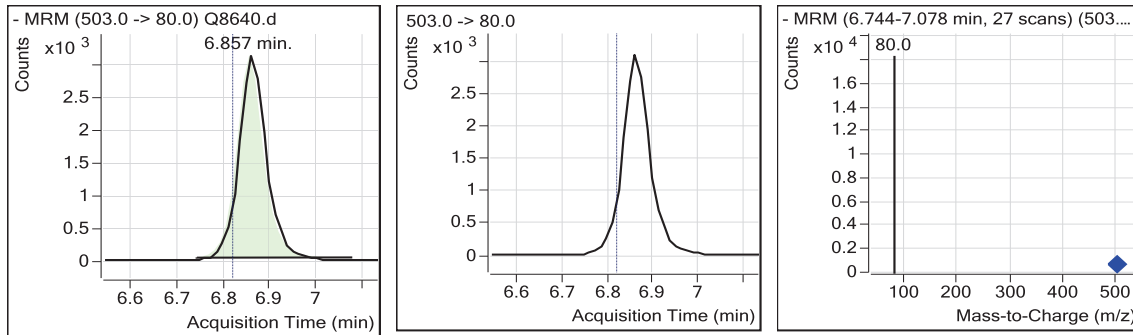
#### PFOA



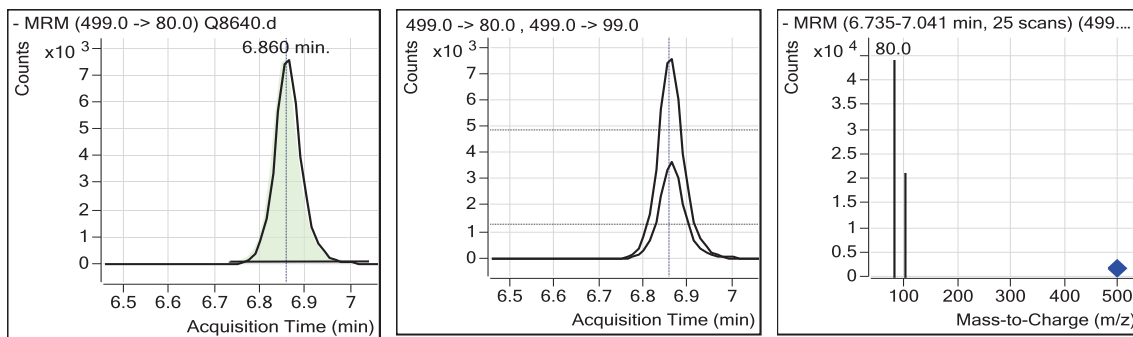
7.5.7  
7

### Perfluorinated Compounds by LC/MS/MS.

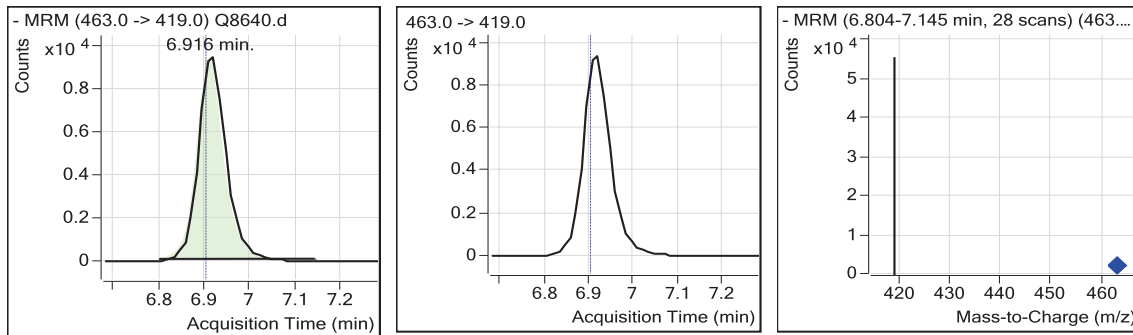
13C4-PFOS



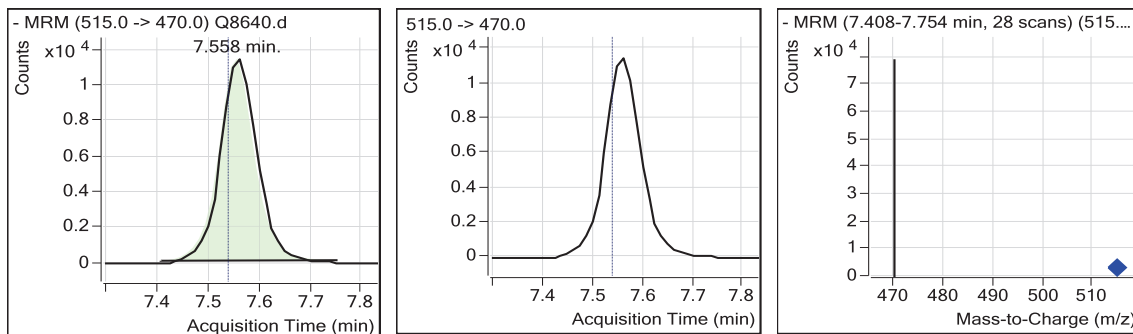
PFOS



PFNA



13C2-PFDA

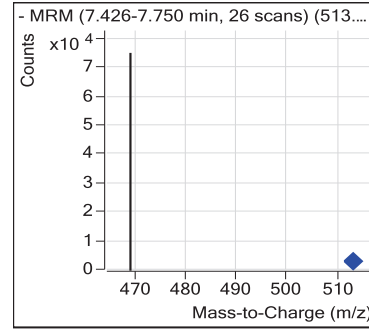
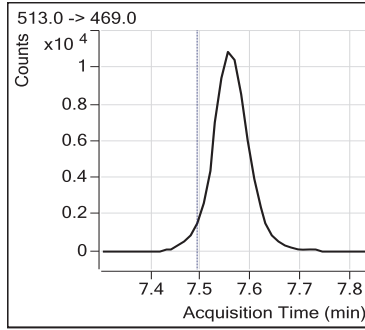
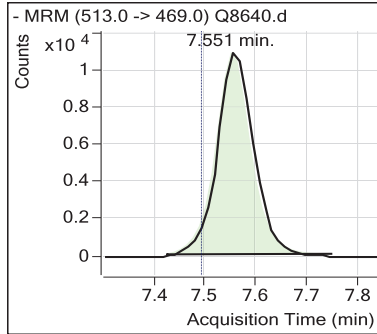


7.5.7  
7

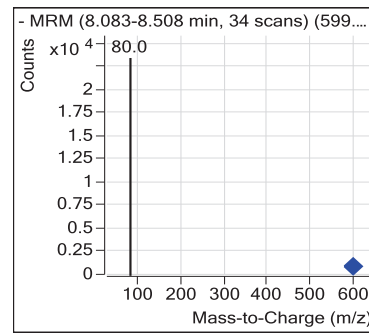
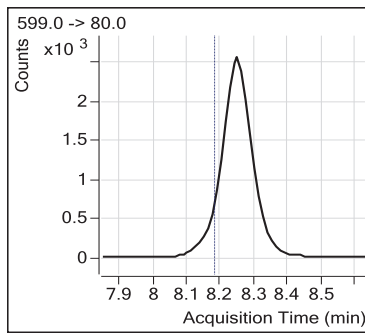
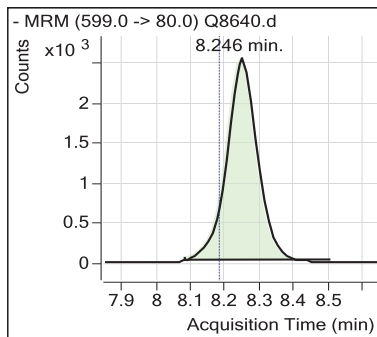


### Perfluorinated Compounds by LC/MS/MS.

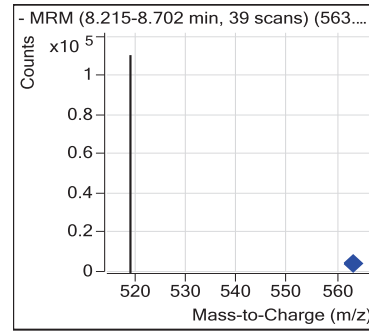
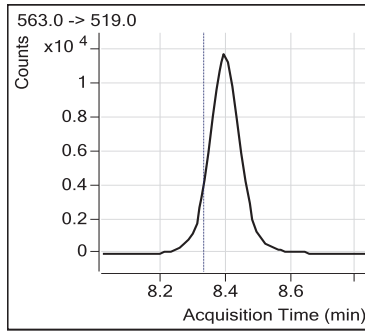
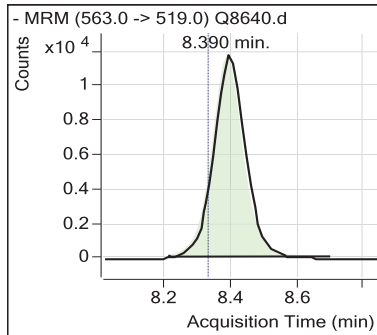
PFDA



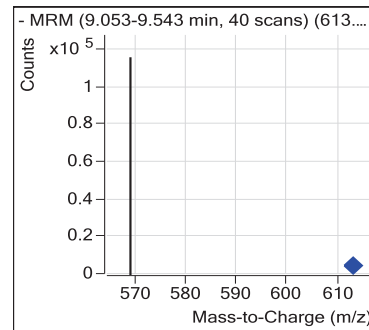
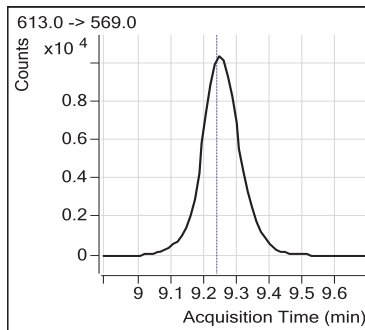
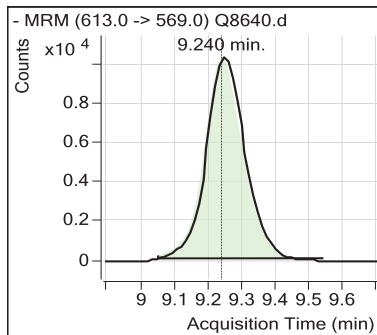
PFDS



PFUnDA



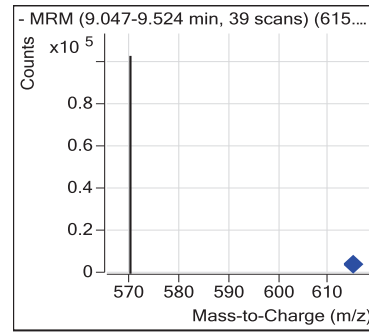
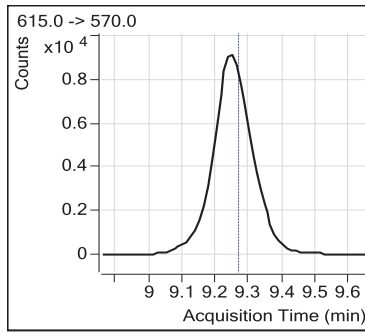
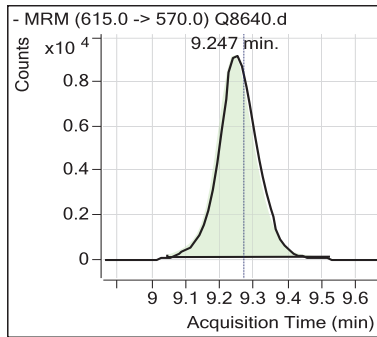
PFDoDA



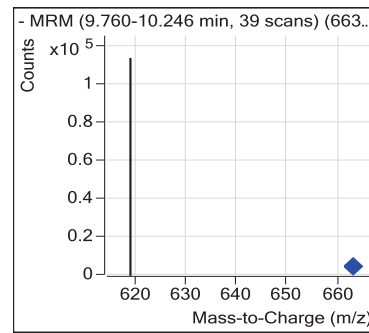
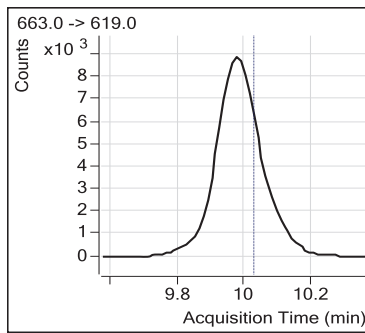
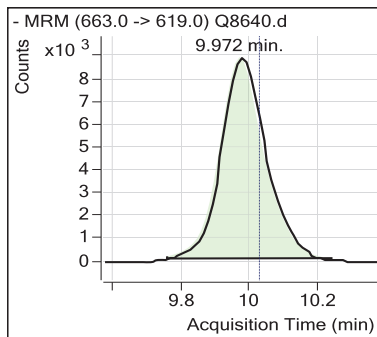
7.5.7  
7

### Perfluorinated Compounds by LC/MS/MS.

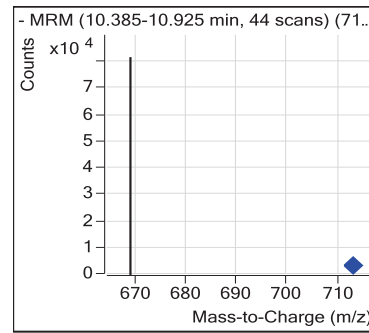
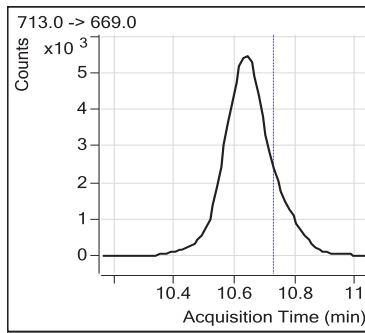
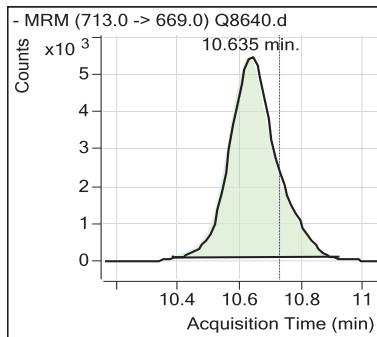
13C2-PFDoDA



PFTrDA



PFTeDA



7.5.7  
7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Naresh Jiawan  
 12/09/14 16:00

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8641.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 15:51  
 Sample Name : ICV280-20  
 Vial : Vial 9  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
13C2-PFOA	6.271	415.0 -> 370.0	30356	20.000	µg/L	0.025
13C4-PFOS	6.857	503.0 -> 80.0	12942	20.000	µg/L	0.038
13C2-PFDoDA	9.234	615.0 -> 570.0	69947	20.000	µg/L	-0.038

**System Monitoring Compounds**

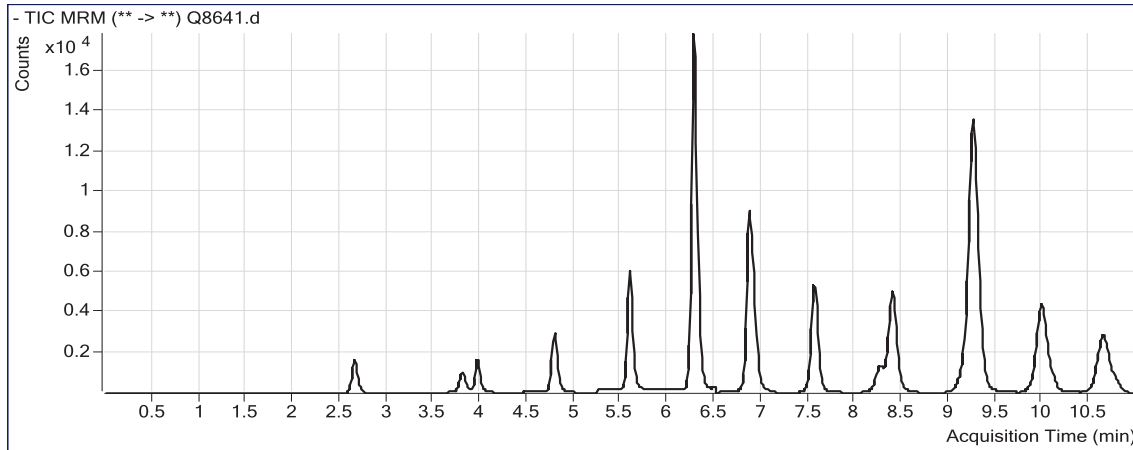
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
PFBA	2.652	213.0 -> 169.0	7698	21.132	µg/L	100
PFPeA	3.811	263.0 -> 219.0	3784	20.786	µg/L	100
PFBS	3.953	299.0 -> 80.0	4350	22.749	µg/L	96
PFHxA	4.783	313.0 -> 269.0	11197	21.363	µg/L	100
PFHpA	5.585	363.0 -> 319.0	10563	20.775	µg/L	98
PFHxS	5.592	399.0 -> 80.0	6570	21.395	µg/L	86
PFOA	6.274	413.0 -> 369.0	32080	20.861	µg/L	81
PFOS	6.860	499.0 -> 80.0	13607	21.021	µg/L	88
PFNA	6.916	463.0 -> 419.0	17806	19.475	µg/L	100
PFDA	7.551	513.0 -> 469.0	25383	23.915	µg/L	100
PFDS	8.246	599.0 -> 80.0	7213	23.692	µg/L	100
PFUnDA	8.390	563.0 -> 519.0	33780	22.320	µg/L	100
PFDoDA	9.240	613.0 -> 569.0	37734	24.075	µg/L	100
PFTrDA	9.972	663.0 -> 619.0	40000	26.260	µg/L	100
PFTeDA	10.623	713.0 -> 669.0	30022	27.964	µg/L	100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

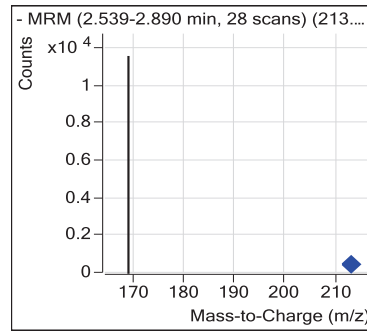
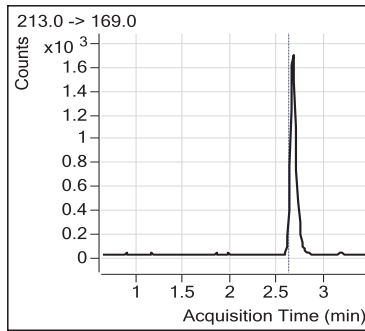
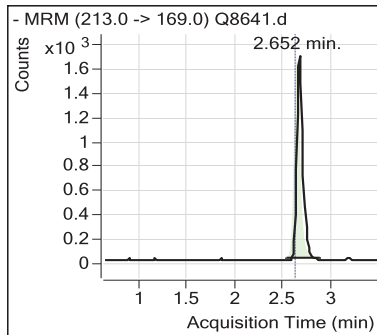
7.5.8  
7

### Perfluorinated Compounds by LC/MS/MS.

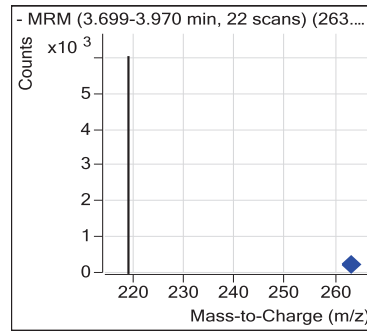
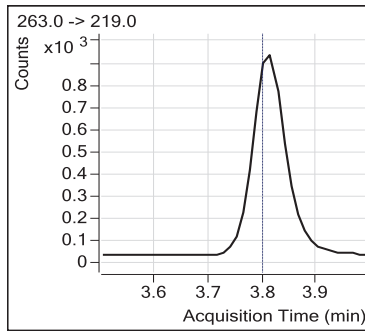
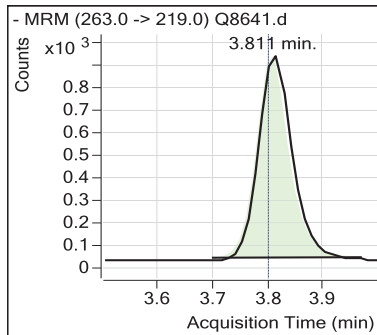
Data File : Q8641.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-08 15:51  
Sample Name : ICV280-20  
Vial : Vial 9  
Sample Info : OP54098,SQ280,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01



