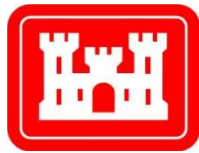


# Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2 Former Fort Ord, California

Prepared for:



**U.S. Army Corps of Engineers**  
Sacramento District  
1325 J Street  
Sacramento, CA 95814-2922

On behalf of:



**U.S. Department of the Army**  
Fort Ord BRAC  
4463 Gigling Road, Room 101  
Seaside, CA 93955

USACE Contract No. W91238-14-C-0048

Amendment No. P00008

Task No. 5.4 and 8.4

Prepared by:



**Ahtna Environmental, Inc.**  
296 12<sup>th</sup> Street  
Marina, CA 93933-6001

Report Date: **February 27, 2020**

Report Version: **Draft Final**

## Report Approval

Report Title: **Technical Summary Report  
Perfluorooctanoic Acid and Perfluorooctane Sulfonate  
Basewide Review of Historical Activities  
Groundwater Monitoring at Operable Unit 2  
Former Fort Ord, California**

Prime Contractor: Ahtna Environmental, Inc.

USACE Contract No.: W91238-14-C-0048

Amendment No.: P00008

Task No.: 5.4 and 8.4

---

Derek S. Lieberman, P.E. Certificate No. C 57417  
Ahtna Environmental, Inc.  
Project Manager

## Table of Contents

|  |            |
|--|------------|
| <b>Report Approval .....</b>   | <b>ii</b>  |
| <b>Table of Contents.....</b>  | <b>iii</b> |
| <b>Acronyms and Abbreviations.....</b>   | <b>vi</b>  |
| <b>1.0 Introduction.....</b>   | <b>1</b>   |
| 1.1 Former Fort Ord Background and History .....                                     | 1          |
| 1.2 Former Fort Ord Geology and Hydrology .....                                      | 1          |
| 1.3 PFOA and PFOS Background .....   | 2          |
| 1.4 Review Methodology .....   | 3          |
| 1.4.1 Primary Site Review .....  | 4          |
| 1.4.2 Secondary Site Review .....  | 5          |
| 1.4.3 Tertiary Site Review .....   | 5          |
| 1.5 Groundwater Monitoring at OU2 .....  | 5          |
| 1.5.1 Sampling Events and Objectives .....   | 6          |
| 1.5.2 Sampling Methodologies and Laboratory Analysis.....                            | 6          |
| 1.5.3 Deviations from the QAPP .....   | 7          |
| 1.5.4 Data Validation and Quality Control Assessment .....                           | 7          |
| <b>2.0 Site Evaluations for Historical Use of PFOA and PFOS .....</b>                | <b>9</b>   |
| 2.1 Fire Training Areas .....  | 9          |
| 2.1.1 Site 8 – Range 49, Molotov Cocktail Range.....                                 | 9          |
| 2.1.2 Site 9 – Range 40A, Flame Field Expedient (FFE) Training Area.....             | 9          |
| 2.1.3 Site 10 – Burn Pit/Fire Training Area.....                                     | 10         |
| 2.1.4 Site 34B – Former Burn Pit.....  | 11         |
| 2.1.5 Site 41 – Crescent Bluff Fire Drill Area .....                                 | 11         |
| 2.1.6 Operable Unit 1 – FAAF Fire Drill Area.....                                    | 12         |
| 2.2 AFFF Storage Areas .....   | 13         |
| 2.2.1 Site 17 – Building 1442 Autoclave.....   | 13         |
| 2.2.2 Site 22 – Building 4492 Auto Craft Shop .....                                  | 14         |
| 2.2.3 Site 29 – Building T-111 DRMO Polychlorinated Biphenyl Storage Area .....      | 14         |
| 2.2.4 Silver Recovery Unit – Building 4385 .....                                     | 14         |
| 2.2.5 Building T-105 East Garrison Fire House.....                                   | 15         |
| 2.2.6 Building 514 FAAF Fire & Rescue Station.....                                   | 15         |
| 2.2.7 Building T-1820 Main Garrison Fire House – South.....                          | 15         |
| 2.2.8 Building T-2898 Main Garrison Fire House – North.....                          | 15         |
| 2.2.9 Building T-3280 Main Garrison Fire House – East.....                           | 15         |
| 2.2.10 Building 4400 Main Garrison Fire Station .....                                | 16         |
| 2.3 Aircraft Crash Sites.....  | 16         |
| 2.3.1 Site 39 – Inland Ranges .....  | 16         |
| 2.3.2 Mudhen Lake.....   | 16         |
| 2.3.3 FAAF .....   | 17         |
| 2.4 Aviation Hangars.....  | 17         |
| 2.4.1 Site 20 – South Parade Ground and 3800 and 519 <sup>th</sup> Motor Pools ..... | 17         |
| 2.4.2 Site 34 – FAAF Multiple Sites .....  | 17         |

2.5 Fuel Farms and other Aviation Assets..... 19

    2.5.1 Site 34 – Buildings 501, 502, and 503 Aircraft Fuel Facilities..... 19

    2.5.2 Site 40 – FAAF Helicopter Defueling Area..... 19

2.6 Landfills ..... 20

    2.6.1 Site 12 – Lower Meadow Disposal Area..... 20

    2.6.2 Site 16 – DOL Maintenance Yard, Pete’s Pond and Pete’s Pond Extension..... 22

    2.6.3 Site 17 – Disposal Area..... 23

    2.6.4 Site 31 – East Garrison Dump Site..... 23

    2.6.5 Operable Unit 2 – Fort Ord Landfills ..... 23

    2.6.6 Fort Ord Soil Treatment Area (FOSTA)..... 25

2.7 Wastewater Treatment Plants ..... 26

    2.7.1 Site 1 – Ord Village Sewage Treatment Plant ..... 27

    2.7.2 Site 2 – Main Garrison Sewage Treatment Plant ..... 27

    2.7.3 Site 32 – East Garrison Sewage Treatment Plant..... 28

    2.7.4 Site 36 – Fritzsche Army Airfield Sewage Treatment Plant..... 29

2.8 Site 39 – Inland Ranges ..... 29

2.9 Outfalls 34 and 35 ..... 30

**3.0 Recommendations for Additional Investigation..... 31**

    3.1 FAAF Fire Drill Area ..... 31

    3.2 Operable Unit 2 – Fort Ord Landfills ..... 32

    3.3 Site 10 – Burn Pit/Fire Training Area..... 33

    3.4 Site 34 – FAAF Aviation Hangars ..... 33

    3.5 Site 36 – FAAF Sewage Treatment Plant..... 34

    3.6 Site 40A – East FAAF Helicopter Defueling Area..... 35

**4.0 References ..... 36**

## Tables

- 1 Site Summary and Primary Records Review Results
- 2 Sites Recommended for Additional Investigation
- 3 Summary of Groundwater Monitoring Analytical Results, March 7, 2019
- 4 Recommended PFAS Target Analyte List

## Figures

- 1 Former Fort Ord Location Map
- 2 Former Fort Ord Site Map
- 3 Site 10 – Site Map and Historical Groundwater Elevations
- 4 Site 10 – Burn Pit/Fire Training Area
- 5 OU1 – Former Fire Drill Area
- 6 FAAF Site Map
- 7 Hangar Fire Suppression Systems Photographs
- 8 Building 510 Aviation Hangar Photographs
- 9 Building 524 Aviation Hangar Photographs
- 10 Building 533 Aviation Hangar Photographs
- 11 Building 507 Aviation Hangar Photographs
- 12 Building 527 Aviation Hangar Photographs
- 13 Fort Ord Landfills Site Map
- 14 OU2 A-Aquifer Sampling Locations
- 15 OU2 Upper 180-Foot Aquifer Sampling Locations
- 16 Site 36 – FAAF Sewage Treatment Plant Site Map
- 17 FAAF Fire Drill Area Recommended Sampling Locations
- 18 OU2 Upper 180-Foot Aquifer and Lower 180-Aquifer Downgradient Sampling Locations
- 19 Site 10 – Burn Pit/Fire Training Area Recommended Sampling Locations
- 20 Site 34 – FAAF Aviation Hangars, Building 507 Recommended Sampling Locations
- 21 Site 36 – FAAF Sewage Treatment Plant Recommended Sampling Locations
- 22 Site 40A – East FAAF Helicopter Defueling Area Recommended Sampling Locations

## Appendices

- A Validation Summary Report
- B Real Property Records for FAAF Aviation Hangars
- C Responses to USEPA Comments on the Draft Technical Summary Report
- D Responses to DTSC Comments on the Draft Technical Summary Report
- E Responses to CCRWQCB Comments on the Draft Technical Summary Report
- F Responses to FOCAG Comments on the Draft Technical Summary Report

## Acronyms and Abbreviations

|         |  |
|---------|--|
| µg/L    | micrograms per liter                               |
| AFFF    | Aqueous Film-Forming Foam                          |
| Ahtna   | Ahtna Environmental, Inc.                          |
| Army    | U.S. Department of the Army                        |
| CAMU    | Corrective Action Management Unit                  |
| CCRWQCB | Central Coast Regional Water Quality Control Board |
| COC     | chemical of concern                                |
| cy      | cubic yards  |
| DoD     | Department of Defense                              |
| DOL     | Directorate of Logistics                           |
| DRMO    | Defense Reutilization and Marketing Office         |
| DTSC    | California Department of Toxic Substances Control  |
| FAAF    | Fritzsche Army Airfield                            |
| FDA     | Fire Drill Area                                    |
| FFE     | Flame Field Expedient                              |
| FOSTA   | Fort Ord Soil Treatment Area                       |
| FO-SVA  | Fort Ord-Salinas Valley Aquitard                   |
| FTA     | fire training area                                 |
| GWTP    | groundwater treatment plant                        |
| HA      | health advisory                                    |
| HDPE    | high-density polyethylene                          |
| IA      | interim action                                     |
| OU1     | Operable Unit 1                                    |
| OU2     | Operable Unit 2                                    |
| OUCTP   | Operable Unit Carbon Tetrachloride Plume           |
| PFAS    | per- and polyfluoroalkyl substances                |
| PFOA    | perfluorooctanoic acid                             |
| PFOS    | perfluorooctane sulfonate                          |
| QAPP    | Quality Assurance Project Plan                     |
| ROD     | Record of Decision                                 |
| SRU     | Silver Recovery Unit                               |
| STP     | sewage treatment plant                             |
| SWMU    | solid waste management unit                        |
| TCE     | trichloroethene                                    |
| TPH     | total petroleum hydrocarbons                       |
| USACE   | U.S. Army Corps of Engineers                       |
| USEPA   | U.S. Environmental Protection Agency               |

UST            underground storage tank  
VOC            volatile organic compound  
WWTP          wastewater treatment plant

## 1.0 Introduction

On behalf of the U.S. Army Corps of Engineers (USACE), Sacramento District, Ahtna Environmental, Inc. (Ahtna) prepared this Technical Summary Report, under Contract Number W91238-14-C-0048, Amendment Number P00008, to assess the presence of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) at the former Fort Ord in response to requests for information from the U.S. Environmental Protection Agency (USEPA) and the California Department of Toxic Substances Control (DTSC). The Report summarizes:

- A basewide review of historical activities with the potential to cause perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) contamination in soil and groundwater at former Fort Ord sites, and
- Groundwater sampling and analysis for PFOA and PFOS at Operable Unit 2 (OU2).

### 1.1 Former Fort Ord Background and History

The former Fort Ord is located along the Pacific Ocean in northwest Monterey County, approximately 80 miles south of San Francisco, California (Figure 1). The former military installation covered about 28,000 acres, is bounded by Monterey Bay to the west and the Santa Lucia Range to the south, and is surrounded by the cities of Del Rey Oaks, Marina, Sand City, and Seaside. State Highway 1 and the Union Pacific Railroad right-of-way traverse through the western portion of the former Fort Ord, separating the Monterey Bay beachfront from the rest of the installation. Fort Ord served as a training and staging facility for infantry troops from 1917 until its closure in 1994. In 1990, Fort Ord was placed on the USEPA National Priorities List (NPL),<sup>1</sup> primarily due to volatile organic compounds (VOCs) found in groundwater beneath the Fort Ord Landfills. Fort Ord was closed in 1994 under the Base Realignment and Closure Act (BRAC).<sup>2</sup> Environmental remediation at the former Fort Ord is being completed pursuant to the CERCLA §121 and the National Oil and Hazardous Substances Contingency Plan.

### 1.2 Former Fort Ord Geology and Hydrology

The predominant lithology is a loose, well-sorted (poorly graded) fine to medium sand. The sands represent active and recently active dunes and Pleistocene-age older dune sands. The active dune sands parallel the beach and extend several hundred feet inland. The older dune sands cover most of the northern and western portions of the former Fort Ord. Paleosols, representing former ground surfaces (silty sands) exist within these sands. These paleosols indicate that one or more cycles of dune deposition have occurred with intervening periods of soil development. The paleosols in the dunes bordering the beach indicate that older dune sand is locally present beneath the recent dune sand.

Three groundwater aquifers are in the remediation phase of cleanup activities at the former Fort Ord: the unconfined A-Aquifer, the unconfined and confined Upper 180-Foot Aquifer, and the confined Lower 180-Foot Aquifer. The aquifers consist predominantly of fine to coarse-grained sands which are separated by silty clay or clayey fine-grained sand aquitards.

---

<sup>1</sup> The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.

<sup>2</sup> BRAC is the process the Department of Defense has used to reorganize its installation infrastructure to more efficiently and effectively support its forces and increase operational readiness.



The A-Aquifer is located within the recent dune sands and is perched above the regional Fort Ord-Salinas Valley Aquitard (FO-SVA). A groundwater divide in the A-Aquifer exists east of the Fort Ord Landfills and trends northward toward the former Fritzsche Army Airfield (FAAF). Groundwater in the A-Aquifer west of the divide flows north and northwest and discharges to the Monterey Bay. Groundwater in the A-Aquifer east of the divide flows north and northeast toward the Salinas Valley and discharges at the bluff face above the Salinas River.

To the west where the FO-SVA pinches out, the unconfined A-Aquifer and confined Upper 180-Foot Aquifer combine to form a continuous, unconfined hydrostratigraphic unit (identified as the unconfined Upper 180-Foot Aquifer). A north-trending groundwater divide in the unconfined Upper 180-Foot Aquifer exists midway between the FO-SVA and Monterey Bay. Groundwater in the unconfined Upper 180-Foot Aquifer west of the divide flows west and discharges to the Monterey Bay. Groundwater in the unconfined Upper 180-Foot Aquifer east of the divide flows under the FO-SVA (becoming confined) toward the Salinas Valley.

The Upper and Lower 180-Foot Aquifers, and portions of the 400-Foot Aquifer (locally) are contained within valley fill deposits. The Upper 180-Foot Aquifer is separated from the Lower 180-Foot Aquifer by the Intermediate 180-Foot Aquitard, which appears to be laterally discontinuous in the eastern portion of the former Fort Ord near the OU2 and OUCTP areas creating a natural conduit between the aquifers (Ahtna, 2017).

### 1.3 PFOA and PFOS Background

PFOA and PFOS are part of a larger group of chemicals called per- and polyfluoroalkyl substances (PFAS) that are human-made compounds and do not occur naturally in the environment. PFOA and PFOS are mobile chemicals which bioaccumulate in humans and wildlife, are stable in the environment, and resist typical environmental degradation processes. Production of these compounds began in the 1940s and they were used in firefighting foam, protective coatings, and stain and water-resistant products until the 2000s (ITRC, 2017).<sup>3</sup> They were found in the blood of occupationally exposed workers in the 1970s and the general public in the 1990s. PFOA and PFOS were released into the environment through air emissions, spills, and disposal of wastes. They then mobilized into the surrounding soil and water environment and have been found in sediment and surface water from landfill leachate and downstream of production and wastewater facilities (USEPA, 2017).

In 2016, the USEPA established lifetime health advisory (HA) levels for PFOA and PFOS of 0.07 micrograms per liter ( $\mu\text{g}/\text{L}$ ) to provide a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water. When both PFOA and PFOS are found in drinking water, USEPA recommends the combined concentrations of PFOA and PFOS be compared with the 0.07  $\mu\text{g}/\text{L}$  HA level (USEPA, 2016). The Department of Defense (DoD) calculated tap water screening levels for PFOA and PFOS of 0.40  $\mu\text{g}/\text{L}$  using the USEPA online calculator; however, if multiple PFAS are encountered at a site, a 0.1 factor is applied to the screening level (i.e., the screening levels for PFOA and PFOS

---

<sup>3</sup> PFOA and PFOS can also be found in a range of products and processes including, but not limited to: paper products, textiles, leathers, metal plating/etching, wire manufacturing, carpeting, fabric softeners, polishes, waxes, personal care products, sporting equipment, paints, adhesives, medical products, nonstick cookware, industrial resins/surfactants/molds/plastics, and the semiconductor industry.

individually are 0.04 µg/L) (DoD, 2019). No Federal or State of California Maximum Contaminant Levels for PFOA or PFOS in drinking water have been established.<sup>4</sup>

At Army installations, the primary mechanism for releases of PFAS is through the historical use of Aqueous Film-Forming Foam (AFFF), a product applied during firefighting and firefighting-related training associated with fuel- or petroleum-based fires, though AFFF was not used at Army installations before 1973 (Army, 2018). AFFF for firefighting was generally used in areas where fuel- or petroleum-based fires may have occurred, such as in the vicinity of aviation assets, fuel farms, or aircraft crash sites.<sup>5</sup> The Army's current practice is not to use AFFF for petroleum-based training fires. Other known sources of environmental releases of PFAS include mist suppressants for chrome plating operations, and landfills and wastewater treatment plants (WWTPs) that have inadvertently accepted PFAS-containing materials (Army, 2018).

## 1.4 Review Methodology

Upon reviewing the *Draft 4<sup>th</sup> Five-Year Review Report for Fort Ord Superfund Site* (Army, 2017), USEPA requested the Army conduct a site-wide review of historical activities with the potential to cause PFOA/PFOS contamination in soil and groundwater at the former Fort Ord, and that the results be summarized in a technical memorandum. This Technical Summary Report was prepared in response to USEPA's request. PFOA and PFOS had not been previously evaluated at the former Fort Ord as of the time of the USEPA request. Locations on Army installations with the greatest likelihood of PFAS releases include:

- Fire training areas (FTAs) where AFFF is known or suspected to have been applied,
- AFFF storage locations,
- Aircraft crash sites where AFFF may have been applied for fire control,
- Aviation hangars and other buildings where AFFF was used in the fire suppression systems and where a release may have occurred,
- Fuel farms and sites associated with aviation assets,
- Plating facilities that may have used PFAS-containing mist suppressants,
- Landfills where PFAS-containing materials may have been disposed, and
- WWTPs that may have received wastewater from facilities that used or disposed of PFAS-containing liquid effluents.

Therefore, a three-step review process was implemented for sites at the former Fort Ord to determine the likelihood of a PFAS release. This process included reviews of existing information about use and disposal practices at the installation and collection of limited field data.

---

<sup>4</sup> The Army does not own or operate potable water supply systems at the former Fort Ord. In October 2001, the Army transferred portions of the former Fort Ord to the Fort Ord Reuse Authority, who in turn transferred the water and waste water systems to the Marina Coast Water District, a local water purveyor.

<sup>5</sup> There are two major classes of firefighting foams. Class A foams were developed in the 1980s for fighting wildfires and are also used to fight structure fires (Class A foams do not contain PFAS). Class B foams are designed to effectively extinguish flammable and combustible liquids and gases; petroleum greases, tars, oils and gasoline; and solvents and alcohols. Class B foams can be synthetic foams, including AFFF (ITRC, 2018b).

### 1.4.1 Primary Site Review

In accordance with Army guidance for addressing releases of PFAS (Army, 2018), a primary review of basewide historical records was conducted to identify locations at the former Fort Ord where releases of PFAS may have occurred (i.e., the types of facilities listed in Section 1.4). Primary historical records reviewed included:

- Enhanced Preliminary Assessment (Weston, 1990)
- Community Environmental Response Facilitation Act (CERFA) Report (ADL, 1994)
- Basewide Remedial Investigation/Feasibility Study (HLA, 1995d)
- Field Investigation and Data Review, Solid Waste Management Units (Harding ESE, 2002)
- Draft Final Five-Year Review Report, First Five-Year Review Report for Fort Ord Superfund Site (Army, 2002)
- Final Second Five-Year Review Report, Fort Ord Superfund Site (Army, 2007)
- Final 3<sup>rd</sup> Five-Year Review Report for Fort Ord Superfund Site (Army, 2012)
- Final 4<sup>th</sup> Five-Year Review Report for Fort Ord Superfund Site (Army, 2017)

During the primary review, consideration was given to:

- Areas where firefighting exercises were conducted,
- Areas where fire suppression infrastructure existed (e.g., fire stations and AFFF equipment storage areas),
- Unplanned release areas such as crash sites, equipment cleaning discharge locations, fire suppression systems located at fuel storage areas, sites where large fires occurred (e.g., warehouse fires),
- Areas where chromium electroplating operations were performed,
- Landfill and waste disposal areas receiving waste streams containing PFAS, and
- Areas where waste material and sludge from WWTPs were disposed of.

From the primary review, a list of historical Fort Ord sites was compiled that includes former or current remedial investigation sites, interim action (IA) sites, no action sites, solid waste management units (SWMUs), and operable units (Table 1). It was also determined during the primary review that, for the former Fort Ord:

- FTAs existed,
- Former AFFF storage locations are probable,
- There are reported aircraft crash sites,
- There are no known sites where large fires were suppressed using AFFF,
- Aviation hangars and other buildings exist where AFFF may have been used in the fire suppression systems,
- Fuel farms and sites associated with aviation assets existed,
- There are no known plating facilities,

- There are current and former landfill areas, and
- WWTPs existed.

If the primary review determined historical activities at a site did not or were unlikely to have resulted in a release of PFAS (i.e., the site was not a location with a likelihood of PFAS releases per the Army guidance [Army, 2018]), the site was eliminated from further evaluation. The results of the primary review are summarized in Table 1.

#### **1.4.2 Secondary Site Review**

Known or probable FTAs, AFFF storage locations, aircraft crash sites, aviation hangars and other aviation assets, landfill areas, and WWTPs identified in the primary review then underwent a secondary records review. Secondary historical records reviewed included:

- Site characterization reports,
- IA work plans,
- IA confirmation reports,
- Data summary and evaluation reports,
- Remedial action work plans,
- Remedial action confirmation reports,
- Closeout reports, and
- Real property records.

Additional sites were eliminated from further evaluation based on the secondary records review, as noted in Section 2.0.

#### **1.4.3 Tertiary Site Review**

Remaining sites requiring further evaluation for the use or presence of PFAS were subjected to tertiary review, including site visits and interviews of personnel either currently or formerly employed at Fort Ord. The results of the tertiary reviews are also summarized for each site, as applicable, in Section 2.0. Based on the results, additional sites were eliminated from further evaluation and select sites are recommended for soil or groundwater sampling, with consideration given to the presence of existing groundwater monitoring wells, if any, and consistency with DoD's "worst first" approach, where potential PFAS release sites are prioritized and sequenced for further action based on risk, with higher risk sites (i.e., where human exposure to contaminated drinking water exists) being addressed before lower risk sites (Army, 2018), as described in Section 2.0 and summarized in Section 3.0 and Table 2.

### **1.5 Groundwater Monitoring at OU2**

Upon reviewing the *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Draft Revision 5, Groundwater Remedies and Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume* (Ahtna, 2017), DTSC recommended sampling groundwater at the former Fort Ord for PFOA and PFOS analysis because these compounds were detected at low concentrations at Operable Unit 1 (OU1) during the site closure process. In response, and in accordance with Army policy (Army, 2016), the Army proposed to screen for PFOA and PFOS in groundwater at OU2

because products containing PFOA and PFOS may have been disposed of at the Fort Ord Landfills (Ahtna, 2017). PFOA and PFOS data had not been previously collected at OU2 and, at the time of the DTSC recommendation, sampling and analysis for PFAS at other former Fort Ord sites had not been contemplated.

### 1.5.1 Sampling Events and Objectives

In accordance with the *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Addendum No. 1, Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis, Operable Unit 2* (QAPP; Ahtna, 2018), samples were collected from twelve OU2 monitoring wells and the OU2 groundwater treatment plant (GWTP) for PFOA/PFOS analysis during the First Quarter 2019 OU2 groundwater monitoring program event performed March 4 through March 8, 2019.

The primary objectives of the OU2 PFOA/PFOS sampling and analysis were to determine if measurable amounts of PFOA or PFOS are in groundwater at OU2, and if so, then whether:

- The detected concentrations exceed the USEPA lifetime HA level (USEPA, 2017), and
- The OU2 GWTP effectively remove PFOA/PFOS from groundwater (i.e., are concentrations of PFOA/PFOS at the GWTP effluent less than concentrations at the GWTP influent [if detected] and by how much?).

Because regulatory limits for PFOA and PFOS in groundwater have not been established, the OU2 PFOA/PFOS analytical results are compared to the USEPA HA values and DoD screening levels for PFOA and PFOS to determine the need for further action. The USEPA HA levels for the individual concentrations of PFOA and PFOS, and the combined concentrations of PFOA and PFOS, is 0.07 µg/L (USEPA, 2017). The DoD screening level for the individual concentrations of PFOA and PFOS is 0.40 µg/L if only one is detected, and the DoD screening level for the individual concentrations of PFOA and PFOS is 0.04 µg/L if both are detected (DoD, 2019).

### 1.5.2 Sampling Methodologies and Laboratory Analysis

The groundwater samples were collected using HydraSleeves™ at groundwater monitoring wells screened in the A-Aquifer and the Upper 180-Foot Aquifer. A-Aquifer monitoring and extraction wells in the OU2 area are typically screened in the bottom 30 feet of the aquifer and range from approximately 115 feet to 145 feet in depth. Monitoring and extraction wells screened in the confined Upper 180-Foot Aquifer in the OU2 area range from approximately 175 feet to 300 feet in depth. Screen intervals for wells in the Upper 180-Foot Aquifer vary as determined by local hydrogeology and the historical presence of VOCs in groundwater in the area. The HydraSleeves™ were placed within the well screen interval in the saturated zone with the highest historical chemical of concern (COC) concentrations. HydraSleeves™ were placed at the designated depth using a dedicated rope and stainless steel weight secured to the top of the well casing or well cap.

HydraSleeves™ were left in place for a minimum of 48 hours before sampling. Depth to water was measured before sample collection to confirm the HydraSleeve™ was completely submerged in groundwater, which is necessary for representative data collection. Aqueous sample collection at OU2 GWTP monitoring points used the designated sampling port.

SGS performed analyses for the groundwater samples. SGS is accredited through the DoD Environmental Laboratory Accreditation Program. SGS was accredited throughout the sampling event and there was no lapse in accreditation. Groundwater samples were analyzed for PFOA and PFOS by Modified USEPA Method 537. Analytical results and interpretation are discussed in Section 2.6.5.

### 1.5.3 Deviations from the QAPP

Per the project schedule presented in QAPP Worksheets #14 and #16, samples were collected and submitted for laboratory analysis in December 2018. During sample preparation at the laboratory, the samples were extracted on a manifold that had been contaminated by samples with elevated PFOA and PFOS concentrations (i.e., in the parts per million [ppm] range). These samples were from a site other than the former Fort Ord. SGS employs a cleaning procedure between sample preparations; however, samples with elevated concentrations may result in carryovers at the parts per trillion level (i.e., the samples collected from the former Fort Ord may have been cross-contaminated by residual PFOA and PFOS in the extraction manifold).

By time SGS analyzed the other site's samples and identified the elevated PFOA/PFOS concentrations, the former Fort Ord samples had already been extracted on the same manifold and potentially cross-contaminated. Per SGS's standard operating procedures, the manifold was taken out of production for additional cleaning and solvent rinses; however, there was insufficient sample volume remaining to re-extract the samples. The original extractions could have been analyzed, but it is unlikely the data would have been usable for project decisions; therefore, the samples were recollected and analyzed in March 2019, delaying the project schedule by three months. The corrective measure was to collect duplicate sample volumes at each sampling location should a similar laboratory incident require re-extraction.

### 1.5.4 Data Validation and Quality Control Assessment

Two duplicate samples were collected during the PFOA/PFOS groundwater monitoring event at OU2. One trip blank, one field blank, and one equipment blank were also collected during the event.<sup>6,7,8</sup> No target analytes were detected in these samples.

Data validation for the PFOA/PFOS groundwater monitoring event was performed per QAPP guidelines (Ahtna, 2018) and the validation summary report is provided in Appendix A. No results required qualification based on 100 percent Stage 2B and 10 percent Stage 4 data validation review. Data are considered acceptable and suitable for use.

The laboratory assigns data qualifiers when analytical results are less than the laboratory limit of quantification or quality control measures are not met. The data validator assigns additional data qualifiers when quality control measures are not met. Laboratory qualifiers include a "U" meaning the

---

<sup>6</sup> Trip blanks are laboratory provided sample bottles filled with analyte free water that are not opened, but travel with regular field samples.

<sup>7</sup> Field blanks are sample bottles filled with laboratory-supplied PFOA/PFOS-free deionized water during regular field sampling.

<sup>8</sup> The equipment blank was prepared by pouring laboratory-supplied PFOA/PFOS-free deionized water into an unused high-density polyethylene HydraSleeve™ that was then suspended in a monitoring well above the water column for a minimum of 48 hours prior to sample collection.

analyte was not detected at or above the limit of detection and a “J” meaning the analyte was detectable above the detection limit but below the limit of quantitation.

## 2.0 Site Evaluations for Historical Use of PFOA and PFOS

Based on the results of the primary review described in Section 1.2 (summarized in Table 1), 39 sites were identified as known or probable FTAs, AFFF storage locations, aircraft crash sites, aviation hangars and other aviation assets, landfill areas, and WWTPs and underwent a secondary records review. Other sites were removed from further evaluation.

Based on the secondary records review, additional sites were eliminated from further evaluation as noted below. Remaining sites requiring further evaluation for the use or presence of PFAS were subjected to tertiary review, including site visits and interviews of personnel either currently or formerly employed at the former Fort Ord, as described below.

For several sites it is noted that there is no exposure pathway to human receptors for groundwater that may contain PFAS; however, groundwater remediation goals identified in decision documents for the former Fort Ord typically include returning groundwater to a condition that will allow beneficial uses to occur, including potential future use as a drinking water source without unacceptable risks to users.

### 2.1 Fire Training Areas

There are five sites at the former Fort Ord identified as former FTAs or potential FTAs. At these sites, training or other activities occurred that involved burning of petroleum-based products, and AFFF may have been used for fire suppression. Therefore, AFFF could have been released into the environment in periodic, high volume, broadcast discharge for fire training. One of the sites, the former FAAF Fire Drill Area (FDA), was previously evaluated for the presence of PFOA and PFOS as part of the closure process for OU1 (HGL, 2017).

#### 2.1.1 Site 8 – Range 49, Molotov Cocktail Range

Site 8 is in the central portion of the former Fort Ord near Parker Flats Road (Figure 2). The site became active in 1976 (Weston, 1990) and training activities included firing handmade explosive devices containing gasoline, transmission fluid, detergent, and motor oil (HLA, 1996d). Approximately 80 cubic yards (cy) of soil and debris were excavated in two phases. The depth of the excavation ranged from about 6 inches to 2 feet, except in several isolated areas where stained soil was excavated to depths of 3 to 4 feet. The soil was transported to the Fort Ord Soil Treatment Area (FOSTA) for treatment (HLA, 1996d). There are no records of fires at Site 8 that required suppression using AFFF (Riso, 2019a). Based on the information available, there is no suspected release of PFAS and this site was eliminated from further evaluation.

#### 2.1.2 Site 9 – Range 40A, Flame Field Expedient (FFE) Training Area

Site 9 is in the central portion of the former Fort Ord within Site 39 (Figure 2). Range 40A was used for training military personnel in the construction and use of improvised weapons using flammable substances. In the training exercises, a drum containing a gelatinous mixture of gasoline was partially buried so that its top pointed at a selected target. Detonation cord was used to blow the top off the drum while a trinitrotoluene (TNT) charge in the drum ejected the burning material. According to Fort Ord Range Control personnel, the burning material generally fell 75 to 100 meters from the firing point. In addition to the FFE training exercises, three shallow trenches were used for fire and smoke



demonstrations, which were conducted by filling the trenches with a fuel similar to that used for the FFE training and then igniting the fuel and allowing it to burn (HLA, 1995d).

Field investigations conducted at Range 40A in 1992 and 1994 determined soils at the site consist of surficial yellowish-brown sand to silty sand and clayey sand underlain by a dark grayish-brown sandy clay layer, the bottom of which is hard and dry. Analytical results for soil samples collected during the investigation indicated relatively low concentrations of petroleum hydrocarbons and metals, primarily in surface samples collected in the general vicinity of the three shallow trenches. Leaching of hydrocarbons and metals through soil to groundwater was not identified as a likely migration pathway because of the clay layer beneath the site. The absence of hydrocarbons beneath the clay layer indicates it is an effective barrier to vertical contaminant migration (HLA, 1995d).

Additional site characterization sampling was conducted at Range 40A and adjacent Ranges 39 and 40 in 2001, 2002, 2003, and 2006 and the remedial action was conducted in 2010 and 2011 to remove soil with elevated concentrations of lead (Shaw, 2012). Approximately 7,440 cy of soil were excavated from Ranges 39, 40, and 40A and transported to the Fort Ord Landfills. The depth of the excavations ranged from about 6 inches to 4 feet (Shaw, 2011).

Documentation of activities at Range 40A indicates FFE-related fires were allowed to burn out and no active fire suppression using AFFF or other methods was required. Additionally, the site is underlain by a clay layer that is a barrier to vertical migration of contaminants, and soil remediation was completed at the site. Based on the information available, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.1.3 Site 10 – Burn Pit/Fire Training Area**

Site 10 is in the Main Garrison area of the former Fort Ord near the main gate (Figure 2) and the Main Garrison Fire Station (Figure 3). The site consisted of a burn pit in which petroleum hydrocarbons were ignited and extinguished for firefighting training and demonstrations during Fire Prevention Week each year. Although no construction record for the pit was found, it is believed to have been constructed soon after the fire station was built in the mid-1950s (Weston, 1990). The pit was approximately 45 feet long, 25 feet wide, and 2 feet deep. A 2-inch diameter pipe penetrated the southern wall of the pit and a drainage swale, apparently resulting from soil settlement after installation of the pipe, extended from the south side of the pit (Figure 4). The burn pit was filled with water and fuel, which was then ignited and extinguished using a foaming product. This activity may have occurred four to five times for demonstrations during Fire Prevention Week, likely starting in the 1960s (Riso, 2019a); however, AFFF would not have been used until after 1972. By 1991, the pit was no longer used and was grass covered (EA, 1991). Fuels used for this purpose reportedly included off-specification jet fuel (JP-4), gasoline, diesel, and waste oil. After the training sessions, water and residual unburned fuel percolated into the soil at the bottom of the burn pit (HLA, 1996c).

The IA was performed at Site 10 in July 1995 and required three excavations: one at the burn pit, one at the drainage swale, and one east of the burn pit. The excavation area was approximately 80 feet wide by 100 feet long to a maximum depth of 10 feet. 1,451 cy of soil were removed and treated at the FOSTA, and the excavation was backfilled with clean soil (HLA, 1996c).

Additional investigation at Site 10 is recommended because of a suspected release of PFAS associated with reported regular use of AFFF at the site for at least two decades. Site 10 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term (see Section 3.3).

#### **2.1.4 Site 34B – Former Burn Pit**

Site 34B is in the FAAF area (Figure 2). The location of a former burn pit at FAAF was identified in 1995 by a former range control officer. According to the range control officer, the burn pit may have been used a few times a year as an FTA by dispensing gasoline or other fuels into the pit, lighting the fuels, and providing an opportunity for firefighters to practice extinguishing the fire. No historical records about the burn pit operations were found (Shaw, 2003); however, elevated concentrations of lead, total petroleum hydrocarbons (TPH), and dioxin/furan detected in shallow soils (0 to 5 feet below ground surface) are evidence of burning at the site.

The IA was performed at Site 34B in October 2002. The excavation area was approximately 40 feet wide by 100 feet long to a maximum depth of 5 feet. 740 cy of soil were removed and disposed of at the Fort Ord Landfills (Shaw, 2003).

A review of historical aerial photographs indicates the burn pit was not present in 1949 but was present in 1986. While the burn pit was likely established after 1949, it had not been used since sometime before 1971 (Riso, 2019a). This information suggests this site may have been a temporary training area that was used while the FAAF was under construction in the early 1960s and before the FAAF FDA was established in 1962.<sup>9</sup> Because the burn pit was not used after 1972, there is no suspected release of AFFF at this location; therefore, this site was eliminated from further evaluation.

#### **2.1.5 Site 41 – Crescent Bluff Fire Drill Area**

The Crescent Bluff FDA is located along Crescent Bluff Road, approximately 1 mile southeast of the developed portion of East Garrison (Figure 2). The site is undeveloped and is a seasonal wetland. There were four shallow depressions (1 to 3 feet deep) that were suspected burn pits formerly used for firefighting drills. These pits range in size from approximately 115 to 900 square feet (HLA, 1997a).

It is suspected that Site 41 was used for fire drill practice in the 1940s and 1950s, although the actual period is unknown. A letter dated November 28, 1952 states liquids in burn pits were ignited and extinguished for demonstration purposes during a Fire Prevention Week in October 1952. Liquids used for the demonstration included used crankcase oil, napalm, gasoline, and kerosene (HLA, 1996b).

Based on the results of site characterization, three of the four shallow depressions were recommended for an IA (HLA, 1996b). The IA was performed at Site 41 in June 1996 and required three excavations, with a total of 76 cy removed and disposed of at the Fort Ord Landfills (HLA, 1997a).

Because the pits are relatively small, it is suspected they were used for handheld fire extinguisher training (Riso, 2019a). Additionally, they were suspected of having been used in the 1940s and 1950s and were not used for training after 1971 (Riso, 2019a). For these reasons, there is no suspected release of AFFF at the Crescent Bluff FDA; therefore, this site was eliminated from further evaluation.

---

<sup>9</sup> FAAF was dedicated to Fort Ord in 1960 and expanded in 1961 (Weston, 1990).

### 2.1.6 Operable Unit 1 – FAAF Fire Drill Area

The FAAF FDA was established in 1962 as a training area for the Fort Ord Fire Department west of FAAF (Figure 2). As part of training activities, waste fuel (primarily composed of outdated or water-contaminated JP-4) was discharged from an onsite storage tank into a pit, ignited, and then extinguished. Other fuels included hydraulic and lubrication oils, gasoline, diesel, and solvents. After 1972, AFFF was used during training activities to extinguish fires in the FDA, with training occurring at least once per quarter (i.e., four times per year) and 100 to 200 gallons of AFFF being used during each training event (Riso, 2019a).<sup>10</sup>

Training activities at the FDA were discontinued in 1985 and the associated structures (pipeline and storage tank) were removed (Figure 5). These training activities are believed to have resulted in the release of contaminants to soil and groundwater (Army, 2017), though groundwater contamination was limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath OU1 and continues in a downgradient direction more than 5,000 feet beyond the farthest historical extent of the OU1 groundwater plume. The low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the former OU1 plume area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Additionally, the OU1 area is located within the Fort Ord Special Groundwater Protection Zone, where installation of wells and use of the A-Aquifer for drinking water are restricted by Monterey County Code, and within the Fort Ord Natural Reserve (part of the University of California Natural Reserve System), where development is prohibited. Consequently, there is no exposure pathway to human receptors for groundwater from the OU1 area (HGL, 2017).

In 1987, approximately 4,000 cy of contaminated soil were removed from the former FDA to a depth of 31 feet, and the area was then backfilled with clean soil. Excavated soils were spread over the area of the former FDA to a depth of 2.5 to 3 feet above the original ground surface and remediated using treated groundwater supplemented with an aqueous nutrient formulation to stimulate microbial degradation of hydrocarbons in the soil (HLA, 1988). As the soil was remediated, it was removed and transported to a soil borrow area for use as fill in construction projects at the former Fort Ord (HGL, 2017). A remediation confirmation study and risk assessment conducted in 1993 indicated chemicals remaining in soil at the former FDA did not present an unacceptable risk to human health or the environment and no further remedial action was necessary (Army, 1995).

Groundwater remediation using pump and treat systems and groundwater monitoring was conducted from 1988 through 2014. Groundwater monitoring results showed the aquifer cleanup levels for COCs specified in the OU1 Record of Decision (OU1 ROD) were achieved at all wells by September 2014. Attainment monitoring performed during 2015 confirmed the OU1 ROD requirements had been met and would be maintained in the future (HGL, 2017).

---

<sup>10</sup> Firefighting foam was used before 1972 at Fort Ord; however, this material was referred to colloquially as “blood and guts” foam and was most likely a protein foam made from animal byproducts, including keratin protein. Anecdotally, it was also very good fertilizer.

PFOA and PFOS were not addressed in the OU1 ROD but were included in the groundwater attainment monitoring program for OU1 and were considered with COCs in evaluating the case for OU1 site closure. The OU1 closure report summarizes the OU1 site history, remediation and monitoring activities, and decommissioning of the remediation system (HGL, 2017).

In March 2016, USEPA, DTSC, and the Central Coast Regional Water Quality Control Board (CCRWQCB) concluded OU1 groundwater monitoring and remediation are complete and OU1 can be closed; however, the detected PFOA and PFOS concentrations in three wells (PZ-OU1-10A1, MW-OU1-26-A, and MW-OU1-88-A in May 2015)<sup>11</sup> were greater than the USEPA HA levels published in May 2016 or the DoD screening levels published in October 2019.<sup>12</sup> Therefore, USEPA, DTSC, and CCRWQCB also concluded PFOA and PFOS investigations would continue independently of the completed OU1 remediation effort, and additional work associated with PFOA and PFOS at any part of the former Fort Ord will not be associated with the OU1 ROD (HGL, 2017).

Additional investigation at the former FAAF FDA is recommended because of a suspected release of PFAS associated with reported regular use of AFFF at the site for at least 13 years and detections of PFOA and PFOS in three groundwater monitoring wells at concentrations greater than the USEPA HA levels or DoD screening levels. The former FAAF FDA is a lower risk site because there is no pathway from this site to existing water supply wells (see Section 3.1). No additional investigation of the soil borrow or fill areas at historical construction sites is recommended because the soil excavated from OU1 was removed from the borrow area and there is no available record of the locations of the construction sites.

## **2.2 AFFF Storage Areas**

There were eighteen sites identified at the former Fort Ord based on operational history where AFFF may have been used or stored as part of a fire suppression system. Eight of these sites were aviation hangars, which are described in Section 2.4.

### **2.2.1 Site 17 – Building 1442 Autoclave**

Building 1442 was a brick building at the corner of 8<sup>th</sup> Street and 4<sup>th</sup> Avenue (Figure 2) that housed a 1,000-gallon Thompson Tank Company autoclave that treated infectious waste from Army clinics.<sup>13</sup> This low-temperature thermal treatment unit (100 degrees Fahrenheit at 100 pounds per square inch) rested on a concrete slab greater than 2 feet thick and was operated from 1984 until 1992. During the SWMU investigation, no waste migration and dispersal characteristics were identified (Harding ESE, 2002).

The Army transferred the parcel of land that included Building 1442 to the Trustees of the California State University on August 22, 2002. Building 1442 was demolished sometime between December 2011 and May 5, 2012.

---

<sup>11</sup> These wells were decommissioned in July 2017 (HGL, 2017).

<sup>12</sup> These HA levels were published five months after the attainment monitoring effort was completed.

<sup>13</sup> An autoclave is a pressure chamber used to carry out industrial processes or medical applications requiring elevated temperature and pressure different from ambient air pressure. The Building 1442 autoclave was used to treat infectious waste, gauze, disposable gowns, and other materials common to medical clinics.

This site was evaluated due to the presence of the autoclave; however, there is no evidence AFFF was used or stored in Building 1442. The autoclave was a low-temperature thermal treatment unit used for steam treating, but not burning, infectious waste (Weston, 1990). Because no fuel- or petroleum-based fires would have occurred during operation of the autoclave, it is unlikely AFFF was used or stored at Building 1442 and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

### **2.2.2 Site 22 – Building 4492 Auto Craft Shop**

The Auto Craft Shop was in Building 4492, located at the intersection of 8<sup>th</sup> Avenue and Butler Street (Figure 2), and was used by military personnel, Federal government employees, and California State University Monterey Bay and University of California students and faculty, for personal vehicle maintenance (Army, 2003).<sup>14</sup> Waste materials associated with automotive maintenance activities were stored in a SWMU at the Auto Craft Shop, including waste oil and solvents, used antifreeze, used fuel filters and oil filters, rags, and contaminated dry sweep. However, there was no known storage or use of AFFF at the Auto Craft Shop and no suspected release of PFAS (Riso, 2019a); therefore, this site was eliminated from further evaluation.

### **2.2.3 Site 29 – Building T-111 DRMO Polychlorinated Biphenyl Storage Area**

Defense Reutilization and Marketing Office (DRMO) Building T-111 was located in the East Garrison area (Figure 2). Drums, transformers, and other equipment containing waste oil with polychlorinated biphenyl concentrations greater than 5 parts per million were stored temporarily at Building T-111. Epoxy sealant was applied to the concrete floor and the bottom four feet of the walls. The adjoining exterior concrete surface was sloped to one corner, where stormwater was conveyed by a concrete culvert to the street curb, but the exterior concrete surface was not sealed (Harding ESE, 2003). There was no known storage or use of AFFF at the Building T-111 and no suspected release of PFAS (Riso, 2019a); therefore, this site was eliminated from further evaluation.

### **2.2.4 Silver Recovery Unit – Building 4385**

The Silver Recovery Unit (SRU) was in the basement of Building 4385 (former Silas B. Hayes Hospital) in the Main Garrison area of the former Fort Ord (Figure 2). Silver-containing waste solutions (waste toner and developer) from Fort Ord photography and dental laboratories, the hospital x-ray facility, and Fort Hunter Liggett, Presidio of Monterey, Camp Roberts, and the Consolidated Treatment Medical Clinic were transported to the SRU and treated to recover the silver. The SRU was upgraded in the early 1980s to an electrolytic recovery system, and in 1992 to a zero-discharge unit. SRU operations ceased in March 1993 and the SRU was removed and relocated to Fort Lee, Virginia (Harding ESE, 2002).

The recovered silver was subsequently managed by the DRMO and the treated solution was neutralized and discharged to the sanitary sewer system (HLA, 2001). Because petroleum products were not used for SRU processes, it is unlikely AFFF was used in the fire suppression system. Additionally, photographs of the SRU indicate a conventional water-based fire suppression system was in place in the basement of

---

<sup>14</sup> California State University Monterey Bay Facilities Services & Operations currently occupies the building to support the day-to-day operations of the campus.

Building 4385 (Harding ESE, 2002). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.2.5 Building T-105 East Garrison Fire House**

The former East Garrison Fire House was located in Building T-105 on Chapel Hill Road between Camp Street and Sherman Street (Figure 2). Building T-105 was constructed in 1941 and was still identified as a “fire station” as of 1991 (DEI, 1993); however, Building T-105 had been demolished by 2007. AFFF was reportedly never stored or used at Building T-105 (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.2.6 Building 514 FAAF Fire & Rescue Station**

The former FAAF Fire & Rescue Station is located in Building 514 at the Marina Municipal Airport, south of the airport control tower and west of the Site 40A helicopter defueling area (see Section 2.5.2) (Figure 2 and Figure 6). Building 514 was constructed in 1961, concurrent with the original buildout and expansion of FAAF (see Section 2.4.2) and included facilities typical to fire stations, such as a garage, an office, workshop, storeroom, kitchen, and sleeping quarters. It was reported that AFFF was stored at Building 514 and was discharged at adjacent Site 40A; however, there is no evidence of other discharges at Building 514 (Riso, 2019c). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation, though additional investigation is recommended at Site 40A (see Sections 2.5.2 and 3.7).

### **2.2.7 Building T-1820 Main Garrison Fire House – South**

The former Main Garrison Fire House (south) is located in Building T-1820 on 1<sup>st</sup> Avenue between 4<sup>th</sup> Street and 5<sup>th</sup> Street (Figure 2). Building T-1820 was constructed in 1940 and was likely abandoned as a fire house with the construction of the Building 4400 fire station in 1953. As of 1990, Building T-1820 was being used for office space (DEI, 1993). AFFF was reportedly never stored or used at Building T-1820 (Riso, 2019c). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.2.8 Building T-2898 Main Garrison Fire House – North**

The former Main Garrison Fire House (north) was located in Building T-2898 on 11<sup>th</sup> Street between 12<sup>th</sup> Street and 13<sup>th</sup> Street (Figure 2). Building T-2898 was constructed in 1940 and was likely abandoned as a fire house with the construction of the Building 4400 fire station in 1953. As of 1992, Building T-2898 was being used by the Deputy Chief of Staff (G3 ADE) for supply service administration (DEI, 1993); however, Building T-2898 had been demolished by 2007. AFFF was reportedly never stored or used at Building T-2898 (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.2.9 Building T-3280 Main Garrison Fire House – East**

The former Main Garrison Fire House (east) is located in Building T-3280 at the intersection of 9<sup>th</sup> Street and 5<sup>th</sup> Avenue (Figure 2). Building T-3280 was constructed in 1944 and was likely abandoned as a fire house with the construction of the Building 4400 fire station in 1953. As of 1992, Building T-2898 was being used as a general-purpose building with office and storeroom facilities (DEI, 1993); however, AFFF

was reportedly never stored or used at Building T-3280 (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.2.10 Building 4400 Main Garrison Fire Station**

The Main Garrison Fire Station is located on General Jim Moore Boulevard (formerly North-South Road) between Lightfighter Drive and Gigling Road (Figure 2) and includes a complex of three buildings (Figure 3). The original fire station, Building 4400, was constructed in 1953 and included facilities typical to fire stations, such as a main garage, offices, dining room, kitchen, and sleeping quarters. Building 4401, the Applied Instruction Building, was constructed in 1957 for training purposes, and its facilities were limited to a hose tower and furnace room. Building S-4403 was constructed in 1982 and includes a garage, workshops, and a dry chemical shop. It was reported that AFFF was stored at the Main Garrison Fire Station (Riso, 2019c), but this was likely limited to Building S-4403 because Buildings 4400 and 4401 do not have appropriate storage facilities. It was also reported that AFFF tanks on fire department vehicles were drained only when repairs on the tanks were needed and some AFFF could have leaked or spilled in the grassy areas adjacent to the fire station, though it was also noted draining of AFFF tanks occurred only five times over 40 years (Riso, 2019c). Based on this information, there was no significant release of PFAS at this site; however, there were significant releases at adjacent Site 10 that warrant additional investigation (see Section 2.1.2).

## **2.3 Aircraft Crash Sites**

Aircraft crash sites are of interest because AFFF may have been applied for fire control. There are up to five reported aircraft crash sites at the former Fort Ord, with three in the Inland Ranges, one at Mudhen Lake, and one at FAAF.

### **2.3.1 Site 39 – Inland Ranges**

Small airplane wreckage was observed in the northcentral portion of the Inland Ranges during a helicopter survey of Fort Ord on August 2, 1993 (ADL, 1994) (Figure 2); however, the presence of the wreckage could not be confirmed through the review of after action reports for prescribed burns and munitions responses in this part of the Inland Ranges. Additionally, this crash likely occurred before 1971 (Riso, 2019a); therefore, AFFF would not have been applied for fire control.

There were two reported helicopter crashes in the Inland Ranges during training exercises sometime in the 1980s. The specific locations are unknown; however, there was no fire and no use of AFFF associated with these crashes (Riso, 2019a).

Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.3.2 Mudhen Lake**

Mudhen Lake is located in the eastern portion of the former Fort Ord at the intersection of Eucalyptus Road, Crescent Bluff Road, and Jacks Road (Figure 2). The site of a helicopter crash at Mudhen Lake was noted during a helicopter survey of Fort Ord on August 2, 1993 (ADL, 1994); however, the after action report for the 1997 munitions response at Mudhen Lake did not note the presence of wreckage (USA, 2000). No other helicopter crash sites were observed during the 1993 helicopter survey, so it is possible

this crash site is the same as one of the ones described in Section 2.3.1 as having occurred in the Inland Ranges. Additionally, the description in the Community Environmental Response Facilitation Act (CERFA) Report indicates the primary concern is a fuel spill and does not indicate any fire associated with this crash (ADL, 1994), which would be consistent with the helicopter crashes described above. Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

### **2.3.3 FAAF**

A small aircraft crash landing occurred at FAAF when the aircraft landing gear did not deploy; however, there was no fire and AFFF was not used (Riso, 2019a). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

In 1989, an AH-1 Cobra attack helicopter and an OH-58 Kiowa observation helicopter crashed approximately 150 yards apart in dense brush 1 mile southwest of FAAF during a nighttime training mission. The two helicopters were badly damaged and leaking fuel started a small fire in the dense brush (UPI, 1989). The fire department responded to the crash, but no AFFF was used (Riso, 2020). Based on this information, there is no suspected release of PFAS and this site was eliminated from further evaluation.

## **2.4 Aviation Hangars**

Aviation hangars are of interest because AFFF may have been used in the fire suppression systems and a release may have occurred.

### **2.4.1 Site 20 – South Parade Ground and 3800 and 519<sup>th</sup> Motor Pools**

Site 20 is located in the Main Garrison area of the former Fort Ord near the main gate (Figure 2). Aerial photographs and property records indicate the South Parade Ground and parts of the 519<sup>th</sup> and 3800 Motor Pools were formerly an airfield. Buildings S-3897 and S-3898 were once aircraft hangars and Building T-3855 was an aircraft parts storage building (HLA, 1995b). Personnel interviews also indicated the airfield was used for small aircraft, but only until FAAF construction was completed in the early 1960s (EA, 1991). Because Buildings S-3897 and S-3898 were no longer used as aircraft hangars after the early 1960s, it is unlikely AFFF was used or stored at these locations and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

### **2.4.2 Site 34 – FAAF Multiple Sites**

The FAAF (now the Marina Municipal Airport) is located on the north side of the former Fort Ord adjacent to the City of Marina (Figure 2). Construction of FAAF was completed in the early 1960s and it served as the general airfield for Fort Ord. Several military companies performed aircraft maintenance there and the Directorate of Logistics (DOL) employed a civilian maintenance force at the FAAF in Buildings 533 and 535. There were five aviation hangars constructed at FAAF that are still in existence, as shown in Figure 6 and listed below:



**AVIATION HANGARS**

| <b>Army Building No.</b> | <b>Year Built</b> | <b>Former Army Occupant</b>   | <b>Current Occupant</b>   | <b>Address</b>  |
|--------------------------|-------------------|---|---|-----------------|
| 507                      | 1979              | 7 <sup>th</sup> Aviation Battalion, C & D Companies Flight Maintenance          | Naval Postgraduate School Center for Interdisciplinary Remotely-Piloted Aircraft Studies; Joby Aviation | 3200 Imjin Road |
| 510                      | 1959              | 2/9 <sup>th</sup> Cavalry Reconnaissance Flight Maintenance                     | Fort Ord Works High Performance Structures  | 3240 Imjin Road |
| 524                      | 1961              | 2/9 <sup>th</sup> Cavalry Reconnaissance Flight Maintenance                     | Suddenlink  | 761 Neeson Road |
| 527                      | 1977              | HHC Cavalry Regiment and 1/123 <sup>rd</sup> Aviation Regiment, A & B Companies | Integrated Composites   | 741 Neeson Road |
| 533                      | 1963              | DOL Aircraft Maintenance  | Skydive Monterey Bay  | 721 Neeson Road |

Buildings 510, 524, and 533 were constructed before 1972 (DEI, 1993), and a review of real property records for these hangars indicates the original fire suppression systems consisted of automatic sprinklers, deluge systems, fire hydrants, and fire alarms, and these systems were never modified (Appendix B). Additionally, the interior views of Buildings 510, 524, and 533 indicate the original deluge systems are still in place, no foam suppression system is currently present, and there is no infrastructure in place that would have supported a foam suppression system (Figures 7 through 10).; therefore, it is unlikely the fire suppression systems at these hangars contained AFFF.

Buildings 507 and 527 were constructed after 1972 (DEI, 1993); therefore, it is possible the fire suppression systems contained AFFF. However, the real property record for Building 507 indicates the fire suppression system consisted of a sprinkler system and hoses, and a fire alarm, indicating a water-based system (Appendix B). The real property record for Building 527 does not include details regarding fire protection (Appendix B), though during the inspection of Building 510, the Operations Manager for Fort Ord Works High Performance Structures stated all the hangars at FAAF had deluge fire suppression systems supplied by an elevated water storage tank (Figure 6). This assertion was based on information provided by his father, who had served in the Army at Fort Ord and, after being discharged, worked as a civilian boiler mechanic at Fort Ord for the remainder of his career. The current fire suppression systems for all five hangars consist of water deluge systems supplied by 10-inch diameter pipelines, and there are no active foam suppression systems. These systems were supplied by the elevated water storage tank, which was decommissioned, and the systems were connected to the Marina Coast Water District system (Crechriou, 2019). Marina Coast Water District water system basemaps also indicate water supplied to the deluge systems is nonpotable.

It was reported there was an accidental discharge of foam from the fire suppression system in one hangar, which resulted in more than five feet of foam covering the floor of the hangar (indicating it was

high expansion synthetic detergent foam),<sup>15</sup> and it was believed to be one of the newer hangars (i.e., Building 507 or Building 527) (Riso, 2019a). An inspection of the interior of Building 507 indicated the presence of a possible foam suppression system in the helicopter maintenance (hangar) area and an adjacent storage/workshop area (Figure 11), though this is not described as a change in the real property record (Appendix B). An inspection of the interior of Building 527 indicates no foam suppression system is currently present and there is no infrastructure in place that would have supported one (Figure 12).

The former FAAF is a lower risk site because groundwater contamination would have been limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath Site 34 and continues in a downgradient direction, daylighting at the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). Additionally, the low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the former FAAF area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 34 area. However, additional investigation at the Building 507 area is recommended because of the presence of a suspected foam suppression system and the reported discharge of potential AFFF at one hangar. Specifically, cleanup after the accidental discharge could have resulted in AFFF being discharged to surface drainage channels or entering the sanitary sewer system, and a suspected release of PFAS at stormwater infiltration areas south of Building 507 or the FAAF sewage treatment plant (STP; see Section 3.5). Based on the information available, the other four aviation hangars at the former FAAF were eliminated from further evaluation.

## **2.5 Fuel Farms and other Aviation Assets**

AFFF for firefighting was generally used in areas where fuel- or petroleum-based fires may have occurred, such as in the vicinity of aviation assets and fuel farms.

### **2.5.1 Site 34 – Buildings 501, 502, and 503 Aircraft Fuel Facilities**

Aircraft fuel facilities associated with Buildings 501, 502, and 503 were located near the FAAF main gate (Figure 2 and Figure 6). Fuels were stored in eight underground storage tanks (USTs) that had a total capacity of 140,000 gallons. Four 10,000-gallon USTs were installed at Building 501 in 1961 and four 25,000-gallon USTs were installed at Building 503 in 1976. These USTs passed pressure tests and there are no records of major spills or fires (EA, 1991). All eight USTs were decommissioned and removed in February 1996 (RCI, 1996). Based on this information, there is no suspected release of PFAS and these facilities were eliminated from further evaluation.

### **2.5.2 Site 40 – FAAF Helicopter Defueling Area**

The helicopter defueling area was located in the northwestern portion of FAAF (Figure 2 and Figure 6), consisting of four areas in the vicinity of aviation hangar Building 533 where helicopter parking, defueling, and routine maintenance operations were performed (HLA, 1996a). Based on elevated concentrations of lead and TPH, 980 cy of soil were excavated from two of these areas, with 650 cy

---

<sup>15</sup> Examples of high expansion foam generators are shown on Figure 7.

transported to the FOSTA for treatment and the remainder disposed at the Fort Ord Landfills (ECC, 1997).

Defueling stationary aircraft at a single point is performed to prevent leakage while the aircraft is on the ground, or to facilitate maintenance operations. Defueling trucks are used to vacuum the bulk of the fuel out of the aircraft. During defueling operations at FAAF, the fire department was on standby in case of a spill or other incident. Sometime in the late 1970s or early 1980s, a defueling tank ruptured and 5,000 to 10,000 gallons of fuel were spilled. The fire department applied AFFF to the spill area to reduce the likelihood of fire (Riso, 2019a); however, the area where this incident occurred was identified on a map as being east of the FAAF fire and rescue station (Building 514; Figure 6), and it was noted the location of the defueling area was moved to this area when new helicopter pads were constructed east of the fire and rescue station (Riso, 2019b). For the purposes of this review, the FAAF helicopter defueling area east of the fire and rescue station is identified as Site 40A (Figure 2 and Figure 6). After the spill was contained, soil was placed in the spill area to absorb the fuel (and AFFF), after which the soil was loaded into dump trucks and disposed at an unknown location (Riso, 2019b).

Groundwater contamination at the former FAAF would have been limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath Site 40 and Site 40A and continues in a downgradient direction, daylighting at the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). Additionally, the low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the former FAAF area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 40 and Site 40A area.

There is no evidence an AFFF or other PFAS release occurred at Site 40; therefore, this site was eliminated from further evaluation. Additional investigation at Site 40A is recommended because of reported use of AFFF for a fuel spill response and suspected release of PFAS. Specifically, cleanup after the fuel spill could have resulted in AFFF entering the storm drain system, though Site 40A is a lower risk site because there is no pathway from this site to existing water supply wells (see Section 3.8).

## **2.6 Landfills**

Landfills are sources of PFAS because they are the end repositories for PFAS-contaminated industrial waste, sewage sludge, waste from site mitigation, and consumer goods treated with hydrophobic, stain-resistant coatings. Given the production timeline of PFAS, consumer products landfilled since the 1950s are potential sources of PFAS to the environment. In addition, many landfills accept sewage sludge from WWTPs that may contain PFAS (ITRC, 2018a).

### **2.6.1 Site 12 – Lower Meadow Disposal Area**

Site 12 is in the Main Garrison area of the former Fort Ord east of State Route 1 and south of the City of Marina (Figure 2). The Lower Meadow was a grassy field of approximately 2 acres located east of State Route 1 near the 12<sup>th</sup> Street overpass (now Imjin Parkway). The Lower Meadow was bounded on the east by the DOL Automotive Yard, to the west and north by 1<sup>st</sup> Avenue, and to the south by 11<sup>th</sup> Street. There were no buildings within the Lower Meadow, but Building T-2722 in the DOL Automotive Yard was located immediately to the east. The Lower Meadow was reportedly used for disposal of waste material

generated by the DOL, such as scrap metal, oil, and batteries. The area was also used for disposal of road construction debris. The Lower Meadow received runoff from the DOL Automotive Yard, which had a completely paved surface, and several pipes discharged into the Lower Meadow, including Outfall 31 at the southeast corner of the Lower Meadow (IT, 1999a).

Activities potentially resulting in the release of hazardous materials at the DOL Automotive Yard included transmission repair, degreasing, engine testing, steam cleaning and washing vehicles, and petroleum/oil/lubricant storage (HLA, 1995d, Volume II). Fire department vehicles were serviced at Building T-2722 and this may have included flushing tanks and systems containing AFFF (Riso, 2019a); however, the tanks were drained of AFFF at the Main Garrison Fire Station before servicing and only residual amounts of AFFF were flushed from the tanks and systems. It was also noted servicing of AFFF systems on fire department vehicles was needed only five times over 40 years (Riso, 2019c). Through this process, some residual AFFF could have been discharged to the ground surface and flowed to the Lower Meadow as surface runoff or through the storm drain system.

Surface water runoff from Site 12 flowed as street gutter flow and overland sheet flow in a westerly direction to storm drain inlets located east of the State Route 1 right-of-way. No natural drainage conveyances existed within the boundary of Site 12. The Site 12 storm drain system laterals converged at junction boxes located beneath the Lower Meadow and State Route 1. Surface water runoff was then directed to a 54-inch diameter concrete storm drain outfall (Outfall 15) located in the dunes to the west of State Route 1 (Figure 2). Surface water runoff discharged from this pipe into a closed depression within the dunes. There is no surface flow path from this depression into Monterey Bay (HLA, 1995d, Volume II).

Surface water containing PFAS from the Lower Meadow could have been discharged at Outfall 15; however, the amount of PFAS discharged would have been small and intermittent. Additionally, due to pesticides, metals, VOCs, and TPH detected in soil at Outfall 15, 430 cy of soil were excavated from the Outfall 15 discharge area in 1997 and 1998 and placed in the Fort Ord Landfills for use in the foundation layer. The excavation was then backfilled with imported clean soil (HLA, 1998b). Based on this information, no additional investigation at Outfall 15 is recommended.

67,100 cy of soil and debris were excavated during the remediation of Site 12. 58,400 cy of the excavated materials were designated potentially impacted by debris or TPH, based on either visual observation or sample results, and were placed in Area E of the Fort Ord Landfills as general fill. The remaining 8,700 cy of excavated soil not impacted by debris or TPH were stockpiled onsite and later used to backfill the Lower Meadow excavation along with 52,000 cy of clean soil imported from Fort Ord Landfills Area A (IT, 1999a). This activity included the removal of Outfall 31 and the associated storm drain infrastructure. Based on this information, no additional investigation at Outfall 31 is recommended.

Groundwater contamination at Site 12 was limited to the unconfined Upper 180-Foot Aquifer, which is not used for drinking water purposes. Additionally, the Site 12 area is located within the Fort Ord Special Groundwater Protection Zone, where installation of wells and use of the Upper 180-Foot Aquifer for drinking water are restricted by Monterey County Code. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 12 area. Reportedly poor waste disposal practices at the

DOL Automotive Yard could have resulted in discharges of AFFF to the Lower Meadow and the storm drain system; however, the AFFF discharged was only residual after the tanks on fire department vehicles had already been drained at the Main Garrison Fire Station, and this activity occurred infrequently (see Section 2.2.7). Based on this information, no additional investigation is recommended at the Lower Meadow.

### **2.6.2 Site 16 – DOL Maintenance Yard, Pete’s Pond and Pete’s Pond Extension**

Site 16 is located in the Main Garrison area of the former Fort Ord between OU2 and State Route 1 (Figure 2). Equipment, primarily large civilian trucks, was serviced in the DOL maintenance yard since the 1950s with most repairs completed in Building T-4900, including servicing of fire department vehicles where flushing of tanks and systems containing AFFF may have occurred (Riso, 2019a); however, the tanks were drained of AFFF at the Main Garrison Fire Station before servicing and only residual amounts of AFFF were flushed from the tanks and systems. It was also noted servicing of AFFF systems on fire department vehicles was needed only five times over 40 years (Riso, 2019c). The facility included a concrete-paved wash rack where runoff discharged to an adjacent oil/water separator. It is suspected fire department vehicle tanks would have been flushed at the wash rack and into the oil/water separator. Drainage from the DOL maintenance yard that did not reach the oil/water separator or sanitary sewer system (i.e., areas other than the wash rack) drained to Pete’s Pond Extension, a topographic depression northwest of the yard and adjacent to Pete’s Pond.

There was also a sewage pump station at Building 4906 to the southwest of the DOL maintenance yard that served Building T-4900. Overflows are suspected of having occurred, releasing raw sewage into the surrounding area (EA, 1991). Based on aerial photographs, Pete’s Pond and Pete’s Pond Extension were also used for refuse disposal between the late 1940s and early 1950s (Army, 1997a).

Groundwater was investigated at Site 16 and organic chemicals, including tetrachloroethene and trichloroethene (TCE), were detected; however, it was concluded these were associated with OU2 (Army, 1997a). 40,740 cy of soil were excavated from Site 16 during remedial actions in 1997, and 27,770 cy were placed in the Fort Ord Landfills as general fill. Of this, 20,920 cy were from Pete’s Pond Extension (IT, 1999b), which is the area impacted by drainage from the DOL maintenance yard and sewer overflows.

This site was eliminated from further evaluation because:

- Though AFFF may have been discharged at the wash rack associated with Building T-4900 during maintenance activities, the volumes were small and intermittent, and would have mostly been contained in the oil/water separator.
- AFFF forms a film that spreads rapidly across the surface of a petroleum product. The aqueous film is produced by the action of the fluorochemical surfactant reducing the surface tension of the foam solution to a point where the solution is supported on the surface of the petroleum product. Therefore, AFFF discharged to the oil/water separator would have likely remained on the surface of the petroleum product or partitioned to the petroleum/water interface, and would have been skimmed off and disposed of along with the petroleum product before the contents of the oil/water separator entered the sanitary sewer system.

- Sewage overflows from the pump station would have been intermittent and the probability of AFFF being discharged at the wash rack during an event that caused a sewage overflow is low (e.g., a significant storm event).
- The period of refuse dumping at Pete's Pond and Pete's Pond Extension makes it unlikely any PFAS-containing material was placed there.
- Soil remediation was completed.
- Potential impacts to groundwater in this area originate from OU2 and are addressed separately (see Section 2.6.5).

### **2.6.3 Site 17 – Disposal Area**

Site 17 is located in the Main Garrison area of the former Fort Ord between OU2 and State Route 1 (Figure 2). Based on aerial photographs, it appears material was buried extensively in the Site 17 Disposal Area between the late 1940s and early 1950s, though incinerated and unincinerated debris from as early as 1935 was detected at the Site 17 Disposal Area (Army, 1997a). Approximately 107,000 cy of soil and debris were excavated during remediation of Site 17 in 1997 and were placed in the Fort Ord Landfills (IT, 1999b). Due to the operational period of the Site 17 Disposal Area and the age of the waste found, it is unlikely any PFAS-containing material was placed there and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

### **2.6.4 Site 31 – East Garrison Dump Site**

Site 31, the East Garrison Dump Site, is in the East Garrison area south of Building T-111 (Figure 2). The East Garrison Dump Site was used for debris disposal in the 1940s and 1950s. A 500-ton incinerator was reportedly located at the top of the ravine at Site 31. Based on interviews with Fort Ord personnel and field observations, most of the refuse observed on and within the ravine slope appeared to have dated from the 1940s and 1950s. Refuse was wholly or partially incinerated and dumped over the northern slope of the ravine (Army, 1997a). Due to its operational period and the age of the waste found, it is unlikely any PFAS-containing material was placed in the East Garrison Dump Site and there is no suspected release of PFAS; therefore, this site was eliminated from further evaluation.