#### PFBA



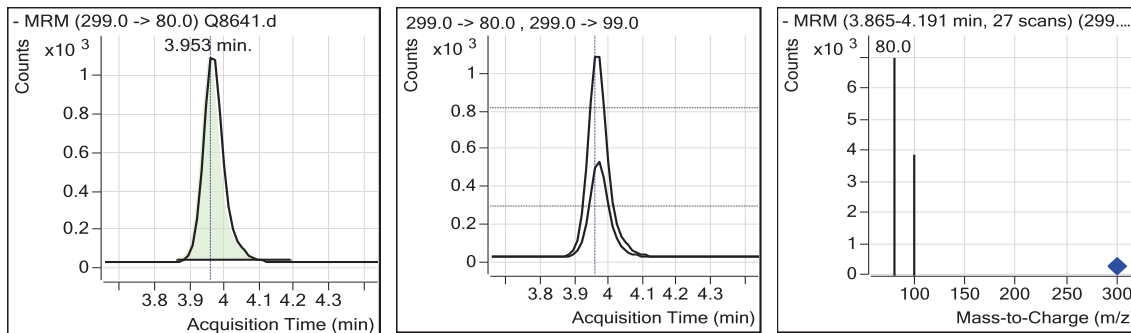
#### PFPeA



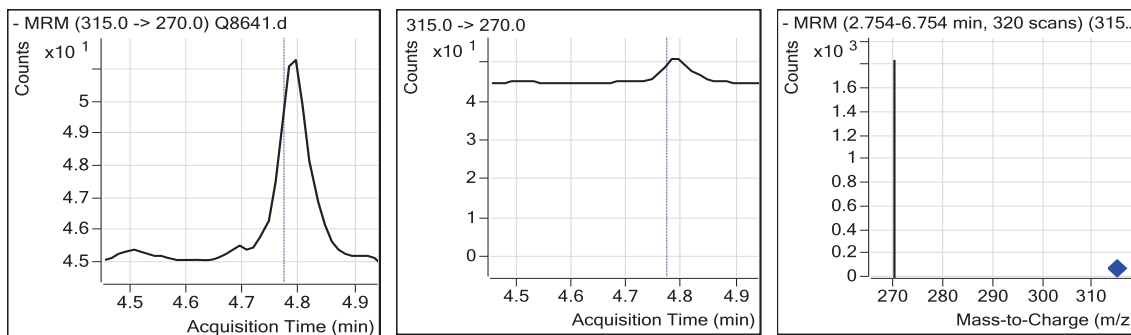
7.5.8  
7

## Perfluorinated Compounds by LC/MS/MS.

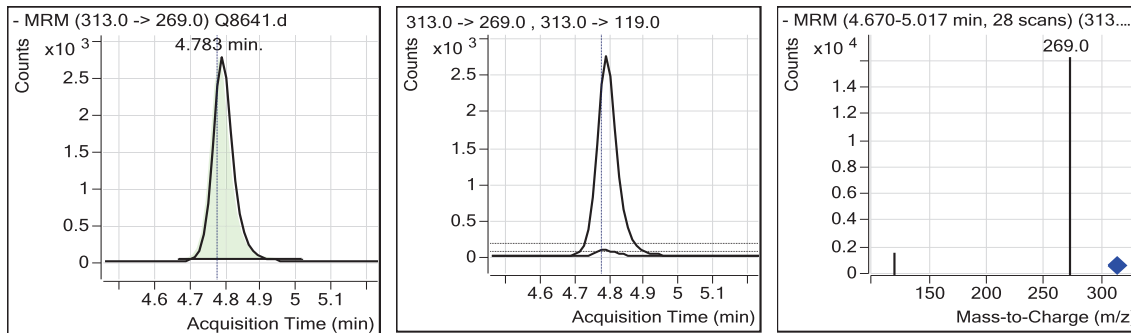
PFBS



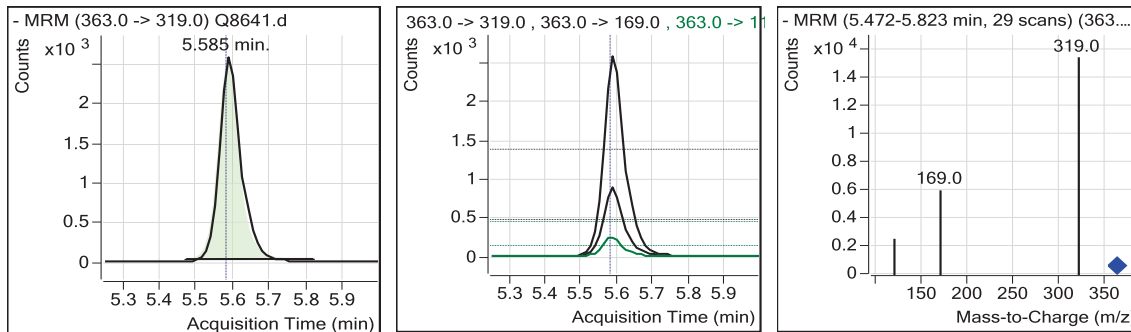
13C2-PFHxA



PFHxA



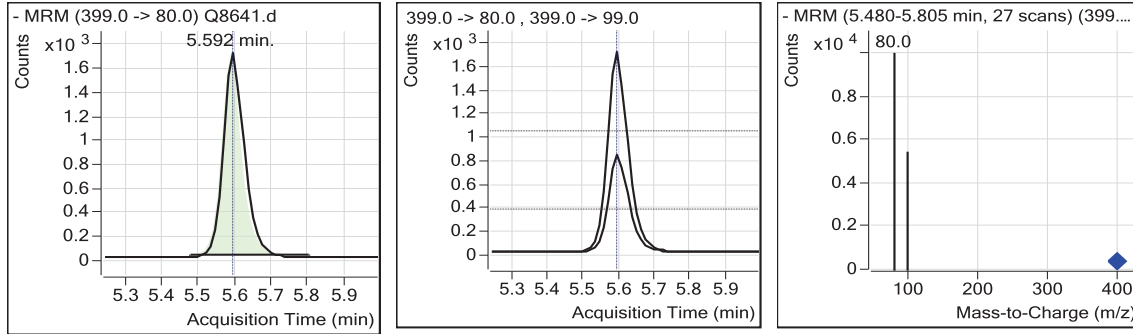
PFHpA



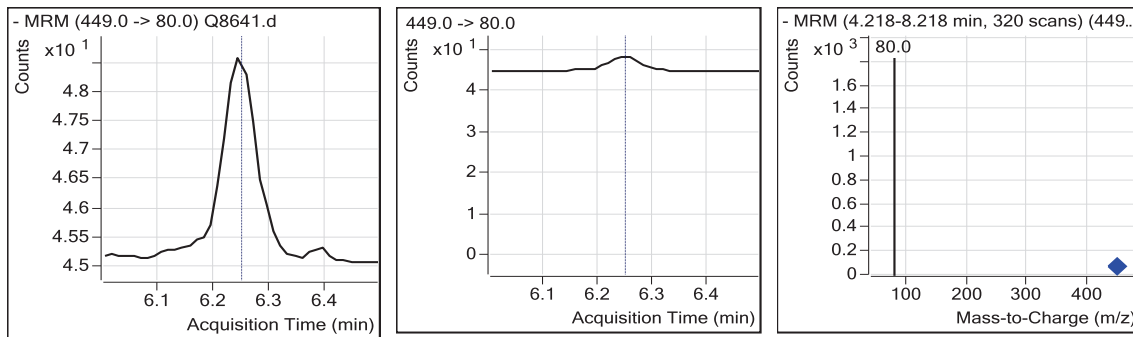
7.5.8  
7

### Perfluorinated Compounds by LC/MS/MS.

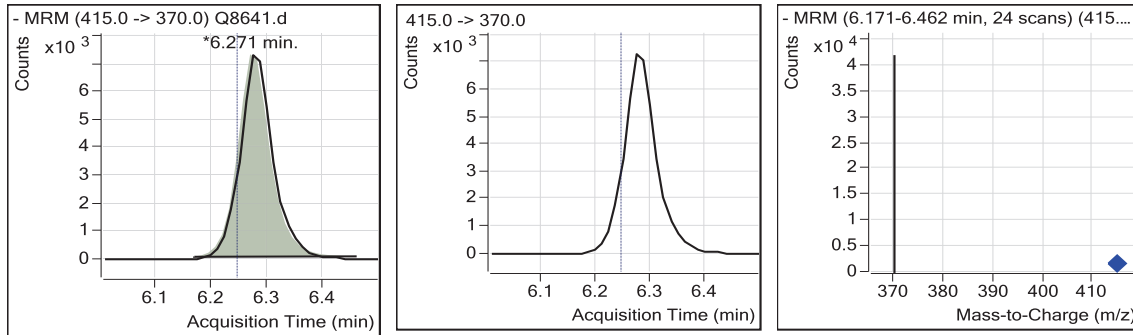
PFHxS



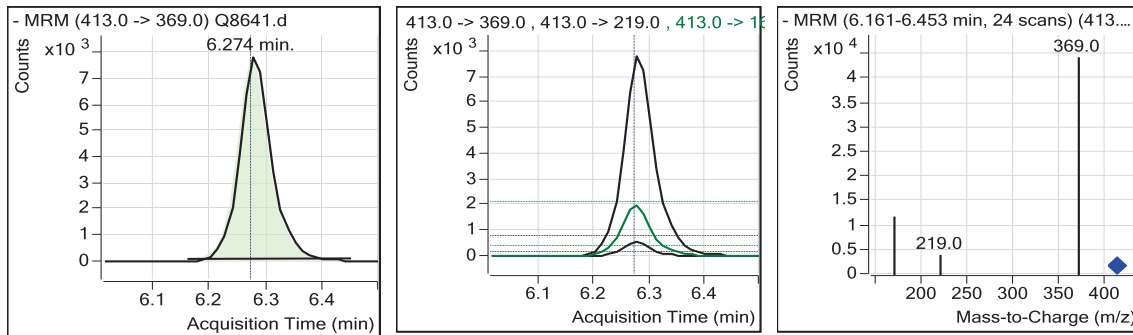
PFHpS



13C2-PFOA



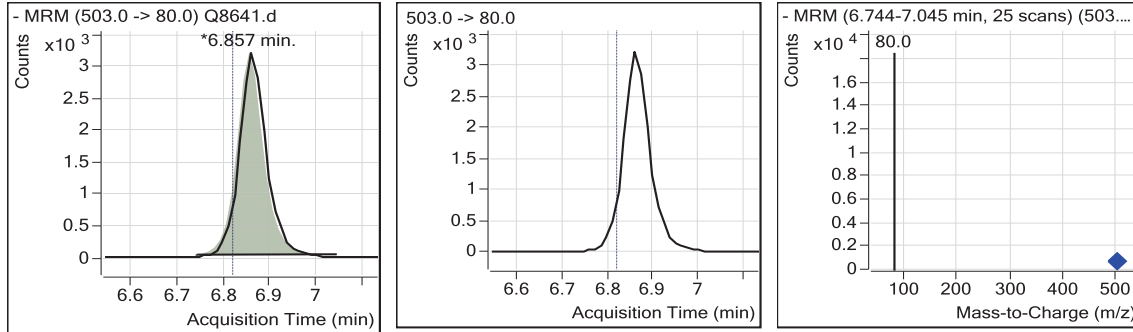
PFOA



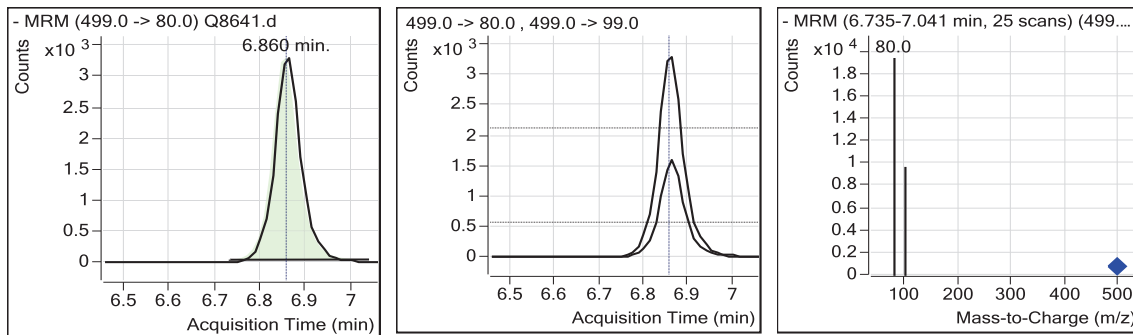
7.5.8  
7

### Perfluorinated Compounds by LC/MS/MS.

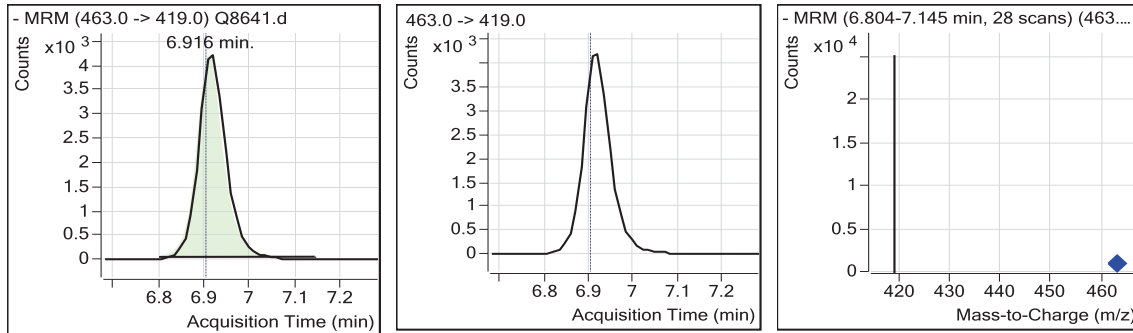
#### 13C4-PFOS



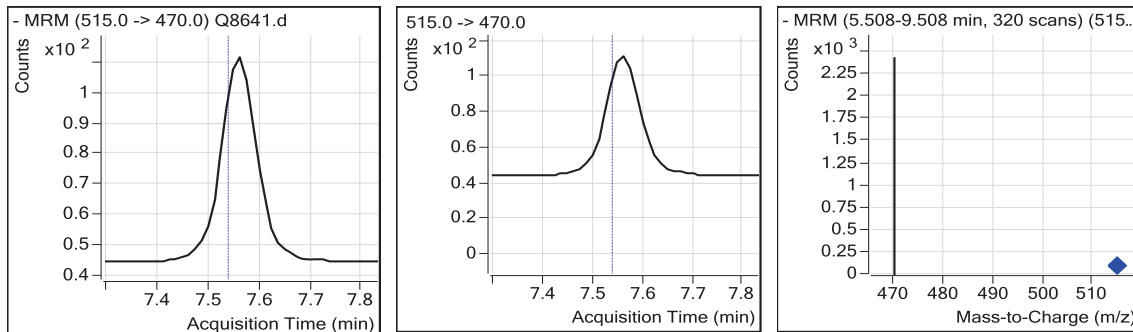
#### PFOS



#### PFNA



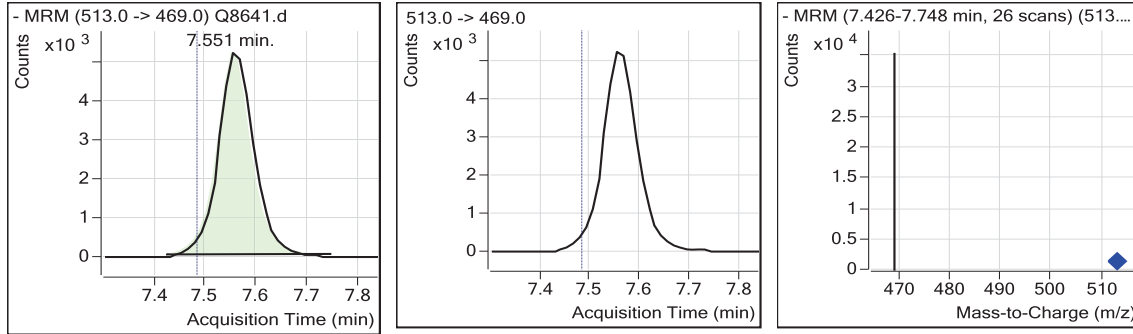
#### 13C2-PFDA



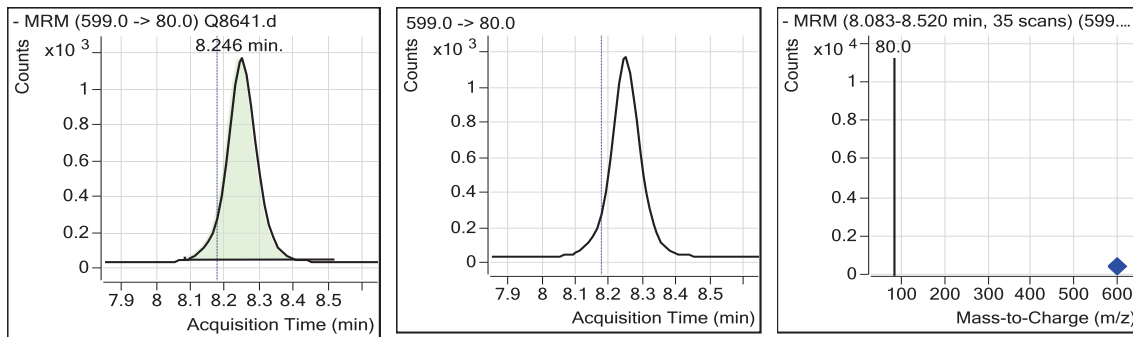
7.5.8  
7

### Perfluorinated Compounds by LC/MS/MS.

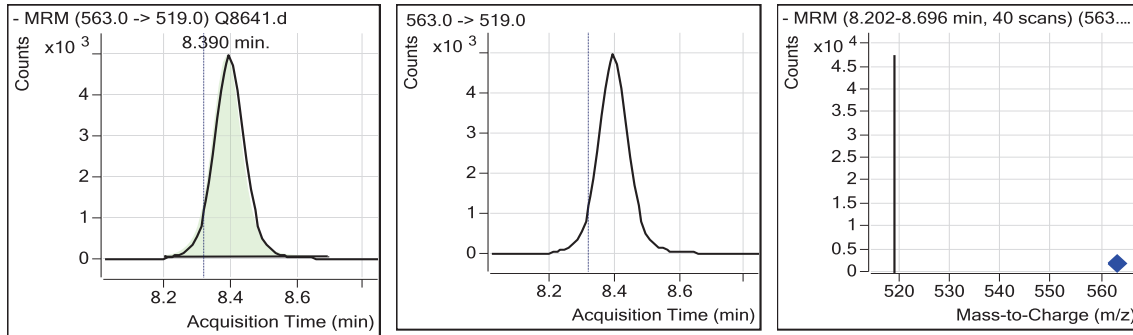
PFDA



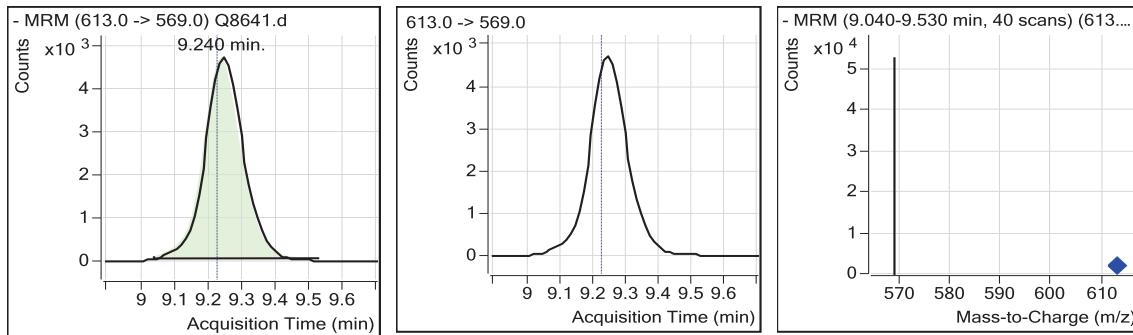
PFDS



PFUnDA



PFDoDA

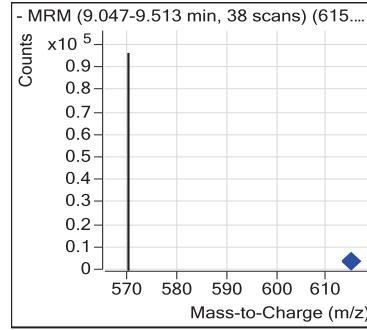
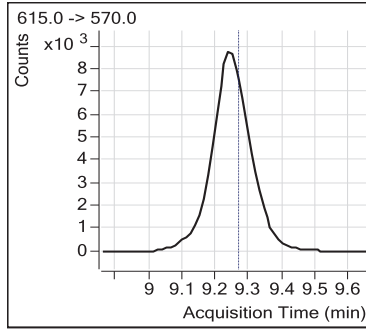
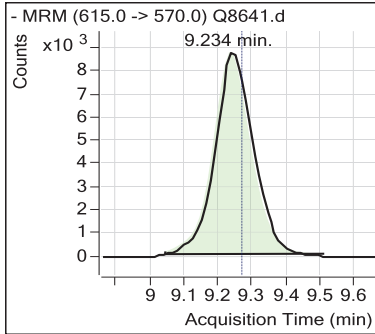


7.5.8  
7

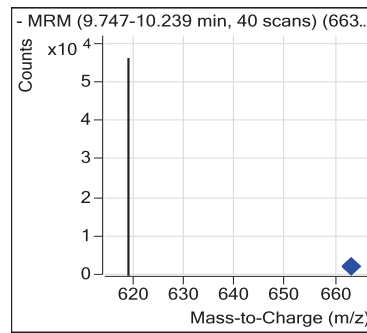
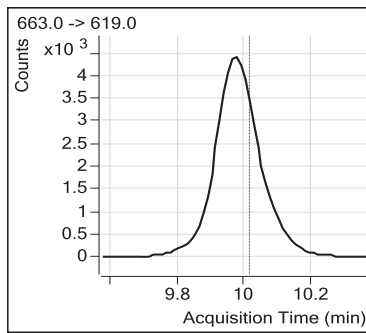
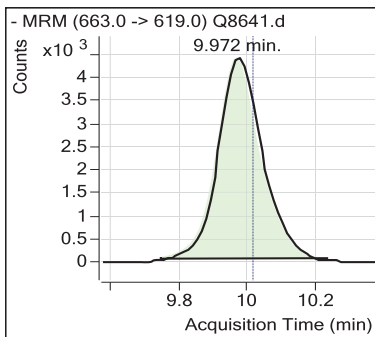


### Perfluorinated Compounds by LC/MS/MS.

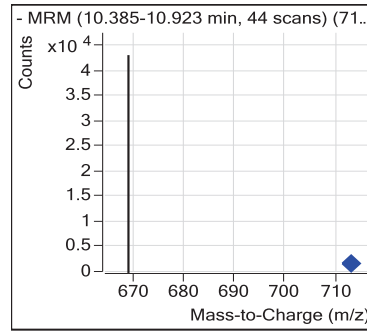
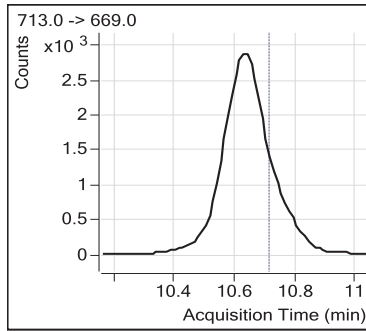
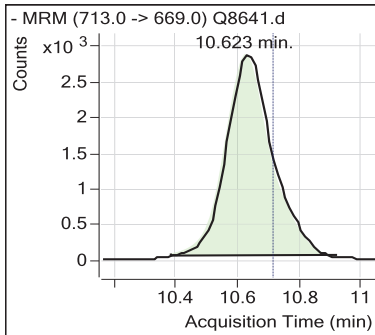
13C2-PFDoDA



PFTTrDA



PFTeDA



7.5.8  
7

# Manual Integration Approval Summary

Sample Number: SQ280-ICV280      Method: EPA 537 MOD  
Lab FileID: Q8641.D      Analyst approved: 12/09/14 11:29 Mike Eger  
Injection Time: 12/08/14 15:51      Supervisor approved: 12/09/14 16:00 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
13C2-PFOA			6.27	Split peak
13C4-PFOS			6.86	Split peak

7.5.8.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Naresh Jiawan  
 12/09/14 16:00

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8642.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-08 16:10  
 Sample Name : ICV280-20  
 Vial : Vial 10  
 Sample Info : OP54098,SQ280,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ280.batch.bin  
**Last Calib Update** : 2014-12-09 08:01

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<b>Internal Standards</b>						
13C2-PFOA	6.271	415.0 -> 370.0	30950	20.000	µg/L	0.025
13C4-PFOS	6.857	503.0 -> 80.0	13135	20.000	µg/L	0.038
13C2-PFDoDA	9.234	615.0 -> 570.0	71468	20.000	µg/L	-0.038

**System Monitoring Compounds**

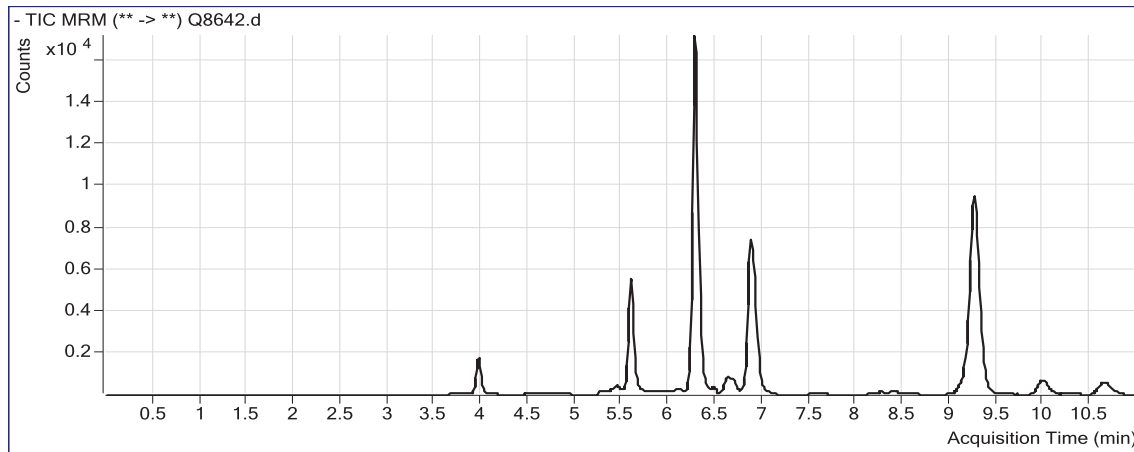
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
PFBS	3.966	299.0 -> 80.0	4524	23.312	µg/L	97
PFHpA	5.585	363.0 -> 319.0	9409	18.151	µg/L	99
PFHxS	5.592	399.0 -> 80.0	6867	22.032	µg/L m	88
PFOA	6.274	413.0 -> 369.0	29724	18.958	µg/L	81
PFOS	6.860	499.0 -> 80.0	13071	19.895	µg/L m	99
PFNA	6.916	463.0 -> 419.0	17821	19.117	µg/L	100
PFDS	8.246	599.0 -> 80.0	0	0.000	µg/L m	1
PFUnDA	8.390	563.0 -> 519.0	0	0.000	µg/L m	1
PFDoDA	9.240	613.0 -> 569.0	0	0.000	µg/L m	1
PFTTrDA	9.972	663.0 -> 619.0	0	0.000	µg/L m	1
PFTeDA	10.635	713.0 -> 669.0	0	0.000	µg/L m	1

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

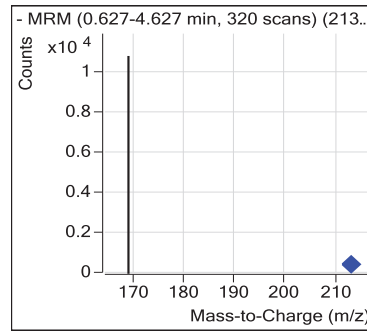
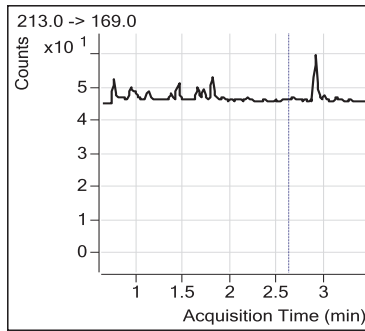
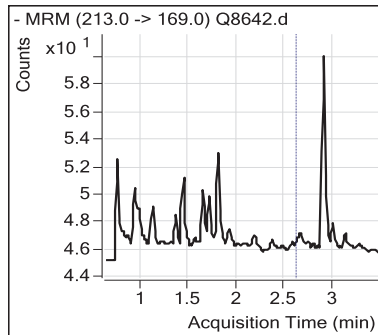
7.5.9  
7

### Perfluorinated Compounds by LC/MS/MS.

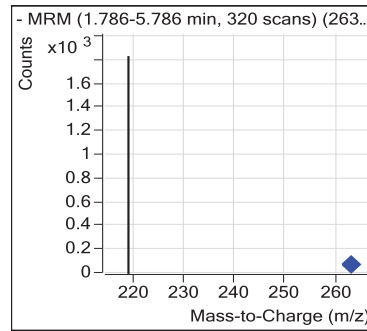
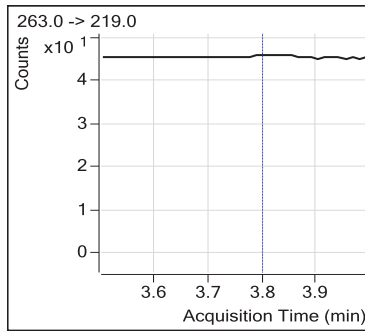
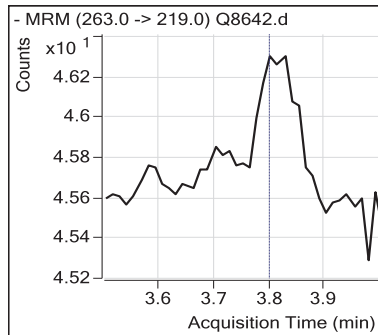
Data File : Q8642.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-08 16:10  
Sample Name : ICV280-20  
Vial : Vial 10  
Sample Info : OP54098,SQ280,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ280.batch.bin  
Last Calib Update : 2014-12-09 08:01



#### PFBA



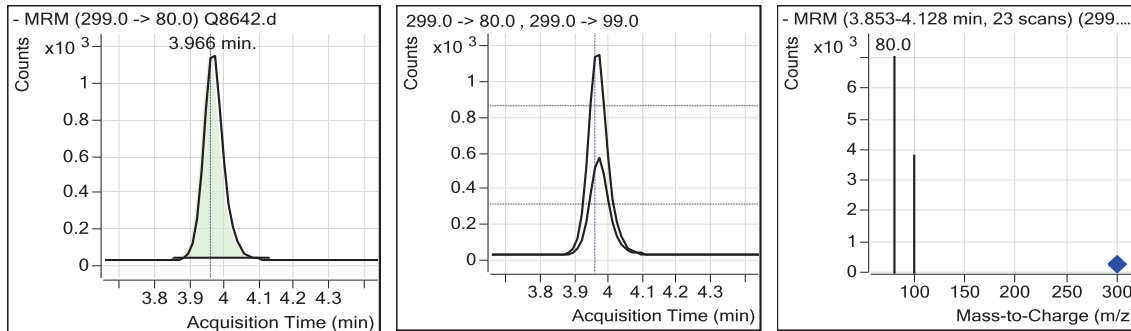
#### PFPeA



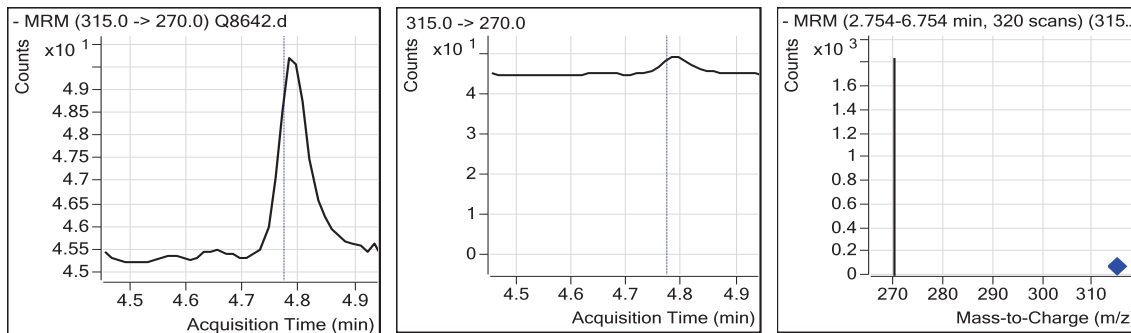
7.5.9  
7

### Perfluorinated Compounds by LC/MS/MS.

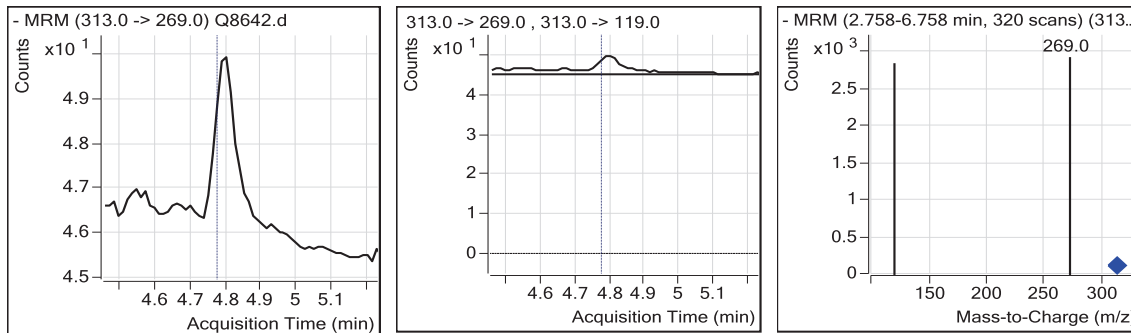
PFBS



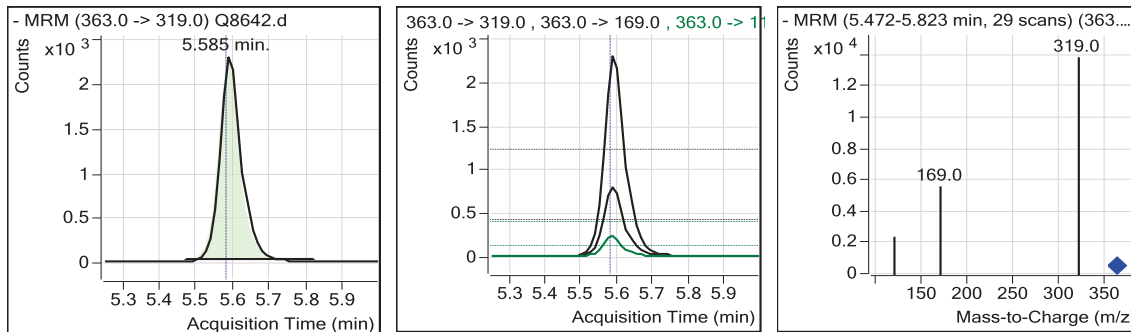
13C2-PFHxA



PFHxA



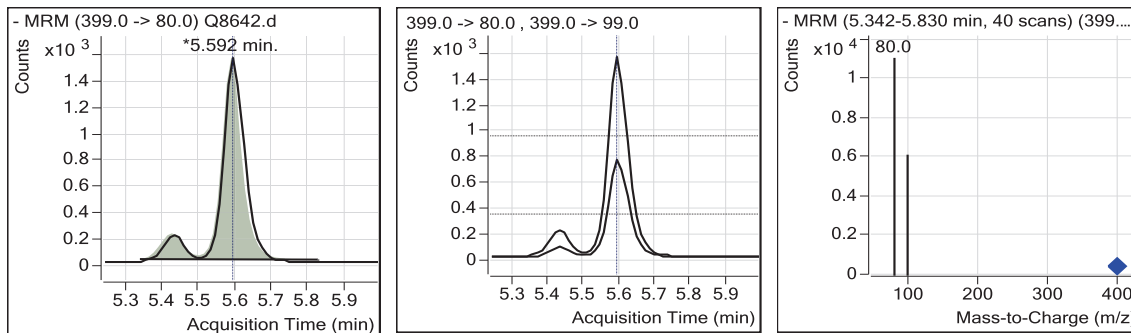
PFHpA



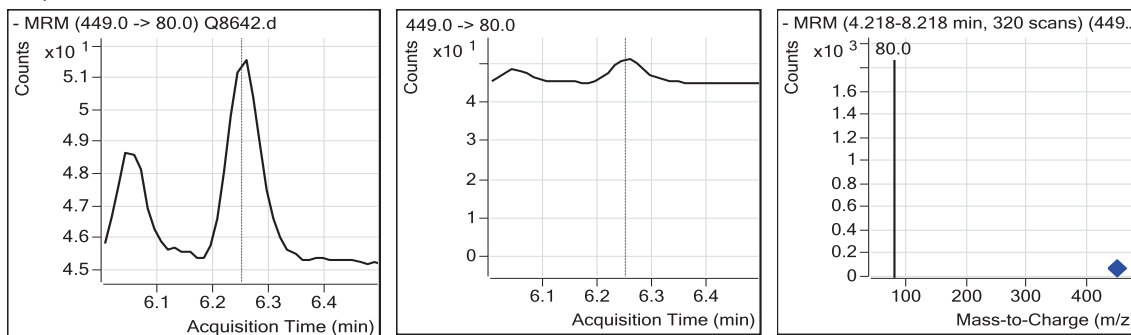
7.59  
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### Perfluorinated Compounds by LC/MS/MS.

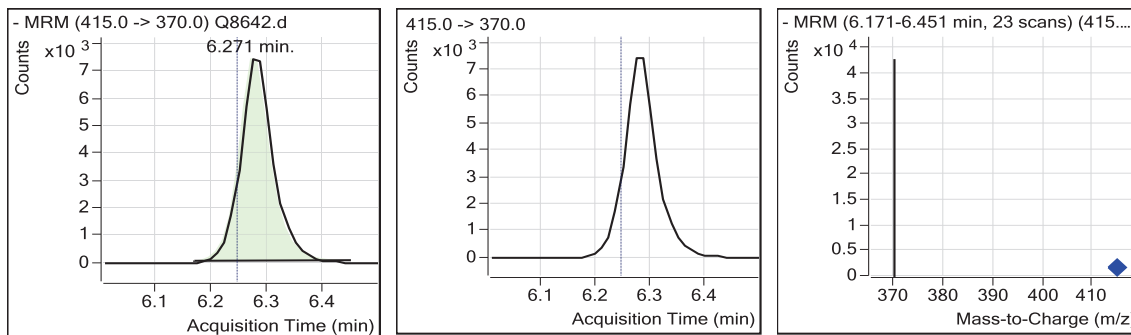
PFHxS



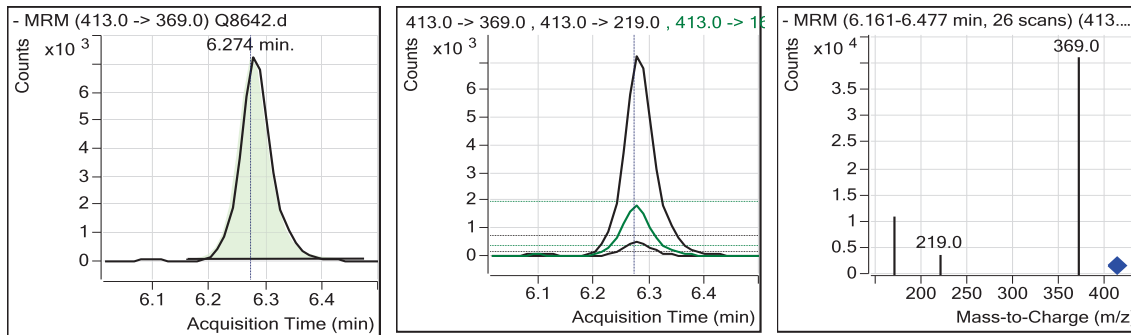
PFHpS



13C2-PFOA



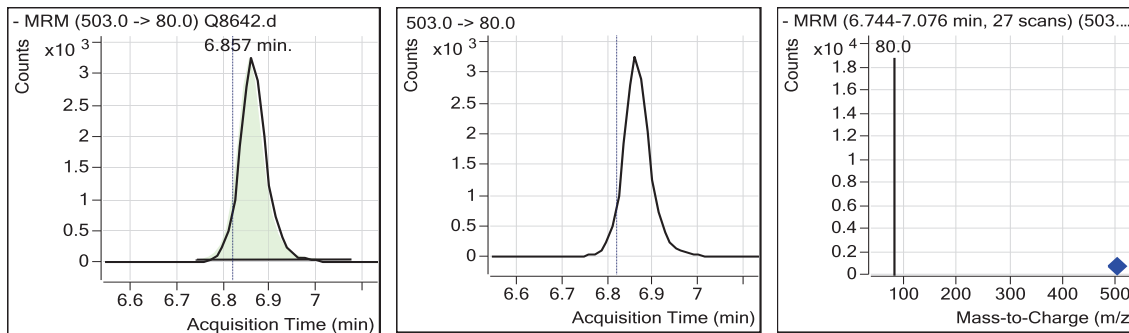
PFOA



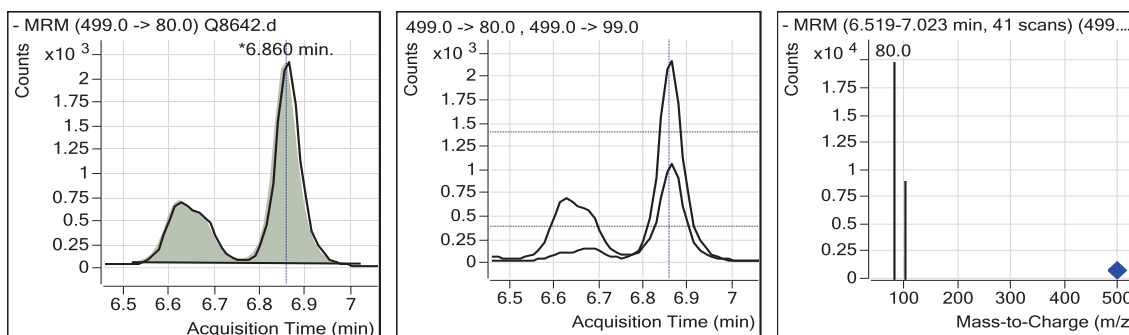
7.59

## Perfluorinated Compounds by LC/MS/MS.

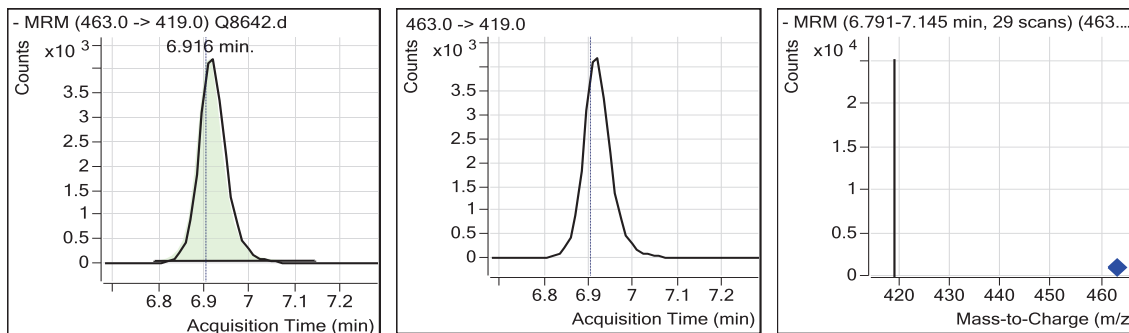
### 13C4-PFOS



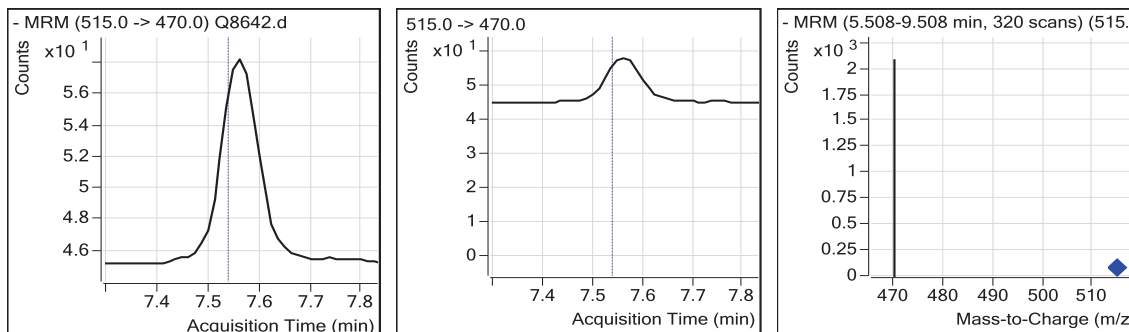
### PFOS



### PFNA



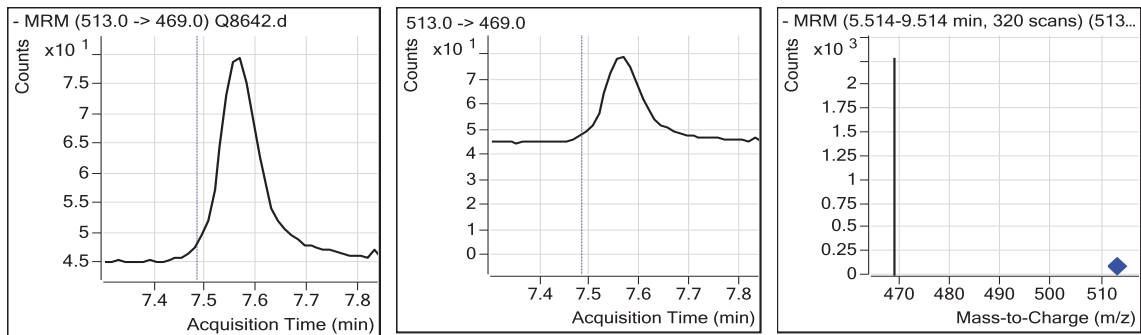
### 13C2-PFDA



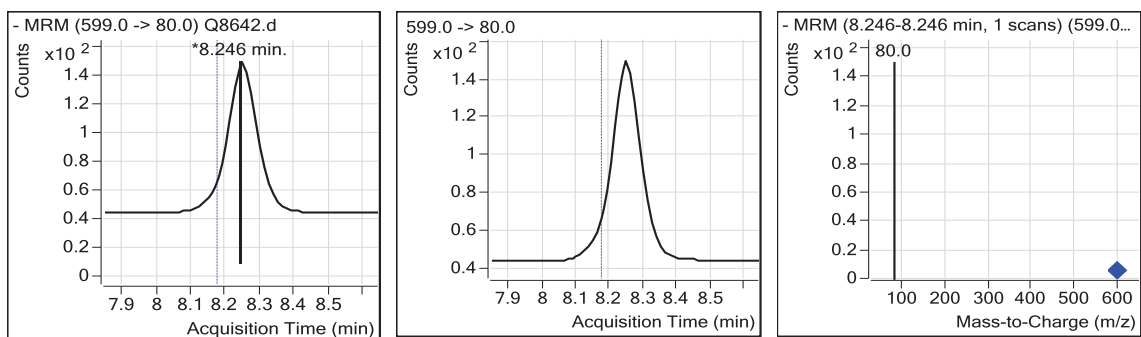
7.59  
7

## Perfluorinated Compounds by LC/MS/MS.

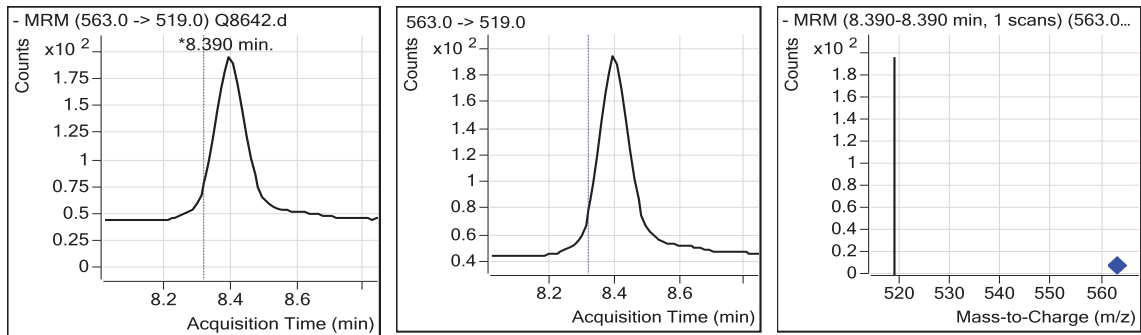
PFDA



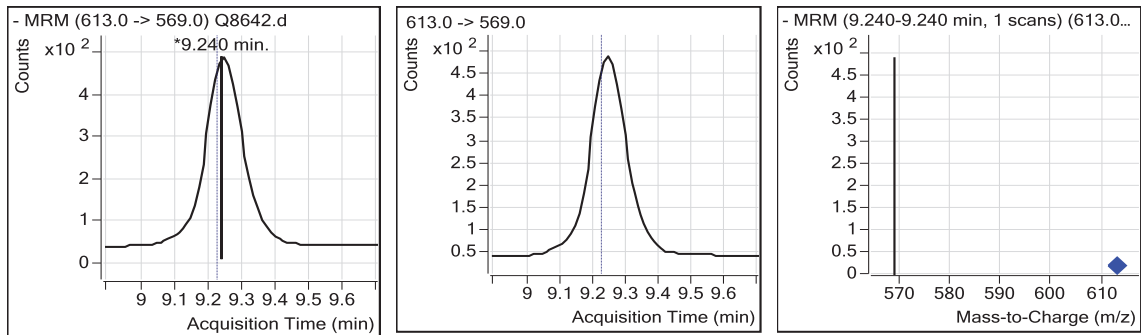
PFDS



PFUnDA



PFDODA

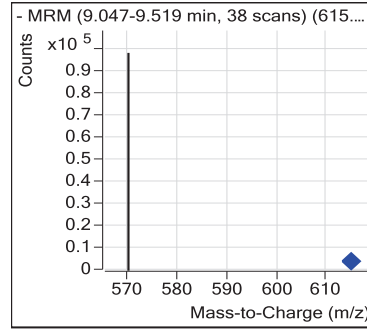
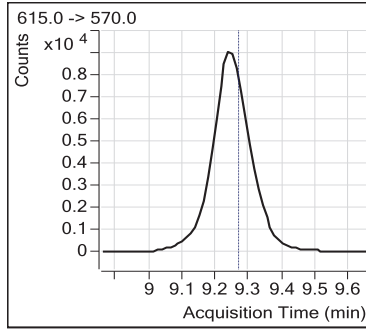
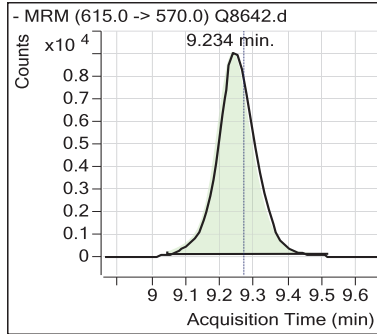