### **2.6.5 Operable Unit 2 – Fort Ord Landfills**

The Fort Ord Landfills are located east of the Main Garrison area in the northcentral part of the former Fort Ord (Figure 2). The USEPA added Fort Ord to the National Priorities List primarily based on groundwater contamination discovered in 1990 beneath the Fort Ord Landfills area, which was subsequently designated as OU2. The Fort Ord Landfills were active from 1955 to 1987 and were used for residential and on-base waste disposal typical of municipal landfills during that time. Waste was placed in parallel trenches from 10 to 30 feet deep and then covered over with the native dune sand excavated during trenching operations. Detailed disposal records are not available; however, information gathered during field activities and from other sources indicates household and on-base commercial refuse, dried sewage sludge, construction debris, and small amounts of chemical waste (paint, oil, pesticides, electrical equipment, ink, and epoxy adhesive) were placed in the Fort Ord Landfills (Shaw, 2005). Additionally, in the 1970s or 1980s, there were at least two fire incidents at the Fort Ord Landfills where consolidated waste, including tires, burned and AFFF was used to suppress the

fire (Riso, 2019a). These activities led to the release of contaminants to the underlying unconfined A-Aquifer.

The Fort Ord Landfills formerly included six landfill areas, one area north and five areas south of Imjin Parkway, covering approximately 150 acres, including the immediate surrounding area (Figure 2). The former Area A Landfill, north of Imjin Parkway, was approximately 33 acres separated from the Areas B through F Landfills to the south of Imjin Parkway (Figure 13). The Areas B through F Landfills encompass approximately 120 acres of undeveloped land. The former Area A was used from 1956 to 1966. Areas B, C, and D were used from 1966 through 1975, Area E was used from 1960 through 1987, with the northern portion of Area E used specifically for disposal of demolition debris, and Area F was operated from 1966 until 1987, when interim closure of the facility began, which effectively terminated waste disposal activities at the Fort Ord Landfills (Army, 1994b). Accordingly, the landfill fires that were suppressed using AFFF likely occurred in the area south of Imjin Parkway, though the exact locations are unknown.

The remedial action at the former Area A was conducted from 1996 to 1998. Approximately 585,000 cy of refuse were excavated during the remediation. This material was placed and compacted as part of the general fill in Areas B, C, D, and F of the Fort Ord Landfills. The selected remedial action for soil at OU2 included placement of an engineered cover system over buried refuse at the Fort Ord Landfills. The engineered cover over Areas B through F was constructed from 1997 to 2003 (Ahtna, 2019a).

Based on DTSC's recommendation to sample groundwater at the former Fort Ord for PFOA and PFOS analysis (see Section 1.3) and the operational history of the Fort Ord Landfills, groundwater samples were collected from twelve OU2 monitoring wells and the OU2 GWTP for PFOA/PFOS analysis during the First Quarter 2019 OU2 groundwater monitoring program event performed March 4 through March 8, 2019. Analytical results for these samples are presented in Table 3, and PFOA/PFOS concentrations in the A-Aquifer and Upper 180-Foot Aquifer are shown in Figures 14 and 15, respectively. Results and conclusions are summarized below.

- PFOA and PFOS were not detected in four of the monitoring wells sampled (EW-OU2-01-180, MW-OU2-27-A, -44-A, and -73-A).
- All monitoring well detections, except for MW-OU2-23-180, are an order of magnitude less than the USEPA HA levels and DoD screening levels, indicating limited impact on groundwater at OU2.
- Most detections were estimated results (J-qualified) below the limit of quantitation.
- PFOA and PFOS are present in the A-Aquifer at the leading edges of the COC plumes west of the groundwater divide, where groundwater flows to the west and northwest, but at concentrations below the USEPA HA levels and DoD screening levels (Figure 14).
- PFOA and PFOS were not detected in the A-Aquifer well east of the groundwater divide (monitoring well MW-OU2-27-A), where groundwater flows to the east and northeast, and therefore may not be associated with the tetrachloroethene plume in the A-Aquifer (Figure 14).
- PFOA and PFOS were not detected in A-Aquifer wells near the Fort Ord Landfills (monitoring wells MW-OU2-27-A, -44-A, and -73-A), indicating the Fort Ord Landfills are not a continuing source of PFOA/PFOS in groundwater (Figure 14).

- PFOA and PFOS were detected at concentrations exceeding the USEPA HA level of 0.07 µg/L and DoD screening level of 0.04 µg/L at one Upper 180-Foot Aquifer well (MW-OU2-23-180), which suggests an upgradient source of PFOA/PFOS to the southern lobe of the Upper 180-Foot Aquifer TCE plume (Figure 15).
- PFOA and PFOS were detected at the OU2 GWTP Eastern Main influent (TS-OU2-INF-01) but at concentrations below the USEPA HA levels and DoD screening levels. Because PFOA and PFOS do not appear to be present in the A-Aquifer near the Fort Ord Landfills, this indicates the PFOA and PFOS are coming from Upper 180-Foot Aquifer extraction wells in the Abrams/Imjin Network (EW-OU2-05-180, -06-180, and -12-180) and the GWTP Network (EW-OU2-10-180).
- PFOA and PFOS were not detected at the OU2 GWTP Western Main influent (TS-OU2-INF-02), which further suggests there are no PFOA/PFOS in the A-Aquifer exceeding the USEPA HA levels and DoD screening levels. None of the OU2 Western Network extraction wells (EW-OU2-01-A through -06-A) were operating at the time samples were collected; however, PFOA was not detected and PFOS was detected at a concentration an order of magnitude less than the USEPA HA level at downgradient A-Aquifer monitoring well MW-OU2-40-A, which is adjacent to the Western Network of extraction wells (Figure 14).
- PFOA and PFOS were not detected at any GWTP sampling points downstream of the influent, indicating granular activated carbon treatment is effectively removing PFOA and PFOS.
- Duplicate samples were collected from monitoring wells MW-OU2-08-A and -56-180. Estimated (J-qualified) concentrations of PFOA close to the limit of detection were detected in the primary samples, but both PFOA and PFOS were not detected in the duplicate samples. This indicates PFOA may be present in groundwater at these locations, but at very low concentrations that cannot be consistently detected.

Additional investigation at OU2 in the Upper 180-Foot Aquifer is recommended because of a suspected release of PFAS associated with the disposal practices used, reported discharges of AFFF at the Fort Ord Landfills, and detections of PFOA and PFOS at concentrations above the USEPA HA levels and DoD screening levels in monitoring well MW-OU2-23-180. OU2 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term (see Section 3.2).

### 2.6.6 Fort Ord Soil Treatment Area (FOSTA)

As described above, soils excavated from Sites 8, 10, and 40 were treated at the FOSTA, which was located at Site 20 (former 519<sup>th</sup> Motor Pool) (Figure 2). The FOSTA was designed and constructed as a bioremediation facility for soil containing petroleum hydrocarbons excavated from IA sites at the former Fort Ord. The FOSTA was an approximately 200-foot by 200-foot lined and bermed treatment unit, consisting of a foundation layer, high-density polyethylene (HDPE) liner, and operational layer. A 40-mil HDPE liner was placed over the foundation layer and the berm.

From 1995 to 1997, soil suitable for bioremediation was transported to the FOSTA, stockpiled, and treated. The soil stockpiles were located in a concrete-paved area west of the FOSTA, pending available treatment space, and were placed on and covered with polyethylene sheeting at all times to prevent potential migration of soil or contaminants to surrounding areas (HLA, 1994). Following the completion of treatment, the soils were transported to the Fort Ord Landfills (U&A, 1999).



The *Record of Decision, Basewide Remedial Investigation Sites, Fort Ord, California* (Army, 1997a), in conjunction with the *Explanation of Significant Differences, Consolidation of Remediation Waste in a Corrective Action Management Unit (CAMU), Operable Unit 2 Landfill* (Army, 1997b) and the *Explanation of Significant Differences, No Further Action for Munitions and Explosives of Concern, Landfill Gas Control, Reuse of Treated Groundwater, Designation of Corrective Action Management Unit (CAMU) Requirements as Applicable or Relevant and Appropriate Requirements (ARARs)* (Army, 2006) designate CAMU regulations as ARARs for the existing boundaries of Landfills Areas B through F. Such designation allows remediation waste to be placed at the Fort Ord Landfills and used as a foundation layer without triggering certain disposal regulations. Soil remedies for remedial investigation sites and IA sites at the former Fort Ord utilized the Fort Ord Landfills for placement of excavated soil and debris, which are managed, incorporated within the landfill foundation layer, and capped as part of the Fort Ord Landfills engineered cover system (Ahtna, 2019g).

Prior to designation of CAMU regulations as ARARs, approximately 6,000 cy of soil was treated at the FOSTA and transported and placed at the Fort Ord Landfills as fill. After designation of CAMU regulations as ARARs, approximately 2,000 cy of soil from IA sites stockpiled for bioremediation at the FOSTA were transported to the Fort Ord Landfills. The FOSTA was shut down in April 1997, and soil subsequently excavated from other IA sites was transported directly to the Fort Ord Landfills for placement as fill.

After the FOSTA was shut down, approximately 1,602 cy of operational layer soils were removed and placed in Area E of the Fort Ord Landfills. The HDPE liner was cut into approximately 20-foot by 50-foot sections and also disposed of in Area E of the Fort Ord Landfills. Laboratory analysis of confirmation soil samples collected from the foundation layer and berm soils indicated petroleum hydrocarbons (motor oil and diesel) were present in two soil samples above the cleanup criteria. Approximately 68 cy were excavated from this area and transported to Fort Ord Landfills Area E for disposal. Confirmation sampling indicated no chemicals of concern were present in the soil above cleanup criteria. The remaining foundation layer and the earthen berm were integrated with clean fill soil from Sites 2 and 12, and this mixed material was used to backfill the FOSTA site.

The concrete-paved areas used to stockpile soil before treatment were cleaned using a power washer. A minimum amount of water was used to limit the amount of wastewater. Washing began along the outer margins of the paved areas and proceeded toward the center. Wastewater was collected as it began to pond and was transported to holding tanks for treatment and discharge (U&A, 1999). Closure of the FOSTA was completed in April 1999 (IT, 2000a).

The FOSTA received soil from Site 10 that may have contained PFAS (see Section 2.1.2); however, this soil was managed in stockpiles covered and underlain with polyethylene sheeting to prevent potential migration of soil or contaminants to surrounding areas, and then contained in a treatment area lined with 40-mil HDPE. Therefore, there is no suspected release of PFAS and the FOSTA was removed from further evaluation.

## **2.7 Wastewater Treatment Plants**

Municipal and industrial WWTPs can provide the following pathways for PFAS to the environment: point source discharges of effluent; leakage or unintended releases from surface impoundments; air

emissions; or disposal of biosolids and other byproducts generated during the treatment process. PFAS could be concentrated in solid waste (e.g., sewage sludge) and, depending on waste management and disposal practices, this solid waste could contaminate groundwater, surface water, or both. PFAS may also be introduced to the environment through the land application of biosolids as a beneficial soil amendment, potentially allowing PFAS to enter surface water through runoff or infiltrate to groundwater (ITRC, 2018a).

WWTPs where releases may have occurred and which merit evaluation include those that may have received wastewater from facilities that used or disposed of PFAS-containing effluents. Concentrations of PFOA up to 0.02 µg/L and of PFOS up to 0.04 µg/L are typically detected at municipal WWTPs, which is significantly lower than concentrations detected at industrial WWTPs (Frömel et al., 2016) and less than the USEPA HA levels.

### **2.7.1 Site 1 – Ord Village Sewage Treatment Plant**

The former Ord Village STP was located at the southwestern corner of the former Fort Ord in what is now Fort Ord Dunes State Park (Figure 2). The Ord Village STP was built in the early 1950s to treat sewage generated from the housing area at the former Ord Village. Facilities for primary treatment consisted of two trickling filters, two clarifiers, a sludge digestion tank, a chlorine contact tank, three small sludge drying beds, and one holding pond (HLA, 1997d). The STP was abandoned in 1964 and a sewage pump station was built at the site in 1983 (IT, 1997).

In accordance with the Interim Action Record of Decision (Army, 1994a), an IA excavation was completed at Site 1 in 1997 to remove soils with concentrations of organic compounds and metals above target cleanup concentrations. 862 cy of soils and dried sludge were excavated from the area of the former trickling filters and holding pond and placed at the Fort Ord Landfills in the foundation layer for the engineered cover system (HLA, 1997d).

The Ord Village STP served a residential area and did not receive wastewater from industrial or commercial facilities that used or disposed of PFAS-containing effluents. Additionally, sewage sludge where PFAS may have been concentrated was removed from the site. Therefore, there is no suspected release of PFAS and the Ord Village STP was removed from further evaluation.

### **2.7.2 Site 2 – Main Garrison Sewage Treatment Plant**

The Main Garrison STP occupies an unpaved area of approximately 28 acres west of Beach Range Road (Figure 2). The former treatment facility is fenced and contains a few buildings and two large trickling filters. Outside of the fenced area are three (former) unlined sewage ponding areas and ten asphalt-lined sludge drying beds. The Main Garrison STP was the primary STP for the former Fort Ord, serving a majority of the residential areas and main industrial areas from the late 1930s until it was decommissioned in May 1990. During operation, effluent from the Main Garrison STP was discharged into a storm drain that emptied onto Indian Head Beach during low tide and into Monterey Bay during high tide. Continuing effluent violations, including excessive biological oxygen demand, ammonia, coliform bacteria, and suspended solids, occurred during operation (HLA, 1997e). The sewage sludge was digested anaerobically, dried in drying bed, and subsequently used as a soil conditioner in areas on Fort Ord (Weston, 1990).

No remedial action was proposed for soil at Site 2 (Army, 1997a); however, as part of the maintenance and cleanup activities associated with the closure of Site 2, all sludge remaining in the STP sludge drying beds and evaporation ponds was removed. Additional cleanup activities included the demolition of the asphalt-lined drying beds, removal of drying bed conveyance piping, and excavation of approximately 3 feet of soil below the drying beds and ponds. Approximately 15,000 cy of sludge, soil, and asphalt debris were transported to the Fort Ord Landfills for disposal (IT, 2000b).

While the Main Garrison STP served both residential and industrial areas, analytical results from the remedial investigation indicate contaminants were mainly confined to the sludge in the asphalt-lined drying beds (HLA, 1995d, Volume II) and the sludge, where PFAS may have been concentrated, was removed from the site. Therefore, there is no suspected release of PFAS and the Main Garrison STP was removed from further evaluation.

There are no known records of how much sewage sludge was used for soil conditioning or where it was placed on the former Fort Ord; however, it is unlikely this sludge contained significant concentrations of PFAS because:

- There were no industrial processes at the former Fort Ord that generated PFAS.
- Possible sources of PFAS in the sludge include discharges of AFFF at the DOL Automotive Yard and the DOL Maintenance Yard that could have entered the sanitary sewer system; however, these discharges would have been intermittent, of relatively small volume, and primarily contained in the oil/water separators at each site (see Sections 2.6.1 and 2.6.2).

Additionally, groundwater was sampled and analyzed for PFOA/PFOS at OU2, which covers a significant portion of the Main Garrison area where sewage sludge may have been applied for soil conditioning (see Section 2.6.5), and additional groundwater monitoring is recommended at OU2 (see Section 3.2).

### **2.7.3 Site 32 – East Garrison Sewage Treatment Plant**

The former East Garrison STP was located at the eastern portion of the former Fort Ord, north of Inter-Garrison Road and south of Reservation Road (Figure 2). The East Garrison STP was built before the 1940s as a primary treatment plant to serve the municipal needs of the East Garrison. Treatment facilities consisted of unlined sludge beds, an unlined percolation pond, and two concrete Doten-sedimentation tanks (HLA, 1998a). The STP effluent was discharged to the Salinas River until around 1973 when the discharge pipe was capped (Weston, 1990). The STP operated until 1997 but only received wastewater from toilets and showers used at the East Garrison, approximately 2,000 to 5,000 gallons per day.

In 1997, dried sewage sludge was removed from the inactive drying beds and soil containing elevated concentrations of metals, pesticides, and petroleum hydrocarbons was removed from the IA areas. The Doten tanks were emptied, cleaned, and capped (IT, 2000b). The results of confirmation sampling and risk evaluation indicated no further threat to human health, the environment, or groundwater (HLA, 1998a). The Site 32 property was transferred in 2004 and a residential neighborhood was constructed over the area.

The East Garrison STP operational history indicates it did not receive wastewater from industrial or commercial facilities that used or disposed of PFAS-containing effluents. Additionally, sewage sludge

where PFAS may have been concentrated was removed from the site. Therefore, there is no suspected release of PFAS and the East Garrison STP was removed from further evaluation.

#### **2.7.4 Site 36 – Fritzsche Army Airfield Sewage Treatment Plant**

The FAAF STP was located in the northeastern portion of FAAF near the former Fort Ord boundary (Figure 2). It was operated from the 1950s until March 1991 (Harding ESE, 2002). The STP consisted of a barminutor, an Imhoff tank, two cement soil-lined oxidation (evaporation) ponds with an estimated capacity of 20,000 gallons per day, and two small drying beds for Imhoff tank sludge, and a sewage overflow outfall (HLA, 1996e) (Figure 16). Oil/water separators were installed in the 1960s to pre-treat wastewater from the aircraft wash racks and prevent petroleum hydrocarbons from entering the sanitary sewer system. The STP treated an average of 16,500 gallons per day of sanitary sewage and wastewater from wash racks and maintenance shops at FAAF and the nearby U.S. Army Reserve Center (Site 27). There was no off-base effluent discharge from the evaporation ponds, and sludge was never removed from the drying beds (Harding ESE, 2002). The Imhoff tank experienced overflows from the oil/water separators, and the evaporation ponds had cracks in the bottom, so it was possible for wastewater to percolate into the ground (HLA, 1997c), though groundwater contamination would have been limited to the A-Aquifer, which is not used for drinking water purposes (HGL, 2017). The FO-SVA underlies the A-Aquifer beneath Site 36 and continues in a downgradient direction, daylighting at the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). Additionally, the low permeability and thickness of the FO-SVA prevents significant vertical migration of groundwater within the Site 36 area from the A-Aquifer into the underlying Upper 180-Foot Aquifer. Consequently, there is no exposure pathway to human receptors for groundwater from the Site 36 area.

Site characterization identified sewage residue and soil with elevation concentrations of chlordane, cadmium, lead, and TPH in the evaporation ponds (Harding ESE, 2002); therefore, 600 cy of impacted soil were removed from the evaporation ponds and 8,700 cy of sewage sludge were removed from the drying beds in 1997 and placed at the Fort Ord Landfills (IT, 2000b).

Additional investigation at the FAAF STP is recommended because of the reported discharge of potential AFFF at one of the FAAF hangars (see Section 2.4.2). Specifically, cleanup after the accidental discharge could have resulted in AFFF entering the sanitary sewer system and a suspected release of PFAS at the FAAF STP. The FAAF STP is a lower risk site because there is no pathway from this site to existing water supply wells (see Section 3.6).

#### **2.8 Site 39 – Inland Ranges**

Site 39 consists of approximately 6,830 acres designated as habitat reserve in the Habitat Management Plan (Army, 1997c) on the south side of the former Fort Ord (Figure 2). Within Site 39 is the Impact Area Munitions Response Area, which is being remediated in accordance with the Record of Decision, Impact Area Munitions Response Area, Track 3 Munitions Response Site (Track 3 ROD; Army, 2008). The selected remedy includes prescribed burning of up to 800 acres per year to clear vegetation and provide access to conduct remediation of munitions and explosives of concern. Prescribed burning is the preferred method for vegetation removal because successful conservation of maritime chaparral is dependent on proper management of the habitat by using fire as a management tool (Army, 1997c).

During prescribed burning at the former Fort Ord, fire foam or retardant may be used for pre-treatment of the containment line around the burn unit (POM, 2016), or to extinguish fires that have gone outside the containment line. However, these are Class A foams or retardants designed for use on combustible materials, such as wood, and not AFFF, which is a Class B foam designed for use on flammable liquids. Class A foams do not contain PFAS. Additionally, the fire department has historically used water tenders and not foam for fighting fires in the Inland Ranges (Riso, 2019a). Based on this information, there is no suspected release of PFAS and the Inland Ranges were removed from further evaluation.

## **2.9 Outfalls 34 and 35**

Outfalls 34 and 35 are located near Site 40, the former FAAF helicopter defueling area (see Section 2.5.2), and west of aviation hangar Building 533 (see Section 2.4.2) (Figure 2). Discharge from Outfall 34 was collected from surface drainage in the area south of Building 533 and west of Building 535, and discharge from Outfall 35 was collected from surface drainage in the area north and east of Building 533. These areas were not part of Site 40 and Outfalls 34 and 35 did not receive stormwater runoff from Site 40 (HLA, 1995c). Both outfalls discharged into a vegetated drainage channel west of Building 533, and chemicals used in Building 533 and Building 535 may have entered storm drain inlets upstream of these outfalls (HLA, 1997c).

Pesticides, metals, and TPH were detected in soil samples collected at the outfalls during site characterization activities. Based on these results, 37 cy of soil were excavated at Outfall 34 and 20 cy of soil were excavated at Outfall 35 and placed in the Fort Ord Landfills (HLA, 1997c).

There was a reported discharge of potential AFFF at one of the FAAF hangars that could have resulted in AFFF entering the storm drain system; however, this discharge is suspected of having occurred at Building 507 and not Building 533 (see Section 2.4.2). Additionally, the intentional application of AFFF to a fuel spill to reduce the likelihood of fire occurred at a helicopter defueling area (Site 40A) separate from Site 40 (see Section 2.5.2). Based on this information, there is no suspected release of PFAS and Outfalls 34 and 35 were removed from further evaluation.

### 3.0 Recommendations for Additional Investigation

Based on the results of the site evaluations described in Section 2.0, several sites are recommended for additional investigation for PFAS as described below and summarized in Table 2. Specific recommendations for additional sampling are based on the suspected PFAS release mechanism, the current understanding of environmental fate and transport for PFAS, and previous or ongoing remedial actions. Per the Army guidance, additional investigation should be prioritized for sites where there may be a pathway for PFAS to receptors, specifically through drinking water (i.e., medium-risk or higher risk sites). For any future sampling for PFAS analysis at the former Fort Ord, it is also recommended the analytical laboratory report results for the 18 PFAS compounds listed in Table 4 in accordance with Army guidance (Army, 2018).

Although PFAS are very water-soluble, some have been detected in soils at FTAs that have been closed for years (Army, 2018). PFAS present in unsaturated soils are subject to downward leaching during precipitation events that promote dissolution of soil-bound contaminant mass. This process is a potential driver of PFAS transport from surface soils to groundwater; however, while some studies have reported PFAS transport by leaching, others have observed long-term retention of longer-chain PFAS in shallow soils after extended percolation (ITRC, 2018a). These longer-chain PFAS can be more strongly sorbed due to association with the organic carbon fraction of soil; however, the northern part of the former Fort Ord, where PFAS releases are suspected of having occurred, consists of dune sands with very low organic carbon content (0.5% on average). Most of the organic carbon that is present occurs in the top few feet of soil, which was removed at the sites where soil remediation took place. Therefore, soil sampling is not recommended at sites where significant overexcavation of impacted soil has already occurred as part of previous remedial actions.

#### 3.1 FAAF Fire Drill Area

The FAAF FDA is a lower risk site because there is no pathway from this site to existing water supply wells; however, additional groundwater investigation in the A-Aquifer is recommended because of reported regular use of AFFF at the former FAAF FDA for at least 13 years and detections of PFOA and PFOS in three groundwater monitoring wells at concentrations exceeding the USEPA HA or DoD screening levels. The former FAAF FDA was associated with OU1; however, any additional PFAS investigations at this site will be independent of the completed OU1 remediation and not associated with the OU1 ROD (see Section 2.1.5).

No additional soil investigation is recommended at this time. Impacted soils were excavated, remediated, and transported offsite, and the soil remedy is considered to be complete (Army, 1995). PFAS may have been present in the excavated soils, and bioremediation activities could have caused downward leaching of PFAS to groundwater; however, analytical results for PFOA and PFOS in samples collected in May 2015 from A-Aquifer wells downgradient of the former FDA indicate the former FDA was no longer a source (HGL, 2017).

One A-Aquifer groundwater monitoring well (MW-BW-95-A) was installed in September 2018 downgradient of the former FDA as part of ongoing remedial activities at Operable Unit Carbon

Tetrachloride Plume (OUCTP; Ahtna, 2019c) (Figure 17). Therefore, it is recommended this well be sampled for PFAS analysis to confirm the former FDA is no longer a source.

All other groundwater wells associated with OU1 have been decommissioned. Groundwater monitoring wells associated with the upgradient portion of OU1 and in the vicinity of the former FDA were decommissioned in September 2011 (HGL, 2012). Additional groundwater wells associated with the downgradient portion of OU1 were decommissioned in June 2014 (HGL, 2014). All remaining OU1 groundwater monitoring, injection, and extraction wells were decommissioned in July 2017 as part of site closeout activities (HGL, 2017). Therefore, it is recommended two new A-Aquifer groundwater monitoring wells be installed at downgradient locations based on the results of the attainment monitoring completed in 2015 (HGL, 2016): one in the area of former monitoring well MW-OU1-88-A, and one in the area of former monitoring well MW-OU1-85-A, approximately halfway between MW-OU1-88-A and the former Fort Ord boundary (Figure 17). These proposed locations are within the Fort Ord-Salinas Valley Aquitard (FO-SVA) Channel Low, a preferential pathway for groundwater contaminants in the A-Aquifer (HGL, 2016). Because these wells would be located downgradient of MW-BW-95-A, where carbon tetrachloride has been detected at concentrations exceeding the aquifer cleanup levels, they would also serve to define OUCTP in the A-Aquifer in this area.

### 3.2 Operable Unit 2 – Fort Ord Landfills

OU2 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term. Additional groundwater investigation at OU2 in the Upper 180-Foot Aquifer is recommended because of the historical disposal practices used, the reported discharge of AFFF at the Fort Ord Landfills, and the detections of PFOA and PFOS at concentrations above the USEPA HA levels and DoD screening levels in monitoring well MW-OU2-23-180 (Table 3 and Figure 15).

Monitoring well MW-OU2-23-180 should be resampled to confirm the results of the sampling event conducted in March 2019. Additionally, it is recommended upgradient monitoring wells MW-OU2-50-180 and MW-OU2-54-180, and downgradient extraction well EW-OU2-03-180 be sampled to evaluate the extent of PFAS in the southern lobe of the OU2 TCE plume in the Upper 180-Foot Aquifer. These proposed sampling locations are shown in Figure 15. Due to recent detected TCE concentrations above the aquifer cleanup level (5 µg/L) in the Upper 180-Foot Aquifer and the Maximum Contaminant Level (5 µg/L) in the Lower 180-Foot Aquifer east of the Fort Ord Landfills and upgradient of water supply well FO-29, it is also recommended monitoring wells MW-OU2-62-180, MW-OU2-28-180, MW-BW-59-180, and MW-OU2-82-180 be sampled (Figure 18).<sup>16</sup>

No soil investigation is recommended. The suspected sources of PFAS at the Fort Ord Landfills are the buried waste and AFFF discharged during fire suppression there. Impacted soils would be beneath the waste and inaccessible due to the engineered cover system in place at the Fort Ord Landfills. The engineered cover system also acts as an impermeable barrier to rainwater, thereby eliminating infiltration as a transport mechanism. Additionally, PFOA and PFOS were not detected in A-Aquifer wells

---

<sup>16</sup> Monitoring wells MW-OU2-54-180 and MW-OU2-62-180 are also recommended for sampling as part of the investigation at Site 10 (Section 3.3).

near the Fort Ord Landfills, indicating the Fort Ord Landfills are not a continuing source of PFOA/PFOS in groundwater (see Section 2.6.5).

### 3.3 Site 10 – Burn Pit/Fire Training Area

Site 10 is a medium-risk site due to potential impacts to downgradient water supply wells in the long-term. Additional groundwater investigation in the Upper 180-Foot Aquifer is recommended because of reported regular use of AFFF at Site 10 for at least two decades. Site 10 overlies the unconfined or semiconfined Upper 180-Foot Aquifer west of the FO-SVA (HLA, 1995a).

No additional soil investigation is recommended at this time. Impacted soils were excavated, transported offsite, and remediated (HLA, 1996c). PFAS may have been present in the excavated soils, and precipitation and training activities could have caused downward leaching of PFAS to groundwater.

All groundwater wells associated with Site 10 have been decommissioned. The three groundwater monitoring wells adjacent to the former burn pit were decommissioned in March 2011 (USAPHC, 2011). All remaining groundwater wells upgradient and downgradient of the former burn pit were decommissioned in June 2014 (HGL, 2014). Groundwater flow in the Upper 180-Foot Aquifer in this area is to the northeast toward the Fort Ord Landfills with hydraulic conductivities up to 366 feet per day (HLA, 1995d, Volume II). Additionally, particle tracking analysis using the Fort Ord groundwater model indicates PFAS entering the Upper 180-Foot Aquifer at Site 10 could have traveled as far as the Fort Ord Landfills within 30 years and potentially commingled with the OU2 TCE plume in the Upper 180-Foot Aquifer; therefore, it is recommended downgradient monitoring wells MW-OU2-29-180, MW-OU2-54-180, MW-OU2-55-180, and MW-OU2-62-180 be sampled for PFAS analysis (Figure 19).<sup>17</sup> Depending on the monitoring results from these wells, additional groundwater investigation may be warranted in the area between this well and Site 10.

### 3.4 Site 34 – FAAF Aviation Hangars

The former FAAF is a lower risk site because there is no pathway from this site to existing water supply wells; however, additional investigation at the Building 507 area is recommended because of the presence of an apparent foam suppression system and the reported discharge of potential AFFF at one hangar. Cleanup after the accidental discharge could have resulted in AFFF being discharged to surface drainage channels or sanitary sewer system, and a suspected release of PFAS at stormwater infiltration areas south of Building 507 or the FAAF STP (see Section 3.6).

Building 507 is located at 3200 Imjin Road in the Marina Municipal Airport property (formerly FAAF; Figure 20). A 10-inch diameter storm drain line runs through the parking lot west of Building 507 and parallel to Imjin Road. This storm drain line discharged at an outfall approximately 350 feet southwest of Building 507, where the University of California Monterey Bay Education, Science, and Technology Center is now located, and the discharge traveled via surface drainage to a topographic low area to the southeast of Building 507. Surface runoff from around Building 507 appears to have also drained to the

---

<sup>17</sup> Monitoring wells MW-OU2-54-180 and MW-OU2-62-180 are also recommended for sampling as part of the investigation at OU2 (Section 3.2).



same topographic low area (HLA, 1995c). This area is east of the A-Aquifer groundwater divide and there are no groundwater monitoring wells nearby or downgradient.

Because long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible, limited soil sampling for PFAS analysis from the surface down to 10 feet below ground surface in the topographic low area is recommended (Figure 20). Depending on the analytical results for the soil samples, a groundwater investigation may be warranted in the downgradient area between Building 507 and the former Fort Ord boundary to the east.

### 3.5 Site 36 – FAAF Sewage Treatment Plant

The FAAF STP is a lower risk site because there is no pathway from this site to existing water supply wells; however, additional investigation at the FAAF STP is recommended because of the reported discharge of potential AFFF at one of the FAAF hangars (see Sections 2.4.2 and 3.5). Specifically, cleanup after the accidental discharge could have resulted in AFFF entering the sanitary sewer system and a suspected release of PFAS at the FAAF STP. The former Imhoff tank experienced overflows and the evaporation ponds had cracks in the bottom, so it was possible for wastewater containing PFAS to have percolated into the ground. No excavation occurred in the area of the Imhoff tank and only limited excavation occurred in the evaporation ponds; therefore, soil sampling for PFAS analysis from the surface down to 10 feet below ground surface in the footprints of the former Imhoff tank and evaporation ponds is recommended to evaluate for residual PFAS. Additionally, because the A-Aquifer in this area discharges to the ground surface as seepage from the bluffs above the Salinas River (HLA, 1995d, Volume II), shallow soil samples should be collected from the bluff face (Figure 21).

The Site 36 area is east of the A-Aquifer groundwater divide and the one groundwater monitoring well adjacent to the former evaporation ponds (MW-36-01-A) was decommissioned in June 2014 (HGL, 2014). There are no downgradient monitoring wells. Groundwater flow in the A-Aquifer in this area is to the northeast toward the Salinas River. No additional groundwater investigation is recommended at this time because:

- The A-Aquifer east of the groundwater divide discharges to the ground surface as seepage from the bluffs above the Salinas River along the eastern boundary of the former Fort Ord (HLA, 1995d, Volume II). These bluffs are approximately 800 feet downgradient of the former Imhoff tank location and 350 feet downgradient from the former evaporation ponds; therefore, given the average hydraulic conductivity of the A-Aquifer and modeled groundwater gradients in this area (HLA, 1995d, Volume II), if any PFAS were discharged at the FAAF STP and migrated to groundwater, they would have already discharged to the ground surface at the bluffs.
- Analytical results for groundwater samples collected from MW-36-01-A from 1992 through 2003 indicate most compounds were not detected and concentrations of detected compounds were consistently less than Federal and State Maximum Contaminant Levels, except for one detection of TCE at 8.1 µg/L in 1995, indicating limited migration of contaminants from the FAAF STP to groundwater.

### 3.6 Site 40A – East FAAF Helicopter Defueling Area

Site 40A is a lower risk site because there is no pathway from this site to existing water supply wells; however, as described in Section 2.5.2, there was a reported discharge of AFFF at a previously unidentified helicopter defueling area east of the fire and rescue station and separate from the helicopter defueling area identified as Site 40. For this report, this eastern helicopter defueling area is identified as Site 40A (Table 2 and Figure 2). Additional investigation is recommended at Site 40A because of the reported use of AFFF for a fuel spill response. Specifically, cleanup after the accidental discharge could have resulted in AFFF entering the storm drain system.

A 24-inch diameter storm drain line runs through the helicopter parking apron east of the fire and rescue station and parallels Imjin Road. This storm drain line discharges at an outfall approximately 450 feet east of the fire and rescue station, and the discharge traveled via surface drainage to a topographic low area to the northeast of the helicopter parking apron. Surface runoff from the helicopter parking apron appears to have also drained to the same topographic low area (HLA, 1995c). This area is east of the A-Aquifer groundwater divide and there are no groundwater monitoring wells nearby or downgradient. Because long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible, limited soil sampling for PFAS analysis from the surface down to 10 feet below ground surface in the topographic low area is recommended (Figure 22). Depending on the analytical results for the soil samples, a groundwater investigation may be warranted in the downgradient area between the helicopter parking apron and the former Fort Ord boundary to the east.

## 4.0 References<sup>18</sup>

Ahtna Engineering Services LLC (AES), 2014. *Report of Quarterly Monitoring, First Quarter 2014, Groundwater Monitoring Program, Sites 2 and 12, OU2 and OUCTP, Former Fort Ord, California*. July 25. AR# BW-2718.

AES, 2015. *Final Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12, Former Fort Ord, California*. February 27. AR# BW-2721B.

Ahtna Environmental, Inc. (Ahtna), 2017. *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Final Revision 5, Groundwater Remedies and Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume*. June 16. AR# BW-2785D.

Ahtna, 2018. *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix A, Final Addendum No. 1, Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis, Operable Unit 2, Former Fort Ord, California*. December 4. AR# OU2-715B.

Ahtna, 2019a. *Annual Report 2018, Operations and Maintenance, Operable Unit 2 Landfills, Former Fort Ord, California*. May 14. AR# OU2-718.

Ahtna, 2019b. *Final Sites 2 and 12 Fourth Quarter 2017 through Third Quarter 2018 Groundwater and Soil Gas Monitoring Report, Former Fort Ord, California*. July 8. AR# BW-2861B.

Ahtna, 2019c. *Final Monitoring Well Installation Completion Report, Former Fort Ord, California*. July 8. AR# BW-2866A.

Ahtna, 2019d. *Final Operable Unit Carbon Tetrachloride Plume First Quarter 2019 Groundwater Monitoring Report, Former Fort Ord, California*. July 15. AR# OUCTP-0088.

Ahtna, 2019e. *Final Operable Unit 2 First Quarter 2019 Groundwater Monitoring and Treatment System Report, Former Fort Ord, California*. August 2. AR# OU2-720.

Ahtna, 2019f. *Final Operable Unit Carbon Tetrachloride Plume Second Quarter 2019 Groundwater Monitoring Report, Former Fort Ord, California*. September 9. AR# OUCTP-0089.

Ahtna, 2019g. *Quality Assurance Project Plan, Former Fort Ord, California, Volume I, Appendix D, Draft Revision 4, Operable Unit 2 Landfills*. September 10. AR# OU2-7021.

Ahtna, 2019h. *Final Operable Unit 2 Second Quarter 2019 Groundwater Monitoring and Treatment System Report, Former Fort Ord, California*. September 23. AR# OU2-721.

---

<sup>18</sup> At the end of references included in the Fort Ord Administrative Record are the Administrative Record Numbers (AR#s) (e.g. BW-1234). To find the referenced document, this number may be typed into the online search tool at: <http://www.fortordcleanup.com/documents/search/>. Please note the referenced documents were available in the Fort Ord Administrative Record at the time this document was issued; however, some may have been superseded by more current versions and were subsequently withdrawn.

- Arthur D. Little (ADL), 1994. *Community Environmental Response Facilitation Act (CERFA) Report, Fort Ord, Monterey, California*. April 8. AR# BW-1658.
- Crechriou, Jeff, Airport Services Manager, Marina Municipal Airport (Crechriou), 2019. Personal communication. December 30.
- Diagnostic Engineering Inc. (DEI), 1993. *Asbestos Survey Report, U.S. Army Corps of Engineers – Fort Ord Installation, Fort Ord, California*. April 26.
- EA Engineering, Science, and Technology (EA), 1991. *Draft Final Fort Ord, California, Base-Wide Remedial Investigation/Feasibility Study, Volume 1: Literature Review and Base Inventory Report*. March. AR# BW-0136.
- Environmental Chemical Corporation (ECC), 1997. *Draft Closure Report, Site 40 – FAAF Defueling Area, Fort Ord Interim Action Sites – Phase II, Fort Ord, California*. January 14. AR# IAFS-155.
- Frömel, T., C. Gremmel, I. Dimzon, and P. de Voogt, 2016. *Investigations on the presence and behavior of precursors to perfluoroalkyl substances in the environment as a preparation of regulatory measures*. August. <https://www.umweltbundesamt.de/publikationen/investigations-on-the-presence-behavior-of>
- Harding ESE, 2002. *Draft Final Field Investigation and Data Review, Solid Waste Management Units, Fort Ord, California*. July 30. AR# BW-1496A.
- Harding ESE, 2003. *Final RCRA Closure Certification Report, DRMO PCB Storage Building T-111 (Solid Waste Management Unit FTO-009), Former Fort Ord, California*. September 23. AR# BW-2191L.
- Harding Lawson Associates (HLA), 1988. *Operation and Maintenance Manual, Soil and Ground-Water Treatment System, Fritzsche Army Airfield Fire Drill Area, Fort Ord, California*. July 25. AR# OU1-096.
- HLA, 1994. *Final Fort Ord Soil Treatment Area (FOSTA), Design, Operations, Maintenance, Monitoring, and Closure Plan, Fort Ord, California*. December 10. AR# BW-0907.
- HLA, 1995a. *Draft Final Data Evaluation and Recommendation Report, Site 10 – Burn Pit, Fort Ord, California*. March 30. AR# BW-1711.
- HLA, 1995b. *Draft Final Site Characterization, Site 20 – South Parade Ground, 3800 and 519<sup>th</sup> Motor Pools, Fort Ord, California*. May 1. AR# BW-1126.
- HLA, 1995c. *Volume I – Draft Final Basewide Surface Water Outfall Investigation, Remedial Investigation/Feasibility Study, Fort Ord, California*. May 17. AR# BW-1146.
- HLA, 1995d. *Basewide Remedial Investigation/Feasibility Study, Fort Ord, California, Volumes I through VI*. October 19. AR# BW-1283A.
- HLA, 1996a. *Draft Final Site Characterization, Site 40 – Fritzsche Army Airfield Defueling Area, Fort Ord, California*. January 9. AR# BW-1354.

HLA, 1996b. *Draft Final Site Characterization, Site 41 – Crescent Bluff Fire Drill Area, Fort Ord, California.* March 22. AR# BW-1356.

HLA, 1996c. *Interim Action Confirmation Report, Site 10 – Burn Pit, Fort Ord, California.* August 30. AR# BW-1382.

HLA, 1996d. *Interim Action Confirmation Report, Site 8 – Range 49 (Molotov Cocktail Range), Fort Ord, California.* December 10. AR# BW-1501.

HLA, 1996e. *Draft Final Site Characterization, Site 36 – Fritzsche Army Airfield, Fort Ord, California.* December 30. AR# BW-1547.

HLA, 1997a. *Interim Action Confirmation Report, Site 41 – Crescent Bluff Fire Drill Area, Fort Ord, California.* February 4. AR# IAFS-149.

HLA, 1997b. *Interim Action Confirmation Report, Outfalls 34 and 35 – Fritzsche Army Airfield, Fort Ord, California.* June 20. AR# IAFS-176.

HLA, 1997c. *Interim Action Confirmation Report, Site 36 – Fritzsche Army Airfield Sewage Treatment Plant, Fort Ord, California.* June 20. AR# IAFS-177.

HLA, 1997d. *Interim Action Confirmation Report, Site 1 – Ord Village Sewage Treatment Plant, Fort Ord, California.* December 10. AR# IAFS-199.

HLA, 1997e. *Draft Final Data Summary Report, Additional Investigation, Site 2 – Main Garrison Sewage Treatment Plant, Fort Ord, California.* December 12. AR# BW-1937.

HLA, 1998a. *Interim Action Confirmation Report, Site 32 – East Garrison Sewage Treatment Plant, Fort Ord, California.* March 5. AR# BW-1937.

HLA, 1998b. *Interim Action Confirmation Report, Outfall 15, Fort Ord, California.* September 3. AR# IAFS-213.

HLA, 2001. *Draft Final Work Plan, Silver Recovery Unit (Solid Waste Management Unit FTO-021), Former Fort Ord, California.* March 26. AR# IAFS-203.

HydroGeoLogic, Inc. (HGL), 2012. *Final Well Destruction Report, Operable Unit 1, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California.* March 30. AR# OU1-593A.

HGL, 2014. *Final Well Destruction and Former OU-1 Treatment Plant Decommissioning Completion Report, Former Fort Ord, California.* September 25. AR# OU1-611A.

HGL, 2016. *Final Remedial Action Completion Report/Technical Memorandum, Operable Unit 1 Attainment Monitoring Results, Sampling Events #1 through #4, Former Fort Ord, California.* March 16. AR# OU1-623A.

HGL, 2017. *Final Closeout Report, Operable Unit 1 Groundwater Remediation, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California*. December. AR# OU1-631A.

Intergovernmental Data Quality Task Force (IDQTF), 2012. *Uniform Federal Policy for Quality Assurance Project Plans, Part 2a, Revision 1: Optimized UFP-QAPP Worksheets*. March.  
<https://www.epa.gov/fedfac/assuring-quality-federal-cleanups#ufp-qapp>.

Interstate Technology Regulatory Council (ITRC), 2017. *History and Use of Per- and Polyfluoroalkyl Substances (PFAS)*. November 13. [https://pfas-1.itrcweb.org/wp-content/uploads/2017/11/pfas\\_fact\\_sheet\\_history\\_and\\_use\\_\\_11\\_13\\_17.pdf](https://pfas-1.itrcweb.org/wp-content/uploads/2017/11/pfas_fact_sheet_history_and_use__11_13_17.pdf).

ITRC, 2018a. *Environmental Fate and Transport for Per- and Polyfluoroalkyl Substances*. March 16. [https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas\\_fact\\_sheet\\_fate\\_and\\_transport\\_\\_3\\_16\\_18.pdf](https://pfas-1.itrcweb.org/wp-content/uploads/2018/03/pfas_fact_sheet_fate_and_transport__3_16_18.pdf).

ITRC, 2018b. *Aqueous Film-Forming Foam (AFFF)*. October 3. <https://pfas-1.itrcweb.org/wp-content/uploads/2019/03/pfas-fact-sheet-aff-10-3-18.pdf>.

International Technology Corporation (IT), 1997. *Interim Action Sites Work Plan, Fort Ord Contaminated Soil Removal, Site #1A, Outfalls 15, 34, and 35, Fort Ord, California*. May. AR# IAFS-211.

IT, 1999a. *Draft Final Remedial Action Confirmation Report and Post-Remediation Health Risk Assessment, Site 12 Remedial Action, Basewide Remediation Sites, Fort Ord, California*. June. AR# BW-2031D.

IT, 1999b. *Construction Close-Out Report, Sites 16 and 17, Basewide Remedial Investigation Sites, Former Fort Ord, California*. October 11. AR# BW-2022B.

IT, 2000a. *Fort Ord Soil Treatment Area, Underground Storage Tank Soil Remediation Area, Operations Summary Report*. February. AR# BW-2797.

IT, 2000b. *Final Construction Summary Report, Interim Action and Sludge Removal Sites, Former Fort Ord, California*. June. AR# BW-2791.

MACTEC Engineering and Consulting, Inc. (MACTEC), 2006. *Final Operable Unit Carbon Tetrachloride Plume, Groundwater Remedial Investigation/Feasibility Study, Former Fort Ord, California, Volume I – Remedial Investigation*. May 19. AR# OUCTP-0011P.

McMahon, Robert H., Assistant Secretary of Defense for Sustainment, U.S. Department of Defense (DoD), 2019. *Memorandum for Assistant Secretary of the Army (Installations, Energy and Environment), Assistant Secretary of the Navy (Energy, Installations and Environment), Assistant Secretary of the Air Force (Installations, Environment and Energy), Director, National Guard Bureau (Joint Staff, J8), Director, Defense Logistics Agency (Installation Support); Subject: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program*. October 15.

Presidio of Monterey Fire Department (POM), 2016. *Final MRS-BLM Units 25 and 31 Prescribed Burn Plan, Former Fort Ord, Monterey, California*. September 30. AR# OE-0881B.

Remedial Constructors, Inc. (RCI), 1996. *Final Closure Report Volume 1 of 5, Underground Storage Tank (UST) Removal Program – Phase 2, Fort Ord, California*. September 6. AR# BW-2203.

Riso, Jack, Chief (retired), Presidio of Monterey Fire Department (Riso), 2019a. Personal communication. April 30.

Riso, 2019b. Personal communication. May 8.

Riso, 2019c. Personal communication. December 16.

Riso, 2020. Personal communication. January 20.

Roy F. Weston, Inc. (Weston), 1990. *Enhanced Preliminary Assessment, Fort Ord, California*. December. AR# BW-2427.

Shaw Environmental, Inc. (Shaw), 2003. *Interim Action Confirmation Report, Interim Action Area 34B, Former Burn Pit, Site 34 – Fritzsche Army Air Field Defueling Area, Former Fort Ord, California*. September 22. AR# IAFS-224.

Shaw, 2005. *Draft Final Remedial Action Construction Completion Report, Operable Unit 2 Landfills Areas A through F, Former Fort Ord, California, Revision 0*. January. AR# OU2-630B.

Shaw, 2011. *Final Technical Memorandum, Summary of Remedial Action Completion at Historical Areas 18, 19, 22, 23, 26, 27, 27a, 28, 29, 33, 36, 39/40/40A, 43, 44, and 48 (MRS-BLM), Former Fort Ord, California*. July 28. AR# BW-2300L.

Shaw, 2012. *Final Comprehensive Basewide Range Assessment Report, Former Fort Ord, California, Revision 2*. January 17. AR# BW-2300L.

United Press International, Inc. (UPI), 1989. *Helicopters crash in dense brush*. February 2. <https://www.upi.com/Archives/1989/02/02/Helicopters-crash-in-dense-brush/8998602398800/>.

Uribe & Associates (U&A), 1999. *Final Confirmation Report, Clean Closure Project, Former Fort Ord Soil Treatment Area (FOSTA), 519<sup>th</sup> Motor Pool, Former Fort Ord, California, Revision C*. December. AR# BW-2057A.

USA Environmental (USA), 2000. *Final After Action Report, Surface OE Removal, Inland Range Contract, Former Fort Ord, California, Site OE-21 (Mudhen Lake)*. December 29. AR# OE-0266A.

U.S. Department of the Army (Army), 1994a. *Interim Action Record of Decision, Contaminated Surface Soil Remediation, Fort Ord, Monterey, California*. March 15. AR# IAFS-089.

Army, 1994b. *Record of Decision, Operable Unit 2, Fort Ord Landfills, Fort Ord, California*. August 23. AR# OU2-480.

Army, 1995. *Record of Decision, Operable Unit 1, Fritzsche Army Airfield Fire Drill Area, Fort Ord, California*. April. AR# OU1-362.

Army, 1997a. *Record of Decision, Basewide Remedial Investigation Sites, Fort Ord, California*. January 13. AR# RI-025.

Army, 1997b. *Explanation of Significant Differences, Consolidation of Remediation Waste in a Corrective Action Management Unit (CAMU), Operable Unit 2 Landfill*. January 13. AR# OU2-523.

Army, 1997c. *Installation-Wide Multispecies Habitat Management Plan for Former Fort Ord, California*. April. AR# BW-1787.

Army, 2002. *Draft Final Five-Year Review Report, First Five-Year Review Report for Fort Ord Superfund Site, Monterey, California*. August 23. AR# BW-2167G.

Army, 2003. *Finding of Suitability to Transfer (FOST), Track 0 Parcels, Former Fort Ord, California*. May 27. AR# OTH-207H.

Army, 2006. *Explanation of Significant Differences, No Further Action for Munitions and Explosives of Concern, Landfill Gas Control, Reuse of Treated Groundwater, Designation of Corrective Action Management Unit (CAMU) Requirements as Applicable or Relevant and Appropriate Requirements (ARARs), Operable Unit 2, Fort Ord Landfills, Former Fort Ord, California*. August. AR# OU2-656.

Army, 2007. *Final Second Five-Year Review Report, Fort Ord Superfund Site, Monterey, California*. September 10. AR# BW-2437.

Army, 2008. *Final Record of Decision, Impact Area Munitions Response Area, Track 3 Munitions Response Site, Former Fort Ord, California*. April 18. AR# OE-0647.

Army, 2012. *Final 3<sup>rd</sup> Five-Year Review Report for Fort Ord Superfund Site, Monterey County, California*. September 17. AR# BW-2632.

Army, Assistant Secretary of the Army, Installations, Energy and Environment, 2016. Memorandum for Commander, Army Material Command; Director, National Guard Bureau; Chief, U.S. Army Reserve; Assistant Chief of Staff for Installation Management Command, Installation Management Command. *Perfluorinated Compound (PFC) Contamination Assessment*. June 10. <https://www.denix.osd.mil/army-pfas/the-army-addresses-pfos-pfoa/the-army-addresses-pfos-and-pfoa/perfluorinated-compound-pfc-contamination-assessment1/>.

Army, 2017. *Final 4<sup>th</sup> Five-Year Review Report for Fort Ord Superfund Site, Monterey County, California*. September 8. AR# BW-2834.

Army, 2018. *Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)*. September 4.



U.S. Army Public Health Command (USAPHC), 2011. *Monitoring Well Decommissioning Report No. 38-EH-ODCD-11, U.S. Army Former Fort Ord, Seaside, California, 15 – 31 March 2011*. August 24. AR# BW-2580.

U.S. Environmental Protection Agency (USEPA), 2016. *Fact Sheet PFOA & PFOS Drinking Water Health Advisories*. November. EPA 800-F-16-003.

USEPA, 2017. *Technical Fact Sheet – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)*. November. EPA 505-F-17-001.

## **TABLES**

**Table 1. Site Summary and Primary Records Review Results\***

| RI Site ID | Site Name                                      | SWMU (FTO-) | SWMU Name   | Bldg. No.  | SWMU Type                            | Applicable Decision Document | FTA      | AFFF Storage | Aircraft Crash Site | Aviation Hangar | FF/AA | Landfill | WWTP  |
|------------|--|-------------|---|------------|--------------------------------------|------------------------------|----------|--------------|---------------------|-----------------|-------|----------|-------|
| 1          | Ord Village STP                                | 059         | Ord Village STP   | NA         | wastewater treatment                 | IA Sites ROD                 |          |              |                     |                 |       |          | known |
| 2          | Main Garrison STP                              | 012         | Main Garrison STP   | 2076       | wastewater treatment                 | BW RI Sites ROD              |          |              |                     |                 |       |          | known |
| 3          | Beach Trainfire Ranges                         | NA          | NA  | NA         | NA                                   | Site 3/Track 1               |          |              |                     |                 |       |          |       |
| 4          | Beach Stormwater Outfalls (includes OF-15)     | NA          | NA  | NA         | NA                                   | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
| 5          | Range 36A (within Site 39)                     | 016         | Open Detonation Area  | NA         | thermal treatment                    | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
| 6          | Range 39, Abandoned Car Dump                   | NA          | NA  | NA         | NA                                   | IA Sites ROD                 |          |              |                     |                 |       |          |       |
| 7          | Ranges 40 and 41 (within Site 39)              | NA          | NA  | NA         | NA                                   | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
| 8          | Range 49, Molotov Cocktail Range               | NA          | NA  | NA         | NA                                   | IA Sites ROD                 | possible |              |                     |                 |       |          |       |
| 9          | Range 40A, Flame Field Expedient Training Area | NA          | NA  | NA         | NA                                   | BW RI Sites ROD              | possible |              |                     |                 |       |          |       |
| 10         | Burn Pit                                       | 014         | Fire Training Area at Fort Ord Fire Station                 | 4400       | thermal treatment                    | IA Sites ROD                 | known    |              |                     |                 |       |          |       |
| 11         | AAFES Fueling Station                          | 010         | AAFES Service Station                                       | 4220       | waste POL storage, container storage | No Action Sites ROD          |          |              |                     |                 |       |          |       |
| 12         | Lower Meadow Disposal Area                     | 007         | Cannibalization Area  | T-2460     | waste pile                           | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
|            |  | 037         | DOL Main Automotive Yard                                    | T-2726     | temporary container storage          | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
|            |  | 038         | DOL General Equipment Maintenance Yard                      | T-2424     | temporary container storage          | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
|            |  | 060         | Lower Meadow Disposal Area                                  | NA         | landfill                             | BW RI Sites ROD              |          |              |                     |                 |       | known    |       |
| 13         | Railroad Right-of-Way                          | NA          | NA  | NA         | NA                                   | No Action Sites ROD          |          |              |                     |                 |       |          |       |
| 14         | 707th Maintenance Facility                     | 004         | 707th Maintenance Battalion, A,B, and C Company Motor Pools | 4885       | temporary container storage          | IA Sites ROD                 |          |              |                     |                 |       |          |       |
|            |  | 061         | Transfer Station South of Building 4885                     | 4885       | temporary container storage          | IA Sites ROD                 |          |              |                     |                 |       |          |       |
| 15         | DEH Yard                                       | 015         | PCB Storage Area  | 4891, H482 | temporary container storage          | IA Sites ROD                 |          |              |                     |                 |       |          |       |
|            |  | 018         | Pesticide Mixing Area                                       | T-4897     | pest management                      | IA Sites ROD                 |          |              |                     |                 |       |          |       |
| 16         | DOL Maintenance Yard                           | 036         | DOL Heavy Equipment Maintenance Yard                        | T-4900     | temporary container storage          | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
|            |  | 062         | Pete's Pond and Pete's Pond Extension                       | NA         | landfill                             | BW RI Sites ROD              |          |              |                     |                 |       | known    |       |
| 17         | Disposal Area, 1400 Block Motor Pool           | 013         | Building 1442 Autoclave                                     | 1442       | low temp thermal treatment           | BW RI Sites ROD              |          | possible     |                     |                 |       |          |       |
|            |  | 048         | 6th/8th Field Artillery Battalion Motor Pool                | 1483       | temporary container storage          | BW RI Sites ROD              |          |              |                     |                 |       |          |       |
|            |  | 049         | 7th/15th Field Artillery Battalion Motor Pool               | 1489       | temporary container storage          | BW RI Sites ROD              |          |              |                     |                 |       |          |       |

**Table 1. Site Summary and Primary Records Review Results\***

| RI Site ID | Site Name  | SWMU (FTO-) | SWMU Name  | Bldg. No.      | SWMU Type                   | Applicable Decision Document | FTA | AFFF Storage | Aircraft Crash Site | Aviation Hangar | FF/AA | Landfill | WWTP  |
|------------|--|-------------|--|----------------|-----------------------------|------------------------------|-----|--------------|---------------------|-----------------|-------|----------|-------|
| 17         | Disposal Area, 1400 Block Motor Pool (continued)   | 050         | 7/7th Air Defense Artillery Motor Pool                               | 1495           | temporary container storage | BW RI Sites ROD              |     |              |                     |                 |       |          |       |
|            |  | 051         | 5/15th Field Artillery Battalion Motor Pool                          | 1489           | temporary container storage | BW RI Sites ROD              |     |              |                     |                 |       |          |       |
|            |  | 063         | Temporary Container Storage Unit East of Aces Carpentry              | T-1440         | temporary container storage | BW RI Sites ROD              |     |              |                     |                 |       |          |       |
|            |  | 064         | Temporary Container Storage Unit Between Buildings T-1458 and T-1468 | T-1458, T-1468 | temporary container storage | BW RI Sites ROD              |     |              |                     |                 |       |          |       |
|            |  | 065         | Site 17 Disposal Area  | 1483           | landfill                    | BW RI Sites ROD              |     |              |                     |                 |       |          | known |
| 18         | 1600 Block Facility                                | 017         | TASC Plastics Shop   | T-1663         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 023         | TASC Graphics Shop   | T-1665         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 040         | DOL Temporary Motor Pool   | T-1672         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 041         | 590th SS Company Motor Pool  | T-1637         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 044         | 121st Aviation Battalion, Company E Motor Pool                       | T-1697         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 052         | 2/62nd ADA B-Battery Motor Pool                                      | T-1641         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 053         | 7th Medical Battalion Motor Pool                                     | T-1697         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 056         | 7th MP Company Motor Pool  | T-1681         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 057         | 571st MP Company Motor Pool  | T-1686         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
|            |  | 058         | 761st Chemical Company Motor Pool                                    | T-1656         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |       |
| 19         | 2200 Block Facility                                | NA          | NA   | NA             | NA                          | No Action Sites ROD          |     |              |                     |                 |       |          |       |
| 20         | South Parade Ground and 3800 and 519th Motor Pools | 024         | 519th Maintenance Company  | 3896, 3899     | temporary container storage | IA Sites ROD                 |     | possible     |                     | known           |       |          |       |
|            |  | 066         | Temporary Container Storage Units in Former Troop Training Area      | H381, H382     | temporary container storage | IA Sites ROD                 |     | possible     |                     | known           |       |          |       |
|            |  | 067         | 3800 Motor Pool  | H3882, H3883   | temporary container storage | IA Sites ROD                 |     | possible     |                     | known           |       |          |       |

**Table 1. Site Summary and Primary Records Review Results\***

| RI Site ID | Site Name                                     | SWMU (FTO-) | SWMU Name  | Bldg. No.      | SWMU Type                   | Applicable Decision Document | FTA | AFFF Storage | Aircraft Crash Site | Aviation Hangar | FF/AA | Landfill | WWTP |
|------------|---|-------------|--|----------------|-----------------------------|------------------------------|-----|--------------|---------------------|-----------------|-------|----------|------|
| 21         | 4400/4500 Block Motor Pool East               | 027         | 2/9 Reconnaissance Battalion Motor Pool                    | 4495           | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 028         | 56th Medical Company Motor Pool                            | 4499E          | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 029         | 9th Regiment HHC Motor Pool                                | 4499W          | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 030         | HHC/Air Force Detachment Motor Pool                        | 4518W          | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 031         | 8th Evacuation Hospital Motor Pool                         | 4522           | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 032         | 7th Aviation Battalion, C & D Company Motor Pool           | 4506E          | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 033         | 1/23rd Aviation Regiment, A, B, C and Companies Motor Pool | 4506W          | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 034         | 2nd Brigade Consolidated Motor Pool                        | 4512           | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
| 22         | 4400/4500 Block Motor Pool West               | 005         | 13th Engineer Battalion Motor Pool                         | 4544           | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 025         | 14th Engineer Battalion Motor Pool                         | 4534           | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 026         | 127th Signal Company Motor Pool                            | 4548           | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 035         | 3rd Brigade Consolidated Motor Pool                        | 4538           | temporary container storage | IA Sites ROD                 |     |              |                     |                 |       |          |      |
|            |   | 068         | Auto Craft Shop  | 4492           | temporary container storage | IA Sites ROD                 |     | possible     |                     |                 |       |          |      |
| 23         | 3700 Block Motor Pool Complex                 | 054         | 107th Medical Battalion                                    | T-3772, T-3776 | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |      |
|            |   | 069         | 107th Medical Battalion Motor Pool                         | T-3767         | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |      |
| 24         | Old DEH Yard                                  | NA          | NA   | NA             | NA                          | IA Sites ROD                 |     |              |                     |                 |       |          |      |
| 25         | Former DRMO                                   | 022         | Former DRMO site   | NA             | abandoned storage site      | BW RI Sites ROD              |     |              |                     |                 |       |          |      |
| 26         | Sewage Pump Stations, Buildings 5871 and 6143 | NA          | NA   | NA             | NA                          | No Action Sites ROD          |     |              |                     |                 |       |          |      |
| 27         | Army Reserve Motor Pool                       | 055         | U.S. Army Reserve Center Motor Pool                        | 705            | temporary container storage | No Action Sites ROD          |     |              |                     |                 |       |          |      |
| 28         | Barracks and Main Garrison Area               | NA          | NA   | NA             | NA                          | No Action Sites ROD          |     |              |                     |                 |       |          |      |

**Table 1. Site Summary and Primary Records Review Results\***

| RI Site ID | Site Name                          | SWMU (FTO-) | SWMU Name   | Bldg. No.     | SWMU Type                   | Applicable Decision Document      | FTA      | AFFF Storage | Aircraft Crash Site | Aviation Hangar | FF/AA | Landfill | WWTP  |  |
|------------|------------------------------------|-------------|---|---------------|-----------------------------|-----------------------------------|----------|--------------|---------------------|-----------------|-------|----------|-------|--|
| 29         | DRMO                               | 009         | DRMO PCB Storage Area   | T-111         | temporary container storage | No Action Sites ROD               |          | possible     |                     |                 |       |          |       |  |
| 30         | Driver Training Area               | NA          | NA  | NA            | NA                          | IA Sites ROD                      |          |              |                     |                 |       |          |       |  |
| 31         | Former Dump Site                   | 070         | East Garrison Dump Site   | NA            | landfill                    | BW RI Sites ROD                   |          |              |                     |                 |       | known    |       |  |
| 32         | East Garrison STP                  | 011         | East Garrison STP   | 145           | wastewater treatment        | IA Sites ROD                      |          |              |                     |                 |       |          | known |  |
| 33         | Golf Course Maintenance Area       | 071         | Golf Course Maintenance Area  | 4110          | temporary container storage | BW RI Sites ROD                   |          |              |                     |                 |       |          |       |  |
| 34         | FAAF Fueling Facility              | NA          | NA  | 501, 502, 503 | NA                          | NA                                |          |              |                     |                 | known |          |       |  |
|            |                                    | 006         | HHC Cavalry Regiment Motor Pool                                       | 527           | temporary container storage | IA Sites ROD                      |          | possible     |                     | known           |       |          |       |  |
|            |                                    | 039         | DOL Aircraft Maintenance Motor Pool                                   | 533           | temporary container storage | IA Sites ROD                      |          | possible     |                     | known           |       |          |       |  |
|            |                                    | 042         | HHC Combat Aviation Brigade Motor Pool                                | 509           | temporary container storage | IA Sites ROD                      |          |              |                     |                 |       |          |       |  |
|            |                                    | 043         | 1/123rd Aviation Regiment, A & B Companies Motor Pool                 | 527           | temporary container storage | IA Sites ROD                      |          | possible     |                     | known           |       |          |       |  |
|            |                                    | 045         | 23rd Medical Detachment Motor Pool                                    | 541           | temporary container storage | IA Sites ROD                      |          |              |                     |                 |       |          |       |  |
|            |                                    | 046         | 2/9th Cavalry Reconnaissance Flight Maintenance Motor Pool            | 510 or 524    | temporary container storage | IA Sites ROD                      |          | possible     |                     | known           |       |          |       |  |
|            |                                    | 047         | 7th Aviation Battalion, C & D Companies Flight Maintenance Motor Pool | 507           | temporary container storage | IA Sites ROD                      |          | possible     |                     | known           |       |          |       |  |
| 34B        | Former Burn Pit                    | NA          | NA  | NA            | NA                          | IA Sites ROD                      | possible |              |                     |                 |       |          |       |  |
| 35         | FAAF Aircraft Cannibalization Yard | NA          | NA  | NA            | NA                          | No Action Sites ROD               |          |              |                     |                 |       |          |       |  |
| 36         | FAAF STP                           | 003         | FAAF STP  | 540           | wastewater treatment        | IA Sites ROD                      |          |              |                     |                 |       |          | known |  |
| 37         | Trailer Park Maintenance Shop      | NA          | NA  | NA            | NA                          | No Action Sites ROD               |          |              |                     |                 |       |          |       |  |
| 38         | AAFES Dry Cleaners                 | 019         | AAFES Economy Cleaners  | 1434          | USTs                        | No Action Sites ROD               |          |              |                     |                 |       |          |       |  |
| 39         | Inland Ranges                      | NA          | NA  | NA            | NA                          | BW RI Sites ROD                   |          | possible     | known               |                 |       |          |       |  |
| 39A        | East Garrison Ranges               | NA          | NA  | NA            | NA                          | IA Sites ROD                      |          |              |                     |                 |       |          |       |  |
| 39B        | Inter-Garrison Training Area       | NA          | NA  | NA            | NA                          | IA Sites ROD                      |          |              |                     |                 |       |          |       |  |
| 40         | FAAF Helicopter Defueling Area     | NA          | NA  | NA            | NA                          | IA Sites ROD                      |          | possible     |                     |                 | known |          |       |  |
| 41         | Crescent Bluff Fire Drill Area     | 072         | Crescent Bluff Fire Drill Area  | NA            | thermal treatment           | IA Sites ROD                      | known    |              |                     |                 |       |          |       |  |
| NA         | DRMO                               | 008         | DRMO Hazardous Waste Storage Area                                     | 53A           |                             | RCRA Closure Certification Report |          |              |                     |                 |       |          |       |  |
| NA         | FAAF                               | NA          | NA  | NA            | NA                          | NA                                |          |              | possible            |                 |       |          |       |  |
| NA         | NA                                 | 020         | Infectious Waste Incinerator at Silas B. Hayes Hospital               | 4385          | incinerator                 | NA                                |          |              |                     |                 |       |          |       |  |
| NA         | NA                                 | 021         | Silver Recovery Unit  | 4385          | recovery unit               | NA                                |          | possible     |                     |                 |       |          |       |  |

**Table 1. Site Summary and Primary Records Review Results\***

| RI Site ID | Site Name                                | SWMU (FTO-) | SWMU Name            | Bldg. No. | SWMU Type         | Applicable Decision Document | FTA   | AFFF Storage | Aircraft Crash Site | Aviation Hangar | FF/AA | Landfill | WWTP |
|------------|--|-------------|----------------------|-----------|-------------------|------------------------------|-------|--------------|---------------------|-----------------|-------|----------|------|
| NA         | Fort Ord Soil Treatment Area (FOSTA)     | NA          | NA                   | NA        | NA                | NA                           |       |              |                     |                 |       | known    |      |
| NA         | FAAF Fire & Rescue Station               | NA          | NA                   | 514       | NA                | NA                           |       | possible     |                     |                 |       |          |      |
| NA         | East Garrison Fire House                 | NA          | NA                   | T-105     | NA                | NA                           |       | possible     |                     |                 |       |          |      |
| NA         | Main Garrison Fire House - South         | NA          | NA                   | T-1820    | NA                | NA                           |       | possible     |                     |                 |       |          |      |
| NA         | Main Garrison Fire House - North         | NA          | NA                   | T-2898    | NA                | NA                           |       | possible     |                     |                 |       |          |      |
| NA         | Main Garrison Fire House - East          | NA          | NA                   | T-3280    | NA                | NA                           |       | possible     |                     |                 |       |          |      |
| NA         | Main Garrison Fire Station               | NA          | NA                   | 4400      | NA                | NA                           |       | possible     |                     |                 |       |          |      |
| NA         | Mudhen Lake                              | NA          | NA                   | NA        | NA                | NA                           |       |              | possible            |                 |       |          |      |
| OF-15      | Outfall 15 (part of Site 4)              | NA          | NA                   | NA        | NA                | IA Sites ROD                 |       |              |                     |                 |       |          |      |
| OF34/35    | Outfalls 34 and 35                       | NA          | NA                   | NA        | NA                | IA Sites ROD                 |       |              |                     |                 |       |          |      |
| OU1        | Operable Unit 1                          | 001         | FAAF Fire Drill Area | NA        | thermal treatment | OU1 ROD                      | known |              |                     |                 |       |          |      |
| OU2        | Operable Unit 2                          | 002         | Fort Ord Landfills   | NA        | landfill          | OU2 ROD                      |       |              |                     |                 |       | known    |      |
| OUCTP      | Operable Unit Carbon Tetrachloride Plume | NA          | NA                   | NA        | NA                | OUCTP ROD                    |       |              |                     |                 |       |          |      |

**Notes:**

\*No plating facilities that may have used PFAS-containing mist suppressants were identified during the primary records review.

**Acronyms:**

AAFES = Army and Air Force Exchange Service  
AFFF = aqueous film-forming foam  
DEH = Directorate of Engineering and Housing  
DOL = Directorate of Logistics  
DRMO = Defense Reutilization Marketing Office  
FAAF = Fritzsche Army Airfield  
FF/AA = Fuel Farm/Aviation Asset  
FTA = fire training area  
HTW = Hazardous and Toxic Waste  
IA = Interim Action  
NA = not applicable  
OF = Outfall  
RCRA = Resource Conservation and Recovery Act  
RI = Remedial Investigation  
ROD = Record of Decision  
STP = Sewage Treatment Plant  
WWTP = wastewater treatment plant

**Table 2. Sites Recommended for Additional Investigation**

| Site Name                                      | Bldg. No. | Site Type       | Recommended Additional Investigation |      |               |  |
|--|-----------|-----------------|--------------------------------------|------|---------------|--|
|  |           |                 | GW                                   | Soil | Risk Priority | Sample Notes   |
| FAAF Fire Drill Area                           | NA        | FTA             | X                                    |      | lower         | Existing well MW-BW-95-A and two new downgradient wells.   |
| Operable Unit 2 - Fort Ord Landfills           | NA        | Landfill        | X                                    |      | medium        | Three existing wells in Upper 180-Foot Aquifer TCE plume southern lobe; two existing downgradient wells in the Upper 180-Foot Aquifer and two existing downgradient wells in the Lower 180-Foot Aquifer. |
| Site 10 - Burn Pit/Fire Training Area          | 4400      | FTA             | X                                    |      | medium        | Downgradient wells MW-OU2-29-180 and MW-OU2-55-180.  |
| Site 34 - FAAF Aviation Hangars                | 507       | Aviation Hangar |                                      | X    | lower         | To 10 feet bgs at three locations in drainage area.  |
| Site 36 - FAAF Sewage Treatment Plant          | 540       | WWTP            |                                      | X    | lower         | To 10 feet bgs at four locations: in footprints of Imhoff tank and two evaporation ponds, and A-Aquifer downgradient discharge point.  |
| Site 40A - East FAAF Helicopter Defueling Area | NA        | FF/AA           |                                      | X    | lower         | To 10 feet bgs at three locations in drainage area.  |

**Acronyms:**

bgs = below ground surface  
FAAF = Fritzsche Army Airfield  
FF/AA = Fuel Farm/Aviation Asset  
FTA = fire training area  
GW = groundwater  
NA = not applicable  
WWTP = wastewater treatment plant

**Risk Priorities:**

Lower = no pathway to drinking water exists  
Medium = potential pathway to drinking water exists  
Higher = human exposure to contaminated drinking water exists



**Table 3. Summary of Groundwater Monitoring Analytical Results, March 7, 2019**

| Well ID  | Sample Depth (ft btoc) | PFOA (µg/L)  |           | PFOS (µg/L)  |           | Total PFOA/PFOS (µg/L) |
|--|------------------------|--------------|-----------|--------------|-----------|------------------------|
|  |                        | Result       | Qualifier | Result       | Qualifier |                        |
| <b>A-Aquifer</b>                                   |                        |              |           |              |           |                        |
| MW-OU2-06-AR                                       | 118                    | 0.00762      |           | 0.00790      |           | 0.01552                |
| MW-OU2-08-A  | 125                    | 0.00245      | J         | <0.0020      | U         | 0.00245                |
| MW-OU2-08-A-DUP                                    | 125                    | <0.0020      | U         | <0.0020      | U         | -                      |
| MW-OU2-27-A  | 113                    | <0.0020      | U         | <0.0020      | U         | -                      |
| MW-OU2-40-A  | 118                    | <0.0020      | U         | 0.00351      | J         | 0.00351                |
| MW-OU2-44-A  | 90                     | <0.0020      | U         | <0.0020      | U         | -                      |
| MW-OU2-73-A  | 122                    | <0.0020      | U         | <0.0020      | U         | -                      |
| MW-OU2-75-A  | 116                    | <0.0020      | U         | 0.00193      | J         | 0.00193                |
| <b>Upper 180-Foot Aquifer</b>                      |                        |              |           |              |           |                        |
| EW-OU2-01-180                                      | 158                    | <0.0020      | U         | <0.0020      | U         | -                      |
| MW-OU2-23-180                                      | 219                    | <b>0.113</b> |           | <b>0.447</b> |           | <b>0.560</b>           |
| MW-OU2-24-180                                      | 214                    | 0.00326      | J         | 0.00254      | J         | 0.00580                |
| MW-OU2-44-180                                      | 188                    | 0.00309      | J         | 0.00343      | J         | 0.00652                |
| MW-OU2-56-180                                      | 225                    | 0.00252      | J         | <0.0020      | U         | 0.00252                |
| MW-OU2-56-180-DUP                                  | 225                    | <0.0020      | U         | <0.0020      | U         | -                      |
| <b>Operable Unit 2 Groundwater Treatment Plant</b> |                        |              |           |              |           |                        |
| TS-OU2-INF-01                                      | -                      | 0.0156       |           | 0.0153       |           | 0.03090                |
| TS-OU2-INF-02                                      | -                      | <0.0020      | U         | <0.0020      | U         | -                      |
| TS-OU2-EFF-1A                                      | -                      | <0.0020      | U         | <0.0020      | U         | -                      |
| TS-OU2-EFF-2A                                      | -                      | <0.0020      | U         | <0.0020      | U         | -                      |
| TS-OU2-INJ-01                                      | -                      | <0.0020      | U         | <0.0020      | U         | -                      |

**Notes:**

Results in gray are not detected above the limit of detection

Results in **bold** are above the U.S. Environmental Protection Agency health advisory level of 0.07 µg/L and the Department of Defense screening level of 0.04 µg/L

**Acronyms and Abbreviations:**

- = not applicable

µg/L = micrograms per liter

DUP = duplicate

ft btoc = feet below top of casing

J = estimated result below the limit of quantitation

PFOA = perfluorooctanoic acid

PFOS = perfluorooctane sulfonate (perfluorooctanesulfonic acid)

TS-OU2-INF-01 = Eastern Main influent (EW-OU2-16-A, -17-A, -18-A, -19-A, -20-A, -05-180, -06-180, -09-180, -10-180, -12-180)

TS-OU2-INF-02 = Western Main influent (EW-OU2-10-A, -11-AR, -12-A, -13-A, -02-180R, -03-180)☐

TS-OU2-EFF-1A = Lead GAC Vessel Effluent for GAC Train #1

TS-OU2-EFF-2A = Lead GAC Vessel Effluent for GAC Train #2

TS-OU2-INJ-01 = GWTP effluent

U = not detected above the limit of detection

**Table 4. Recommended PFAS Target Analyte List\***

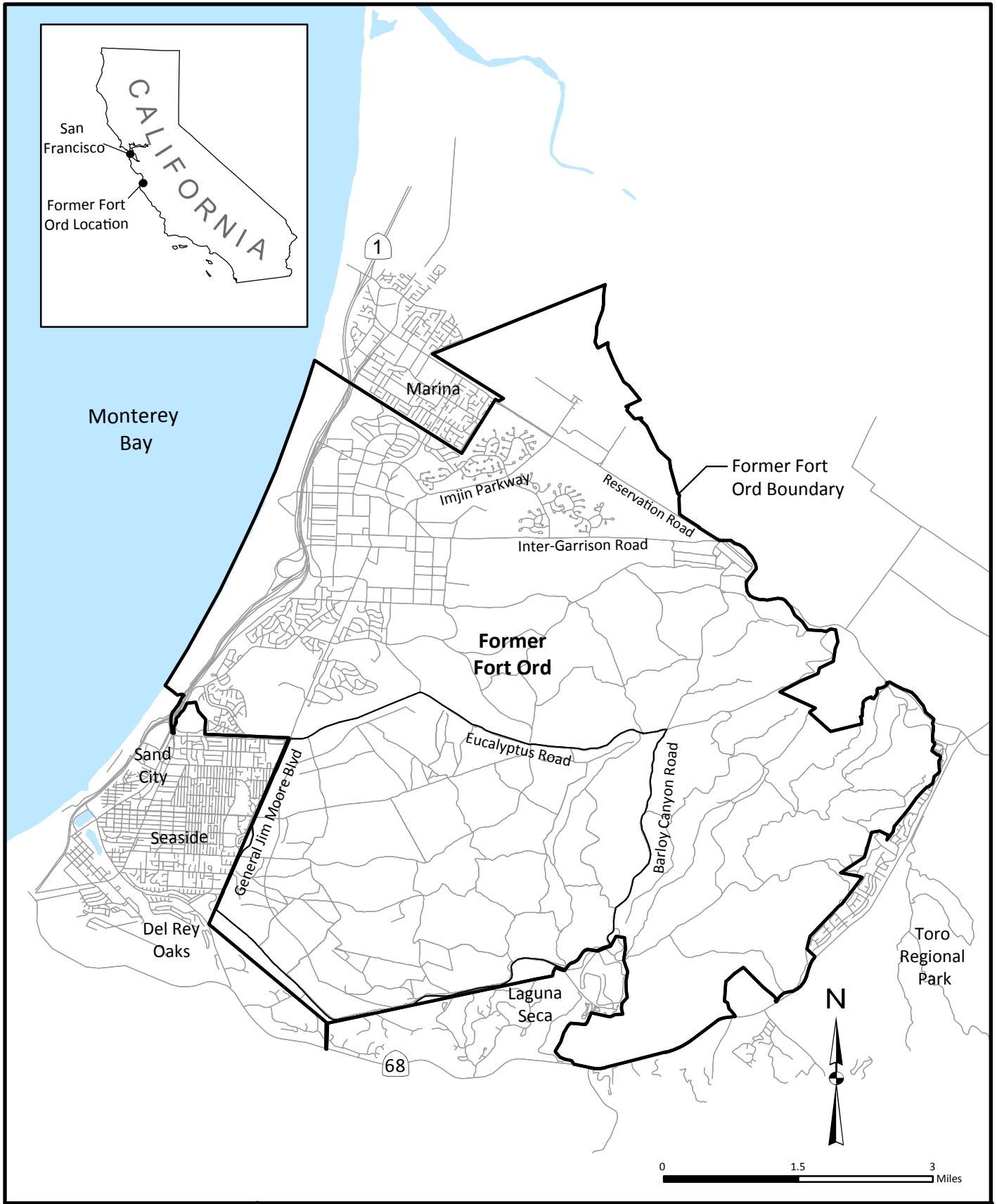
| Compound                                       | Acronym  | CASRN      |
|--|----------|------------|
| perfluorooctanesulfonic acid                   | PFOS     | 1763-23-1  |
| perfluorooctanoic acid                         | PFOA     | 335-67-1   |
| perfluorobutanesulfonic acid                   | PFBS     | 375-73-5   |
| perfluorodecanoic acid                         | PFDA     | 335-76-2   |
| perfluorododecanoic acid                       | PFDoA    | 307-55-1   |
| perfluoroheptanoic acid                        | PFHpA    | 374-85-9   |
| perfluorohexanesulfonic acid                   | PFHxS    | 355-46-4   |
| perfluorohexanoic acid                         | PFHxA    | 307-24-4   |
| perfluorononanoic acid                         | PFNA     | 375-95-1   |
| perfluorotetradecanoic acid                    | PFTA     | 376-06-7   |
| perfluorotridecanoic acid                      | PFTTrDA  | 72629-94-8 |
| perfluoroundecanoic acid                       | PFUnA    | 2058-94-8  |
| perfluorodecane sulfonate                      | PFDS     | 335-77-3   |
| perfluorobutanoic acid                         | PFBA     | 375-22-4   |
| perfluorooctane sulfonamide                    | PFOSA    | 754-91-6   |
| perfluoropentanoic acid                        | PFPeA    | 2706-90-3  |
| n-ethyl perfluorooctanesulfonamidoacetic acid  | NEtFOSAA | 2991-50-6  |
| n-methyl perfluorooctanesulfonamidoacetic acid | NMeFOSAA | 2355-31-9  |

**Notes:**

CASRN = Chemical Abstracts Service Registry Number

\*From *Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)*, September 2018, Department of the Army, Office of the Assistant Chief of Staff for Installation Management.

## FIGURES



*Ahtna*

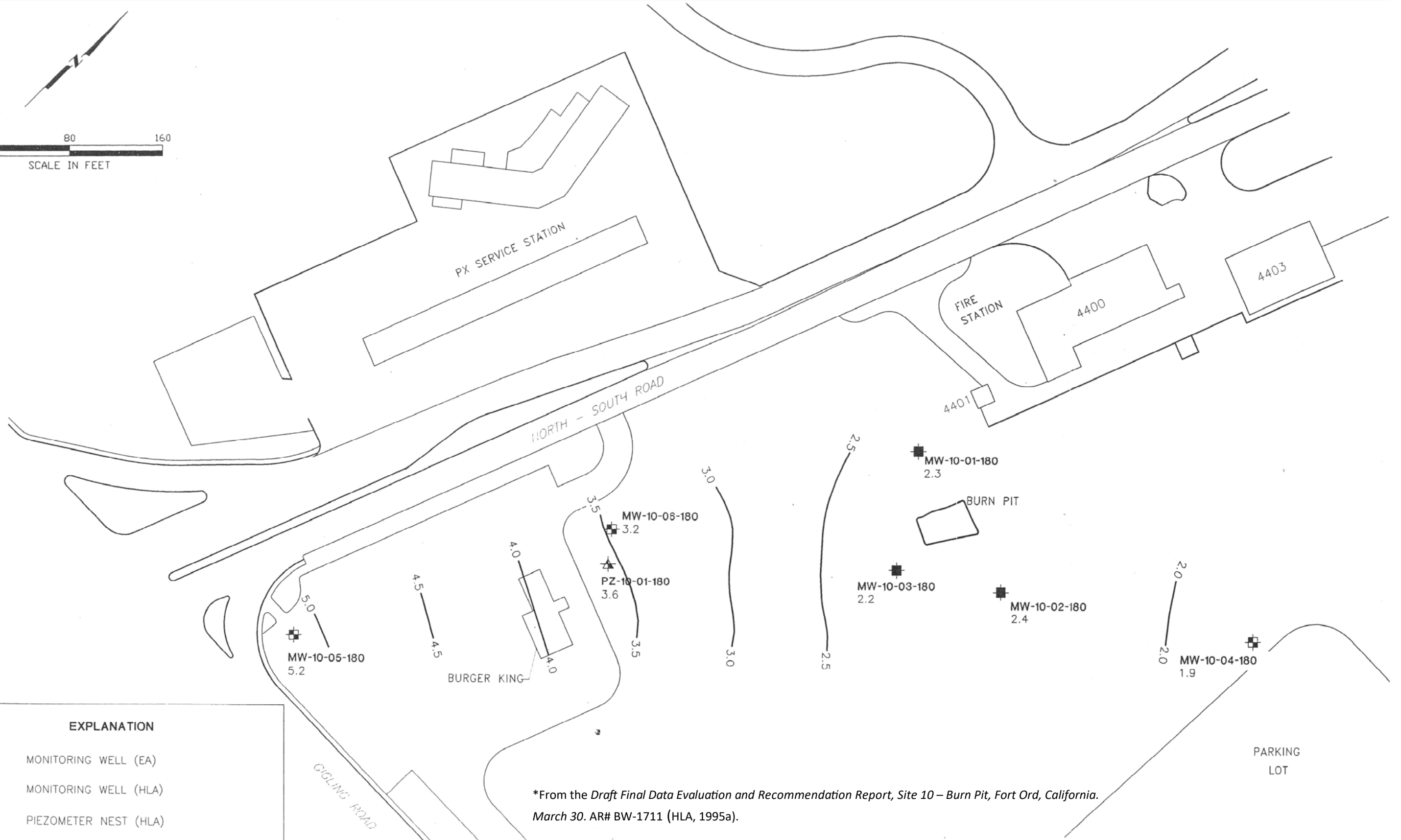
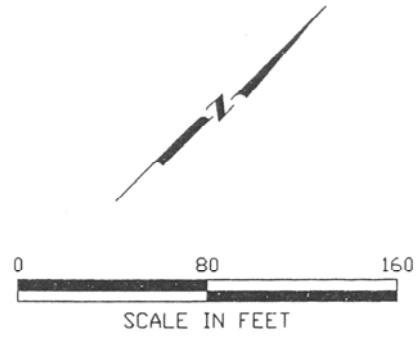
## Former Fort Ord Location Map

Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2

Figure:

**1**





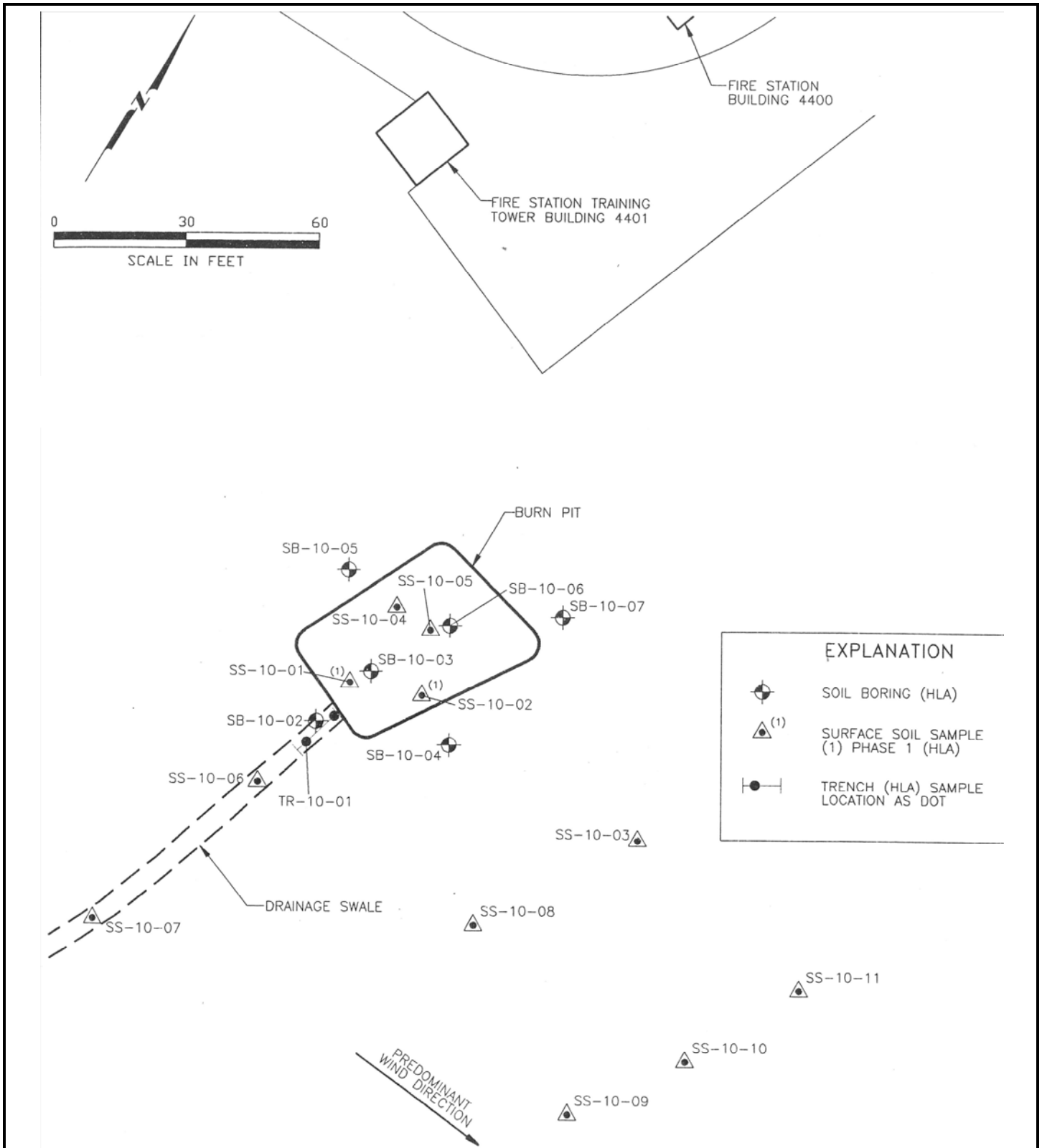
\*From the Draft Final Data Evaluation and Recommendation Report, Site 10 – Burn Pit, Fort Ord, California.  
 March 30. AR# BW-1711 (HLA, 1995a).

| EXPLANATION |  |
|-------------|--|
|             | MONITORING WELL (EA)   |
|             | MONITORING WELL (HLA)  |
|             | PIEZOMETER NEST (HLA)  |
| 5.2         | WATER SURFACE ELEVATION MEASUREMENT (FEET MSL) AUGUST 6, 1992    |
| 4.5         | GROUNDWATER SURFACE ELEVATION CONTOUR (FEET MSL), AUGUST 6, 1992 |

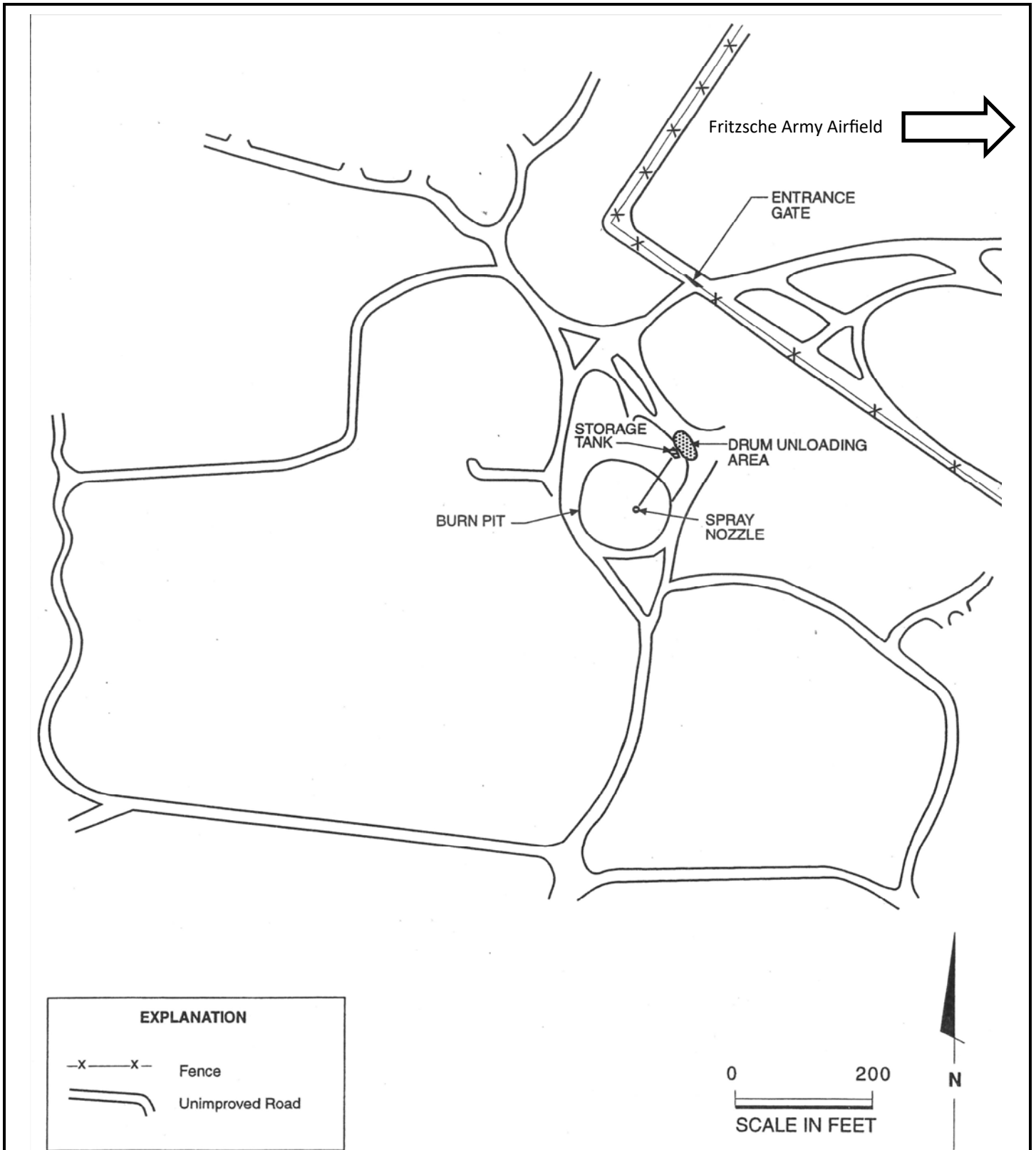


**Site 10—Site Map and Historical Groundwater Elevations\***  
 Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

Figure:  
**3**



\*From the Draft Final Data Evaluation and Recommendation Report, Site 10 – Burn Pit, Fort Ord, California. March 30. AR# BW-1711 (HLA, 1995a).



\*From the *Five-Year Status Report and Effectiveness Evaluation, Operable Unit 1, Fort Ord, California*. November 29. AR# OU1-484J (HLA, 1999).

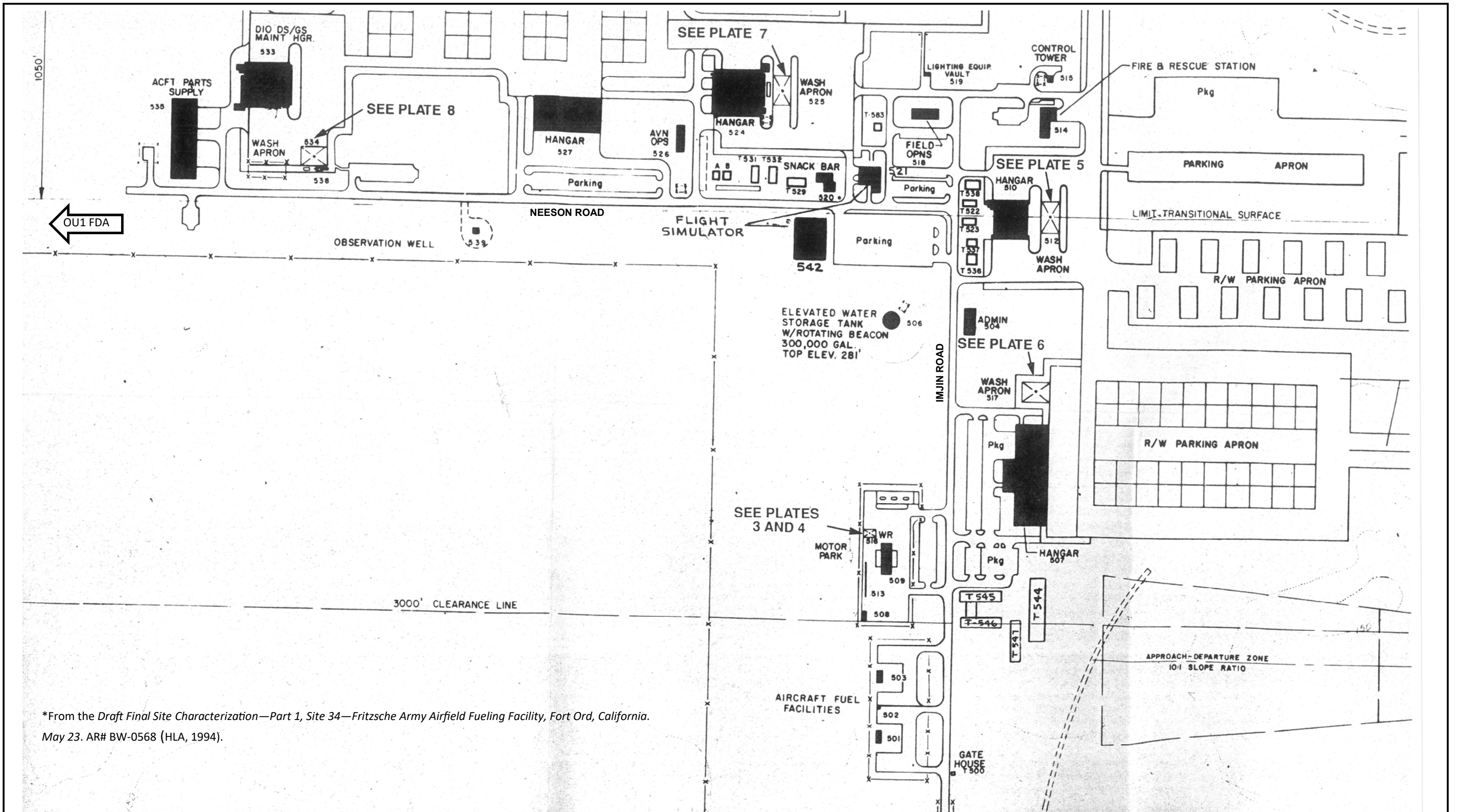
*Ahtna*

**OU1—Former Fire Drill Area\***  
 Technical Summary Report, PFOA/PFOS Basewide Review  
 of Historical Activities and Groundwater Monitoring at  
 OU2, Former Fort Ord, California

Figure:

**5**





\*From the Draft Final Site Characterization—Part 1, Site 34—Fritzsche Army Airfield Fueling Facility, Fort Ord, California.  
 May 23. AR# BW-0568 (HLA, 1994).

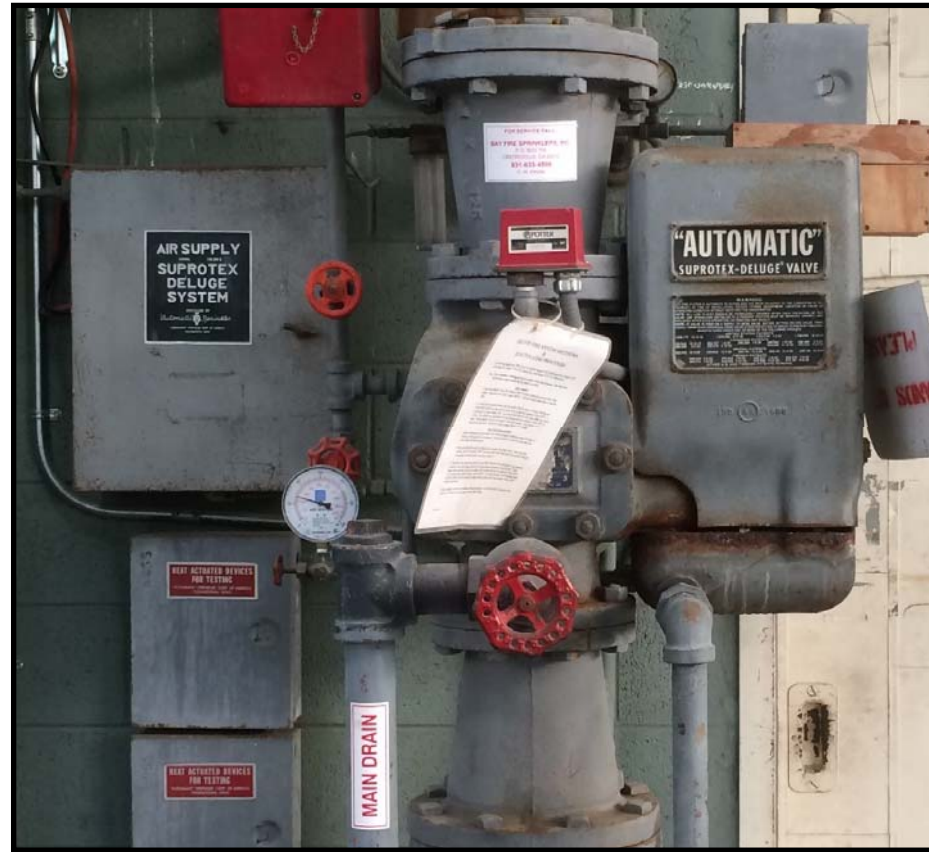
50' COUNTY HIGHWAY EASEMENT RESERVATION ROAD



**FAAF Site Map\***  
 Technical Summary Report, PFOA/PFOS Basewide Review of Historical Activities and Groundwater  
 Monitoring at OU2, Former Fort Ord, California

Figure:

FAAF hangar water deluge valve system (typical)



FAAF hangar water deluge valve system and riser pipe (typical)



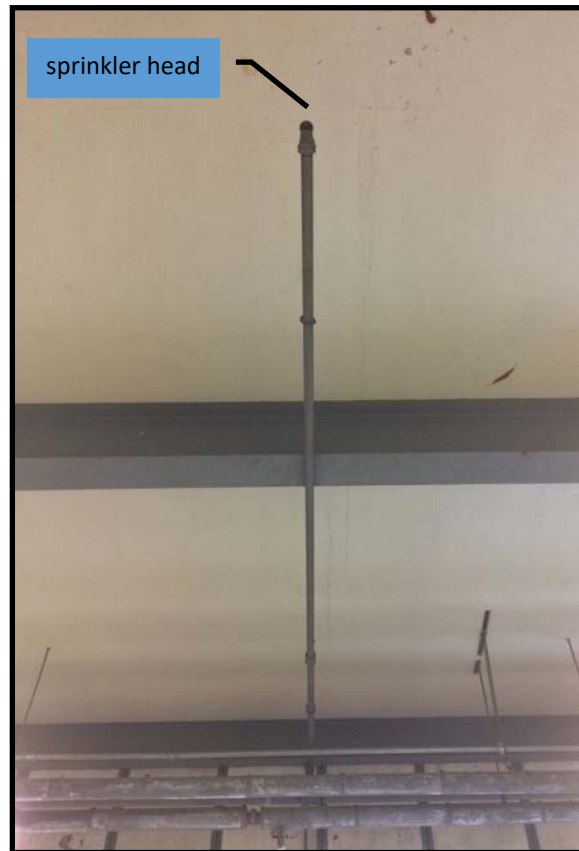
FAAF hangar water deluge sprinkler system (typical)



FAAF hangar support area wet system valve (typical)



FAAF hangar support area wet system sprinkler (typical)



Example high expansion foam generator



Example high expansion foam generator

Hangar Fire Suppression System Photographs

Technical Summary Report  
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2 Former Fort Ord, California



Building 510 northeast interior view.



Building 510 southwest interior view.



Building 510 west exterior view.

**Building 510 Aviation Hangar Photographs**

Technical Summary Report  
PFOA/PFOS Basewide Review of Historical  
Activities and  
Groundwater Monitoring at OU2  
Former Fort Ord, California

*Ahtna*

Figure:

**8**



Building 524 north interior view.



Building 524 south interior view.



Building 524 south exterior view.

**Building 524 Aviation Hangar Photographs**

Technical Summary Report  
PFOA/PFOS Basewide Review of Historical  
Activities and  
Groundwater Monitoring at OU2  
Former Fort Ord, California



Figure:

**9**



Building 533 south interior view.



Building 533 north interior view.

Building 533 north exterior view.



**Building 533 Aviation Hangar Photographs**

Technical Summary Report  
PFOA/PFOS Basewide Review of Historical  
Activities and  
Groundwater Monitoring at OU2  
Former Fort Ord, California

*Ahtna*

Figure:

**10**



Building 507 suspected high expansion foam generator in hangar.



Building 507 suspected high expansion foam generator in storeroom/workshop.



Building 507 north exterior view.

**Building 507 Aviation Hangar Photographs**

Technical Summary Report  
PFOA/PFOS Basewide Review of Historical  
Activities and  
Groundwater Monitoring at OU2  
Former Fort Ord, California

*Ahtna*

Figure:

**11**



Building 527 east interior view.



Building 527 west interior view.



Building 527 north exterior view.

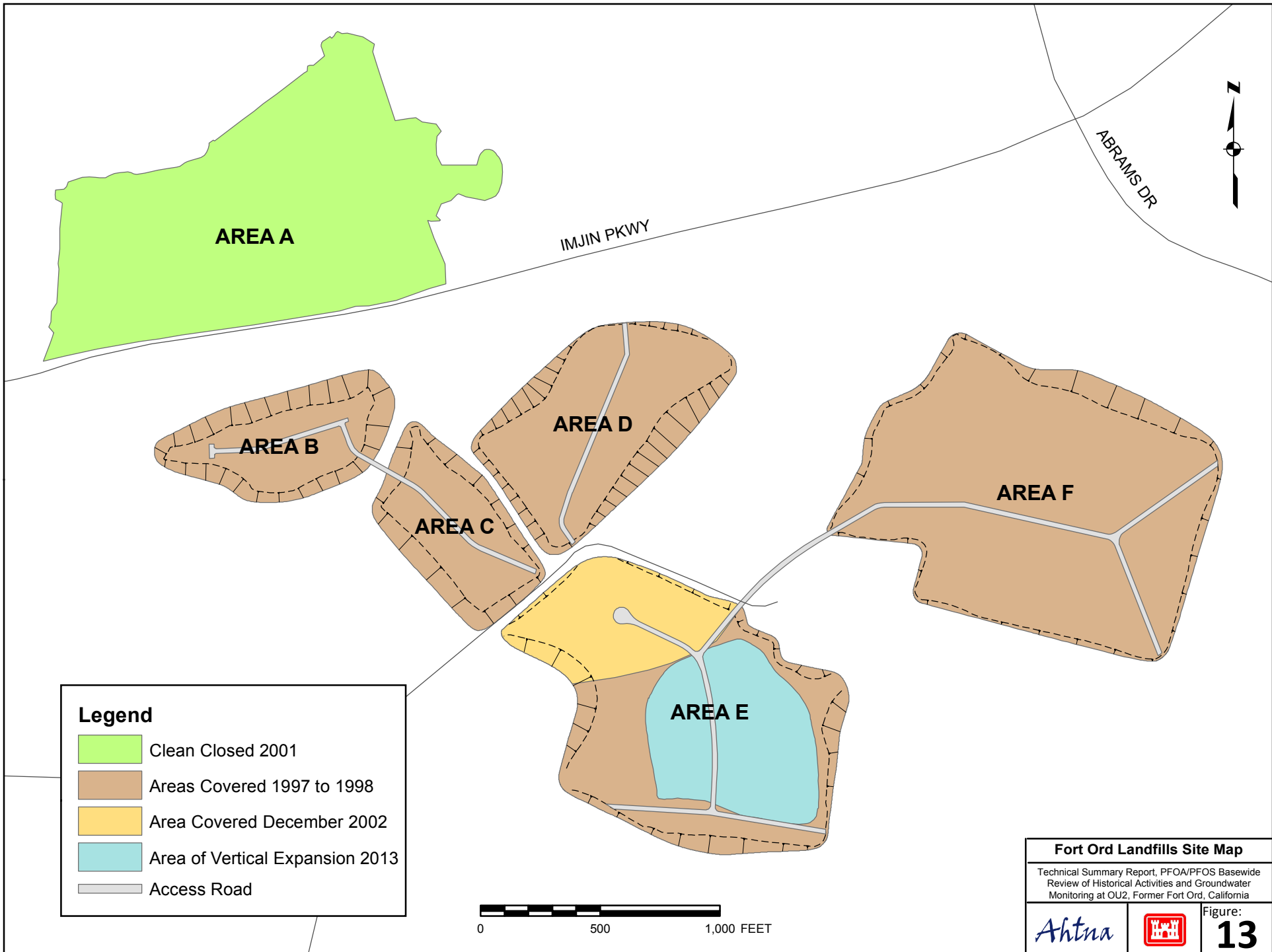
**Building 527 Aviation Hangar Photographs**

Technical Summary Report  
PFOA/PFOS Basewide Review of Historical  
Activities and  
Groundwater Monitoring at OU2  
Former Fort Ord, California

*Ahtna*

Figure:

**12**



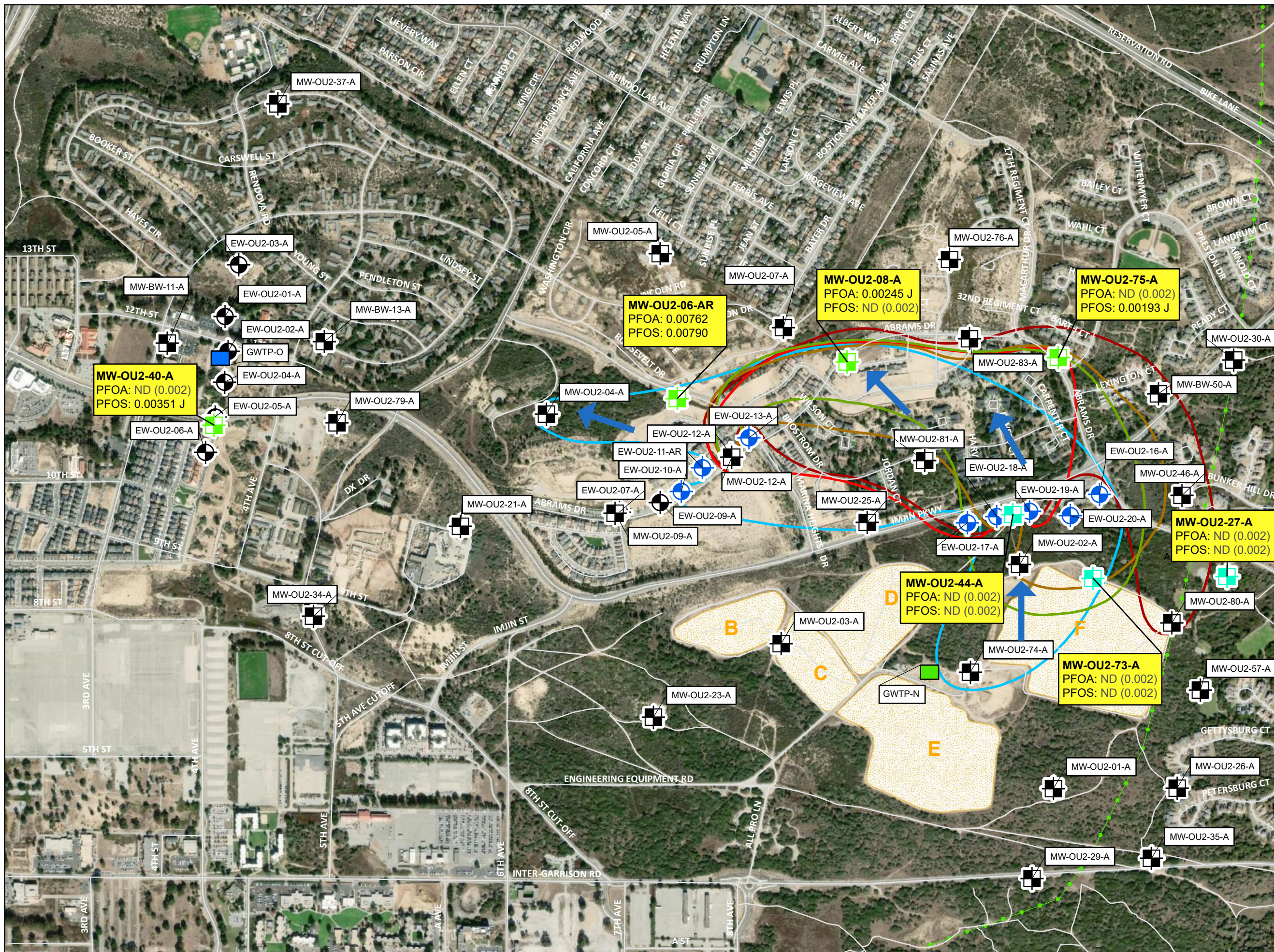
**Legend**

- Clean Closed 2001
- Areas Covered 1997 to 1998
- Area Covered December 2002
- Area of Vertical Expansion 2013
- Access Road

0 500 1,000 FEET

|   |  |
|---|--|
| <b>Fort Ord Landfills Site Map</b>  |  |
| Technical Summary Report, PFOA/PFOS Basewide<br>Review of Historical Activities and Groundwater<br>Monitoring at OU2, Former Fort Ord, California |  |
|   |  |
| Figure: 13  |  |





**Legend**

- Groundwater Divide
- Roads
- OU2 Landfill Areas
- OU2 GWTP-O: old OU2 GWTP ceased operation in October 2018 (not sampled)
- OU2 GWTP-N: new OU2 GWTP began operation in November 2018 (sampled)

**Well Type and PFOA/PFOS Results**

- Extraction Well - Offline
- Extraction Well - Online
- Monitoring Well - Not Sampled
- Monitoring Well - Sampled and PFOA/PFOS results below USEPA HA
- Monitoring Well - Sampled and PFOA/PFOS results not detected

**GWMP A-Aquifer COCs 2019-2Q**

- 1,1-DCA (5.0 ug/L)
- 1,2-DCA (0.5 ug/L)
- PCE (3.0 ug/L)
- TCE (5.0 ug/L)
- VC (0.1 ug/L)
- ➔ General Groundwater Flow Direction\*

\*Groundwater flow direction source: OU2 Second Quarter 2019 Groundwater Monitoring Report

0 415 830 1,660 Feet

**OU2 A-Aquifer Sampling Locations**

Technical Summary Report  
 PFOA/PFOS Basewide Review of  
 Historical Activities and  
 Groundwater Monitoring at OU2,  
 Former Fort Ord, California



**Legend**

- Roads
- OU2 Landfill Areas
- OU2 GWTP-O: old OU2 GWTP ceased operation in October 2018 (not sampled)
- OU2 GWTP-N: new OU2 GWTP began operation in November 2018 (sampled)

**Well Type and PFOA/PFOS Results**

- Extraction Well - Offline
- Extraction Well - Online
- Extraction Well - Offline - Sampled and PFOA/PFOS results not detected
- Monitoring Well - Not Sampled
- Monitoring Well - Sampled and PFOA/PFOS results below USEPA HA
- Monitoring Well - Sampled and PFOA/PFOS results above USEPA HA

**GWMP Upper 180-Foot Aquifer COCs**

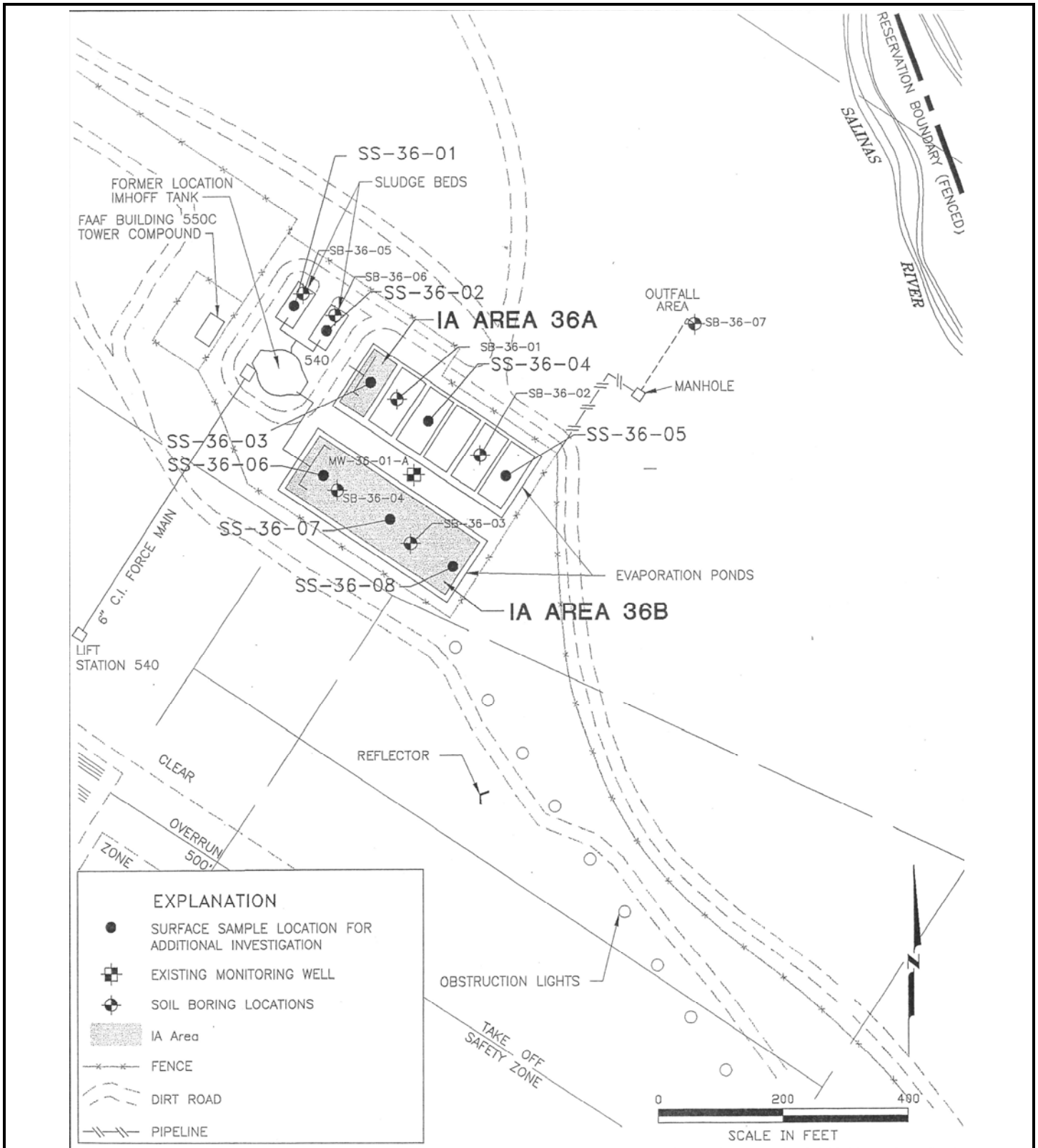
- TCE (5.0 ug/L) 2019-2Q
- General Groundwater Flow Direction\*

\*Groundwater flow direction source: OU2 Second Quarter 2019 Groundwater Monitoring Report

0 425 850 1,700 Feet

**OU2 Upper 180-Foot Aquifer Sampling Locations**

Technical Summary Report  
PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California

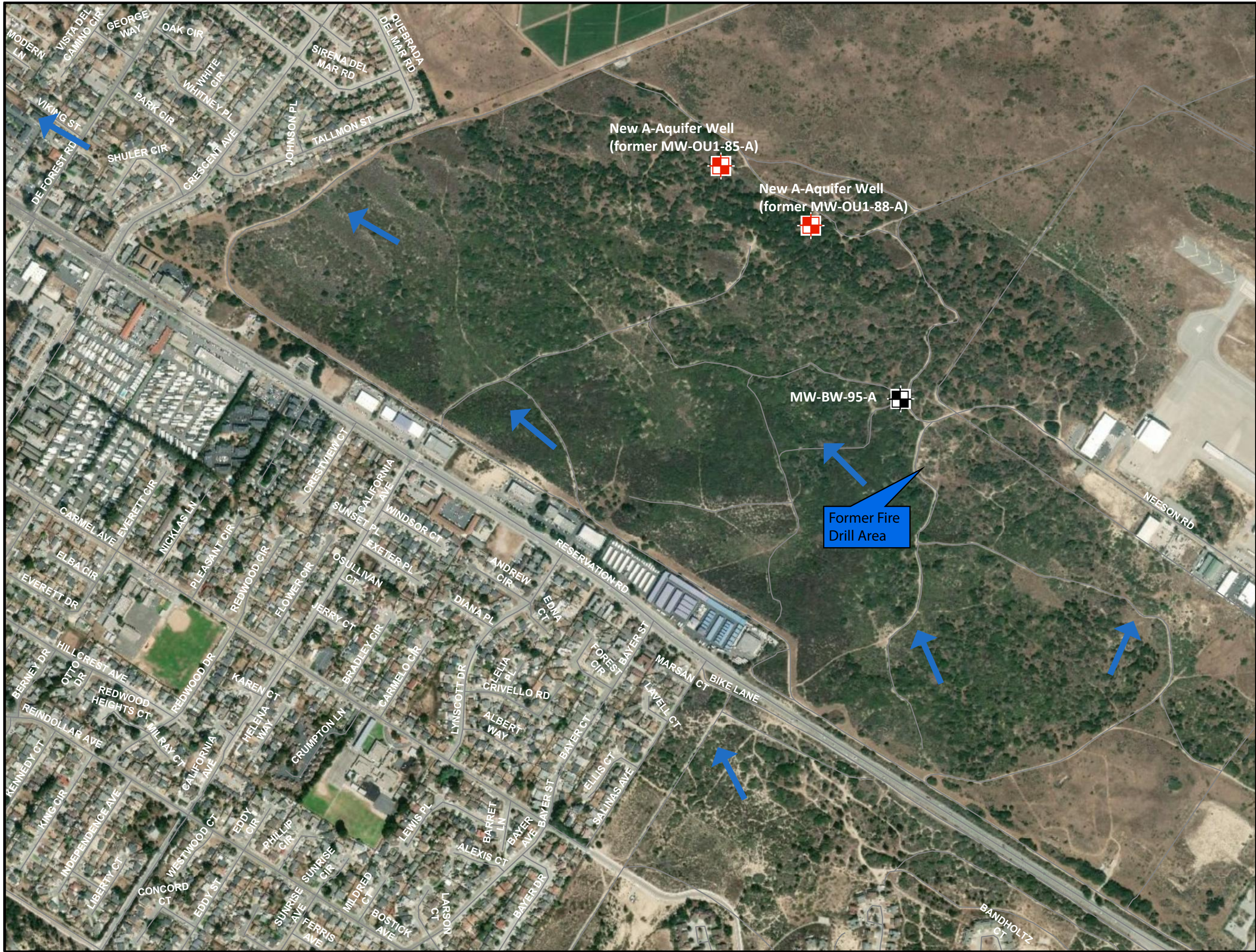


\*From the *Interim Action Confirmation Report, Site 36—Fritzche Army Airfield Sewage Treatment Plant, Fort Ord, California*. June 20. AR# IAFS-177 (HLA, 1997).



**Site 36 – FAAF STP Site Map\***  
 Technical Summary Report, PFOA/PFOS Basewide Review  
 of Historical Activities and Groundwater Monitoring at  
 OU2, Former Fort Ord, California

Figure:  
**16**



**Legend**

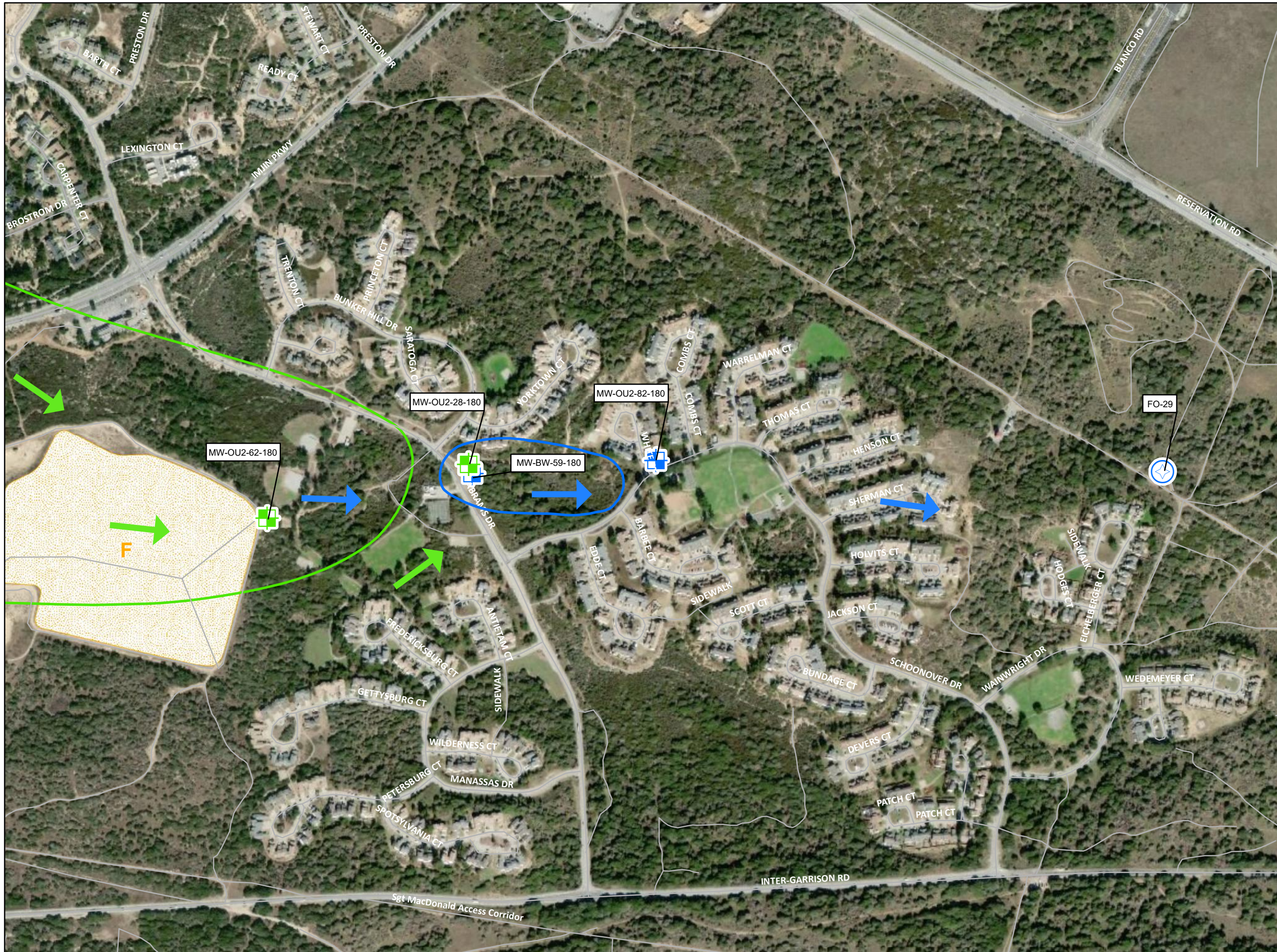
- Roads
- New Well Location
- Existing Well Location
- ➔ General Groundwater Flow Direction\*

\*Groundwater flow direction source:  
OUCTP First Quarter 2019  
Groundwater Monitoring Report







**FAAF Fire Drill Area  
Recommended  
Sampling Locations**



Technical Summary Report  
PFOA/PFOS Basewide Review  
of Historical Activities and  
Groundwater Monitoring at OU2  
Former Fort Ord, California

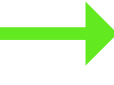



**Legend**

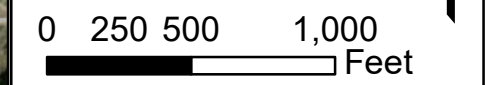
-  Existing Upper 180-Foot Aquifer Monitoring Well - Sampling Recommended
-  Existing Lower 180-Foot Aquifer Monitoring Well - Sampling Recommended
-  Existing Lower 180-Foot Aquifer Supply Well - Sampling Recommended
-  Roads
-  OU2 Landfill Areas

**GWMP COCs**

-  Upper 180-Foot Aquifer TCE (5.0 ug/L) 2019-2Q
-  Lower 180-Foot Aquifer TCE (5.0 ug/L) 2019-2Q

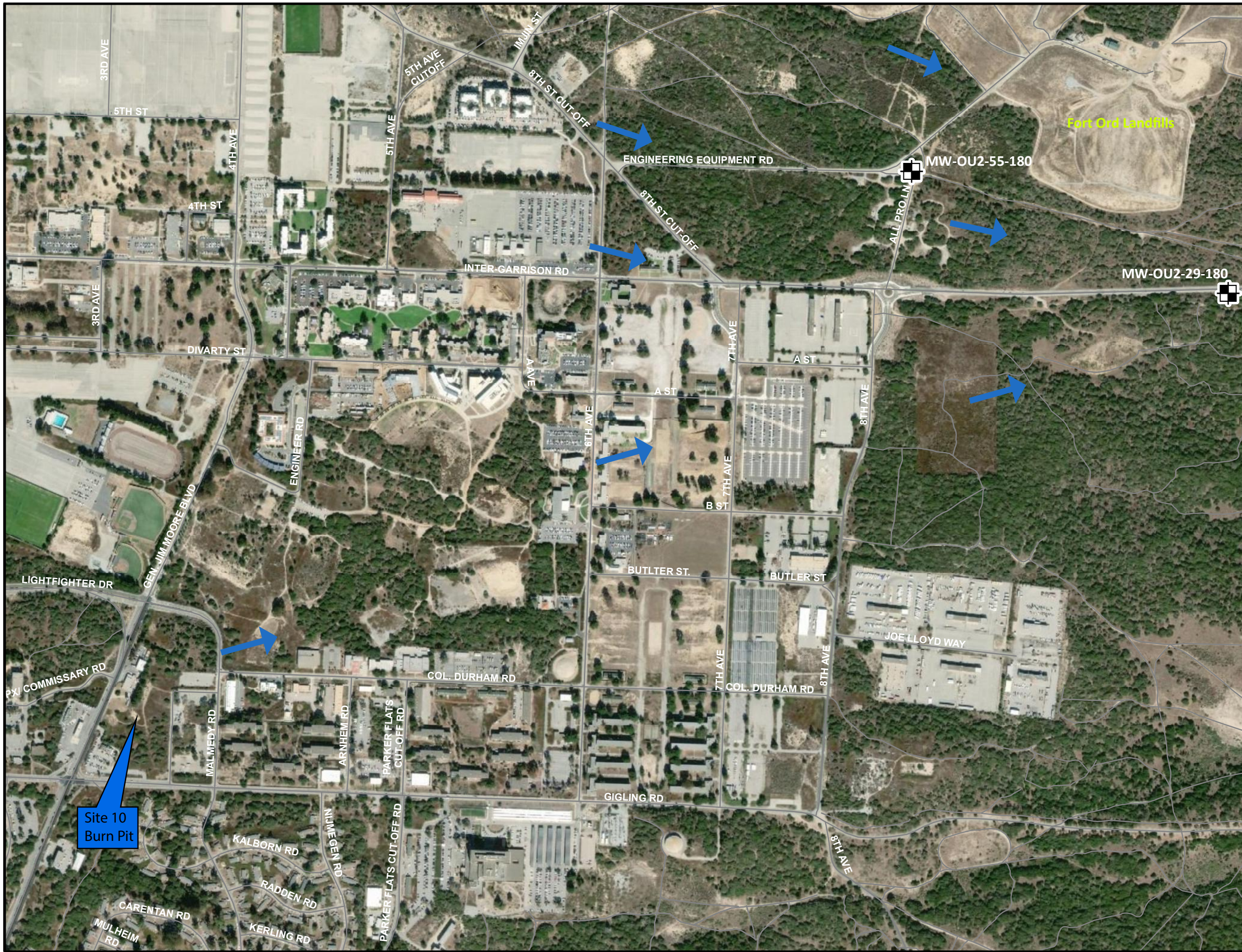
-  General Upper 180-Foot Aquifer Groundwater Flow Direction\*
-  General Lower 180-Foot Aquifer Groundwater Flow Direction\*

\*Groundwater flow direction source:  
 A. Upper 180-Foot Aquifer: OU2 Second Quarter 2019 Groundwater Monitoring Report  
 B. Lower 180-Foot Aquifer: OUCTP Second Quarter 2019 Groundwater Monitoring Report



**OU2 Upper 180-Foot Aquifer and Lower 180-Foot Aquifer Sampling Locations**

Technical Summary Report  
 PFOA/PFOS Basewide Review of Historical Activities and Groundwater Monitoring at OU2, Former Fort Ord, California



- Legend**
- Roads
  - ⊕ Existing Well Location
  - ➔ General Groundwater Flow Direction\*

\*Groundwater flow direction source:  
 A. North of Inter-Garrison Road:  
 OU2 First Quarter 2019  
 Groundwater Monitoring Report  
 B. South of Inter-Garrison Road:  
 Sites 2/12, OU2, and OUCTP  
 First Quarter 2014 Goundwater  
 Monitoring Program utilizing now  
 decommissioned Site 10 well data



**Site 10 - Burn Pit/  
 Fire Training Area  
 Recommended  
 Sampling Locations**

Technical Summary Report  
 PFOA/PFOS Basewide Review  
 of Historical Activities and  
 Groundwater Monitoring at OU2  
 Former Fort Ord, California



University of California  
 Monterey Bay Education,  
 Science, and Technology  
 Center

**Legend**

- Roads
- ✚ New Soil Boring Location
- ➡ General Surfacewater Flow Direction



0 50 100 200  
 Feet

**Site 34 - FAAF  
 Aviation Hangars  
 Building 507  
 Recommended  
 Sampling Locations**

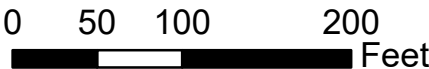
Technical Summary Report  
 PFOA/PFOS Basewide Review  
 of Historical Activities and  
 Groundwater Monitoring at OU2  
 Former Fort Ord, California



**Legend**

- Roads
- ⊕ New Soil Boring Location
- ➔ General Groundwater Flow Direction\*

\*Groundwater flow direction source:  
 Extrapolated from upgradient  
 OUCTP A-Aquifer well elevation  
 data from the OUCTP Second  
 Quarter 2019 Groundwater  
 Monitoring Report



**Site 36 - FAAF  
 Sewage Treatment Plant  
 Recommended  
 Sampling Locations**

Technical Summary Report  
 PFOA/PFOS Basewide Review  
 of Historical Activities and  
 Groundwater Monitoring at OU2  
 Former Fort Ord, California





**Legend**

- Roads
- ⊕ New Soil Boring Location
- > General Surface Water Flow Direction

0 50 100 200 Feet

N

**Site 40A - East FAAF  
Helicopter Defueling Area  
Recommended  
Sampling Locations**

Technical Summary Report  
PFOA/PFOS Basewide Review  
of Historical Activities and  
Groundwater Monitoring at OU2  
Former Fort Ord, California

## **APPENDICES**

## **APPENDIX A**

### Validation Summary Report



## **VALIDATION SUMMARY REPORT**

First Quarter 2019

Perfluorooctanoic Acid and Perfluorooctane Sulfonate

Groundwater Sampling

Operable Unit 2

Former Fort Ord, California

*Prepared for:*

**Ahtna Environmental Inc.**

296 12th Street

Marina, California 93933-6001

*Prepared by:*

**Wood Environment & Infrastructure Solutions, Inc.**

1670 Corporate, Circle, Suite 201

Petaluma, California 94954

April 8, 2019

Project No. 8418191360

**Validation Summary Report**

First Quarter 2019

Perfluorooctanoic Acid and Perfluorooctane Sulfonate

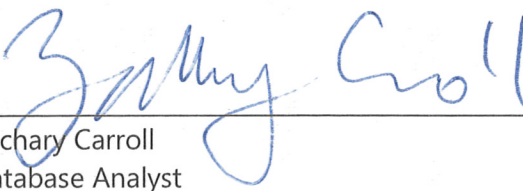
Groundwater Sampling


Operable Unit 2

Former Fort Ord, California

April 8, 2019

Project No. 8418191360

  
\_\_\_\_\_  
Zachary Carroll  
Database Analyst

*for*   
\_\_\_\_\_  
Kevin E. Garrett, PhD, PMP  
Senior Associate  
*with permission*

**Validation Summary Report  
First Quarter 2019  
Perfluorooctanoic Acid and Perfluorooctane Sulfonate  
Groundwater Sampling  
Operable Unit 2  
Former Fort Ord, California**

Project No. 8418191360

This document was prepared by Wood Environment & Infrastructure Solutions, Inc., on behalf of Ahtna Environmental Inc. at the direction of the United States Army Corps of Engineers (USACE) for the sole use of the United States Department of the Army (Army) and regulatory agencies, the only intended beneficiaries of this work. No other party should rely on the information contained herein without prior written consent of the USACE and Army. This report and the interpretations, conclusions, and recommendations contained within are based in part on information presented in other documents that are cited in the text and listed in the references. Therefore, this report is subject to the limitations and qualifications presented in the referenced documents.

**TABLE OF CONTENTS**

|   | <b>Page</b> |
|---|-------------|
| 1.0 INTRODUCTION.....                                     | 1           |
| 2.0 SUMMARY DATA QUALITY ASSESSMENT .....                 | 1           |
| 2.1 SAMPLE PRESERVATION AND HOLDING TIME .....            | 2           |
| 2.2 INSTRUMENT CALIBRATION .....                          | 2           |
| 2.3 METHOD BLANKS.....                                    | 3           |
| 2.4 SURROGATES AND INTERNAL STANDARDS.....                | 3           |
| 2.5 LABORATORY CONTROL SAMPLES.....                       | 3           |
| 2.6 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE SAMPLES ..... | 3           |
| 2.7 TARGET COMPOUND IDENTIFICATION .....                  | 3           |
| 2.8 ANALYTICAL SENSITIVITY.....                           | 4           |
| 3.0 FIELD DUPLICATES.....                                 | 4           |
| 4.0 DEVIATIONS FROM THE QAPP.....                         | 4           |
| 5.0 RECONCILIATION OF DATA QUALITY OBJECTIVES.....        | 4           |
| 5.1 REJECTED DATA.....                                    | 4           |
| 5.2 USABILITY .....                                       | 4           |
| 6.0 CONCLUSIONS AND RECOMMENDATIONS .....                 | 5           |
| 6.1 CORRECTIVE ACTIONS.....                               | 5           |
| 7.0 REFERENCES.....                                       | 5           |

**TABLE**

Table 1 Sample Cross Reference

**ATTACHMENTS**

Attachment 1 Stage 4 Worksheet  
 Attachment 2 Field Duplicate Relative Percent Differences

**APPENDIX**

Appendix 1 Laboratory Report

## ABBREVIATIONS

|       |   |
|-------|---|
| %     | percent                                       |
| ADR   | Automated Data Review                         |
| Army  | United States Department of the Army          |
| DOD   | Department of Defense                         |
| LCS   | laboratory control sample                     |
| OU2   | Operable Unit 2                               |
| QAPP  | Quality Assurance Project Plan                |
| QC    | Quality Control                               |
| QSM   | Quality Systems Manual                        |
| PFOA  | perfluorooctanoic acid                        |
| PFOS  | perfluorooctane sulfonate                     |
| RL    | reporting limit                               |
| RPD   | relative percent difference                   |
| USACE | United States Army Corps of Engineers         |
| USEPA | United States Environmental Protection Agency |



## 1.0 INTRODUCTION

This Validation Summary Report presents Stage 2B and Stage 4 data validation results for groundwater samples collected during the First Quarter 2019 monitoring period for the Fort Ord perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) sampling at Operable Unit 2 (OU2). Data review was performed in accordance with the procedures specified in the following documents:

- *EM-200-1-10, Guidance for Evaluating Performance-based Chemical Data* (United States Army Corps of Engineers [USACE], 2005)
- *Quality Assurance Project Plan (QAPP), Former Fort Ord, California, Volume I, Appendix A, Addendum No. 1 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis Operable Unit 2, Former Fort Ord, California. Draft* (U.S. Department of the Army [Army], 2019)
- The Department of Defense (DOD) *Quality Systems Manual (QSM) for Environmental Laboratories Version 5.1* (DOD, 2017)
- EPA 540-R-08-005, *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*. (USACE, 2009).

Wood Environment & Infrastructure Solutions, Inc. performed the data validation task under subcontract to Ahtna Environmental Inc.

Each of the analytical results from the monitoring event were subjected to Stage 2B review, which comprises an evaluation of Quality Control (QC) summary results for sample holding times, initial and continuing calibrations, surrogates, internal standards, laboratory duplicates, laboratory control samples (LCS), matrix spike and matrix spike duplicate samples, method blanks, calibration blanks, and field duplicate samples, as applicable.

Additionally, to confirm sample quantitation and identification, a Stage 4 evaluation of the QC summary forms and the raw data was performed on a minimum 10 percent (%) of the sample results. A sample cross reference, including sample identification numbers and level of review is presented as Table 1. A copy laboratory report is included as Appendix 1.

## 2.0 SUMMARY DATA QUALITY ASSESSMENT

The overall quality of the data was acceptable. Sample analysis for United States Environmental Protection Agency (USEPA) Test Method 537 (modified) was performed by SGS Accutest Laboratories in Orlando, Florida. SGS Accutest's Orlando laboratory is currently certified



through the Department of Defense Environmental Laboratory Accreditation Program ([DOD ELAP] number L2229).

Stage 2B review was performed on 100% of the data from this monitoring event using Laboratory Data Consultants, Inc.'s Automated Data Review (ADR) software program ADR.NET version 1.9.1.335. Flagging conventions specified in the QAPP were incorporated with the program's reference library to assess compliance with project requirements.