7.5.9

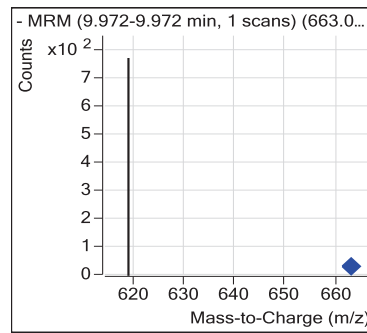
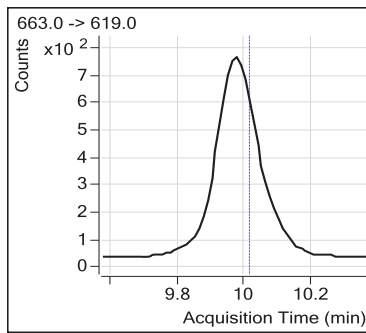
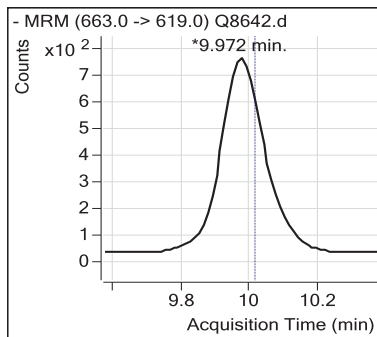


### Perfluorinated Compounds by LC/MS/MS.

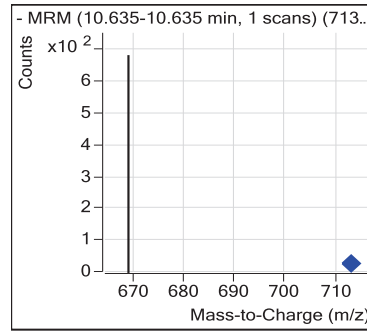
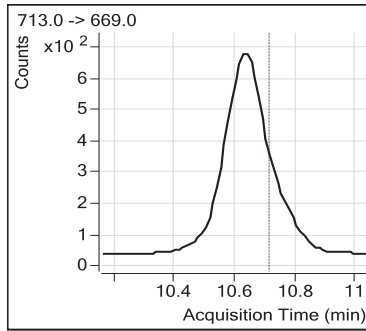
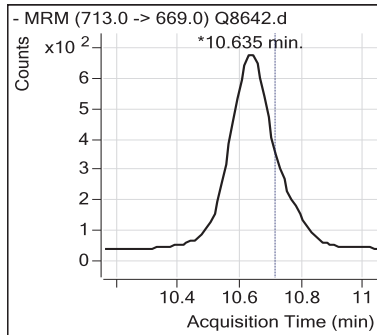
13C2-PFDoDA



PFTTrDA



PFTeDA



7.5.9  
7

# Manual Integration Approval Summary

Sample Number: SQ280-ICV280      Method: EPA 537 MOD  
Lab FileID: Q8642.D      Analyst approved: 12/09/14 11:29 Mike Eger  
Injection Time: 12/08/14 16:10      Supervisor approved: 12/09/14 16:00 Naresh Jiawan

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		5.59	Split peak
Perfluorooctanesulfonic acid	1763-23-1		6.86	Split peak
Perfluorodecanesulfonic acid	335-77-3		8.25	Split peak
Perfluoroundecanoic acid	2058-94-8		8.39	Split peak
Perfluorododecanoic acid	307-55-1		9.24	Split peak
Perfluorotridecanoic acid	72629-94-8		9.97	Split peak
Perfluorotetradecanoic acid	376-06-7		10.63	Split peak

7.5.9.1

7

## Perfluorinated Compounds by LC/MS/MS.

```

Data File           : Q8688.d
Operator            : nancyf
Acq Method Name     : dMRM_PFOA_PFOS.m
Acquisition date    : 2014-12-09 14:59
Sample Name         : CC280-20
Vial                 : Vial 2
Sample Info         : OP54151,SQ281,125,,,1,1,WATER
Quant Method        : PFC_1208_SQ280.quantmethod.xml
Quant Batch Name    : SQ281.batch.bin
Last Calib Update   : 2014-12-08 16:17
    
```

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
<b>Internal Standards</b>							
13C2-PFOA	6.271	415.0 -> 370.0	25171	20.000	µg/L	0.025	
13C4-PFOS	6.857	503.0 -> 80.0	12019	20.000	µg/L	0.038	
13C2-PFDoDA	9.309	615.0 -> 570.0	61923	20.000	µg/L	0.038	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.779	315.0 -> 270.0	8515	20.57	µg/L	0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 102.87%				
13C2-PFDA	7.558	515.0 -> 470.0	22036	20.52	µg/L	0.050	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 102.61%				
<b>Target Compounds</b>							<b>Qvalue</b>
PFBA	2.652	213.0 -> 169.0	6499	21.517	µg/L		100
PFPeA	3.811	263.0 -> 219.0	3166	20.973	µg/L		100
PFBS	3.953	299.0 -> 80.0	3755	21.144	µg/L		98
PFHxA	4.783	313.0 -> 269.0	9004	20.718	µg/L		99
PFHpA	5.585	363.0 -> 319.0	8646	20.509	µg/L		98
PFHxS	5.592	399.0 -> 80.0	6017	21.097	µg/L		87
PFHpS	6.243	449.0 -> 80.0	7415	20.814	µg/L		100
PFOA	6.274	413.0 -> 369.0	26068	20.444	µg/L		81
PFOS	6.860	499.0 -> 80.0	12359	20.559	µg/L		89
PFNA	6.916	463.0 -> 419.0	14571	19.219	µg/L		100
PFDA	7.564	513.0 -> 469.0	21001	22.350	µg/L		100
PFDS	8.258	599.0 -> 80.0	5725	21.242	µg/L		100
PFUnDA	8.415	563.0 -> 519.0	28273	21.102	µg/L		100
PFDoDA	9.303	613.0 -> 569.0	28089	20.244	µg/L		100
PFTrDA	10.072	663.0 -> 619.0	26880	19.934	µg/L		100
PFTeDA	10.761	713.0 -> 669.0	19672	20.698	µg/L		100

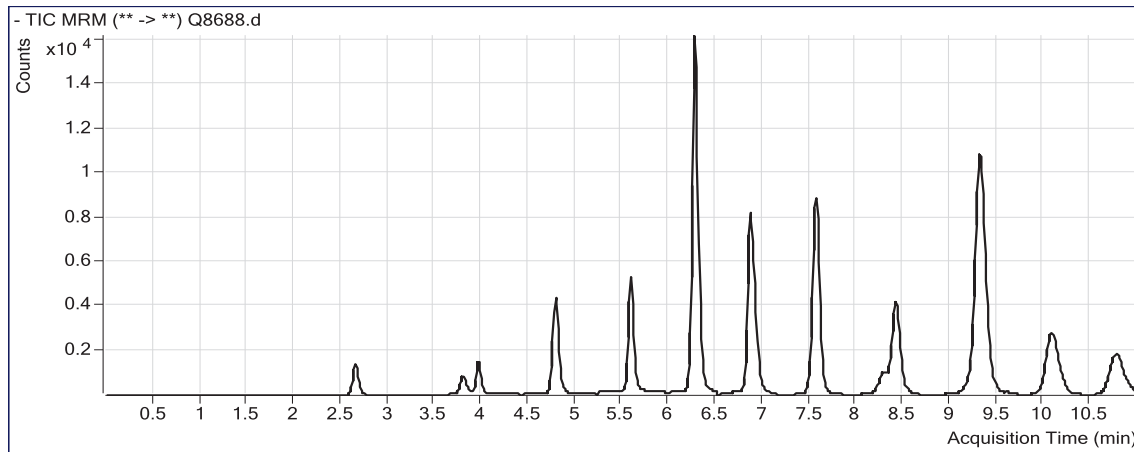
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

7.5.10  
7

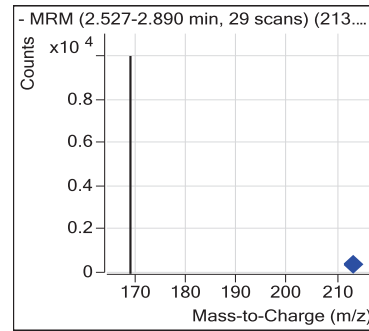
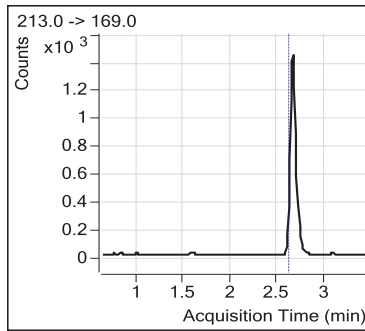
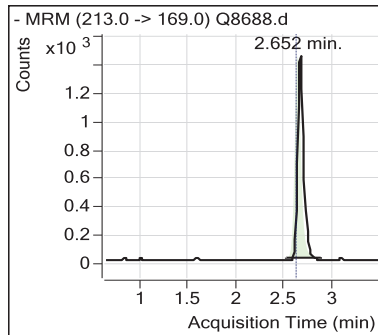
### Perfluorinated Compounds by LC/MS/MS.

Data File : Q8688.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-09 14:59  
Sample Name : CC280-20  
Vial : Vial 2  
Sample Info : OP54151,SQ281,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17

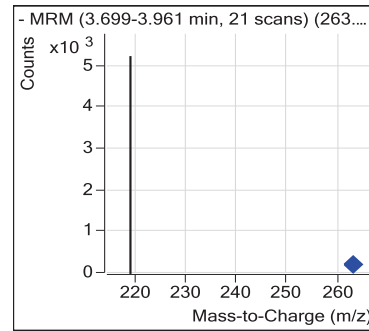
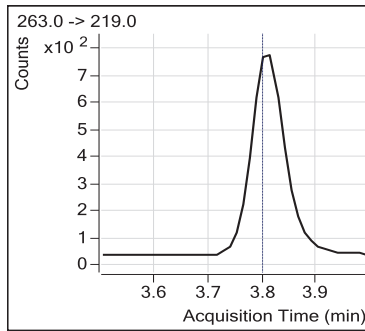
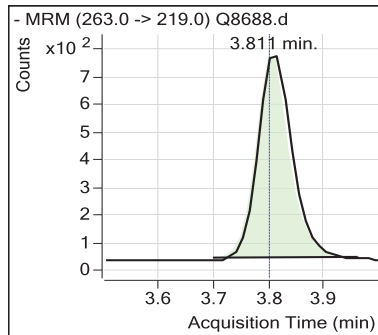
7.5.10  
7



#### PFBA

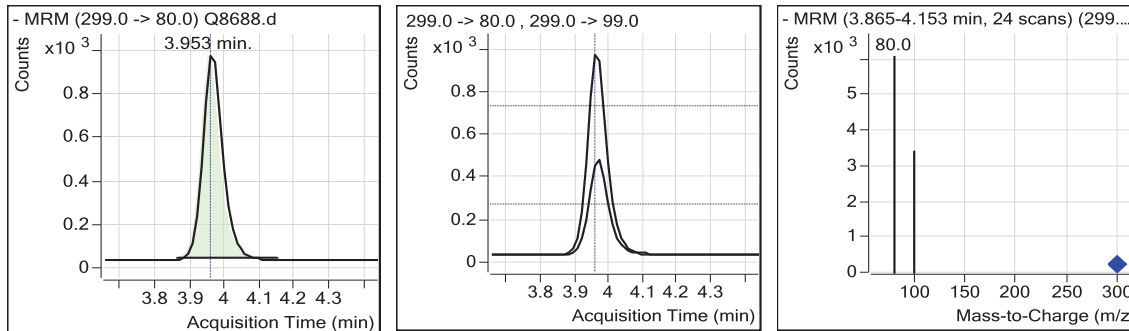


#### PFPeA

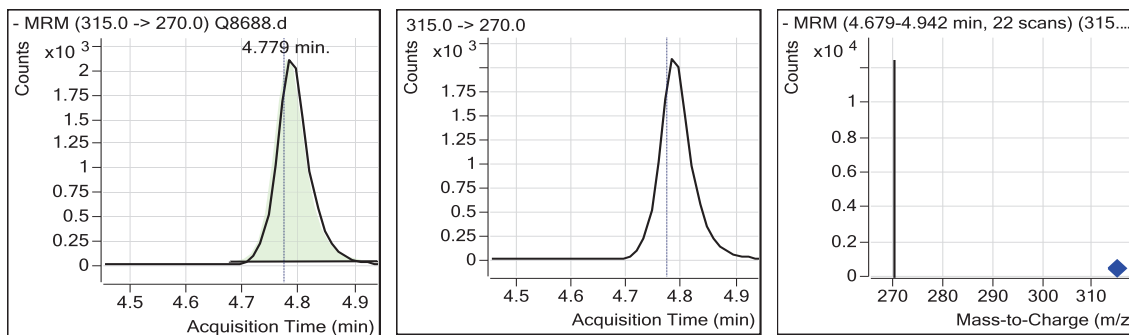


## Perfluorinated Compounds by LC/MS/MS.

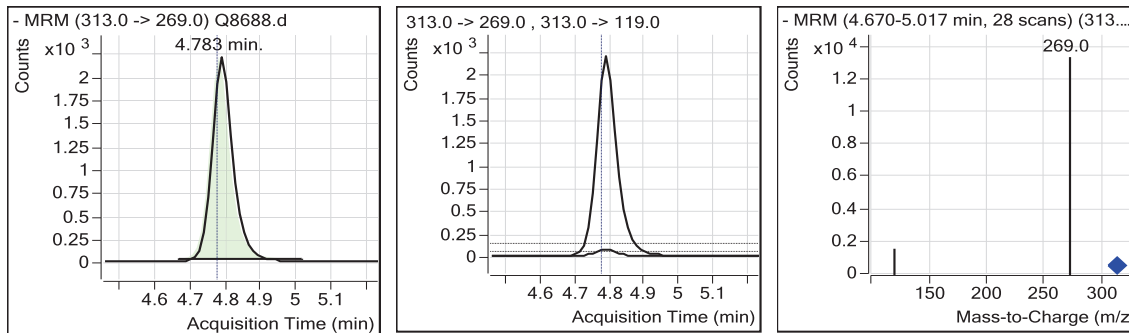
PFBS



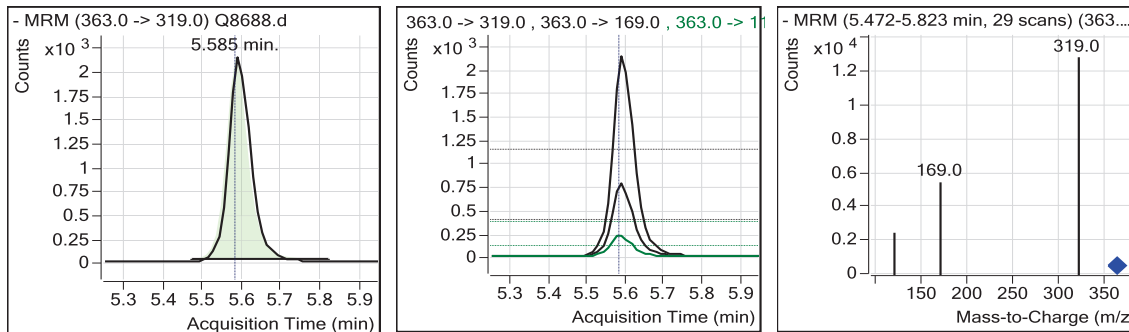
13C2-PFHxA



PFHxA



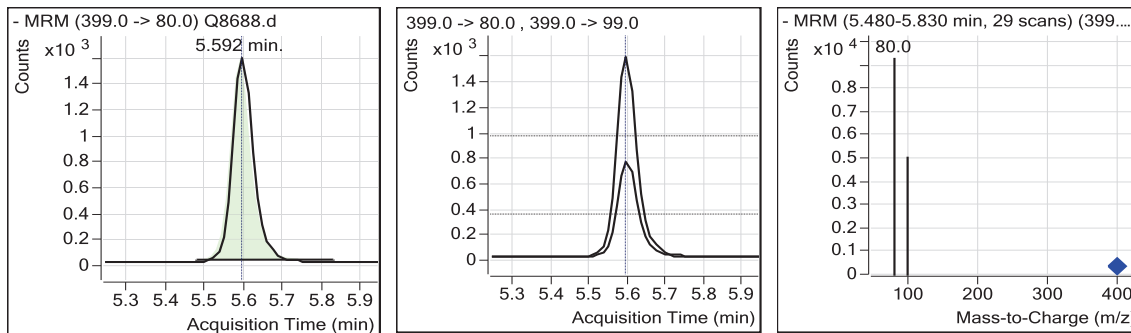
PFHpA



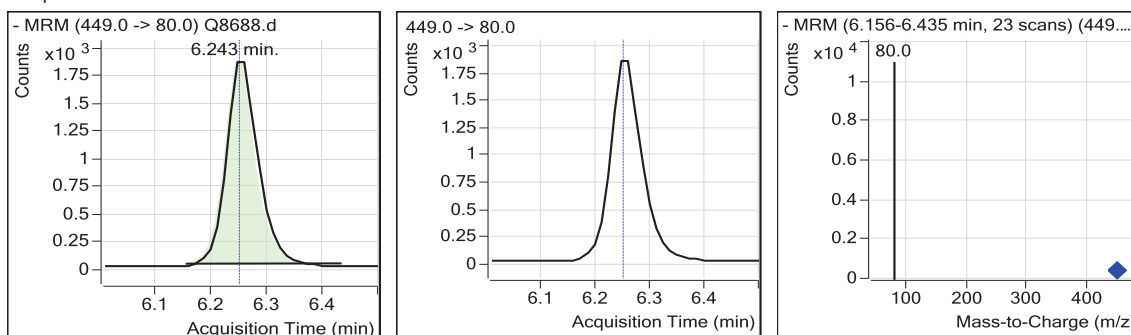
7.5.10  
7

### Perfluorinated Compounds by LC/MS/MS.

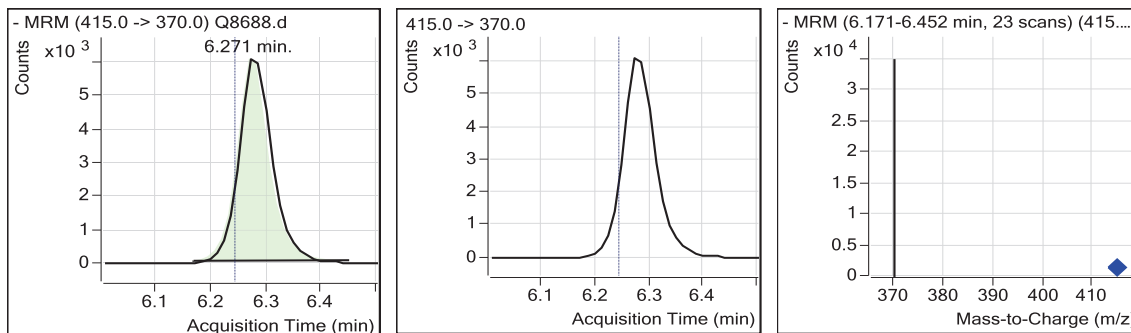
PFHxS



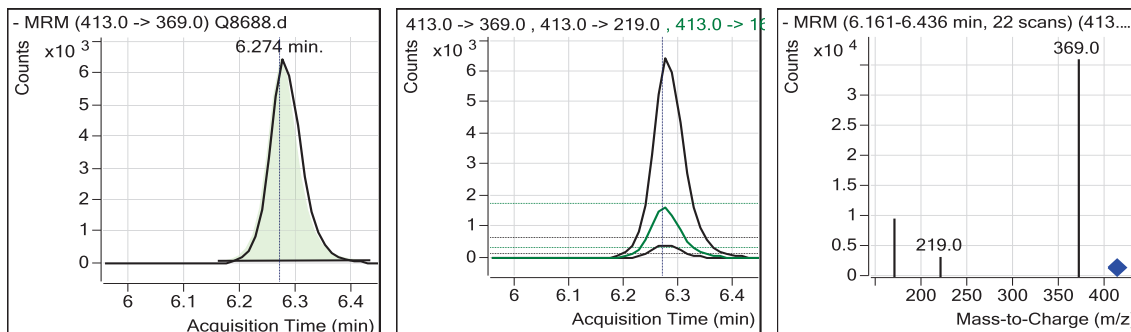
PFHpS



13C2-PFOA

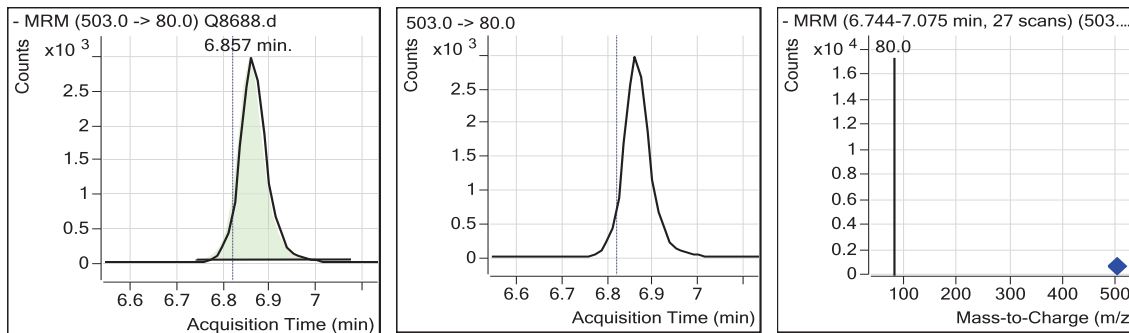


PFOA

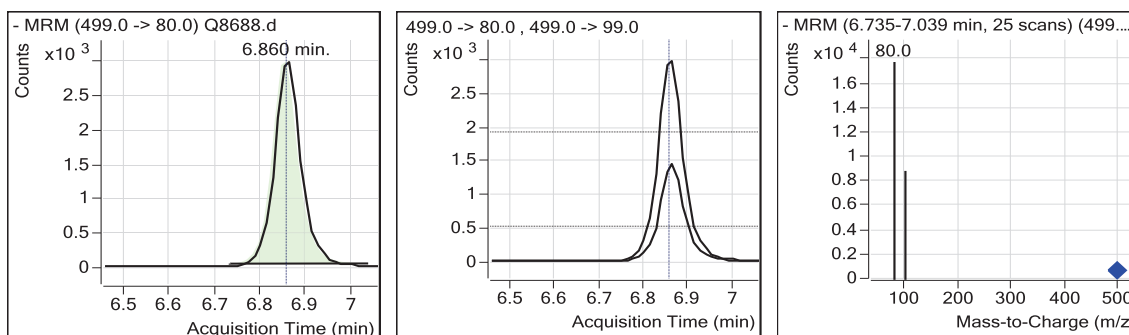


## Perfluorinated Compounds by LC/MS/MS.

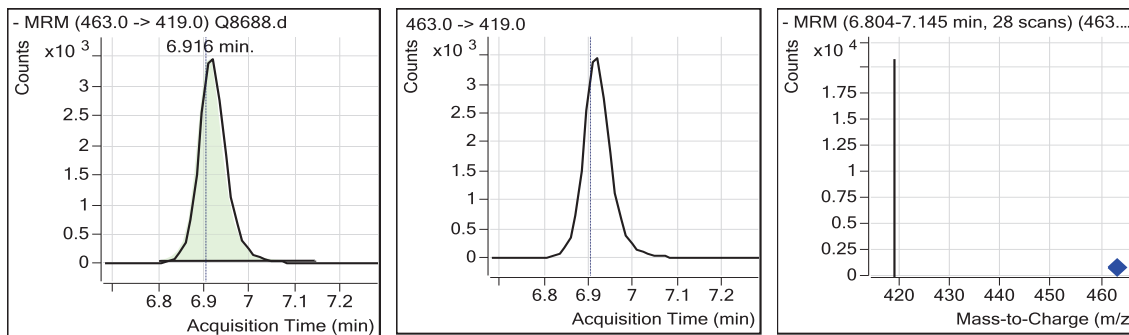
### 13C4-PFOS



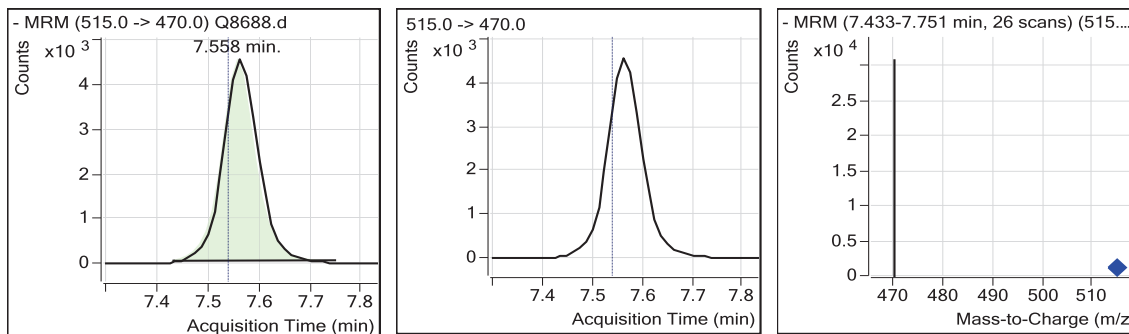
### PFOS



### PFNA



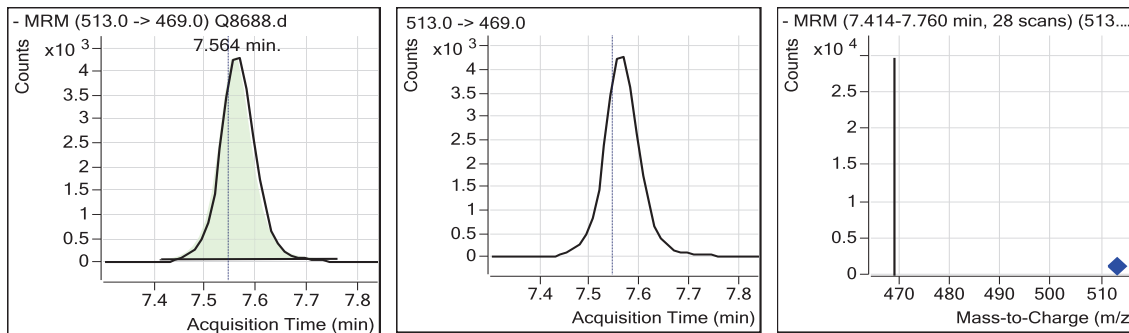
### 13C2-PFDA



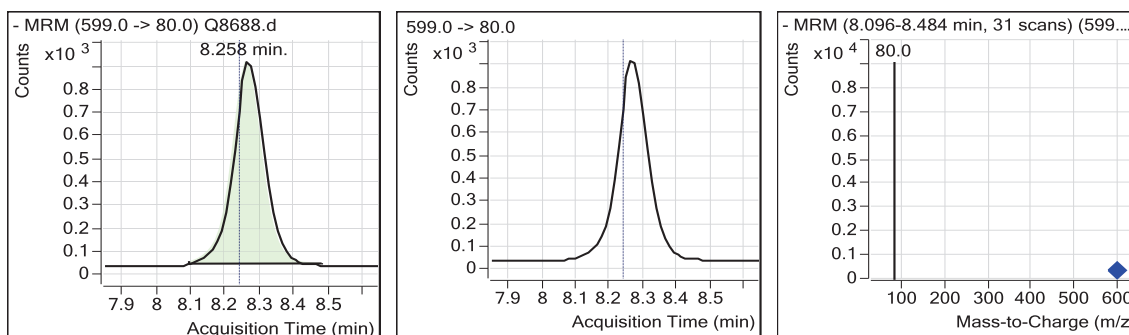
7.5.10  
7

## Perfluorinated Compounds by LC/MS/MS.

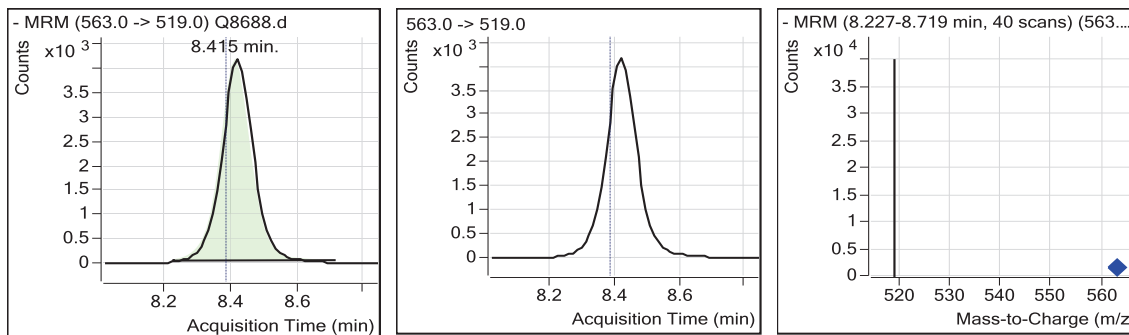
PFDA



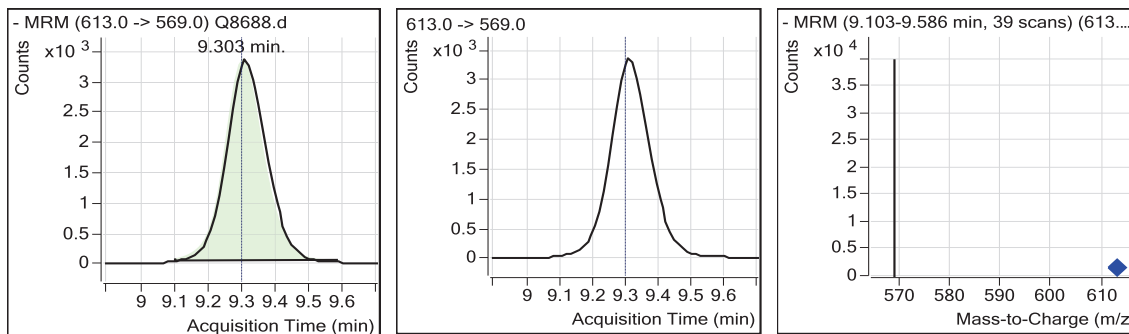
PFDS



PFUnDA



PFDoDA

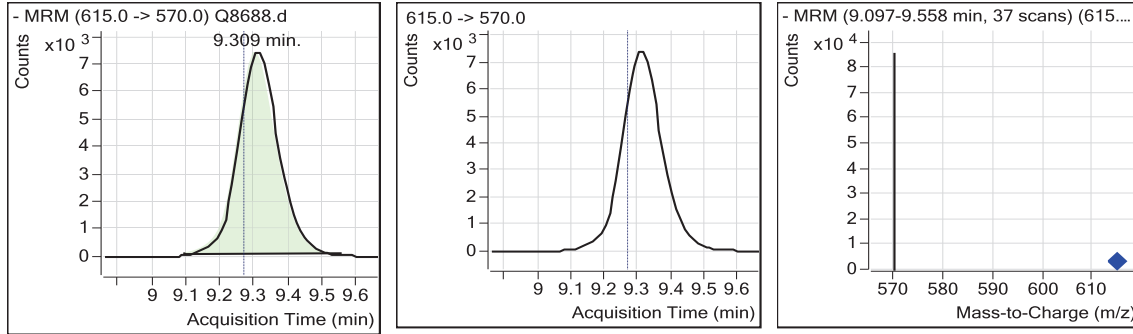


7.5.10  
7

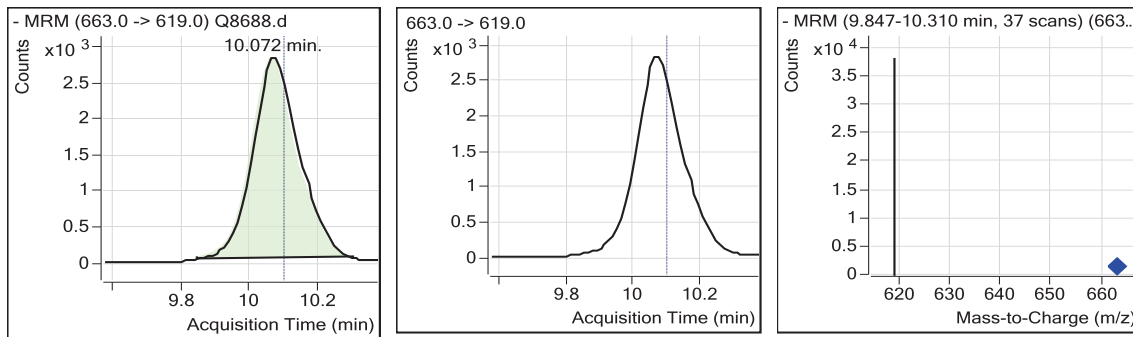


### Perfluorinated Compounds by LC/MS/MS.

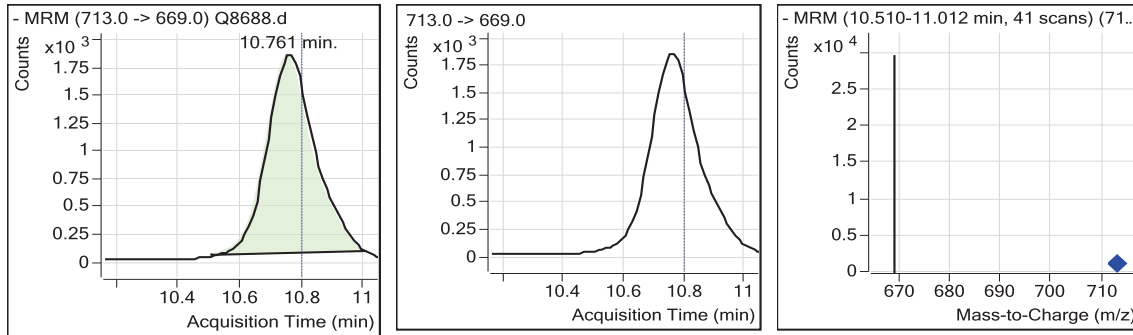
13C2-PFDoDA



PFTTrDA



PFTeDA



7.5.10  
7

## Perfluorinated Compounds by LC/MS/MS.

```

Data File           : Q8700.d
Operator            : nancyf
Acq Method Name     : dMRM_PFOA_PFOS.m
Acquisition date    : 2014-12-09 19:08
Sample Name         : CC280-20
Vial                : Vial 2
Sample Info         : OP54151,SQ281,125,,,1,1,WATER
Quant Method        : PFC_1208_SQ280.quantmethod.xml
Quant Batch Name    : SQ281.batch.bin
Last Calib Update   : 2014-12-08 16:17
    
```

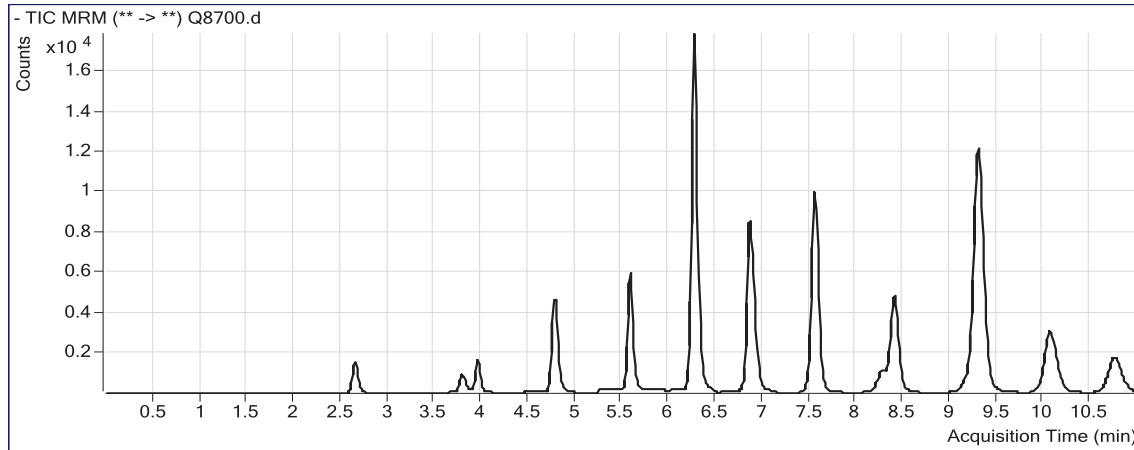
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
<b>Internal Standards</b>							
13C2-PFOA	6.271	415.0 -> 370.0	28797	20.000	µg/L	0.025	
13C4-PFOS	6.844	503.0 -> 80.0	12576	20.000	µg/L	0.025	
13C2-PFDoDA	9.284	615.0 -> 570.0	67780	20.000	µg/L	0.012	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.779	315.0 -> 270.0	9236	19.51	µg/L	0.025	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 97.53%				
13C2-PFDA	7.545	515.0 -> 470.0	25199	20.51	µg/L	0.037	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 102.56%				
<b>Target Compounds</b>							<b>Qvalue</b>
PFBA	2.639	213.0 -> 169.0	7260	21.009	µg/L		100
PFPeA	3.799	263.0 -> 219.0	3589	20.784	µg/L		100
PFBS	3.953	299.0 -> 80.0	4261	22.934	µg/L		97
PFHxA	4.771	313.0 -> 269.0	9662	19.433	µg/L		99
PFHxS	5.580	399.0 -> 80.0	6555	21.965	µg/L		88
PFHpA	5.585	363.0 -> 319.0	9771	20.259	µg/L		99
PFHpS	6.243	449.0 -> 80.0	7997	21.453	µg/L		100
PFOA	6.274	413.0 -> 369.0	29557	20.261	µg/L		80
PFOS	6.848	499.0 -> 80.0	13046	20.741	µg/L		89
PFNA	6.904	463.0 -> 419.0	16578	19.113	µg/L		100
PFDA	7.551	513.0 -> 469.0	24103	23.435	µg/L		100
PFDS	8.246	599.0 -> 80.0	5991	20.307	µg/L		100
PFUnDA	8.402	563.0 -> 519.0	32441	22.121	µg/L		100
PFDoDA	9.290	613.0 -> 569.0	30407	20.020	µg/L		100
PFTrDA	10.047	663.0 -> 619.0	28059	19.010	µg/L		100
PFTeDA	10.736	713.0 -> 669.0	17955	17.259	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

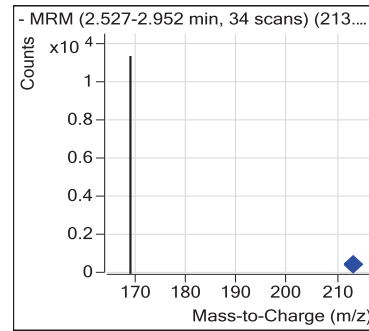
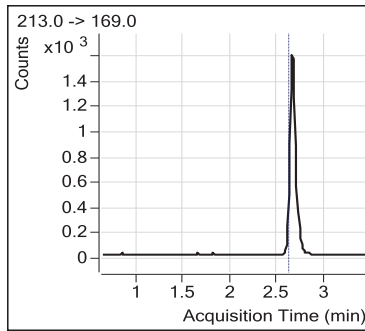
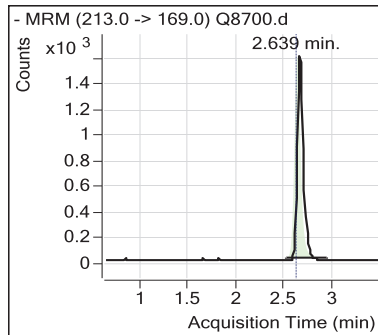
7.5.11  
7

### Perfluorinated Compounds by LC/MS/MS.

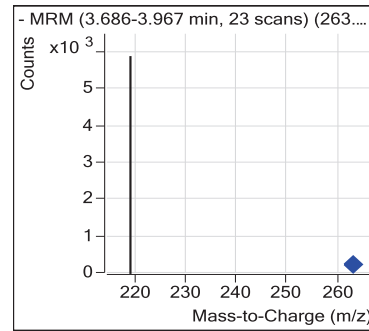
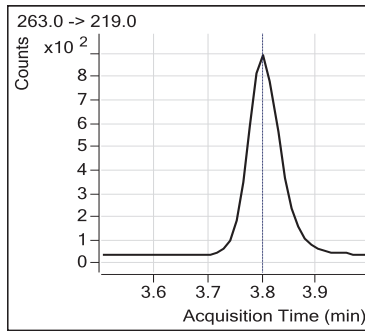
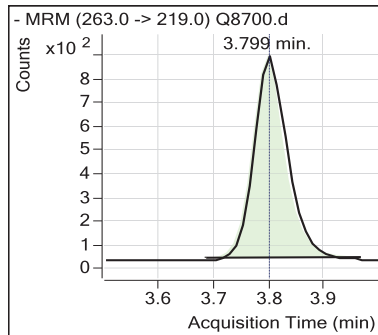
Data File : Q8700.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-09 19:08  
Sample Name : CC280-20  
Vial : Vial 2  
Sample Info : OP54151,SQ281,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ281.batch.bin  
**Last Calib Update** : 2014-12-08 16:17



#### PFBA



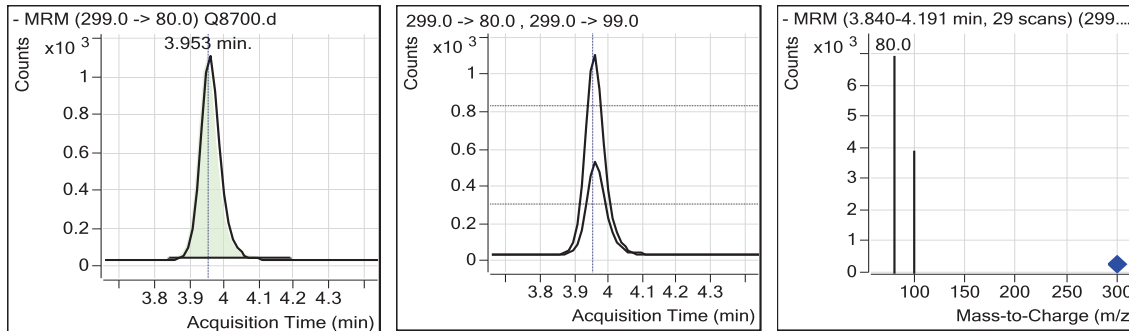
#### PFPeA



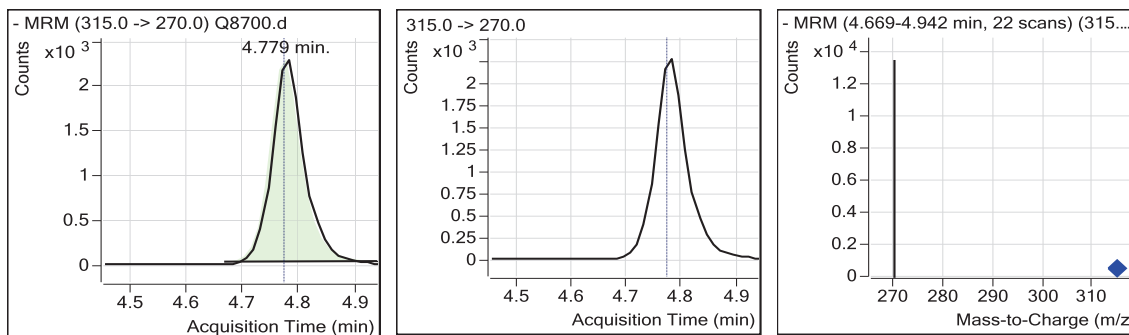
7.5.11  
7

## Perfluorinated Compounds by LC/MS/MS.

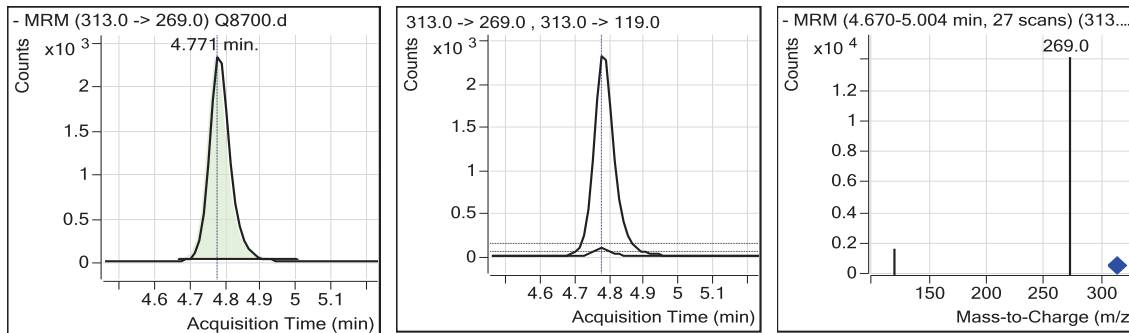
PFBS



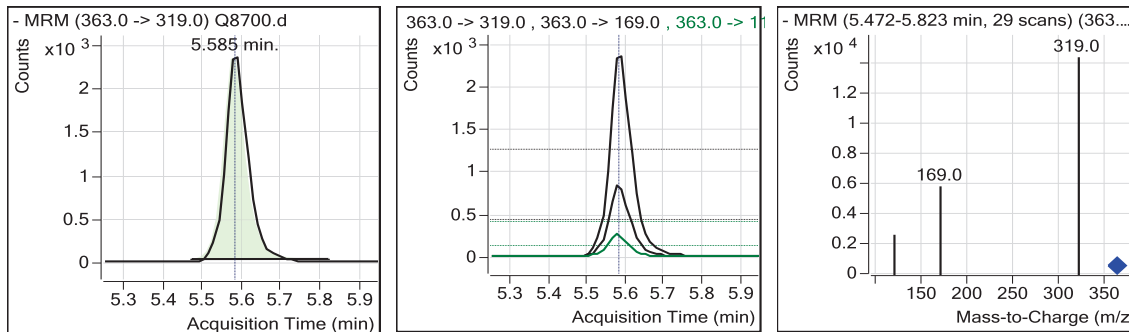
13C2-PFHxA



PFHxA



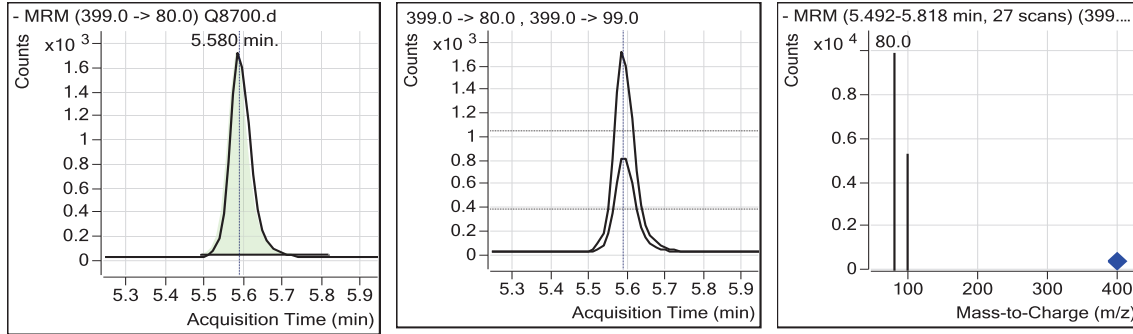
PFHpA



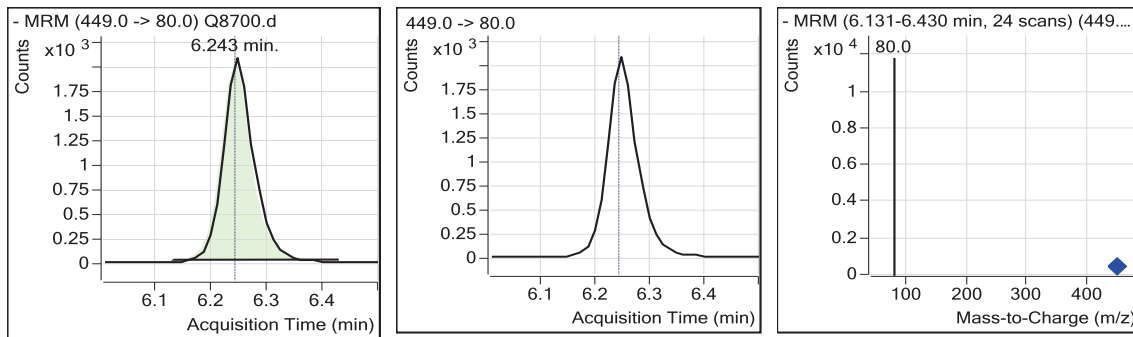
7.5.11  
7

### Perfluorinated Compounds by LC/MS/MS.

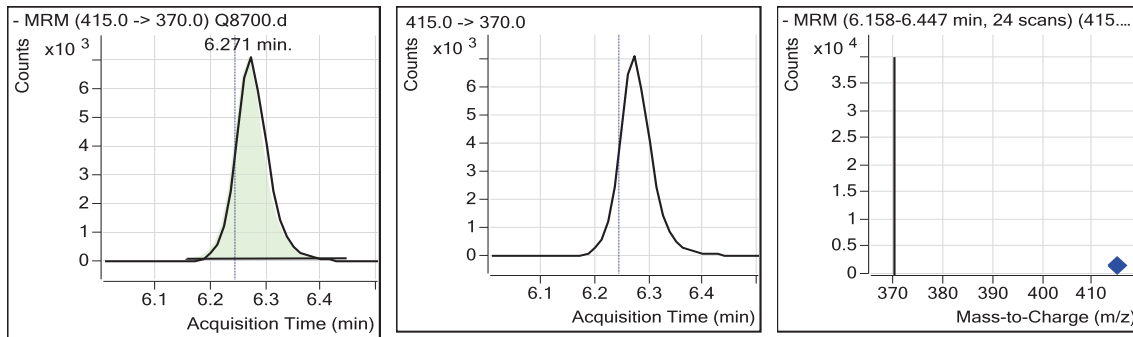
PFHxS



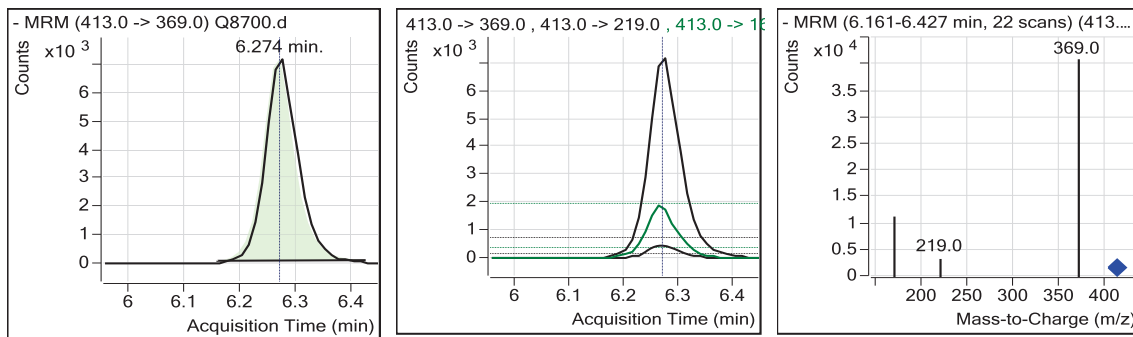
PFHpS



13C2-PFOA



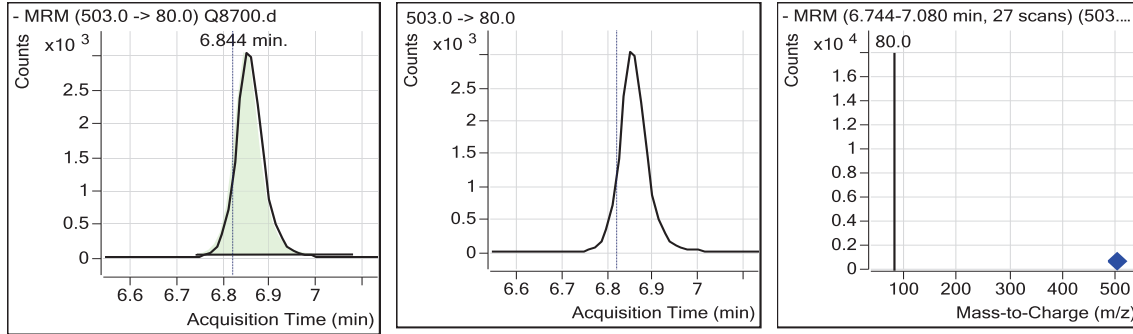
PFOA



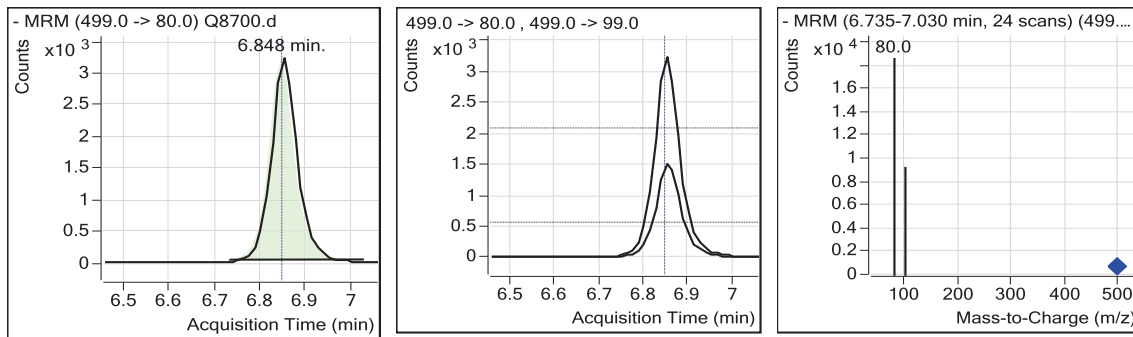
7.5.11  
7

### Perfluorinated Compounds by LC/MS/MS.

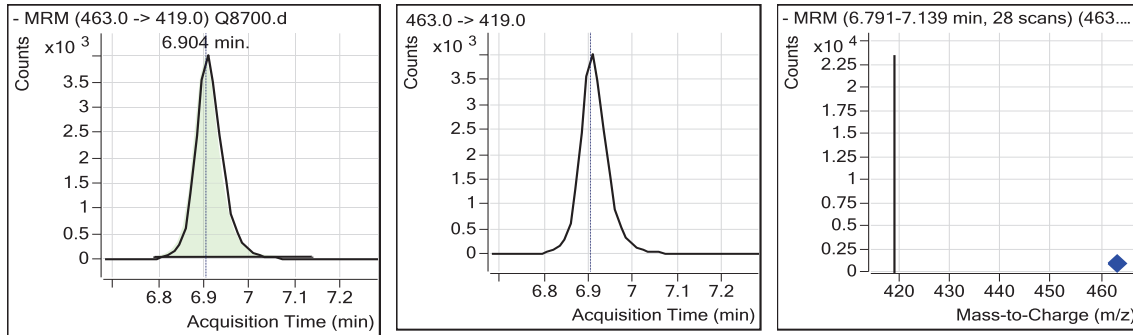
#### 13C4-PFOS



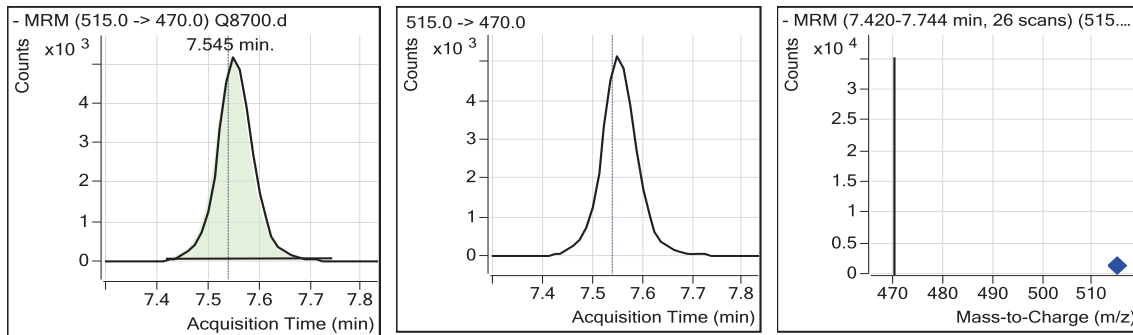
#### PFOS



#### PFNA



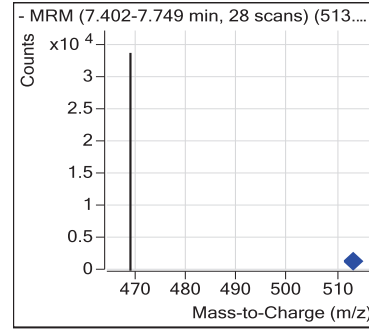
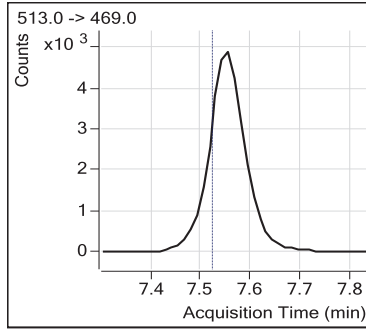
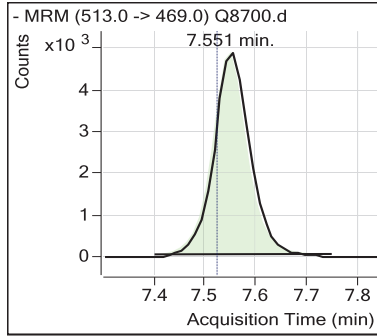
#### 13C2-PFDA



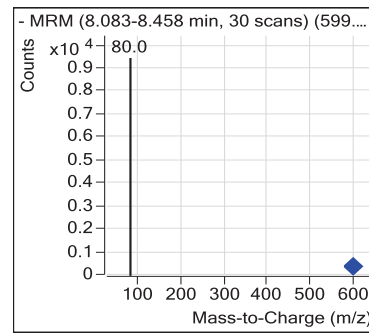
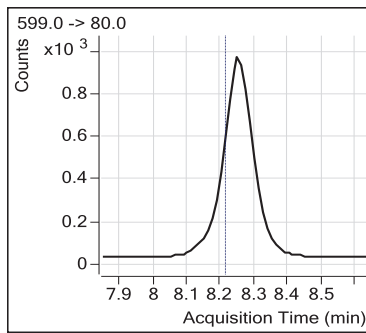
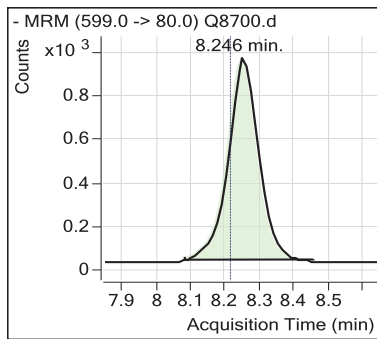
7.5.11  
7

### Perfluorinated Compounds by LC/MS/MS.

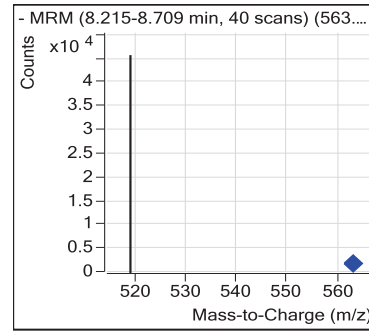
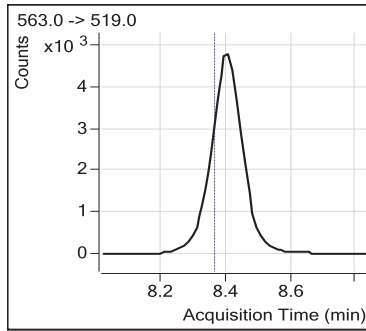
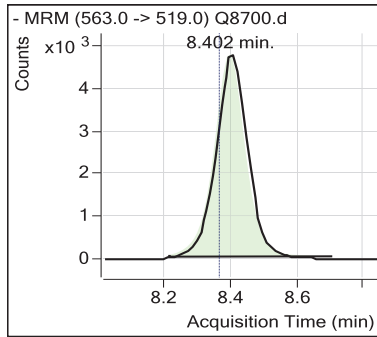
PFDA



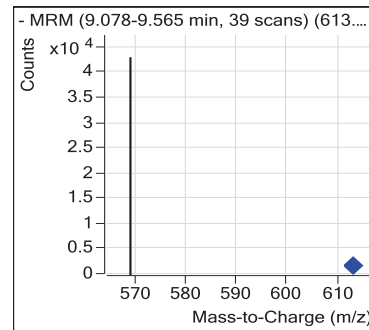
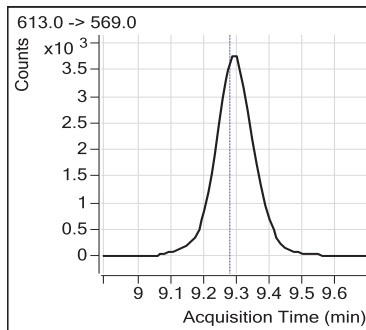
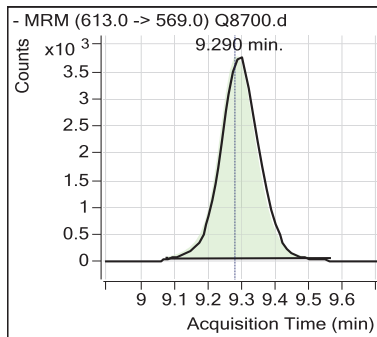
PFDS



PFUnDA



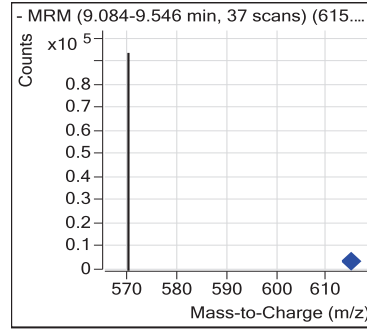
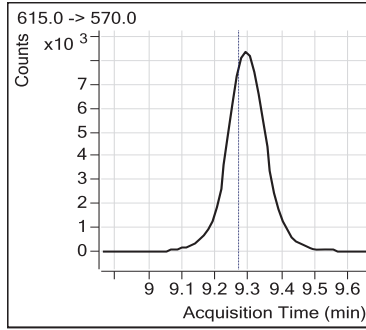
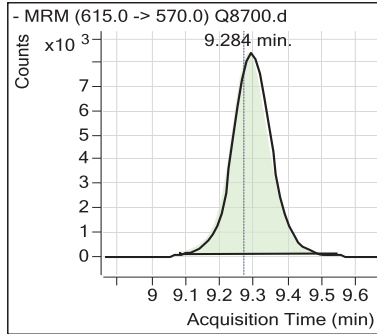
PFDoDA



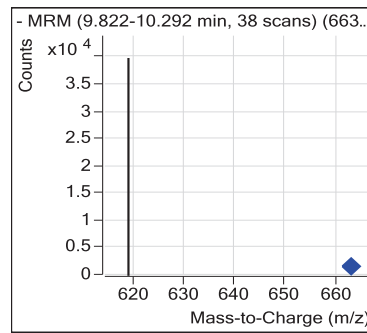
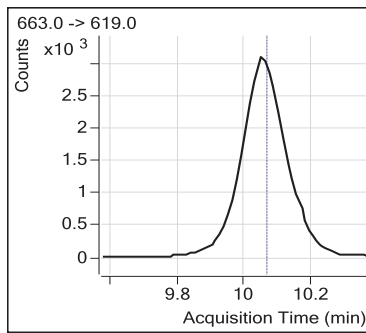
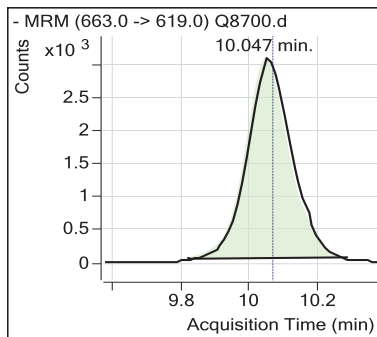
7.5.11  
7

### Perfluorinated Compounds by LC/MS/MS.

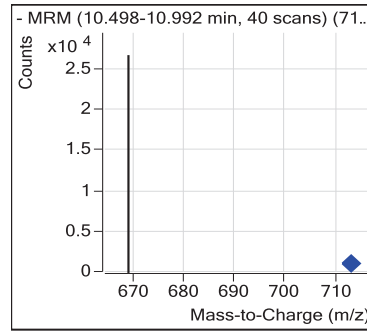
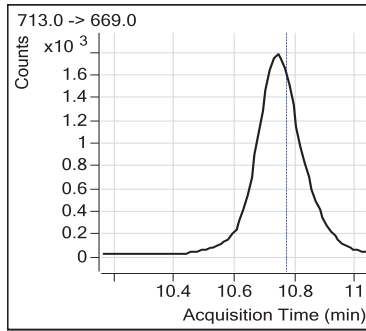
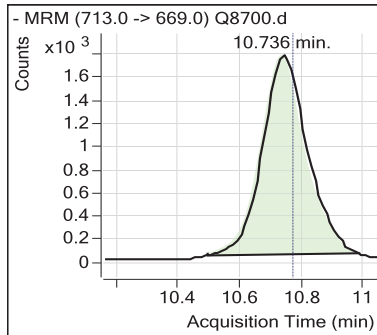
13C2-PFDoDA



PFTTrDA



PFTeDA



7.5.11  
7



## Perfluorinated Compounds by LC/MS/MS.

```

Data File           : Q8768.d
Operator            : nancyf
Acq Method Name     : dMRM_PFOA_PFOS.m
Acquisition date    : 2014-12-15 14:32
Sample Name         : CC280-20
Vial                : Vial 2
Sample Info         : OP54151,SQ284,125,,,1,1,WATER
Quant Method        : PFC_1208_SQ280.quantmethod.xml
Quant Batch Name    : SQ284.batch.bin
Last Calib Update   : 2014-12-10 09:24
    
```

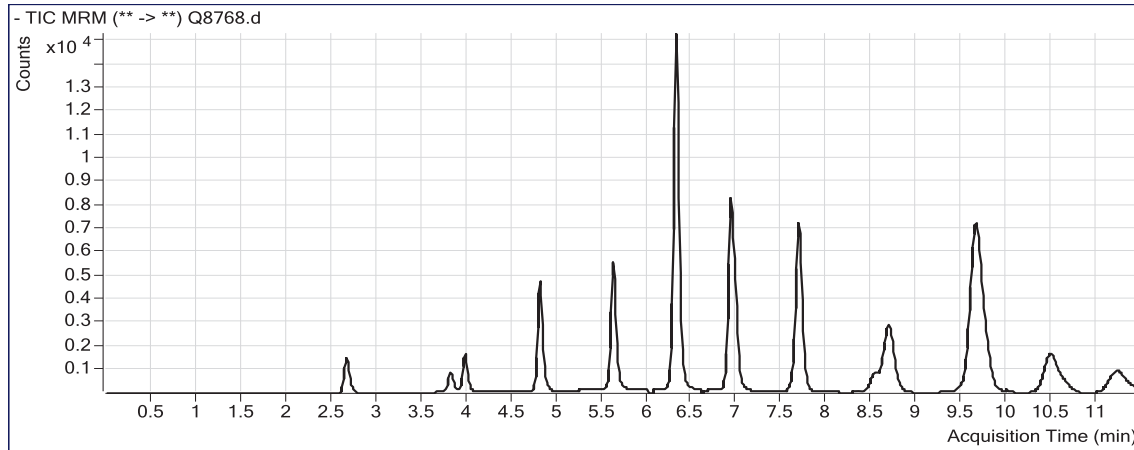
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
<b>Internal Standards</b>							
13C2-PFOA	6.321	415.0 -> 370.0	24500	20.000	µg/L	0.013	
13C4-PFOS	6.920	503.0 -> 80.0	12787	20.000	µg/L	0.013	
13C2-PFDoDA	9.635	615.0 -> 570.0	52482	20.000	µg/L	0.025	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.804	315.0 -> 270.0	9011	22.37	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 111.85%				
13C2-PFDA	7.670	515.0 -> 470.0	19588	18.74	µg/L	0.013	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 93.71%				
<b>Target Compounds</b>							<b>Qvalue</b>
PFBA	2.664	213.0 -> 169.0	6613	22.492	µg/L		100
PFPeA	3.824	263.0 -> 219.0	3367	22.916	µg/L		100
PFBS	3.978	299.0 -> 80.0	4073	21.560	µg/L		98
PFHxA	4.808	313.0 -> 269.0	9583	22.653	µg/L		99
PFHxS	5.618	399.0 -> 80.0	6187	20.392	µg/L		88
PFHpA	5.623	363.0 -> 319.0	8657	21.097	µg/L		98
PFHpS	6.294	449.0 -> 80.0	7535	19.880	µg/L		100
PFOA	6.324	413.0 -> 369.0	24797	19.979	µg/L		80
PFOS	6.923	499.0 -> 80.0	12855	20.100	µg/L		88
PFNA	6.979	463.0 -> 419.0	13539	18.347	µg/L		100
PFDA	7.677	513.0 -> 469.0	18694	23.474	µg/L		100
PFDS	8.509	599.0 -> 80.0	5707	24.982	µg/L		100
PFUnDA	8.678	563.0 -> 519.0	24143	21.261	µg/L		100
PFDoDA	9.628	613.0 -> 569.0	22505	19.136	µg/L		100
PFTTrDA	10.460	663.0 -> 619.0	19589	17.140	µg/L		100
PFTeDA	11.198	713.0 -> 669.0	14771	18.336	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

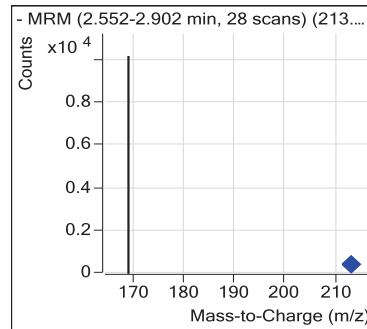
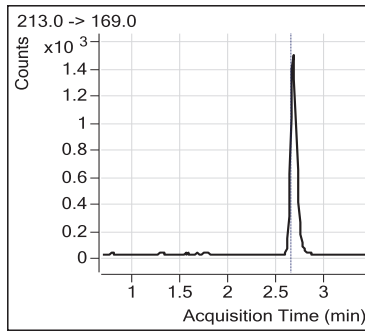
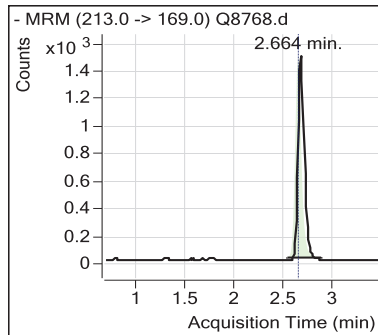
7.5.12  
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### Perfluorinated Compounds by LC/MS/MS.