The ADR program was used as an electronic validation tool for the following QC checks:

- Holding Times
- Method Blank Contamination
- Surrogates
- Laboratory Control Samples
- Field Blank Contamination
- Field Duplicates

Initial, continuing calibration, and internal standards were validated manually due to the laboratory's inability to deliver electronic calibration files.

For the monitoring event, an additional Stage 4 review was performed on 10% of the results. The Stage 4 review included the elements of the Stage 2B review plus target compound identification, target compound quantitation, and an evaluation of the raw data and incorporated QC criteria from the QAPP. The findings of the Stage 2B and Stage 4 data review are presented in the following sections.

## **2.1 SAMPLE PRESERVATION AND HOLDING TIME**

Samples were properly collected and stored in compliance with the United States Army Corps of Engineers' (USACE) standard of 0-6 degrees Celsius (°C). The 14 days until extraction, 28 days until analysis holding times were met.

## **2.2 INSTRUMENT CALIBRATION**

Initial and continuing calibrations were analyzed at the method specified frequency. Initial calibration criteria specified in the QAPP were met.

Second source initial calibration verification standards, continuing calibration verification standards specified in the QAPP were met.

### **2.3 METHOD BLANKS**

Method blanks were analyzed at the frequency required by the QAPP of one per analytical batch. No target compounds were detected in the method blanks.

### **2.4 SURROGATES AND INTERNAL STANDARDS**

Surrogates and internal standards were added to investigative and QC samples as required by the QAPP. Reported recoveries of surrogate compounds for project samples were within laboratory's in-house acceptance limits, as specified by the QAPP.

Internal standard retention times and area counts were within the method specified acceptance criteria.

### **2.5 LABORATORY CONTROL SAMPLES**

LCS were analyzed at the frequency required by the QAPP of one per analytical batch. The %R and relative percent differences (RPD) for laboratory control sample duplicates were within QAPP specified acceptance limits.

### **2.6 MATRIX SPIKE AND MATRIX SPIKE DUPLICATE SAMPLES**

Matrix spike and matrix spike duplicate (MS/MSD) samples were analyzed at the frequency required by the QAPP of one set per analytical batch. The %R and relative percent differences (RPD) for project source samples were within the QAPP specified acceptance limits.

### **2.7 TARGET COMPOUND IDENTIFICATION**

The raw data associated with two project samples were evaluated as part of the Stage 4 review. Target compound identifications and quantitations were found to be acceptable. The Stage 4 review included both recalculation of reported results and review of the raw data for transcription errors. Results evaluated as part of the Stage 4 review were re-calculated and verified as being correctly reported by the laboratory. The Stage 4 calculation worksheet is presented as Attachment 1.



## **2.8 ANALYTICAL SENSITIVITY**

Laboratory reporting limits (RL) reviewed as part of the Stage 2B review met the QAPP specified requirements.

The raw data associated with two project samples was evaluated for instrument sensitivity as part of the Stage 4 review. The instrument sensitivity was found to be sufficient to support project reporting requirements.

## **3.0 FIELD DUPLICATES**

Two field duplicate sample pairs were collected and analyzed.

The following equation was used to calculate the RPD:

$$\text{RPD} = \frac{(\text{sample result} - \text{duplicate result}) \times 100}{(\text{sample result} + \text{duplicate result})/2}$$

The RPDs between the primary and duplicate samples were evaluated and were below the QAPP specified 30% acceptance criteria. The field duplicate relative percent differences are presented as Attachment 2.

## **4.0 DEVIATIONS FROM THE QAPP**

Project samples collected and submitted during the monitoring period were analyzed as described in the QAPP.

## **5.0 RECONCILIATION OF DATA QUALITY OBJECTIVES**

The sample results generated for the First Quarter 2019 monitoring period were subject to a rigorous 100% Stage 2B and 10% Stage 4 raw data review, as described in Section 1.0. The data review verified that the data is of a known quality that is in compliance with QAPP criteria, the general guidance of the DOD QSM Version 5.1, and the published analytical methods.

### **5.1 REJECTED DATA**

No data gaps were identified as a result of the validation effort. No data generated for the monitoring period was rejected.

### **5.2 USABILITY**

The data are considered usable for the intended purpose as reported by the laboratory.

## **6.0 CONCLUSIONS AND RECOMMENDATIONS**

The analytical data quality assessment for the sample results generated for the First Quarter 2019 monitoring period established that the overall project requirements and completeness levels specified in the QAPP were met. The data are considered usable for the intended purpose.

### **6.1 CORRECTIVE ACTIONS**

No field or laboratory corrective actions are recommended on the basis of the data validation.

## **7.0 REFERENCES**

Department of Defense, 2017. *DoD Quality Systems Manual for Environmental Laboratories, Version 5.1*

United States Army Corps of Engineers (USACE), 2005. EM-200-1-10, *Guidance for Evaluation Performance Based Chemical Data*. June.

USACE, 2009. EPA 540-R-08-005, *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*, 13 January.

United States Department of the Army, 2018 *Addendum No. 1 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling and Analysis Operable Unit 2, Former Fort Ord, California. Draft*, 28 September.

**TABLE**

---



**TABLE 1**

**SAMPLE CROSS REFERENCE**

Validation Summary Report, OU2 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling  
Former Fort Ord, California

| Sample Date | Sample Number | Lab Sample ID | Station Name  | Sample Type     | Test Method | Validation Stage |
|-------------|---------------|---------------|---------------|-----------------|-------------|------------------|
| 3/7/2019    | 1910BOU2048F  | FA62220-1     | MW-OU2-06-AR  | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2049A  | FA62220-2     | FIELD-QC      | Trip Blank      | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2050F  | FA62220-3     | MW-OU2-24-180 | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2051F  | FA62220-4     | MW-OU2-08-A   | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2052D  | FA62220-5     | MW-OU2-08-A   | Field Duplicate | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2053F  | FA62220-6     | MW-OU2-75-A   | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2054F  | FA62220-7     | MW-OU2-27-A   | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2055F  | FA62220-8     | MW-OU2-73-A   | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2056C  | FA62220-9     | FIELD-QC      | Field Blank     | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2057F  | FA62220-10    | MW-OU2-44-A   | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2058B  | FA62220-11    | FIELD-QC      | Equipment Blank | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2059F  | FA62220-12    | MW-OU2-44-180 | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2060F  | FA62220-13    | MW-OU2-56-180 | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2061D  | FA62220-14    | MW-OU2-56-180 | Field Duplicate | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2062F  | FA62220-15    | MW-OU2-40-A   | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2063F  | FA62220-16    | EW-OU2-01-180 | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2064F  | FA62220-17    | MW-OU2-23-180 | Primary         | EPA 537M    | 4                |
| 3/7/2019    | 1910BOU2065F  | FA62220-18    | TS-OU2-INF-01 | Primary         | EPA 537M    | 4                |
| 3/7/2019    | 1910BOU2066F  | FA62220-19    | TS-OU2-INF-02 | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2067F  | FA62220-20    | TS-OU2-EFF-1A | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2068F  | FA62220-21    | TS-OU2-EFF-2A | Primary         | EPA 537M    | 2B               |
| 3/7/2019    | 1910BOU2069F  | FA62220-22    | TS-OU2-INJ-01 | Primary         | EPA 537M    | 2B               |

**ATTACHMENT 1**

---

Stage 4 Worksheet





### Data Validation Worksheet

**Project Name:** Former Ft. Ord  
OU2 Perfluorooctanoic Acid and Perfluorooctane Sulfonate Sampling  
**Laboratory Name:** SGS - Orlando

#### SAMPLE CROSS REFERENCE TABLES

**Samples reviewed as Stage 4:** 2  
**Samples:** 22  
**Percent Stage 4** 9%

| <b>Sample ID</b> | <b>Laboratory ID</b> | <b>Matrix</b> |
|------------------|----------------------|---------------|
| 1910BOU2064F     | FA62220-17           | H2O           |
| 1910BOU2065F     | FA62220-18           | H2O           |

### Data Validation Worksheet

#### INITIAL CALIBRATION - AVERAGE RESPONSE FACTOR

RRF =  $Ax \cdot Is / Ais \cdot STD$

$Ax$  = Area of compound;  $Is$  = Concentration of internal standard;

$Ais$  = Area of associated internal standard;  $STD$  = Concentration of compound

|                   |           |               |        |        |        |        |        |        |                      |
|-------------------|-----------|---------------|--------|--------|--------|--------|--------|--------|----------------------|
| Date: 3/18/2019   |           |               |        |        |        |        |        |        |                      |
| Compound: PFOA    |           | ITSD: M8-PFOA |        |        |        |        |        |        |                      |
|                   | 1         | 2             | 3      | 4      | 5      | 6      | 7      | 8      |                      |
| STD =             | 0.5       | 1             | 2      | 5      | 10     | 20     | 50     | 100    | <b>Rpt Avg</b> 0.521 |
| Ax =              | 2817      | 5758          | 11272  | 27043  | 52958  | 107547 | 267229 | 498604 | <b>Rpt %RSD</b> 2.83 |
| Ais =             | 222345    | 221022        | 227282 | 208189 | 203690 | 202524 | 201495 | 183541 | AVG. RF 0.521        |
| Is =              | 20        | 20            | 20     | 20     | 20     | 20     | 20     | 20     | SD 0.014744          |
| RF =              | 0.5068    | 0.5210        | 0.4959 | 0.5196 | 0.5200 | 0.5310 | 0.5305 | 0.5433 | %RSD= 2.83           |
| Linear Fit        |           |               |        |        |        |        |        |        |                      |
| y                 | 0.0127    | 0.0261        | 0.0496 | 0.1299 | 0.2600 | 0.5310 | 1.3262 | 2.7166 |                      |
| x                 | 0.025     | 0.05          | 0.1    | 0.25   | 0.5    | 1      | 2.5    | 5      |                      |
| Slope (m) = m     | 0.5424147 |               |        |        |        |        |        |        |                      |
| Intercept (b) = b | 0         |               |        |        |        |        |        |        |                      |
| linear R^2 = r2   | 0.999879  |               |        |        |        |        |        |        |                      |

|                   |           |               |        |        |        |        |        |        |                      |
|-------------------|-----------|---------------|--------|--------|--------|--------|--------|--------|----------------------|
| Date: 3/18/2019   |           |               |        |        |        |        |        |        |                      |
| Compound: PFOS    |           | ITSD: M8-PFOS |        |        |        |        |        |        |                      |
|                   | 1         | 2             | 3      | 4      | 5      | 6      | 7      | 8      |                      |
| STD =             | 0.5       | 1             | 2      | 5      | 10     | 20     | 50     | 100    | <b>Rpt Avg</b> 0.955 |
| Ax =              | 649       | 1263          | 2733   | 6138   | 12220  | 24125  | 61125  | 113808 | <b>Rpt %RSD</b> 2.57 |
| Ais =             | 28319     | 27340         | 28599  | 25891  | 24727  | 24876  | 25394  | 23384  | AVG. RF 0.955        |
| Is =              | 20        | 20            | 20     | 20     | 20     | 20     | 20     | 20     | SD 0.02453           |
| RF =              | 0.9167    | 0.9239        | 0.9556 | 0.9483 | 0.9884 | 0.9698 | 0.9628 | 0.9734 | %RSD= 2.57           |
| Linear Fit        |           |               |        |        |        |        |        |        |                      |
| y                 | 0.0229    | 0.0462        | 0.0956 | 0.2371 | 0.4942 | 0.9698 | 2.4071 | 4.8669 |                      |
| x                 | 0.025     | 0.05          | 0.1    | 0.25   | 0.5    | 1      | 2.5    | 5      |                      |
| Slope (m) = m     | 0.9721177 |               |        |        |        |        |        |        |                      |
| Intercept (b) = b | 0         |               |        |        |        |        |        |        |                      |
| linear R^2 = r2   | 0.999969  |               |        |        |        |        |        |        |                      |

CALCULATED VALUES MATCH REPORTED VALUES? YES NO

|   |  |
|---|--|
| X |  |
|---|--|

**Data Validation Worksheet**

**CALIBRATION VERIFICATION**

|            |               |
|------------|---------------|
| Date:      | 3/19/2019     |
| Time:      | 18:08         |
| CCV:       | S2Q443-ECC442 |
| Compound:  | PFOA          |
| Expected   | 20.0          |
| Final Conc | 19.498        |
| %D         | -2.5          |
| RPT        | -2.5%         |

|            |               |
|------------|---------------|
| Date:      | 3/19/2019     |
| Time:      | 18:08         |
| CCV:       | S2Q443-ECC442 |
| Compound:  | PFOS          |
| Expected   | 20.0          |
| Final Conc | 19.556        |
| %D         | -2.2          |
| RPT        | -2.2%         |

CALCULATED VALUES MATCH REPORTED VALUES?

|     |    |
|-----|----|
| YES | NO |
| X   |    |

### Data Validation Worksheet

|  | FA62220-17                  | FA62220-17  | FA62220-18 | FA62220-18 |
|--|-----------------------------|-------------|------------|------------|
| Lab ID:  | FA62220-17                  | FA62220-17  | FA62220-18 | FA62220-18 |
| Compound:  | PFOA                        | PFOS        | PFOA       | PFOS       |
| ITSD:  | M8-PFOA                     | M8-PFOS     | M8-PFOA    | M8-PFOS    |
| Response in compound:                            | 143912                      | 50969       | 21299      | 3337       |
| Response of Internal Standard:                   | 188592                      | 9394        | 202788     | 17930      |
| Amount of Internal Standard <sup>1</sup> (ug/L): | 20                          | 10          | 20         | 20         |
| Dilution factor:                                 | 1                           | 2           | 1          | 1          |
| Volume of extract injected (mL):                 | 1                           | 1           | 1          | 1          |
| % moisture (100 if AQ)                           | 100                         | 100         | 100        | 100        |
| Average from ICAL:                               | 0.521                       | 0.955       | 0.521      | 0.955      |
| Volume of water (mL):                            | 250                         | 250         | 250        | 250        |
| Calculated Concentration (ug/L) for RF           | 0.117                       | 0.455       | 0.0161     | 0.0156     |
|  | y = 0.76308645              | 5.425697254 | 0.10503087 | 0.18611266 |
|  | (from curve) b = 0          | 0           | 0          | 0          |
|  | (from curve) m = 0.54241472 | 0.972117662 | 0.54241472 | 0.97211766 |
|  | calc X = 1.40683213         | 5.581317432 | 0.19363573 | 0.19145075 |
| Calculated Concentration (ug/L) for Linear       | 0.113                       | 0.447       | 0.0155     | 0.0153     |
| <b>Result Reported (ug/L):</b>                   | 0.113                       | 0.447       | 0.0156     | 0.0153     |

CALCULATED VALUES MATCH REPORTED VALUES?

|     |    |
|-----|----|
| YES | NO |
| X   |    |

**Notes:**

1) Per the SGS Orlando Chromatography Technical Director (4/2/19): Any dilution under a 20X the isotopes (extracted internals) are not added back in to a concentration of 20ppb. So, the ISTD response at a 2x is lower. We have to tell the software that it is a 2x for the ISTD response and it adjusts the raw data. Then the dilution factor is done in LIMS. So ISTD concentration is 10 not 20 for a 2x.

**ATTACHMENT 2**

---

Field Duplicate Relative Percent Differences



# Field Duplicate RPD Report

Lab Reporting Batch ID: FA62220

Laboratory: ACTO

EDD Filename: FA62220ACTO

eQAPP Name: FtOrd\_PFAS

Method: EPA537M

Matrix: AQ

| <i>Analyte</i>         | <i>Concentration (ug/L)</i> |              | <i>Sample RPD</i> | <i>eQAPP RPD</i> | <i>Flag</i>           |
|------------------------|-----------------------------|--------------|-------------------|------------------|-----------------------|
|                        | 1910BOU2060F                | 1910BOU2061D |                   |                  |                       |
| Perfluorooctanoic acid | 0.00252 J                   | 0.004 U      | N/A               | 30.00            | No Qualifiers Applied |

| <i>Analyte</i>         | <i>Concentration (ug/L)</i> |              | <i>Sample RPD</i> | <i>eQAPP RPD</i> | <i>Flag</i>           |
|------------------------|-----------------------------|--------------|-------------------|------------------|-----------------------|
|                        | 1910BOU2051F                | 1910BOU2052D |                   |                  |                       |
| Perfluorooctanoic acid | 0.00245 J                   | 0.004 U      | N/A               | 30.00            | No Qualifiers Applied |

---

**APPENDIX 1**

Laboratory Report



The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

**Ahtna Environmental Inc**

**OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring**

**8418191360.05.053 (Fort Order Basewide GWM 1Q19)- OU2**

**SGS Job Number: FA62220**

**Sampling Date: 03/07/19**



### Report to:

**Ahtna Environmental Inc**  
**3100 Beacon Blvd**  
**West Sacramento, CA 95691**  
**hdillon@ahtna.net; jeffery.fenton@amecfw.com;**  
**zachary.carroll@amecfw.com; mfisher@ahtna.net;**  
**ATTN: Derek Lieberman**

**Total number of pages in report: 1205**



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.

**Caitlin Brice, M.S.**  
**General Manager**

**Client Service contact: Elvin Kumar 407-425-6700**

Certifications: FL(E83510), LA(03051), KS(E-10327), IL(200063), NC(573), NJ(FL002), NY(12022), SC(96038001)  
DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),  
AK, AR, IA, KY, MA, MS, ND, NH, NV, OK, OR, UT, WA, WV

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

Test results relate only to samples analyzed.



# Table of Contents

-1-

|  |            |
|--|------------|
| <b>Section 1: Sample Summary .....</b>                         | <b>4</b>   |
| <b>Section 2: Case Narrative/Conformance Summary .....</b>     | <b>6</b>   |
| <b>Section 3: Summary of Hits .....</b>                        | <b>7</b>   |
| <b>Section 4: Sample Results .....</b>                         | <b>10</b>  |
| <b>4.1:</b> FA62220-1: 1910BOU2048F .....                      | 11         |
| <b>4.2:</b> FA62220-2: 1910BOU2049A .....                      | 12         |
| <b>4.3:</b> FA62220-3: 1910BOU2050F .....                      | 13         |
| <b>4.4:</b> FA62220-4: 1910BOU2051F .....                      | 14         |
| <b>4.5:</b> FA62220-5: 1910BOU2052D .....                      | 15         |
| <b>4.6:</b> FA62220-6: 1910BOU2053F .....                      | 16         |
| <b>4.7:</b> FA62220-7: 1910BOU2054F .....                      | 17         |
| <b>4.8:</b> FA62220-8: 1910BOU2055F .....                      | 18         |
| <b>4.9:</b> FA62220-9: 1910BOU2056C .....                      | 19         |
| <b>4.10:</b> FA62220-10: 1910BOU2057F .....                    | 20         |
| <b>4.11:</b> FA62220-11: 1910BOU2058B .....                    | 21         |
| <b>4.12:</b> FA62220-12: 1910BOU2059F .....                    | 22         |
| <b>4.13:</b> FA62220-13: 1910BOU2060F .....                    | 23         |
| <b>4.14:</b> FA62220-14: 1910BOU2061D .....                    | 24         |
| <b>4.15:</b> FA62220-15: 1910BOU2062F .....                    | 25         |
| <b>4.16:</b> FA62220-16: 1910BOU2063F .....                    | 26         |
| <b>4.17:</b> FA62220-17: 1910BOU2064F .....                    | 27         |
| <b>4.18:</b> FA62220-18: 1910BOU2065F .....                    | 28         |
| <b>4.19:</b> FA62220-19: 1910BOU2066F .....                    | 29         |
| <b>4.20:</b> FA62220-20: 1910BOU2067F .....                    | 30         |
| <b>4.21:</b> FA62220-21: 1910BOU2068F .....                    | 31         |
| <b>4.22:</b> FA62220-22: 1910BOU2069F .....                    | 32         |
| <b>Section 5: Misc. Forms .....</b>                            | <b>33</b>  |
| <b>5.1:</b> Chain of Custody .....                             | 34         |
| <b>5.2:</b> QC Evaluation: DOD QSM5 Limits .....               | 38         |
| <b>Section 6: MS Semi-volatiles - QC Data Summaries .....</b>  | <b>39</b>  |
| <b>6.1:</b> Method Blank Summary .....                         | 40         |
| <b>6.2:</b> Blank Spike Summary .....                          | 47         |
| <b>6.3:</b> Matrix Spike Summary .....                         | 50         |
| <b>6.4:</b> Matrix Spike/Matrix Spike Duplicate Summary .....  | 52         |
| <b>6.5:</b> Duplicate Summary .....                            | 53         |
| <b>6.6:</b> Injection Standard Area Summaries .....            | 55         |
| <b>6.7:</b> Isotope Dilution Standard Recovery Summaries ..... | 61         |
| <b>6.8:</b> Initial and Continuing Calibration Summaries ..... | 63         |
| <b>Section 7: MS Semi-volatiles - Raw Data .....</b>           | <b>118</b> |
| <b>7.1:</b> Samples .....                                      | 119        |
| <b>7.2:</b> Method Blanks .....                                | 337        |
| <b>7.3:</b> Blank Spikes .....                                 | 394        |

# Table of Contents

Sections:

1

2

3

4

5

6

7

-2-

|  |      |
|--|------|
| <b>7.4:</b> Matrix Spike/Matrix Spike Duplicates ..... | 439  |
| <b>7.5:</b> Duplicates .....                           | 499  |
| <b>7.6:</b> Initial and Continuing Calibrations .....  | 519  |
| <b>7.7:</b> Instrument Run Logs .....                  | 1190 |
| <b>7.8:</b> Prep Logs .....                            | 1203 |



## Sample Summary

Ahtna Environmental Inc

**Job No:** FA62220

OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring  
 Project No: 8418191360.05.053 (Fort Order Basewide GWM 1Q19)- OU2

| Sample Number | Collected |          | Received | Matrix |                    | Client Sample ID |
|---------------|-----------|----------|----------|--------|--------------------|------------------|
|               | Date      | Time By  |          | Code   | Type               |                  |
| FA62220-1     | 03/07/19  | 07:30 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2048F     |
| FA62220-1D    | 03/07/19  | 07:30 DA | 03/09/19 | AQ     | Water Dup/MSD      | 1910BOU2048F     |
| FA62220-1S    | 03/07/19  | 07:30 DA | 03/09/19 | AQ     | Water Matrix Spike | 1910BOU2048F     |
| FA62220-2     | 03/07/19  | 07:35 DA | 03/09/19 | AQ     | Trip Blank Water   | 1910BOU2049A     |
| FA62220-3     | 03/07/19  | 08:10 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2050F     |
| FA62220-4     | 03/07/19  | 08:35 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2051F     |
| FA62220-5     | 03/07/19  | 08:37 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2052D     |
| FA62220-6     | 03/07/19  | 09:05 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2053F     |
| FA62220-7     | 03/07/19  | 09:35 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2054F     |
| FA62220-8     | 03/07/19  | 10:15 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2055F     |
| FA62220-9     | 03/07/19  | 10:25 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2056C     |
| FA62220-10    | 03/07/19  | 10:50 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2057F     |
| FA62220-11    | 03/07/19  | 11:10 DA | 03/09/19 | AQ     | Ground Water       | 1910BOU2058B     |



## Sample Summary

(continued)

Ahtna Environmental Inc

**Job No:** FA62220

OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring  
 Project No: 8418191360.05.053 (Fort Order Basewide GWM 1Q19)- OU2

| Sample Number | Collected |          | Received | Matrix |              | Client Sample ID |
|---------------|-----------|----------|----------|--------|--------------|------------------|
|               | Date      | Time By  |          | Code   | Type         |                  |
| FA62220-12    | 03/07/19  | 11:15 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2059F     |
| FA62220-13    | 03/07/19  | 12:25 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2060F     |
| FA62220-14    | 03/07/19  | 12:27 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2061D     |
| FA62220-15    | 03/07/19  | 13:00 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2062F     |
| FA62220-16    | 03/07/19  | 13:25 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2063F     |
| FA62220-17    | 03/07/19  | 14:00 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2064F     |
| FA62220-18    | 03/07/19  | 14:50 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2065F     |
| FA62220-19    | 03/07/19  | 14:52 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2066F     |
| FA62220-20    | 03/07/19  | 14:54 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2067F     |
| FA62220-21    | 03/07/19  | 14:56 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2068F     |
| FA62220-22    | 03/07/19  | 14:58 DA | 03/09/19 | AQ     | Ground Water | 1910BOU2069F     |

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Ahtna Environmental Inc **Job No** FA62220  
**Site:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring **Report Date** 3/27/2019 9:46:10

21 Samples, 1 Trip Blank were collected on 03/07/2019 and were received at SGS North America Inc - Orlando on 03/09/2019 properly preserved, at 2.8 Deg. C and intact. These samples received an SGS Orlando job number of FA62220. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section. 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.

### MS Semi-volatiles By Method EPA 537M QSM5.1 B-15

**Matrix:** AQ **Batch ID:** OP74164

All samples were extracted within the recommended method holding time.  
 All samples were analyzed within the recommended method holding time.  
 Sample(s) FA62220-21MS, FA62220-22DUP were used as the QC samples indicated.  
 All method blanks for this batch meet method specific criteria.

**Matrix:** AQ **Batch ID:** OP74180

All samples were extracted within the recommended method holding time.  
 All samples were analyzed within the recommended method holding time.  
 Sample(s) FA62220-1MS, FA62220-1MSD were used as the QC samples indicated.  
 All method blanks for this batch meet method specific criteria.

**Matrix:** AQ **Batch ID:** OP74233

All samples were extracted within the recommended method holding time.  
 All samples were analyzed within the recommended method holding time.  
 Sample(s) FA62454-1DUP, FA62454-2MS were used as the QC samples indicated.  
 All method blanks for this batch meet method specific criteria.

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

Narrative prepared by:

\_\_\_\_\_  
 Ariel Hartney, Client Services (*Signature on File*)

## Summary of Hits

**Job Number:** FA62220  
**Account:** Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring  
**Collected:** 03/07/19



| Lab Sample ID | Client Sample ID | Result/<br>Qual | LOQ | LOD | Units | Method |
|---------------|------------------|-----------------|-----|-----|-------|--------|
|---------------|------------------|-----------------|-----|-----|-------|--------|

**FA62220-1 1910BOU2048F**

|                              |         |        |        |      |                      |
|------------------------------|---------|--------|--------|------|----------------------|
| Perfluorooctanoic acid       | 0.00762 | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
| Perfluorooctanesulfonic acid | 0.00790 | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |

**FA62220-2 1910BOU2049A**

No hits reported in this sample.

**FA62220-3 1910BOU2050F**

|                              |           |        |        |      |                      |
|------------------------------|-----------|--------|--------|------|----------------------|
| Perfluorooctanoic acid       | 0.00326 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
| Perfluorooctanesulfonic acid | 0.00254 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |

**FA62220-4 1910BOU2051F**

|                        |           |        |        |      |                      |
|------------------------|-----------|--------|--------|------|----------------------|
| Perfluorooctanoic acid | 0.00245 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
|------------------------|-----------|--------|--------|------|----------------------|

**FA62220-5 1910BOU2052D**

No hits reported in this sample.

**FA62220-6 1910BOU2053F**

|                              |           |        |        |      |                      |
|------------------------------|-----------|--------|--------|------|----------------------|
| Perfluorooctanesulfonic acid | 0.00193 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
|------------------------------|-----------|--------|--------|------|----------------------|

**FA62220-7 1910BOU2054F**

No hits reported in this sample.

**FA62220-8 1910BOU2055F**

No hits reported in this sample.

**FA62220-9 1910BOU2056C**

No hits reported in this sample.

**FA62220-10 1910BOU2057F**

No hits reported in this sample.

**FA62220-11 1910BOU2058B**

No hits reported in this sample.

## Summary of Hits

**Job Number:** FA62220  
**Account:** Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring  
**Collected:** 03/07/19



| Lab Sample ID | Client Sample ID | Result/<br>Qual | LOQ | LOD | Units | Method |
|---------------|------------------|-----------------|-----|-----|-------|--------|
|---------------|------------------|-----------------|-----|-----|-------|--------|

**FA62220-12 1910BOU2059F**

|                              |           |        |        |      |                      |
|------------------------------|-----------|--------|--------|------|----------------------|
| Perfluorooctanoic acid       | 0.00309 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
| Perfluorooctanesulfonic acid | 0.00343 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |

**FA62220-13 1910BOU2060F**

|                        |           |        |        |      |                      |
|------------------------|-----------|--------|--------|------|----------------------|
| Perfluorooctanoic acid | 0.00252 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
|------------------------|-----------|--------|--------|------|----------------------|

**FA62220-14 1910BOU2061D**

No hits reported in this sample.

**FA62220-15 1910BOU2062F**

|                              |           |        |        |      |                      |
|------------------------------|-----------|--------|--------|------|----------------------|
| Perfluorooctanesulfonic acid | 0.00351 J | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
|------------------------------|-----------|--------|--------|------|----------------------|

**FA62220-16 1910BOU2063F**

No hits reported in this sample.

**FA62220-17 1910BOU2064F**

|                              |       |        |        |      |                      |
|------------------------------|-------|--------|--------|------|----------------------|
| Perfluorooctanoic acid       | 0.113 | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
| Perfluorooctanesulfonic acid | 0.447 | 0.0080 | 0.0040 | ug/l | EPA 537M QSM5.1 B-15 |

**FA62220-18 1910BOU2065F**

|                              |        |        |        |      |                      |
|------------------------------|--------|--------|--------|------|----------------------|
| Perfluorooctanoic acid       | 0.0156 | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |
| Perfluorooctanesulfonic acid | 0.0153 | 0.0040 | 0.0020 | ug/l | EPA 537M QSM5.1 B-15 |

**FA62220-19 1910BOU2066F**

No hits reported in this sample.

**FA62220-20 1910BOU2067F**

No hits reported in this sample.

**FA62220-21 1910BOU2068F**

No hits reported in this sample.

## Summary of Hits

**Job Number:** FA62220  
**Account:** Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring  
**Collected:** 03/07/19



| Lab Sample ID | Client Sample ID | Result/<br>Qual | LOQ | LOD | Units | Method |
|---------------|------------------|-----------------|-----|-----|-------|--------|
|---------------|------------------|-----------------|-----|-----|-------|--------|

**FA62220-22**      **1910BOU2069F**

No hits reported in this sample.



Sample Results

---

Report of Analysis

---

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2048F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-1                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27693.D | 1  | 03/18/19 16:16 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |         |        |        |        |      |  |
|----------|------------------------|---------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.00762 | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|---------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |         |        |        |        |      |  |
|-----------|------------------------------|---------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.00790 | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|---------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 93% |  | 50-150% |
|  | 13C8-PFOS | 74% |  | 50-150% |

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

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2049A                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-2                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Trip Blank Water                           | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27696.D | 1  | 03/18/19 17:04 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 92% |  | 50-150% |
|  | 13C8-PFOS | 66% |  | 50-150% |

---

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

4.2  
4

# Report of Analysis

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2050F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-3                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27697.D | 1  | 03/18/19 17:19 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |         |        |        |        |      |   |
|----------|------------------------|---------|--------|--------|--------|------|---|
| 335-67-1 | Perfluorooctanoic acid | 0.00326 | 0.0040 | 0.0020 | 0.0010 | ug/l | J |
|----------|------------------------|---------|--------|--------|--------|------|---|

**PERFLUOROALKYLSULFONATES**

|           |                              |         |        |        |        |      |   |
|-----------|------------------------------|---------|--------|--------|--------|------|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.00254 | 0.0040 | 0.0020 | 0.0015 | ug/l | J |
|-----------|------------------------------|---------|--------|--------|--------|------|---|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 91% |  | 50-150% |
|  | 13C8-PFOS | 61% |  | 50-150% |

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

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2051F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-4                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID  | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 3Q1986.D | 1  | 03/21/19 13:36 | NAF | 03/20/19 12:00 | OP74233    | S3Q54            |
| Run #2 |          |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |         |        |        |        |      |   |
|----------|------------------------|---------|--------|--------|--------|------|---|
| 335-67-1 | Perfluorooctanoic acid | 0.00245 | 0.0040 | 0.0020 | 0.0010 | ug/l | J |
|----------|------------------------|---------|--------|--------|--------|------|---|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 91% |  | 50-150% |
|  | 13C8-PFOS | 90% |  | 50-150% |

---

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

4.4  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2052D                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-5                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27699.D | 1  | 03/18/19 17:51 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 88% |  | 50-150% |
|  | 13C8-PFOS | 63% |  | 50-150% |

---

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

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2053F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-6                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27700.D | 1  | 03/18/19 18:07 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |         |        |        |        |      |   |
|-----------|------------------------------|---------|--------|--------|--------|------|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.00193 | 0.0040 | 0.0020 | 0.0015 | ug/l | J |
|-----------|------------------------------|---------|--------|--------|--------|------|---|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 96% |  | 50-150% |
|  | 13C8-PFOS | 71% |  | 50-150% |

---

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

4.6  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2054F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-7                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27703.D | 1  | 03/18/19 18:54 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 91% |  | 50-150% |
|  | 13C8-PFOS | 71% |  | 50-150% |

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

4.7  
4



SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2055F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-8                                       | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID  | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 3Q1987.D | 1  | 03/21/19 13:51 | NAF | 03/20/19 12:00 | OP74233    | S3Q54            |
| Run #2 |          |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 91% |  | 50-150% |
|  | 13C8-PFOS | 86% |  | 50-150% |

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

4.8  
4

# Report of Analysis

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2056C                                    |                        |          |
| <b>Lab Sample ID:</b>    | FA62220-9                                       | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Date Received:</b>  | 03/09/19 |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                | <b>Percent Solids:</b> | n/a      |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27705.D | 1  | 03/18/19 19:25 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 91% |  | 50-150% |
|  | 13C8-PFOS | 63% |  | 50-150% |

---

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

4.9  
4

# Report of Analysis

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2057F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-10                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27706.D | 1  | 03/18/19 19:41 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

335-67-1 Perfluorooctanoic acid 0.0020 U 0.0040 0.0020 0.0010 ug/l

**PERFLUOROALKYLSULFONATES**

1763-23-1 Perfluorooctanesulfonic acid 0.0020 U 0.0040 0.0020 0.0015 ug/l

**CAS No. ID Standard Recoveries Run# 1 Run# 2 Limits**

13C8-PFOA 89% 50-150%

13C8-PFOS 73% 50-150%

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

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2058B                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-11                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27707.D | 1  | 03/18/19 19:57 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 84% |  | 50-150% |
|  | 13C8-PFOS | 64% |  | 50-150% |

---

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

4.11  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2059F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-12                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27708.D | 1  | 03/18/19 20:12 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |         |        |        |        |      |   |
|----------|------------------------|---------|--------|--------|--------|------|---|
| 335-67-1 | Perfluorooctanoic acid | 0.00309 | 0.0040 | 0.0020 | 0.0010 | ug/l | J |
|----------|------------------------|---------|--------|--------|--------|------|---|

**PERFLUOROALKYLSULFONATES**

|           |                              |         |        |        |        |      |   |
|-----------|------------------------------|---------|--------|--------|--------|------|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.00343 | 0.0040 | 0.0020 | 0.0015 | ug/l | J |
|-----------|------------------------------|---------|--------|--------|--------|------|---|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 75% |  | 50-150% |
|  | 13C8-PFOS | 58% |  | 50-150% |

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

4.12  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2060F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-13                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27709.D | 1  | 03/18/19 20:28 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |         |        |        |        |      |   |
|----------|------------------------|---------|--------|--------|--------|------|---|
| 335-67-1 | Perfluorooctanoic acid | 0.00252 | 0.0040 | 0.0020 | 0.0010 | ug/l | J |
|----------|------------------------|---------|--------|--------|--------|------|---|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 96% |  | 50-150% |
|  | 13C8-PFOS | 67% |  | 50-150% |

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

4.13  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2061D                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-14                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27710.D | 1  | 03/18/19 20:44 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 72% |  | 50-150% |
|  | 13C8-PFOS | 53% |  | 50-150% |

---

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

4.14  
4

# Report of Analysis

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2062F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-15                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27711.D | 1  | 03/18/19 21:00 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |         |        |        |        |      |   |
|-----------|------------------------------|---------|--------|--------|--------|------|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.00351 | 0.0040 | 0.0020 | 0.0015 | ug/l | J |
|-----------|------------------------------|---------|--------|--------|--------|------|---|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 91% |  | 50-150% |
|  | 13C8-PFOS | 60% |  | 50-150% |

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

4.15  
4



SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2063F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-16                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27712.D | 1  | 03/18/19 21:15 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 93% |  | 50-150% |
|  | 13C8-PFOS | 63% |  | 50-150% |

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

4.16  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2064F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-17                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27715.D | 1  | 03/18/19 22:03 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 | 2Q27752.D | 2  | 03/19/19 17:52 | NAF | 03/15/19 07:30 | OP74180    | S2Q443           |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 | 250 ml         | 1.0 ml       |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

335-67-1 Perfluorooctanoic acid 0.113 0.0040 0.0020 0.0010 ug/l

**PERFLUOROALKYLSULFONATES**

1763-23-1 Perfluorooctanesulfonic acid 0.447<sup>a</sup> 0.0080 0.0040 0.0030 ug/l

**CAS No. ID Standard Recoveries Run# 1 Run# 2 Limits**

|           |     |     |         |
|-----------|-----|-----|---------|
| 13C8-PFOA | 90% | 97% | 50-150% |
| 13C8-PFOS | 66% | 72% | 50-150% |

(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

4.17  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2065F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-18                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27751.D | 1  | 03/19/19 17:37 | NAF | 03/15/19 07:30 | OP74180    | S2Q443           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |        |        |        |        |      |  |
|----------|------------------------|--------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0156 | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|--------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |        |        |        |        |      |  |
|-----------|------------------------------|--------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0153 | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|--------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 97% |  | 50-150% |
|  | 13C8-PFOS | 69% |  | 50-150% |

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

4.18  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2066F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-19                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27717.D | 1  | 03/18/19 22:34 | NAF | 03/15/19 07:30 | OP74180    | S2Q442           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 95% |  | 50-150% |
|  | 13C8-PFOS | 66% |  | 50-150% |

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

4.19  
4



SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2068F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-21                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27657.D | 1  | 03/15/19 17:09 | NAF | 03/14/19 07:00 | OP74164    | S2Q441           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYL CARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 72% |  | 50-150% |
|  | 13C8-PFOS | 52% |  | 50-150% |

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

4.21  
4

SGS North America Inc.

# Report of Analysis

Page 1 of 1

|                          |   |                        |          |
|--------------------------|---|------------------------|----------|
| <b>Client Sample ID:</b> | 1910BOU2069F                                    | <b>Date Sampled:</b>   | 03/07/19 |
| <b>Lab Sample ID:</b>    | FA62220-22                                      | <b>Date Received:</b>  | 03/09/19 |
| <b>Matrix:</b>           | AQ - Ground Water                               | <b>Percent Solids:</b> | n/a      |
| <b>Method:</b>           | EPA 537M QSM5.1 B-15 EPA 537 MOD                |                        |          |
| <b>Project:</b>          | OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring |                        |          |

|        | File ID   | DF | Analyzed       | By  | Prep Date      | Prep Batch | Analytical Batch |
|--------|-----------|----|----------------|-----|----------------|------------|------------------|
| Run #1 | 2Q27659.D | 1  | 03/15/19 17:40 | NAF | 03/14/19 07:00 | OP74164    | S2Q441           |
| Run #2 |           |    |                |     |                |            |                  |

|        | Initial Volume | Final Volume |
|--------|----------------|--------------|
| Run #1 | 250 ml         | 1.0 ml       |
| Run #2 |                |              |

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

**PERFLUOROALKYLCARBOXYLIC ACIDS**

|          |                        |          |        |        |        |      |  |
|----------|------------------------|----------|--------|--------|--------|------|--|
| 335-67-1 | Perfluorooctanoic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0010 | ug/l |  |
|----------|------------------------|----------|--------|--------|--------|------|--|

**PERFLUOROALKYLSULFONATES**

|           |                              |          |        |        |        |      |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0020 U | 0.0040 | 0.0020 | 0.0015 | ug/l |  |
|-----------|------------------------------|----------|--------|--------|--------|------|--|

| CAS No. | ID Standard Recoveries | Run# 1 | Run# 2 | Limits |
|---------|------------------------|--------|--------|--------|
|---------|------------------------|--------|--------|--------|

|  |           |     |  |         |
|--|-----------|-----|--|---------|
|  | 13C8-PFOA | 75% |  | 50-150% |
|  | 13C8-PFOS | 52% |  | 50-150% |

---

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

4.22  
4

Misc. Forms

Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5 Limits



Seq. No. 3767

CA051504  
1670 Corporate Circle  
Suite 201  
Petaluma, CA 94954  
(707) 793-3800

CHAIN OF CUSTODY FORM

1 of 3

Lab: SGS Accutest

Samplers: D. Allbut

FA6220wood.

Job Number: 8418191360.05.053

FA6220

Name/Location: East Ord Basewide Groundwater Monitoring - U2 PFOS

Project Manager: Jeff Fenton Recorder: D. Allbut  
(Signature Required)

| ANALYSIS REQUESTED |      |                       |
|--------------------|------|-----------------------|
| 8260               | 8270 | TITLE 22 METALS       |
|                    |      | PFOS/PFOA             |
| X                  | X    | MS/MSD Limited volume |
| X                  | X    | Limited volume        |
| X                  | X    | Limited volume        |
| X                  | X    | Limited volume        |
| X                  | X    | Limited volume        |
| X                  | X    | Limited volume        |

| MATRIX |      | # CONTAINERS |       |      |     |               | DATE         |    |     |      |
|--------|------|--------------|-------|------|-----|---------------|--------------|----|-----|------|
| Water  | Soil | Unpres       | H2SO4 | HNO3 | HCL | SAMPLE NUMBER | YR           | MO | DAY | TIME |
| X      |      | 7            |       |      |     |               | 191080U2048F | 19 | 03  | 07   |
| X      |      | 2            |       |      |     | 191080U2049A  | 19           | 03 | 07  | 0735 |
| X      |      | 2            |       |      |     | 191080U2050F  | 19           | 03 | 07  | 0810 |
| X      |      | 2            |       |      |     | 191080U2051F  | 19           | 03 | 07  | 0835 |
| X      |      | 2            |       |      |     | 191080U2052D  | 19           | 03 | 07  | 0837 |
| X      |      | 2            |       |      |     | 191080U2053F  | 19           | 03 | 07  | 0905 |
| X      |      | 2            |       |      |     | 191080U2054F  | 19           | 03 | 07  | 0935 |
| X      |      | 2            |       |      |     | 191080U2055F  | 19           | 03 | 07  | 1015 |
| X      |      | 2            |       |      |     | 191080U2056C  | 19           | 03 | 07  | 1025 |
| X      |      | 2            |       |      |     | 191080U2057F  | 19           | 03 | 07  | 1050 |

| STATION DESCRIPTION | DEPTH |
|---------------------|-------|
|                     |       |
|                     |       |
|                     |       |
|                     |       |
|                     |       |
|                     |       |
|                     |       |
|                     |       |

ADDITIONAL INFORMATION

REPORT TO: Jeff Fenton

PO#: \_\_\_\_\_

TAT: Standard

Comments: Field Filtered Y/N

CHAIN OF CUSTODY RECORD

Relinquished By (Signature): D. Allbut (Print Name) David Allbut Wood (Company) 3/7/19 1600 (Date/Time)

Received By (Signature): Leo Baustista (Print Name) Leo Baustista SGS (Company) 3/8/19 1400 (Date/Time)

Relinquished By (Signature): Leo Baustista (Print Name) Leo Baustista SGS (Company) 3/8/19 1500 (Date/Time)

Received By (Signature): Fedex (Print Name) \_\_\_\_\_ (Company) 3/8/19 1500 (Date/Time)

Relinquished By (Signature): FF (Print Name) \_\_\_\_\_ (Company) \_\_\_\_\_ (Date/Time)

Received By (Signature): Peter He (Print Name) SGS (Company) 3/9/19 919 (Date/Time)

Method of Shipment: \_\_\_\_\_

2.8

White - Laboratory Copy      Yellow - Project Office Copy      Pink - Field of Office Copy      F1008-1

5.1 5

Seq. No. 3786

CAOSIS04  
1670 Corporate Circle  
Suite 201  
Petaluma, CA 94954  
(707) 793-3800

# CHAIN OF CUSTODY FORM

20F3

Lab: SGS Accutest

Samplers: D. Albut

~~FA6220~~

Job Number: 8419191360.05.053

**FA6220**

Name/Location: Fort Ord Basewide Groundwater Monitoring - OJ2 PFOS

Project Manager: Jeff Fenton Recorder: D. Albut  
(Signature Required)

### ANALYSIS REQUESTED

| MATRIX |      |     | # CONTAINERS |       |      |     | DATE          |    |    |     |      |
|--------|------|-----|--------------|-------|------|-----|---------------|----|----|-----|------|
| Water  | Soil | Air | Unpres.      | H2SO4 | HNO3 | HCL | SAMPLE NUMBER | YR | MO | DAY | TIME |
| X      | X    |     | 2            |       |      |     | 1910B0U2058B  | 19 | 03 | 07  | 1110 |
| X      | X    |     | 2            |       |      |     | 1910B0U2059F  | 19 | 03 | 07  | 1115 |
| X      | X    |     | 2            |       |      |     | 1910B0U2060F  | 19 | 03 | 07  | 1225 |
| X      | X    |     | 2            |       |      |     | 1910B0U2061D  | 19 | 03 | 07  | 1227 |
| X      | X    |     | 2            |       |      |     | 1910B0U2062F  | 19 | 03 | 07  | 1300 |
| X      | X    |     | 2            |       |      |     | 1910B0U2063F  | 19 | 03 | 07  | 1325 |
| X      | X    |     | 2            |       |      |     | 1910B0U2064F  | 19 | 03 | 07  | 1400 |

| STATION DESCRIPTION |  |
|---------------------|--|
| DEPTH               |  |

| 8260 | TITLE 22 METALS |
|------|-----------------|
|      | PFOS            |

ADDITIONAL INFORMATION

REPORT TO: Jeff Fenton

PO#: \_\_\_\_\_

TAT: standard

Comments: Field Filtered Y/N

CHAIN OF CUSTODY RECORD

Relinquished By (Signature): D. Albut (Print Name): David Albut (Company): West (Date/Time): 3/7/19 1600

Received By (Signature): LeeBana (Print Name): LEE BAUTSON (Company): SSS (Date/Time): 3/8/19 1100

Relinquished By (Signature): LeeBana (Print Name): LEE BAUTSON (Company): SSS (Date/Time): 3/8/19 1500

Received By (Signature): FEDIX (Print Name): FEDIX (Company): SCS (Date/Time): 3/8/19 1500

Relinquished By (Signature): Fx (Print Name): \_\_\_\_\_ (Company): \_\_\_\_\_ (Date/Time): \_\_\_\_\_

Received By (Signature): Peter H (Print Name): Peter H (Company): SCS (Date/Time): 3/11/19 915

Method of Shipment: \_\_\_\_\_

White - Laboratory Copy

Yellow - Project Office Copy

Pink - Field of Office Copy

F1008-1

FA62220: Chain of Custody

Page 2 of 4

5.1  
5

Seq. No. 3787

CADSI564  
1670 Corporate Circle  
Suite 201  
Petaluma, CA 94954  
(707) 793-3800

CHAIN OF CUSTODY FORM

30P3

wood.

Lab: SGS - Acculast

Samplers: D. Allant

FA62220

Job Number: 8418191360.05.053

Name/Location: Fort Ord Basewide Groundwater Monitoring - 002 PFOS

Project Manager: Jeff Fenton Recorder: [Signature]

| ANALYSIS REQUESTED |      |       |             |
|--------------------|------|-------|-------------|
| 8260               | 8270 | TITLE | 22 METALS   |
|                    |      |       | PFOS (PFOA) |
|                    |      | X     | X           |
|                    |      | X     | X           |
|                    |      | X     | X           |
|                    |      | X     | X           |

| MATRIX | # | DATE       | STATION DESCRIPTION | DEPTH | CONTAINERS |       |      |     | SAMPLE NUMBER |    |     |      | DATE |    |     |      |  |
|--------|---|------------|---------------------|-------|------------|-------|------|-----|---------------|----|-----|------|------|----|-----|------|--|
|        |   |            |                     |       | Unpres.    | H2SO4 | HNO3 | HCL | YR            | MO | DAY | TIME | YR   | MO | DAY | TIME |  |
| Water  | 2 | 1903071450 |                     |       |            |       |      |     | 19108002068F  | 19 | 03  | 07   | 1450 |    |     |      |  |
| Soil   | 2 | 1903071452 |                     |       |            |       |      |     | 19108002066F  | 19 | 03  | 07   | 1452 |    |     |      |  |
| Air    | 2 | 1903071454 |                     |       |            |       |      |     | 19108002067F  | 19 | 03  | 07   | 1454 |    |     |      |  |
|        | 2 | 1903071456 |                     |       |            |       |      |     | 19108002068F  | 19 | 03  | 07   | 1456 |    |     |      |  |
|        | 2 | 1903071458 |                     |       |            |       |      |     | 19108002069F  | 19 | 03  | 07   | 1458 |    |     |      |  |

ADDITIONAL INFORMATION

REPORT TO: Jeff Fenton

PO#: \_\_\_\_\_

TAT: Standard

Comments: Field Filtered Y/N

CHAIN OF CUSTODY RECORD

Relinquished By (Signature): [Signature] (Print Name) David Allant (Company) Wood (Date/Time) 3/7/19

Received By (Signature): [Signature] (Print Name) Lee Bae (Company) WOODBRUNN-SGS (Date/Time) 3/19/19 1130

Relinquished By (Signature): [Signature] (Print Name) Lee Bae (Company) WOODBRUNN-SGS (Date/Time) 3/19/19 1500

Received By (Signature): [Signature] (Print Name) FedEx (Company) (Date/Time) 3/19/19 1500

Relinquished By (Signature): [Signature] (Print Name) [Signature] (Company) [Signature] (Date/Time)

Received By (Signature): [Signature] (Print Name) Peter H (Company) SCS (Date/Time) 3/19/19 09:55

Method of Shipment: \_\_\_\_\_

White - Laboratory Copy Yellow - Project Office Copy Pink - Field of Office Copy F1008-1

## SGS Sample Receipt Summary

Job Number: FA62220

Client: AHTNA

Project: OU2 (PFOA/PFOS)-Fort Ord GWM 1Q2019

Date / Time Received: 3/9/2019 9:15:00 AM

Delivery Method: FedEx

Airbill #s: 774658965347

Therm ID: IR 1;

Therm CF: -0.2;

# of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.8);

**Cooler Information**

Y or N

- 1. Custody Seals Present
- 2. Custody Seals Intact
- 3. Temp criteria achieved
- 4. Cooler temp verification IR Gun
- 5. Cooler media Ice (Bag)

**Sample Information**

Y or N N/A

- 1. Sample labels present on bottles
- 2. Samples preserved properly
- 3. Sufficient volume/containers recvd for analysis:
- 4. Condition of sample Intact
- 5. Sample recvd within HT
- 6. Dates/Times/IDs on COC match Sample Label
- 7. VOCs have headspace
- 8. Bottles received for unspecified tests
- 9. Compositing instructions clear
- 10. Voa Soil Kits/Jars received past 48hrs?
- 11. % Solids Jar received?
- 12. Residual Chlorine Present?

**Trip Blank Information**

Y or N N/A

- 1. Trip Blank present / cooler
  - 2. Trip Blank listed on COC
- W or S N/A
- 3. Type Of TB Received

**Misc. Information**

Number of Encores: 25-Gram \_\_\_\_\_ 5-Gram \_\_\_\_\_ Number of 5035 Field Kits: \_\_\_\_\_ Number of Lab Filtered Metals: \_\_\_\_\_  
 Test Strip Lot #: pH 0-3 230315 pH 10-12 219813A Other: (Specify) \_\_\_\_\_  
 Residual Chlorine Test Strip Lot #: \_\_\_\_\_

Comments

SM001  
Rev. Date 05/24/17

Technician: PETERH

Date: 3/9/2019 9:15:00 AM

Reviewer: PH

Date: 3/11/2019

**FA62220: Chain of Custody**

**Page 4 of 4**

5.1  
5

# QC Evaluation: DOD QSM5 Limits

**Job Number:** FA62220  
**Account:** Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring  
**Collected:** 03/07/19

| QC Sample ID | CAS# | Analyte | Sample Result Type | Result Type | Units | Limits |
|--------------|------|---------|--------------------|-------------|-------|--------|
|--------------|------|---------|--------------------|-------------|-------|--------|

No Exceptions found.

---

\* Sample used for QC is not from job FA62220

5.2  
5

## MS Semi-volatiles

---

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Injection Standard Area Summaries
- Isotope Dilution Standard Recovery Summaries
- Initial and Continuing Calibration Summaries

**Instrument Blank**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample      | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|-------------|-----------|----|----------|-----|-----------|------------|------------------|
| S2Q441-IBLK | 2Q27626.D | 1  | 03/15/19 | NAF | n/a       | n/a        | S2Q441           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

| CAS No.   | Compound                     | Result | RL     | MDL    | Units | Q |
|-----------|------------------------------|--------|--------|--------|-------|---|
| 335-67-1  | Perfluorooctanoic acid       | ND     | 0.0040 | 0.0010 | ug/l  |   |
| 1763-23-1 | Perfluorooctanesulfonic acid | ND     | 0.0040 | 0.0015 | ug/l  |   |

| CAS No. | ID Standard Recoveries   | Limits      |
|---------|--------------------------|-------------|
|         | 13C4-PFBA                | 78% 50-150% |
|         | 13C5-PFPeA               | 79% 50-150% |
|         | 13C5-PFHxA               | 78% 50-150% |
|         | 13C4-PFHpA               | 79% 50-150% |
|         | 13C8-PFOA                | 78% 50-150% |
|         | 13C9-PFNA                | 83% 50-150% |
|         | 13C6-PFDA                | 85% 50-150% |
|         | 13C7-PFUnDA              | 80% 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 73% 50-150% |
|         | 13C2-PFTeDA              | 66% 50-150% |
|         | 13C3-PFBS                | 81% 50-150% |
|         | 13C3-PFHxS               | 80% 50-150% |
|         | 13C8-PFOS                | 85% 50-150% |
|         | 13C8-FOSA                | 87% 50-150% |
|         | d3-MeFOSAA               | 81% 50-150% |
|         | 13C2-4:2FTS              | 73% 50-150% |
|         | 13C2-6:2FTS              | 74% 50-150% |
|         | 13C2-8:2FTS              | 75% 50-150% |

**Instrument Blank**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample      | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|-------------|-----------|----|----------|-----|-----------|------------|------------------|
| S2Q442-IBLK | 2Q27675.D | 1  | 03/18/19 | NAF | n/a       | n/a        | S2Q442           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11, FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-19, FA62220-20

| CAS No.   | Compound                     | Result | RL     | MDL    | Units | Q |
|-----------|------------------------------|--------|--------|--------|-------|---|
| 335-67-1  | Perfluorooctanoic acid       | ND     | 0.0040 | 0.0010 | ug/l  |   |
| 1763-23-1 | Perfluorooctanesulfonic acid | ND     | 0.0040 | 0.0015 | ug/l  |   |

| CAS No. | ID Standard Recoveries   | Limits       |
|---------|--------------------------|--------------|
|         | 13C4-PFBA                | 101% 50-150% |
|         | 13C5-PFPeA               | 104% 50-150% |
|         | 13C5-PFHxA               | 103% 50-150% |
|         | 13C4-PFHpA               | 105% 50-150% |
|         | 13C8-PFOA                | 107% 50-150% |
|         | 13C9-PFNA                | 106% 50-150% |
|         | 13C6-PFDA                | 107% 50-150% |
|         | 13C7-PFUnDA              | 108% 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 109% 50-150% |
|         | 13C2-PFTeDA              | 108% 50-150% |
|         | 13C3-PFBS                | 102% 50-150% |
|         | 13C3-PFHxS               | 102% 50-150% |
|         | 13C8-PFOS                | 103% 50-150% |
|         | 13C8-FOSA                | 107% 50-150% |
|         | d3-MeFOSAA               | 104% 50-150% |
|         | 13C2-4:2FTS              | 97% 50-150%  |
|         | 13C2-6:2FTS              | 100% 50-150% |
|         | 13C2-8:2FTS              | 99% 50-150%  |



**Instrument Blank****Job Number:** FA62220**Account:** AHTNACAS Ahtna Environmental Inc**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample      | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|-------------|-----------|----|----------|-----|-----------|------------|------------------|
| S2Q443-IBLK | 2Q27725.D | 1  | 03/19/19 | NAF | n/a       | n/a        | S2Q443           |

**The QC reported here applies to the following samples:****Method:** EPA 537M QSM5.1 B-15

FA62220-17, FA62220-18

| CAS No.   | Compound                     | Result | RL     | MDL    | Units | Q |
|-----------|------------------------------|--------|--------|--------|-------|---|
| 335-67-1  | Perfluorooctanoic acid       | ND     | 0.0040 | 0.0010 | ug/l  |   |
| 1763-23-1 | Perfluorooctanesulfonic acid | ND     | 0.0040 | 0.0015 | ug/l  |   |

| CAS No. | ID Standard Recoveries   | Limits       |
|---------|--------------------------|--------------|
|         | 13C4-PFBA                | 109% 50-150% |
|         | 13C5-PFPeA               | 107% 50-150% |
|         | 13C5-PFHxA               | 107% 50-150% |
|         | 13C4-PFHpA               | 107% 50-150% |
|         | 13C8-PFOA                | 109% 50-150% |
|         | 13C9-PFNA                | 108% 50-150% |
|         | 13C6-PFDA                | 112% 50-150% |
|         | 13C7-PFUnDA              | 112% 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 110% 50-150% |
|         | 13C2-PFTeDA              | 114% 50-150% |
|         | 13C3-PFBS                | 108% 50-150% |
|         | 13C3-PFHxS               | 108% 50-150% |
|         | 13C8-PFOS                | 112% 50-150% |
|         | 13C8-FOSA                | 115% 50-150% |
|         | d3-MeFOSAA               | 109% 50-150% |
|         | 13C2-4:2FTS              | 100% 50-150% |
|         | 13C2-6:2FTS              | 102% 50-150% |
|         | 13C2-8:2FTS              | 103% 50-150% |

**Instrument Blank**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID  | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|----------|----|----------|-----|-----------|------------|------------------|
| S3Q54-IBLK | 3Q1980.D | 1  | 03/21/19 | NAF | n/a       | n/a        | S3Q54            |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

| CAS No.   | Compound                     | Result | RL     | MDL    | Units | Q |
|-----------|------------------------------|--------|--------|--------|-------|---|
| 335-67-1  | Perfluorooctanoic acid       | ND     | 0.0040 | 0.0010 | ug/l  |   |
| 1763-23-1 | Perfluorooctanesulfonic acid | ND     | 0.0040 | 0.0015 | ug/l  |   |

| CAS No. | ID Standard Recoveries   | Limits       |
|---------|--------------------------|--------------|
|         | 13C4-PFBA                | 101% 50-150% |
|         | 13C5-PFPeA               | 101% 50-150% |
|         | 13C5-PFHxA               | 101% 50-150% |
|         | 13C4-PFHpA               | 102% 50-150% |
|         | 13C8-PFOA                | 103% 50-150% |
|         | 13C9-PFNA                | 105% 50-150% |
|         | 13C6-PFDA                | 107% 50-150% |
|         | 13C7-PFUnDA              | 106% 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 105% 50-150% |
|         | 13C2-PFTeDA              | 107% 50-150% |
|         | 13C3-PFBS                | 100% 50-150% |
|         | 13C3-PFHxS               | 102% 50-150% |
|         | 13C8-PFOS                | 102% 50-150% |
|         | 13C8-FOSA                | 106% 50-150% |
|         | d3-MeFOSAA               | 105% 50-150% |
|         | 13C2-4:2FTS              | 94% 50-150%  |
|         | 13C2-6:2FTS              | 98% 50-150%  |
|         | 13C2-8:2FTS              | 96% 50-150%  |

**Method Blank Summary**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|-----|-----------|------------|------------------|
| OP74164-MB | 2Q27656.D | 1  | 03/15/19 | NAF | 03/14/19  | OP74164    | S2Q441           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

| CAS No.   | Compound                     | Result | RL     | MDL    | Units | Q |
|-----------|------------------------------|--------|--------|--------|-------|---|
| 335-67-1  | Perfluorooctanoic acid       | ND     | 0.0040 | 0.0010 | ug/l  |   |
| 1763-23-1 | Perfluorooctanesulfonic acid | ND     | 0.0040 | 0.0015 | ug/l  |   |

| CAS No. | ID Standard Recoveries   | Limits      |
|---------|--------------------------|-------------|
|         | 13C4-PFBA                | 73% 50-150% |
|         | 13C5-PFPeA               | 75% 50-150% |
|         | 13C5-PFHxA               | 75% 50-150% |
|         | 13C4-PFHpA               | 75% 50-150% |
|         | 13C8-PFOA                | 80% 50-150% |
|         | 13C9-PFNA                | 84% 50-150% |
|         | 13C6-PFDA                | 86% 50-150% |
|         | 13C7-PFUnDA              | 89% 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 87% 50-150% |
|         | 13C2-PFTeDA              | 62% 50-150% |
|         | 13C3-PFBS                | 74% 50-150% |
|         | 13C3-PFHxS               | 71% 50-150% |
|         | 13C8-PFOS                | 75% 50-150% |
|         | 13C8-FOSA                | 78% 50-150% |
|         | d3-MeFOSAA               | 78% 50-150% |
|         | 13C2-4:2FTS              | 72% 50-150% |
|         | 13C2-6:2FTS              | 78% 50-150% |
|         | 13C2-8:2FTS              | 80% 50-150% |

**Method Blank Summary****Job Number:** FA62220**Account:** AHTNACAS Ahtna Environmental Inc**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|-----|-----------|------------|------------------|
| OP74180-MB | 2Q27692.D | 1  | 03/18/19 | NAF | 03/15/19  | OP74180    | S2Q442           |

**The QC reported here applies to the following samples:****Method:** EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11,  
 FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-18, FA62220-19, FA62220-20

| CAS No.   | Compound                     | Result | RL     | MDL    | Units | Q |
|-----------|------------------------------|--------|--------|--------|-------|---|
| 335-67-1  | Perfluorooctanoic acid       | ND     | 0.0040 | 0.0010 | ug/l  |   |
| 1763-23-1 | Perfluorooctanesulfonic acid | ND     | 0.0040 | 0.0015 | ug/l  |   |

| CAS No. | ID Standard Recoveries | Limits |         |
|---------|------------------------|--------|---------|
|         | 13C8-PFOA              | 93%    | 50-150% |
|         | 13C8-PFOS              | 79%    | 50-150% |

**Method Blank Summary****Job Number:** FA62220**Account:** AHTNACAS Ahtna Environmental Inc**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID  | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|----------|----|----------|-----|-----------|------------|------------------|
| OP74233-MB | 3Q1985.D | 1  | 03/21/19 | NAF | 03/20/19  | OP74233    | S3Q54            |

**The QC reported here applies to the following samples:****Method:** EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

| CAS No.   | Compound                     | Result | RL     | MDL    | Units | Q |
|-----------|------------------------------|--------|--------|--------|-------|---|
| 335-67-1  | Perfluorooctanoic acid       | ND     | 0.0077 | 0.0019 | ug/l  |   |
| 1763-23-1 | Perfluorooctanesulfonic acid | ND     | 0.0077 | 0.0029 | ug/l  |   |

| CAS No. | ID Standard Recoveries | Limits      |
|---------|------------------------|-------------|
|         | 13C8-PFOA              | 99% 50-150% |
|         | 13C8-PFOS              | 90% 50-150% |

**Blank Spike Summary**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|-----|-----------|------------|------------------|
| OP74164-BS | 2Q27655.D | 1  | 03/15/19 | NAF | 03/14/19  | OP74164    | S2Q441           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

| CAS No.   | Compound                     | Spike<br>ug/l | BSP<br>ug/l | BSP<br>% | Limits |
|-----------|------------------------------|---------------|-------------|----------|--------|
| 335-67-1  | Perfluorooctanoic acid       | 0.08          | 0.0775      | 97       | 71-133 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.08          | 0.0737      | 92       | 65-140 |

| CAS No. | ID Standard Recoveries   | BSP | Limits  |
|---------|--------------------------|-----|---------|
|         | 13C4-PFBA                | 69% | 50-150% |
|         | 13C5-PFPeA               | 71% | 50-150% |
|         | 13C5-PFHxA               | 71% | 50-150% |
|         | 13C4-PFHpA               | 71% | 50-150% |
|         | 13C8-PFOA                | 73% | 50-150% |
|         | 13C9-PFNA                | 76% | 50-150% |
|         | 13C6-PFDA                | 75% | 50-150% |
|         | 13C7-PFUnDA              | 74% | 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 73% | 50-150% |
|         | 13C2-PFTeDA              | 54% | 50-150% |
|         | 13C3-PFBS                | 72% | 50-150% |
|         | 13C3-PFHxS               | 67% | 50-150% |
|         | 13C8-PFOS                | 70% | 50-150% |
|         | 13C8-FOSA                | 71% | 50-150% |
|         | d3-MeFOSAA               | 68% | 50-150% |
|         | 13C2-4:2FTS              | 73% | 50-150% |
|         | 13C2-6:2FTS              | 76% | 50-150% |
|         | 13C2-8:2FTS              | 75% | 50-150% |

\* = Outside of Control Limits.

**Blank Spike Summary**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|-----|-----------|------------|------------------|
| OP74180-BS | 2Q27691.D | 1  | 03/18/19 | NAF | 03/15/19  | OP74180    | S2Q442           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11, FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-18, FA62220-19, FA62220-20

| CAS No.   | Compound                     | Spike<br>ug/l | BSP<br>ug/l | BSP<br>% | Limits |
|-----------|------------------------------|---------------|-------------|----------|--------|
| 335-67-1  | Perfluorooctanoic acid       | 0.08          | 0.0826      | 103      | 71-133 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.08          | 0.0810      | 101      | 65-140 |

| CAS No. | ID Standard Recoveries | BSP | Limits  |
|---------|------------------------|-----|---------|
|         | 13C8-PFOA              | 87% | 50-150% |
|         | 13C8-PFOS              | 82% | 50-150% |

\* = Outside of Control Limits.

# Blank Spike Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID  | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|----------|----|----------|-----|-----------|------------|------------------|
| OP74233-BS | 3Q1984.D | 1  | 03/21/19 | NAF | 03/20/19  | OP74233    | S3Q54            |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

| CAS No.   | Compound                     | Spike<br>ug/l | BSP<br>ug/l | BSP<br>% | Limits |
|-----------|------------------------------|---------------|-------------|----------|--------|
| 335-67-1  | Perfluorooctanoic acid       | 0.154         | 0.163       | 106      | 71-133 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.154         | 0.155       | 101      | 65-140 |

| CAS No. | ID Standard Recoveries | BSP | Limits  |
|---------|------------------------|-----|---------|
|         | 13C8-PFOA              | 98% | 50-150% |
|         | 13C8-PFOS              | 92% | 50-150% |

\* = Outside of Control Limits.



**Matrix Spike Summary**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|-----------|----|----------|-----|-----------|------------|------------------|
| OP74164-MS | 2Q27658.D | 1  | 03/15/19 | NAF | 03/14/19  | OP74164    | S2Q441           |
| FA62220-21 | 2Q27657.D | 1  | 03/15/19 | NAF | 03/14/19  | OP74164    | S2Q441           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

| CAS No.   | Compound                     | FA62220-21<br>ug/l | Spike<br>Q | MS<br>ug/l | MS<br>% | Limits |
|-----------|------------------------------|--------------------|------------|------------|---------|--------|
| 335-67-1  | Perfluorooctanoic acid       | 0.0040 U           | 0.08       | 0.0740     | 93      | 71-133 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0040 U           | 0.08       | 0.0696     | 87      | 65-140 |

| CAS No. | ID Standard Recoveries   | MS  | FA62220-21 | Limits  |
|---------|--------------------------|-----|------------|---------|
|         | 13C4-PFBA                | 75% |            | 50-150% |
|         | 13C5-PFPeA               | 76% |            | 50-150% |
|         | 13C5-PFHxA               | 76% |            | 50-150% |
|         | 13C4-PFHpA               | 78% |            | 50-150% |
|         | 13C8-PFOA                | 82% | 72%        | 50-150% |
|         | 13C9-PFNA                | 78% |            | 50-150% |
|         | 13C6-PFDA                | 74% |            | 50-150% |
|         | 13C7-PFUnDA              | 79% |            | 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 78% |            | 50-150% |
|         | 13C2-PFTeDA              | 60% |            | 50-150% |
|         | 13C3-PFBS                | 75% |            | 50-150% |
|         | 13C3-PFHxS               | 72% |            | 50-150% |
|         | 13C8-PFOS                | 64% | 52%        | 50-150% |
|         | 13C8-FOSA                | 72% |            | 50-150% |
|         | d3-MeFOSAA               | 68% |            | 50-150% |
|         | 13C2-4:2FTS              | 80% |            | 50-150% |
|         | 13C2-6:2FTS              | 91% |            | 50-150% |
|         | 13C2-8:2FTS              | 75% |            | 50-150% |

\* = Outside of Control Limits.

# Matrix Spike Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample     | File ID  | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|------------|----------|----|----------|-----|-----------|------------|------------------|
| OP74233-MS | 3Q1991.D | 1  | 03/21/19 | NAF | 03/20/19  | OP74233    | S3Q54            |
| FA62454-2  | 3Q1990.D | 1  | 03/21/19 | NAF | 03/20/19  | OP74233    | S3Q54            |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

| CAS No.   | Compound                     | FA62454-2<br>ug/l | Spike<br>Q | MS<br>ug/l | MS<br>% | Limits |
|-----------|------------------------------|-------------------|------------|------------|---------|--------|
| 335-67-1  | Perfluorooctanoic acid       | 0.0316            | 0.154      | 0.202      | 111     | 71-133 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.524             | 0.154      | 0.676      | 99      | 65-140 |

| CAS No. | ID Standard Recoveries | MS  | FA62454-2 | Limits  |
|---------|------------------------|-----|-----------|---------|
|         | 13C8-PFOA              | 98% | 96%       | 50-150% |
|         | 13C8-PFOS              | 89% | 83%       | 50-150% |

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample      | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|-------------|-----------|----|----------|-----|-----------|------------|------------------|
| OP74180-MS  | 2Q27694.D | 1  | 03/18/19 | NAF | 03/15/19  | OP74180    | S2Q442           |
| OP74180-MSD | 2Q27695.D | 1  | 03/18/19 | NAF | 03/15/19  | OP74180    | S2Q442           |
| FA62220-1   | 2Q27693.D | 1  | 03/18/19 | NAF | 03/15/19  | OP74180    | S2Q442           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-1, FA62220-2, FA62220-3, FA62220-5, FA62220-6, FA62220-7, FA62220-9, FA62220-10, FA62220-11, FA62220-12, FA62220-13, FA62220-14, FA62220-15, FA62220-16, FA62220-17, FA62220-18, FA62220-19, FA62220-20

| CAS No.   | Compound                     | FA62220-1<br>ug/l | Spike<br>Q<br>ug/l | MS<br>ug/l | MS<br>% | Spike<br>ug/l | MSD<br>ug/l | MSD<br>% | RPD | Limits<br>Rec/RPD |
|-----------|------------------------------|-------------------|--------------------|------------|---------|---------------|-------------|----------|-----|-------------------|
| 335-67-1  | Perfluorooctanoic acid       | 0.00762           | 0.08               | 0.0909     | 104     | 0.08          | 0.0836      | 95       | 8   | 71-133/30         |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.00790           | 0.08               | 0.0920     | 105     | 0.08          | 0.0837      | 95       | 9   | 65-140/30         |

| CAS No. | ID Standard Recoveries | MS  | MSD | FA62220-1 | Limits  |
|---------|------------------------|-----|-----|-----------|---------|
|         | 13C8-PFOA              | 84% | 88% | 93%       | 50-150% |
|         | 13C8-PFOS              | 70% | 70% | 74%       | 50-150% |

\* = Outside of Control Limits.