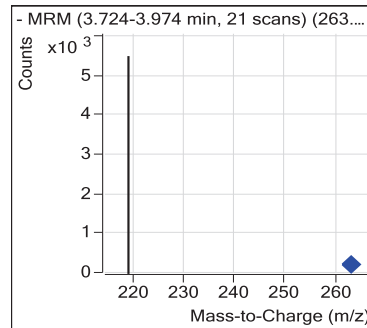
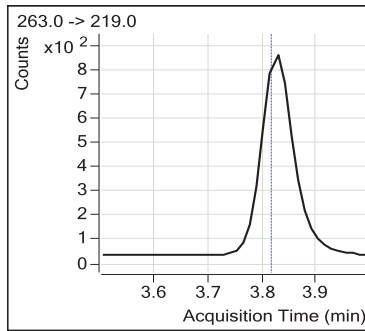
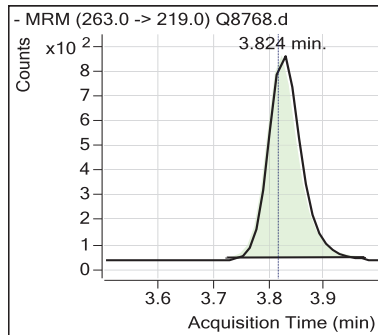
Data File : Q8768.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-15 14:32  
Sample Name : CC280-20  
Vial : Vial 2  
Sample Info : OP54151,SQ284,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ284.batch.bin  
Last Calib Update : 2014-12-10 09:24



#### PFBA



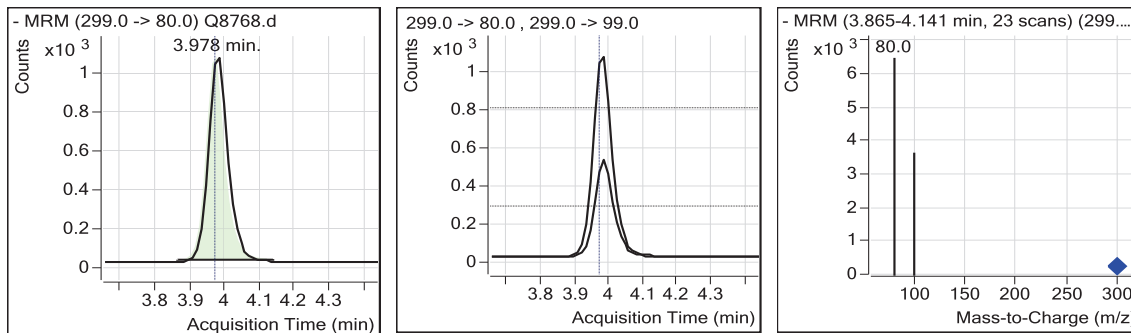
#### PFPeA



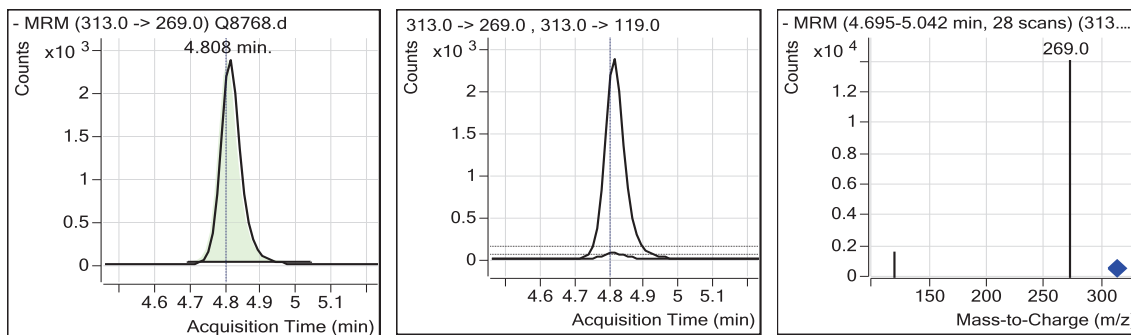
7.5.12  
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## Perfluorinated Compounds by LC/MS/MS.

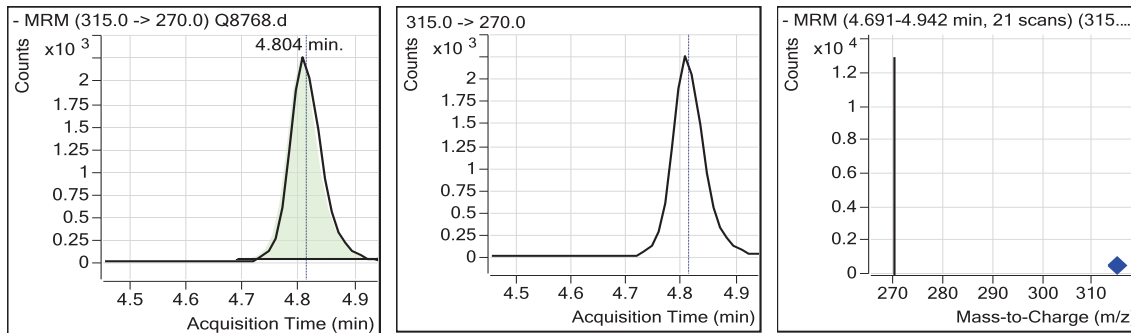
PFBS



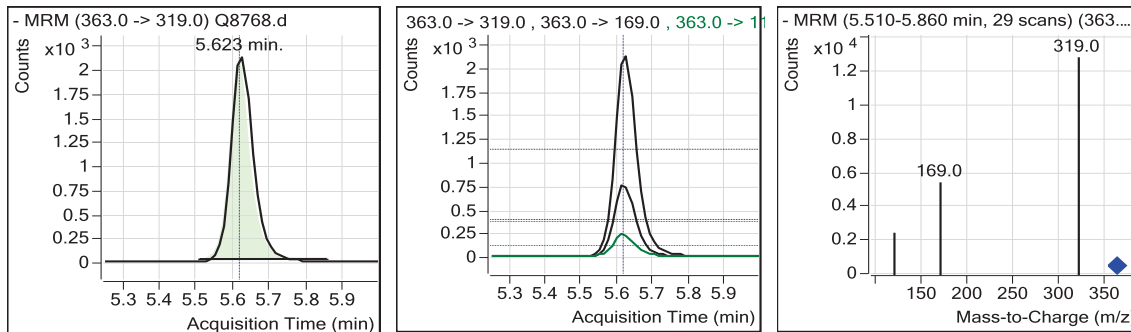
PFHxA



13C2-PFHxA



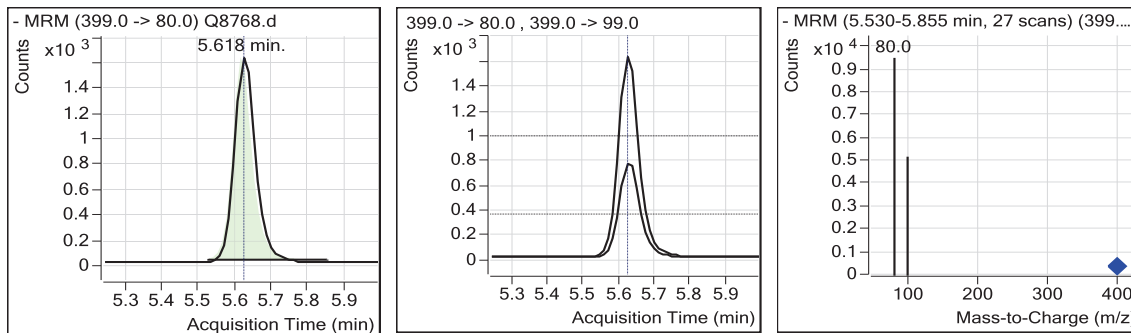
PFHpA



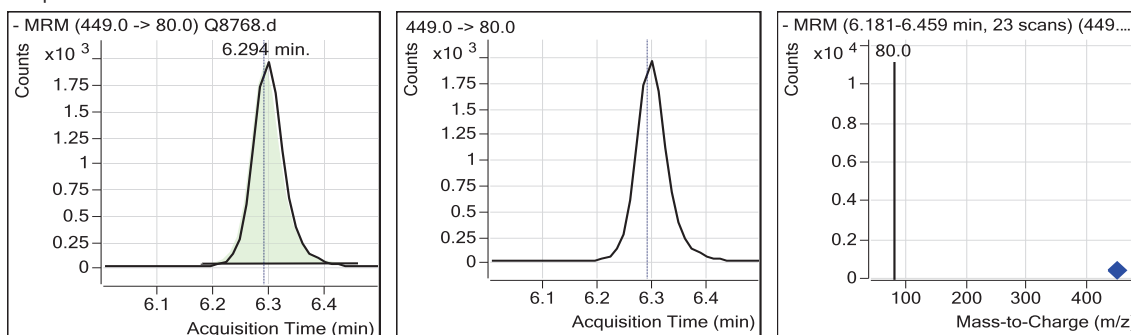
7.5.12  
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### Perfluorinated Compounds by LC/MS/MS.

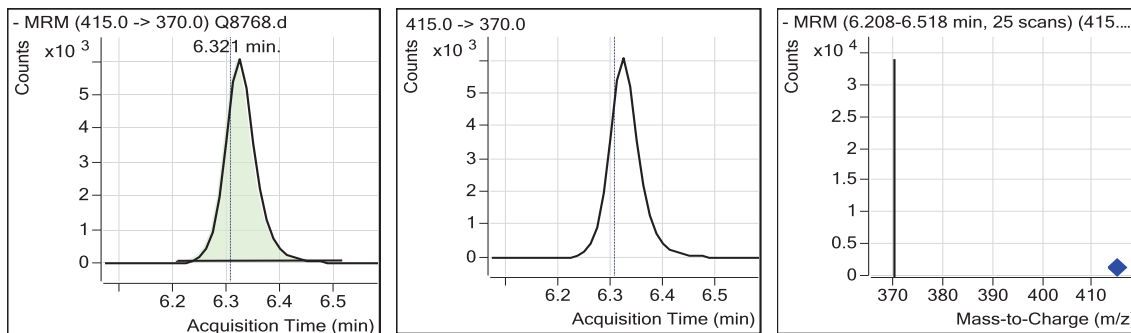
PFHxS



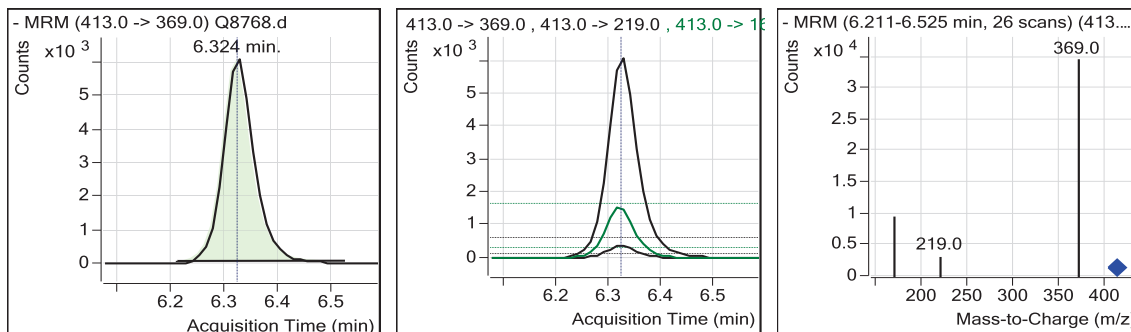
PFHpS



13C2-PFOA



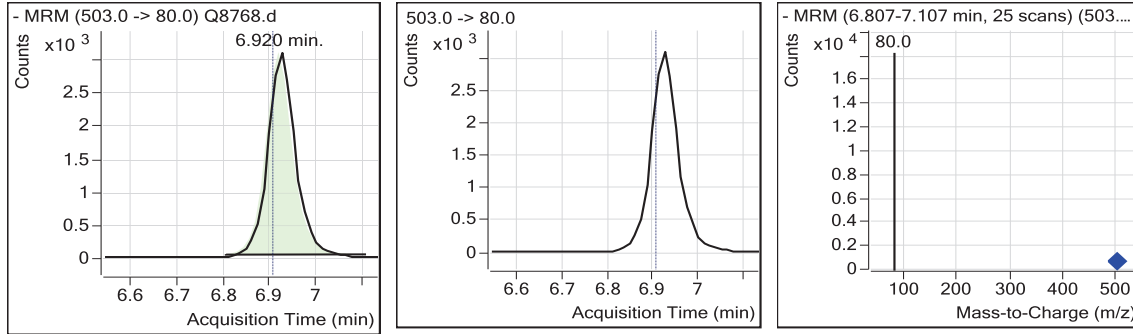
PFOA



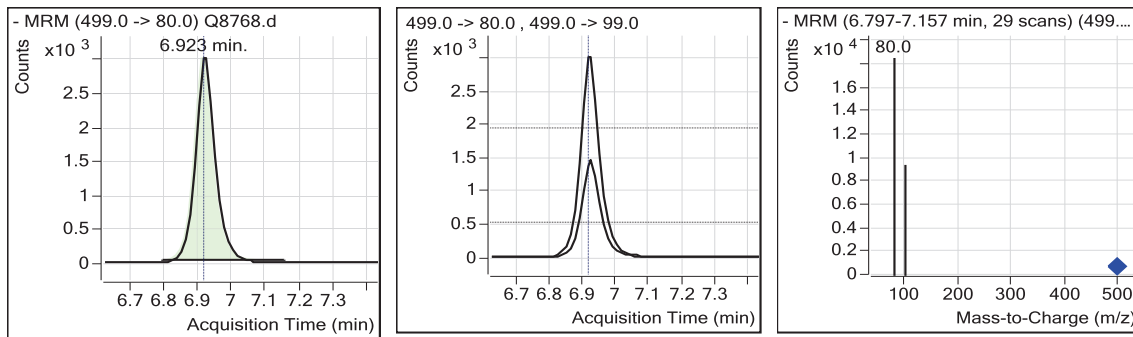
7.5.12  
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### Perfluorinated Compounds by LC/MS/MS.

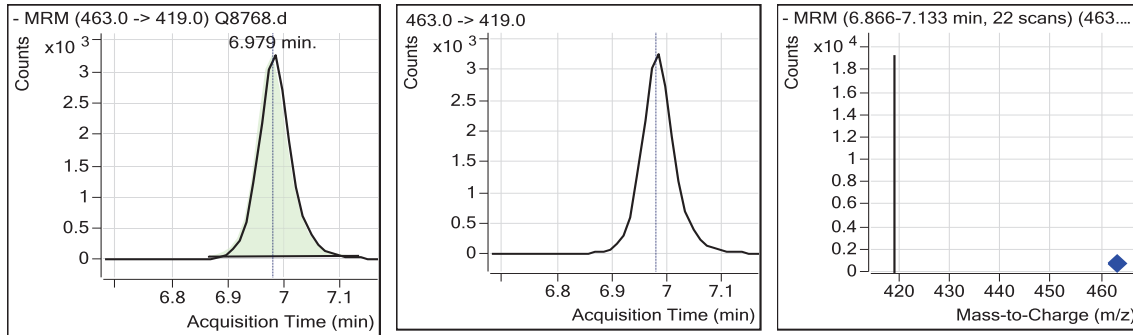
#### 13C4-PFOS



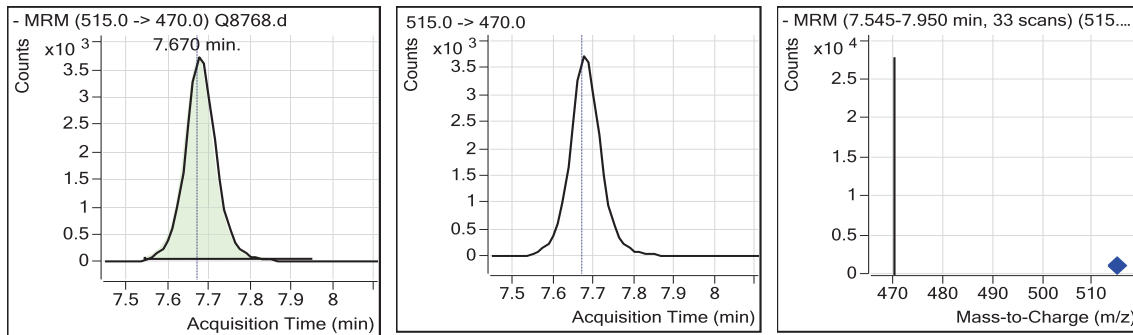
#### PFOS



#### PFNA



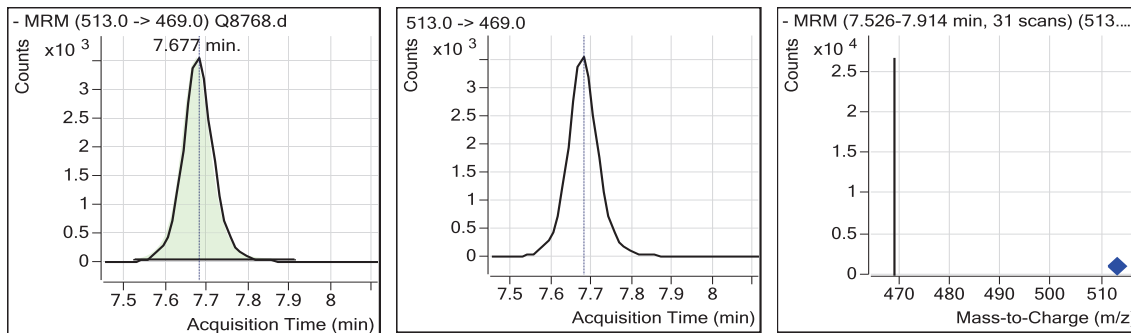
#### 13C2-PFDA



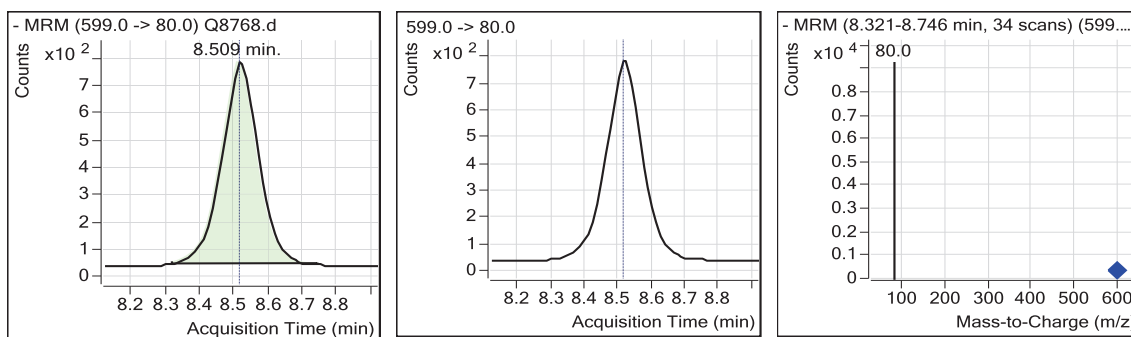
7.5.12  
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### Perfluorinated Compounds by LC/MS/MS.

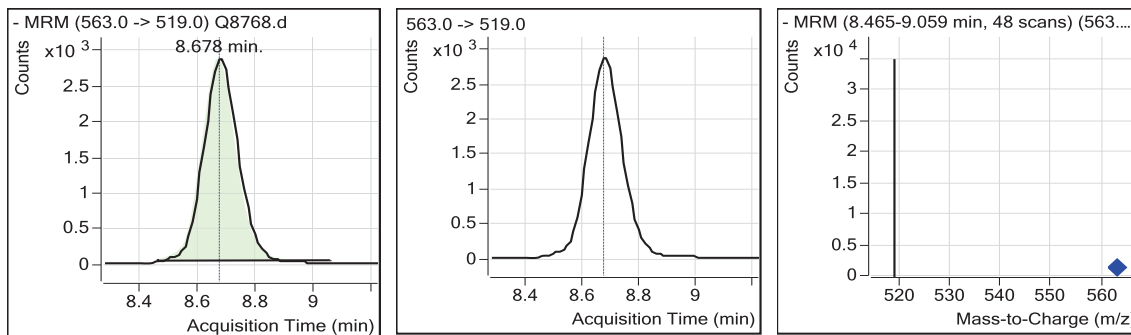
PFDA



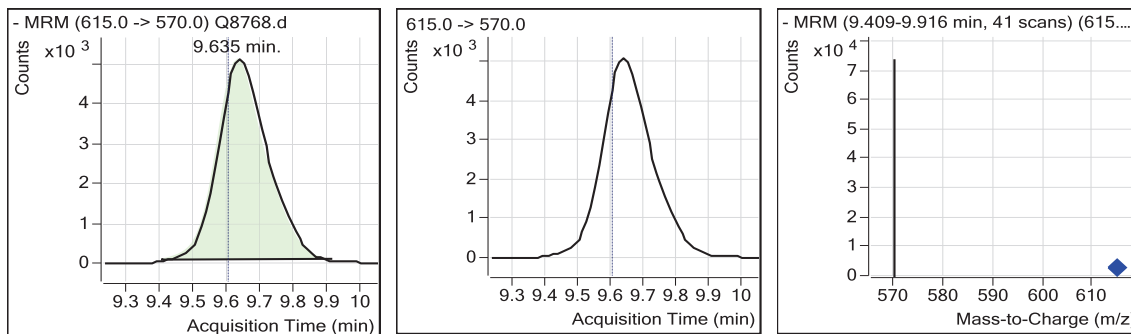
PFDS



PFUnDA



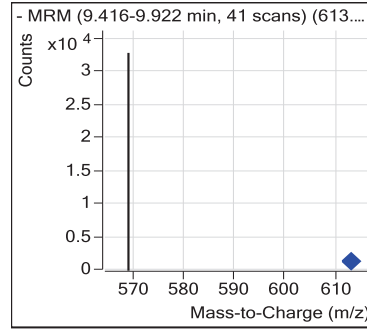
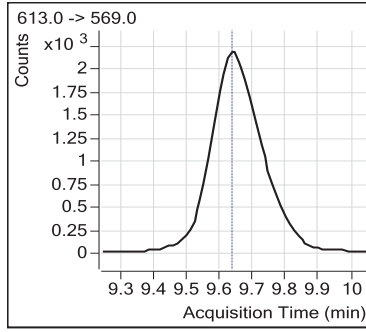
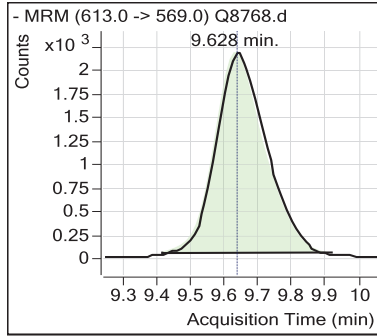
13C2-PFDoDA



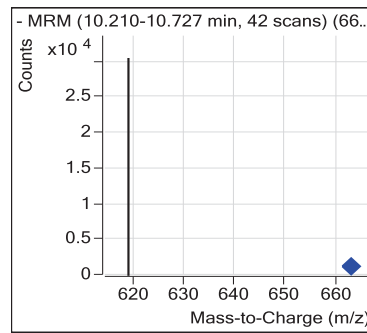
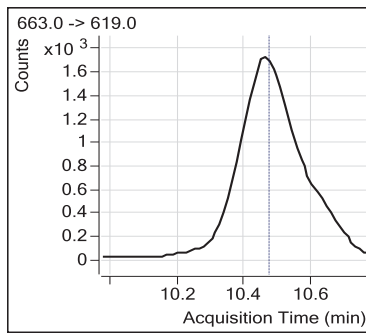
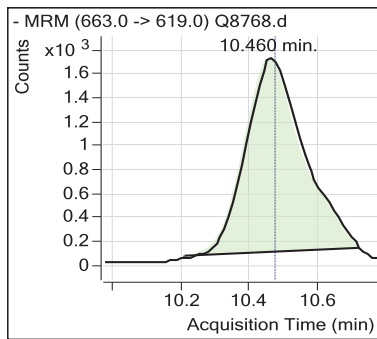
7.5.12  
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### Perfluorinated Compounds by LC/MS/MS.

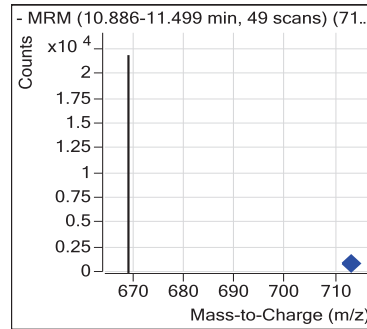
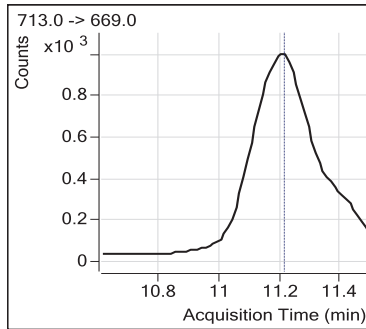
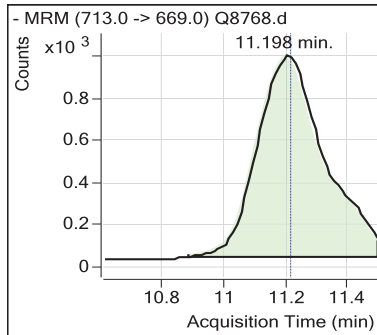
PFD<sub>o</sub>DA



PFT<sub>r</sub>DA



PFT<sub>e</sub>DA



7.5.12  
7

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8774.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 16:51  
 Sample Name : CC280-20  
 Vial : Vial 2  
 Sample Info : OP54151,SQ284,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
**Last Calib Update** : 2014-12-10 09:24

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
<b>Internal Standards</b>							
13C2-PFOA	6.309	415.0 -> 370.0	26490	20.000	µg/L	0.000	
13C4-PFOS	6.907	503.0 -> 80.0	13031	20.000	µg/L	0.000	
13C2-PFDoDA	9.610	615.0 -> 570.0	55699	20.000	µg/L	0.000	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.804	315.0 -> 270.0	9144	20.99	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 104.97%				
13C2-PFDA	7.658	515.0 -> 470.0	21326	18.87	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 94.36%				
<b>Target Compounds</b>							<b>Qvalue</b>
PFBA	2.664	213.0 -> 169.0	6798	21.384	µg/L		100
PFPeA	3.811	263.0 -> 219.0	3315	20.867	µg/L		100
PFBS	3.966	299.0 -> 80.0	4187	21.746	µg/L		96
PFHxA	4.796	313.0 -> 269.0	9713	21.236	µg/L		99
PFHpA	5.610	363.0 -> 319.0	8984	20.248	µg/L		98
PFHxS	5.618	399.0 -> 80.0	6381	20.636	µg/L		87
PFHpS	6.281	449.0 -> 80.0	7831	20.273	µg/L		100
PFOA	6.311	413.0 -> 369.0	26869	20.023	µg/L		81
PFOS	6.910	499.0 -> 80.0	13223	20.289	µg/L		89
PFNA	6.966	463.0 -> 419.0	14254	17.865	µg/L		100
PFDA	7.664	513.0 -> 469.0	20405	24.142	µg/L		100
PFDS	8.496	599.0 -> 80.0	6111	25.207	µg/L		100
PFUnDA	8.653	563.0 -> 519.0	27658	22.950	µg/L		100
PFDoDA	9.616	613.0 -> 569.0	25077	20.092	µg/L		100
PFTrDA	10.448	663.0 -> 619.0	22085	18.208	µg/L		100
PFTeDA	11.186	713.0 -> 669.0	13885	16.241	µg/L		100

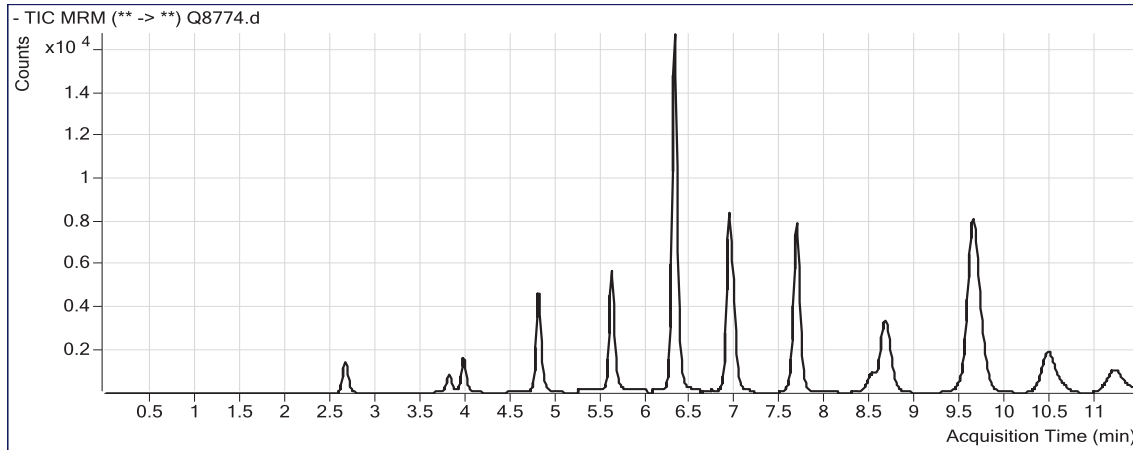
(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

7.5.13  
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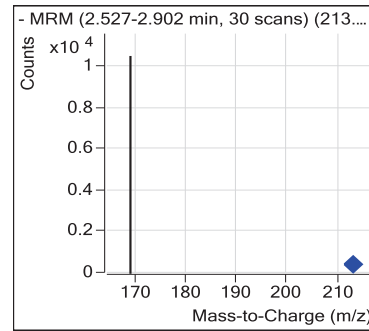
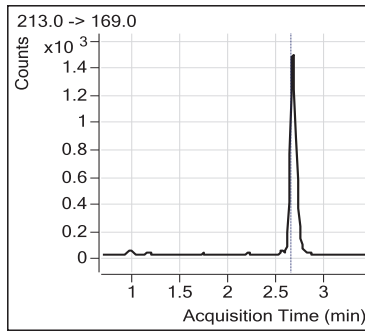
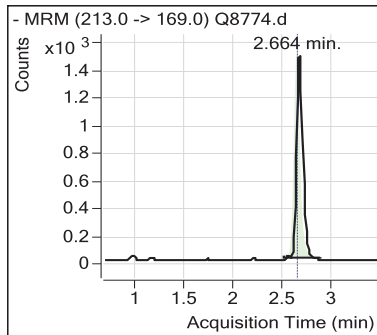


### Perfluorinated Compounds by LC/MS/MS.

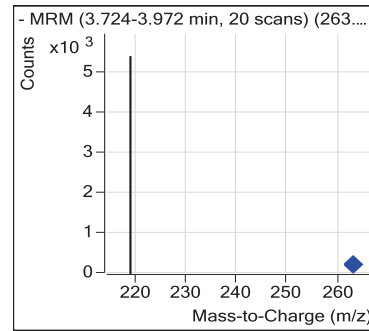
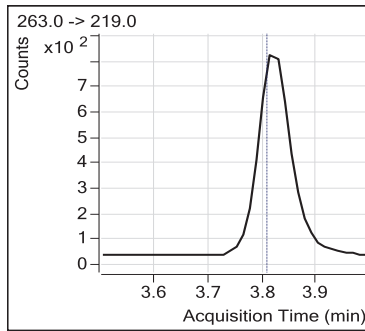
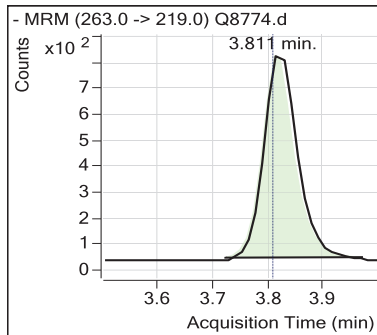
Data File : Q8774.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-15 16:51  
Sample Name : CC280-20  
Vial : Vial 2  
Sample Info : OP54151,SQ284,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ284.batch.bin  
**Last Calib Update** : 2014-12-10 09:24



#### PFBA



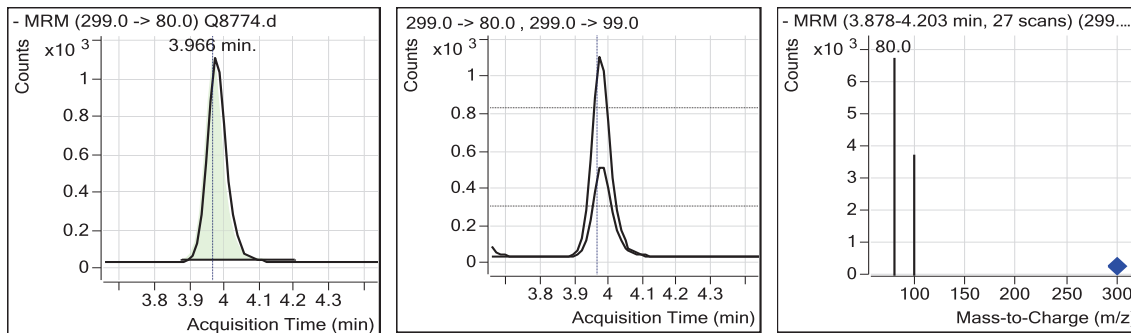
#### PFPeA



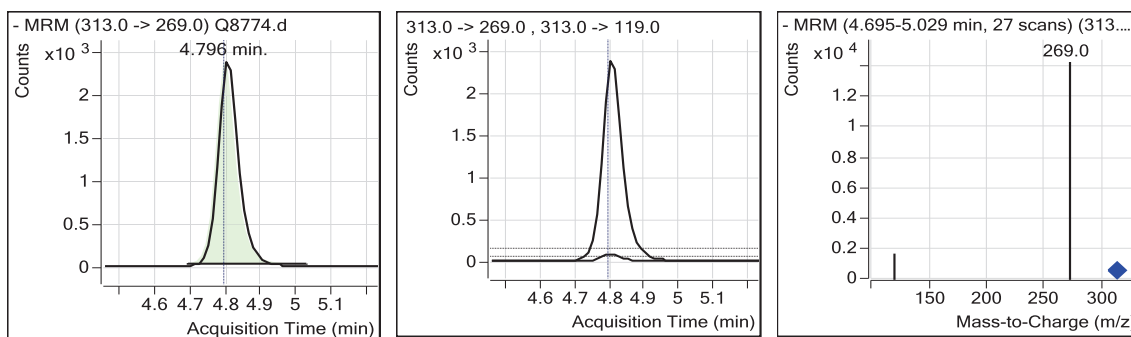
7.5.13  
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## Perfluorinated Compounds by LC/MS/MS.