**Duplicate Summary**

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample      | File ID   | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|-------------|-----------|----|----------|-----|-----------|------------|------------------|
| OP74164-DUP | 2Q27660.D | 1  | 03/15/19 | NAF | 03/14/19  | OP74164    | S2Q441           |
| FA62220-22  | 2Q27659.D | 1  | 03/15/19 | NAF | 03/14/19  | OP74164    | S2Q441           |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-21, FA62220-22

| CAS No.   | Compound                     | FA62220-22 DUP |        | Q | RPD | Limits |
|-----------|------------------------------|----------------|--------|---|-----|--------|
|           |                              | ug/l           | Q ug/l |   |     |        |
| 335-67-1  | Perfluorooctanoic acid       | 0.0040 U       | ND     |   | nc  | 30     |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.0040 U       | ND     |   | nc  | 30     |

| CAS No. | ID Standard Recoveries   | DUP     | FA62220-22 | Limits  |
|---------|--------------------------|---------|------------|---------|
|         | 13C4-PFBA                | 59%     |            | 50-150% |
|         | 13C5-PFPeA               | 60%     |            | 50-150% |
|         | 13C5-PFHxA               | 60%     |            | 50-150% |
|         | 13C4-PFHpA               | 62%     |            | 50-150% |
|         | 13C8-PFOA                | 68%     | 75%        | 50-150% |
|         | 13C9-PFNA                | 64%     |            | 50-150% |
|         | 13C6-PFDA                | 62%     |            | 50-150% |
|         | 13C7-PFUnDA              | 65%     |            | 50-150% |
|         | 13C2-PFD <sub>o</sub> DA | 65%     |            | 50-150% |
|         | 13C2-PFTeDA              | 46% * a |            | 50-150% |
|         | 13C3-PFBS                | 65%     |            | 50-150% |
|         | 13C3-PFHxS               | 61%     |            | 50-150% |
|         | 13C8-PFOS                | 53%     | 52%        | 50-150% |
|         | 13C8-FOSA                | 59%     |            | 50-150% |
|         | d3-MeFOSAA               | 55%     |            | 50-150% |
|         | 13C2-4:2FTS              | 63%     |            | 50-150% |
|         | 13C2-6:2FTS              | 74%     |            | 50-150% |
|         | 13C2-8:2FTS              | 58%     |            | 50-150% |

(a) Outside control limits.

\* = Outside of Control Limits.

## Duplicate Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

| Sample      | File ID  | DF | Analyzed | By  | Prep Date | Prep Batch | Analytical Batch |
|-------------|----------|----|----------|-----|-----------|------------|------------------|
| OP74233-DUP | 3Q1989.D | 1  | 03/21/19 | NAF | 03/20/19  | OP74233    | S3Q54            |
| FA62454-1   | 3Q1988.D | 1  | 03/21/19 | NAF | 03/20/19  | OP74233    | S3Q54            |

The QC reported here applies to the following samples:

Method: EPA 537M QSM5.1 B-15

FA62220-4, FA62220-8

| CAS No.   | Compound                     | FA62454-1<br>ug/l | DUP<br>Q ug/l | Q | RPD | Limits |
|-----------|------------------------------|-------------------|---------------|---|-----|--------|
| 335-67-1  | Perfluorooctanoic acid       | 0.0310            | 0.0320        | 3 |     | 30     |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.511             | 0.535         | 5 |     | 30     |

| CAS No. | ID Standard Recoveries | DUP | FA62454-1 | Limits  |
|---------|------------------------|-----|-----------|---------|
|         | 13C8-PFOA              | 95% | 102%      | 50-150% |
|         | 13C8-PFOS              | 83% | 91%       | 50-150% |

\* = Outside of Control Limits.

# Injection Standard Area Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                                |                                     |
|--------------------------------|-------------------------------------|
| <b>Check Std:</b> S2Q441-CC439 | <b>Injection Date:</b> 03/15/19     |
| <b>Lab File ID:</b> 2Q27653.D  | <b>Injection Time:</b> 16:06        |
| <b>Instrument ID:</b> GCMS2Q   | <b>Method:</b> EPA 537M QSM5.1 B-15 |

|                          | <b>IS 1</b> | <b>RT</b> | <b>IS 2</b> | <b>RT</b> |
|--------------------------|-------------|-----------|-------------|-----------|
|                          | <b>AREA</b> |           | <b>AREA</b> |           |
| Initial Cal <sup>a</sup> | 358299      | 6.87      | 52649       | 7.46      |
| Check Std <sup>b</sup>   | 349896      | 6.45      | 49627       | 7.05      |
| Upper Limit <sup>c</sup> | 537449      | 7.45      | 78974       | 8.05      |
| Lower Limit <sup>d</sup> | 179150      | 5.45      | 26325       | 6.05      |

| <b>Lab</b>       | <b>IS 1</b> | <b>RT</b> | <b>IS 2</b> | <b>RT</b> |
|------------------|-------------|-----------|-------------|-----------|
| <b>Sample ID</b> | <b>AREA</b> |           | <b>AREA</b> |           |
| OP74164-BS       | 295452      | 6.45      | 41803       | 7.05      |
| OP74164-MB       | 310144      | 6.45      | 42666       | 7.05      |
| FA62220-21       | 321197      | 6.45      | 40464       | 7.05      |
| OP74164-MS       | 326757      | 6.45      | 43017       | 7.05      |
| FA62220-22       | 323680      | 6.45      | 41340       | 7.05      |
| OP74164-DUP      | 310735      | 6.45      | 40520       | 7.05      |
| S2Q441-ECC439    | 327096      | 6.45      | 46482       | 7.05      |

**IS 1** = 13C2-PFOA  
**IS 2** = 13C4-PFOS

- (a) Initial Cal is: S2Q439-ICC439 2Q27568.D 03/13/19 12:03
- (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.

# Injection Standard Area Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                                |                                     |
|--------------------------------|-------------------------------------|
| <b>Check Std:</b> S2Q442-CC442 | <b>Injection Date:</b> 03/18/19     |
| <b>Lab File ID:</b> 2Q27688.D  | <b>Injection Time:</b> 14:57        |
| <b>Instrument ID:</b> GCMS2Q   | <b>Method:</b> EPA 537M QSM5.1 B-15 |

|                          | <b>IS 1</b> | <b>RT</b> | <b>IS 2</b> | <b>RT</b> |
|--------------------------|-------------|-----------|-------------|-----------|
|                          | <b>AREA</b> |           | <b>AREA</b> |           |
| Initial Cal <sup>a</sup> | 270918      | 6.43      | 43615       | 7.05      |
| Check Std <sup>b</sup>   | 303819      | 6.43      | 46779       | 7.04      |
| Upper Limit <sup>c</sup> | 406377      | 7.43      | 65423       | 8.04      |
| Lower Limit <sup>d</sup> | 135459      | 5.43      | 21808       | 6.04      |

| <b>Lab</b>       | <b>IS 1</b> | <b>RT</b> | <b>IS 2</b> | <b>RT</b> |
|------------------|-------------|-----------|-------------|-----------|
| <b>Sample ID</b> | <b>AREA</b> |           | <b>AREA</b> |           |
| OP74180-BS       | 250146      | 6.43      | 37068       | 7.05      |
| OP74180-MB       | 252927      | 6.43      | 36813       | 7.05      |
| FA62220-1        | 284864      | 6.43      | 40120       | 7.04      |
| OP74180-MS       | 249290      | 6.43      | 36670       | 7.04      |
| OP74180-MSD      | 240011      | 6.43      | 34143       | 7.04      |
| FA62220-2        | 288171      | 6.43      | 39540       | 7.04      |
| FA62220-3        | 275902      | 6.43      | 38892       | 7.04      |
| FA62220-5        | 271948      | 6.43      | 37601       | 7.04      |
| FA62220-6        | 272791      | 6.43      | 37188       | 7.04      |

**IS 1** = 13C2-PFOA  
**IS 2** = 13C4-PFOS

- (a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
- (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.

6.6.2  
6

# Injection Standard Area Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                                |                                     |
|--------------------------------|-------------------------------------|
| <b>Check Std:</b> S2Q442-CC442 | <b>Injection Date:</b> 03/18/19     |
| <b>Lab File ID:</b> 2Q27701.D  | <b>Injection Time:</b> 18:22        |
| <b>Instrument ID:</b> GCMS2Q   | <b>Method:</b> EPA 537M QSM5.1 B-15 |

|                          | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|--------------------------|--------------|------|--------------|------|
| Initial Cal <sup>a</sup> | 270918       | 6.43 | 43615        | 7.05 |
| Check Std <sup>b</sup>   | 315380       | 6.43 | 47865        | 7.04 |
| Upper Limit <sup>c</sup> | 406377       | 7.43 | 65423        | 8.04 |
| Lower Limit <sup>d</sup> | 135459       | 5.43 | 21808        | 6.04 |

| Lab<br>Sample ID | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|------------------|--------------|------|--------------|------|
| FA62220-7        | 263784       | 6.43 | 36605        | 7.04 |
| FA62220-9        | 258399       | 6.43 | 35871        | 7.04 |
| FA62220-10       | 252566       | 6.43 | 35615        | 7.04 |
| FA62220-11       | 242545       | 6.43 | 33698        | 7.05 |
| FA62220-12       | 216370       | 6.43 | 30828        | 7.05 |
| FA62220-13       | 286411       | 6.43 | 38937        | 7.05 |
| FA62220-14       | 218359       | 6.43 | 29899        | 7.05 |
| FA62220-15       | 277830       | 6.43 | 37290        | 7.05 |
| FA62220-16       | 283404       | 6.43 | 38941        | 7.05 |

**IS 1** = 13C2-PFOA  
**IS 2** = 13C4-PFOS

- (a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
- (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.

6.6.3  
6



# Injection Standard Area Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                       |              |                        |                      |
|-----------------------|--------------|------------------------|----------------------|
| <b>Check Std:</b>     | S2Q442-CC442 | <b>Injection Date:</b> | 03/18/19             |
| <b>Lab File ID:</b>   | 2Q27713.D    | <b>Injection Time:</b> | 21:31                |
| <b>Instrument ID:</b> | GCMS2Q       | <b>Method:</b>         | EPA 537M QSM5.1 B-15 |

|                          | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|--------------------------|--------------|------|--------------|------|
| Initial Cal <sup>a</sup> | 270918       | 6.43 | 43615        | 7.05 |
| Check Std <sup>b</sup>   | 304907       | 6.43 | 45909        | 7.05 |
| Upper Limit <sup>c</sup> | 406377       | 7.43 | 65423        | 8.05 |
| Lower Limit <sup>d</sup> | 135459       | 5.43 | 21808        | 6.05 |

| Lab<br>Sample ID | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|------------------|--------------|------|--------------|------|
| FA62220-17       | 275006       | 6.43 | 37581        | 7.04 |
| FA62220-19       | 266068       | 6.43 | 35885        | 7.04 |
| FA62220-20       | 278424       | 6.43 | 37347        | 7.04 |
| S2Q442-ECC442    | 310379       | 6.43 | 46264        | 7.04 |

**IS 1** = 13C2-PFOA  
**IS 2** = 13C4-PFOS

- (a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
- (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.

6.6.4  
6

# Injection Standard Area Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                                |                                     |
|--------------------------------|-------------------------------------|
| <b>Check Std:</b> S2Q443-CC442 | <b>Injection Date:</b> 03/19/19     |
| <b>Lab File ID:</b> 2Q27742.D  | <b>Injection Time:</b> 15:15        |
| <b>Instrument ID:</b> GCMS2Q   | <b>Method:</b> EPA 537M QSM5.1 B-15 |

|                          | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|--------------------------|--------------|------|--------------|------|
| Initial Cal <sup>a</sup> | 270918       | 6.43 | 43615        | 7.05 |
| Check Std <sup>b</sup>   | 302137       | 6.43 | 46798        | 7.05 |
| Upper Limit <sup>c</sup> | 406377       | 7.43 | 65423        | 8.05 |
| Lower Limit <sup>d</sup> | 135459       | 5.43 | 21808        | 6.05 |

| Lab<br>Sample ID | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|------------------|--------------|------|--------------|------|
| OP74196-BS       |              |      |              |      |
| OP74196-MB       |              |      |              |      |
| FA62366-1        |              |      |              |      |
| OP74196-MS       |              |      |              |      |
| OP74196-MSD      |              |      |              |      |
| FA62220-18       | 276743       | 6.43 | 39253        | 7.05 |
| FA62220-17       | 316900       | 6.45 | 44894        | 7.05 |
| S2Q443-ECC442    | 303791       | 6.43 | 46509        | 7.05 |

**IS 1** = 13C2-PFOA  
**IS 2** = 13C4-PFOS

- (a) Initial Cal is: S2Q442-ICC442 2Q27672.D 03/18/19 09:37
- (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.

6.6.5  
6

# Injection Standard Area Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                               |                                     |
|-------------------------------|-------------------------------------|
| <b>Check Std:</b> S3Q54-ICC54 | <b>Injection Date:</b> 03/21/19     |
| <b>Lab File ID:</b> 3Q1977.D  | <b>Injection Time:</b> 11:10        |
| <b>Instrument ID:</b> GCMS3Q  | <b>Method:</b> EPA 537M QSM5.1 B-15 |

|                          | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|--------------------------|--------------|------|--------------|------|
| Initial Cal <sup>a</sup> | 403246       | 6.62 | 120795       | 7.20 |
| Check Std <sup>b</sup>   | 403246       | 6.62 | 120795       | 7.20 |
| Upper Limit <sup>c</sup> | 604869       | 7.62 | 181193       | 8.20 |
| Lower Limit <sup>d</sup> | 201623       | 5.62 | 60398        | 6.20 |

| Lab<br>Sample ID | IS 1<br>AREA | RT   | IS 2<br>AREA | RT   |
|------------------|--------------|------|--------------|------|
| S3Q54-IBLK       | 435894       | 6.62 | 129273       | 7.20 |
| S3Q54-IBLK       | 435894       | 6.62 | 129273       | 7.20 |
| OP74233-BS       | 387619       | 6.62 | 117123       | 7.20 |
| OP74233-MB       | 405989       | 6.62 | 118878       | 7.20 |
| FA62220-4        | 406659       | 6.61 | 120535       | 7.18 |
| FA62220-8        | 400221       | 6.61 | 118438       | 7.20 |
| FA62454-1        | 406717       | 6.61 | 114853       | 7.18 |
| OP74233-DUP      | 405278       | 6.61 | 113003       | 7.20 |
| FA62454-2        | 387407       | 6.61 | 109076       | 7.18 |
| OP74233-MS       | 399248       | 6.61 | 114135       | 7.18 |

**IS 1** = 13C2-PFOA  
**IS 2** = 13C4-PFOS

- (a) Initial Cal is: S3Q54-ICC54 3Q1977.D 03/21/19 11:10
- (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.

6.6.6  
6

# Isotope Dilution Standard Recovery Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                                     |                   |
|-------------------------------------|-------------------|
| <b>Method:</b> EPA 537M QSM5.1 B-15 | <b>Matrix:</b> AQ |
|-------------------------------------|-------------------|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1  | S2  |
|---------------|-------------|-----|-----|
| FA62220-1     | 2Q27693.D   | 93  | 74  |
| FA62220-2     | 2Q27696.D   | 92  | 66  |
| FA62220-3     | 2Q27697.D   | 91  | 61  |
| FA62220-4     | 3Q1986.D    | 91  | 90  |
| FA62220-5     | 2Q27699.D   | 88  | 63  |
| FA62220-6     | 2Q27700.D   | 96  | 71  |
| FA62220-7     | 2Q27703.D   | 91  | 71  |
| FA62220-8     | 3Q1987.D    | 91  | 86  |
| FA62220-9     | 2Q27705.D   | 91  | 63  |
| FA62220-10    | 2Q27706.D   | 89  | 73  |
| FA62220-11    | 2Q27707.D   | 84  | 64  |
| FA62220-12    | 2Q27708.D   | 75  | 58  |
| FA62220-13    | 2Q27709.D   | 96  | 67  |
| FA62220-14    | 2Q27710.D   | 72  | 53  |
| FA62220-15    | 2Q27711.D   | 91  | 60  |
| FA62220-16    | 2Q27712.D   | 93  | 63  |
| FA62220-17    | 2Q27752.D   | 97  | 72  |
| FA62220-17    | 2Q27715.D   | 90  | 66  |
| FA62220-18    | 2Q27751.D   | 97  | 69  |
| FA62220-19    | 2Q27717.D   | 95  | 66  |
| FA62220-20    | 2Q27718.D   | 98  | 66  |
| FA62220-21    | 2Q27657.D   | 72  | 52  |
| FA62220-22    | 2Q27659.D   | 75  | 52  |
| OP74164-BS    | 2Q27655.D   | 73  | 70  |
| OP74164-DUP   | 2Q27660.D   | 68  | 53  |
| OP74164-MB    | 2Q27656.D   | 80  | 75  |
| OP74164-MS    | 2Q27658.D   | 82  | 64  |
| OP74180-BS    | 2Q27691.D   | 87  | 82  |
| OP74180-MB    | 2Q27692.D   | 93  | 79  |
| OP74180-MS    | 2Q27694.D   | 84  | 70  |
| OP74180-MSD   | 2Q27695.D   | 88  | 70  |
| OP74233-BS    | 3Q1984.D    | 98  | 92  |
| OP74233-DUP   | 3Q1989.D    | 95  | 83  |
| OP74233-MB    | 3Q1985.D    | 99  | 90  |
| OP74233-MS    | 3Q1991.D    | 98  | 89  |
| S2Q441-IBLK   | 2Q27626.D   | 78  | 85  |
| S2Q442-IBLK   | 2Q27675.D   | 107 | 103 |
| S2Q443-IBLK   | 2Q27725.D   | 109 | 112 |
| S3Q54-IBLK    | 3Q1980.D    | 103 | 102 |

# Isotope Dilution Standard Recovery Summary

**Job Number:** FA62220

**Account:** AHTNACAS Ahtna Environmental Inc

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|                                     |                   |
|-------------------------------------|-------------------|
| <b>Method:</b> EPA 537M QSM5.1 B-15 | <b>Matrix:</b> AQ |
|-------------------------------------|-------------------|

**Samples and QC shown here apply to the above method**

| <b>Isotope Dilution Standards</b> | <b>Recovery Limits</b> |
|-----------------------------------|------------------------|
|-----------------------------------|------------------------|

| <b>Isotope Dilution Standards</b> | <b>Recovery Limits</b> |
|-----------------------------------|------------------------|
|-----------------------------------|------------------------|

|                |         |
|----------------|---------|
| S1 = 13C8-PFOA | 50-150% |
| S2 = 13C8-PFOS | 50-150% |

6.7.1

6

# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q439-ICC439  
**Lab FileID:** 2Q27568.D

## Initial Calibration Report

| Method Path                                      | Method File                                      | Batch Name | Last Calib Update     | Level Name | Calibration Files | Curve Fit | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | Avg RF | %RSD  |
|--|--|------------|-----------------------|------------|-------------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| D:\MassHunter\demethods                          | D:\MassHunter\demethods                          |            |                       |            |                   |           |        |        |        |        |        |        |        |        |        |       |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27563.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27563.d |            | 3/13/2019 10:44:33 AM |            |                   | Linear    | 8956   | 9063   | 8962   | 8821   | 8773   | 8019   | 8374   | 8378   | 8668   | 4.253 |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27564.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27564.d |            | 3/13/2019 11:00:17 AM |            |                   | Linear    | 7399   | 7546   | 7411   | 7317   | 7270   | 6632   | 6930   | 6866   | 7172   | 4.480 |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27565.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27565.d |            | 3/13/2019 11:16:00 AM |            |                   | Linear    | 1247   | 1280   | 1249   | 1233   | 1226   | 1119   | 1169   | 1164   | 1211   | 4.480 |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27566.d |            | 3/13/2019 11:31:44 AM |            |                   | Linear    | 4043   | 4084   | 4088   | 3996   | 4009   | 3802   | 4343   | 4846   | 4151   | 7.646 |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27567.d |            | 3/13/2019 11:47:28 AM |            |                   | Linear    | 10616  | 10754  | 10678  | 10491  | 10440  | 9481   | 9907   | 9686   | 10257  | 4.793 |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27568.d |            | 3/13/2019 12:03:12 PM |            |                   | Linear    | 2114   | 2162   | 2171   | 2166   | 2108   | 1943   | 1843   | 1744   | 2031   | 8.178 |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27569.d |            | 3/13/2019 12:18:56 PM |            |                   | Linear    | 14961  | 15319  | 15048  | 14716  | 14640  | 13293  | 13796  | 13401  | 14397  | 5.461 |
| D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d | D:\MassHunter\Data\0313_ID_GENX_S2Q439\2Q27570.d |            | 3/13/2019 12:34:40 PM |            |                   | Linear    | 1396   | 1450   | 1428   | 1413   | 1388   | 1260   | 1297   | 1264   | 1362   | 5.599 |
| S 13C4-PFBA                                      |  |            |                       |            |                   | Linear    | 15646  | 15984  | 15714  | 15511  | 15176  | 13826  | 13944  | 13331  | 14892  | 6.893 |
| S 13C5-PFPeA                                     |  |            |                       |            |                   | Linear    | 6102   | 6242   | 6129   | 5968   | 5928   | 5220   | 5220   | 4690   | 5695   | 9.817 |
| S 13C3-PFBS                                      |  |            |                       |            |                   | Linear    | 1724   | 1744   | 1712   | 1703   | 1713   | 1535   | 1573   | 1527   | 1654   | 5.561 |
| S 13C2-4:2FTS                                    |  |            |                       |            |                   | Linear    | 14945  | 15153  | 15032  | 14802  | 14638  | 13359  | 13642  | 13082  | 14331  | 5.801 |
| S 13C5-PFHxA                                     |  |            |                       |            |                   | Linear    | 2479   | 2474   | 2468   | 2457   | 2465   | 2222   | 2286   | 2279   | 2391   | 4.539 |
| S 13C3-PFHS                                      |  |            |                       |            |                   | Linear    | 19254  | 19657  | 19645  | 19342  | 19196  | 17236  | 17379  | 16403  | 18514  | 6.972 |
| S 13C8-PFOA                                      |  |            |                       |            |                   | Linear    | 2716   | 2752   | 2730   | 2773   | 2786   | 2654   | 2964   | 3338   | 2839   | 7.769 |
| S 13C9-PFNA                                      |  |            |                       |            |                   | Linear    | 24620  | 25059  | 25163  | 24843  | 24607  | 22309  | 22967  | 22077  | 23956  | 5.361 |
| S d3-MeFOSAA                                     |  |            |                       |            |                   | Linear    | 28057  | 28726  | 29005  | 28538  | 28469  | 26452  | 27180  | 26862  | 27911  | 3.412 |
| S 13C2-8:2FTS                                    |  |            |                       |            |                   | Linear    | 19389  | 20412  | 20121  | 20123  | 19586  | 16725  | 19033  | 19257  | 19331  | 5.986 |
| S 13C7-PFUnDA                                    |  |            |                       |            |                   | Linear    | 1.0004 | 1.0011 | 1.0005 | 1.0012 | 1.0008 | 1.0009 | 1.0013 | 1.0007 | 1.0009 | 0.032 |
| S 13C2-PFOaDA                                    |  |            |                       |            |                   | Linear    | 1.0001 | 1.0002 | 1.0005 | 0.9996 | 1.0003 | 0.9992 | 1.0004 | 1.0014 | 1.0002 | 0.064 |
| S 13C2-PFPeDA                                    |  |            |                       |            |                   | Linear    | 0.2002 | 0.1922 | 0.1838 | 0.1878 | 0.1846 | 0.1920 | 0.1910 | 0.1956 | 0.1909 | 2.872 |
| I 13C2-PFOA                                      |  |            |                       |            |                   | Linear    | 0.9827 | 0.9024 | 0.8595 | 0.8637 | 0.8540 | 0.8864 | 0.8897 | 0.9147 | 0.8942 | 4.660 |

Generated at 1:11 PM on 3/13/2019

Page 1 of 5



# Initial Calibration Summary

Job Number: FA62220  
 Account: AHTNACAS Ahtna Environmental Inc  
 Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q439-ICC439  
 Lab FileID: 2Q27568.D

| Compound       | Curve Fit | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | Avg RF | %RSD  |
|----------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| I M5-PFHxA     | Linear    | 0.3787 | 0.3536 | 0.3241 | 0.3314 | 0.3301 | 0.3442 | 0.3378 | 0.3484 | 0.3435 | 5.048 |
| T PFHxA        |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M4-PFHpA     | Linear    | 0.9408 | 0.9019 | 0.8734 | 0.8992 | 0.8887 | 0.9247 | 0.9188 | 0.9439 | 0.9114 | 2.735 |
| T PFHpA        |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M8-PFOA      | Quadratic | 0.9988 | 0.9817 | 0.9655 | 0.9805 | 0.9855 | 1.0347 | 1.0628 | 1.1209 | 1.0163 | 5.229 |
| T ADONA        | Linear    | 0.5930 | 0.5281 | 0.5146 | 0.5184 | 0.5186 | 0.5412 | 0.5423 | 0.5488 | 0.5381 | 4.753 |
| T PFOA         |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M9-PFNA      | Linear    | 0.6594 | 0.6218 | 0.5740 | 0.5999 | 0.6030 | 0.6401 | 0.6323 | 0.6522 | 0.6229 | 4.657 |
| T PFNA         |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M6-PFDA      | Quadratic | 0.0774 | 0.0755 | 0.0697 | 0.0724 | 0.0700 | 0.0747 | 0.0766 | 0.0810 | 0.0747 | 5.157 |
| T 9C-PF3ONS    | Linear    | 0.4574 | 0.4189 | 0.3932 | 0.3973 | 0.4013 | 0.4243 | 0.4178 | 0.4235 | 0.4167 | 4.909 |
| T PFDA         |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M7-PFUnDA    | Linear    | 0.4150 | 0.3914 | 0.3916 | 0.3992 | 0.3937 | 0.4188 | 0.4124 | 0.4268 | 0.4061 | 3.403 |
| T PFUnDA       |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M2-PFDoDA    | Linear    | 0.2765 | 0.2448 | 0.2408 | 0.2446 | 0.2479 | 0.2532 | 0.2532 | 0.2543 | 0.2519 | 4.394 |
| T 11Cl-PF3OUds | Linear    | 0.4768 | 0.4507 | 0.4362 | 0.4462 | 0.4427 | 0.4638 | 0.4632 | 0.4707 | 0.4563 | 3.158 |
| T PFDoDA       |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M2-PFTeDA    | Linear    | 0.7810 | 0.7196 | 0.6889 | 0.7168 | 0.7216 | 0.7609 | 0.7478 | 0.7519 | 0.7360 | 4.011 |
| T PFTiDA       | Linear    | 0.7366 | 0.6758 | 0.6208 | 0.6368 | 0.6490 | 0.6657 | 0.6710 | 0.6867 | 0.6678 | 5.274 |
| T PFTeDA       |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M8-FOSA      | Quadratic | 0.5288 | 0.4542 | 0.4369 | 0.4520 | 0.4526 | 0.4645 | 0.4632 | 0.4816 | 0.4667 | 6.036 |
| T FOSA         |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M3-PFBS      | Linear    | 1.6809 | 1.6659 | 1.6030 | 1.5844 | 1.5783 | 1.6304 | 1.6313 | 1.6593 | 1.6292 | 2.345 |
| T PFBS         | Linear    | 1.1467 | 1.1128 | 1.0985 | 1.1199 | 1.0913 | 1.1431 | 1.1237 | 1.1328 | 1.1211 | 1.768 |
| T PFPeS        |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M3-PFHxS     | Linear    | 1.3257 | 1.1312 | 1.1469 | 1.1163 | 1.1051 | 1.1645 | 1.1654 | 1.1996 | 1.1693 | 5.987 |
| T PFHxS        | Linear    | 1.0118 | 0.9743 | 0.9752 | 0.9925 | 1.0014 | 1.0419 | 1.0128 | 1.0121 | 1.0028 | 2.222 |
| T PFHpS        |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M8-PFOS      | Linear    | 1.1929 | 1.0249 | 1.0304 | 0.9744 | 0.9441 | 0.9982 | 1.0041 | 1.0326 | 1.0252 | 7.238 |
| T PFOS         | Linear    | 0.8268 | 0.7339 | 0.7431 | 0.7633 | 0.7143 | 0.7721 | 0.7490 | 0.7480 | 0.7563 | 4.423 |
| T PFNS         | Linear    | 0.4108 | 0.4150 | 0.4006 | 0.3770 | 0.3794 | 0.4028 | 0.3932 | 0.3955 | 0.3968 | 3.415 |
| T PFDS         |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M2-4:2FTS    | Avg RF    | 0.6325 | 0.6019 | 0.5731 | 0.6073 | 0.5935 | 0.6009 | 0.5434 | 0.5021 | 0.5818 | 7.126 |
| T 4:2FTS       |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M2-6:2FTS    |           |        |        |        |        | ISTD   |        |        |        |        |       |



# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q439-ICC439  
**Lab FileID:** 2Q27568.D

## Initial Calibration Report

| Compound     | Curve Fit | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | Avg RF | %RSD   |
|--------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| T 6:2FTS     | Avg RF    | 0.6087 | 0.5331 | 0.5082 | 0.5220 | 0.5050 | 0.5155 | 0.4737 | 0.4250 | 0.5114 | 10.190 |
| I M2-8:2FTS  |           |        |        |        |        | ISTD   |        |        |        |        |        |
| T 8:2FTS     | Avg RF    | 0.6246 | 0.5175 | 0.5770 | 0.5195 | 0.5293 | 0.5233 | 0.4910 | 0.4435 | 0.5282 | 10.229 |
| I M3-MeFOSAA |           |        |        |        |        | ISTD   |        |        |        |        |        |
| T MeFOSAA    | Quadratic | 0.5934 | 0.5122 | 0.5483 | 0.5123 | 0.5129 | 0.5329 | 0.5413 | 0.5550 | 0.5385 | 5.185  |
| T EtFOSAA    | Quadratic | 0.4930 | 0.4534 | 0.4595 | 0.4412 | 0.4294 | 0.4559 | 0.4294 | 0.4201 | 0.4477 | 5.181  |
| I M3-HFPO-DA |           |        |        |        |        | ISTD   |        |        |        |        |        |
| T HFPO-DA    | Linear    | 1.3169 | 1.2287 | 1.1800 | 1.1758 | 1.1776 | 1.1988 | 1.2201 | 1.2125 | 1.2138 | 3.815  |

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike



# Initial Calibration Summary

Job Number: FA62220  
 Account: AHTNACAS Ahtna Environmental Inc  
 Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q439-ICC439  
 Lab FileID: 2Q27568.D

## Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

| Compound       | Curve Fit | Curve Fit Formula                    | Curve Fit R2 |
|----------------|-----------|--------------------------------------|--------------|
| T PFBA         | Linear    | $y = 0.194495 * x$                   | 0.999826     |
| S 13C4-PFBA    | Linear    | $y = 8668.293220 * x$                | 0.000000     |
| T PFPeA        | Linear    | $y = 0.908479 * x$                   | 0.999746     |
| S 13C5-PFPeA   | Linear    | $y = 7171.534783 * x$                | 0.000000     |
| S 13C3-PFBS    | Linear    | $y = 1210.868273 * x$                | 0.000000     |
| T PFBS         | Linear    | $y = 1.652262 * x$                   | 0.999896     |
| S 13C2-4:2FTS  | Linear    | $y = 4151.435828 * x$                | 0.000000     |
| S 13C5-PFHxA   | Linear    | $y = 10256.589849 * x$               | 0.000000     |
| T PFHxA        | Linear    | $y = 0.346056 * x$                   | 0.999749     |
| T PFPeS        | Linear    | $y = 1.131047 * x$                   | 0.999965     |
| T HFPO-DA      | Linear    | $y = 1.213220 * x$                   | 0.999970     |
| S 13C3-HFPO-DA | Linear    | $y = 2031.292129 * x$                | 0.000000     |
| S 13C4-PFHpA   | Linear    | $y = 14396.740274 * x$               | 0.000000     |
| T PFHpA        | Linear    | $y = 0.937951 * x$                   | 0.999786     |
| S 13C3-PFHxS   | Linear    | $y = 1362.070727 * x$                | 0.000000     |
| T PFHxS        | Linear    | $y = 1.191071 * x$                   | 0.999712     |
| T ADONA        | Quadratic | $y = 0.023602 * x^2 + 1.003062 * x$  | 0.999987     |
| S 13C2-6:2FTS  | Linear    | $y = 4358.899629 * x$                | 0.000000     |
| S 13C8-PFOA    | Linear    | $y = 14891.518157 * x$               | 0.000000     |
| S M2-PFOA      | Linear    | $y = 1.000869 * x$                   | 0.000000     |
| T PFOA         | Linear    | $y = 0.547049 * x$                   | 0.999920     |
| T PFHpS        | Linear    | $y = 1.013039 * x$                   | 0.999958     |
| S 13C8-FOSA    | Linear    | $y = 5695.319136 * x$                | 0.000000     |
| T FOSA         | Quadratic | $y = 0.006387 * x^2 + 0.449415 * x$  | 0.999977     |
| S 13C8-PFOS    | Linear    | $y = 1653.953870 * x$                | 0.000000     |
| S M4-PFOS      | Linear    | $y = 1.000220 * x$                   | 0.000000     |
| T PFOS         | Linear    | $y = 1.025296 * x$                   | 0.999705     |
| S 13C9-PFNA    | Linear    | $y = 14331.430917 * x$               | 0.000000     |
| T PFNA         | Linear    | $y = 0.647533 * x$                   | 0.999697     |
| T 9Cl-PF3ONS   | Quadratic | $y = 0.001770 * x^2 + 0.072154 * x$  | 0.999978     |
| S d3-MeFOSAA   | Linear    | $y = 2391.122420 * x$                | 0.000000     |
| T MeFOSAA      | Quadratic | $y = 0.005938 * x^2 + 0.525456 * x$  | 0.999986     |
| T PFNS         | Linear    | $y = 0.748704 * x$                   | 0.999927     |
| T EtFOSAA      | Quadratic | $y = -0.005079 * x^2 + 0.445191 * x$ | 0.999905     |
| S 13C6-PFDA    | Linear    | $y = 18513.813105 * x$               | 0.000000     |
| T PFDA         | Linear    | $y = 0.422223 * x$                   | 0.999915     |
| S 13C2-8:2FTS  | Linear    | $y = 2839.173556 * x$                | 0.000000     |
| T PFDS         | Linear    | $y = 0.395151 * x$                   | 0.999949     |
| S 13C7-PFUnDA  | Linear    | $y = 23955.563266 * x$               | 0.000000     |
| T PFUnDA       | Linear    | $y = 0.423444 * x$                   | 0.999658     |
| T 11Cl-PF3OUdS | Linear    | $y = 0.253177 * x$                   | 0.999870     |
| S 13C2-PFDODA  | Linear    | $y = 27911.018523 * x$               | 0.000000     |
| T PFDODA       | Linear    | $y = 0.468734 * x$                   | 0.999890     |

# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q439-ICC439  
**Lab FileID:** 2Q27568.D

## Initial Calibration Report

|               |        |                        |          |
|---------------|--------|------------------------|----------|
| T PFTeDA      | Linear | $y = 0.751032 * x$     | 0.999958 |
| S 13C2-PFTeDA | Linear | $y = 19330.674506 * x$ | 0.000000 |
| T PFTeDA      | Linear | $y = 0.682652 * x$     | 0.999801 |

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

**Initial Calibration Verification****Job Number:** FA62220**Sample:** S2Q439-ICV439**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27572.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\S2Q439.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27563.d  
 2:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27564.d  
 3:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27565.d  
 4:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27566.d  
 5:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27567.d  
 6:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27568.d  
 7:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27569.d  
 8:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27570.d

Data File: 2Q27572

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %    | Area % |
|-------------|-----------|------------|----------|--------|
| 13C2-4:2FTS | 20.000    | 17.308     | -13.5    | 86.5   |
| 13C2-6:2FTS | 20.000    | 17.827     | -10.9    | 89.1   |
| 13C2-8:2FTS | 20.000    | 17.635     | -11.8    | 88.2   |
| 13C2-PFDoDA | 20.000    | 19.110     | -4.4     | 95.6   |
| 13C2-PFOA   | ---       | --ISTD--   |          |        |
| 13C2-PFTeDA | 20.000    | 18.607     | -7.0     | 93.0   |
| 13C3-PFBS   | 20.000    | 18.033     | -9.8     | 90.2   |
| 13C3-PFHxS  | 20.000    | 18.285     | -8.6     | 91.4   |
| 13C4-PFBA   | 20.000    | 18.225     | -8.9     | 91.1   |
| 13C4-PFHpA  | 20.000    | 18.207     | -9.0     | 91.0   |
| 13C4-PFOS   | ---       | --ISTD--   |          |        |
| 13C5-PFHxA  | 20.000    | 18.237     | -8.8     | 91.2   |
| 13C5-PFPeA  | 20.000    | 18.237     | -8.8     | 91.2   |
| 13C6-PFDA   | 20.000    | 19.171     | -4.1     | 95.9   |
| 13C7-PFUnDA | 20.000    | 19.109     | -4.5     | 95.5   |
| 13C8-FOSA   | 20.000    | 19.386     | -3.1     | 96.9   |
| 13C8-PFOA   | 20.000    | 18.741     | -6.3     | 93.7   |
| 13C8-PFOS   | 20.000    | 18.168     | -9.2     | 90.8   |
| 13C9-PFNA   | 20.000    | 18.535     | -7.3     | 92.7   |
| 4:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 6:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 8:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| d3-MeFOSAA  | 20.000    | 18.930     | -5.3     | 94.7   |
| M2-PFOA     | 20.000    | 19.990     | 0.0      | 100.0  |
| EtFOSAA     | 20.000    | 18.977     | -5.1     | 94.9   |
| FOSA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| MeFOSAA     | 20.000    | 17.802     | -11.0    | 89.0   |
| PFBA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFBS        | 20.000    | 19.638     | -1.8     | 98.2   |
| PFDA        | 20.000    | 19.591     | -2.0     | 98.0   |
| PFDoDA      | 20.000    | 19.439     | -2.8     | 97.2   |
| PFDS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpA       | 20.000    | 19.859     | -0.7     | 99.3   |
| PFHpS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxA       | 20.000    | 19.678     | -1.6     | 98.4   |
| PFHxS       | 20.000    | 19.683     | -1.6     | 98.4   |
| PFNA        | 20.000    | 20.371     | 1.9      | 101.9  |

# Initial Calibration Verification

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q439-ICV439  
**Lab FileID:** 2Q27572.D

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFNS         | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFOA         | 20.000  | 20.232   | 1.2      | 101.2 |
| PFOS         | 20.000  | 19.713   | -1.4     | 98.6  |
| PFPeA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFPeS        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTeDA       | 20.000  | 19.591   | -2.0     | 98.0  |
| PFTrDA       | 20.000  | 20.261   | 1.3      | 101.3 |
| PFUnDA       | 20.000  | 19.838   | -0.8     | 99.2  |
| M4-PFOS      | 20.000  | 20.004   | 0.0      | 100.0 |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDoDA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 20.845   | 4.2      | 104.2 |
| 13C3-HFPO-DA | 100.000 | 101.328  | 1.3      | 101.3 |
| 9C1-PF3ONS   | 20.000  | 20.805   | 4.0      | 104.0 |
| ADONA        | 20.000  | 20.610   | 3.1      | 103.1 |
| HFPO-DA      | 20.000  | 18.440   | -7.8     | 92.2  |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |

CC Criteria: +/- 30%

6.8.2  
6

**Initial Calibration Verification****Job Number:** FA62220**Sample:** S2Q439-ICV439**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27573.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\S2Q439.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27563.d  
 2:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27564.d  
 3:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27565.d  
 4:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27566.d  
 5:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27567.d  
 6:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27568.d  
 7:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27569.d  
 8:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27570.d

Data File: 2Q27573

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 18.510     | -7.5  | 92.5   |
| 13C2-6:2FTS | 20.000    | 18.656     | -6.7  | 93.3   |
| 13C2-8:2FTS | 20.000    | 18.841     | -5.8  | 94.2   |
| 13C2-PFDoDA | 20.000    | 19.679     | -1.6  | 98.4   |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 19.309     | -3.5  | 96.5   |
| 13C3-PFBS   | 20.000    | 18.433     | -7.8  | 92.2   |
| 13C3-PFHxS  | 20.000    | 18.458     | -7.7  | 92.3   |
| 13C4-PFBA   | 20.000    | 18.153     | -9.2  | 90.8   |
| 13C4-PFHpA  | 20.000    | 18.524     | -7.4  | 92.6   |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 18.557     | -7.2  | 92.8   |
| 13C5-PFPeA  | 20.000    | 18.471     | -7.6  | 92.4   |
| 13C6-PFDA   | 20.000    | 19.046     | -4.8  | 95.2   |
| 13C7-PFUnDA | 20.000    | 19.156     | -4.2  | 95.8   |
| 13C8-FOSA   | 20.000    | 19.011     | -4.9  | 95.1   |
| 13C8-PFOA   | 20.000    | 18.637     | -6.8  | 93.2   |
| 13C8-PFOS   | 20.000    | 18.657     | -6.7  | 93.3   |
| 13C9-PFNA   | 20.000    | 18.758     | -6.2  | 93.8   |
| 4:2FTS      | 20.000    | 19.174     | -4.1  | 95.9   |
| 6:2FTS      | 20.000    | 19.727     | -1.4  | 98.6   |
| 8:2FTS      | 20.000    | 19.709     | -1.5  | 98.5   |
| d3-MeFOSAA  | 20.000    | 19.028     | -4.9  | 95.1   |
| M2-PFOA     | 20.000    | 19.993     | 0.0   | 100.0  |
| EtFOSAA     | 20.000    | 20.804     | 4.0   | 104.0  |
| FOSA        | 20.000    | 21.384     | 6.9   | 106.9  |
| MeFOSAA     | 20.000    | 20.637     | 3.2   | 103.2  |
| PFBA        | 20.000    | 20.210     | 1.0   | 101.0  |
| PFBS        | 20.000    | 17.055     | -14.7 | 85.3   |
| PFDA        | 20.000    | 18.789     | -6.1  | 93.9   |
| PFDoDA      | 20.000    | 21.009     | 5.0   | 105.0  |
| PFDS        | 20.000    | 18.588     | -7.1  | 92.9   |
| PFHpA       | 20.000    | 20.916     | 4.6   | 104.6  |
| PFHpS       | 20.000    | 19.674     | -1.6  | 98.4   |
| PFHxA       | 20.000    | 18.260     | -8.7  | 91.3   |
| PFHxS       | 20.000    | 17.204     | -14.0 | 86.0   |
| PFNA        | 20.000    | 18.660     | -6.7  | 93.3   |

# Initial Calibration Verification

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q439-ICV439  
**Lab FileID:** 2Q27573.D

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFNS         | 20.000  | 19.140   | -4.3     | 95.7  |
| PFOA         | 20.000  | 20.517   | 2.6      | 102.6 |
| PFOS         | 20.000  | 19.610   | -2.0     | 98.0  |
| PFPeA        | 20.000  | 19.028   | -4.9     | 95.1  |
| PFPeS        | 20.000  | 17.161   | -14.2    | 85.8  |
| PFTeDA       | 20.000  | 18.519   | -7.4     | 92.6  |
| PFTTrDA      | 20.000  | 22.346   | 11.7     | 111.7 |
| PFUnDA       | 20.000  | 20.465   | 2.3      | 102.3 |
| M4-PFOS      | 20.000  | 19.990   | -0.1     | 99.9  |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDoDA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 0.000    | # -100.0 | 0.0   |
| 13C3-HFPO-DA | 100.000 | 103.111  | 3.1      | 103.1 |
| 9C1-PF3ONS   | 20.000  | 0.000    | # -100.0 | 0.0   |
| ADONA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| HFPO-DA      | 100.000 | 0.000    | # -100.0 | 0.0   |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |

CC Criteria: +/- 30%

**Initial Calibration Verification****Job Number:** FA62220**Sample:** S2Q439-ICV439**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27574.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\S2Q439.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27563.d  
 2:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27564.d  
 3:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27565.d  
 4:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27566.d  
 5:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27567.d  
 6:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27568.d  
 7:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27569.d  
 8:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27570.d

Data File: 2Q27574

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %    | Area % |
|-------------|-----------|------------|----------|--------|
| 13C2-4:2FTS | 20.000    | 19.216     | -3.9     | 96.1   |
| 13C2-6:2FTS | 20.000    | 20.461     | 2.3      | 102.3  |
| 13C2-8:2FTS | 20.000    | 19.735     | -1.3     | 98.7   |
| 13C2-PFDoDA | 20.000    | 21.649     | 8.2      | 108.2  |
| 13C2-PFOA   | ---       | --ISTD--   |          |        |
| 13C2-PFTeDA | 20.000    | 21.183     | 5.9      | 105.9  |
| 13C3-PFBS   | 20.000    | 20.083     | 0.4      | 100.4  |
| 13C3-PFHxS  | 20.000    | 20.364     | 1.8      | 101.8  |
| 13C4-PFBA   | 20.000    | 20.148     | 0.7      | 100.7  |
| 13C4-PFHpA  | 20.000    | 20.578     | 2.9      | 102.9  |
| 13C4-PFOS   | ---       | --ISTD--   |          |        |
| 13C5-PFHxA  | 20.000    | 20.442     | 2.2      | 102.2  |
| 13C5-PFPeA  | 20.000    | 20.293     | 1.5      | 101.5  |
| 13C6-PFDA   | 20.000    | 21.594     | 8.0      | 108.0  |
| 13C7-PFUnDA | 20.000    | 21.471     | 7.4      | 107.4  |
| 13C8-FOSA   | 20.000    | 22.131     | 10.7     | 110.7  |
| 13C8-PFOA   | 20.000    | 21.115     | 5.6      | 105.6  |
| 13C8-PFOS   | 20.000    | 20.541     | 2.7      | 102.7  |
| 13C9-PFNA   | 20.000    | 20.860     | 4.3      | 104.3  |
| 4:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 6:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 8:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| d3-MeFOSAA  | 20.000    | 20.337     | 1.7      | 101.7  |
| M2-PFOA     | 20.000    | 20.007     | 0.0      | 100.0  |
| EtFOSAA     | 20.000    | 16.199     | -19.0    | 81.0   |
| FOSA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| MeFOSAA     | 20.000    | 17.489     | -12.6    | 87.4   |
| PFBA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFBS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDoDA      | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpA       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxA       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFNA        | 20.000    | 0.000      | # -100.0 | 0.0    |

# Initial Calibration Verification

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q439-ICV439  
**Lab FileID:** 2Q27574.D

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFNS         | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFOA         | 20.000  | 16.688   | -16.6    | 83.4  |
| PFOS         | 20.000  | 18.691   | -6.5     | 93.5  |
| PFPeA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFPeS        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTeDA       | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTTrDA      | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFUnDA       | 20.000  | 0.000    | # -100.0 | 0.0   |
| M4-PFOS      | 20.000  | 20.006   | 0.0      | 100.0 |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDODA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 0.000    | # -100.0 | 0.0   |
| 13C3-HFPO-DA | 100.000 | 103.181  | 3.2      | 103.2 |
| 9C1-PF3ONS   | 20.000  | 0.000    | # -100.0 | 0.0   |
| ADONA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| HFPO-DA      | 100.000 | 0.000    | # -100.0 | 0.0   |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |

CC Criteria: +/- 30%



## Continuing Calibration Summary

Job Number: FA62220

Sample: S2Q441-CC439

Account: AHTNACAS Ahtna Environmental Inc

Lab FileID: 2Q27653.D

Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0315\_ID\_GENX\_S2Q441\S2Q441.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27563.d  
 2:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27564.d  
 3:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27565.d  
 4:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27566.d  
 5:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27567.d  
 6:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27568.d  
 7:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27569.d  
 8:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27570.d

Data File: 2Q27653

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 17.655     | -11.7 | 88.3   |
| 13C2-6:2FTS | 20.000    | 18.179     | -9.1  | 90.9   |
| 13C2-8:2FTS | 20.000    | 20.397     | 2.0   | 102.0  |
| 13C2-PFDoDA | 20.000    | 19.650     | -1.8  | 98.2   |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 17.837     | -10.8 | 89.2   |
| 13C3-PFBS   | 20.000    | 17.072     | -14.6 | 85.4   |
| 13C3-PFHxS  | 20.000    | 16.843     | -15.8 | 84.2   |
| 13C4-PFBA   | 20.000    | 16.847     | -15.8 | 84.2   |
| 13C4-PFHpA  | 20.000    | 17.574     | -12.1 | 87.9   |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 17.560     | -12.2 | 87.8   |
| 13C5-PFPeA  | 20.000    | 17.620     | -11.9 | 88.1   |
| 13C6-PFDA   | 20.000    | 20.252     | 1.3   | 101.3  |
| 13C7-PFUnDA | 20.000    | 19.576     | -2.1  | 97.9   |
| 13C8-FOSA   | 20.000    | 18.904     | -5.5  | 94.5   |
| 13C8-PFOA   | 20.000    | 17.955     | -10.2 | 89.8   |
| 13C8-PFOS   | 20.000    | 18.030     | -9.9  | 90.1   |
| 13C9-PFNA   | 20.000    | 19.265     | -3.7  | 96.3   |
| 4:2FTS      | 20.000    | 20.232     | 1.2   | 101.2  |
| 6:2FTS      | 20.000    | 19.894     | -0.5  | 99.5   |
| 8:2FTS      | 20.000    | 19.958     | -0.2  | 99.8   |
| d3-MeFOSAA  | 20.000    | 19.602     | -2.0  | 98.0   |
| M2-PFOA     | 20.000    | 19.982     | -0.1  | 99.9   |
| EtFOSAA     | 20.000    | 20.729     | 3.6   | 103.6  |
| FOSA        | 20.000    | 20.732     | 3.7   | 103.7  |
| MeFOSAA     | 20.000    | 20.792     | 4.0   | 104.0  |
| PFBA        | 20.000    | 20.079     | 0.4   | 100.4  |
| PFBS        | 20.000    | 19.645     | -1.8  | 98.2   |
| PFDA        | 20.000    | 19.896     | -0.5  | 99.5   |
| PFDoDA      | 20.000    | 19.775     | -1.1  | 98.9   |
| PFDS        | 20.000    | 20.043     | 0.2   | 100.2  |
| PFHpA       | 20.000    | 19.375     | -3.1  | 96.9   |
| PFHpS       | 20.000    | 20.528     | 2.6   | 102.6  |
| PFHxA       | 20.000    | 19.420     | -2.9  | 97.1   |
| PFHxS       | 20.000    | 19.660     | -1.7  | 98.3   |
| PFNA        | 20.000    | 19.267     | -3.7  | 96.3   |

# Continuing Calibration Summary

**Job Number:** FA62220

**Sample:** S2Q441-CC439

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 2Q27653.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 20.000  | 20.686   | 3.4   | 103.4 |
| PFOA         | 20.000  | 19.902   | -0.5  | 99.5  |
| PFOS         | 20.000  | 19.225   | -3.9  | 96.1  |
| PFPeA        | 20.000  | 19.247   | -3.8  | 96.2  |
| PFPeS        | 20.000  | 19.766   | -1.2  | 98.8  |
| PFTeDA       | 20.000  | 19.798   | -1.0  | 99.0  |
| PFTTrDA      | 20.000  | 20.246   | 1.2   | 101.2 |
| PFUnDA       | 20.000  | 20.101   | 0.5   | 100.5 |
| M4-PFOS      | 20.000  | 20.000   | 0.0   | 100.0 |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDoDA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 20.000  | 18.241   | -8.8  | 91.2  |
| 13C3-HFPO-DA | 100.000 | 87.559   | -12.4 | 87.6  |
| 9C1-PF3ONS   | 20.000  | 18.588   | -7.1  | 92.9  |
| ADONA        | 20.000  | 19.415   | -2.9  | 97.1  |
| HFPO-DA      | 100.000 | 101.926  | 1.9   | 101.9 |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

**Continuing Calibration Summary****Job Number:** FA62220**Sample:** S2Q441-ECC439**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27663.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0315\_ID\_GENX\_S2Q441\S2Q441.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27563.d  
 2:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27564.d  
 3:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27565.d  
 4:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27566.d  
 5:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27567.d  
 6:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27568.d  
 7:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27569.d  
 8:D:\MassHunter\Data\0313\_ID\_GENX\_S2Q439\2Q27570.d

Data File: 2Q27663

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 16.408     | -18.0 | 82.0   |
| 13C2-6:2FTS | 20.000    | 16.946     | -15.3 | 84.7   |
| 13C2-8:2FTS | 20.000    | 18.976     | -5.1  | 94.9   |
| 13C2-PFDoDA | 20.000    | 17.802     | -11.0 | 89.0   |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 15.692     | -21.5 | 78.5   |
| 13C3-PFBS   | 20.000    | 15.935     | -20.3 | 79.7   |
| 13C3-PFHxS  | 20.000    | 15.758     | -21.2 | 78.8   |
| 13C4-PFBA   | 20.000    | 15.692     | -21.5 | 78.5   |
| 13C4-PFHpA  | 20.000    | 16.351     | -18.2 | 81.8   |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 16.351     | -18.2 | 81.8   |
| 13C5-PFPeA  | 20.000    | 16.390     | -18.0 | 82.0   |
| 13C6-PFDA   | 20.000    | 18.831     | -5.8  | 94.2   |
| 13C7-PFUnDA | 20.000    | 18.168     | -9.2  | 90.8   |
| 13C8-FOSA   | 20.000    | 17.584     | -12.1 | 87.9   |
| 13C8-PFOA   | 20.000    | 16.943     | -15.3 | 84.7   |
| 13C8-PFOS   | 20.000    | 16.730     | -16.3 | 83.7   |
| 13C9-PFNA   | 20.000    | 18.107     | -9.5  | 90.5   |
| 4:2FTS      | 20.000    | 20.177     | 0.9   | 100.9  |
| 6:2FTS      | 20.000    | 20.304     | 1.5   | 101.5  |
| 8:2FTS      | 20.000    | 19.986     | -0.1  | 99.9   |
| d3-MeFOSAA  | 20.000    | 18.783     | -6.1  | 93.9   |
| M2-PFOA     | 20.000    | 19.993     | 0.0   | 100.0  |
| EtFOSAA     | 20.000    | 20.531     | 2.7   | 102.7  |
| FOSA        | 20.000    | 20.525     | 2.6   | 102.6  |
| MeFOSAA     | 20.000    | 20.591     | 3.0   | 103.0  |
| PFBA        | 20.000    | 20.117     | 0.6   | 100.6  |
| PFBS        | 20.000    | 19.866     | -0.7  | 99.3   |
| PFDA        | 20.000    | 19.613     | -1.9  | 98.1   |
| PFDoDA      | 20.000    | 19.811     | -0.9  | 99.1   |
| PFDS        | 20.000    | 19.760     | -1.2  | 98.8   |
| PFHpA       | 20.000    | 19.605     | -2.0  | 98.0   |
| PFHpS       | 20.000    | 20.817     | 4.1   | 104.1  |
| PFHxA       | 20.000    | 19.762     | -1.2  | 98.8   |
| PFHxS       | 20.000    | 19.681     | -1.6  | 98.4   |
| PFNA        | 20.000    | 19.179     | -4.1  | 95.9   |

# Continuing Calibration Summary

**Job Number:** FA62220

**Sample:** S2Q441-ECC439

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 2Q27663.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 20.000  | 21.020   | 5.1   | 105.1 |
| PFOA         | 20.000  | 19.844   | -0.8  | 99.2  |
| PFOS         | 20.000  | 18.988   | -5.1  | 94.9  |
| PFPeA        | 20.000  | 19.434   | -2.8  | 97.2  |
| PFPeS        | 20.000  | 19.886   | -0.6  | 99.4  |
| PFTeDA       | 20.000  | 19.618   | -1.9  | 98.1  |
| PFTrDA       | 20.000  | 20.248   | 1.2   | 101.2 |
| PFUnDA       | 20.000  | 20.052   | 0.3   | 100.3 |
| M4-PFOS      | 20.000  | 19.972   | -0.1  | 99.9  |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDoDA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 20.000  | 18.409   | -8.0  | 92.0  |
| 13C3-HFPO-DA | 100.000 | 76.590   | -23.4 | 76.6  |
| 9C1-PF3ONS   | 20.000  | 18.590   | -7.0  | 93.0  |
| ADONA        | 20.000  | 19.282   | -3.6  | 96.4  |
| HFPO-DA      | 100.000 | 100.861  | 0.9   | 100.9 |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q442-ICC442  
**Lab FileID:** 2Q27672.D

## Initial Calibration Report

| Method Path             | ID   | Curve Fit             | 1                             | 2        | 3        | 4        | 5        | 6        | 7        | 8             | Avg RF      | %RSD |
|-------------------------|--|-----------------------|-------------------------------|----------|----------|----------|----------|----------|----------|---------------|-------------|------|
| D:\MassHunter\demethods |  |                       |                               |          |          |          |          |          |          |               |             |      |
| Method File             | D:\MassHunter\Data\0318_ID_GENX_S2Q442.quantimethod.xml              |                       |                               |          |          |          |          |          |          |               |             |      |
| Batch Name              | D:\MassHunter\Data\0318_ID_GENX_S2Q442\QuantResults\S2Q442.batch.bin |                       |                               |          |          |          |          |          |          |               |             |      |
| Last Calib Update       | 3/18/2019 10:25:16 AM  |                       |                               |          |          |          |          |          |          |               |             |      |
| <b>Level Name</b>       | <b>Calibration Files</b>   | <b>Acq. Date-Time</b> | <b>Level Last Update Time</b> |          |          |          |          |          |          |               |             |      |
| 1                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27667.d                     | 3/18/2019 8:18:31 AM  | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| 2                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27668.d                     | 3/18/2019 8:34:20 AM  | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| 3                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27669.d                     | 3/18/2019 8:50:04 AM  | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| 4                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27670.d                     | 3/18/2019 9:05:48 AM  | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| 5                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27671.d                     | 3/18/2019 9:21:31 AM  | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| 6                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27672.d                     | 3/18/2019 9:37:15 AM  | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| 7                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27673.d                     | 3/18/2019 9:52:58 AM  | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| 8                       | D:\MassHunter\Data\0318_ID_GENX_S2Q442\2Q27674.d                     | 3/18/2019 10:08:42 AM | 3/18/2019 10:25:16 AM         |          |          |          |          |          |          |               |             |      |
| <b>Compound</b>         | <b>Curve Fit</b>   | <b>1</b>              | <b>2</b>                      | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>8</b> | <b>Avg RF</b> | <b>%RSD</b> |      |
| S 13C4-PFBA             | Linear   | 6277                  | 6274                          | 6497     | 5911     | 5748     | 5806     | 5902     | 5558     | 5997          | 5.319       |      |
| S 13C5-PFPeA            | Linear   | 5324                  | 5292                          | 5484     | 5025     | 4900     | 4926     | 4989     | 4727     | 5083          | 5.040       |      |
| S 13C3-PFBs             | Linear   | 9759                  | 9548                          | 9943     | 898.4    | 871.6    | 880.8    | 884.6    | 833.8    | 911.8         | 6.199       |      |
| S 13C2-4:2FTS           | Linear   | 2976                  | 2911                          | 3044     | 2812     | 2756     | 2842     | 3119     | 3329     | 2974          | 6.315       |      |
| S 13C5-PFHA             | Linear   | 7685                  | 7604                          | 7914     | 7178     | 6924     | 7034     | 7134     | 6657     | 7266          | 5.878       |      |
| S 13C3-HPO-DA           | Linear   | 1680                  | 1731                          | 1787     | 1617     | 1593     | 1546     | 1500     | 1338     | 1599          | 8.854       |      |
| S 13C4-PFHpA            | Linear   | 10960                 | 10821                         | 11261    | 10227    | 9959     | 10006    | 10078    | 9430     | 10343         | 5.926       |      |
| S 13C3-PFHS             | Linear   | 1089                  | 1088                          | 1109     | 1009     | 976.0    | 987.2    | 978.6    | 918.5    | 1019          | 6.683       |      |
| S 13C2-6:2FTS           | Linear   | 3225                  | 3166                          | 3336     | 3073     | 3033     | 3109     | 3346     | 3390     | 3210          | 4.232       |      |
| S 13C8-PFOA             | Linear   | 11126                 | 11043                         | 11352    | 10406    | 10173    | 10118    | 10068    | 9169     | 10432         | 6.871       |      |
| S 13C8-FOSA             | Linear   | 4451                  | 4385                          | 4469     | 4143     | 3958     | 3924     | 3794     | 3315     | 4055          | 9.717       |      |
| S 13C8-PFOS             | Linear   | 1415                  | 1367                          | 1432     | 1295     | 1238     | 1243     | 1270     | 1169     | 1304          | 7.131       |      |
| S 13C9-PFNA             | Linear   | 11090                 | 11008                         | 11453    | 10537    | 10268    | 10391    | 10351    | 9603     | 10588         | 5.469       |      |
| S d3-MeFOSAA            | Linear   | 2010                  | 1945                          | 2049     | 1875     | 1884     | 1869     | 1905     | 1798     | 1917          | 4.250       |      |
| S 13C6-PFDA             | Linear   | 14484                 | 14198                         | 14830    | 13586    | 13271    | 13392    | 13383    | 12027    | 13646         | 6.381       |      |
| S 13C2-8:2FTS           | Linear   | 2167                  | 2130                          | 2245     | 2072     | 2063     | 2137     | 2384     | 2540     | 2217          | 7.502       |      |
| S 13C7-PFUnDA           | Linear   | 17527                 | 17558                         | 18250    | 16865    | 16491    | 16595    | 16774    | 15330    | 16924         | 5.184       |      |
| S 13C2-PFDODA           | Linear   | 19066                 | 19032                         | 20039    | 18611    | 18441    | 18520    | 18929    | 17831    | 18809         | 3.397       |      |
| S 13C2-PFTEdA           | Linear   | 13033                 | 12884                         | 13611    | 12653    | 12546    | 12693    | 12984    | 12305    | 12839         | 3.066       |      |
| I 13C2-PFOA             | Linear   | 1.0006                | 1.0012                        | 1.0007   | 1.0010   | 1.0007   | 1.0013   | 1.0008   | 1.0013   | 1.0010        | 0.029       |      |
| S M2-PFOA               | Linear   | 0.9990                | 1.0013                        | 0.9989   | 1.0030   | 1.0010   | 1.0000   | 1.0018   | 0.9987   | 1.0005        | 0.156       |      |
| I 13C4-PFOS             | Linear   | 0.1888                | 0.1964                        | 0.1844   | 0.1919   | 0.1953   | 0.1958   | 0.1963   | 0.1979   | 0.1934        | 2.403       |      |
| S M4-PFOS               | Linear   | 0.8749                | 0.8458                        | 0.8261   | 0.8490   | 0.8534   | 0.8630   | 0.8626   | 0.8667   | 0.8552        | 1.776       |      |
| I M4-PFBA               | Linear   | ISTD                  |                               |          |          |          |          |          |          |               |             |      |
| T PFBA                  | Linear   | ISTD                  |                               |          |          |          |          |          |          |               |             |      |
| I M5-PFPeA              | Linear   | ISTD                  |                               |          |          |          |          |          |          |               |             |      |
| T PFPeA                 | Linear   | ISTD                  |                               |          |          |          |          |          |          |               |             |      |

Generated at 10:25 AM on 3/18/2019

Page 1 of 5

# Initial Calibration Summary

Job Number: FA62220  
 Account: AHTNACAS Ahtna Environmental Inc  
 Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q442-ICC442  
 Lab FileID: 2Q27672.D

| Compound       | Curve Fit | 1      | 2      | 3      | 4      | 5    | 6      | 7      | 8      | Avg RF | %RSD   |       |
|----------------|-----------|--------|--------|--------|--------|------|--------|--------|--------|--------|--------|-------|
| I M5-PFHxA     | Linear    | 0.3283 | 0.3352 | 0.3150 | 0.3386 | ISTD | 0.3434 | 0.3392 | 0.3424 | 0.3452 | 0.3359 | 2.972 |
| T PFHxA        |           |        |        |        |        |      |        |        |        |        |        |       |
| I M4-PFHpA     | Linear    | 0.7915 | 0.8459 | 0.7825 | 0.8413 | ISTD | 0.8467 | 0.8573 | 0.8638 | 0.8621 | 0.8364 | 3.777 |
| T PFHpA        |           |        |        |        |        |      |        |        |        |        |        |       |
| I M8-PFOA      | Quadratic | 0.9168 | 0.9441 | 0.9241 | 0.9637 | ISTD | 0.9852 | 0.9948 | 1.0148 | 1.0572 | 0.9751 | 4.888 |
| T ADONA        | Linear    | 0.5068 | 0.5210 | 0.4959 | 0.5196 | ISTD | 0.5200 | 0.5310 | 0.5305 | 0.5433 | 0.5210 | 2.831 |
| T PFOA         |           |        |        |        |        |      |        |        |        |        |        |       |
| I M9-PFNA      | Linear    | 0.6153 | 0.6162 | 0.6019 | 0.6283 | ISTD | 0.6641 | 0.6600 | 0.6627 | 0.6637 | 0.6390 | 4.102 |
| T PFNA         |           |        |        |        |        |      |        |        |        |        |        |       |
| I M6-PFDA      | Quadratic | 0.0704 | 0.0764 | 0.0686 | 0.0743 | ISTD | 0.0778 | 0.0756 | 0.0770 | 0.0806 | 0.0751 | 5.219 |
| T 9C-PF3ONS    | Linear    | 0.4079 | 0.4103 | 0.4065 | 0.4198 | ISTD | 0.4308 | 0.4336 | 0.4300 | 0.4368 | 0.4220 | 2.939 |
| T PFDA         |           |        |        |        |        |      |        |        |        |        |        |       |
| I M7-PFUnDA    | Linear    | 0.3692 | 0.3818 | 0.3659 | 0.3907 | ISTD | 0.4041 | 0.4025 | 0.4058 | 0.4149 | 0.3919 | 4.601 |
| T PFUnDA       |           |        |        |        |        |      |        |        |        |        |        |       |
| I M2-PFDODA    | Linear    | 0.2894 | 0.2829 | 0.2600 | 0.2728 | ISTD | 0.2757 | 0.2776 | 0.2741 | 0.2734 | 0.2757 | 3.084 |
| T 11Cl-PF3OUds | Linear    | 0.4193 | 0.4282 | 0.4029 | 0.4298 | ISTD | 0.4383 | 0.4448 | 0.4432 | 0.4458 | 0.4315 | 3.443 |
| T PFDODA       |           |        |        |        |        |      |        |        |        |        |        |       |
| I M2-PFTeDA    | Linear    | 0.6703 | 0.6814 | 0.6677 | 0.6984 | ISTD | 0.7209 | 0.7205 | 0.7268 | 0.7294 | 0.7019 | 3.686 |
| T PFTiDA       | Linear    | 0.6752 | 0.6706 | 0.6400 | 0.6743 | ISTD | 0.6947 | 0.6943 | 0.6932 | 0.7013 | 0.6804 | 2.938 |
| T PFTeDA       |           |        |        |        |        |      |        |        |        |        |        |       |
| I M8-FOSA      | Quadratic | 0.4457 | 0.4272 | 0.4292 | 0.4430 | ISTD | 0.4520 | 0.4652 | 0.4628 | 0.4667 | 0.4490 | 3.458 |
| T FOSA         |           |        |        |        |        |      |        |        |        |        |        |       |
| I M3-PFBS      | Linear    | 1.5405 | 1.5464 | 1.4950 | 1.5509 | ISTD | 1.5670 | 1.5611 | 1.5914 | 1.5884 | 1.5551 | 1.964 |
| T PFBS         | Linear    | 1.0208 | 0.9895 | 0.9434 | 0.9825 | ISTD | 1.0100 | 1.0105 | 1.0249 | 1.0146 | 0.9995 | 2.699 |
| T PFPeS        |           |        |        |        |        |      |        |        |        |        |        |       |
| I M3-PFHxS     | Linear    | 1.0766 | 1.0002 | 1.0240 | 1.0641 | ISTD | 1.0874 | 1.0760 | 1.1192 | 1.1037 | 1.0689 | 3.698 |
| T PFHxS        | Linear    | 0.9332 | 1.0002 | 0.8912 | 0.9598 | ISTD | 0.9754 | 0.9785 | 0.9883 | 0.9656 | 0.9615 | 3.616 |
| T PFHpS        |           |        |        |        |        |      |        |        |        |        |        |       |
| I M8-PFOS      | Linear    | 0.9167 | 0.9238 | 0.9556 | 0.9482 | ISTD | 0.9884 | 0.9698 | 0.9628 | 0.9734 | 0.9548 | 2.572 |
| T PFOS         | Linear    | 0.5850 | 0.7658 | 0.6364 | 0.6977 | ISTD | 0.7225 | 0.7059 | 0.6911 | 0.6828 | 0.6859 | 7.971 |
| T PFNS         | Linear    | 0.3694 | 0.3805 | 0.3508 | 0.3700 | ISTD | 0.3743 | 0.3861 | 0.3694 | 0.3673 | 0.3710 | 2.800 |
| T PFDS         |           |        |        |        |        |      |        |        |        |        |        |       |
| I M2-4:2FTS    | Avg RF    | 0.5573 | 0.5899 | 0.5499 | 0.5744 | ISTD | 0.5665 | 0.5660 | 0.5297 | 0.4741 | 0.5510 | 6.483 |
| T 4:2FTS       |           |        |        |        |        |      |        |        |        |        |        |       |
| I M2-6:2FTS    |           |        |        |        |        | ISTD |        |        |        |        |        |       |



# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q442-ICC442  
**Lab FileID:** 2Q27672.D

## Initial Calibration Report

| Compound     | Curve Fit | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | Avg RF | %RSD  |
|--------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| T 6:2FTS     | Avg RF    | 0.5288 | 0.5368 | 0.5090 | 0.4944 | 0.4989 | 0.4964 | 0.4565 | 0.4152 | 0.4920 | 8.012 |
| I M2-8:2FTS  | Avg RF    | 0.5362 | 0.4821 | 0.5185 | 0.5277 | 0.5312 | 0.5130 | 0.4775 | 0.4141 | 0.5000 | 8.200 |
| T 8:2FTS     |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M3-MeFOSAA | Quadratic | 0.4441 | 0.5244 | 0.4642 | 0.5122 | 0.4984 | 0.5144 | 0.5143 | 0.5217 | 0.4992 | 5.878 |
| T MeFOSAA    | Quadratic | 0.4227 | 0.4942 | 0.4075 | 0.4047 | 0.4191 | 0.4230 | 0.4197 | 0.4061 | 0.4246 | 6.855 |
| T EtFOSAA    |           |        |        |        |        | ISTD   |        |        |        |        |       |
| I M3-HFPO-DA | Linear    | 1.1493 | 1.1180 | 1.0889 | 1.1647 | 1.1458 | 1.1794 | 1.1788 | 1.1911 | 1.1520 | 2.994 |
| T HFPO-DA    |           |        |        |        |        | ISTD   |        |        |        |        |       |

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

# Initial Calibration Summary

Job Number: FA62220  
 Account: AHTNACAS Ahtna Environmental Inc  
 Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S2Q442-ICC442  
 Lab FileID: 2Q27672.D

## Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

| Compound       | Curve Fit | Curve Fit Formula                    | Curve Fit R2 |
|----------------|-----------|--------------------------------------|--------------|
| S 13C4-PFBA    | Linear    | $y = 5996.518789 * x$                | 0.000000     |
| T PFBA         | Linear    | $y = 0.197520 * x$                   | 0.999975     |
| S 13C5-PFPeA   | Linear    | $y = 5083.356394 * x$                | 0.000000     |
| T PFPeA        | Linear    | $y = 0.865662 * x$                   | 0.999990     |
| T PFBS         | Linear    | $y = 1.587873 * x$                   | 0.999980     |
| S 13C3-PFBS    | Linear    | $y = 911.78702 * x$                  | 0.000000     |
| S 13C2-4:2FTS  | Linear    | $y = 2973.580736 * x$                | 0.000000     |
| S 13C5-PFHxA   | Linear    | $y = 7266.192219 * x$                | 0.000000     |
| T PFHxA        | Linear    | $y = 0.344421 * x$                   | 0.999970     |
| T PFPeS        | Linear    | $y = 1.016317 * x$                   | 0.999968     |
| T HFPO-DA      | Linear    | $y = 1.187915 * x$                   | 0.999953     |
| S 13C3-HFO-DA  | Linear    | $y = 1599.025152 * x$                | 0.000000     |
| S 13C4-PFHpA   | Linear    | $y = 10342.763286 * x$               | 0.000000     |
| T PFHpA        | Linear    | $y = 0.862058 * x$                   | 0.999988     |
| S 13C3-PFHxS   | Linear    | $y = 1019.424693 * x$                | 0.000000     |
| T PFHxS        | Linear    | $y = 1.105562 * x$                   | 0.999908     |
| T ADONA        | Quadratic | $y = 0.016622 * x^2 + 0.974049 * x$  | 0.999997     |
| S 13C2-6:2FTS  | Linear    | $y = 3209.585519 * x$                | 0.000000     |
| S 13C8-PFOA    | Linear    | $y = 10431.663893 * x$               | 0.000000     |
| S M2-PFOA      | Linear    | $y = 1.000962 * x$                   | 0.000000     |
| T PFOA         | Linear    | $y = 0.540236 * x$                   | 0.999831     |
| T PFHpS        | Linear    | $y = 0.970406 * x$                   | 0.999866     |
| T FOSA         | Quadratic | $y = 0.001527 * x^2 + 0.459098 * x$  | 0.999986     |
| S 13C8-FOSA    | Linear    | $y = 4054.959560 * x$                | 0.000000     |
| S M4-PFOS      | Linear    | $y = 1.000462 * x$                   | 0.000000     |
| T PFOS         | Linear    | $y = 0.971314 * x$                   | 0.999967     |
| S 13C8-PFOS    | Linear    | $y = 1303.510781 * x$                | 0.000000     |
| S 13C9-PFNA    | Linear    | $y = 10587.712977 * x$               | 0.000000     |
| T PFNA         | Linear    | $y = 0.663287 * x$                   | 0.999985     |
| T 9Cl-PF3ONS   | Quadratic | $y = 0.001311 * x^2 + 0.073985 * x$  | 0.999975     |
| S d3-MeFOSAA   | Linear    | $y = 1916.910382 * x$                | 0.000000     |
| T MeFOSAA      | Quadratic | $y = 0.002859 * x^2 + 0.507371 * x$  | 0.999988     |
| T PFNS         | Linear    | $y = 0.685455 * x$                   | 0.999881     |
| S 13C6-PFDA    | Linear    | $y = 13646.262526 * x$               | 0.000000     |
| T PFDA         | Linear    | $y = 0.435348 * x$                   | 0.999935     |
| T EtFOSAA      | Quadratic | $y = -0.004715 * x^2 + 0.429857 * x$ | 0.999975     |
| S 13C2-8:2FTS  | Linear    | $y = 2217.301028 * x$                | 0.000000     |
| T PFDS         | Linear    | $y = 0.368354 * x$                   | 0.999876     |
| S 13C7-PFUnDA  | Linear    | $y = 16923.713644 * x$               | 0.000000     |
| T PFUnDA       | Linear    | $y = 0.412589 * x$                   | 0.999838     |
| T 11Cl-PF3OUdS | Linear    | $y = 0.274079 * x$                   | 0.999929     |
| S 13C2-PFDodA  | Linear    | $y = 18808.572482 * x$               | 0.000000     |
| T PFDodA       | Linear    | $y = 0.445132 * x$                   | 0.999981     |



# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q442-ICC442  
**Lab FileID:** 2Q27672.D

## Initial Calibration Report

|               |        |                        |          |
|---------------|--------|------------------------|----------|
| T PFTeDA      | Linear | $y = 0.728459 * x$     | 0.999981 |
| T PFTeDA      | Linear | $y = 0.699430 * x$     | 0.999958 |
| S 13C2-PFTeDA | Linear | $y = 12838.574424 * x$ | 0.000000 |

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

## Initial Calibration Verification

Job Number: FA62220

Sample: S2Q442-ICV442

Account: AHTNACAS Ahtna Environmental Inc

Lab FileID: 2Q27676.D

Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27676

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %    | Area % |
|-------------|-----------|------------|----------|--------|
| 13C2-4:2FTS | 20.000    | 20.252     | 1.3      | 101.3  |
| 13C2-6:2FTS | 20.000    | 20.889     | 4.4      | 104.4  |
| 13C2-8:2FTS | 20.000    | 21.759     | 8.8      | 108.8  |
| 13C2-PFDoDA | 20.000    | 24.560     | 22.8     | 122.8  |
| 13C2-PFOA   | ---       | --ISTD--   |          |        |
| 13C2-PFTeDA | 20.000    | 25.772     | 28.9     | 128.9  |
| 13C3-PFBS   | 20.000    | 20.930     | 4.7      | 104.7  |
| 13C3-PFHxS  | 20.000    | 21.132     | 5.7      | 105.7  |
| 13C4-PFBA   | 20.000    | 20.498     | 2.5      | 102.5  |
| 13C4-PFHpA  | 20.000    | 22.142     | 10.7     | 110.7  |
| 13C4-PFOS   | ---       | --ISTD--   |          |        |
| 13C5-PFHxA  | 20.000    | 21.644     | 8.2      | 108.2  |
| 13C5-PFPeA  | 20.000    | 21.319     | 6.6      | 106.6  |
| 13C6-PFDA   | 20.000    | 23.118     | 15.6     | 115.6  |
| 13C7-PFUnDA | 20.000    | 22.940     | 14.7     | 114.7  |
| 13C8-FOSA   | 20.000    | 22.597     | 13.0     | 113.0  |
| 13C8-PFOA   | 20.000    | 22.066     | 10.3     | 110.3  |
| 13C8-PFOS   | 20.000    | 21.430     | 7.2      | 107.2  |
| 13C9-PFNA   | 20.000    | 22.205     | 11.0     | 111.0  |
| 4:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 6:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 8:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| d3-MeFOSAA  | 20.000    | 21.717     | 8.6      | 108.6  |
| M2-PFOA     | 20.000    | 19.988     | -0.1     | 99.9   |
| EtFOSAA     | 20.000    | 15.917     | -20.4    | 79.6   |
| FOSA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| MeFOSAA     | 20.000    | 17.692     | -11.5    | 88.5   |
| PFBA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFBS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDoDA      | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpA       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxA       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFNA        | 20.000    | 0.000      | # -100.0 | 0.0    |

# Initial Calibration Verification

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q442-ICV442  
**Lab FileID:** 2Q27676.D

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFNS         | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFOA         | 20.000  | 17.009   | -15.0    | 85.0  |
| PFOS         | 20.000  | 19.885   | -0.6     | 99.4  |
| PFPeA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFPeS        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTeDA       | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTTrDA      | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFUnDA       | 20.000  | 0.000    | # -100.0 | 0.0   |
| M4-PFOS      | 20.000  | 20.005   | 0.0      | 100.0 |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDoDA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 0.000    | # -100.0 | 0.0   |
| 13C3-HFPO-DA | 100.000 | 103.129  | 3.1      | 103.1 |
| 9C1-PF3ONS   | 20.000  | 0.000    | # -100.0 | 0.0   |
| ADONA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| HFPO-DA      | 100.000 | 0.000    | # -100.0 | 0.0   |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |

CC Criteria: +/- 30%

6.8.8

6

**Initial Calibration Verification****Job Number:** FA62220**Sample:** S2Q442-ICV442**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27677.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27677

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 22.638     | 13.2  | 113.2  |
| 13C2-6:2FTS | 20.000    | 22.817     | 14.1  | 114.1  |
| 13C2-8:2FTS | 20.000    | 23.035     | 15.2  | 115.2  |
| 13C2-PFDoDA | 20.000    | 23.742     | 18.7  | 118.7  |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 24.339     | 21.7  | 121.7  |
| 13C3-PFBS   | 20.000    | 22.365     | 11.8  | 111.8  |
| 13C3-PFHxS  | 20.000    | 22.260     | 11.3  | 111.3  |
| 13C4-PFBA   | 20.000    | 22.456     | 12.3  | 112.3  |
| 13C4-PFHpA  | 20.000    | 23.074     | 15.4  | 115.4  |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 22.916     | 14.6  | 114.6  |
| 13C5-PFPeA  | 20.000    | 22.739     | 13.7  | 113.7  |
| 13C6-PFDA   | 20.000    | 23.318     | 16.6  | 116.6  |
| 13C7-PFUnDA | 20.000    | 23.698     | 18.5  | 118.5  |
| 13C8-FOSA   | 20.000    | 22.532     | 12.7  | 112.7  |
| 13C8-PFOA   | 20.000    | 23.216     | 16.1  | 116.1  |
| 13C8-PFOS   | 20.000    | 22.252     | 11.3  | 111.3  |
| 13C9-PFNA   | 20.000    | 23.187     | 15.9  | 115.9  |
| 4:2FTS      | 20.000    | 17.691     | -11.5 | 88.5   |
| 6:2FTS      | 20.000    | 18.148     | -9.3  | 90.7   |
| 8:2FTS      | 20.000    | 18.613     | -6.9  | 93.1   |
| d3-MeFOSAA  | 20.000    | 23.338     | 16.7  | 116.7  |
| M2-PFOA     | 20.000    | 20.004     | 0.0   | 100.0  |
| EtFOSAA     | 20.000    | 18.369     | -8.2  | 91.8   |
| FOSA        | 20.000    | 19.229     | -3.9  | 96.1   |
| MeFOSAA     | 20.000    | 19.078     | -4.6  | 95.4   |
| PFBA        | 20.000    | 18.609     | -7.0  | 93.0   |
| PFBS        | 20.000    | 15.884     | -20.6 | 79.4   |
| PFDA        | 20.000    | 17.488     | -12.6 | 87.4   |
| PFDoDA      | 20.000    | 19.612     | -1.9  | 98.1   |
| PFDS        | 20.000    | 18.040     | -9.8  | 90.2   |
| PFHpA       | 20.000    | 19.524     | -2.4  | 97.6   |
| PFHpS       | 20.000    | 18.494     | -7.5  | 92.5   |
| PFHxA       | 20.000    | 16.735     | -16.3 | 83.7   |
| PFHxS       | 20.000    | 16.344     | -18.3 | 81.7   |
| PFNA        | 20.000    | 17.441     | -12.8 | 87.2   |

# Initial Calibration Verification

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q442-ICV442  
**Lab FileID:** 2Q27677.D

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFNS         | 20.000  | 18.531   | -7.3     | 92.7  |
| PFOA         | 20.000  | 18.815   | -5.9     | 94.1  |
| PFOS         | 20.000  | 18.739   | -6.3     | 93.7  |
| PFPeA        | 20.000  | 17.947   | -10.3    | 89.7  |
| PFPeS        | 20.000  | 15.768   | -21.2    | 78.8  |
| PFTeDA       | 20.000  | 17.125   | -14.4    | 85.6  |
| PFTTrDA      | 20.000  | 19.985   | -0.1     | 99.9  |
| PFUnDA       | 20.000  | 19.148   | -4.3     | 95.7  |
| M4-PFOS      | 20.000  | 20.020   | 0.1      | 100.1 |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDoDA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 0.000    | # -100.0 | 0.0   |
| 13C3-HFPO-DA | 100.000 | 112.339  | 12.3     | 112.3 |
| 9C1-PF3ONS   | 20.000  | 0.000    | # -100.0 | 0.0   |
| ADONA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| HFPO-DA      | 100.000 | 0.000    | # -100.0 | 0.0   |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |

CC Criteria: +/- 30%

6.8.9

6

## Initial Calibration Verification

Job Number: FA62220

Sample: S2Q442-ICV442

Account: AHTNACAS Ahtna Environmental Inc

Lab FileID: 2Q27678.D

Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27678

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %    | Area % |
|-------------|-----------|------------|----------|--------|
| 13C2-4:2FTS | 20.000    | 19.949     | -0.3     | 99.7   |
| 13C2-6:2FTS | 20.000    | 20.397     | 2.0      | 102.0  |
| 13C2-8:2FTS | 20.000    | 20.279     | 1.4      | 101.4  |
| 13C2-PFDoDA | 20.000    | 22.005     | 10.0     | 110.0  |
| 13C2-PFOA   | ---       | --ISTD--   |          |        |
| 13C2-PFTeDA | 20.000    | 22.045     | 10.2     | 110.2  |
| 13C3-PFBS   | 20.000    | 20.708     | 3.5      | 103.5  |
| 13C3-PFHxS  | 20.000    | 20.662     | 3.3      | 103.3  |
| 13C4-PFBA   | 20.000    | 20.885     | 4.4      | 104.4  |
| 13C4-PFHpA  | 20.000    | 21.553     | 7.8      | 107.8  |
| 13C4-PFOS   | ---       | --ISTD--   |          |        |
| 13C5-PFHxA  | 20.000    | 21.131     | 5.7      | 105.7  |
| 13C5-PFPeA  | 20.000    | 21.185     | 5.9      | 105.9  |
| 13C6-PFDA   | 20.000    | 22.187     | 10.9     | 110.9  |
| 13C7-PFUnDA | 20.000    | 21.945     | 9.7      | 109.7  |
| 13C8-FOSA   | 20.000    | 22.035     | 10.2     | 110.2  |
| 13C8-PFOA   | 20.000    | 21.863     | 9.3      | 109.3  |
| 13C8-PFOS   | 20.000    | 21.032     | 5.2      | 105.2  |
| 13C9-PFNA   | 20.000    | 21.779     | 8.9      | 108.9  |
| 4:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 6:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 8:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| d3-MeFOSAA  | 20.000    | 21.405     | 7.0      | 107.0  |
| M2-PFOA     | 20.000    | 19.984     | -0.1     | 99.9   |
| EtFOSAA     | 20.000    | 17.754     | -11.2    | 88.8   |
| FOSA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| MeFOSAA     | 20.000    | 17.719     | -11.4    | 88.6   |
| PFBA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFBS        | 20.000    | 18.581     | -7.1     | 92.9   |
| PFDA        | 20.000    | 18.965     | -5.2     | 94.8   |
| PFDoDA      | 20.000    | 18.808     | -6.0     | 94.0   |
| PFDS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpA       | 20.000    | 18.868     | -5.7     | 94.3   |
| PFHpS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxA       | 20.000    | 18.761     | -6.2     | 93.8   |
| PFHxS       | 20.000    | 19.135     | -4.3     | 95.7   |
| PFNA        | 20.000    | 19.556     | -2.2     | 97.8   |

# Initial Calibration Verification

**Job Number:** FA62220

**Sample:** S2Q442-ICV442

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 2Q27678.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFNS         | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFOA         | 20.000  | 19.149   | -4.3     | 95.7  |
| PFOS         | 20.000  | 18.260   | -8.7     | 91.3  |
| PFPeA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFPeS        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTeDA       | 20.000  | 18.900   | -5.5     | 94.5  |
| PFTrDA       | 20.000  | 19.098   | -4.5     | 95.5  |
| PFUnDA       | 20.000  | 19.168   | -4.2     | 95.8  |
| M4-PFOS      | 20.000  | 20.007   | 0.0      | 100.0 |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDoDA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 19.907   | -0.5     | 99.5  |
| 13C3-HFPO-DA | 100.000 | 103.306  | 3.3      | 103.3 |
| 9C1-PF3ONS   | 20.000  | 19.678   | -1.6     | 98.4  |
| ADONA        | 20.000  | 19.409   | -3.0     | 97.0  |
| HFPO-DA      | 20.000  | 19.973   | -0.1     | 99.9  |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |

CC Criteria: +/- 30%

**Continuing Calibration Summary****Job Number:** FA62220**Sample:** S2Q442-CC442**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27688.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27688

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %  | Area % |
|-------------|-----------|------------|--------|--------|
| 13C2-4:2FTS | 20.000    | 20.955     | 4.8    | 104.8  |
| 13C2-6:2FTS | 20.000    | 21.894     | 9.5    | 109.5  |
| 13C2-8:2FTS | 20.000    | 23.468     | 17.3   | 117.3  |
| 13C2-PFDoDA | 20.000    | 24.865     | 24.3   | 124.3  |
| 13C2-PFOA   | ---       | --ISTD--   |        |        |
| 13C2-PFTeDA | 20.000    | 26.079     | # 30.4 | 130.4  |
| 13C3-PFBS   | 20.000    | 20.397     | 2.0    | 102.0  |
| 13C3-PFHxS  | 20.000    | 20.797     | 4.0    | 104.0  |
| 13C4-PFBA   | 20.000    | 21.107     | 5.5    | 105.5  |
| 13C4-PFHpA  | 20.000    | 21.935     | 9.7    | 109.7  |
| 13C4-PFOS   | ---       | --ISTD--   |        |        |
| 13C5-PFHxA  | 20.000    | 21.253     | 6.3    | 106.3  |
| 13C5-PFPeA  | 20.000    | 21.378     | 6.9    | 106.9  |
| 13C6-PFDA   | 20.000    | 22.958     | 14.8   | 114.8  |
| 13C7-PFUnDA | 20.000    | 23.673     | 18.4   | 118.4  |
| 13C8-FOSA   | 20.000    | 21.967     | 9.8    | 109.8  |
| 13C8-PFOA   | 20.000    | 22.072     | 10.4   | 110.4  |
| 13C8-PFOS   | 20.000    | 21.257     | 6.3    | 106.3  |
| 13C9-PFNA   | 20.000    | 22.588     | 12.9   | 112.9  |
| 4:2FTS      | 20.000    | 20.536     | 2.7    | 102.7  |
| 6:2FTS      | 20.000    | 19.861     | -0.7   | 99.3   |
| 8:2FTS      | 20.000    | 20.320     | 1.6    | 101.6  |
| d3-MeFOSAA  | 20.000    | 22.047     | 10.2   | 110.2  |
| M2-PFOA     | 20.000    | 20.002     | 0.0    | 100.0  |
| EtFOSAA     | 20.000    | 20.259     | 1.3    | 101.3  |
| FOSA        | 20.000    | 19.761     | -1.2   | 98.8   |
| MeFOSAA     | 20.000    | 19.851     | -0.7   | 99.3   |
| PFBA        | 20.000    | 19.686     | -1.6   | 98.4   |
| PFBS        | 20.000    | 19.959     | -0.2   | 99.8   |
| PFDA        | 20.000    | 20.085     | 0.4    | 100.4  |
| PFDoDA      | 20.000    | 19.910     | -0.5   | 99.5   |
| PFDS        | 20.000    | 20.213     | 1.1    | 101.1  |
| PFHpA       | 20.000    | 19.719     | -1.4   | 98.6   |
| PFHpS       | 20.000    | 20.349     | 1.7    | 101.7  |
| PFHxA       | 20.000    | 19.973     | -0.1   | 99.9   |
| PFHxS       | 20.000    | 19.682     | -1.6   | 98.4   |
| PFNA        | 20.000    | 19.822     | -0.9   | 99.1   |



# Continuing Calibration Summary

**Job Number:** FA62220      **Sample:** S2Q442-CC442  
**Account:** AHTNACAS Ahtna Environmental Inc      **Lab FileID:** 2Q27688.D  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 20.000  | 20.857   | 4.3   | 104.3 |
| PFOA         | 20.000  | 19.387   | -3.1  | 96.9  |
| PFOS         | 20.000  | 19.234   | -3.8  | 96.2  |
| PFPeA        | 20.000  | 19.825   | -0.9  | 99.1  |
| PFPeS        | 20.000  | 20.759   | 3.8   | 103.8 |
| PFTeDA       | 20.000  | 19.710   | -1.4  | 98.6  |
| PFTTrDA      | 20.000  | 19.407   | -3.0  | 97.0  |
| PFUnDA       | 20.000  | 19.837   | -0.8  | 99.2  |
| M4-PFOS      | 20.000  | 20.021   | 0.1   | 100.1 |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDoDA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 20.000  | 17.355   | -13.2 | 86.8  |
| 13C3-HFPO-DA | 100.000 | 102.732  | 2.7   | 102.7 |
| 9C1-PF3ONS   | 20.000  | 18.991   | -5.0  | 95.0  |
| ADONA        | 20.000  | 19.507   | -2.5  | 97.5  |
| HFPO-DA      | 100.000 | 102.547  | 2.5   | 102.5 |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

## Continuing Calibration Summary

Job Number: FA62220

Sample: S2Q442-CC442

Account: AHTNACAS Ahtna Environmental Inc

Lab FileID: 2Q27690.D

Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27690

Type : QC

Level : 2

| Cpnd Name   | Exp. Conc | Final Conc | Dev %  | Area % |
|-------------|-----------|------------|--------|--------|
| 13C2-4:2FTS | 20.000    | 21.428     | 7.1    | 107.1  |
| 13C2-6:2FTS | 20.000    | 22.563     | 12.8   | 112.8  |
| 13C2-8:2FTS | 20.000    | 23.190     | 15.9   | 115.9  |
| 13C2-PFDoDA | 20.000    | 25.994     | 30.0   | 130.0  |
| 13C2-PFOA   | ---       | --ISTD--   |        |        |
| 13C2-PFTeDA | 20.000    | 27.775     | # 38.9 | 138.9  |
| 13C3-PFBS   | 20.000    | 21.847     | 9.2    | 109.2  |
| 13C3-PFHxS  | 20.000    | 22.053     | 10.3   | 110.3  |
| 13C4-PFBA   | 20.000    | 22.486     | 12.4   | 112.4  |
| 13C4-PFHpA  | 20.000    | 23.532     | 17.7   | 117.7  |
| 13C4-PFOS   | ---       | --ISTD--   |        |        |
| 13C5-PFHxA  | 20.000    | 22.955     | 14.8   | 114.8  |
| 13C5-PFPeA  | 20.000    | 22.884     | 14.4   | 114.4  |
| 13C6-PFDA   | 20.000    | 25.114     | 25.6   | 125.6  |
| 13C7-PFUnDA | 20.000    | 25.557     | 27.8   | 127.8  |
| 13C8-FOSA   | 20.000    | 23.954     | 19.8   | 119.8  |
| 13C8-PFOA   | 20.000    | 24.101     | 20.5   | 120.5  |
| 13C8-PFOS   | 20.000    | 21.959     | 9.8    | 109.8  |
| 13C9-PFNA   | 20.000    | 24.656     | 23.3   | 123.3  |
| 4:2FTS      | 1.000     | 0.989      | -1.1   | 98.9   |
| 6:2FTS      | 1.000     | 0.994      | -0.6   | 99.4   |
| 8:2FTS      | 1.000     | 0.987      | -1.3   | 98.7   |
| d3-MeFOSAA  | 20.000    | 23.833     | 19.2   | 119.2  |
| M2-PFOA     | 20.000    | 19.993     | 0.0    | 100.0  |
| EtFOSAA     | 1.000     | 0.961      | -3.9   | 96.1   |
| FOSA        | 1.000     | 1.015      | 1.5    | 101.5  |
| MeFOSAA     | 1.000     | 1.013      | 1.3    | 101.3  |
| PFBA        | 1.000     | 0.987      | -1.3   | 98.7   |
| PFBS        | 1.000     | 0.970      | -3.0   | 97.0   |
| PFDA        | 1.000     | 0.987      | -1.3   | 98.7   |
| PFDoDA      | 1.000     | 0.977      | -2.3   | 97.7   |
| PFDS        | 1.000     | 0.885      | -11.5  | 88.5   |
| PFHpA       | 1.000     | 0.935      | -6.5   | 93.5   |
| PFHpS       | 1.000     | 0.977      | -2.3   | 97.7   |
| PFHxA       | 1.000     | 0.969      | -3.1   | 96.9   |
| PFHxS       | 1.000     | 0.960      | -4.0   | 96.0   |
| PFNA        | 1.000     | 0.934      | -6.6   | 93.4   |

# Continuing Calibration Summary

**Job Number:** FA62220

**Sample:** S2Q442-CC442

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 2Q27690.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 1.000   | 1.082    | 8.2   | 108.2 |
| PFOA         | 1.000   | 0.932    | -6.8  | 93.2  |
| PFOS         | 1.000   | 1.040    | 4.0   | 104.0 |
| PFPeA        | 1.000   | 0.974    | -2.6  | 97.4  |
| PFPeS        | 1.000   | 1.041    | 4.1   | 104.1 |
| PFTeDA       | 1.000   | 0.943    | -5.7  | 94.3  |
| PFTTrDA      | 1.000   | 0.897    | -10.3 | 89.7  |
| PFUnDA       | 1.000   | 0.937    | -6.3  | 93.7  |
| M4-PFOS      | 20.000  | 20.048   | 0.2   | 100.2 |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDoDA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 1.000   | 0.857    | -14.3 | 85.7  |
| 13C3-HFPO-DA | 100.000 | 115.795  | 15.8  | 115.8 |
| 9C1-PF3ONS   | 1.000   | 0.986    | -1.4  | 98.6  |
| ADONA        | 1.000   | 0.908    | -9.2  | 90.8  |
| HFPO-DA      | 5.000   | 4.780    | -4.4  | 95.6  |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

6.8.12

6

## Continuing Calibration Summary

Job Number: FA62220

Sample: S2Q442-CC442

Account: AHTNACAS Ahtna Environmental Inc

Lab FileID: 2Q27701.D

Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27701

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %  | Area % |
|-------------|-----------|------------|--------|--------|
| 13C2-4:2FTS | 20.000    | 22.092     | 10.5   | 110.5  |
| 13C2-6:2FTS | 20.000    | 22.347     | 11.7   | 111.7  |
| 13C2-8:2FTS | 20.000    | 23.504     | 17.5   | 117.5  |
| 13C2-PFDoDA | 20.000    | 25.004     | 25.0   | 125.0  |
| 13C2-PFOA   | ---       | --ISTD--   |        |        |
| 13C2-PFTeDA | 20.000    | 26.123     | # 30.6 | 130.6  |
| 13C3-PFBS   | 20.000    | 21.113     | 5.6    | 105.6  |
| 13C3-PFHxS  | 20.000    | 21.231     | 6.2    | 106.2  |
| 13C4-PFBA   | 20.000    | 21.954     | 9.8    | 109.8  |
| 13C4-PFHpA  | 20.000    | 22.768     | 13.8   | 113.8  |
| 13C4-PFOS   | ---       | --ISTD--   |        |        |
| 13C5-PFHxA  | 20.000    | 22.337     | 11.7   | 111.7  |
| 13C5-PFPeA  | 20.000    | 22.534     | 12.7   | 112.7  |
| 13C6-PFDA   | 20.000    | 24.162     | 20.8   | 120.8  |
| 13C7-PFUnDA | 20.000    | 24.323     | 21.6   | 121.6  |
| 13C8-FOSA   | 20.000    | 22.738     | 13.7   | 113.7  |
| 13C8-PFOA   | 20.000    | 22.931     | 14.7   | 114.7  |
| 13C8-PFOS   | 20.000    | 21.422     | 7.1    | 107.1  |
| 13C9-PFNA   | 20.000    | 23.414     | 17.1   | 117.1  |
| 4:2FTS      | 20.000    | 20.224     | 1.1    | 101.1  |
| 6:2FTS      | 20.000    | 20.329     | 1.6    | 101.6  |
| 8:2FTS      | 20.000    | 20.434     | 2.2    | 102.2  |
| d3-MeFOSAA  | 20.000    | 22.582     | 12.9   | 112.9  |
| M2-PFOA     | 20.000    | 19.994     | 0.0    | 100.0  |
| EtFOSAA     | 20.000    | 20.571     | 2.9    | 102.9  |
| FOSA        | 20.000    | 20.067     | 0.3    | 100.3  |
| MeFOSAA     | 20.000    | 19.904     | -0.5   | 99.5   |
| PFBA        | 20.000    | 19.384     | -3.1   | 96.9   |
| PFBS        | 20.000    | 20.042     | 0.2    | 100.2  |
| PFDA        | 20.000    | 19.736     | -1.3   | 98.7   |
| PFDoDA      | 20.000    | 19.993     | 0.0    | 100.0  |
| PFDS        | 20.000    | 19.809     | -1.0   | 99.0   |
| PFHpA       | 20.000    | 19.701     | -1.5   | 98.5   |
| PFHpS       | 20.000    | 20.631     | 3.2    | 103.2  |
| PFHxA       | 20.000    | 19.659     | -1.7   | 98.3   |
| PFHxS       | 20.000    | 19.778     | -1.1   | 98.9   |
| PFNA        | 20.000    | 19.664     | -1.7   | 98.3   |

# Continuing Calibration Summary

**Job Number:** FA62220

**Sample:** S2Q442-CC442

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 2Q27701.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 20.000  | 21.178   | 5.9   | 105.9 |
| PFOA         | 20.000  | 19.401   | -3.0  | 97.0  |
| PFOS         | 20.000  | 19.406   | -3.0  | 97.0  |
| PFPeA        | 20.000  | 19.728   | -1.4  | 98.6  |
| PFPeS        | 20.000  | 20.784   | 3.9   | 103.9 |
| PFTeDA       | 20.000  | 19.411   | -2.9  | 97.1  |
| PFTTrDA      | 20.000  | 19.213   | -3.9  | 96.1  |
| PFUnDA       | 20.000  | 19.693   | -1.5  | 98.5  |
| M4-PFOS      | 20.000  | 20.037   | 0.2   | 100.2 |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDoDA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 20.000  | 17.467   | -12.7 | 87.3  |
| 13C3-HFPO-DA | 100.000 | 106.139  | 6.1   | 106.1 |
| 9C1-PF3ONS   | 20.000  | 18.216   | -8.9  | 91.1  |
| ADONA        | 20.000  | 19.508   | -2.5  | 97.5  |
| HFPO-DA      | 100.000 | 99.543   | -0.5  | 99.5  |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

6.8.13

6

## Continuing Calibration Summary

Job Number: FA62220

Sample: S2Q442-CC442

Account: AHTNACAS Ahtna Environmental Inc

Lab FileID: 2Q27713.D

Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27713

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 21.156     | 5.8   | 105.8  |
| 13C2-6:2FTS | 20.000    | 21.882     | 9.4   | 109.4  |
| 13C2-8:2FTS | 20.000    | 23.047     | 15.2  | 115.2  |
| 13C2-PFDoDA | 20.000    | 24.124     | 20.6  | 120.6  |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 25.149     | 25.7  | 125.7  |
| 13C3-PFBS   | 20.000    | 20.257     | 1.3   | 101.3  |
| 13C3-PFHxS  | 20.000    | 20.293     | 1.5   | 101.5  |
| 13C4-PFBA   | 20.000    | 21.044     | 5.2   | 105.2  |
| 13C4-PFHpA  | 20.000    | 22.098     | 10.5  | 110.5  |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 21.493     | 7.5   | 107.5  |
| 13C5-PFPeA  | 20.000    | 21.569     | 7.8   | 107.8  |
| 13C6-PFDA   | 20.000    | 23.406     | 17.0  | 117.0  |
| 13C7-PFUnDA | 20.000    | 23.715     | 18.6  | 118.6  |
| 13C8-FOSA   | 20.000    | 21.764     | 8.8   | 108.8  |
| 13C8-PFOA   | 20.000    | 22.179     | 10.9  | 110.9  |
| 13C8-PFOS   | 20.000    | 20.005     | 0.0   | 100.0  |
| 13C9-PFNA   | 20.000    | 23.125     | 15.6  | 115.6  |
| 4:2FTS      | 20.000    | 20.327     | 1.6   | 101.6  |
| 6:2FTS      | 20.000    | 20.133     | 0.7   | 100.7  |
| 8:2FTS      | 20.000    | 20.389     | 1.9   | 101.9  |
| d3-MeFOSAA  | 20.000    | 22.608     | 13.0  | 113.0  |
| M2-PFOA     | 20.000    | 20.002     | 0.0   | 100.0  |
| EtFOSAA     | 20.000    | 20.094     | 0.5   | 100.5  |
| FOSA        | 20.000    | 19.993     | 0.0   | 100.0  |
| MeFOSAA     | 20.000    | 20.244     | 1.2   | 101.2  |
| PFBA        | 20.000    | 19.245     | -3.8  | 96.2   |
| PFBS        | 20.000    | 19.622     | -1.9  | 98.1   |
| PFDA        | 20.000    | 19.934     | -0.3  | 99.7   |
| PFDoDA      | 20.000    | 20.117     | 0.6   | 100.6  |
| PFDS        | 20.000    | 20.986     | 4.9   | 104.9  |
| PFHpA       | 20.000    | 19.752     | -1.2  | 98.8   |
| PFHpS       | 20.000    | 20.637     | 3.2   | 103.2  |
| PFHxA       | 20.000    | 19.667     | -1.7  | 98.3   |
| PFHxS       | 20.000    | 20.050     | 0.2   | 100.2  |
| PFNA        | 20.000    | 19.243     | -3.8  | 96.2   |

# Continuing Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q442-CC442  
**Lab FileID:** 2Q27713.D

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 20.000  | 21.760   | 8.8   | 108.8 |
| PFOA         | 20.000  | 19.330   | -3.3  | 96.7  |
| PFOS         | 20.000  | 19.925   | -0.4  | 99.6  |
| PFPeA        | 20.000  | 19.827   | -0.9  | 99.1  |
| PFPeS        | 20.000  | 20.824   | 4.1   | 104.1 |
| PFTeDA       | 20.000  | 19.414   | -2.9  | 97.1  |
| PFTrDA       | 20.000  | 19.163   | -4.2  | 95.8  |
| PFUnDA       | 20.000  | 19.644   | -1.8  | 98.2  |
| M4-PFOS      | 20.000  | 20.003   | 0.0   | 100.0 |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDODA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 20.000  | 17.257   | -13.7 | 86.3  |
| 13C3-HFPO-DA | 100.000 | 99.599   | -0.4  | 99.6  |
| 9C1-PF3ONS   | 20.000  | 18.087   | -9.6  | 90.4  |
| ADONA        | 20.000  | 19.365   | -3.2  | 96.8  |
| HFPO-DA      | 100.000 | 99.866   | -0.1  | 99.9  |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

6.8.14

6

**Continuing Calibration Summary****Job Number:** FA62220**Sample:** S2Q442-ECC442**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27719.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\S2Q442.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27719

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %  | Area % |
|-------------|-----------|------------|--------|--------|
| 13C2-4:2FTS | 20.000    | 21.425     | 7.1    | 107.1  |
| 13C2-6:2FTS | 20.000    | 22.240     | 11.2   | 111.2  |
| 13C2-8:2FTS | 20.000    | 23.648     | 18.2   | 118.2  |
| 13C2-PFDoDA | 20.000    | 24.970     | 24.8   | 124.8  |
| 13C2-PFOA   | ---       | --ISTD--   |        |        |
| 13C2-PFTeDA | 20.000    | 26.248     | # 31.2 | 131.2  |
| 13C3-PFBS   | 20.000    | 20.474     | 2.4    | 102.4  |
| 13C3-PFHxS  | 20.000    | 20.821     | 4.1    | 104.1  |
| 13C4-PFBA   | 20.000    | 21.554     | 7.8    | 107.8  |
| 13C4-PFHpA  | 20.000    | 22.419     | 12.1   | 112.1  |
| 13C4-PFOS   | ---       | --ISTD--   |        |        |
| 13C5-PFHxA  | 20.000    | 21.608     | 8.0    | 108.0  |
| 13C5-PFPeA  | 20.000    | 22.047     | 10.2   | 110.2  |
| 13C6-PFDA   | 20.000    | 23.978     | 19.9   | 119.9  |
| 13C7-PFUnDA | 20.000    | 24.195     | 21.0   | 121.0  |
| 13C8-FOSA   | 20.000    | 22.149     | 10.7   | 110.7  |
| 13C8-PFOA   | 20.000    | 22.584     | 12.9   | 112.9  |
| 13C8-PFOS   | 20.000    | 20.806     | 4.0    | 104.0  |
| 13C9-PFNA   | 20.000    | 23.413     | 17.1   | 117.1  |
| 4:2FTS      | 20.000    | 20.340     | 1.7    | 101.7  |
| 6:2FTS      | 20.000    | 20.063     | 0.3    | 100.3  |
| 8:2FTS      | 20.000    | 20.300     | 1.5    | 101.5  |
| d3-MeFOSAA  | 20.000    | 23.564     | 17.8   | 117.8  |
| M2-PFOA     | 20.000    | 20.002     | 0.0    | 100.0  |
| EtFOSAA     | 20.000    | 19.577     | -2.1   | 97.9   |
| FOSA        | 20.000    | 20.042     | 0.2    | 100.2  |
| MeFOSAA     | 20.000    | 19.484     | -2.6   | 97.4   |
| PFBA        | 20.000    | 19.315     | -3.4   | 96.6   |
| PFBS        | 20.000    | 19.930     | -0.3   | 99.7   |
| PFDA        | 20.000    | 19.850     | -0.8   | 99.2   |
| PFDoDA      | 20.000    | 19.945     | -0.3   | 99.7   |
| PFDS        | 20.000    | 20.206     | 1.0    | 101.0  |
| PFHpA       | 20.000    | 19.743     | -1.3   | 98.7   |
| PFHpS       | 20.000    | 20.150     | 0.7    | 100.7  |
| PFHxA       | 20.000    | 19.706     | -1.5   | 98.5   |
| PFHxS       | 20.000    | 19.650     | -1.8   | 98.2   |
| PFNA        | 20.000    | 19.454     | -2.7   | 97.3   |



# Continuing Calibration Summary

**Job Number:** FA62220

**Sample:** S2Q442-ECC442

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 2Q27719.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 20.000  | 21.406   | 7.0   | 107.0 |
| PFOA         | 20.000  | 19.367   | -3.2  | 96.8  |
| PFOS         | 20.000  | 19.251   | -3.7  | 96.3  |
| PFPeA        | 20.000  | 19.754   | -1.2  | 98.8  |
| PFPeS        | 20.000  | 20.934   | 4.7   | 104.7 |
| PFTeDA       | 20.000  | 19.438   | -2.8  | 97.2  |
| PFTTrDA      | 20.000  | 19.281   | -3.6  | 96.4  |
| PFUnDA       | 20.000  | 19.747   | -1.3  | 98.7  |
| M4-PFOS      | 20.000  | 20.026   | 0.1   | 100.1 |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDoDA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 20.000  | 17.212   | -13.9 | 86.1  |
| 13C3-HFPO-DA | 100.000 | 101.659  | 1.7   | 101.7 |
| 9C1-PF3ONS   | 20.000  | 17.935   | -10.3 | 89.7  |
| ADONA        | 20.000  | 19.389   | -3.1  | 96.9  |
| HFPO-DA      | 100.000 | 99.045   | -1.0  | 99.0  |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

6.8.15

6

**Continuing Calibration Summary****Job Number:** FA62220**Sample:** S2Q443-CC442**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27742.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0319\_ID\_GENX\_S2Q443\S2Q443.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27742

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 20.921     | 4.6   | 104.6  |
| 13C2-6:2FTS | 20.000    | 21.602     | 8.0   | 108.0  |
| 13C2-8:2FTS | 20.000    | 22.687     | 13.4  | 113.4  |
| 13C2-PFDoDA | 20.000    | 23.476     | 17.4  | 117.4  |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 24.026     | 20.1  | 120.1  |
| 13C3-PFBS   | 20.000    | 20.639     | 3.2   | 103.2  |
| 13C3-PFHxS  | 20.000    | 20.637     | 3.2   | 103.2  |
| 13C4-PFBA   | 20.000    | 20.892     | 4.5   | 104.5  |
| 13C4-PFHpA  | 20.000    | 21.594     | 8.0   | 108.0  |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 21.222     | 6.1   | 106.1  |
| 13C5-PFPeA  | 20.000    | 21.432     | 7.2   | 107.2  |
| 13C6-PFDA   | 20.000    | 22.631     | 13.2  | 113.2  |
| 13C7-PFUnDA | 20.000    | 23.104     | 15.5  | 115.5  |
| 13C8-FOSA   | 20.000    | 21.500     | 7.5   | 107.5  |
| 13C8-PFOA   | 20.000    | 21.662     | 8.3   | 108.3  |
| 13C8-PFOS   | 20.000    | 21.188     | 5.9   | 105.9  |
| 13C9-PFNA   | 20.000    | 22.203     | 11.0  | 111.0  |
| 4:2FTS      | 20.000    | 20.442     | 2.2   | 102.2  |
| 6:2FTS      | 20.000    | 19.897     | -0.5  | 99.5   |
| 8:2FTS      | 20.000    | 20.595     | 3.0   | 103.0  |
| d3-MeFOSAA  | 20.000    | 21.731     | 8.7   | 108.7  |
| M2-PFOA     | 20.000    | 19.997     | 0.0   | 100.0  |
| EtFOSAA     | 20.000    | 20.735     | 3.7   | 103.7  |
| FOSA        | 20.000    | 19.717     | -1.4  | 98.6   |
| MeFOSAA     | 20.000    | 20.660     | 3.3   | 103.3  |
| PFBA        | 20.000    | 19.616     | -1.9  | 98.1   |
| PFBS        | 20.000    | 19.907     | -0.5  | 99.5   |
| PFDA        | 20.000    | 20.271     | 1.4   | 101.4  |
| PFDoDA      | 20.000    | 20.046     | 0.2   | 100.2  |
| PFDS        | 20.000    | 19.677     | -1.6  | 98.4   |
| PFHpA       | 20.000    | 19.691     | -1.5  | 98.5   |
| PFHpS       | 20.000    | 20.234     | 1.2   | 101.2  |
| PFHxA       | 20.000    | 20.148     | 0.7   | 100.7  |
| PFHxS       | 20.000    | 19.938     | -0.3  | 99.7   |
| PFNA        | 20.000    | 19.997     | 0.0   | 100.0  |

# Continuing Calibration Summary

**Job Number:** FA62220      **Sample:** S2Q443-CC442  
**Account:** AHTNACAS Ahtna Environmental Inc      **Lab FileID:** 2Q27742.D  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |      |       |
|--------------|---------|----------|------|-------|
| PFNS         | 20.000  | 20.249   | 1.2  | 101.2 |
| PFOA         | 20.000  | 19.610   | -1.9 | 98.1  |
| PFOS         | 20.000  | 19.231   | -3.8 | 96.2  |
| PFPeA        | 20.000  | 19.577   | -2.1 | 97.9  |
| PFPeS        | 20.000  | 20.653   | 3.3  | 103.3 |
| PFTeDA       | 20.000  | 19.581   | -2.1 | 97.9  |
| PFTTrDA      | 20.000  | 19.663   | -1.7 | 98.3  |
| PFUnDA       | 20.000  | 19.632   | -1.8 | 98.2  |
| M4-PFOS      | 20.000  | 20.030   | 0.1  | 100.1 |
| M4-PFBA      | ---     | --ISTD-- |      |       |
| M5-PFPeA     | ---     | --ISTD-- |      |       |
| M5-PFHxA     | ---     | --ISTD-- |      |       |
| M4-PFHpA     | ---     | --ISTD-- |      |       |
| M8-PFOA      | ---     | --ISTD-- |      |       |
| M9-PFNA      | ---     | --ISTD-- |      |       |
| M6-PFDA      | ---     | --ISTD-- |      |       |
| M7-PFUnDA    | ---     | --ISTD-- |      |       |
| M2-PFDoDA    | ---     | --ISTD-- |      |       |
| M2-PFTeDA    | ---     | --ISTD-- |      |       |
| M8-FOSA      | ---     | --ISTD-- |      |       |
| M3-PFBS      | ---     | --ISTD-- |      |       |
| M3-PFHxS     | ---     | --ISTD-- |      |       |
| M8-PFOS      | ---     | --ISTD-- |      |       |
| M2-4:2FTS    | ---     | --ISTD-- |      |       |
| M2-6:2FTS    | ---     | --ISTD-- |      |       |
| M2-8:2FTS    | ---     | --ISTD-- |      |       |
| M3-MeFOSAA   | ---     | --ISTD-- |      |       |
| 11C1-PF3OUdS | 20.000  | 18.032   | -9.8 | 90.2  |
| 13C3-HFPO-DA | 100.000 | 114.940  | 14.9 | 114.9 |
| 9C1-PF3ONS   | 20.000  | 19.011   | -4.9 | 95.1  |
| ADONA        | 20.000  | 19.591   | -2.0 | 98.0  |
| HFPO-DA      | 100.000 | 99.516   | -0.5 | 99.5  |
| M3-HFPO-DA   | ---     | --ISTD-- |      |       |

CC Criteria: +/- 30%

6.8.16

6

**Continuing Calibration Summary****Job Number:** FA62220**Sample:** S2Q443-CC442**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27744.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0319\_ID\_GENX\_S2Q443\S2Q443.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27744

Type : QC

Level : 2

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 21.265     | 6.3   | 106.3  |
| 13C2-6:2FTS | 20.000    | 22.516     | 12.6  | 112.6  |
| 13C2-8:2FTS | 20.000    | 23.238     | 16.2  | 116.2  |
| 13C2-PFDoDA | 20.000    | 25.290     | 26.4  | 126.4  |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 25.866     | 29.3  | 129.3  |
| 13C3-PFBS   | 20.000    | 22.304     | 11.5  | 111.5  |
| 13C3-PFHxS  | 20.000    | 22.068     | 10.3  | 110.3  |
| 13C4-PFBA   | 20.000    | 22.506     | 12.5  | 112.5  |
| 13C4-PFHpA  | 20.000    | 23.628     | 18.1  | 118.1  |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 22.971     | 14.9  | 114.9  |
| 13C5-PFPeA  | 20.000    | 23.015     | 15.1  | 115.1  |
| 13C6-PFDA   | 20.000    | 25.435     | 27.2  | 127.2  |
| 13C7-PFUnDA | 20.000    | 25.478     | 27.4  | 127.4  |
| 13C8-FOSA   | 20.000    | 23.928     | 19.6  | 119.6  |
| 13C8-PFOA   | 20.000    | 24.038     | 20.2  | 120.2  |
| 13C8-PFOS   | 20.000    | 22.634     | 13.2  | 113.2  |
| 13C9-PFNA   | 20.000    | 24.657     | 23.3  | 123.3  |
| 4:2FTS      | 1.000     | 1.034      | 3.4   | 103.4  |
| 6:2FTS      | 1.000     | 1.106      | 10.6  | 110.6  |
| 8:2FTS      | 1.000     | 1.066      | 6.6   | 106.6  |
| d3-MeFOSAA  | 20.000    | 23.734     | 18.7  | 118.7  |
| M2-PFOA     | 20.000    | 20.002     | 0.0   | 100.0  |
| EtFOSAA     | 1.000     | 1.067      | 6.7   | 106.7  |
| FOSA        | 1.000     | 0.942      | -5.8  | 94.2   |
| MeFOSAA     | 1.000     | 0.964      | -3.6  | 96.4   |
| PFBA        | 1.000     | 0.967      | -3.3  | 96.7   |
| PFBS        | 1.000     | 0.965      | -3.5  | 96.5   |
| PFDA        | 1.000     | 0.969      | -3.1  | 96.9   |
| PFDoDA      | 1.000     | 0.967      | -3.3  | 96.7   |
| PFDS        | 1.000     | 1.036      | 3.6   | 103.6  |
| PFHpA       | 1.000     | 0.932      | -6.8  | 93.2   |
| PFHpS       | 1.000     | 0.979      | -2.1  | 97.9   |
| PFHxA       | 1.000     | 1.005      | 0.5   | 100.5  |
| PFHxS       | 1.000     | 0.976      | -2.4  | 97.6   |
| PFNA        | 1.000     | 0.901      | -9.9  | 90.1   |

# Continuing Calibration Summary

**Job Number:** FA62220

**Sample:** S2Q443-CC442

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 2Q27744.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |       |       |
|--------------|---------|----------|-------|-------|
| PFNS         | 1.000   | 1.025    | 2.5   | 102.5 |
| PFOA         | 1.000   | 0.977    | -2.3  | 97.7  |
| PFOS         | 1.000   | 0.995    | -0.5  | 99.5  |
| PFPeA        | 1.000   | 0.978    | -2.2  | 97.8  |
| PFPeS        | 1.000   | 0.981    | -1.9  | 98.1  |
| PFTeDA       | 1.000   | 0.956    | -4.4  | 95.6  |
| PFTTrDA      | 1.000   | 0.936    | -6.4  | 93.6  |
| PFUnDA       | 1.000   | 0.941    | -5.9  | 94.1  |
| M4-PFOS      | 20.000  | 20.023   | 0.1   | 100.1 |
| M4-PFBA      | ---     | --ISTD-- |       |       |
| M5-PFPeA     | ---     | --ISTD-- |       |       |
| M5-PFHxA     | ---     | --ISTD-- |       |       |
| M4-PFHpA     | ---     | --ISTD-- |       |       |
| M8-PFOA      | ---     | --ISTD-- |       |       |
| M9-PFNA      | ---     | --ISTD-- |       |       |
| M6-PFDA      | ---     | --ISTD-- |       |       |
| M7-PFUnDA    | ---     | --ISTD-- |       |       |
| M2-PFDoDA    | ---     | --ISTD-- |       |       |
| M2-PFTeDA    | ---     | --ISTD-- |       |       |
| M8-FOSA      | ---     | --ISTD-- |       |       |
| M3-PFBS      | ---     | --ISTD-- |       |       |
| M3-PFHxS     | ---     | --ISTD-- |       |       |
| M8-PFOS      | ---     | --ISTD-- |       |       |
| M2-4:2FTS    | ---     | --ISTD-- |       |       |
| M2-6:2FTS    | ---     | --ISTD-- |       |       |
| M2-8:2FTS    | ---     | --ISTD-- |       |       |
| M3-MeFOSAA   | ---     | --ISTD-- |       |       |
| 11C1-PF3OUdS | 1.000   | 0.879    | -12.1 | 87.9  |
| 13C3-HFPO-DA | 100.000 | 124.630  | 24.6  | 124.6 |
| 9C1-PF3ONS   | 1.000   | 1.050    | 5.0   | 105.0 |
| ADONA        | 1.000   | 0.927    | -7.3  | 92.7  |
| HFPO-DA      | 5.000   | 4.794    | -4.1  | 95.9  |
| M3-HFPO-DA   | ---     | --ISTD-- |       |       |

CC Criteria: +/- 30%

**Continuing Calibration Summary****Job Number:** FA62220**Sample:** S2Q443-ECC442**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 2Q27753.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0319\_ID\_GENX\_S2Q443\S2Q443.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27667.d  
 2:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27668.d  
 3:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27669.d  
 4:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27670.d  
 5:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27671.d  
 6:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27672.d  
 7:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27673.d  
 8:D:\MassHunter\Data\0318\_ID\_GENX\_S2Q442\2Q27674.d

Data File: 2Q27753

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 20.831     | 4.2   | 104.2  |
| 13C2-6:2FTS | 20.000    | 21.860     | 9.3   | 109.3  |
| 13C2-8:2FTS | 20.000    | 23.204     | 16.0  | 116.0  |
| 13C2-PFDoDA | 20.000    | 23.407     | 17.0  | 117.0  |
| 13C2-PFOA   | ---       | --ISTD--   |       |        |
| 13C2-PFTeDA | 20.000    | 23.880     | 19.4  | 119.4  |
| 13C3-PFBS   | 20.000    | 20.459     | 2.3   | 102.3  |
| 13C3-PFHxS  | 20.000    | 20.320     | 1.6   | 101.6  |
| 13C4-PFBA   | 20.000    | 21.033     | 5.2   | 105.2  |
| 13C4-PFHpA  | 20.000    | 21.883     | 9.4   | 109.4  |
| 13C4-PFOS   | ---       | --ISTD--   |       |        |
| 13C5-PFHxA  | 20.000    | 21.352     | 6.8   | 106.8  |
| 13C5-PFPeA  | 20.000    | 21.638     | 8.2   | 108.2  |
| 13C6-PFDA   | 20.000    | 23.098     | 15.5  | 115.5  |
| 13C7-PFUnDA | 20.000    | 23.359     | 16.8  | 116.8  |
| 13C8-FOSA   | 20.000    | 21.674     | 8.4   | 108.4  |
| 13C8-PFOA   | 20.000    | 21.918     | 9.6   | 109.6  |
| 13C8-PFOS   | 20.000    | 20.850     | 4.3   | 104.3  |
| 13C9-PFNA   | 20.000    | 22.339     | 11.7  | 111.7  |
| 4:2FTS      | 20.000    | 20.694     | 3.5   | 103.5  |
| 6:2FTS      | 20.000    | 20.184     | 0.9   | 100.9  |
| 8:2FTS      | 20.000    | 20.068     | 0.3   | 100.3  |
| d3-MeFOSAA  | 20.000    | 22.608     | 13.0  | 113.0  |
| M2-PFOA     | 20.000    | 19.997     | 0.0   | 100.0  |
| EtFOSAA     | 20.000    | 19.740     | -1.3  | 98.7   |
| FOSA        | 20.000    | 19.610     | -1.9  | 98.1   |
| MeFOSAA     | 20.000    | 19.514     | -2.4  | 97.6   |
| PFBA        | 20.000    | 19.659     | -1.7  | 98.3   |
| PFBS        | 20.000    | 19.930     | -0.4  | 99.6   |
| PFDA        | 20.000    | 19.909     | -0.5  | 99.5   |
| PFDoDA      | 20.000    | 19.954     | -0.2  | 99.8   |
| PFDS        | 20.000    | 19.094     | -4.5  | 95.5   |
| PFHpA       | 20.000    | 19.583     | -2.1  | 97.9   |
| PFHpS       | 20.000    | 20.890     | 4.5   | 104.5  |
| PFHxA       | 20.000    | 19.929     | -0.4  | 99.6   |
| PFHxS       | 20.000    | 19.935     | -0.3  | 99.7   |
| PFNA        | 20.000    | 20.073     | 0.4   | 100.4  |

# Continuing Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S2Q443-ECC442  
**Lab FileID:** 2Q27753.D

|              |         |          |      |       |
|--------------|---------|----------|------|-------|
| PFNS         | 20.000  | 20.917   | 4.6  | 104.6 |
| PFOA         | 20.000  | 19.498   | -2.5 | 97.5  |
| PFOS         | 20.000  | 19.556   | -2.2 | 97.8  |
| PFPeA        | 20.000  | 19.458   | -2.7 | 97.3  |
| PFPeS        | 20.000  | 20.538   | 2.7  | 102.7 |
| PFTeDA       | 20.000  | 19.536   | -2.3 | 97.7  |
| PFTTrDA      | 20.000  | 19.494   | -2.5 | 97.5  |
| PFUnDA       | 20.000  | 19.655   | -1.7 | 98.3  |
| M4-PFOS      | 20.000  | 19.979   | -0.1 | 99.9  |
| M4-PFBA      | ---     | --ISTD-- |      |       |
| M5-PFPeA     | ---     | --ISTD-- |      |       |
| M5-PFHxA     | ---     | --ISTD-- |      |       |
| M4-PFHpA     | ---     | --ISTD-- |      |       |
| M8-PFOA      | ---     | --ISTD-- |      |       |
| M9-PFNA      | ---     | --ISTD-- |      |       |
| M6-PFDA      | ---     | --ISTD-- |      |       |
| M7-PFUnDA    | ---     | --ISTD-- |      |       |
| M2-PFDoDA    | ---     | --ISTD-- |      |       |
| M2-PFTeDA    | ---     | --ISTD-- |      |       |
| M8-FOSA      | ---     | --ISTD-- |      |       |
| M3-PFBS      | ---     | --ISTD-- |      |       |
| M3-PFHxS     | ---     | --ISTD-- |      |       |
| M8-PFOS      | ---     | --ISTD-- |      |       |
| M2-4:2FTS    | ---     | --ISTD-- |      |       |
| M2-6:2FTS    | ---     | --ISTD-- |      |       |
| M2-8:2FTS    | ---     | --ISTD-- |      |       |
| M3-MeFOSAA   | ---     | --ISTD-- |      |       |
| 11C1-PF3OUdS | 20.000  | 18.051   | -9.7 | 90.3  |
| 13C3-HFPO-DA | 100.000 | 106.974  | 7.0  | 107.0 |
| 9C1-PF3ONS   | 20.000  | 18.239   | -8.8 | 91.2  |
| ADONA        | 20.000  | 19.469   | -2.7 | 97.3  |
| HFPO-DA      | 100.000 | 100.213  | 0.2  | 100.2 |
| M3-HFPO-DA   | ---     | --ISTD-- |      |       |

CC Criteria: +/- 30%

6.8.18

6

# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S3Q54-ICC54  
**Lab FileID:** 3Q1977.D

## Initial Calibration Report

| Method Path           | Calibration Files                              |        |        |        |        |        |        |        | Level Name | Acq. Date-Time        | Level Last Update Time |
|-----------------------|--|--------|--------|--------|--------|--------|--------|--------|------------|-----------------------|------------------------|
| D:\MassHunter\Methods | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1977.d |        |        |        |        |        |        |        | 1          | 3/21/2019 9:54:57 AM  | 3/21/2019 12:54:41 PM  |
| Method File           | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1973.d |        |        |        |        |        |        |        | 2          | 3/21/2019 10:10:04 AM | 3/21/2019 12:54:41 PM  |
| Batch Name            | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1974.d |        |        |        |        |        |        |        | 3          | 3/21/2019 10:25:10 AM | 3/21/2019 12:54:41 PM  |
| Last Calib Update     | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1975.d |        |        |        |        |        |        |        | 4          | 3/21/2019 10:40:17 AM | 3/21/2019 12:54:41 PM  |
|                       | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1976.d |        |        |        |        |        |        |        | 5          | 3/21/2019 10:55:23 AM | 3/21/2019 12:54:41 PM  |
|                       | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1977.d |        |        |        |        |        |        |        | 6          | 3/21/2019 11:10:30 AM | 3/21/2019 12:54:41 PM  |
|                       | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1978.d |        |        |        |        |        |        |        | 7          | 3/21/2019 11:25:37 AM | 3/21/2019 12:54:41 PM  |
|                       | D:\MassHunter\Data\0321_id_genx_S3Q54\3q1979.d |        |        |        |        |        |        |        | 8          | 3/21/2019 11:41:20 AM | 3/21/2019 12:54:41 PM  |
| Compound              | Curve Fit                                      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8          | Avg RF                | %RSD                   |
| S 13C4-PFBA           | Linear   | 16259  | 16631  | 16857  | 16399  | 16245  | 15933  | 15872  | 16277      | 16309                 | 2.010                  |
| S 13C5-PFPeA          | Linear   | 11121  | 11248  | 11363  | 11123  | 10976  | 10861  | 10777  | 11109      | 11072                 | 1.749                  |
| S 13C3-PFBS           | Linear   | 2551   | 2568   | 2604   | 2534   | 2500   | 2459   | 2455   | 2507       | 2522                  | 2.058                  |
| S 13C2-4:2FTS         | Linear   | 4533   | 4539   | 4598   | 4487   | 4551   | 4600   | 4931   | 5727       | 4746                  | 8.843                  |
| S 13C5-PFHxA          | Linear   | 15083  | 15058  | 15044  | 14697  | 14669  | 14381  | 14162  | 14640      | 14717                 | 2.278                  |
| S 13C3-HFPO-DA        | Linear   | 1708   | 1754   | 1751   | 1717   | 1736   | 1635   | 1587   | 1472       | 1670                  | 5.939                  |
| S 13C4-PFHpA          | Linear   | 17018  | 17016  | 17397  | 16822  | 16571  | 16439  | 16076  | 16216      | 16694                 | 2.687                  |
| S 13C3-PFHxS          | Linear   | 2591   | 2592   | 2641   | 2540   | 2512   | 2471   | 2430   | 2443       | 2528                  | 3.031                  |
| S 13C2-6:2FTS         | Linear   | 4365   | 4367   | 4549   | 4422   | 4429   | 4528   | 4619   | 5279       | 4570                  | 6.575                  |
| S 13C8-PFOA           | Linear   | 16413  | 16365  | 16456  | 16086  | 15931  | 15403  | 14993  | 14917      | 15821                 | 4.004                  |
| S 13C8-PFOS           | Linear   | 3952   | 3973   | 4043   | 3899   | 3816   | 3767   | 3721   | 3648       | 3852                  | 3.545                  |
| S 13C9-PFNA           | Linear   | 15428  | 15338  | 15640  | 15168  | 14795  | 14724  | 14231  | 14227      | 14944                 | 3.592                  |
| S 13C8-FOSA           | Linear   | 11057  | 10949  | 11109  | 10733  | 10712  | 10380  | 9849   | 9410       | 10525                 | 5.795                  |
| S 13C6-PFDA           | Linear   | 17160  | 17326  | 17474  | 16907  | 16721  | 16481  | 15880  | 15314      | 16658                 | 4.465                  |
| S 13C2-8:2FTS         | Linear   | 2642   | 2616   | 2720   | 2677   | 2661   | 2729   | 2935   | 3384       | 2795                  | 9.206                  |
| S d3-MeFOSAA          | Linear   | 2436   | 2374   | 2428   | 2337   | 2361   | 2369   | 2330   | 2358       | 2374                  | 1.638                  |
| S 13C7-PFUnDA         | Linear   | 19045  | 18837  | 19305  | 18773  | 18825  | 18235  | 17871  | 17424      | 18539                 | 3.441                  |
| S 13C2-PFDODa         | Linear   | 19949  | 19609  | 20176  | 19896  | 19572  | 19306  | 18965  | 18964      | 19555                 | 2.303                  |
| S 13C2-PFTEdA         | Linear   | 18951  | 18560  | 18631  | 18818  | 18399  | 18229  | 17409  | 17347      | 18293                 | 3.322                  |
| I M4-PFBA             | Linear   | 0.1778 | 0.1806 | 0.1714 | 0.1823 | 0.1853 | 0.1868 | 0.1884 | 0.1899     | 0.1828                | 3.366                  |
| T PFBA                |  |        |        |        |        |        |        |        |            |                       |                        |
| I M5-PFPeA            | Linear   | 0.9984 | 0.9743 | 0.9201 | 0.9760 | 1.0069 | 1.0084 | 1.0130 | 1.0138     | 0.9889                | 3.221                  |
| T PFPeA               |  |        |        |        |        |        |        |        |            |                       |                        |
| I M5-PFHxA            | Linear   | 0.3521 | 0.3446 | 0.3360 | 0.3364 | 0.3540 | 0.3527 | 0.3570 | 0.3561     | 0.3486                | 2.449                  |
| T PFHxA               |  |        |        |        |        |        |        |        |            |                       |                        |
| I M4-PFHpA            | Linear   | 0.8085 | 0.8329 | 0.8040 | 0.8467 | 0.8635 | 0.8724 | 0.8746 | 0.8887     | 0.8489                | 3.703                  |
| T PFHpA               |  |        |        |        |        |        |        |        |            |                       |                        |

Generated at 12:55 PM on 3/21/2019

Page 1 of 5



# Initial Calibration Summary

Job Number: FA62220  
 Account: AHTNACAS Ahtna Environmental Inc  
 Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S3Q54-ICC54  
 Lab FileID: 3Q1977.D

| Compound      | Curve Fit | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | Avg RF | %RSD   |
|---------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| I M8-PFOA     | Quadratic | 1.1033 | 1.1541 | 1.1123 | 1.1802 | 1.2166 | 1.2515 | 1.2726 | 1.3021 | 1.1991 | 6.158  |
| T ADONA       | Linear    | 0.5183 | 0.5112 | 0.4972 | 0.5234 | 0.5276 | 0.5400 | 0.5334 | 0.5359 | 0.5234 | 2.712  |
| I M9-PFNA     | Linear    | 0.5541 | 0.5888 | 0.5667 | 0.5796 | 0.6237 | 0.6120 | 0.6198 | 0.6224 | 0.5959 | 4.582  |
| T PFNA        | Quadratic | 0.1006 | 0.1082 | 0.1049 | 0.1094 | 0.1117 | 0.1124 | 0.1177 | 0.1230 | 0.1110 | 6.329  |
| I M6-PFDA     | Linear    | 0.4082 | 0.4313 | 0.4371 | 0.4586 | 0.4742 | 0.4714 | 0.4697 | 0.4747 | 0.4532 | 5.467  |
| T 9C-PF3ONS   | Avg RF    | 0.0668 | 0.0624 | 0.0585 | 0.0624 | 0.0594 | 0.0616 | 0.0607 | 0.0609 | 0.0616 | 4.092  |
| T PFDA        | Linear    | 0.3961 | 0.3940 | 0.3817 | 0.4238 | 0.4265 | 0.4351 | 0.4306 | 0.4347 | 0.4153 | 5.110  |
| I M7-PFUnDA   | Linear    | 0.3697 | 0.3712 | 0.3518 | 0.3746 | 0.3808 | 0.3820 | 0.3823 | 0.3833 | 0.3745 | 2.829  |
| T PFDS        | Linear    | 0.4124 | 0.4273 | 0.4118 | 0.4275 | 0.4523 | 0.4476 | 0.4565 | 0.4563 | 0.4365 | 4.350  |
| T PFUnDA      | Linear    | 0.4679 | 0.4816 | 0.4851 | 0.5088 | 0.5274 | 0.5177 | 0.5328 | 0.5330 | 0.5068 | 5.022  |
| I M2-PFDoDA   | Linear    | 0.5678 | 0.5867 | 0.5698 | 0.5973 | 0.6160 | 0.6122 | 0.6204 | 0.6230 | 0.5991 | 3.720  |
| T 11C-PF3OUds | Quadratic | 0.4009 | 0.4284 | 0.4219 | 0.4415 | 0.4483 | 0.4495 | 0.4517 | 0.4569 | 0.4374 | 4.340  |
| T PFDoDA      | Linear    | 1.3066 | 1.3391 | 1.2825 | 1.3420 | 1.3732 | 1.3888 | 1.3937 | 1.3914 | 1.3522 | 3.094  |
| I M2-PFTeDA   | Linear    | 0.7691 | 0.8027 | 0.7934 | 0.8504 | 0.8550 | 0.8704 | 0.8677 | 0.8645 | 0.8341 | 4.742  |
| T PFTIDA      | Linear    | 1.0299 | 1.0712 | 1.0213 | 1.0418 | 1.0905 | 1.0848 | 1.0936 | 1.1022 | 1.0669 | 2.948  |
| T PFTeDA      | Linear    | 0.8369 | 0.9221 | 0.9108 | 0.9484 | 0.9509 | 0.9457 | 0.9655 | 0.9491 | 0.9287 | 4.409  |
| I M8-PFOS     | Linear    | 1.2142 | 0.9864 | 0.8528 | 0.9003 | 0.9034 | 0.9142 | 0.9135 | 0.9302 | 0.9519 | 11.792 |
| T PFHS        | Linear    | 0.5094 | 0.5380 | 0.5156 | 0.5684 | 0.5549 | 0.5558 | 0.5512 | 0.5374 | 0.5413 | 3.780  |
| T PFHS        | Avg RF    | 0.5444 | 0.5473 | 0.5423 | 0.5761 | 0.5804 | 0.5676 | 0.5341 | 0.4825 | 0.5468 | 5.674  |
| I M2-4:2FTS   | Avg RF    | 0.6448 | 0.4841 | 0.4668 | 0.4857 | 0.4961 | 0.4822 | 0.4687 | 0.4178 | 0.4933 | 13.322 |
| T 4:2FTS      | Avg RF    | 0.5048 | 0.4891 | 0.5108 | 0.5210 | 0.5191 | 0.5186 | 0.4793 | 0.4178 | 0.4951 | 7.001  |
| I M2-8:2FTS   |           |        |        |        |        |        |        |        |        |        |        |
| T 8:2FTS      |           |        |        |        |        |        |        |        |        |        |        |
| I M3-MeFOSAA  |           |        |        |        |        |        |        |        |        |        |        |

# Initial Calibration Summary

Job Number: FA62220  
 Account: AHTNACAS Ahtna Environmental Inc  
 Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S3Q54-ICC54  
 Lab FileID: 3Q1977.D