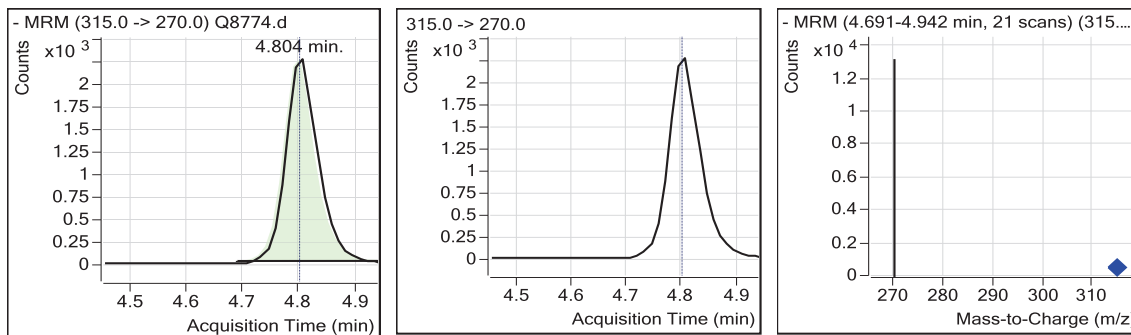
PFBS



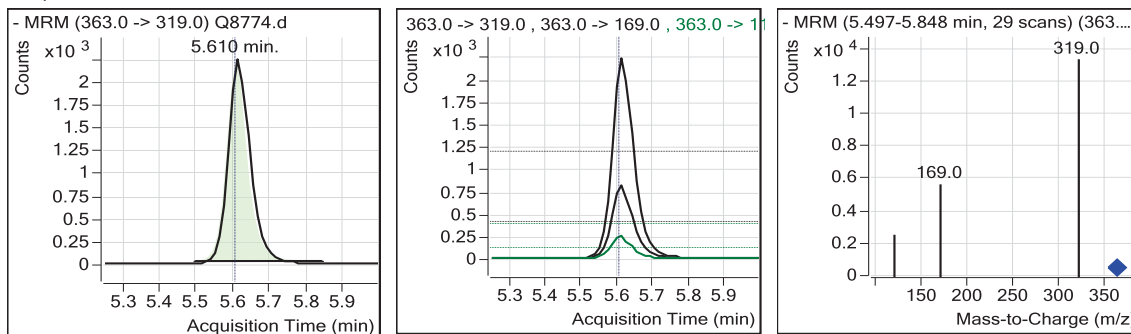
PFHxA



13C2-PFHxA



PFHpA

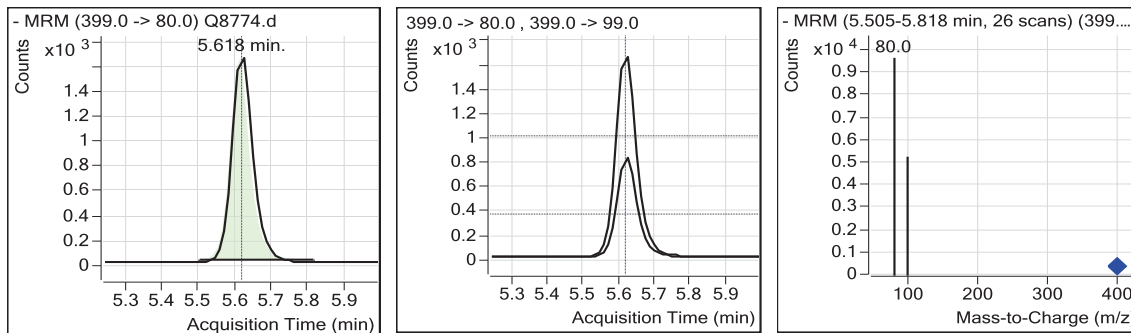


7.5.13

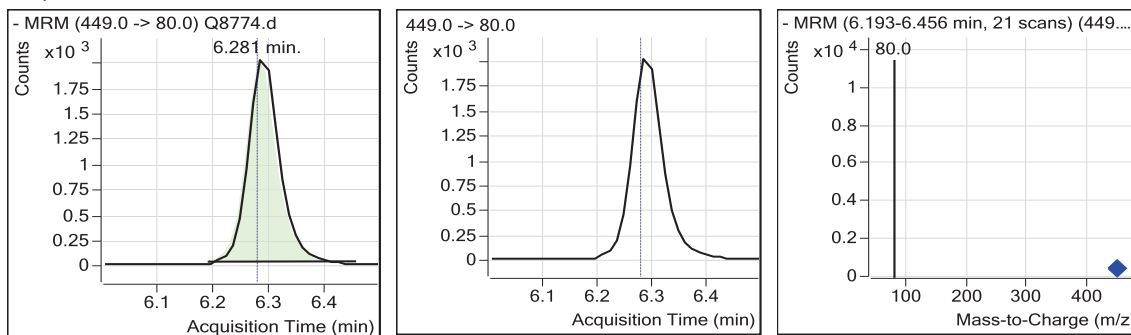
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### Perfluorinated Compounds by LC/MS/MS.

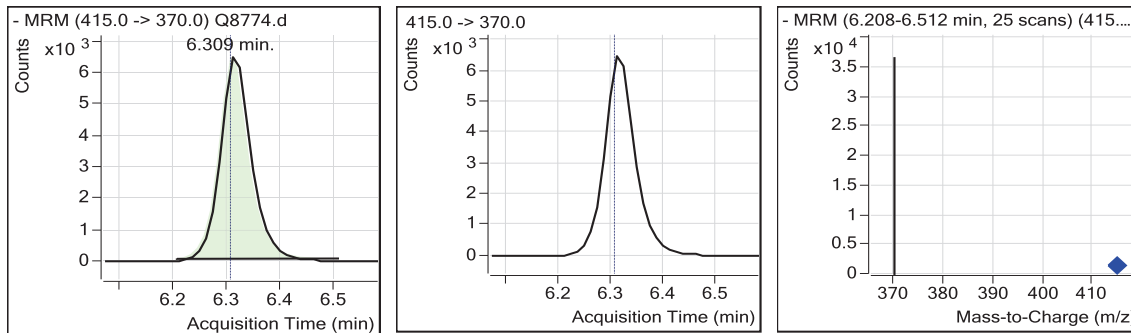
PFHxS



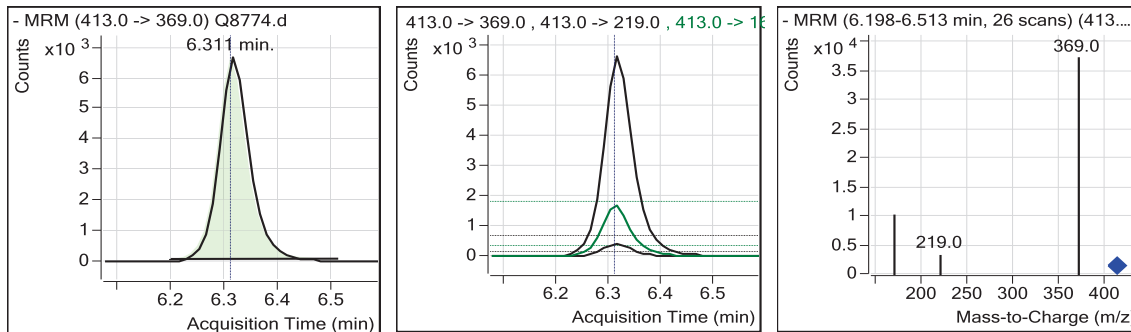
PFHpS



13C2-PFOA



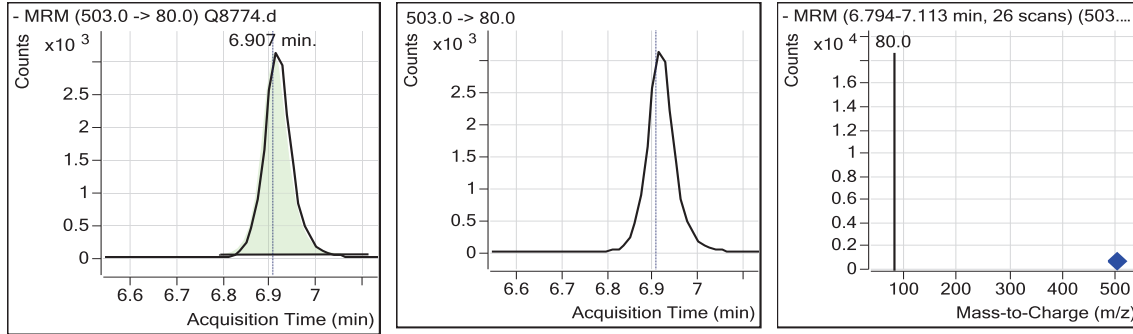
PFOA



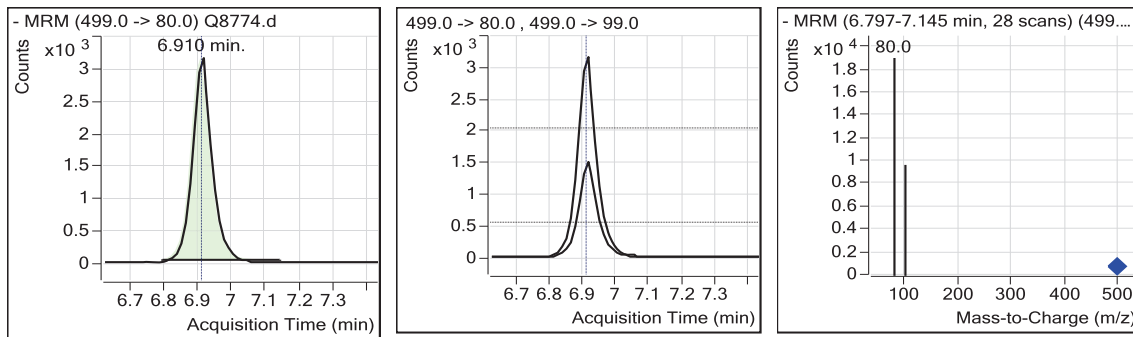
7.5.13  
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### Perfluorinated Compounds by LC/MS/MS.

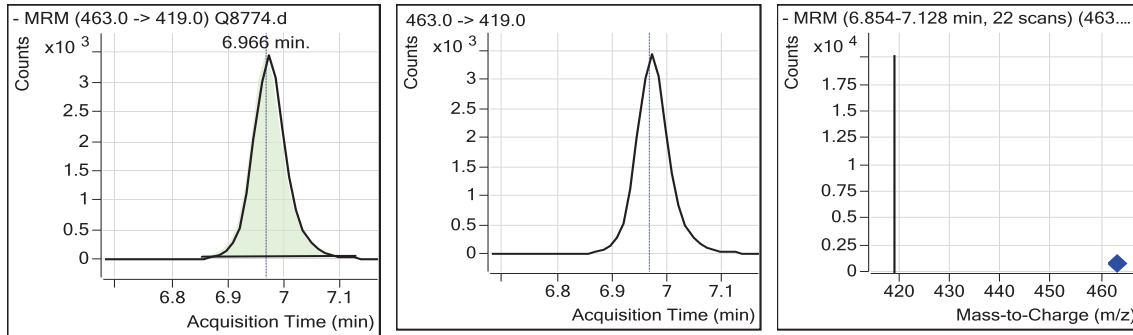
13C4-PFOS



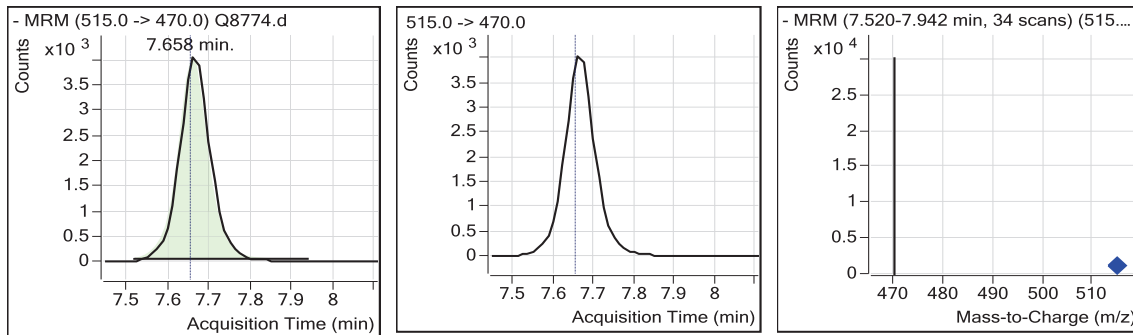
PFOS



PFNA



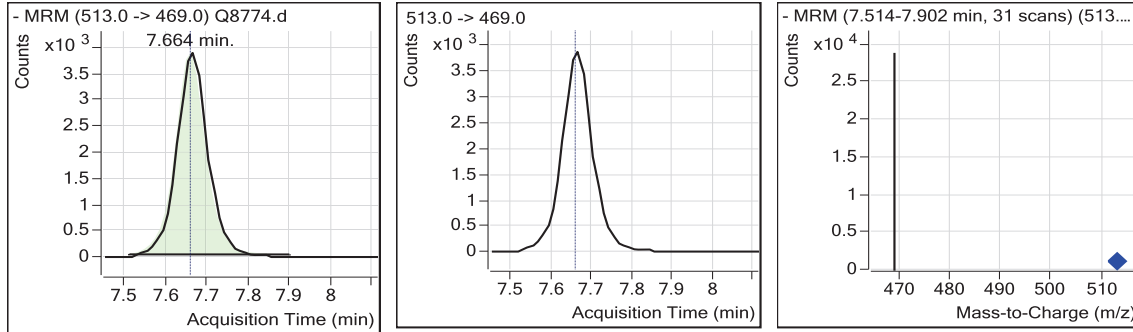
13C2-PFDA



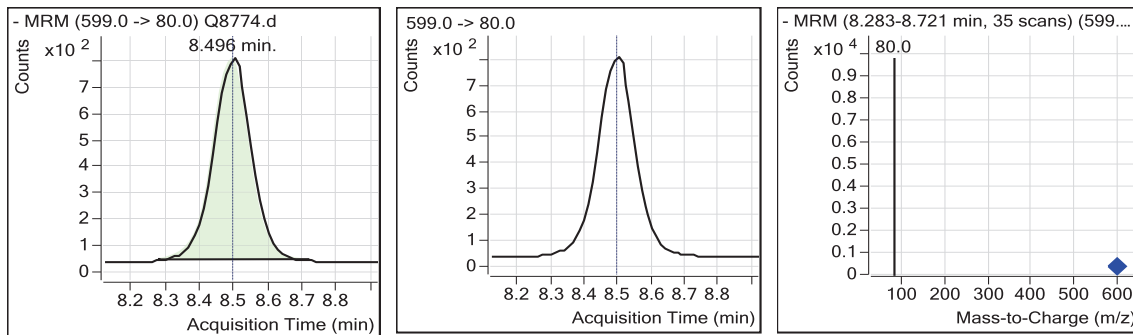
7.5.13  
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### Perfluorinated Compounds by LC/MS/MS.

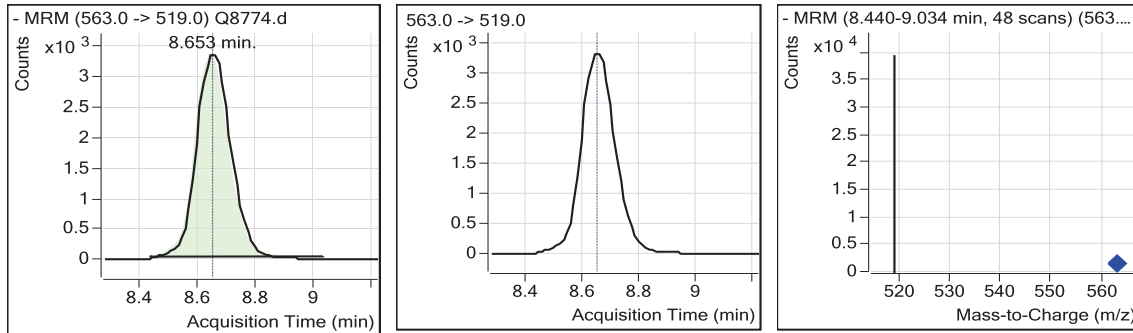
PFDA



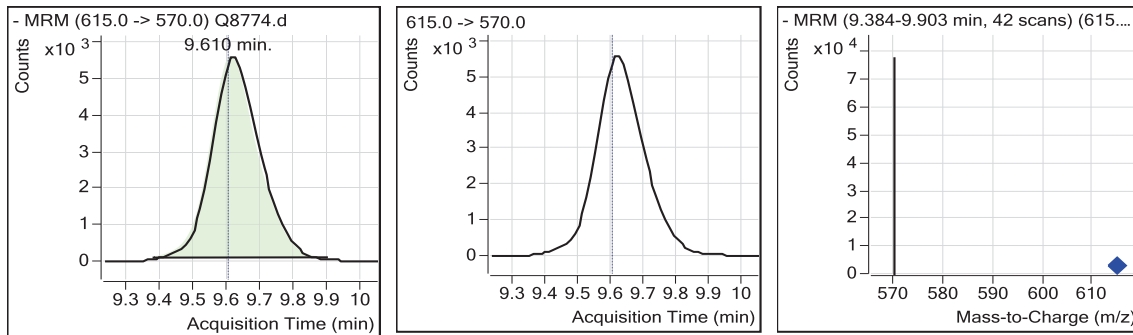
PFDS



PFUnDA



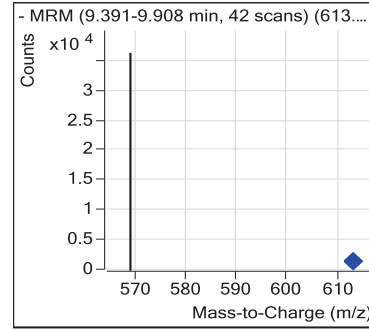
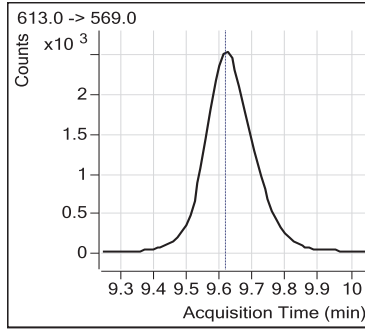
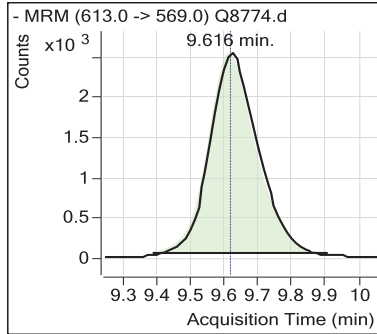
13C2-PFDoDA



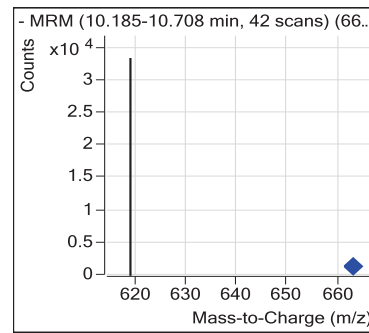
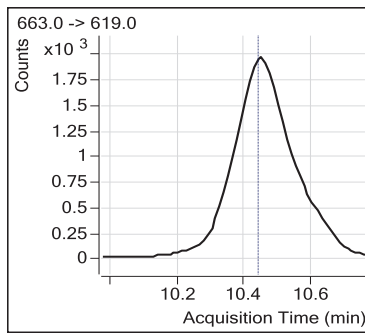
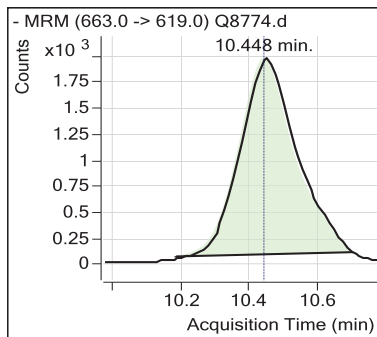
7.5.13  
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### Perfluorinated Compounds by LC/MS/MS.

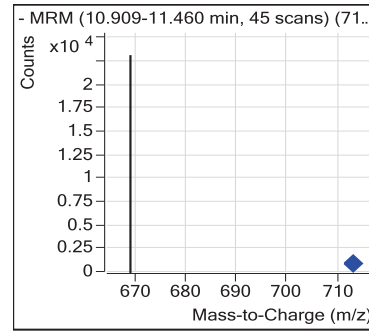
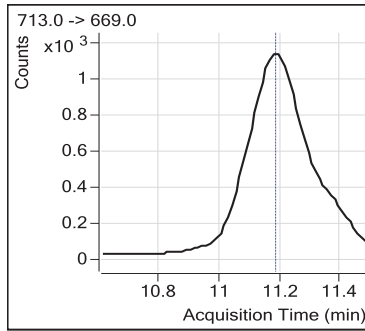
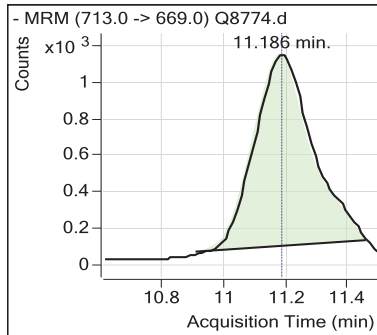
PFD<sub>o</sub>DA



PFT<sub>r</sub>DA



PFT<sub>e</sub>DA



7.5.13  
7

## Perfluorinated Compounds by LC/MS/MS.

Data File : Q8786.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 21:00  
 Sample Name : CC280-20  
 Vial : Vial 2  
 Sample Info : OP54151,SQ284,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
**Last Calib Update** : 2014-12-10 09:24

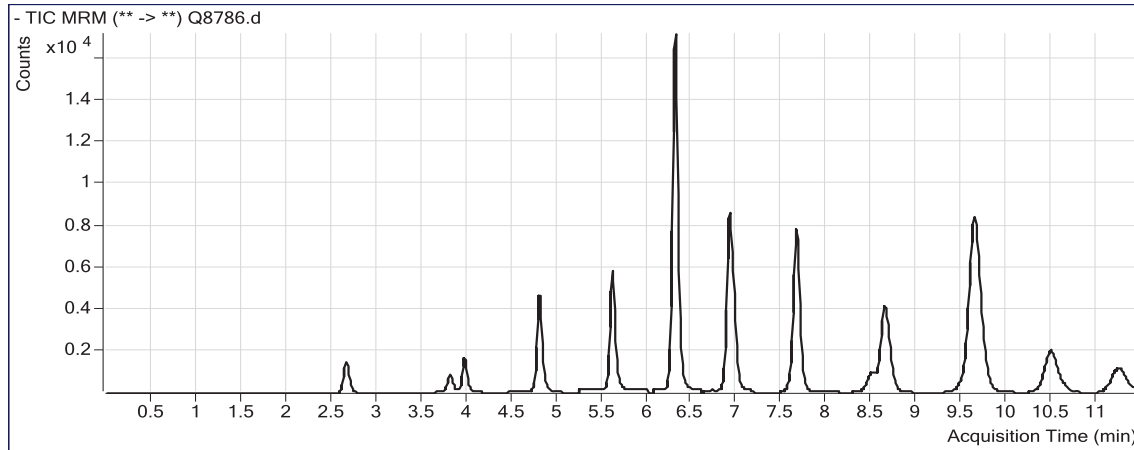
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	
<b>Internal Standards</b>							
13C2-PFOA	6.309	415.0 -> 370.0	27830	20.000	µg/L	0.000	
13C4-PFOS	6.907	503.0 -> 80.0	13391	20.000	µg/L	0.000	
13C2-PFDoDA	9.622	615.0 -> 570.0	54601	20.000	µg/L	0.012	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.804	315.0 -> 270.0	9165	20.03	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 100.15%				
13C2-PFDA	7.645	515.0 -> 470.0	20951	17.65	µg/L	-0.013	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 88.23%				
<b>Target Compounds</b>							<b>Qvalue</b>
PFBA	2.664	213.0 -> 169.0	7087	21.222	µg/L		100
PFPeA	3.811	263.0 -> 219.0	3366	20.172	µg/L		100
PFBS	3.966	299.0 -> 80.0	4231	21.385	µg/L		97
PFHxA	4.796	313.0 -> 269.0	9648	20.080	µg/L		99
PFHpA	5.610	363.0 -> 319.0	9262	19.870	µg/L		100
PFHxS	5.618	399.0 -> 80.0	6564	20.657	µg/L		88
PFHpS	6.281	449.0 -> 80.0	8165	20.569	µg/L		100
PFOA	6.311	413.0 -> 369.0	27865	19.765	µg/L		80
PFOS	6.898	499.0 -> 80.0	13646	20.374	µg/L		90
PFNA	6.954	463.0 -> 419.0	14316	17.079	µg/L		100
PFDA	7.652	513.0 -> 469.0	19972	24.106	µg/L		100
PFDS	8.471	599.0 -> 80.0	6207	26.118	µg/L		100
PFUnDA	8.627	563.0 -> 519.0	30581	25.885	µg/L		100
PFDoDA	9.616	613.0 -> 569.0	24477	20.006	µg/L		100
PFTrDA	10.460	663.0 -> 619.0	21701	18.251	µg/L		100
PFTeDA	11.211	713.0 -> 669.0	13911	16.599	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

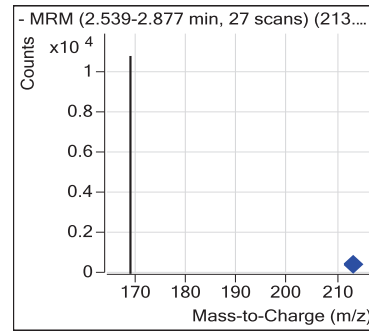
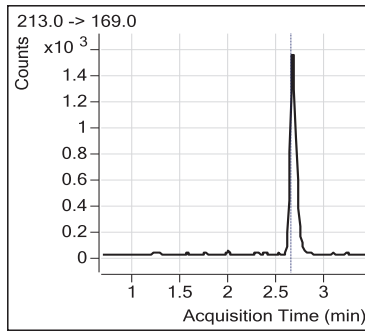
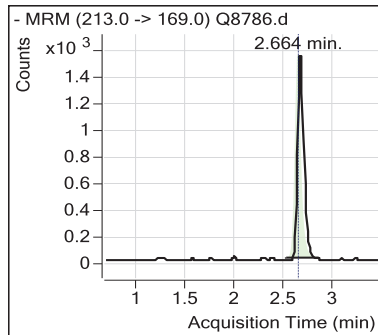
7.5.14  
7

### Perfluorinated Compounds by LC/MS/MS.

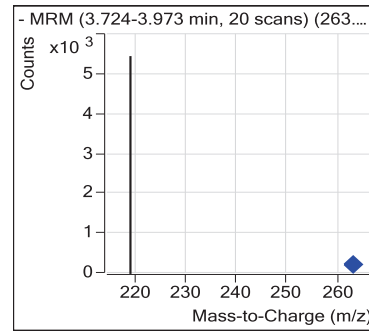
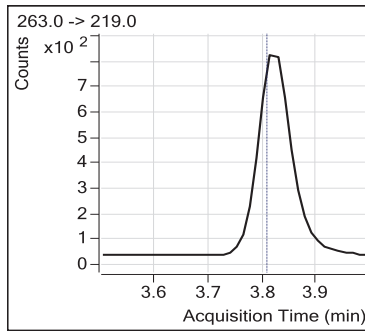
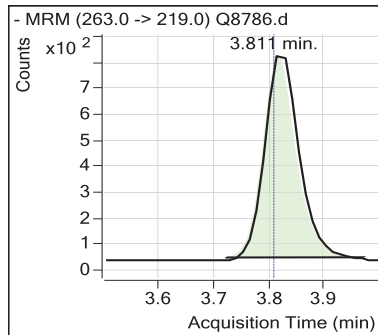
Data File : Q8786.d  
Operator : nancyf  
Acq Method Name : dMRM\_PFOA\_PFOS.m  
Acquisition date : 2014-12-15 21:00  
Sample Name : CC280-20  
Vial : Vial 2  
Sample Info : OP54151,SQ284,125,,,1,1,WATER  
Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
Quant Batch Name : SQ284.batch.bin  
Last Calib Update : 2014-12-10 09:24