## Initial Calibration Report

| Compound     | Curve Fit | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | Avg RF | %RSD  |
|--------------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| T MeFOSAA    | Linear    | 0.4719 | 0.4479 | 0.5241 | 0.5131 | 0.5067 | 0.5189 | 0.5399 | 0.5350 | 0.5072 | 6.264 |
| T EtFOSAA    | Quadratic | 0.5269 | 0.4603 | 0.4370 | 0.4467 | 0.4541 | 0.4469 | 0.4531 | 0.4587 | 0.4605 | 6.052 |
| I M3-HFPO-DA | Linear    | 1.5344 | 1.5054 | 1.4645 | 1.5764 | 1.5836 | 1.6456 | 1.6356 | 1.7158 | 1.5827 | 5.166 |
| T HFPO-DA    |           |        |        |        |        |        |        |        |        |        |       |
| I 13C2-PFOA  | Linear    | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.000 |
| S M2-PFOA    |           |        |        |        |        |        |        |        |        |        |       |
| I 13C4-PFOS  | Linear    | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.000 |
| S M4-PFOS    |           |        |        |        |        |        |        |        |        |        |       |

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

# Initial Calibration Summary

Job Number: FA62220  
 Account: AHTNACAS Ahtna Environmental Inc  
 Project: OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

Sample: S3Q54-ICC54  
 Lab FileID: 3Q1977.D

## Initial Calibration Report

Compounds with curve fitting not using Avg Response Factor:

| Compound       | Curve Fit | Curve Fit Formula                    | Curve Fit R2 |
|----------------|-----------|--------------------------------------|--------------|
| S 13C4-PFBA    | Linear    | $y = 16309.112710 * x$               | 0.000000     |
| T PFBA         | Linear    | $y = 0.189472 * x$                   | 0.999962     |
| S 13C5-PFPeA   | Linear    | $y = 11072.412322 * x$               | 0.000000     |
| T PFPeA        | Linear    | $y = 1.013343 * x$                   | 0.999990     |
| S 13C3-PFBS    | Linear    | $y = 2522.337422 * x$                | 0.000000     |
| T PFBS         | Linear    | $y = 1.391454 * x$                   | 0.999990     |
| S 13C2-4:2FTS  | Linear    | $y = 4745.705236 * x$                | 0.000000     |
| S 13C5-PFHxA   | Linear    | $y = 14716.889080 * x$               | 0.000000     |
| T PFHxA        | Linear    | $y = 0.356127 * x$                   | 0.999983     |
| T PPFes        | Linear    | $y = 0.865196 * x$                   | 0.999989     |
| S 13C3-HFO-DA  | Linear    | $y = 1669.883520 * x$                | 0.000000     |
| T HFO-DA       | Linear    | $y = 1.696905 * x$                   | 0.999365     |
| S 13C4-PFHpA   | Linear    | $y = 16694.177448 * x$               | 0.000000     |
| T PFHpA        | Linear    | $y = 0.885168 * x$                   | 0.999914     |
| T PFHxS        | Linear    | $y = 1.098775 * x$                   | 0.999965     |
| S 13C3-PFHXS   | Linear    | $y = 2527.532987 * x$                | 0.000000     |
| T ADONA        | Quadratic | $y = 0.013156 * x^2 + 1.236642 * x$  | 0.999982     |
| S 13C2-6:2FTS  | Linear    | $y = 4569.802753 * x$                | 0.000000     |
| T PFOA         | Linear    | $y = 0.535450 * x$                   | 0.999985     |
| S 13C8-PFOA    | Linear    | $y = 15820.619667 * x$               | 0.000000     |
| S M2-PFOA      | Linear    | $y = 1.000000 * x$                   | NaN          |
| T PFHpS        | Linear    | $y = 0.952125 * x$                   | 0.999927     |
| S 13C8-PFOS    | Linear    | $y = 3852.284530 * x$                | 0.000000     |
| S M4-PFOS      | Linear    | $y = 1.000000 * x$                   | NaN          |
| T PFOS         | Linear    | $y = 0.926210 * x$                   | 0.999900     |
| S 13C9-PPNA    | Linear    | $y = 14943.935134 * x$               | 0.000000     |
| T PFNA         | Linear    | $y = 0.621451 * x$                   | 0.999967     |
| S 13C8-FOSA    | Linear    | $y = 10524.713125 * x$               | 0.000000     |
| T FOSA         | Quadratic | $y = 0.002055 * x^2 + 0.446624 * x$  | 0.999998     |
| T 9Cl-PF3ONS   | Quadratic | $y = 0.002337 * x^2 + 0.1111356 * x$ | 0.999987     |
| T PFNS         | Linear    | $y = 0.540829 * x$                   | 0.999794     |
| S 13C6-PFDA    | Linear    | $y = 16657.936302 * x$               | 0.000000     |
| T PFDA         | Linear    | $y = 0.473603 * x$                   | 0.999966     |
| S 13C2-8:2FTS  | Linear    | $y = 2795.424818 * x$                | 0.000000     |
| S d3-MeFOSAA   | Linear    | $y = 2374.052116 * x$                | 0.000000     |
| T MeFOSAA      | Linear    | $y = 0.535177 * x$                   | 0.999893     |
| T EFOSAA       | Quadratic | $y = 0.002344 * x^2 + 0.447038 * x$  | 0.999995     |
| S 13C7-PFUnDA  | Linear    | $y = 18539.340851 * x$               | 0.000000     |
| T PFUnDA       | Linear    | $y = 0.433852 * x$                   | 0.999966     |
| T 11Cl-PF3OUgS | Linear    | $y = 0.383046 * x$                   | 0.999993     |
| S 13C2-PFDODA  | Linear    | $y = 19554.588748 * x$               | 0.000000     |
| T PFDODA       | Linear    | $y = 0.455986 * x$                   | 0.999966     |
| T PFTdA        | Linear    | $y = 0.532422 * x$                   | 0.999951     |

# Initial Calibration Summary

**Job Number:** FA62220  
**Account:** AHTNACAS Ahtna Environmental Inc  
**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

**Sample:** S3Q54-ICC54  
**Lab FileID:** 3Q1977.D

## Initial Calibration Report

0.000000  
0.999974

Linear  
 $Y = .18292858140 * X$   
Linear  
 $Y = 0.622052 * X$

S 13C2-PFTeDA  
T PFTeDA

(RedFont and #) = Outlier Flag; (I) = Internal Standard; (T) = Target; (S) = Surrogate; (M) = Matrix Spike

**Initial Calibration Verification****Job Number:** FA62220**Sample:** S3Q54-ICV54**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 3Q1981.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0321\_id\_genx\_S3Q54\s3q54.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1972.d  
 2:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1973.d  
 3:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1974.d  
 4:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1975.d  
 5:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1976.d  
 6:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1977.d  
 7:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1978.d  
 8:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1979.d

Data File: 3q1981

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %    | Area % |
|-------------|-----------|------------|----------|--------|
| 13C2-4:2FTS | 20.000    | 18.886     | -5.6     | 94.4   |
| 13C2-6:2FTS | 20.000    | 19.533     | -2.3     | 97.7   |
| 13C2-8:2FTS | 20.000    | 19.626     | -1.9     | 98.1   |
| 13C2-PFDoDA | 20.000    | 21.290     | 6.5      | 106.5  |
| 13C2-PFTeDA | 20.000    | 21.236     | 6.2      | 106.2  |
| 13C3-PFBS   | 20.000    | 20.262     | 1.3      | 101.3  |
| 13C3-PFHxS  | 20.000    | 20.317     | 1.6      | 101.6  |
| 13C4-PFBA   | 20.000    | 20.329     | 1.6      | 101.6  |
| 13C4-PFHpA  | 20.000    | 20.411     | 2.1      | 102.1  |
| 13C5-PFHxA  | 20.000    | 20.152     | 0.8      | 100.8  |
| 13C5-PFPeA  | 20.000    | 20.198     | 1.0      | 101.0  |
| 13C6-PFDA   | 20.000    | 21.301     | 6.5      | 106.5  |
| 13C7-PFUnDA | 20.000    | 21.582     | 7.9      | 107.9  |
| 13C8-FOSA   | 20.000    | 21.229     | 6.1      | 106.1  |
| 13C8-PFOA   | 20.000    | 20.599     | 3.0      | 103.0  |
| 13C8-PFOS   | 20.000    | 20.316     | 1.6      | 101.6  |
| 13C9-PFNA   | 20.000    | 20.679     | 3.4      | 103.4  |
| 4:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 6:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 8:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| d3-MeFOSAA  | 20.000    | 20.910     | 4.6      | 104.6  |
| EtFOSAA     | 20.000    | 15.108     | -24.5    | 75.5   |
| FOSA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| MeFOSAA     | 20.000    | 17.092     | -14.5    | 85.5   |
| PFBA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFBS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDoDA      | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFDS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpA       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxA       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFNA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFNS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFOA        | 20.000    | 17.376     | -13.1    | 86.9   |
| PFOS        | 20.000    | 19.416     | -2.9     | 97.1   |

# Initial Calibration Verification

**Job Number:** FA62220

**Sample:** S3Q54-ICV54

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 3Q1981.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFPeA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFPeS        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTeDA       | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTrDA       | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFUnDA       | 20.000  | 0.000    | # -100.0 | 0.0   |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDODA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 0.000    | # -100.0 | 0.0   |
| 13C3-HFPO-DA | 100.000 | 103.778  | 3.8      | 103.8 |
| 9C1-PF3ONS   | 20.000  | 0.000    | # -100.0 | 0.0   |
| ADONA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| HFPO-DA      | 100.000 | 0.000    | # -100.0 | 0.0   |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |
| 13C2-PFOA    | ---     | --ISTD-- |          |       |
| 13C4-PFOS    | ---     | --ISTD-- |          |       |
| M2-PFOA      | 20.000  | 20.000   | 0.0      | 100.0 |
| M4-PFOS      | 20.000  | 20.000   | 0.0      | 100.0 |

CC Criteria: +/- 30%

6.8.20

6

**Initial Calibration Verification****Job Number:** FA62220**Sample:** S3Q54-ICV54**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 3Q1982.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0321\_id\_genx\_S3Q54\s3q54.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1972.d  
 2:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1973.d  
 3:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1974.d  
 4:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1975.d  
 5:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1976.d  
 6:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1977.d  
 7:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1978.d  
 8:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1979.d

Data File: 3q1982

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 20.095     | 0.5   | 100.5  |
| 13C2-6:2FTS | 20.000    | 20.282     | 1.4   | 101.4  |
| 13C2-8:2FTS | 20.000    | 20.447     | 2.2   | 102.2  |
| 13C2-PFDoDA | 20.000    | 20.909     | 4.5   | 104.5  |
| 13C2-PFTeDA | 20.000    | 20.596     | 3.0   | 103.0  |
| 13C3-PFBS   | 20.000    | 20.186     | 0.9   | 100.9  |
| 13C3-PFHxS  | 20.000    | 20.516     | 2.6   | 102.6  |
| 13C4-PFBA   | 20.000    | 20.281     | 1.4   | 101.4  |
| 13C4-PFHpA  | 20.000    | 20.327     | 1.6   | 101.6  |
| 13C5-PFHxA  | 20.000    | 20.176     | 0.9   | 100.9  |
| 13C5-PFPeA  | 20.000    | 20.268     | 1.3   | 101.3  |
| 13C6-PFDA   | 20.000    | 20.938     | 4.7   | 104.7  |
| 13C7-PFUnDA | 20.000    | 21.092     | 5.5   | 105.5  |
| 13C8-FOSA   | 20.000    | 20.468     | 2.3   | 102.3  |
| 13C8-PFOA   | 20.000    | 20.406     | 2.0   | 102.0  |
| 13C8-PFOS   | 20.000    | 20.601     | 3.0   | 103.0  |
| 13C9-PFNA   | 20.000    | 20.438     | 2.2   | 102.2  |
| 4:2FTS      | 20.000    | 18.355     | -8.2  | 91.8   |
| 6:2FTS      | 20.000    | 17.905     | -10.5 | 89.5   |
| 8:2FTS      | 20.000    | 19.092     | -4.5  | 95.5   |
| d3-MeFOSAA  | 20.000    | 20.898     | 4.5   | 104.5  |
| EtFOSAA     | 20.000    | 18.951     | -5.2  | 94.8   |
| FOSA        | 20.000    | 19.808     | -1.0  | 99.0   |
| MeFOSAA     | 20.000    | 18.854     | -5.7  | 94.3   |
| PFBA        | 20.000    | 18.505     | -7.5  | 92.5   |
| PFBS        | 20.000    | 16.176     | -19.1 | 80.9   |
| PFDA        | 20.000    | 17.053     | -14.7 | 85.3   |
| PFDoDA      | 20.000    | 19.431     | -2.8  | 97.2   |
| PFDS        | 20.000    | 16.807     | -16.0 | 84.0   |
| PFHpA       | 20.000    | 19.450     | -2.7  | 97.3   |
| PFHpS       | 20.000    | 18.260     | -8.7  | 91.3   |
| PFHxA       | 20.000    | 16.936     | -15.3 | 84.7   |
| PFHxS       | 20.000    | 16.000     | -20.0 | 80.0   |
| PFNA        | 20.000    | 17.649     | -11.8 | 88.2   |
| PFNS        | 20.000    | 17.765     | -11.2 | 88.8   |
| PFOA        | 20.000    | 18.953     | -5.2  | 94.8   |
| PFOS        | 20.000    | 18.066     | -9.7  | 90.3   |

# Initial Calibration Verification

**Job Number:** FA62220

**Sample:** S3Q54-ICV54

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 3Q1982.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFPeA        | 20.000  | 17.721   | -11.4    | 88.6  |
| PFPeS        | 20.000  | 15.791   | -21.0    | 79.0  |
| PFTeDA       | 20.000  | 17.115   | -14.4    | 85.6  |
| PFTrDA       | 20.000  | 20.447   | 2.2      | 102.2 |
| PFUnDA       | 20.000  | 19.262   | -3.7     | 96.3  |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDODA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 0.000    | # -100.0 | 0.0   |
| 13C3-HFPO-DA | 100.000 | 105.525  | 5.5      | 105.5 |
| 9C1-PF3ONS   | 20.000  | 0.000    | # -100.0 | 0.0   |
| ADONA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| HFPO-DA      | 100.000 | 0.000    | # -100.0 | 0.0   |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |
| 13C2-PFOA    | ---     | --ISTD-- |          |       |
| 13C4-PFOS    | ---     | --ISTD-- |          |       |
| M2-PFOA      | 20.000  | 20.000   | 0.0      | 100.0 |
| M4-PFOS      | 20.000  | 20.000   | 0.0      | 100.0 |

CC Criteria: +/- 30%

6.8.21

6



**Initial Calibration Verification****Job Number:** FA62220**Sample:** S3Q54-ICV54**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 3Q1983.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0321\_id\_genx\_S3Q54\s3q54.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1972.d  
 2:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1973.d  
 3:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1974.d  
 4:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1975.d  
 5:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1976.d  
 6:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1977.d  
 7:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1978.d  
 8:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1979.d

Data File: 3q1983

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev %    | Area % |
|-------------|-----------|------------|----------|--------|
| 13C2-4:2FTS | 20.000    | 19.027     | -4.9     | 95.1   |
| 13C2-6:2FTS | 20.000    | 19.608     | -2.0     | 98.0   |
| 13C2-8:2FTS | 20.000    | 19.692     | -1.5     | 98.5   |
| 13C2-PFDoDA | 20.000    | 20.862     | 4.3      | 104.3  |
| 13C2-PFTeDA | 20.000    | 20.760     | 3.8      | 103.8  |
| 13C3-PFBS   | 20.000    | 20.108     | 0.5      | 100.5  |
| 13C3-PFHxS  | 20.000    | 20.122     | 0.6      | 100.6  |
| 13C4-PFBA   | 20.000    | 20.283     | 1.4      | 101.4  |
| 13C4-PFHpA  | 20.000    | 20.165     | 0.8      | 100.8  |
| 13C5-PFHxA  | 20.000    | 20.125     | 0.6      | 100.6  |
| 13C5-PFPeA  | 20.000    | 20.129     | 0.6      | 100.6  |
| 13C6-PFDA   | 20.000    | 21.496     | 7.5      | 107.5  |
| 13C7-PFUnDA | 20.000    | 21.238     | 6.2      | 106.2  |
| 13C8-FOSA   | 20.000    | 21.369     | 6.8      | 106.8  |
| 13C8-PFOA   | 20.000    | 20.589     | 2.9      | 102.9  |
| 13C8-PFOS   | 20.000    | 20.255     | 1.3      | 101.3  |
| 13C9-PFNA   | 20.000    | 20.562     | 2.8      | 102.8  |
| 4:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 6:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| 8:2FTS      | 20.000    | 0.000      | # -100.0 | 0.0    |
| d3-MeFOSAA  | 20.000    | 21.098     | 5.5      | 105.5  |
| EtFOSAA     | 20.000    | 17.612     | -11.9    | 88.1   |
| FOSA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| MeFOSAA     | 20.000    | 16.806     | -16.0    | 84.0   |
| PFBA        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFBS        | 20.000    | 18.885     | -5.6     | 94.4   |
| PFDA        | 20.000    | 19.031     | -4.8     | 95.2   |
| PFDoDA      | 20.000    | 18.646     | -6.8     | 93.2   |
| PFDS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHpA       | 20.000    | 19.176     | -4.1     | 95.9   |
| PFHpS       | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFHxA       | 20.000    | 18.887     | -5.6     | 94.4   |
| PFHxS       | 20.000    | 19.171     | -4.1     | 95.9   |
| PFNA        | 20.000    | 19.638     | -1.8     | 98.2   |
| PFNS        | 20.000    | 0.000      | # -100.0 | 0.0    |
| PFOA        | 20.000    | 19.435     | -2.8     | 97.2   |
| PFOS        | 20.000    | 18.625     | -6.9     | 93.1   |

# Initial Calibration Verification

**Job Number:** FA62220

**Sample:** S3Q54-ICV54

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 3Q1983.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |          |       |
|--------------|---------|----------|----------|-------|
| PFPeA        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFPeS        | 20.000  | 0.000    | # -100.0 | 0.0   |
| PFTeDA       | 20.000  | 18.757   | -6.2     | 93.8  |
| PFTrDA       | 20.000  | 19.726   | -1.4     | 98.6  |
| PFUnDA       | 20.000  | 18.953   | -5.2     | 94.8  |
| M4-PFBA      | ---     | --ISTD-- |          |       |
| M5-PFPeA     | ---     | --ISTD-- |          |       |
| M5-PFHxA     | ---     | --ISTD-- |          |       |
| M4-PFHpA     | ---     | --ISTD-- |          |       |
| M8-PFOA      | ---     | --ISTD-- |          |       |
| M9-PFNA      | ---     | --ISTD-- |          |       |
| M6-PFDA      | ---     | --ISTD-- |          |       |
| M7-PFUnDA    | ---     | --ISTD-- |          |       |
| M2-PFDoDA    | ---     | --ISTD-- |          |       |
| M2-PFTeDA    | ---     | --ISTD-- |          |       |
| M8-FOSA      | ---     | --ISTD-- |          |       |
| M3-PFBS      | ---     | --ISTD-- |          |       |
| M3-PFHxS     | ---     | --ISTD-- |          |       |
| M8-PFOS      | ---     | --ISTD-- |          |       |
| M2-4:2FTS    | ---     | --ISTD-- |          |       |
| M2-6:2FTS    | ---     | --ISTD-- |          |       |
| M2-8:2FTS    | ---     | --ISTD-- |          |       |
| M3-MeFOSAA   | ---     | --ISTD-- |          |       |
| 11C1-PF3OUdS | 20.000  | 19.863   | -0.7     | 99.3  |
| 13C3-HFPO-DA | 100.000 | 101.128  | 1.1      | 101.1 |
| 9C1-PF3ONS   | 20.000  | 19.538   | -2.3     | 97.7  |
| ADONA        | 20.000  | 19.610   | -1.9     | 98.1  |
| HFPO-DA      | 20.000  | 19.283   | -3.6     | 96.4  |
| M3-HFPO-DA   | ---     | --ISTD-- |          |       |
| 13C2-PFOA    | ---     | --ISTD-- |          |       |
| 13C4-PFOS    | ---     | --ISTD-- |          |       |
| M2-PFOA      | 20.000  | 20.000   | 0.0      | 100.0 |
| M4-PFOS      | 20.000  | 20.000   | 0.0      | 100.0 |

CC Criteria: +/- 30%

**Continuing Calibration Summary****Job Number:** FA62220**Sample:** S3Q54-CC54**Account:** AHTNACAS Ahtna Environmental Inc**Lab FileID:** 3Q1992.D**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

## Continuing Calibration Report

Batch: D:\MassHunter\Data\0321\_id\_genx\_S3Q54\s3q54.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1972.d  
 2:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1973.d  
 3:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1974.d  
 4:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1975.d  
 5:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1976.d  
 6:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1977.d  
 7:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1978.d  
 8:D:\MassHunter\Data\0321\_id\_genx\_S3Q54\3q1979.d

Data File: 3q1992

Type : QC

Level : 6

| Cpnd Name   | Exp. Conc | Final Conc | Dev % | Area % |
|-------------|-----------|------------|-------|--------|
| 13C2-4:2FTS | 20.000    | 19.373     | -3.1  | 96.9   |
| 13C2-6:2FTS | 20.000    | 19.795     | -1.0  | 99.0   |
| 13C2-8:2FTS | 20.000    | 20.520     | 2.6   | 102.6  |
| 13C2-PFDoDA | 20.000    | 20.852     | 4.3   | 104.3  |
| 13C2-PFTeDA | 20.000    | 20.730     | 3.7   | 103.7  |
| 13C3-PFBS   | 20.000    | 19.274     | -3.6  | 96.4   |
| 13C3-PFHxS  | 20.000    | 19.479     | -2.6  | 97.4   |
| 13C4-PFBA   | 20.000    | 19.556     | -2.2  | 97.8   |
| 13C4-PFHpA  | 20.000    | 19.605     | -2.0  | 98.0   |
| 13C5-PFHxA  | 20.000    | 19.357     | -3.2  | 96.8   |
| 13C5-PFPeA  | 20.000    | 19.173     | -4.1  | 95.9   |
| 13C6-PFDA   | 20.000    | 20.439     | 2.2   | 102.2  |
| 13C7-PFUnDA | 20.000    | 20.872     | 4.4   | 104.4  |
| 13C8-FOSA   | 20.000    | 20.086     | 0.4   | 100.4  |
| 13C8-PFOA   | 20.000    | 19.800     | -1.0  | 99.0   |
| 13C8-PFOS   | 20.000    | 19.285     | -3.6  | 96.4   |
| 13C9-PFNA   | 20.000    | 20.156     | 0.8   | 100.8  |
| 4:2FTS      | 20.000    | 20.973     | 4.9   | 104.9  |
| 6:2FTS      | 20.000    | 19.660     | -1.7  | 98.3   |
| 8:2FTS      | 20.000    | 20.574     | 2.9   | 102.9  |
| d3-MeFOSAA  | 20.000    | 20.618     | 3.1   | 103.1  |
| EtFOSAA     | 20.000    | 20.444     | 2.2   | 102.2  |
| FOSA        | 20.000    | 20.178     | 0.9   | 100.9  |
| MeFOSAA     | 20.000    | 18.885     | -5.6  | 94.4   |
| PFBA        | 20.000    | 19.725     | -1.4  | 98.6   |
| PFBS        | 20.000    | 19.979     | -0.1  | 99.9   |
| PFDA        | 20.000    | 20.165     | 0.8   | 100.8  |
| PFDoDA      | 20.000    | 19.706     | -1.5  | 98.5   |
| PFDS        | 20.000    | 18.309     | -8.5  | 91.5   |
| PFHpA       | 20.000    | 19.830     | -0.8  | 99.2   |
| PFHpS       | 20.000    | 19.989     | -0.1  | 99.9   |
| PFHxA       | 20.000    | 19.875     | -0.6  | 99.4   |
| PFHxS       | 20.000    | 19.650     | -1.7  | 98.3   |
| PFNA        | 20.000    | 19.791     | -1.0  | 99.0   |
| PFNS        | 20.000    | 20.907     | 4.5   | 104.5  |
| PFOA        | 20.000    | 20.009     | 0.0   | 100.0  |
| PFOS        | 20.000    | 19.906     | -0.5  | 99.5   |

# Continuing Calibration Summary

**Job Number:** FA62220

**Sample:** S3Q54-CC54

**Account:** AHTNACAS Ahtna Environmental Inc

**Lab FileID:** 3Q1992.D

**Project:** OU2 (PFOA/PFOS)-Fort Ord Groundwater Monitoring

|              |         |          |      |       |
|--------------|---------|----------|------|-------|
| PFPeA        | 20.000  | 19.603   | -2.0 | 98.0  |
| PFPeS        | 20.000  | 20.124   | 0.6  | 100.6 |
| PFTeDA       | 20.000  | 19.806   | -1.0 | 99.0  |
| PFTTrDA      | 20.000  | 19.626   | -1.9 | 98.1  |
| PFUnDA       | 20.000  | 19.752   | -1.2 | 98.8  |
| M4-PFBA      | ---     | --ISTD-- |      |       |
| M5-PFPeA     | ---     | --ISTD-- |      |       |
| M5-PFHxA     | ---     | --ISTD-- |      |       |
| M4-PFHpA     | ---     | --ISTD-- |      |       |
| M8-PFOA      | ---     | --ISTD-- |      |       |
| M9-PFNA      | ---     | --ISTD-- |      |       |
| M6-PFDA      | ---     | --ISTD-- |      |       |
| M7-PFUnDA    | ---     | --ISTD-- |      |       |
| M2-PFDoDA    | ---     | --ISTD-- |      |       |
| M2-PFTeDA    | ---     | --ISTD-- |      |       |
| M8-FOSA      | ---     | --ISTD-- |      |       |
| M3-PFBS      | ---     | --ISTD-- |      |       |
| M3-PFHxS     | ---     | --ISTD-- |      |       |
| M8-PFOS      | ---     | --ISTD-- |      |       |
| M2-4:2FTS    | ---     | --ISTD-- |      |       |
| M2-6:2FTS    | ---     | --ISTD-- |      |       |
| M2-8:2FTS    | ---     | --ISTD-- |      |       |
| M3-MeFOSAA   | ---     | --ISTD-- |      |       |
| 11C1-PF3OUdS | 20.000  | 18.785   | -6.1 | 93.9  |
| 13C3-HFPO-DA | 100.000 | 95.535   | -4.5 | 95.5  |
| 9C1-PF3ONS   | 20.000  | 18.714   | -6.4 | 93.6  |
| ADONA        | 20.000  | 19.643   | -1.8 | 98.2  |
| HFPO-DA      | 100.000 | 97.698   | -2.3 | 97.7  |
| M3-HFPO-DA   | ---     | --ISTD-- |      |       |
| 13C2-PFOA    | ---     | --ISTD-- |      |       |
| 13C4-PFOS    | ---     | --ISTD-- |      |       |
| M2-PFOA      | 20.000  | 20.000   | 0.0  | 100.0 |
| M4-PFOS      | 20.000  | 20.000   | 0.0  | 100.0 |

CC Criteria: +/- 30%

6.8.23

6

MS Semi-volatiles

Raw Data

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27693.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 4:16:56 PM  
 Sample Name : fa62220-1  
 Vial : Vial 15  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT    | QIon                 | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|-------|----------------------|--------|------------------|----------|
| <b>Internal Standards</b>          |       |                      |        |                  |          |
| 13C2-PFOA                          | 6.435 | 415.0 -> 370.0       | 284864 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036 | 503.0 -> 80.0        | 40120  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852 | 217.0 -> 172.0       | 105748 | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511 | 268.0 -> 223.0       | 89026  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.776 | 318.0 -> 273.0       | 125442 | 20.00 µg/L       | -0.013   |
| M4-PFHpA                           | 5.693 | 367.0 -> 322.0       | 183385 | 20.00 µg/L       | -0.013   |
| M8-PFOA                            | 6.434 | 421.0 -> 376.0       | 194051 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.052 | 472.0 -> 427.0       | 183774 | 20.00 µg/L       | -0.013   |
| M6-PFDA                            | 7.594 | 519.0 -> 474.0       | 231649 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041 | 570.0 -> 525.0       | 296411 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.466 | 615.0 -> 570.0       | 345887 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.315 | 715.0 -> 670.0       | 192909 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.932 | 506.0 -> 78.0        | 58239  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.767 | 302.0 -> 99.0        | 15092  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.736 | 402.0 -> 99.0        | 16581  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033 | 507.0 -> 99.0        | 19201  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684 | 329.0 -> 309.0       | 49890  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416 | 429.0 -> 409.0       | 61754  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630 | 529.0 -> 509.0       | 35525  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447 | 573.0 -> 419.0       | 28284  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -     | 287.0 -> 169.0       | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |       |                      |        |                  |          |
| 13C2-4:2FTS                        | 4.684 | 329.0 -> 309.0       | 49717  | 16.72 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 83.6% |          |
| 13C2-6:2FTS                        | 6.416 | 429.0 -> 409.0       | 61748  | 19.24 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 96.2% |          |
| 13C2-8:2FTS                        | 7.630 | 529.0 -> 509.0       | 35529  | 16.02 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 80.1% |          |
| 13C2-PFDoDA                        | 8.466 | 615.0 -> 570.0       | 345754 | 18.38 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 91.9% |          |
| 13C2-PFTeDA                        | 9.315 | 715.0 -> 670.0       | 192152 | 14.97 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 74.8% |          |
| 13C3-PFBS                          | 3.767 | 302.0 -> 99.0        | 15091  | 16.55 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 82.8% |          |
| 13C3-PFHxS                         | 5.736 | 402.0 -> 99.0        | 16562  | 16.25 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 81.2% |          |
| 13C4-PFBA                          | 1.852 | 217.0 -> 172.0       | 105661 | 17.62 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 88.1% |          |
| 13C4-PFHpA                         | 5.693 | 367.0 -> 322.0       | 183491 | 17.74 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 88.7% |          |
| 13C5-PFHxA                         | 4.776 | 318.0 -> 273.0       | 125433 | 17.26 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 86.3% |          |
| 13C5-PFPeA                         | 3.511 | 268.0 -> 223.0       | 88852  | 17.48 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 87.4% |          |
| 13C6-PFDA                          | 7.594 | 519.0 -> 474.0       | 231622 | 16.97 µg/L       | 0.000    |

7.1.1  
7

Perfluorinated Compounds by LC/MS/MS

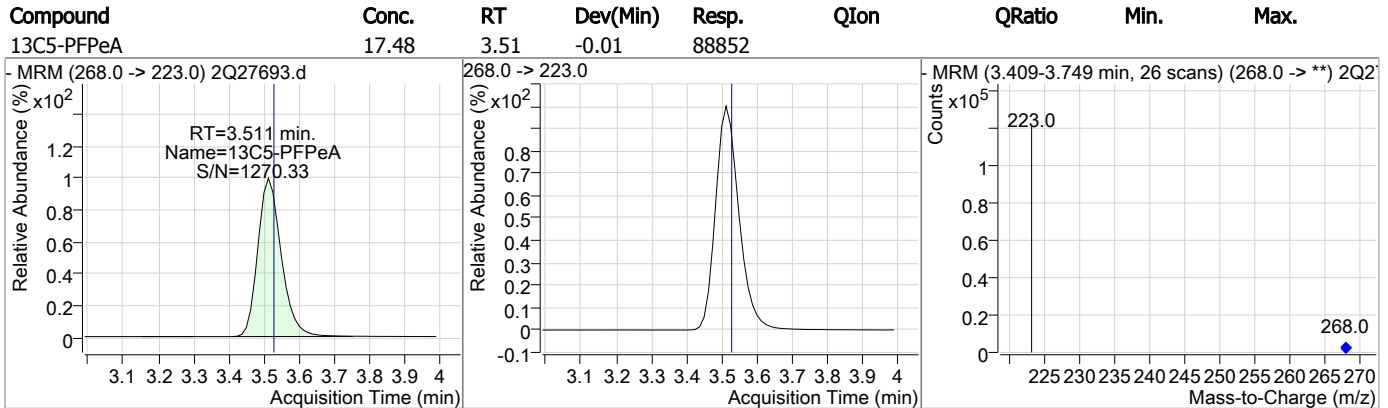
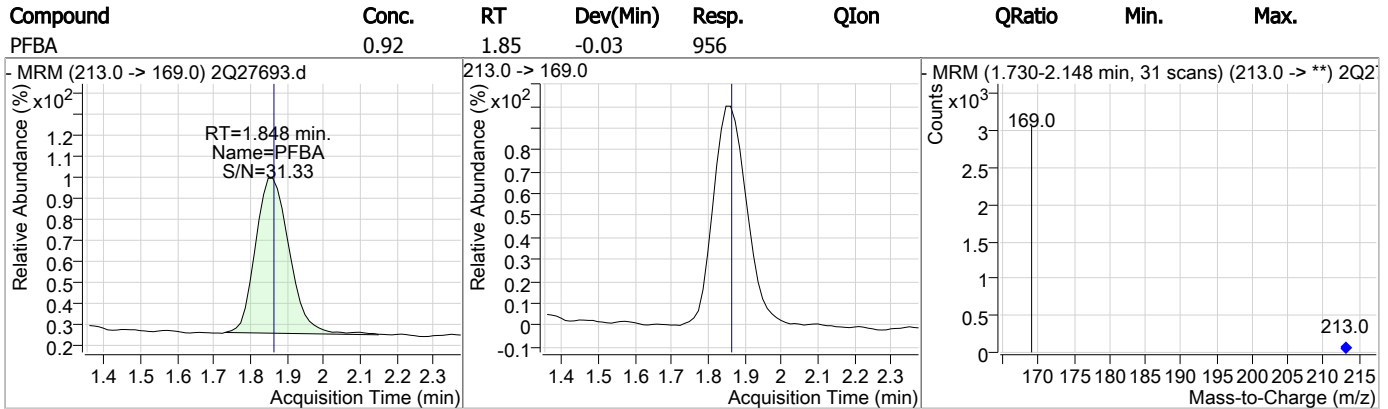
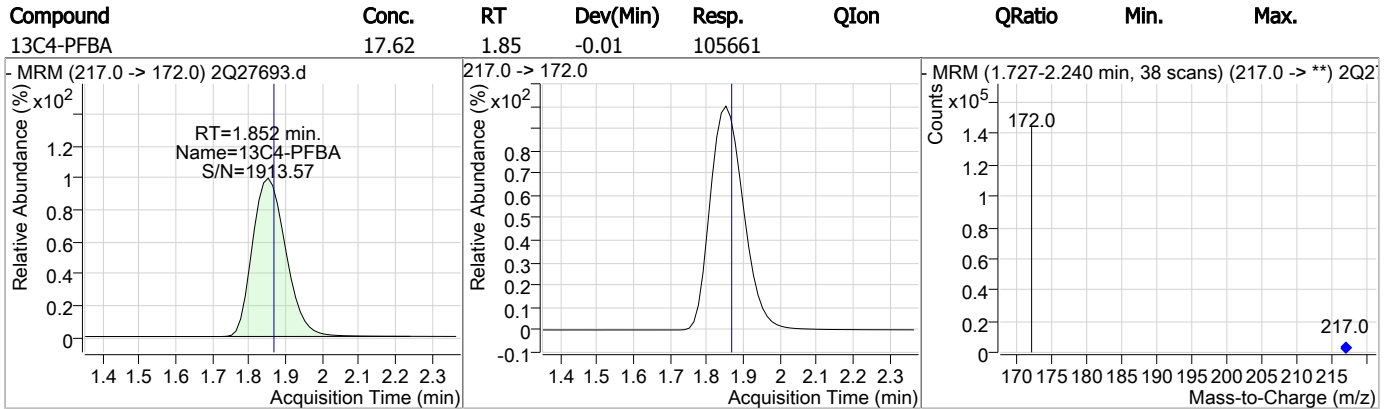
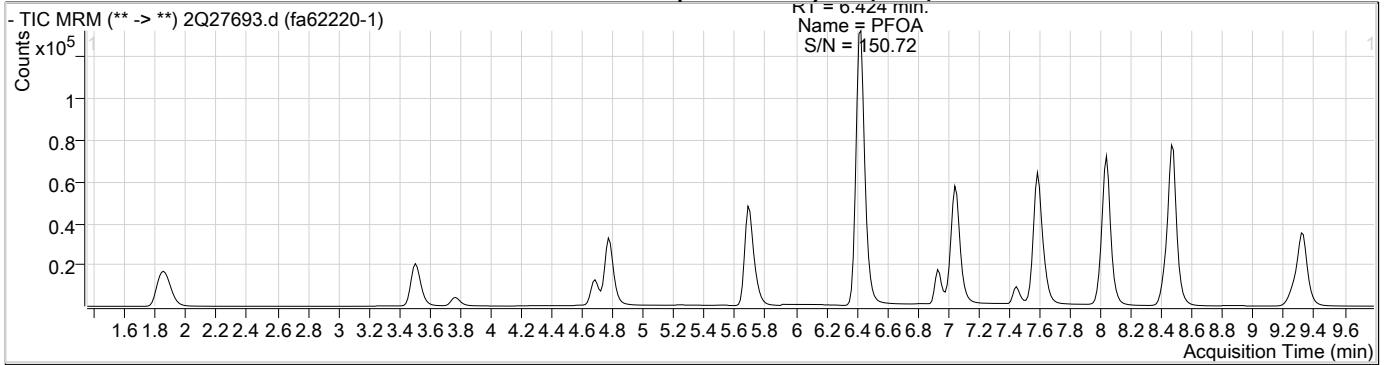
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 84.9%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 296309 | 17.51 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.5%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 58220  | 14.36 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.8%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 193928 | 18.59 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.0%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 19206  | 14.73 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.7%  |          |
| 13C9-PFNA             | 7.052                | 472.0 -> 427.0 | 183701 | 17.35 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.8%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 28302  | 14.76 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.8%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 284954 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 40158  | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

7.1.1  
7

| Target Compounds |       |                |      |           |    | QValue |
|------------------|-------|----------------|------|-----------|----|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -    | N.D.      |    |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -    | N.D.      |    |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -    | N.D.      |    |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -    | N.D.      |    |        |
| FOSA             | -     | 498.0 -> 78.0  | -    | N.D.      |    |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -    | N.D.      |    |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 956  | 0.92 µg/L |    | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 1915 | 1.60 µg/L |    | 97     |
| PFDA             | -     | 513.0 -> 469.0 | -    | N.D.      |    |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -    | N.D.      |    |        |
| PFDS             | -     | 599.0 -> 80.0  | -    | N.D.      |    |        |
| PFHpA            | 5.695 | 363.0 -> 319.0 | 4779 | 0.60 µg/L | m  | 99     |
| PFHpS            | -     | 449.0 -> 80.0  | -    | N.D.      |    |        |
| PFHxA            | 4.778 | 313.0 -> 269.0 | 3151 | 1.46 µg/L |    | 98     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 1060 | 1.16 µg/L | m  | 97     |
| PFNA             | -     | 463.0 -> 419.0 | -    | N.D.      |    |        |
| PFNS             | -     | 549.0 -> 80.0  | -    | N.D.      |    |        |
| PFOA             | 6.424 | 413.0 -> 369.0 | 9992 | 1.91 µg/L | m  | 100    |
| PFOS             | 7.037 | 499.0 -> 80.0  | 1841 | 1.97 µg/L | #m | 69     |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 4739 | 1.23 µg/L |    | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 447  | 0.58 µg/L | m  | 94     |
| PFTeDA           | -     | 713.0 -> 669.0 | -    | N.D.      |    |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -    | N.D.      |    |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -    | N.D.      |    |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -    | N.D.      |    |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -    | N.D.      |    |        |
| ADONA            | -     | 377.0 -> 251.0 | -    | N.D.      |    |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -    | N.D.      |    |        |

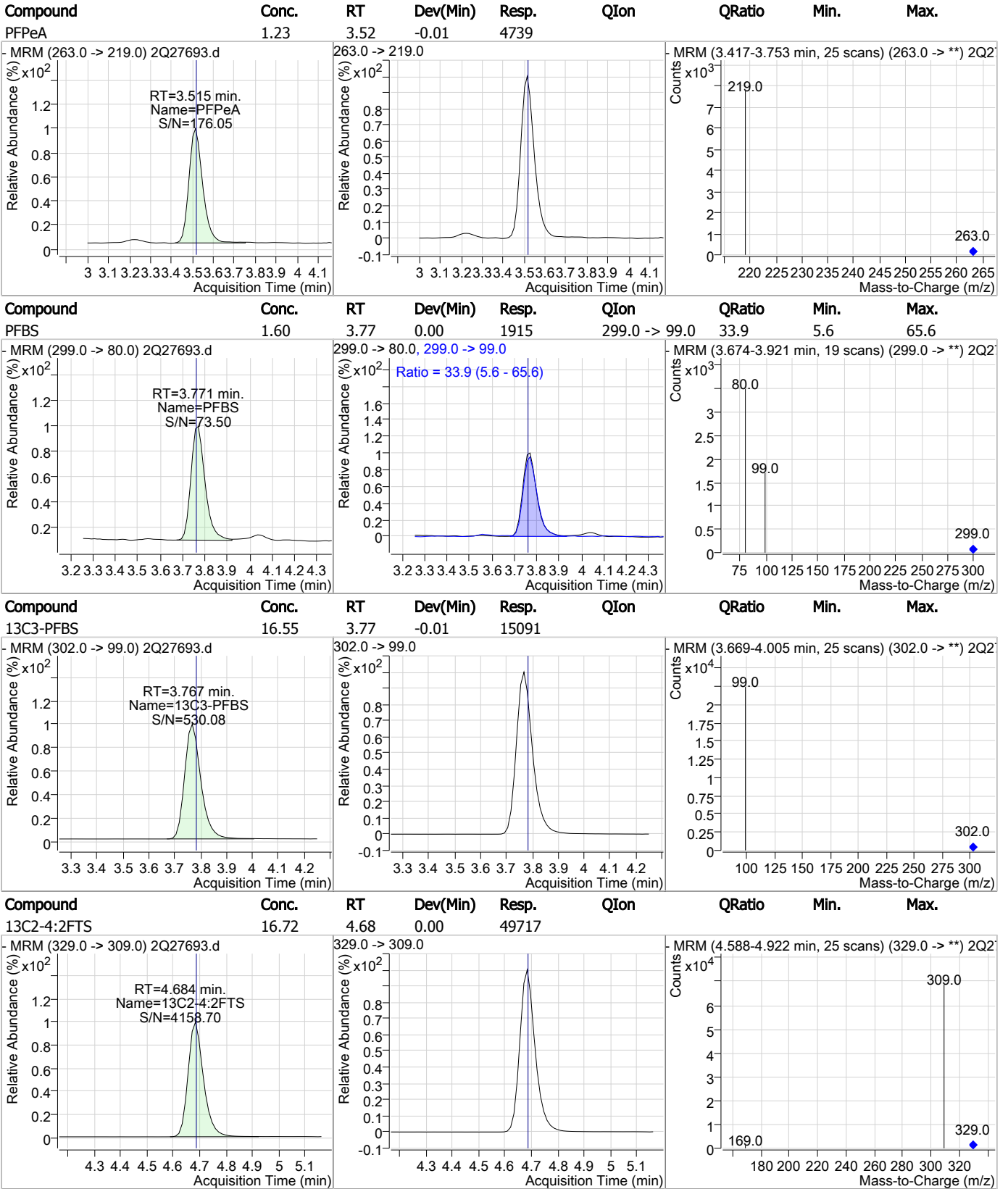
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS





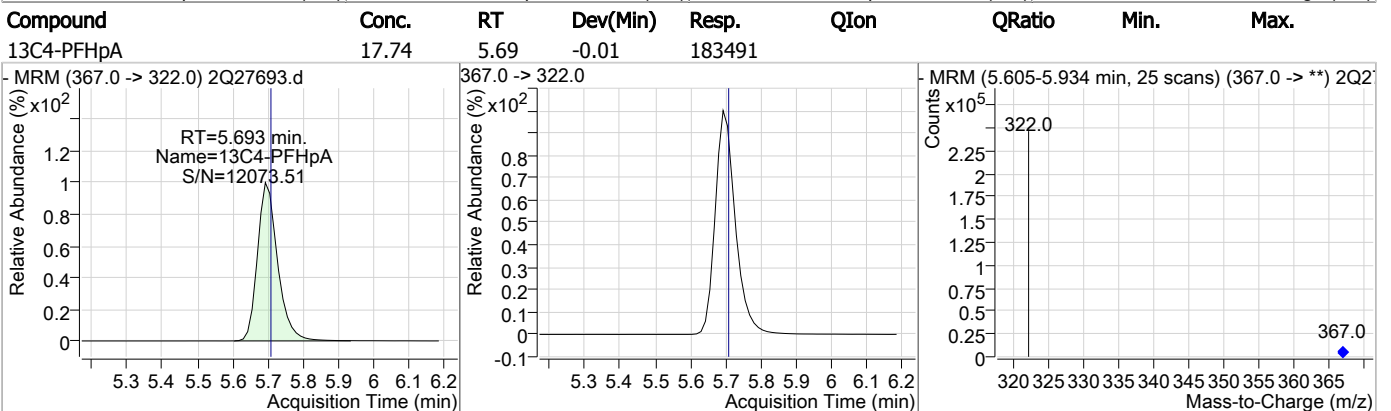
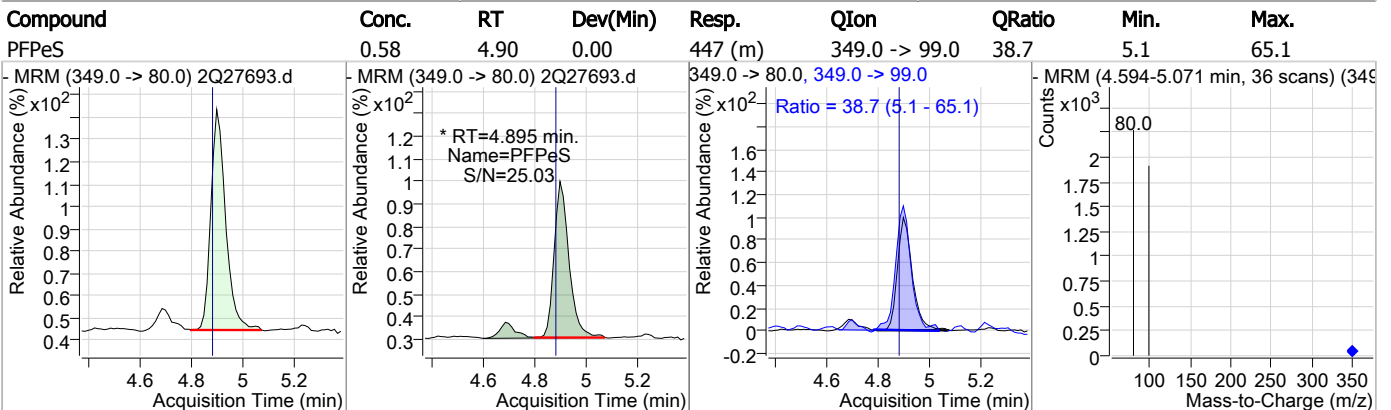
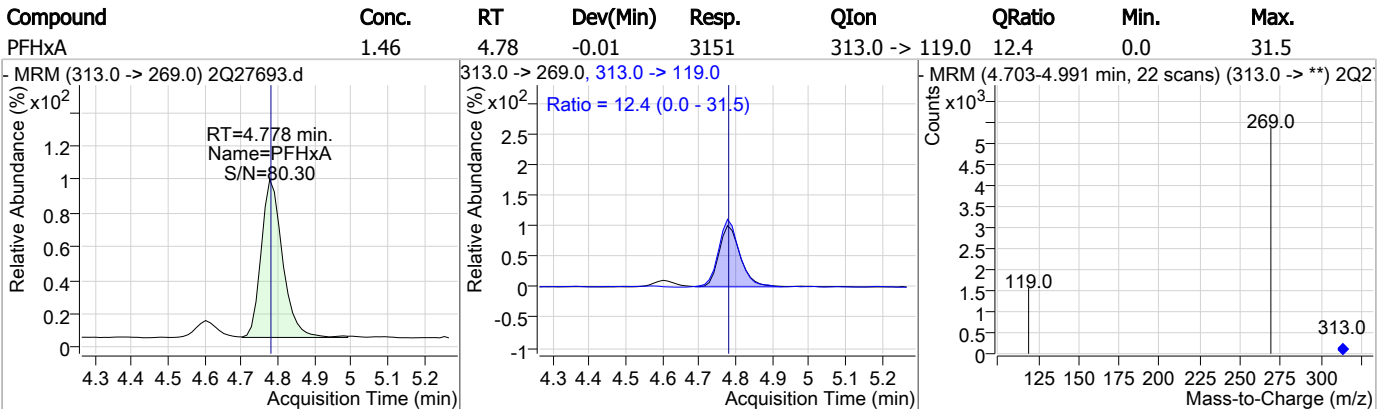
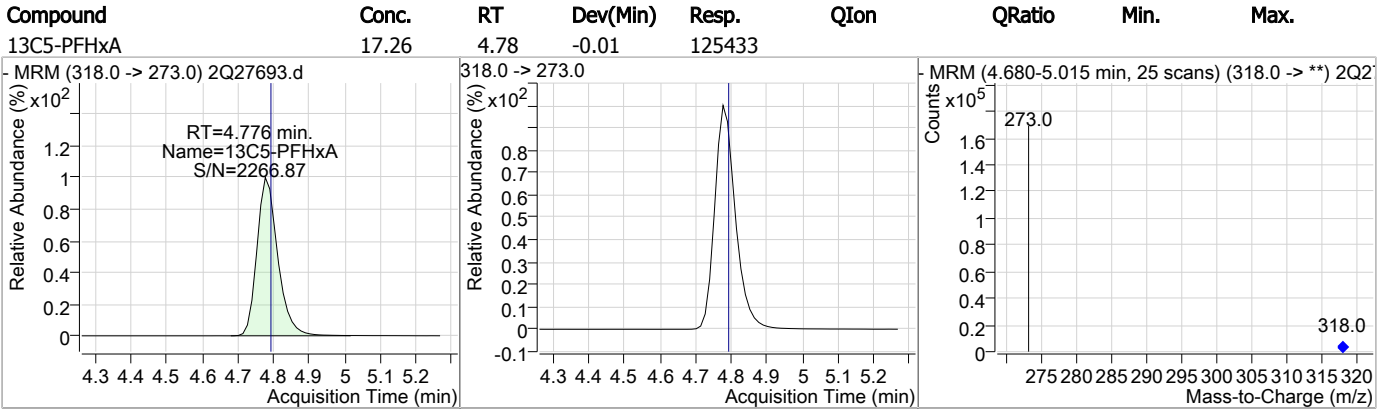
### Perfluorinated Compounds by LC/MS/MS



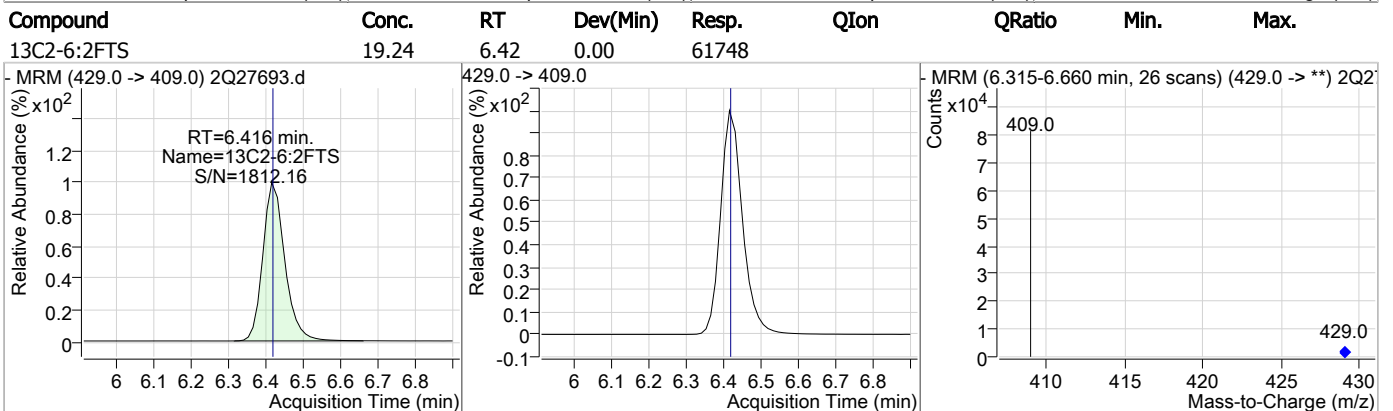
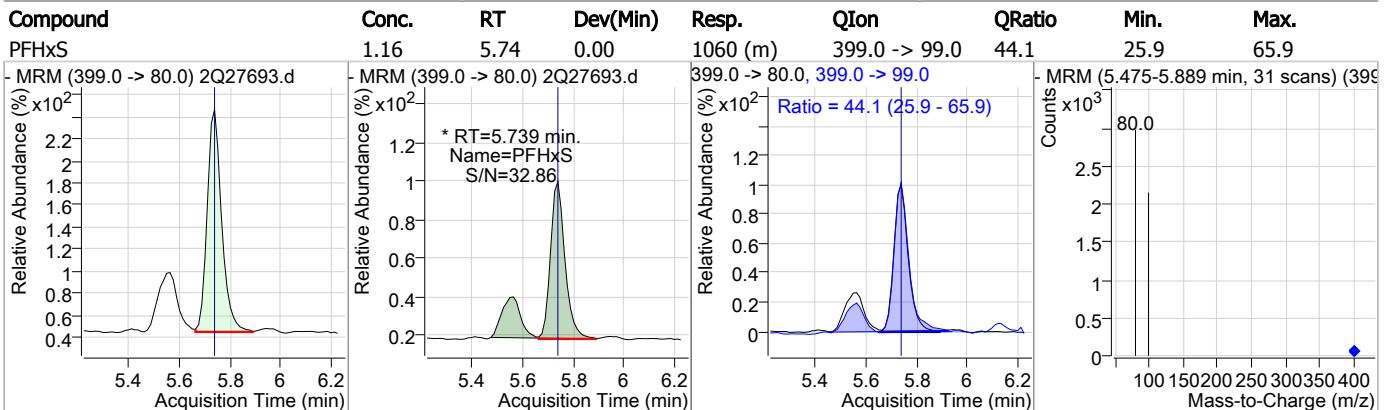
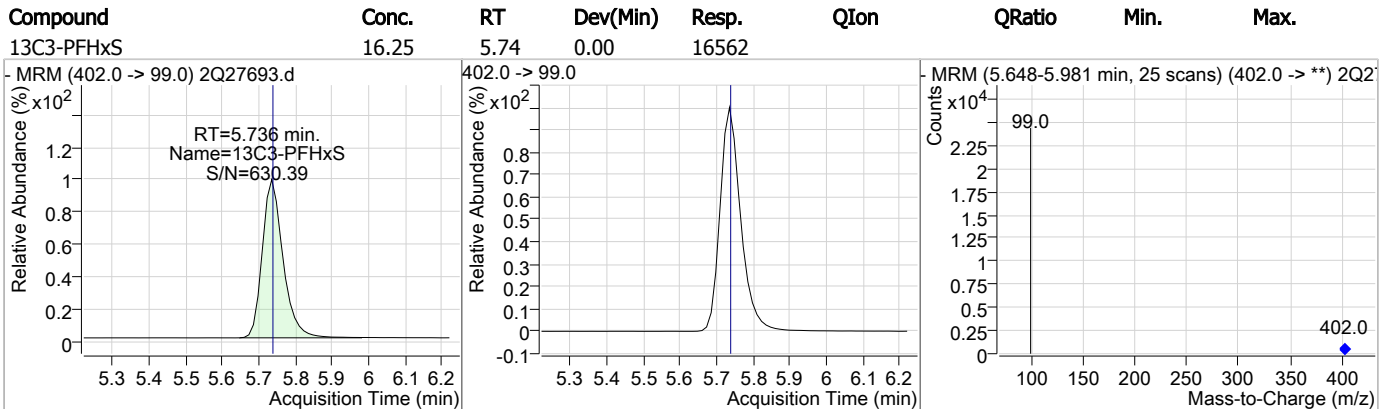
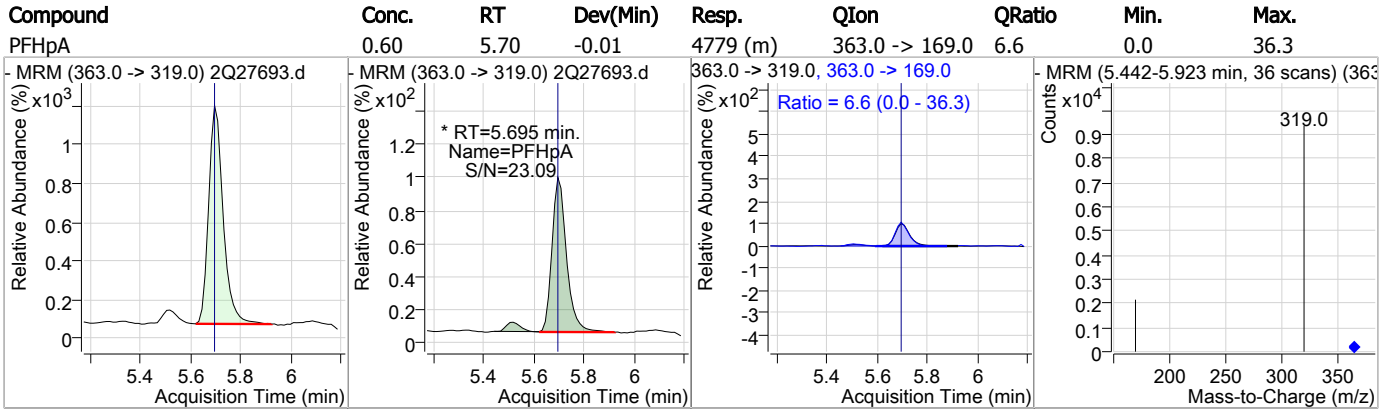
7.1.1  
7



### Perfluorinated Compounds by LC/MS/MS

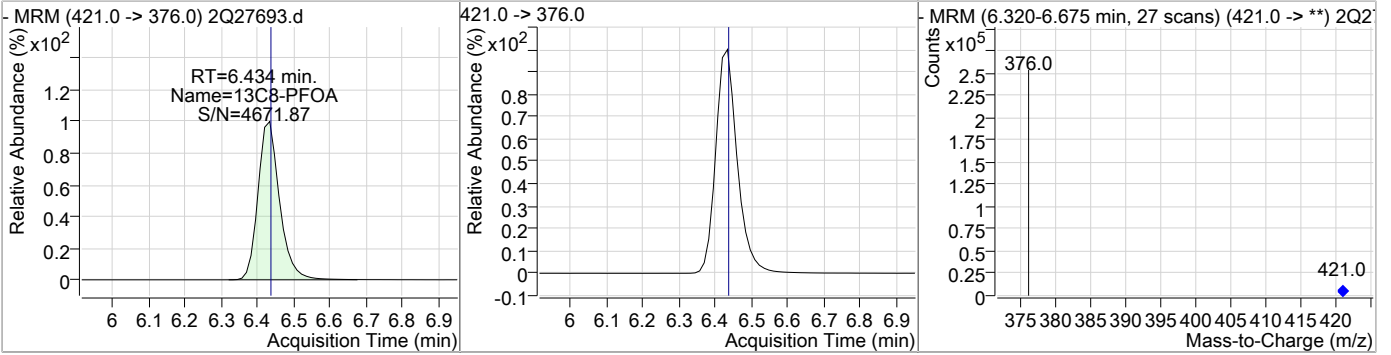


### Perfluorinated Compounds by LC/MS/MS

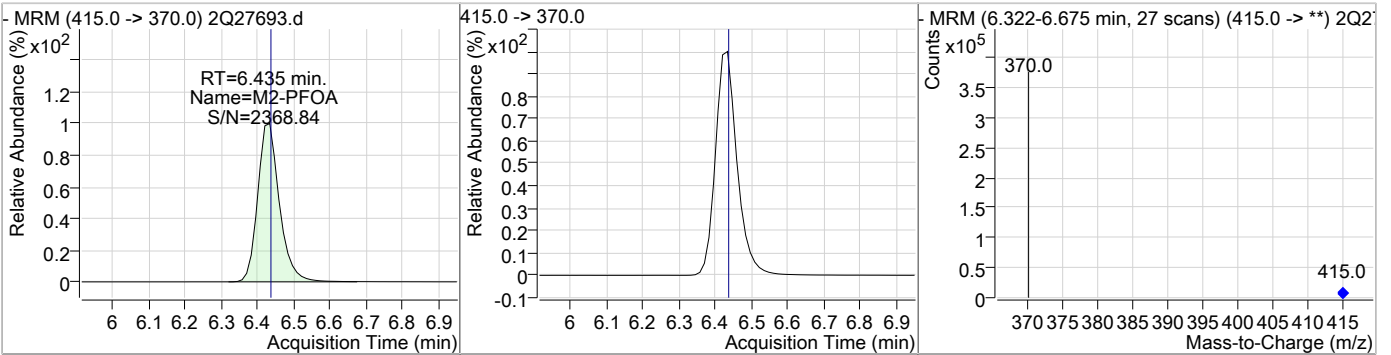


### Perfluorinated Compounds by LC/MS/MS

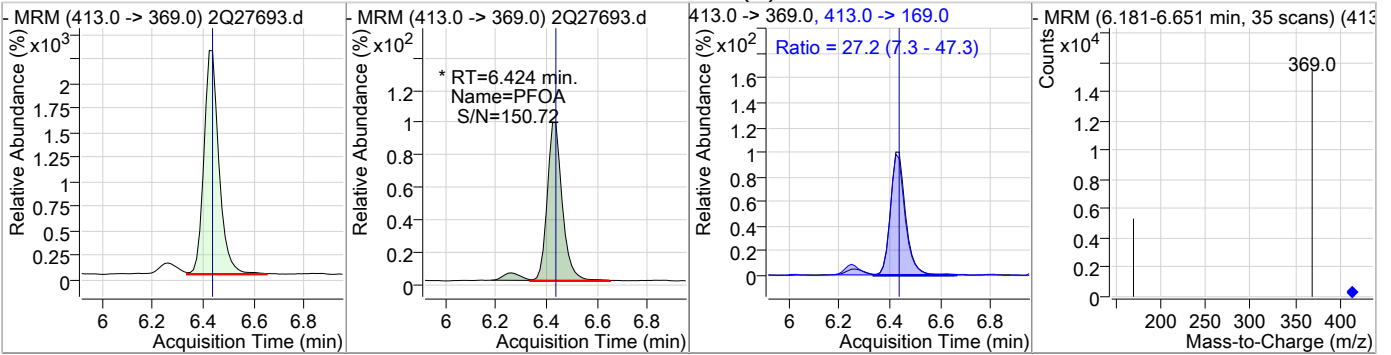
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 18.59 | 6.43 | 0.00     | 193928 |      |        |      |      |



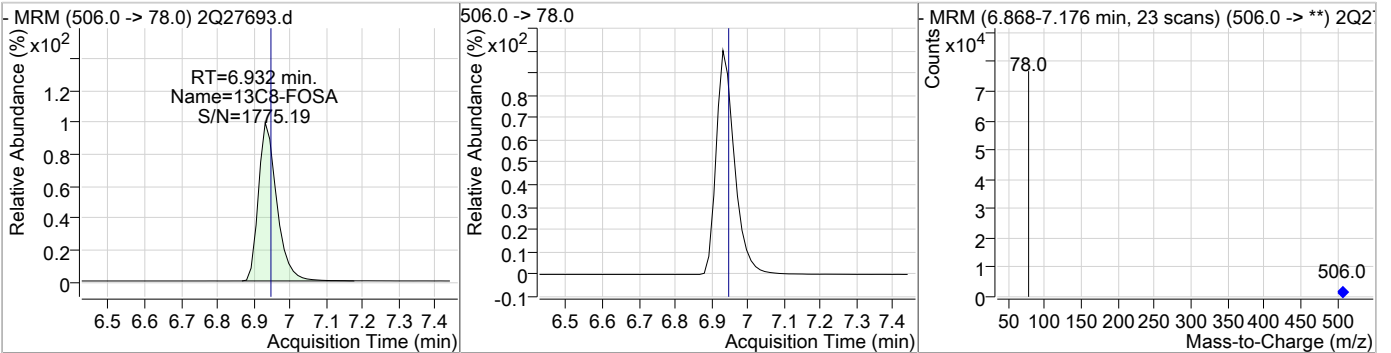
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.99 | 6.44 | 0.00     | 284954 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|----------------|--------|------|------|
| PFOA     | 1.91  | 6.42 | -0.01    | 9992 (m) | 413.0 -> 169.0 | 27.2   | 7.3  | 47.3 |

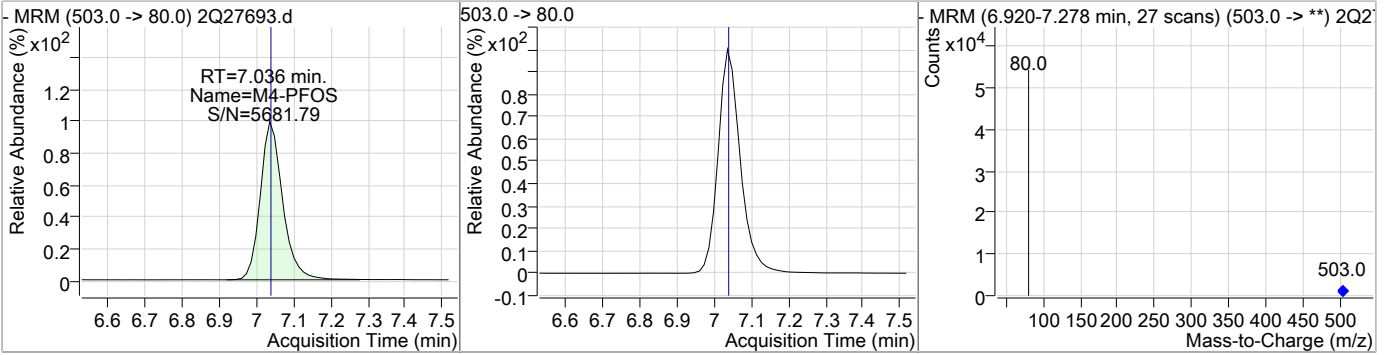


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-FOSA | 14.36 | 6.93 | -0.01    | 58220 |      |        |      |      |

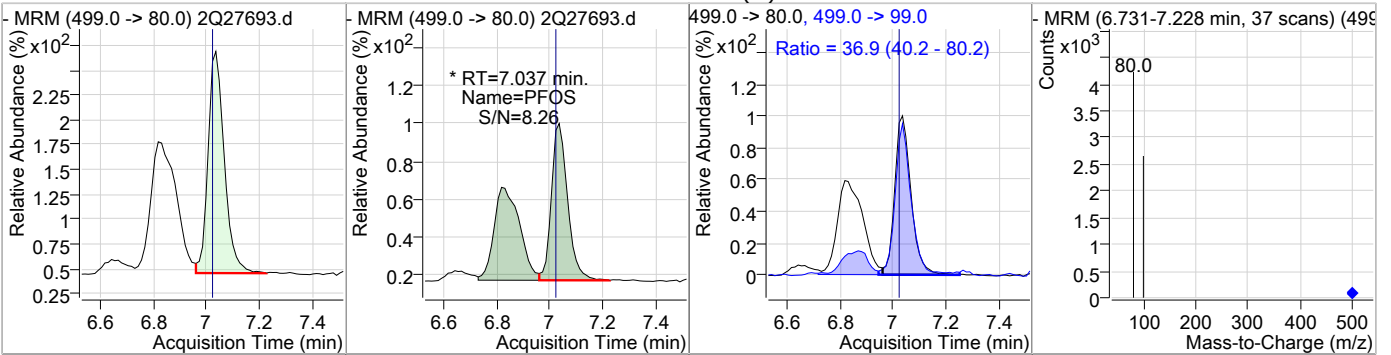


### Perfluorinated Compounds by LC/MS/MS

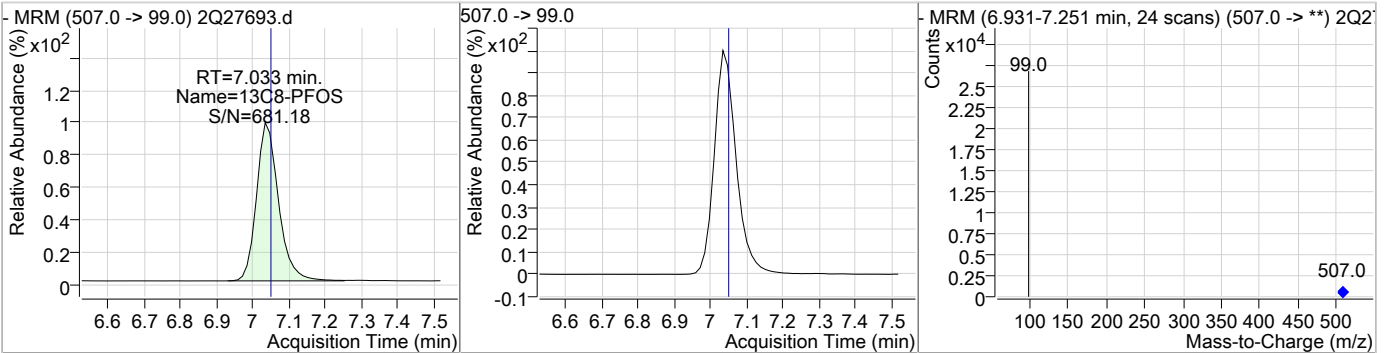
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| M4-PFOS  | 20.01 | 7.04 | 0.00     | 40158 |      |        |      |      |



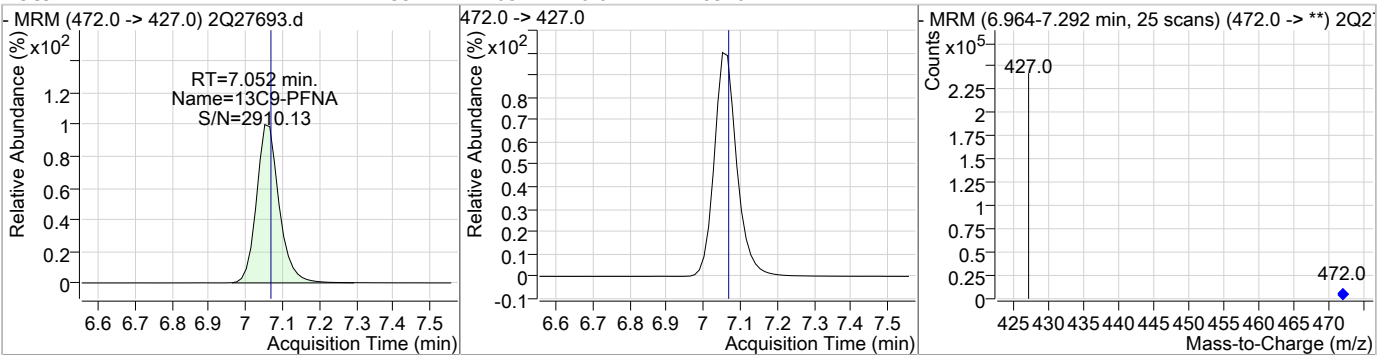
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFOS     | 1.97  | 7.04 | 0.00     | 1841 (m) | 499.0 -> 99.0 | 36.9   | 40.2 | 80.2 |