#### PFBA



#### PFPeA

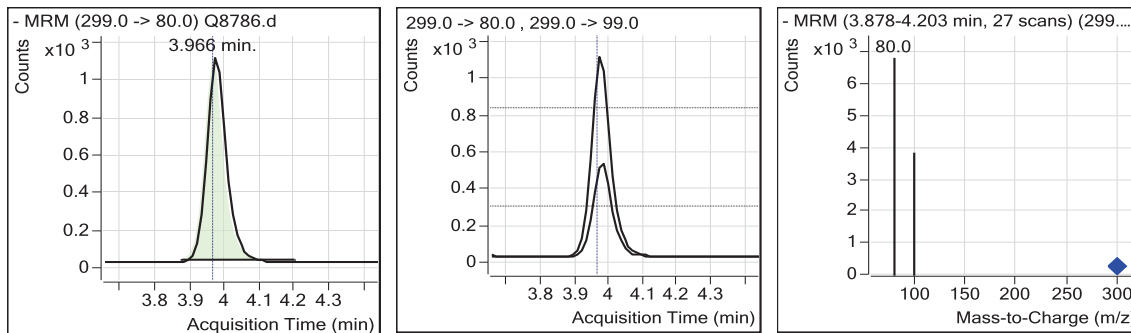


7.5.14  
7

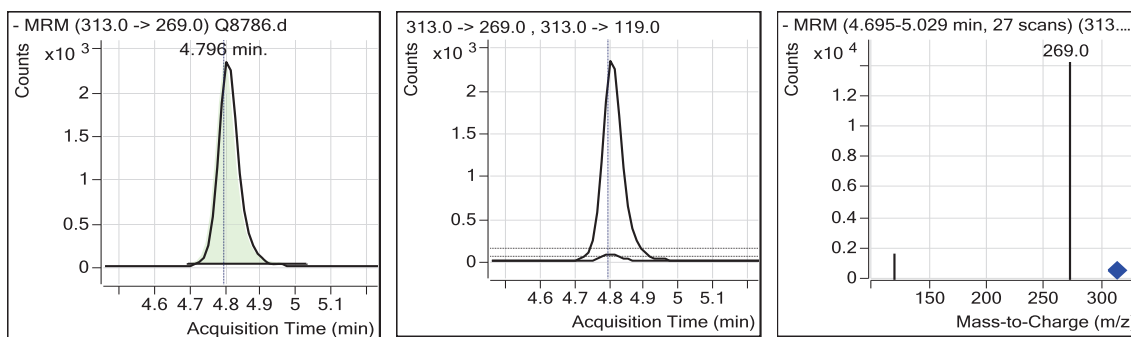


### Perfluorinated Compounds by LC/MS/MS.

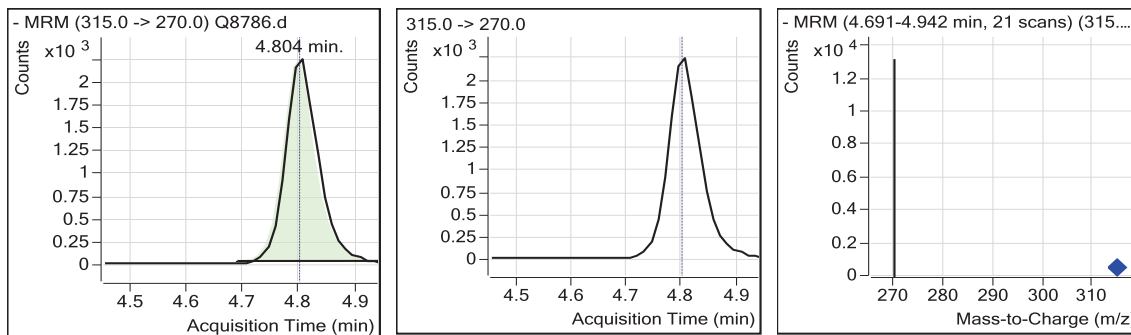
PFBS



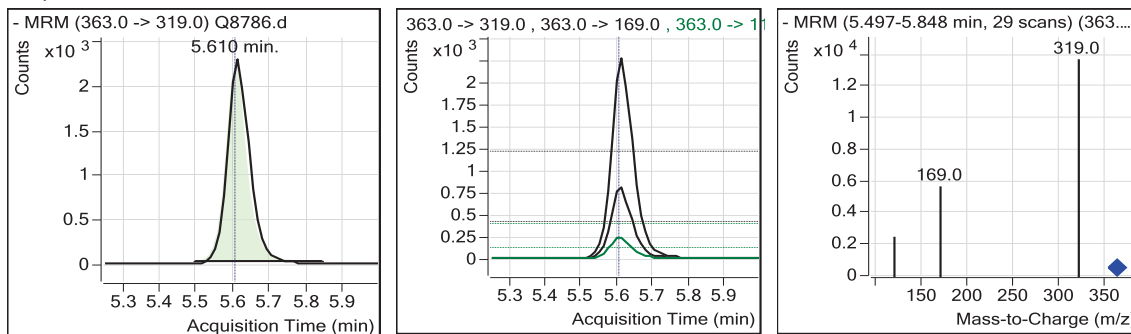
PFHxA



13C2-PFHxA



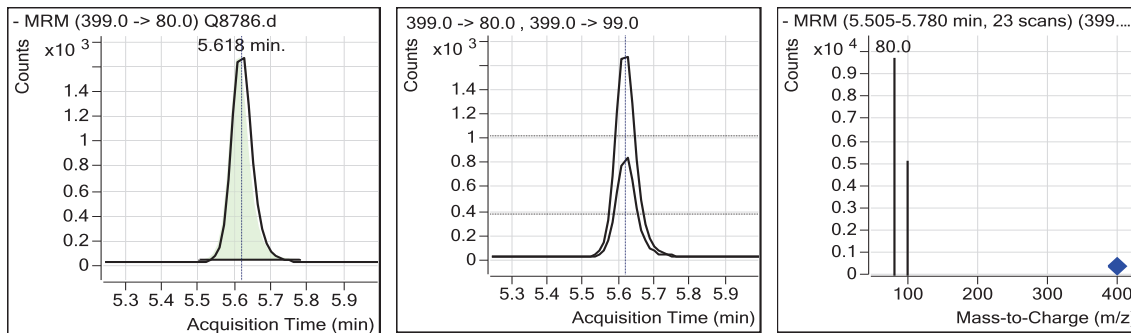
PFHpA



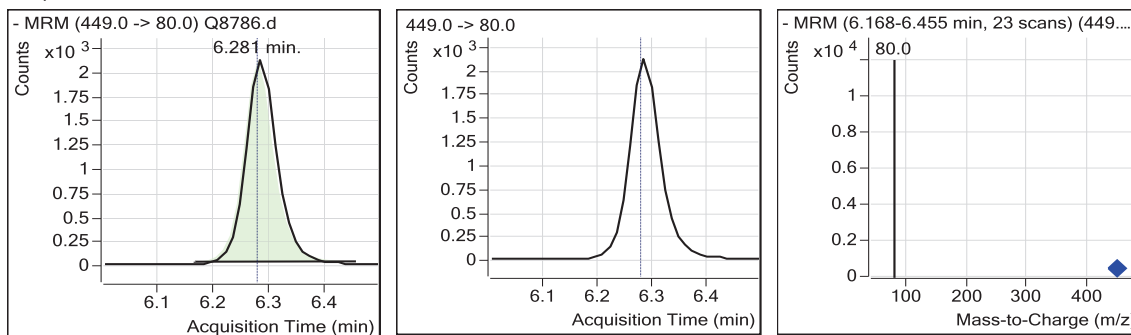
7.5.14  
7

### Perfluorinated Compounds by LC/MS/MS.

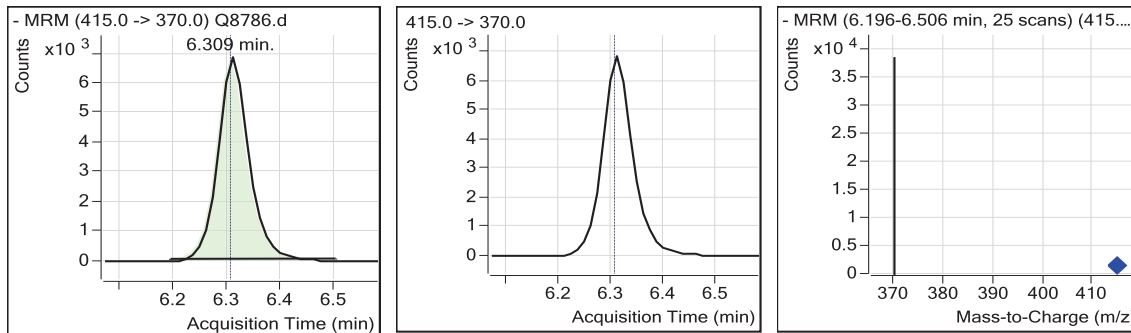
PFHxS



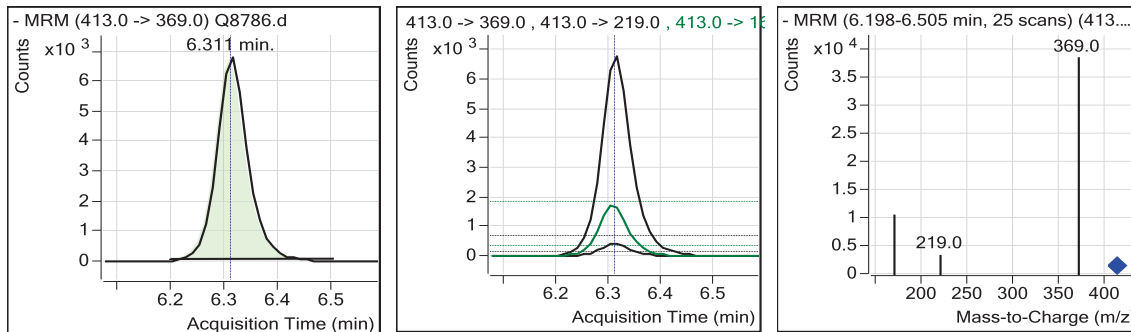
PFHpS



13C2-PFOA



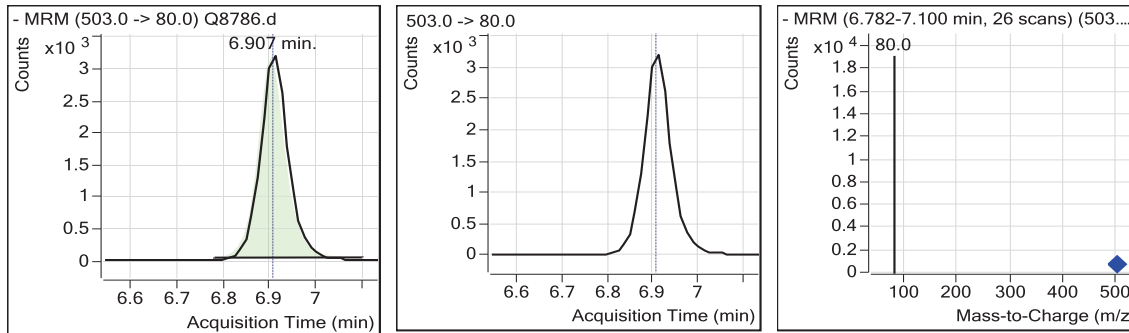
PFOA



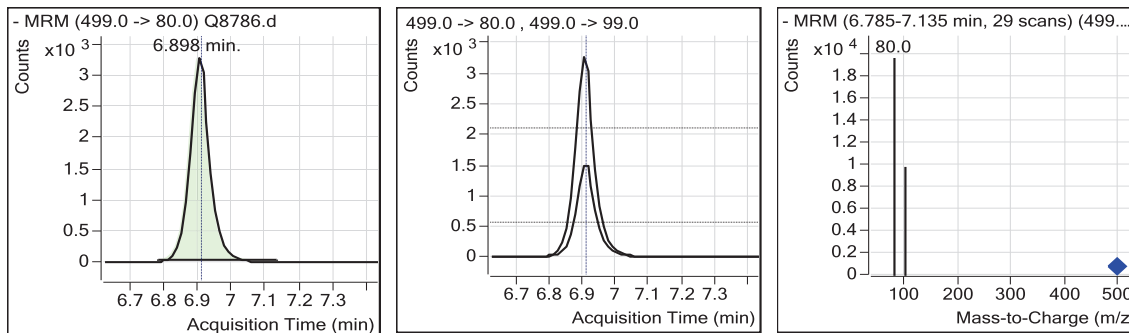
7.5.14  
7

### Perfluorinated Compounds by LC/MS/MS.

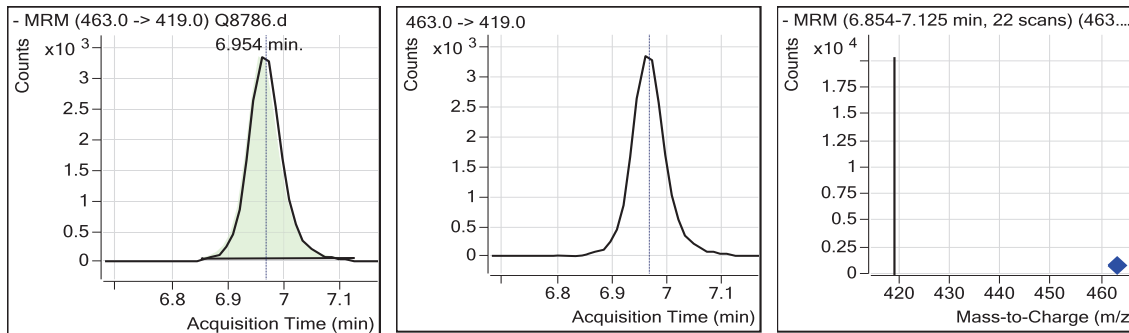
13C4-PFOS



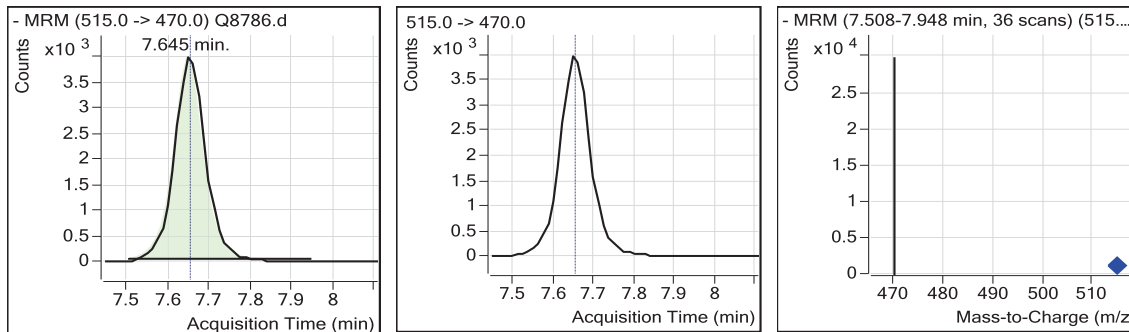
PFOS



PFNA



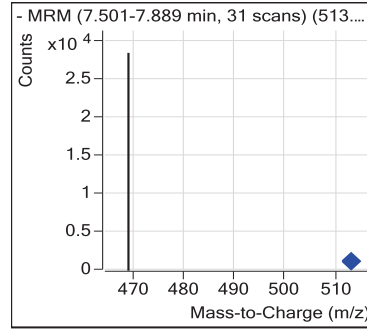
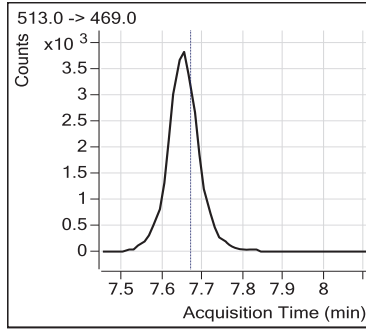
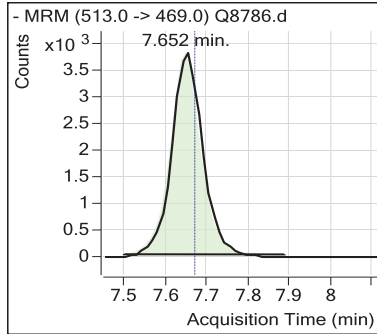
13C2-PFDA



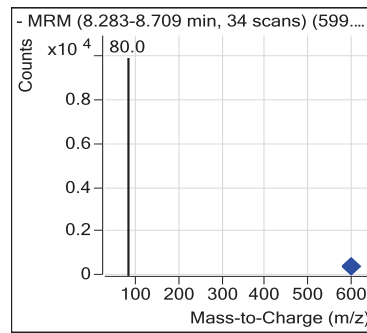
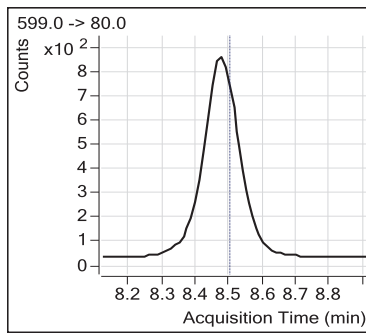
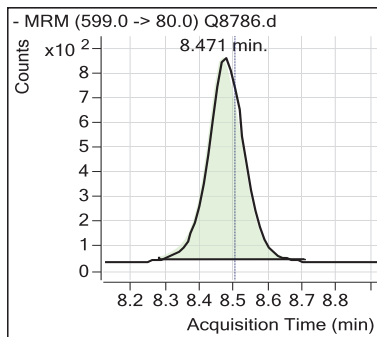
7.5.14  
7

### Perfluorinated Compounds by LC/MS/MS.

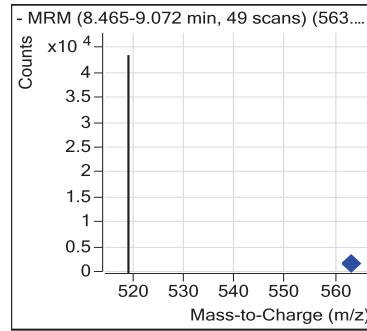
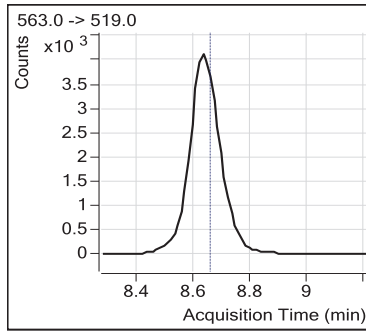
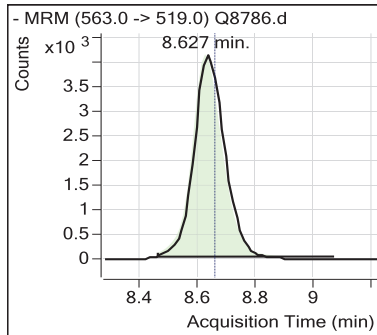
PFDA



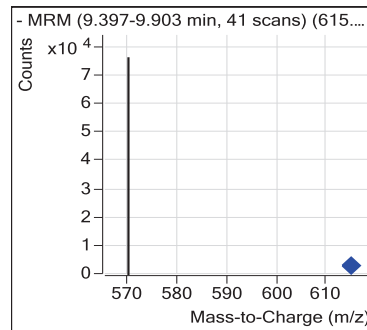
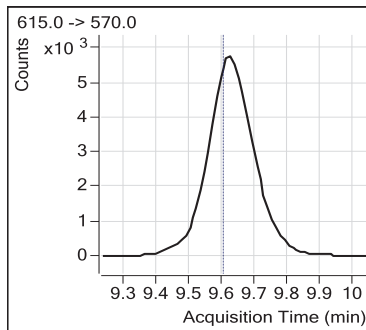
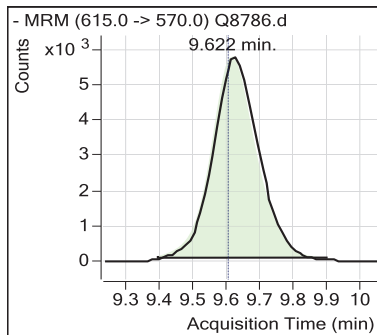
PFDS



PFUnDA



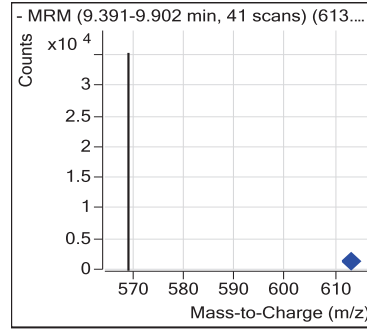
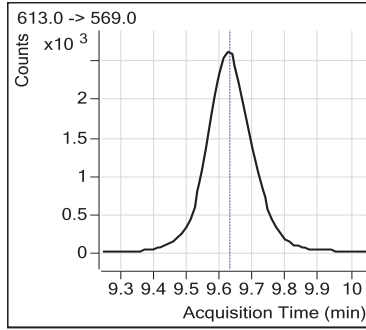
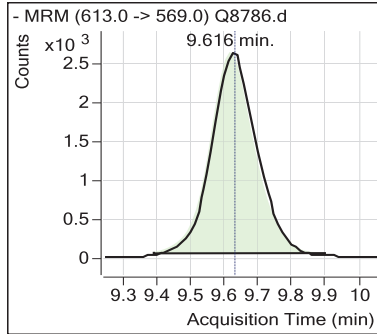
13C2-PFDoDA



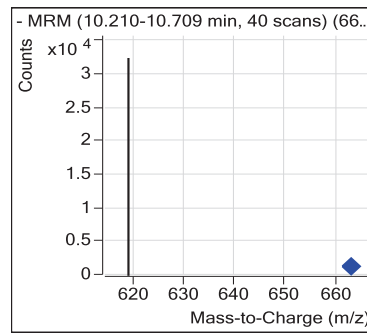
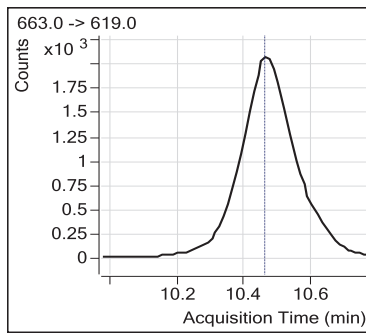
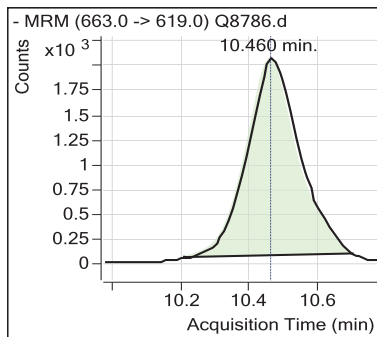
7.5.14  
7

### Perfluorinated Compounds by LC/MS/MS.

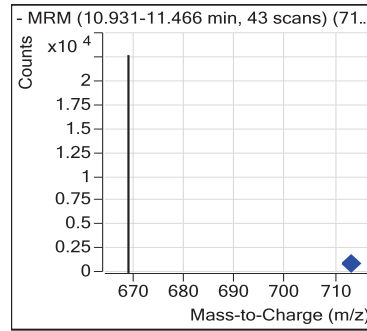
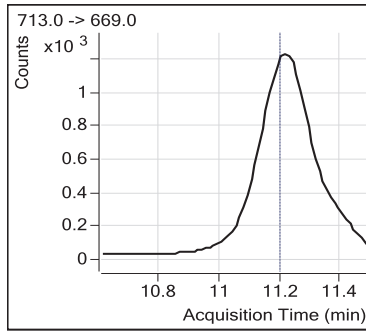
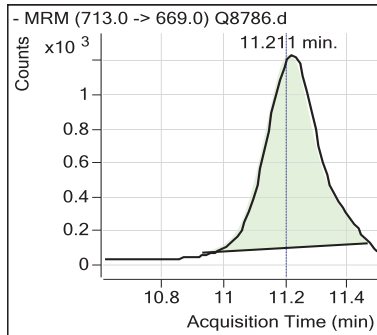
PFD<sub>o</sub>DA



PFT<sub>r</sub>DA



PFT<sub>e</sub>DA



7.5.14  
7

## Perfluorinated Compounds by LC/MS/MS.

```

Data File           : Q8793.d
Operator            : nancyf
Acq Method Name     : dMRM_PFOA_PFOS.m
Acquisition date    : 2014-12-15 23:25
Sample Name         : CC280-20
Vial                 : Vial 2
Sample Info         : OP54151,SQ284,125,,,1,1,WATER
Quant Method        : PFC_1208_SQ280.quantmethod.xml
Quant Batch Name    : SQ284.batch.bin
Last Calib Update   : 2014-12-10 09:24
    
```

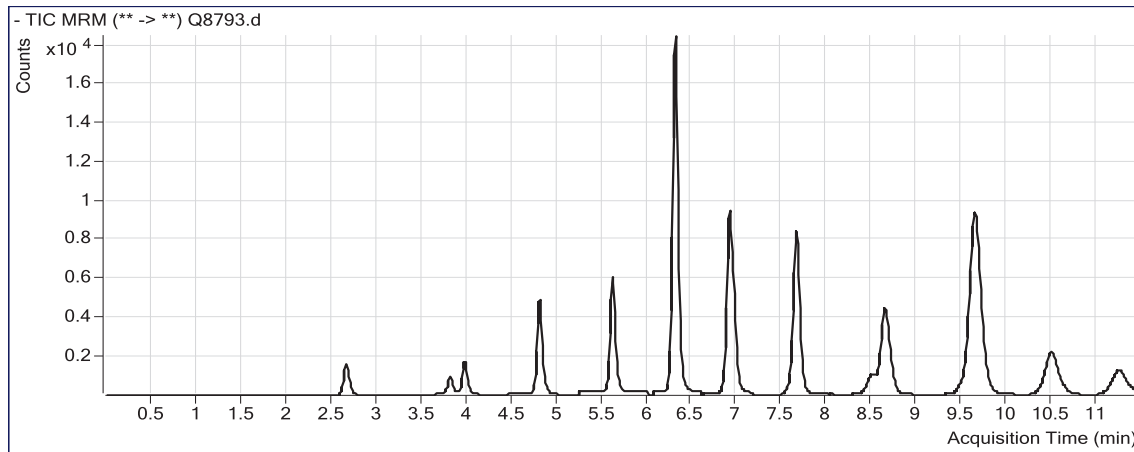
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)	Qvalue
<b>Internal Standards</b>							
13C2-PFOA	6.309	415.0 -> 370.0	30020	20.000	µg/L	0.000	
13C4-PFOS	6.907	503.0 -> 80.0	14852	20.000	µg/L	0.000	
13C2-PFDoDA	9.622	615.0 -> 570.0	59443	20.000	µg/L	0.013	
<b>System Monitoring Compounds</b>							
13C2-PFHxA	4.804	315.0 -> 270.0	9787	19.83	µg/L	0.000	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 99.14%				
13C2-PFDA	7.645	515.0 -> 470.0	22818	17.82	µg/L	-0.013	
Spiked Amount: 20.000	Range: 14 - 26		Recovery = 89.09%				
<b>Target Compounds</b>							
PFBA	2.664	213.0 -> 169.0	7300	20.266	µg/L		100
PFPeA	3.824	263.0 -> 219.0	3603	20.015	µg/L		100
PFBS	3.966	299.0 -> 80.0	4516	20.580	µg/L		98
PFHxA	4.796	313.0 -> 269.0	10233	19.743	µg/L		99
PFHpA	5.610	363.0 -> 319.0	9665	19.222	µg/L		99
PFHxS	5.618	399.0 -> 80.0	6976	19.796	µg/L		88
PFHpS	6.281	449.0 -> 80.0	8755	19.888	µg/L		100
PFOA	6.311	413.0 -> 369.0	30370	19.970	µg/L		81
PFOS	6.898	499.0 -> 80.0	14819	19.950	µg/L		87
PFNA	6.954	463.0 -> 419.0	15941	17.630	µg/L		100
PFDA	7.652	513.0 -> 469.0	21656	24.009	µg/L		100
PFDS	8.471	599.0 -> 80.0	6763	26.139	µg/L		100
PFUnDA	8.627	563.0 -> 519.0	32906	25.585	µg/L		100
PFDoDA	9.616	613.0 -> 569.0	26948	20.232	µg/L		100
PFTrDA	10.473	663.0 -> 619.0	23508	18.160	µg/L		100
PFTeDA	11.223	713.0 -> 669.0	14925	16.359	µg/L		100

(#) = Qualifier Out of Range; (m) = Manual Integration; (+) = Area Summed

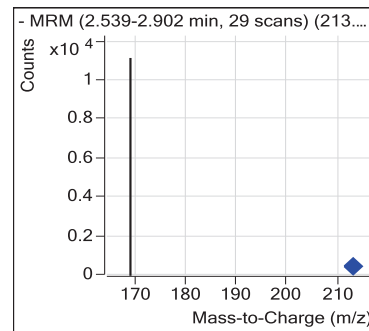
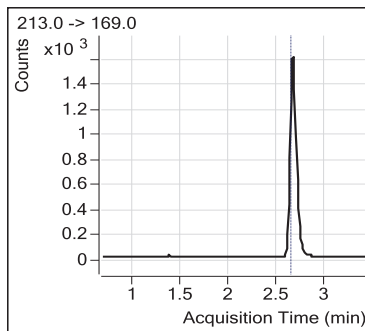
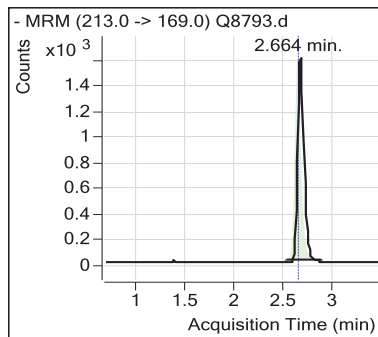
7.5.15  
7

## Perfluorinated Compounds by LC/MS/MS.

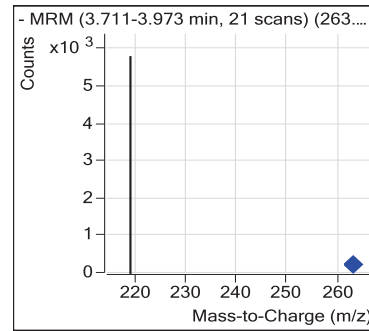
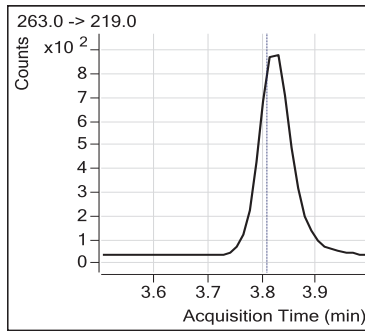
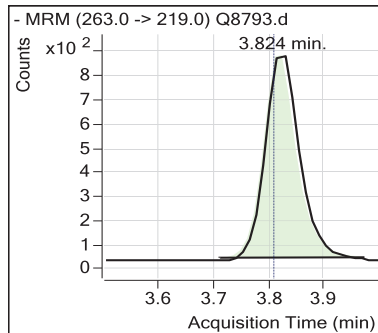
Data File : Q8793.d  
 Operator : nancyf  
 Acq Method Name : dMRM\_PFOA\_PFOS.m  
 Acquisition date : 2014-12-15 23:25  
 Sample Name : CC280-20  
 Vial : Vial 2  
 Sample Info : OP54151,SQ284,125,,,1,1,WATER  
 Quant Method : PFC\_1208\_SQ280.quantmethod.xml  
 Quant Batch Name : SQ284.batch.bin  
**Last Calib Update** : 2014-12-10 09:24



**PFBA**



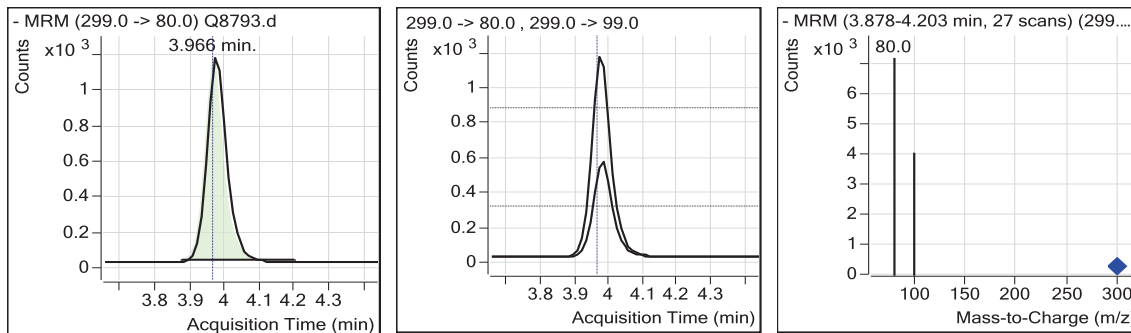
**PFPeA**



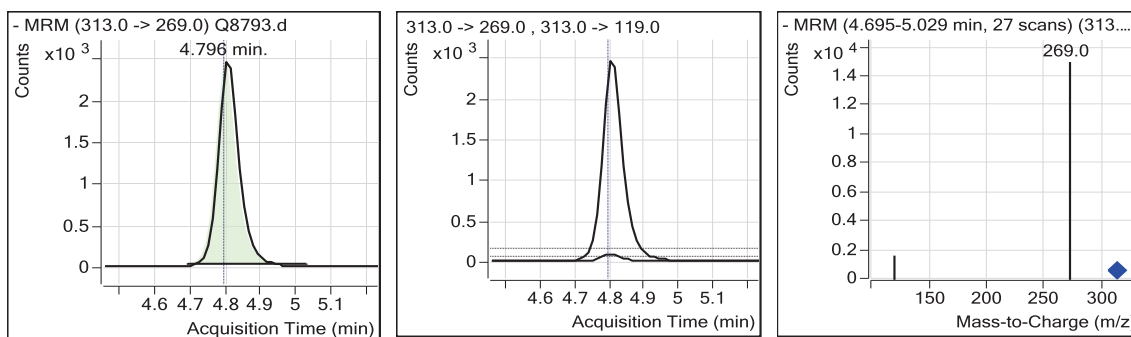
7.5.15  
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### Perfluorinated Compounds by LC/MS/MS.

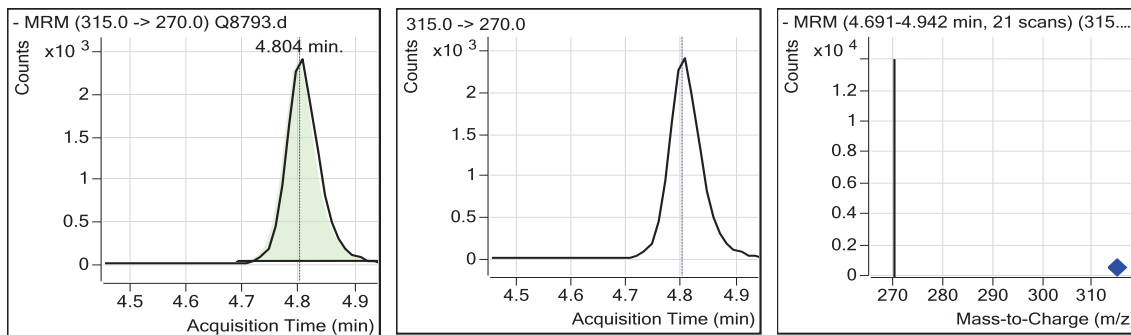
PFBS



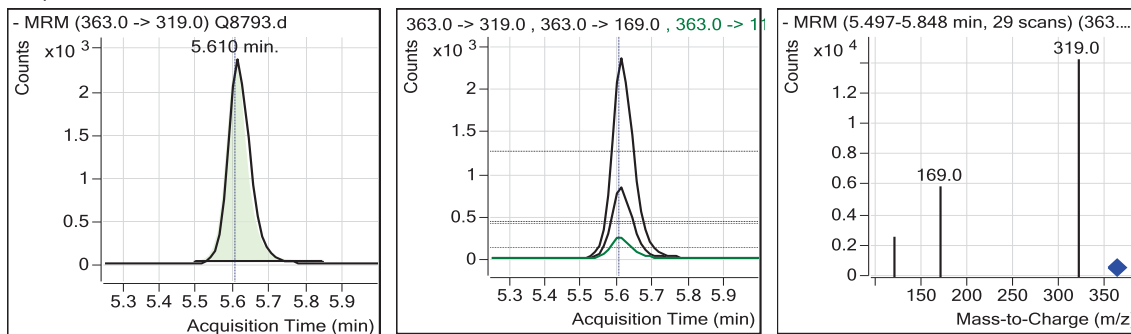
PFHxA



13C2-PFHxA



PFHpA

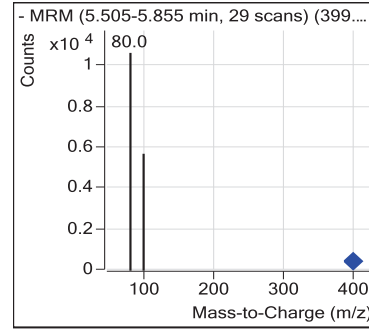
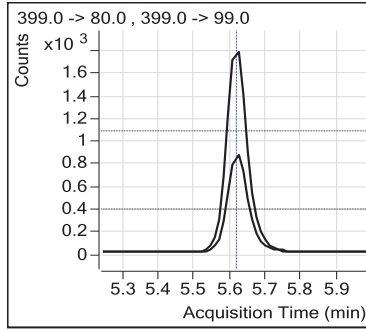
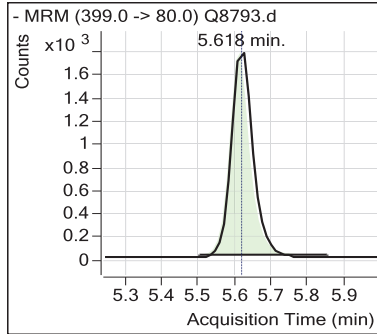


7.5.15  
7

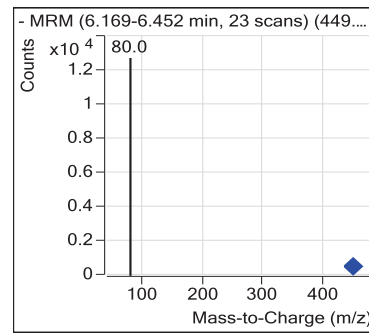
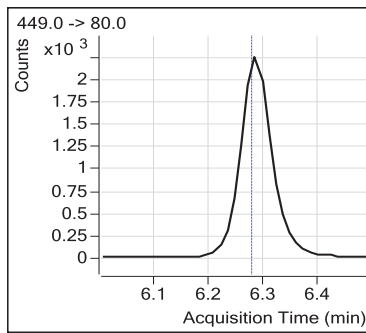
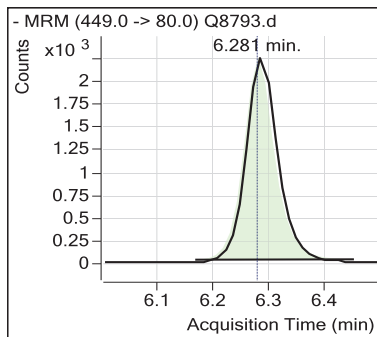


### Perfluorinated Compounds by LC/MS/MS.

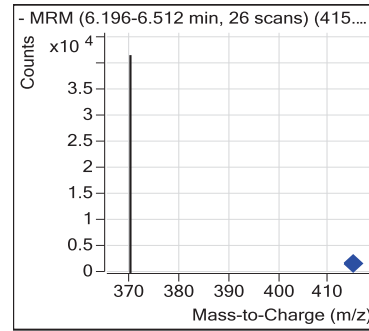
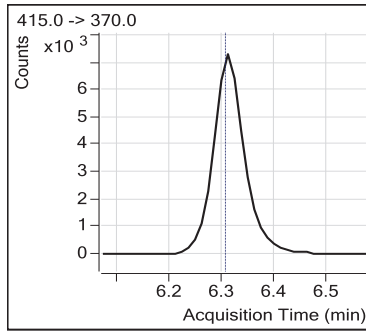
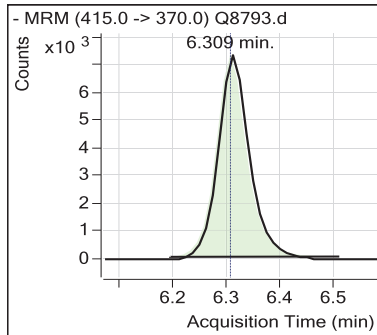
PFHxS



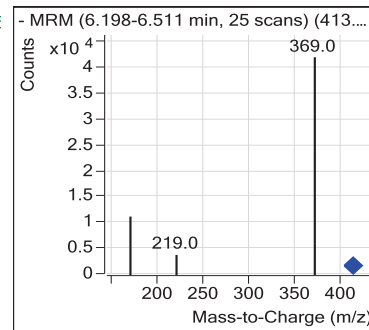
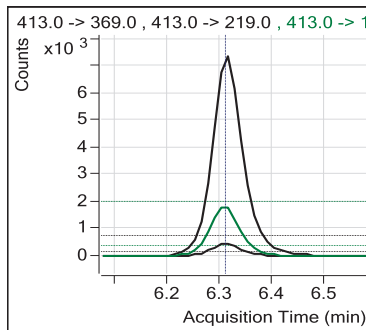
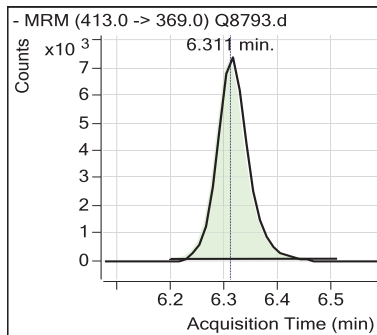
PFHpS



13C2-PFOA



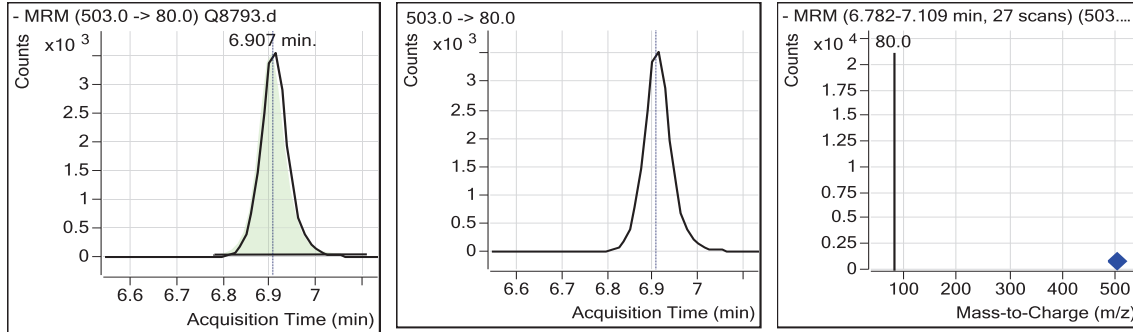
PFOA



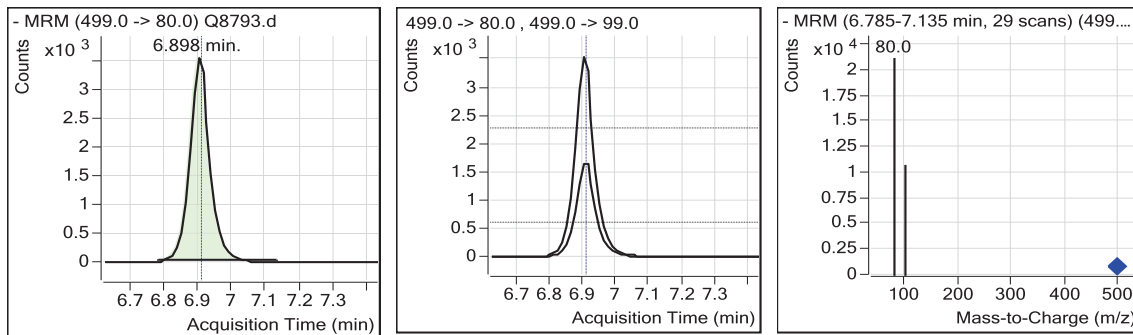
7.5.15  
7

### Perfluorinated Compounds by LC/MS/MS.

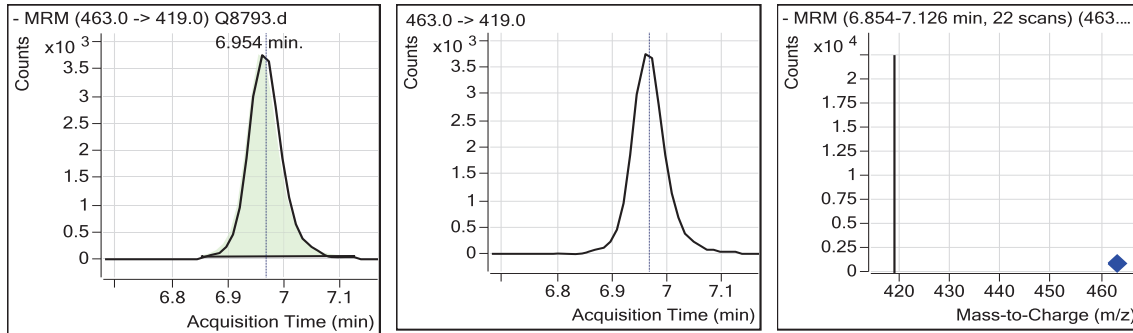
#### 13C4-PFOS



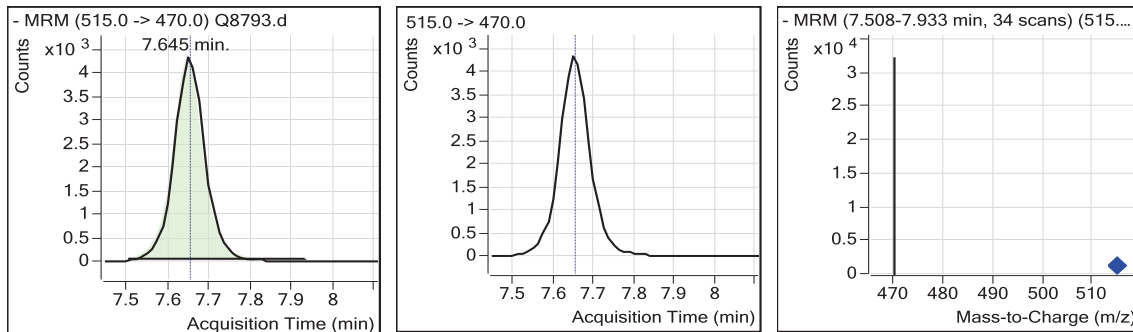
#### PFOS



#### PFNA



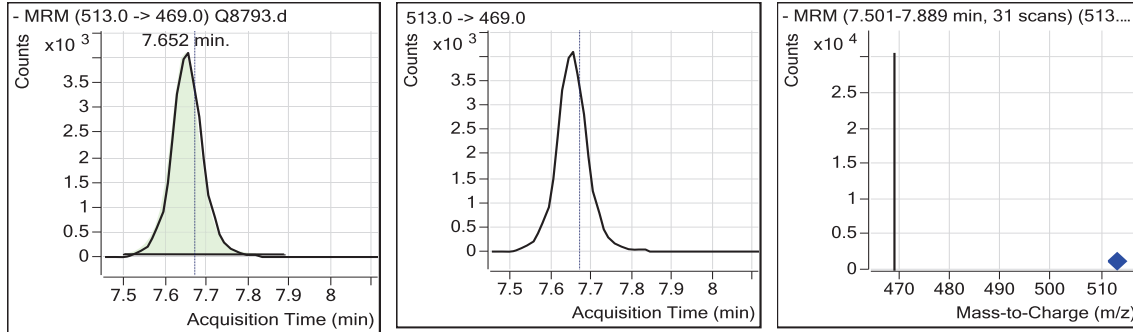
#### 13C2-PFDA



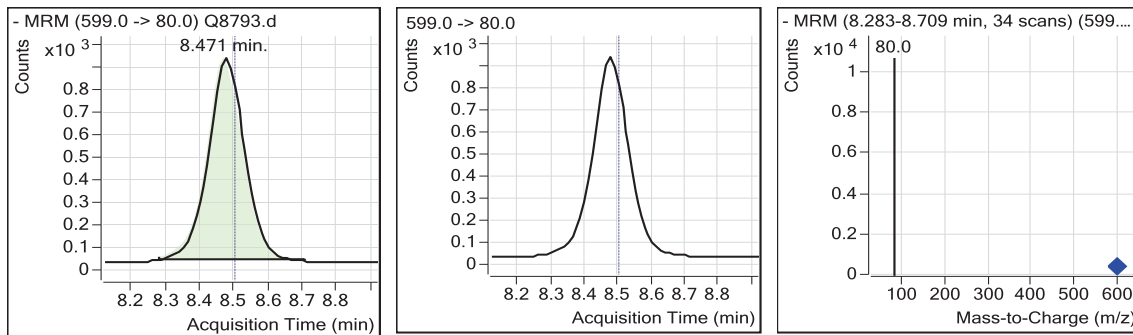
7.5.15  
7

### Perfluorinated Compounds by LC/MS/MS.

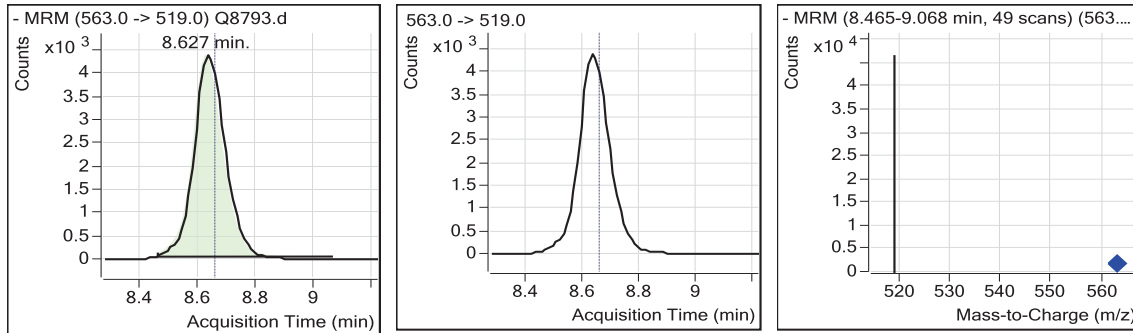
PFDA



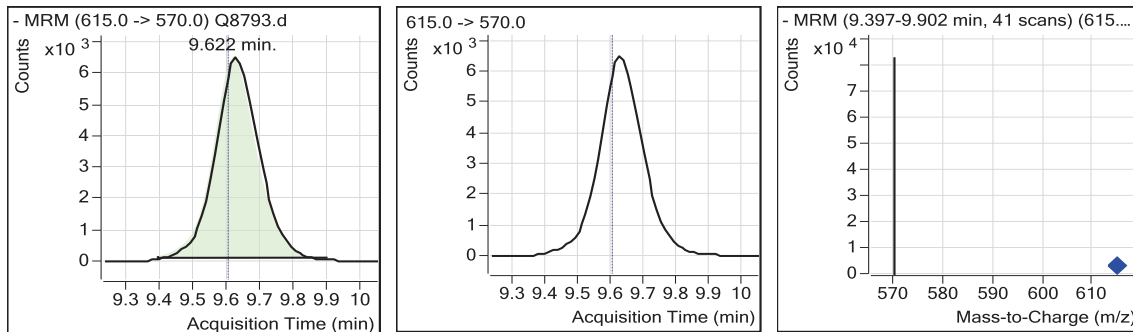
PFDS



PFUnDA



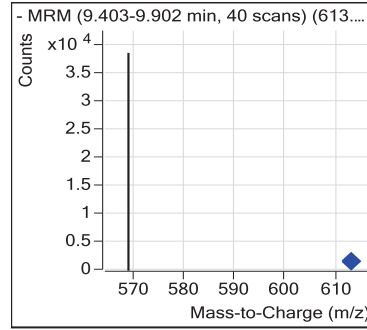
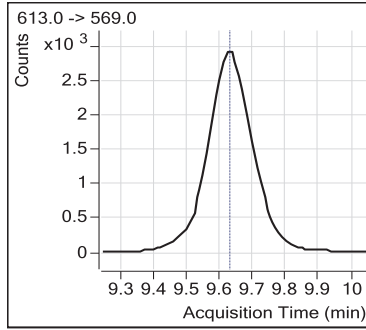
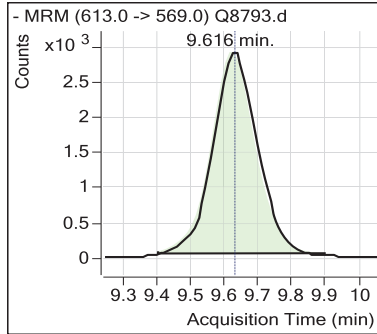
13C2-PFDoDA



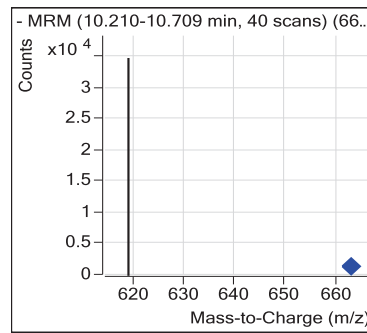
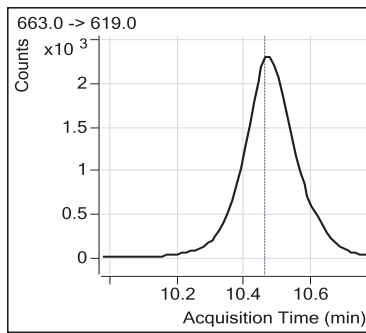
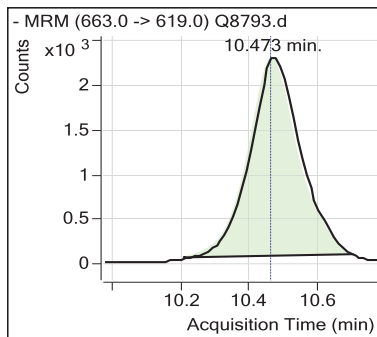
7.5.15  
7

### Perfluorinated Compounds by LC/MS/MS.

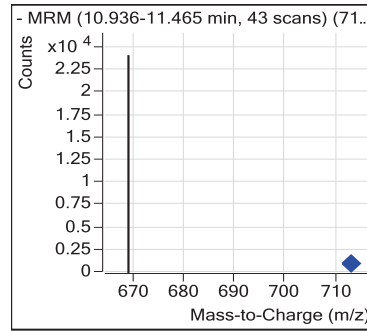
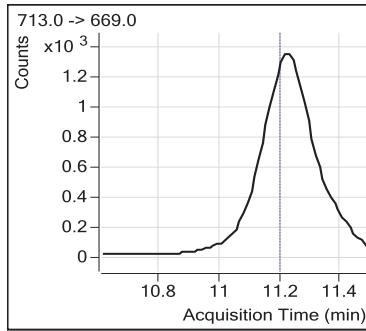
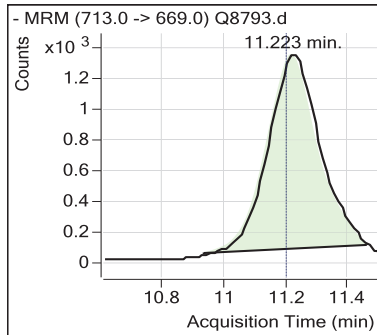
PFD<sub>o</sub>DA



PFT<sub>r</sub>DA



PFT<sub>e</sub>DA



7.5.15  
7

ACCUTEST LABORATORIES SE

DATE: 12/8/14  
 COLUMN TYPE: Porashell 2.2-c18  
 AMOUNT INJECTED: 7.5 ul  
 INSTRUMENT: LCMS1-Q  
 HEAD PRESSURE: 414

LCMS1-Q ANALYSIS LOG

METHODS: Prep. PPOS  
 ACC. METHOD: AMEM-PPA-PPS  
 PROC. METHOD: PCE-PPA-PPS  
 CALIB. DATE: 11/14/14  
 RUN BATCH: SQ 280

ANALYST: MJS  
 SOLVENT A LOT #: 295-081023  
 SOLVENT B LOT #: 081052  
 WATER LOT #: 284032  
 ISTD Lot #: LC 488

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	SCON	ION RATIO	MANUAL INTS RATIONALE, PK #	COMMENTS
Q 86 28	1	CCB	PCE						
Q 29	1	CCB							
Q 30	2	FT check							
Q 31	2	CC276.20		LC487	200/500				Low (high 1570)
Q 32	3	CC276.20		J	J				Low J
Q 33	1	CCB							
Q 34	2	LC280.2.5		LC487	25/500				
Q 35	3	J - 5.0		J	50/500				
Q 36	4	J - 10		J	100/500				
Q 37	5	LC280.20		J	200/500				
Q 38	6	LC280.30		J	300/500				
Q 39	7	J - 40		J	400/500				
Q 40	8	J - 50		J	400/500				
Q 41	9	LCV280.20		7047	5/500				
Q 42	10	LCV280.20		LC485	40/500				
Q 43	11	OP57108-735		57105	1			SP	
Q 44	12	FA20136-1		J	5/500			SP	LAST 4 low RR
Q 45	13	FA20172-16		57086	250/500			SP	RR
Q 46	14	FA20172-27		57098	50/500			SP	
Q 47	15	J - 28		J	100/500			SP	

Manual Integration Rationale SOP QA029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, BR Baseline Ripple, PII Poor Instrument Integration  
 All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

LCMS1\_Q\_log.xls NF rev. 10/12

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Analyst's Signature: *MJS*

ACCUTEST LABORATORIES SE

DATE: 12/8/14  
 COLUMN TYPE: Proshelw Et-C18  
 AMOUNT INJECTED: 7.5 ul  
 INSTRUMENT: LCMS1-Q  
 HEAD PRESSURE: 414

LCMS1-Q ANALYSIS LOG

METHODS: PFA - PFA  
 ACQ. METHOD: ADEM-PFA-AF03  
 PROC. METHOD: PFC-1203-50750  
 CALIB. DATE: 12/8/14  
 RUN BATCH: SQ 280

ANALYST: [Signature]  
 SOLVENT A LOT #: 95F 084023/660640  
 SOLVENT B LOT #: 0810521  
 WATER LOT #: 084023  
 ISTD Lot #: LC488

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	SCON	ION RATIO	MANUAL INTS RATIONALE, PK #	COMMENTS
Q 86 48	16	FA20172-29	PFC	54098	100/500				
Q 1 49	17	↓ .30			↓			SP	
Q 50	18	↓ -31			250/500				
Q 51	19	FA20173-1			50/500				
Q 52	20	↓ -2			↓				
Q 53	5	CC280.20		LC487	200/500				MPAS
Q 54	1	CCB							
Q 55	21	OP54121-BS		54121	↓			SP	✓
Q 56	22	↓ -MB							BDL
Q 57	23	C37320-1						SP	✓
Q 58	24	OP54121-MS						50	✓
Q 59	25	↓ -MSD						50	✓
Q 60	26	C37320-2							BDL
Q 61	27	↓ -3							BDL
Q 62	28	↓ -5							BDL
Q 63	29	C37352-1		54121	↓			SP	✓
Q 64	30	OP54121-MS2			↓			SP	✓
Q 65	5	CC280.20		LC487	200/500				MPAS
Q 66	1	CCB							MPAS
Q 67	31	OP54121-MS2		54121	↓			SP	✓ High RID

Manual Integration Rationale SOP QA029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, BR Baseline Ripple, PII Poor Instrument Integration  
 All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

LCMS1\_Q\_log.xls NF rev. 10/12

Analyst's Signature: [Signature]

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ACCUTEST LABORATORIES SE

DATE: 12/8/14  
 COLUMN TYPE: Poroshell EC-C18  
 AMOUNT INJECTED: 7.5 ul  
 INSTRUMENT: LCMS1-Q  
 HEAD PRESSURE: 414

LCMS1-Q ANALYSIS LOG

METHODS: PPA, PPO5  
 ACQ. METHOD: MRM-PPA-PP5  
 PROC. METHOD: PPA-129-50280  
 CALIB. DATE: 12/8/14  
 RUN BATCH: SQ 280

ANALYST: [Signature]  
 SOLVENT A LOT #: 084023/06660  
 SOLVENT B LOT #: 084023/081052  
 WATER LOT #: 084032  
 ISTD Lot #: LC488

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	SCON	ION RATIO	MANUAL INTS RATIONALE, PK #	COMMENTS
Q 8668	32	C37352.2	PFC	54121	1				
Q 69	33	-3						SP	
Q 70	34	-4							
Q 71	35	-5							
Q 72	36	-6							BR
Q 73	37	-8							
Q 74	38	-9							
Q 75	35	FA20272-1							
Q 76	40	-2						SD	
Q 77	5	LC280.20		LC487	200/400			SP	
Q 78	1	CCB							PPAS
Q 79	41	FA20328-2		54121					BDC
Q 80	43	C37304-8		54058					
Q 81	42	ELC780.20		LC487	200/400				LMT ISD out, 20D
Q									PPAS PFDNA
Q									
Q									
Q									
Q									
Q									

Manual Integration Rationale SOP QJ029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, BR Baseline Ripple, PII Poor Instrument Integration  
 All strikeouts must be initiated and dated. If correction was not due to a transcription error, then list the reason for correction.

LCMS1\_Q\_log.xls NF rev. 10/12  
 Analyst's Signature: [Signature]

ACCUTEST LABORATORIES SE

DATE:	12/19/14
COLUMN TYPE:	Yonshull 00-C18
AMOUNT INJECTED:	1.5 ul
INSTRUMENT:	LCMS1-Q
HEAD PRESSURE:	422

LCMS1-Q ANALYSIS LOG

METHODS:	PFOA - PFOs
ACQ. METHOD:	AMM - PFOA - PFOs
PROC. METHOD:	PFC-1208-SQ280
CALIB. DATE:	12/8/14
RUN BATCH:	SQ 281

ANALYST:	MS
SOLVENT A LOT #:	9515 084623/6666
SOLVENT B LOT #:	081052
WATER LOT #:	084623
ISTD Lot #:	LC488

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	SCON	ION RATIO	MANUAL INTS RATIONALE, PK #	COMMENTS
Q 8682	1	CCB	PFC						
Q 83	1	CCB							
Q 84	2	CC280.20		LC487	200/500				Pass
Q 85	1	CCB							
Q 86	3	FA20136-1		54108	5/500			SP	
Q 87	4	OP54108-BS						SP	
Q 88	2	CC280.20		LC487	200/500				Pass
Q 89	1	CCB							
Q 90	5	OP54151-BS		54151				SP	
Q 91	6	I - MIB							NO
Q 92	7	FA20172-7						SP	PR 2X
Q 93	8	FA20402-1						SP	BDC
Q 94	9	-2						SP	RE20X
Q 95	10	-3						SP	RE20X
Q 96	11	-4						SP	RE20X
Q 97	12	OP54151-MS						SP	PR 1X.C.O
Q 98	13	I - MSD						SA	
Q 99	14	FA20402-5						SP	BDC
Q 18700	2	CC280.20		LC487	200/500				Pass
Q 1801	1	CCB							BDC

Manual Integration Rationale SOP QAO29: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, BR Baseline Ripple, PII Poor Instrument Integration  
 All strikeouts must be initiated and dated. If correction was not due to a transcription error, then list the reason for correction.

Analyst's Signature: *[Signature]*



ACCUTEST LABORATORIES SE

DATE: 12/9/14  
 COLUMN TYPE: Porosil 120 5.18  
 AMOUNT INJECTED: 7.5 ul  
 INSTRUMENT: LCMS1-Q  
 HEAD PRESSURE: 422

LCMS1-Q ANALYSIS LOG

METHODS: PFOA - PFOA  
 ACQ. METHOD: AMEM - PFOA-PFOA  
 PROC. METHOD: PFC - 1208-50280  
 CALIB. DATE: 12/8/14  
 RUN BATCH: SQ 281

ANALYST: MSQ/NAS  
 SOLVENT A LOT #: 2515 054623/066646  
 SOLVENT B LOT #: 081052  
 WATER LOT #: 084623  
 ISTD Lot #: LC478

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	SCON	ION RATIO	MANUAL INTS RATIONALE, PK #	COMMENTS
Q 8702	15	FA2072.7	PFC	5417	280			SP ✓	
Q 03	2		I	LC477	900				NAS
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									
Q									

Manual Integration Rationale SOP QA029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, BR Baseline Ripple, PII Poor Instrument Integration  
 All strikeouts must be initiated and dated. If correction was not due to a transcription error, then list the reason for correction.  
 LCMS1\_Q\_log.xls NF rev. 10/12  
 Analyst's Signature: *[Signature]*  
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ACCUTEST LABORATORIES SE

DATE: 12-15-14  
 COLUMN TYPE: Porasil B LC18  
 AMOUNT INJECTED: 7.5 ul  
 INSTRUMENT: LCMS1-Q  
 HEAD PRESSURE: 391

LCMS1-Q ANALYSIS LOG

METHODS: P for PFO3  
 ACQ. METHOD: LMA-M P for PFO3  
 PROC. METHOD: PFC 1200 SA260  
 CALIB. DATE: 12-8-14  
 RUN BATCH: SQ 284

ANALYST: PMS n+E  
 SOLVENT A LOT #: 9515 26/28/06046  
 SOLVENT B LOT #: 081052  
 WATER LOT #: 081623  
 ISTD Lot #: LC468

DATA FILE	ALS #	SAMPLE ID	SAMPLE METHOD	OP BATCH	DF	SCON	ION RATIO	MANUAL INTS RATIONALE, PK #	COMMENTS
Q 6763	1	ccb	PFC						✓
Q 64	1	ccb							✓
Q 65	2	A+ check		LC467	200/100				✓
Q 66	1	ccb							✓
Q 67	1	ccb							✓
Q 68	2	LC260-20		LC467	200/100				pass
Q 69	1	ccb							✓
Q 70	3	FA20172-7		0054171	20/100 25/100				✓
Q 71	4	FA20402-2			25/100 30%				✓
Q 72	5	-3							✓
Q 73	6	-4							✓
Q 74	2	LC260-20		LC467	200/100				✓
Q 75	1	ccb							✓
Q 76	7	0054204-85		0054104	14				✓
Q 77	8	-1M3							✓
Q 78	9	FA20472-3							✓
Q 79	10	-4							✓
Q 80	11	-5							✓
Q 81	12	0054204-1M5							✓
Q 82	13	-1M0							✓

Manual Integration Rationale SOP QA029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, BR Baseline Ripple, PII Poor Instrument Integration  
 All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

Analyst's Signature:



ACCUTEST LABORATORIES SE

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 12/08/14 1000  
 Started (mm/dd/yy 24:00)

Prep Method: 3535A or Method (circle)

Date/Time: 12/08/14 1450  
 Finished (mm/dd/yy 24:00)

Analytical Method: LC537

Batch#: OP54151

Ext. By: MB

Vialed By: MB

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount	Spike Amount	Final Volume (ml)	Comments
OP54151 MB	X	125	6	N/A	20ul		1ml	
OP54151 BS	X	125				80ul		
FA20172-7MS	2	125						
FA20402-1	2	125						
-2	1	120						
-3	2	120						
-4	5	120						
-5	1	120						
<del>MB 12/08/14</del>								
FA20402-4 MS	1	125	6	N/A	20ul	80ul	1ml	
-4 MSD	2	125						
DUP								

Comments:

Surr. ID: LC486 Conc: 1ppm Exp. Date: 05/19/15 Inj. By: MB Ver. By: MB  
 Spk.1 ID: LC485 Conc: 250ppb Exp. Date: 05/17/15 Inj. By: MB Ver. By: MB  
 Spk.2 ID:      Conc:      Exp. Date:      Inj. By:      Ver. By:     

CH2CL2 Lot #      Hexane Lot #      Na2SO4 Lot#       
 Acetonitrile Lot #      Methanol Lot # 08/052 Water Lot# OP54108  
 Syringe Filter Lot#      SPE Lot # S300-0942 Reagent #     

Relinquished By: [Signature]  
 Accepted By: [Signature]

Date: 12/08/14  
 Date: 12-08-14

7.7.1  
 7



















## Data Validation Summary

### Naval Station, Norfolk Site 20

TO: Juliana Dean/VBO  
Anita Dodson/VBO

FROM: Tiffany McGlynn/GNV

CC: Herb Kelly/GNV

DATE: February 12, 2015

#### Introduction

The following data validation report discusses the data validation process and findings for Accutest Laboratories, for SDG 1412119.

Samples were analyzed using the following analytical methods:

- 537\_MOD Semivolatiles

The samples included in this SDG are listed in the table below.

Sample Name	Matrix
NBS01-A-MW30B-R15	Water
NBS01-A-MW12-R15	Water
NBS01-A-MW12P-R15	Water
NBS01-A1-MW6A-R15	Water
NBS01-EB01-120314	Water

#### **Data Evaluation**

Data was evaluated in accordance with the analytical methods and with the criteria found in the following guidance documents: Sampling and Analysis Plan Long-Term Monitoring Plan for Groundwater Sites 1,2,3,6,18, and 20 Naval Station Norfolk, Norfolk Virginia, Contract Task Order WE79 (December 2014) and Region III Modifications for Organic Data Review (EPA 1994) as applicable. The samples were evaluated based on the following criteria:

- Data Completeness

- Technical Holding Times
- Instrument Tuning
- Initial/Continuing Calibrations
- Blanks
- Internal Standards
- Laboratory Control Samples
- Matrix Spike Recoveries
- Surrogate Recoveries
- Field Duplicates
- Identification/Quantitation
- Reporting Limits

### **Overall Evaluation of Data/Potential Usability Issues**

Specific details regarding qualification of the data are addressed in the sections below. If an issue is not addressed there were no actions required based on unmet quality criteria. When more than one qualifier is associated with a compound/analyte, the validator has chosen the qualifier that best indicates possible bias in the results and qualified these data accordingly.

#### **Data Completeness**

The SDG was received complete and intact.

#### **Technical Holding Times**

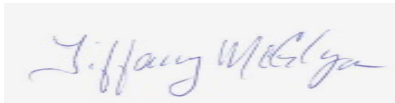
According to the chain of custody records, sampling was performed on 12/1/14 through 12/3/14. Samples were received at the laboratory on 12/4/14. All sample preparation and analyses were performed within holding time requirements.

## **Conclusion**

These data can be used in the project decision-making process as qualified by the data quality evaluation process.

Please do not hesitate to contact us about this validation report.

Sincerely,

A handwritten signature in blue ink that reads "Tiffany McGlynn". The signature is written in a cursive style and is set against a light gray rectangular background.

Tiffany McGlynn

## Qualification Flags

Exclude	More appropriate data exist for this analyte.
R	Data were rejected for use.
UL	Analyte not detected, quantitation limit is potentially biased low.
UJ	Analyte not detected, estimated quantitation limit.
U	Analyte not detected.
B	Not detected substantially above the level reported in laboratory or field blanks.
L	Analyte present, estimated value potentially biased low.
K	Analyte present, estimated value potentially biased high.
N	Analyte identification presumptive; no second column analysis performed or GC/MS tentative identification.
J	Analyte present, estimated value.
NJ	Analysis indicates the presence of an analyte that was "tentatively identified" and the associated value represents its approximate concentration.
None	Placeholder for calculating quality control issues that do not require flagging.
=	Analyte was detected at a concentration greater than the quantitation limit.



### Qualifier Code Reference

<b>Value</b>	<b>Description</b>
%SOL	High Moisture content
2C	Second Column – Poor Dual Column Reproducibility
2S	Second Source – Bad reproducibility between tandem detectors
BD	Blank Spike/Blank Spike Duplicate(LCS/LCSD) Precision
BRL	Below Reporting Limit
BSH	Blank Spike/LCS – High Recovery
BSL	Blank Spike/LCS – Low Recovery
CC	Continuing Calibration
CCBL	Continuing Calibration Blank Contamination
CCH	Continuing Calibration Verification – High Recovery
CCL	Continuing Calibration Verification – Low Recovery
DL	Redundant Result – due to Dilution
EBL	Equipment Blank Contamination
EMPC	Estimated Possible Maximum Concentration
ESH	Extraction Standard - High Recovery
ESL	Extraction Standard - Low Recovery
FBL	Field Blank Contamination
FD	Field Duplicate
HT	Holding Time
ICB	Initial Calibration – Bad Linearity or Curve Function
ICH	Initial Calibration – High Relative Response Factors
ICL	Initial Calibration – Low Relative Response Factors
IR15	Ion ratio exceeds +/- 15% difference
ISH	Internal Standard – High Recovery
ISL	Internal Standard – Low Recovery
LD	Lab Duplicate Reproducibility
LR	Concentration Exceeds Linear Range
MBL	Method Blank Contamination
MDP	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix interference obscuring the raw data

MSH	Matrix Spike and/or Matrix Spike Duplicate – High Recovery
MSL	Matrix Spike and/or Matrix Spike Duplicate – Low Recovery
OT	Other
PD	Pesticide Degradation
RE	Redundant Result - due to Reanalysis or Re-extraction
SD	Serial Dilution Reproducibility
SSH	Spiked Surrogate – High Recovery
SSL	Spiked Surrogate – Low Recovery
TBL	Trip Blank Contamination
TN	Tune

LOCATION_NAME	SITE_NAME	INSTALLATION_ID	LOCATION_TYPE	LOCATION_TYPE_DESC	SDG	COORD_X	COORD_Y	ANALYTICAL_METHOD_GRP_DESC	SAMPLE_NAME	SAMPLE_MATRIX	SAMPLE_MATRIX_DESC	COLLECT_DATE
"	"	NORFOLK_NB	"	"	1412119			Perfluoroalkyl Compounds	NBS01-EB01-120314	WQ	Water for QC samples	03-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12-R15	WG	Ground water	02-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12P-R15	WG	Ground water	02-Dec-14
NBS01-A-MW30B	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124350	3506990	Perfluoroalkyl Compounds	NBS01-A-MW30B-R15	WG	Ground water	01-Dec-14
"	"	NORFOLK_NB	"	"	1412119			Perfluoroalkyl Compounds	NBS01-EB01-120314	WQ	Water for QC samples	03-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12P-R15	WG	Ground water	02-Dec-14
"	"	NORFOLK_NB	"	"	1412119			Perfluoroalkyl Compounds	NBS01-EB01-120314	WQ	Water for QC samples	03-Dec-14
NBS01-A1-MW6A	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124403	3504693.8	Perfluoroalkyl Compounds	NBS01-A1-MW6A-R15	WG	Ground water	03-Dec-14
NBS01-A-MW30B	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124350	3506990	Perfluoroalkyl Compounds	NBS01-A-MW30B-R15	WG	Ground water	01-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12-R15	WG	Ground water	02-Dec-14
NBS01-A-MW30B	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124350	3506990	Perfluoroalkyl Compounds	NBS01-A-MW30B-R15	WG	Ground water	01-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12P-R15	WG	Ground water	02-Dec-14
"	"	NORFOLK_NB	"	"	1412119			Perfluoroalkyl Compounds	NBS01-EB01-120314	WQ	Water for QC samples	03-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12P-R15	WG	Ground water	02-Dec-14
NBS01-A-MW30B	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124350	3506990	Perfluoroalkyl Compounds	NBS01-A-MW30B-R15	WG	Ground water	01-Dec-14
NBS01-A1-MW6A	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124403	3504693.8	Perfluoroalkyl Compounds	NBS01-A1-MW6A-R15	WG	Ground water	03-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12-R15	WG	Ground water	02-Dec-14
NBS01-A-MW30B	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124350	3506990	Perfluoroalkyl Compounds	NBS01-A-MW30B-R15	WG	Ground water	01-Dec-14
"	"	NORFOLK_NB	"	"	1412119			Perfluoroalkyl Compounds	NBS01-EB01-120314	WQ	Water for QC samples	03-Dec-14
NBS01-A1-MW6A	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124403	3504693.8	Perfluoroalkyl Compounds	NBS01-A1-MW6A-R15	WG	Ground water	03-Dec-14
NBS01-A1-MW6A	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124403	3504693.8	Perfluoroalkyl Compounds	NBS01-A1-MW6A-R15	WG	Ground water	03-Dec-14
NBS01-A1-MW6A	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124403	3504693.8	Perfluoroalkyl Compounds	NBS01-A1-MW6A-R15	WG	Ground water	03-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12P-R15	WG	Ground water	02-Dec-14
"	"	NORFOLK_NB	"	"	1412119			Perfluoroalkyl Compounds	NBS01-EB01-120314	WQ	Water for QC samples	03-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12-R15	WG	Ground water	02-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12-R15	WG	Ground water	02-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12P-R15	WG	Ground water	02-Dec-14
NBS01-A-MW12	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12125744	3506608	Perfluoroalkyl Compounds	NBS01-A-MW12-R15	WG	Ground water	02-Dec-14
NBS01-A1-MW6A	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124403	3504693.8	Perfluoroalkyl Compounds	NBS01-A1-MW6A-R15	WG	Ground water	03-Dec-14
NBS01-A-MW30B	SITE 00001	NORFOLK_NB	WLM	Monitoring well	1412119	12124350	3506990	Perfluoroalkyl Compounds	NBS01-A-MW30B-R15	WG	Ground water	01-Dec-14