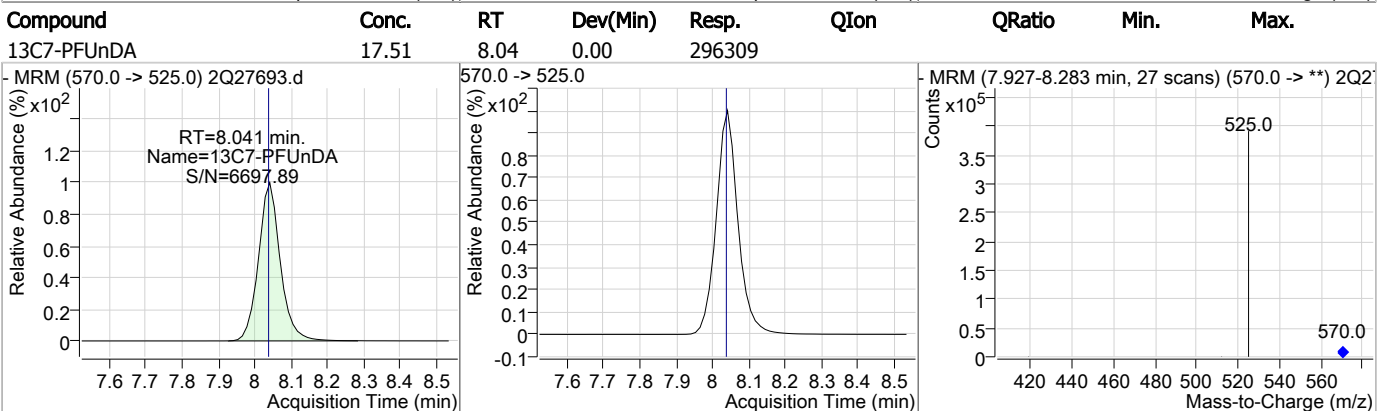
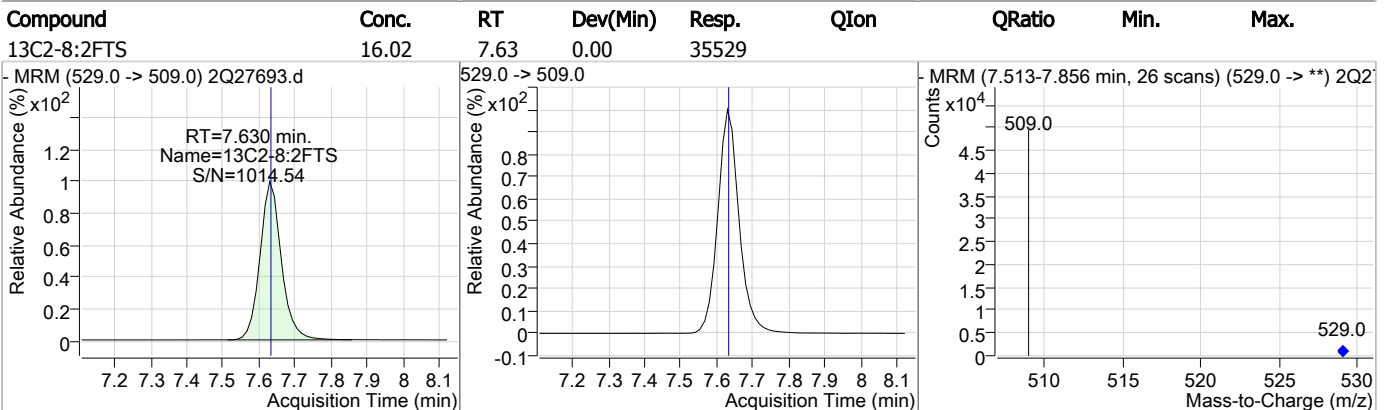
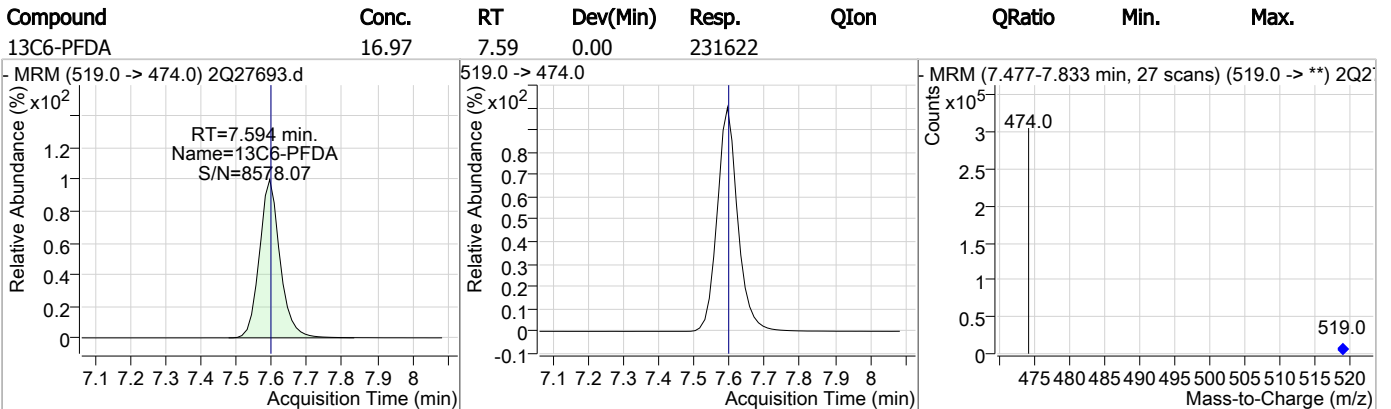
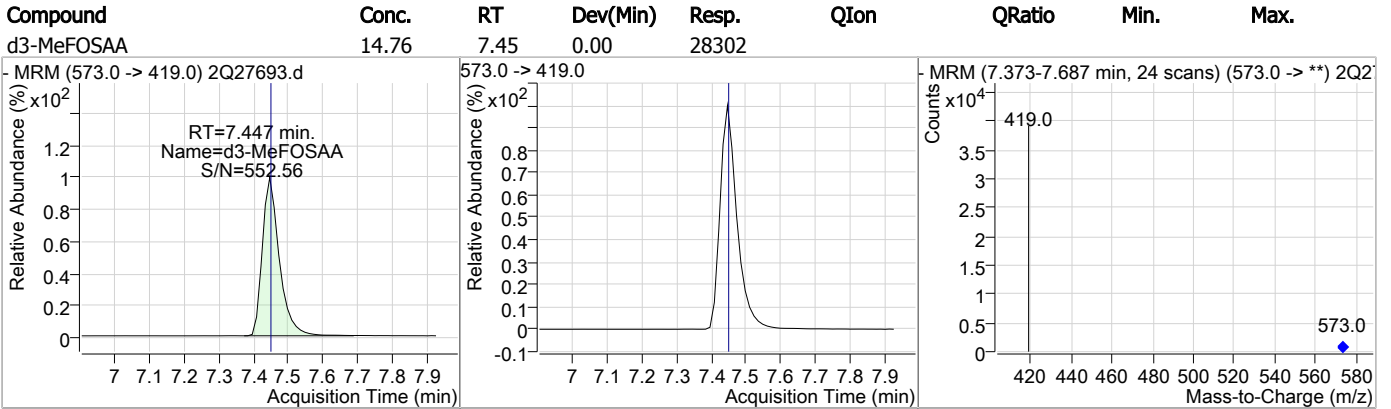
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 14.73 | 7.03 | -0.01    | 19206 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 17.35 | 7.05 | -0.01    | 183701 |      |        |      |      |

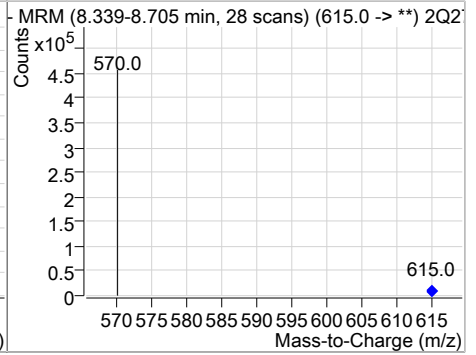
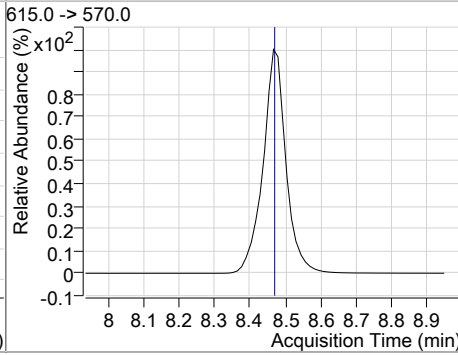
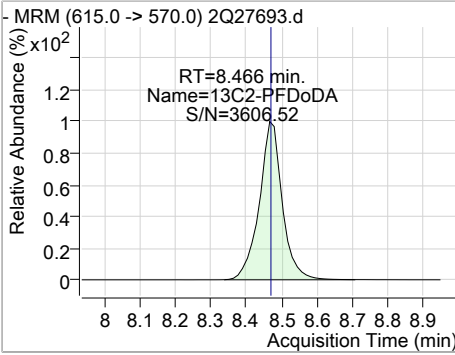


### Perfluorinated Compounds by LC/MS/MS

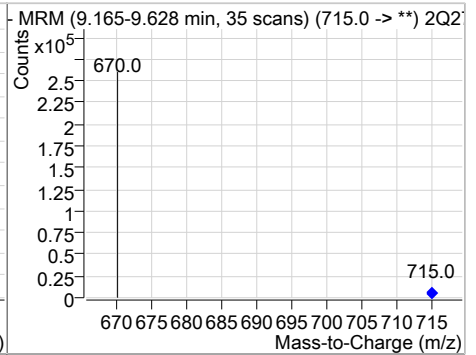
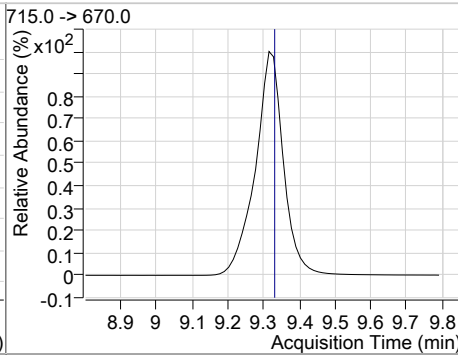
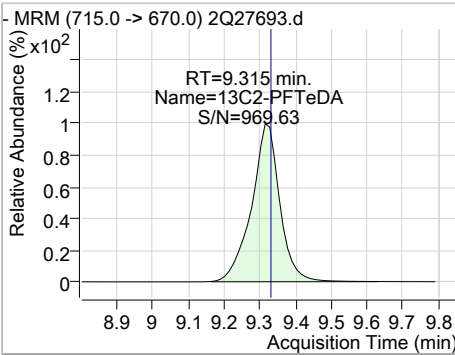


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 18.38 | 8.47 | 0.00     | 345754 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 14.97 | 9.31 | -0.01    | 192152 |      |        |      |      |



7.1.1  
7



# Manual Integration Approval Summary

**Sample Number:** FA62220-1      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27693.D      **Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Injection Time:** 03/18/19 16:16      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                     | CAS       | Sig# | R.T. (min.) | Reason     |
|-------------------------------|-----------|------|-------------|------------|
| Perfluoropentanesulfonic acid | 2706-91-4 |      | 4.89        | Split peak |
| Perfluoroheptanoic acid       | 375-85-9  |      | 5.70        | Split peak |
| Perfluorohexanesulfonic acid  | 355-46-4  |      | 5.74        | Split peak |
| Perfluorooctanoic acid        | 335-67-1  |      | 6.42        | Split peak |
| Perfluorooctanesulfonic acid  | 1763-23-1 |      | 7.04        | Split peak |

7.1.1.1

7



Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27696.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 5:04:07 PM  
 Sample Name : fa62220-2  
 Vial : Vial 18  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 288171 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 39540  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 94100  | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 79946  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.776                | 318.0 -> 273.0 | 115870 | 20.00 µg/L       | -0.013   |
| M4-PFHpA                           | 5.693                | 367.0 -> 322.0 | 174694 | 20.00 µg/L       | -0.013   |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 192158 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 177736 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 216170 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 293480 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 361847 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 205801 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 61936  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 14912  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 16502  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 17323  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 48405  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 62345  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 32776  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 27596  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 48359  | 16.26 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.3% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 62336  | 19.42 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.1% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 32773  | 14.78 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 73.9% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 361811 | 19.24 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.2% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 205009 | 15.97 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.8% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 14900  | 16.34 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.7% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 16498  | 16.18 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.9% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 93913  | 15.66 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.3% |          |
| 13C4-PFHpA                         | 5.693                | 367.0 -> 322.0 | 174596 | 16.88 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.4% |          |
| 13C5-PFHxA                         | 4.776                | 318.0 -> 273.0 | 115827 | 15.94 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.7% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 79716  | 15.68 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.4% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 216174 | 15.84 µg/L       | 0.000    |

7.12  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.2%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 293557 | 17.35 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.7%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 61921  | 15.27 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 76.4%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 192069 | 18.41 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.1%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 17316  | 13.28 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 66.4%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 177714 | 16.78 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.9%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 27540  | 14.37 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.8%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 288789 | 20.02 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 39572  | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

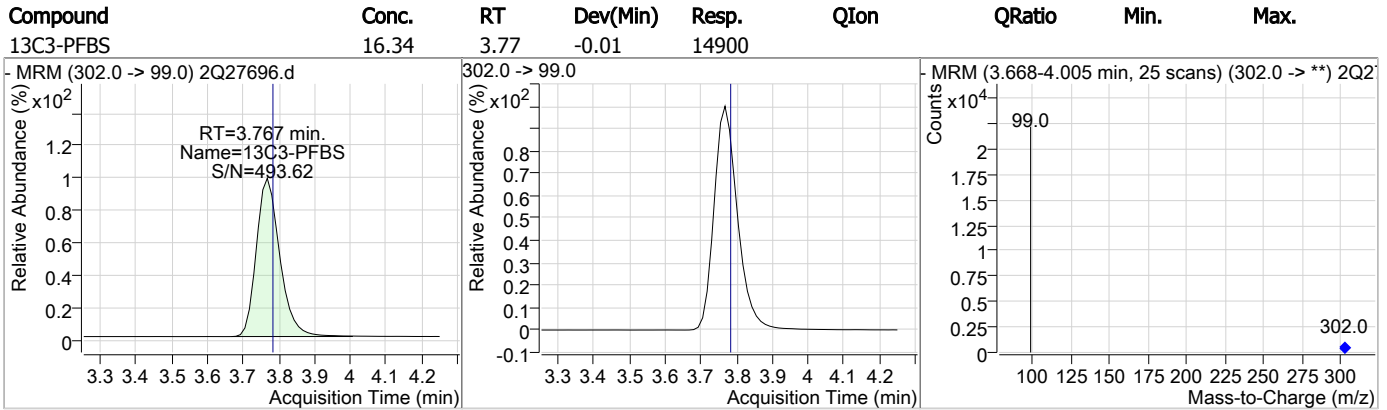
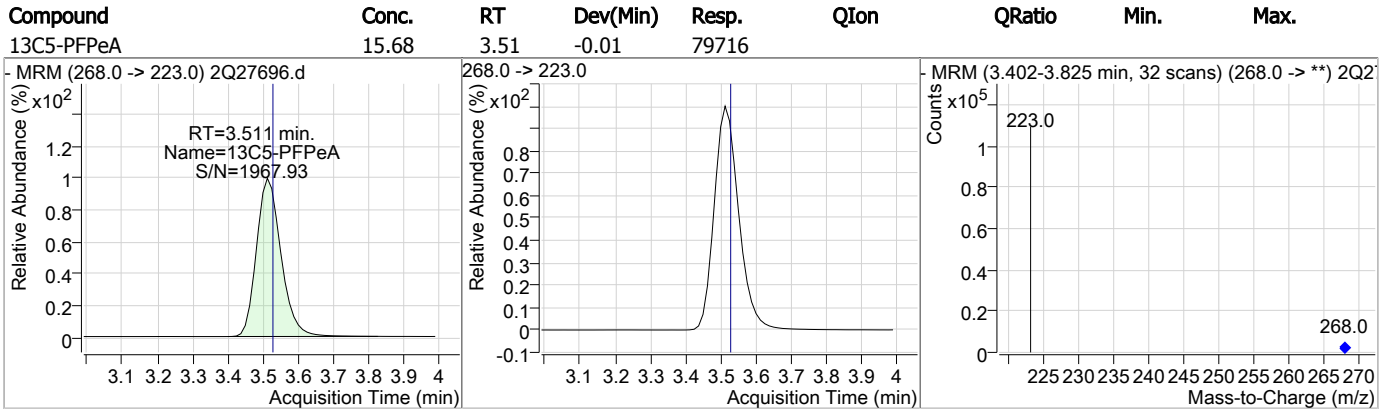
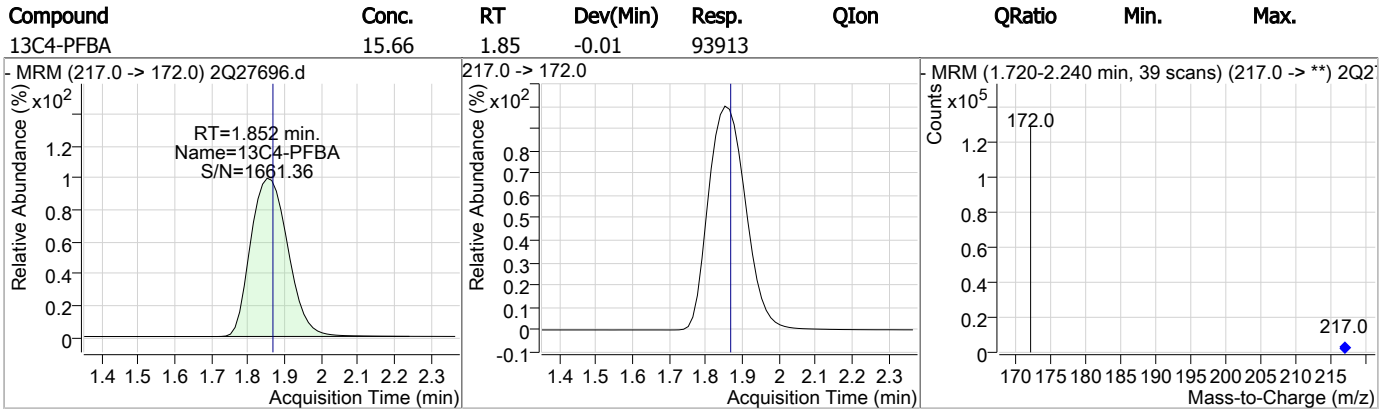
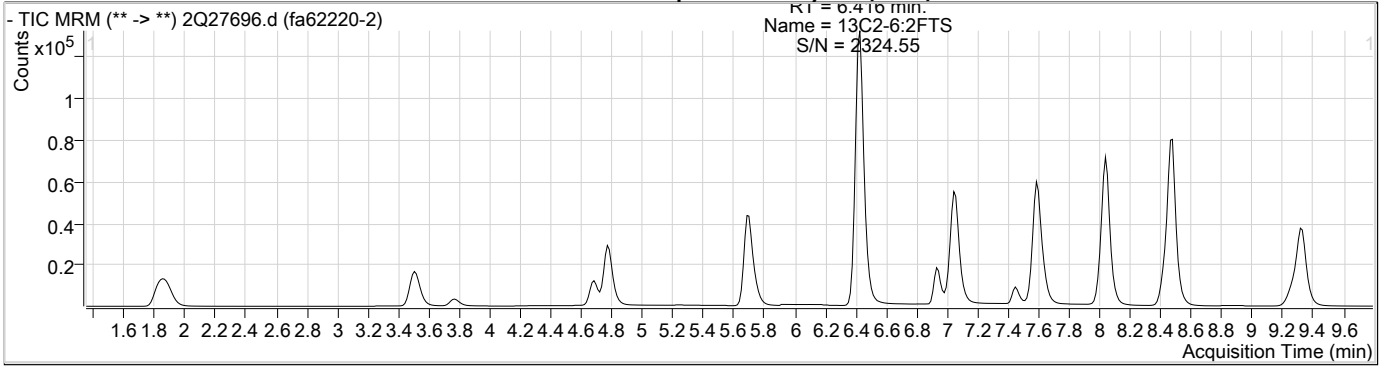
Target Compounds

| Target Compounds | RT | QIon           | Resp. | Conc. Units | QValue |
|------------------|----|----------------|-------|-------------|--------|
| 4:2FTS           | -  | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -  | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -  | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -  | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -  | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -  | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -  | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -  | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -  | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -  | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -  | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -  | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -  | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -  | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -  | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -  | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -  | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -  | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -  | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | -  | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS            | -  | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -  | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -  | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -  | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -  | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -  | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -  | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -  | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

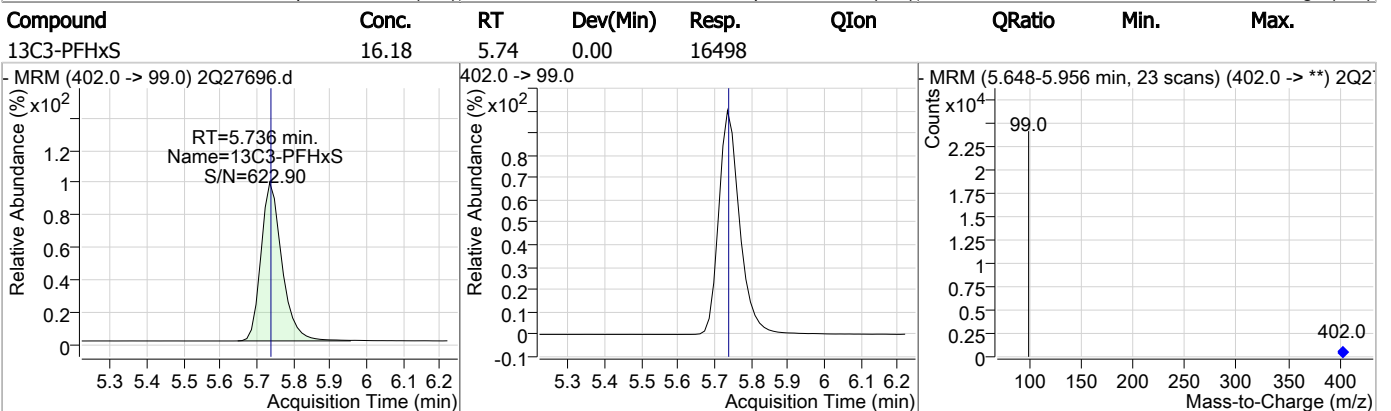
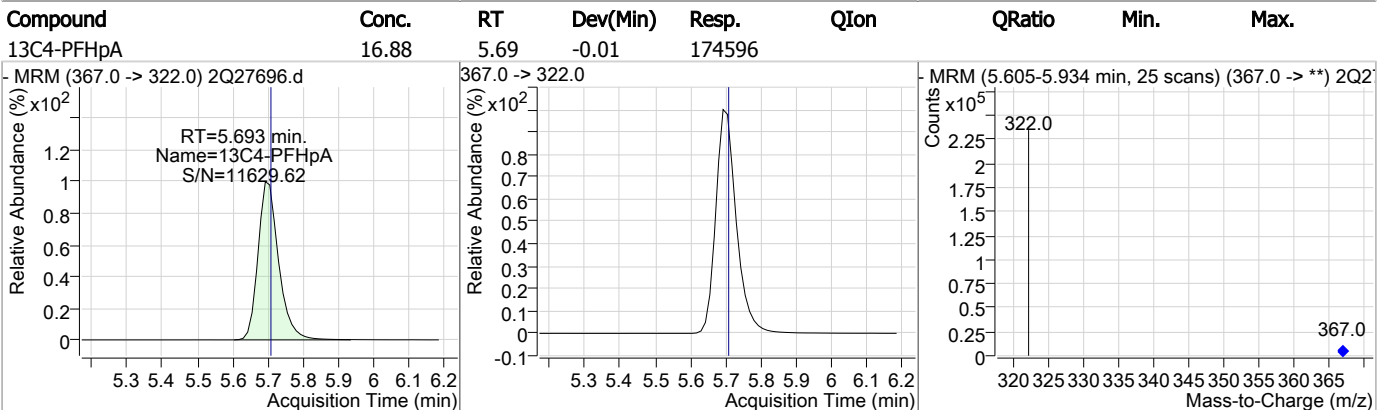
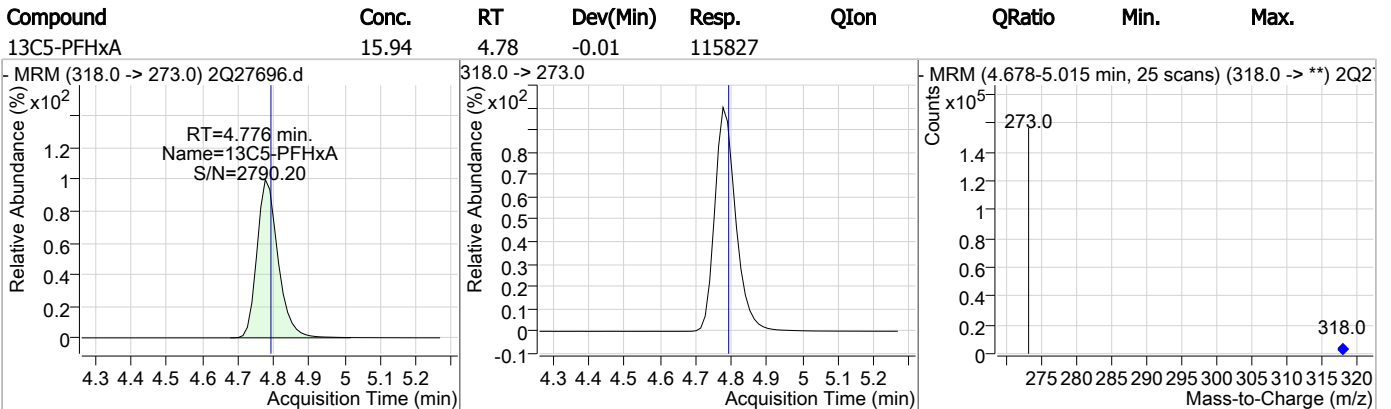
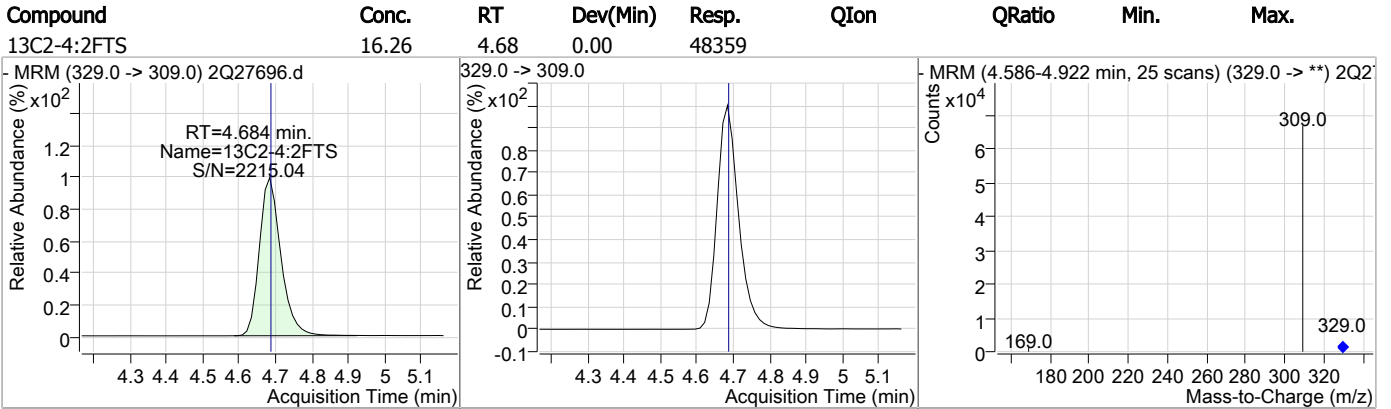
7.12  
7

### Perfluorinated Compounds by LC/MS/MS

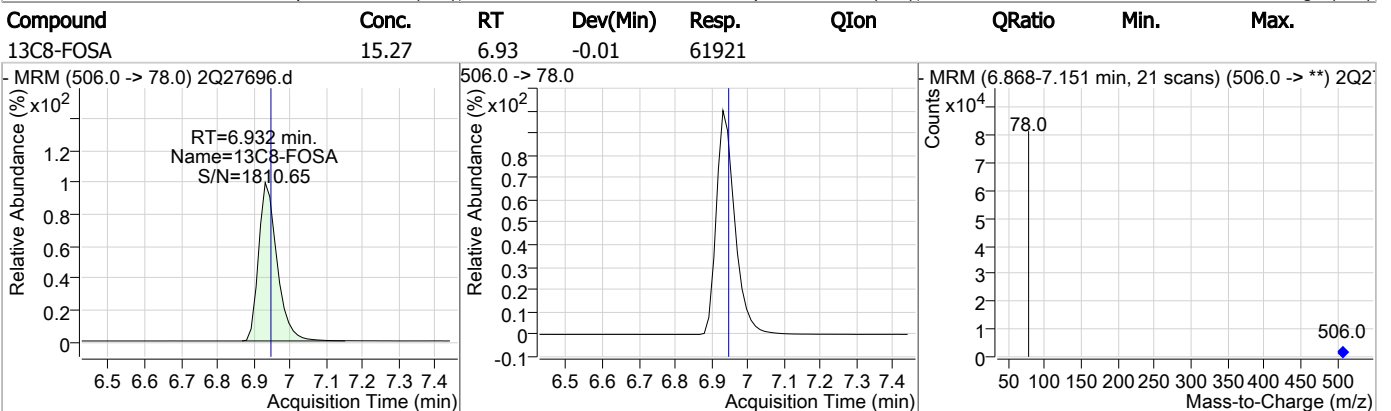
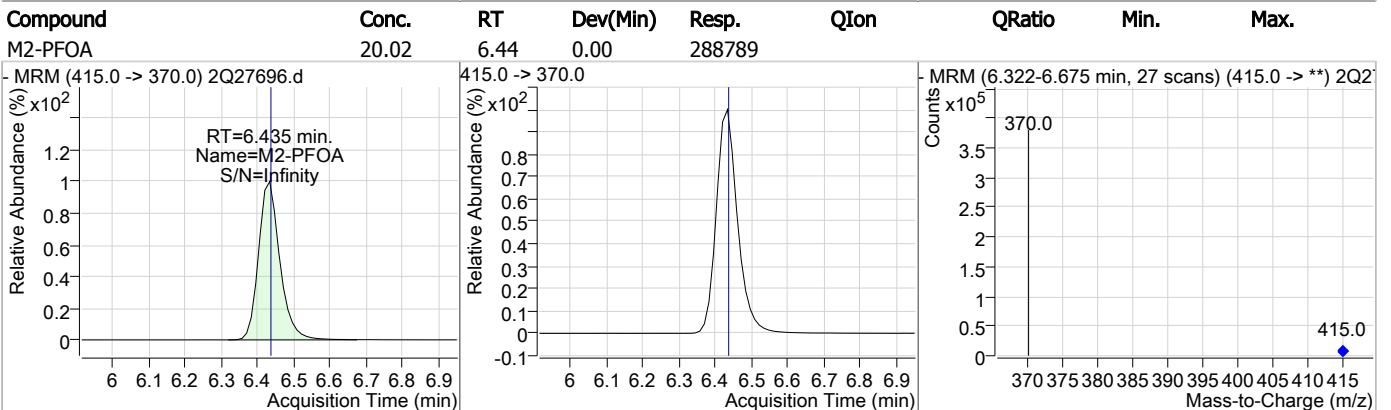
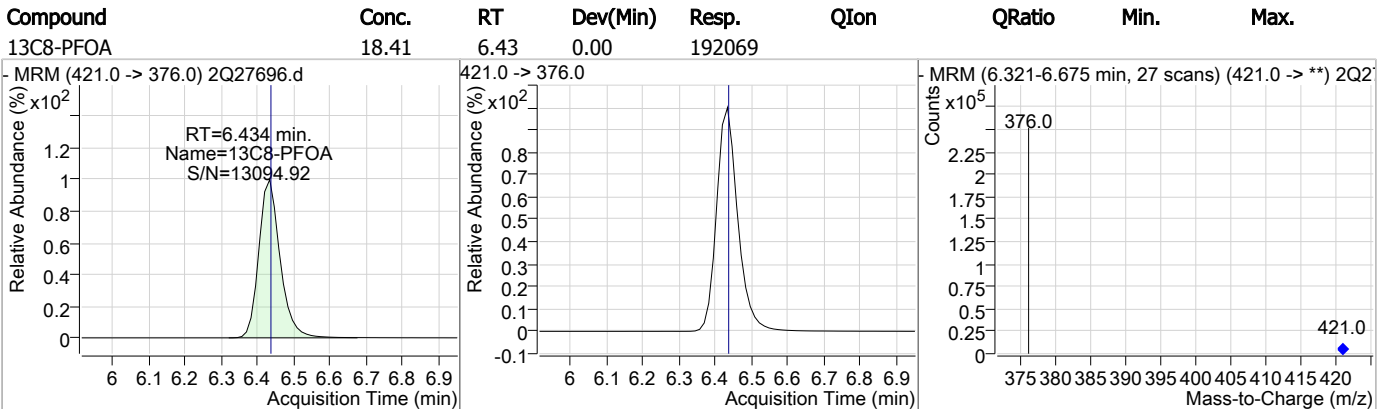
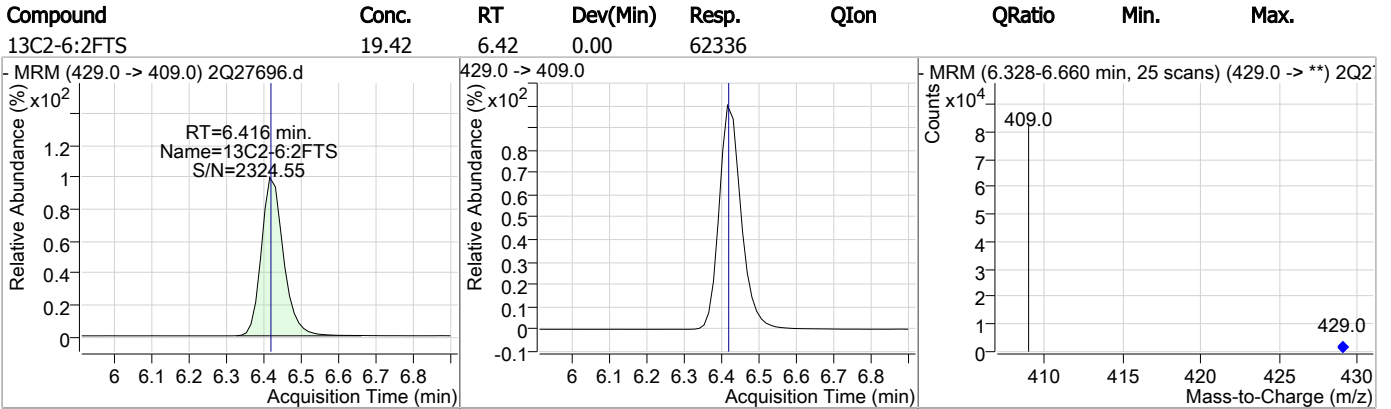


7.1.2  
7

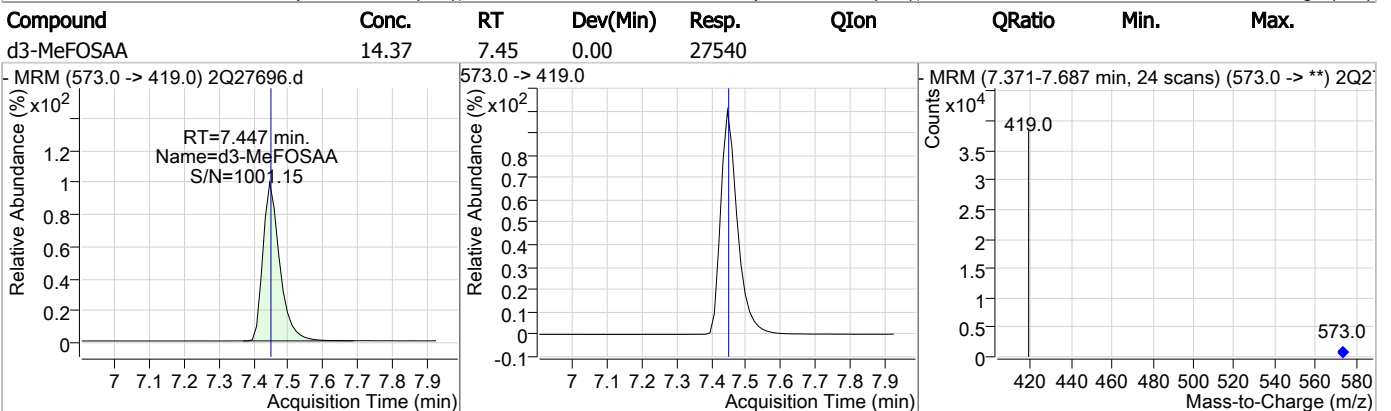
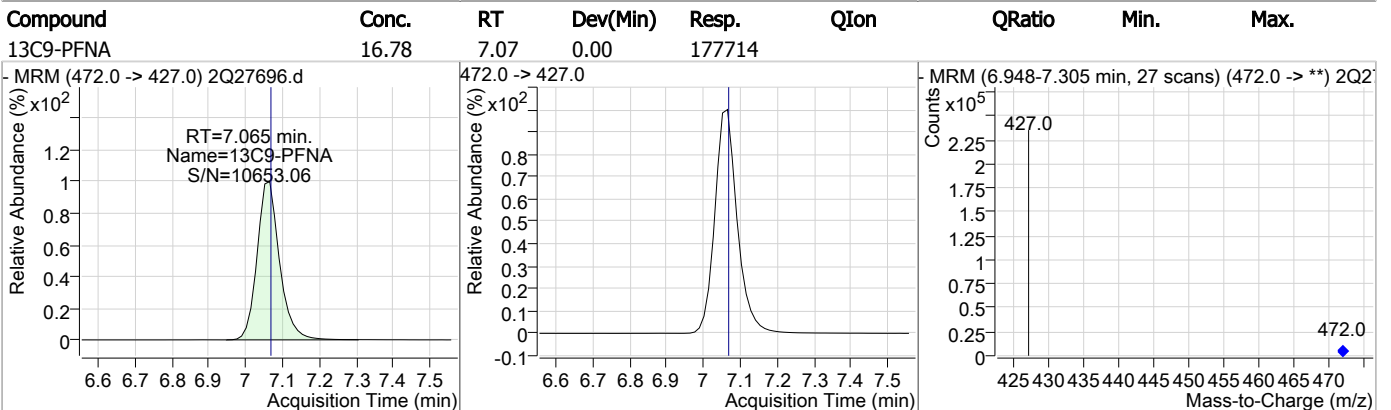
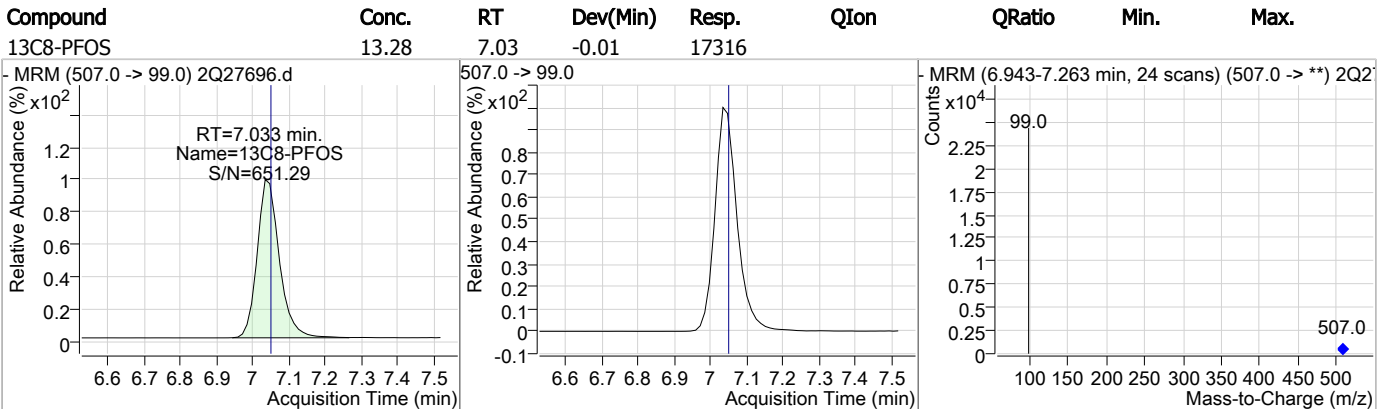
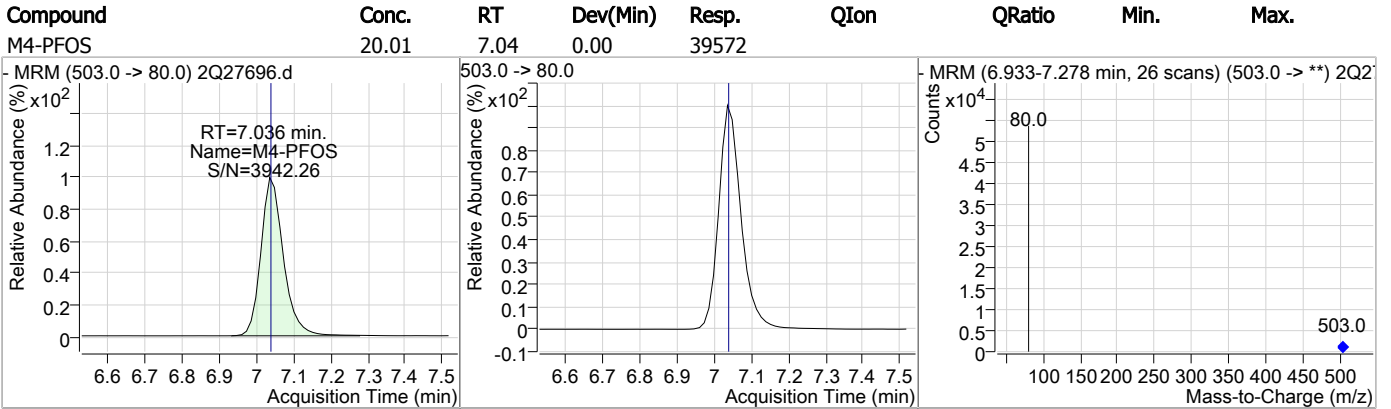
Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

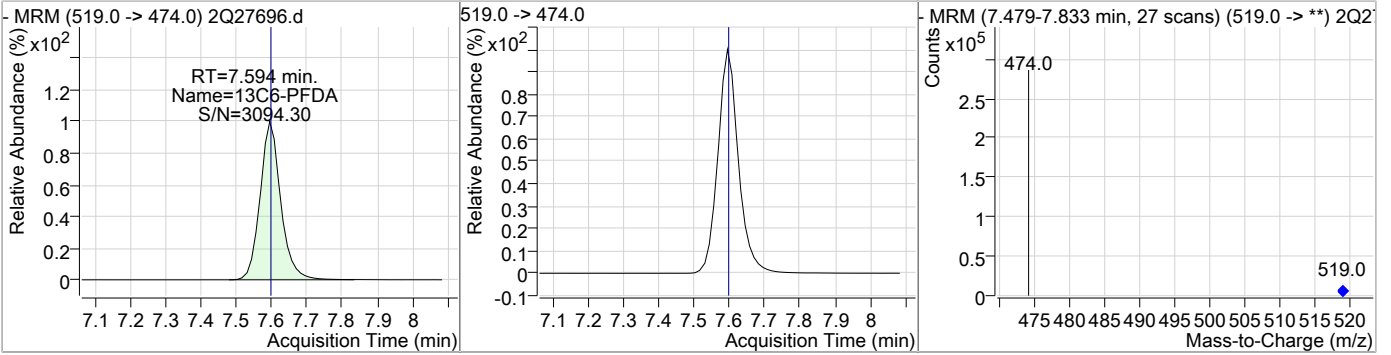


7.1.2

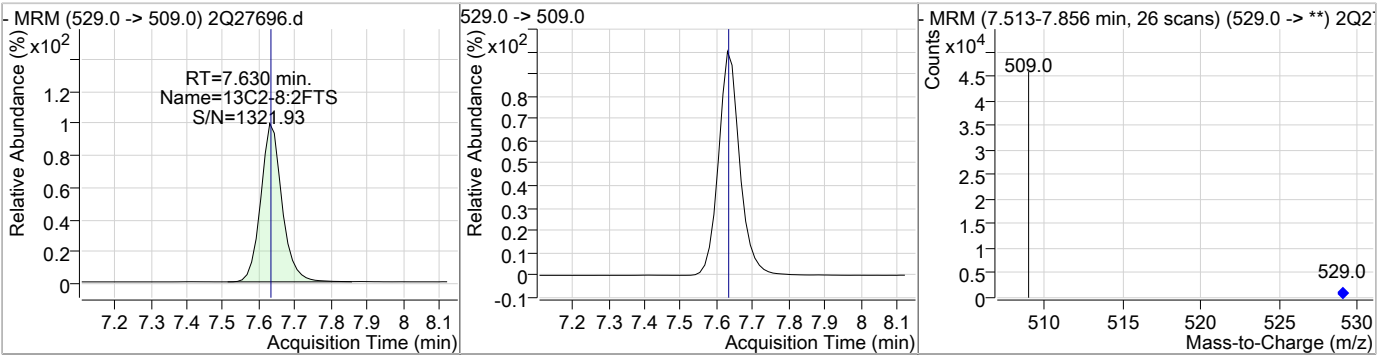
7

### Perfluorinated Compounds by LC/MS/MS

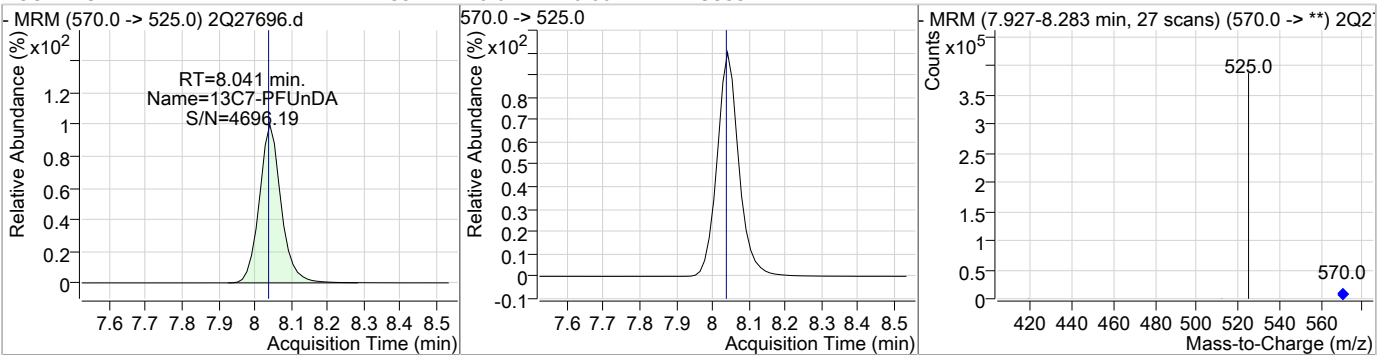
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



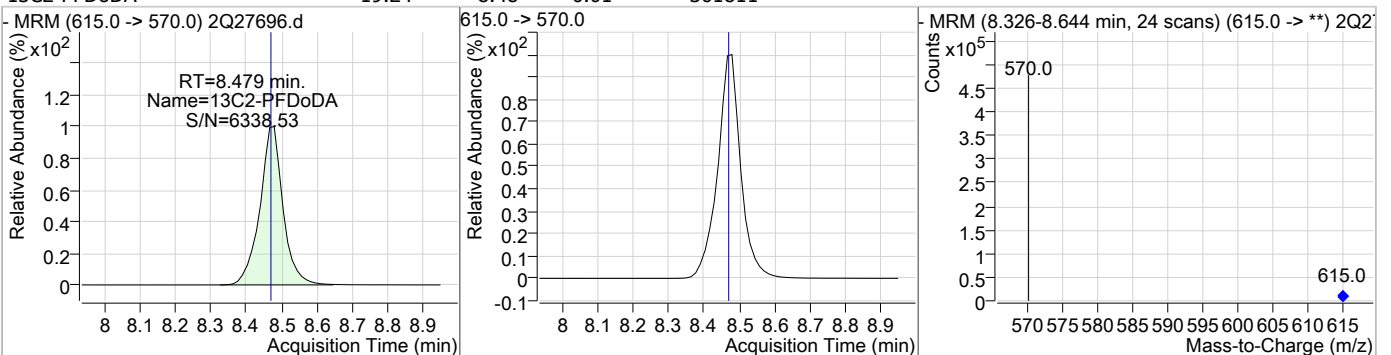
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

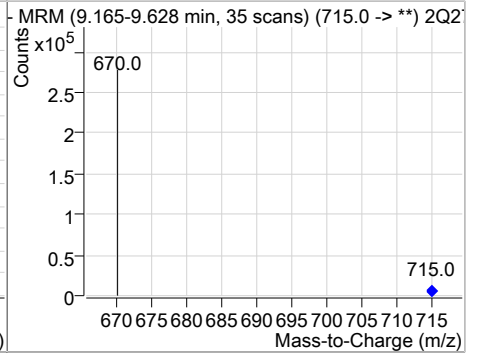
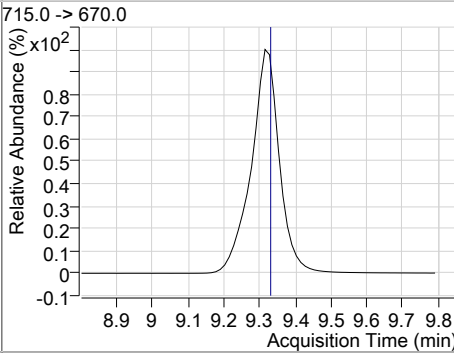
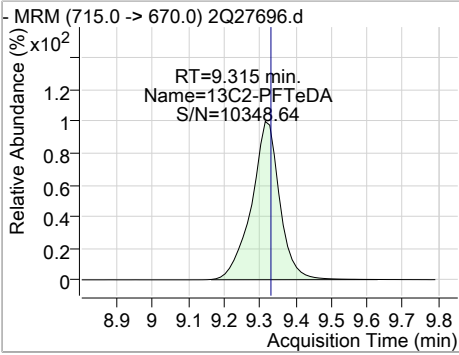


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.97 | 9.31 | -0.01    | 205009 |      |        |      |      |



7.12  
7



### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27697.d  
Operator : nancyf  
Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
Acq. Date-Time : 3/18/2019 5:19:51 PM  
Sample Name : fa62220-3  
Vial : Vial 19  
DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
Batch Name : S2Q442.batch.bin  
Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 275902 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 38892  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 101345 | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 85352  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 121062 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 176293 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 190425 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 174812 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 202250 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 248214 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 302404 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 166350 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 60417  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 14948  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16099  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 15893  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 48863  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 60021  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 30232  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 24108  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 48732  | 16.39 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.9% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 59979  | 18.69 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.4% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 30239  | 13.64 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 68.2% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 302312 | 16.07 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.4% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 165695 | 12.91 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 64.5% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 14918  | 16.36 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.8% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16088  | 15.78 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.9% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 101244 | 16.88 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.4% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 176135 | 17.03 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.1% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 120989 | 16.65 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.3% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 85142  | 16.75 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.7% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 202250 | 14.82 µg/L       | 0.000    |

7.1.3  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.1%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 248201 | 14.67 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.3%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 60400  | 14.90 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.5%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 190347 | 18.25 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 91.2%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 15890  | 12.19 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 60.9%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 174826 | 16.51 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.6%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 24149  | 12.60 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 63.0%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 275963 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 38942  | 20.02 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

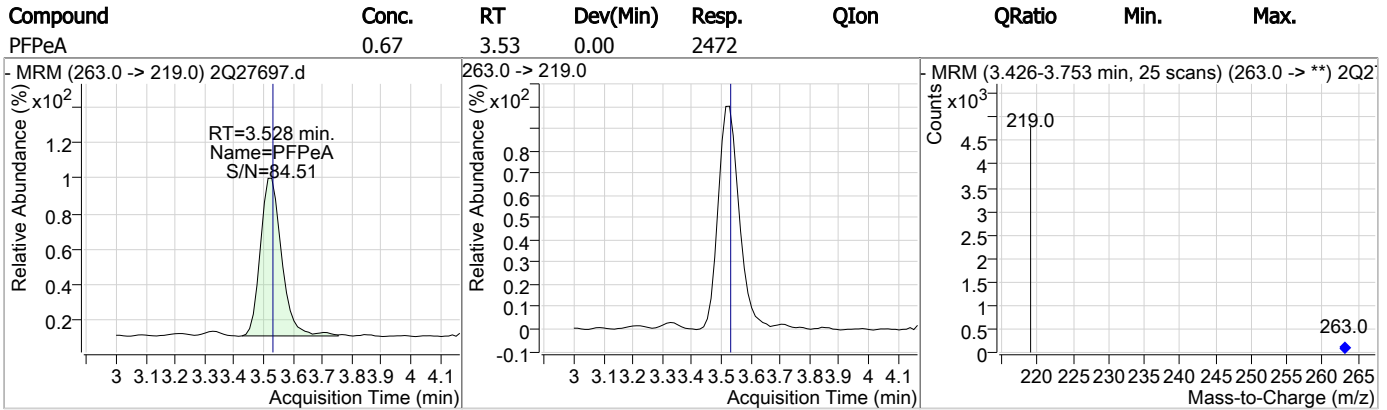
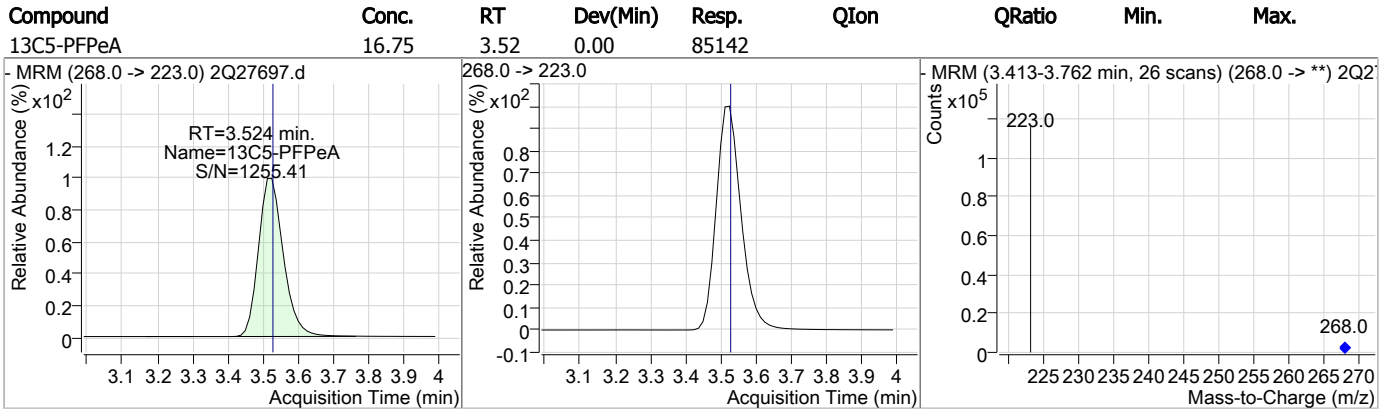
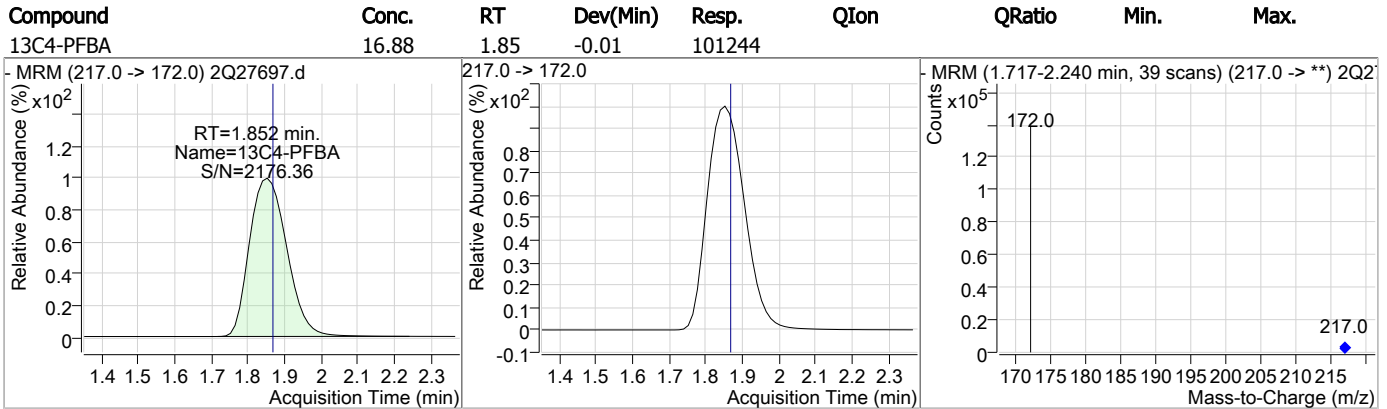
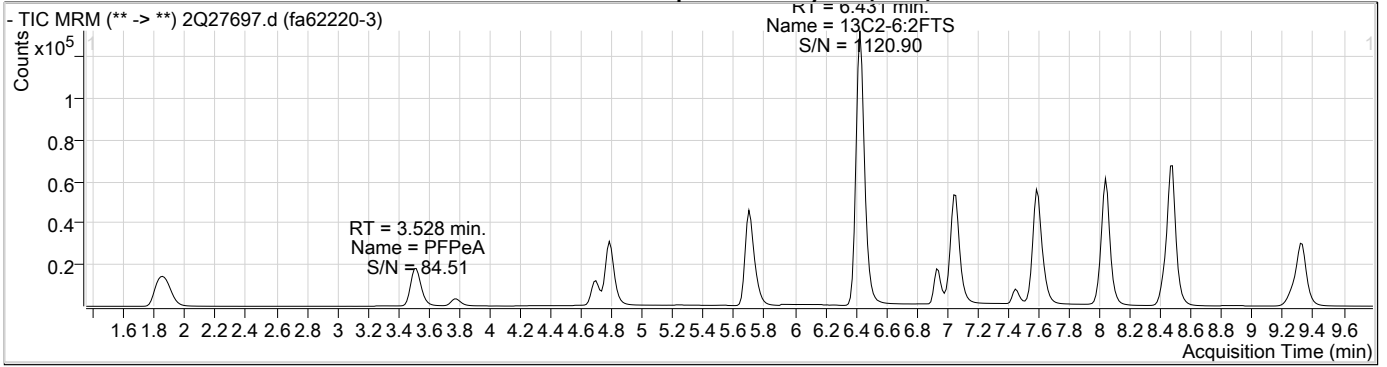
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -     | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 1474  | 0.71 µg/L   | 96     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 2347  | 2.64 µg/L   | m 98   |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | 6.437 | 413.0 -> 369.0 | 4196  | 0.82 µg/L   | m 95   |
| PFOS             | 6.844 | 499.0 -> 80.0  | 490   | 0.64 µg/L   | #m 67  |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 2472  | 0.67 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

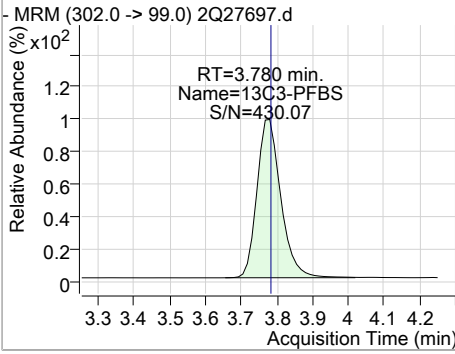
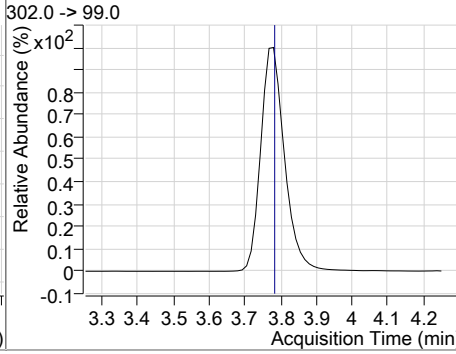
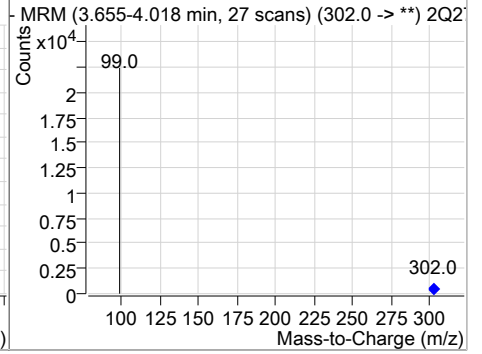
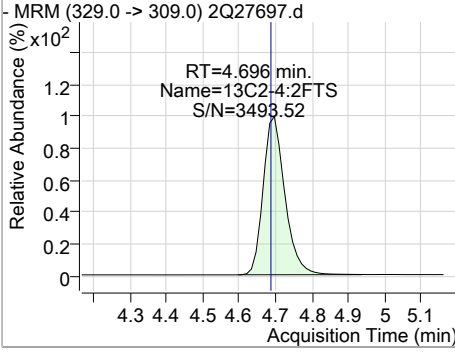
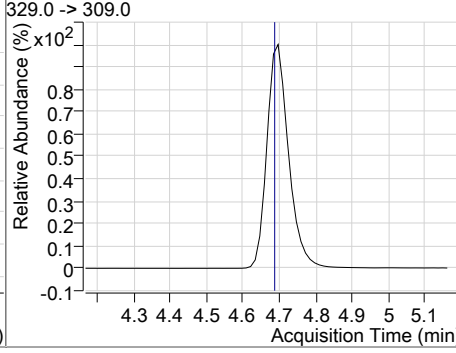
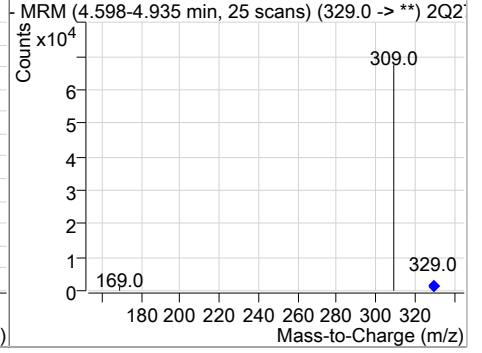
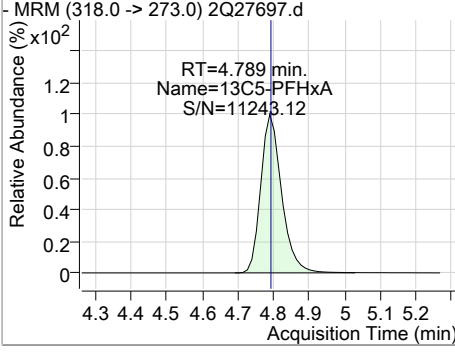
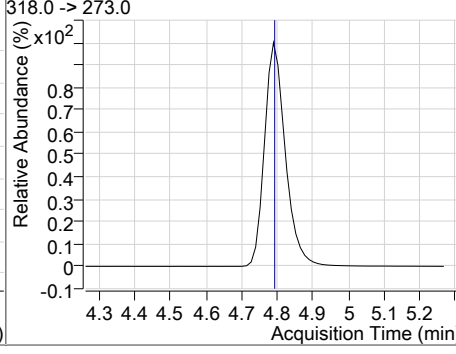
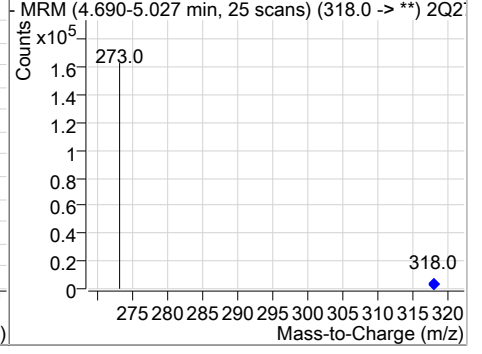
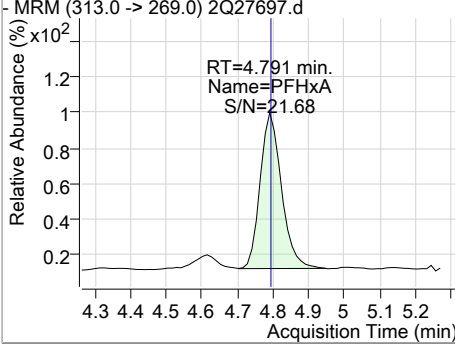
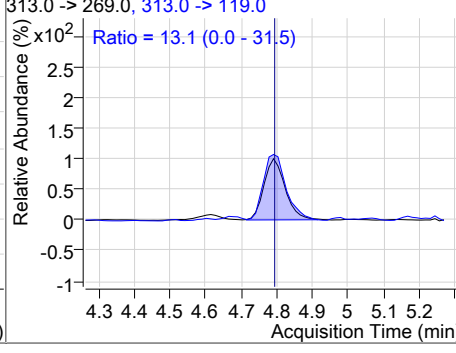
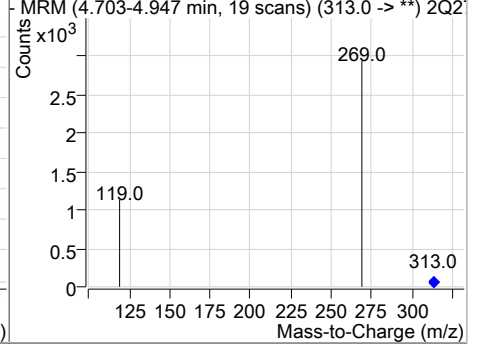
# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.3  
7

### Perfluorinated Compounds by LC/MS/MS

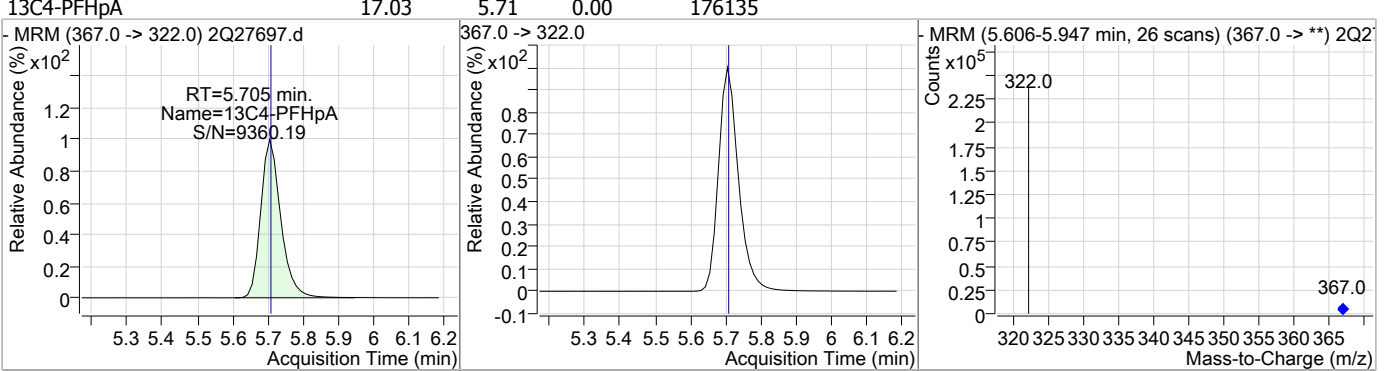


### Perfluorinated Compounds by LC/MS/MS

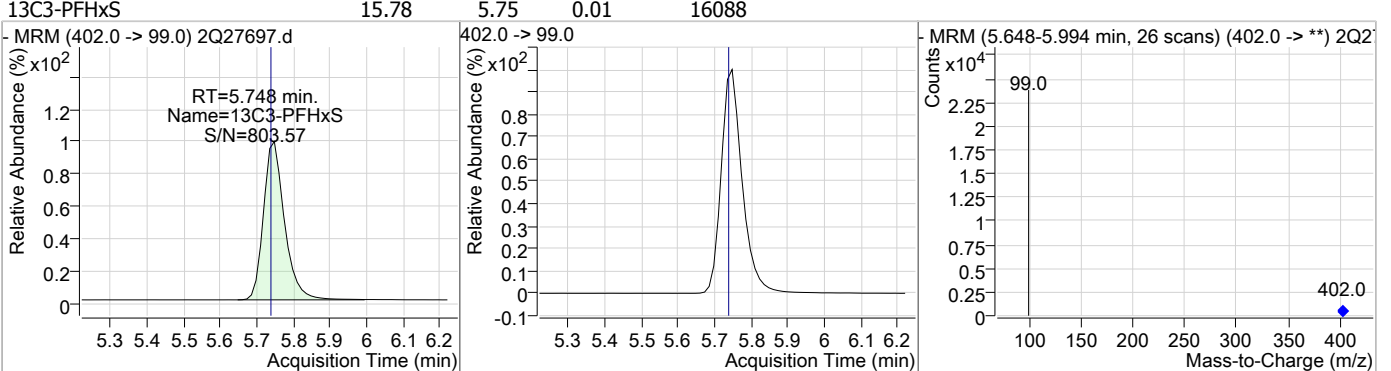
| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon           | QRatio   | Min. | Max. |
|--|-------|------|---|--------|----------------|--|------|------|
| 13C3-PFBS  | 16.36 | 3.78 | 0.00  | 14918  |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| 13C2-4:2FTS  | 16.39 | 4.70 | 0.01  | 48732  |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| 13C5-PFHxA   | 16.65 | 4.79 | 0.00  | 120989 |                |  |      |      |
|  |       |      |  |        |                |  |      |      |
| PFHxA  | 0.71  | 4.79 | 0.00  | 1474   | 313.0 -> 119.0 | 13.1   | 0.0  | 31.5 |
|  |       |      |  |        |                |  |      |      |

### Perfluorinated Compounds by LC/MS/MS

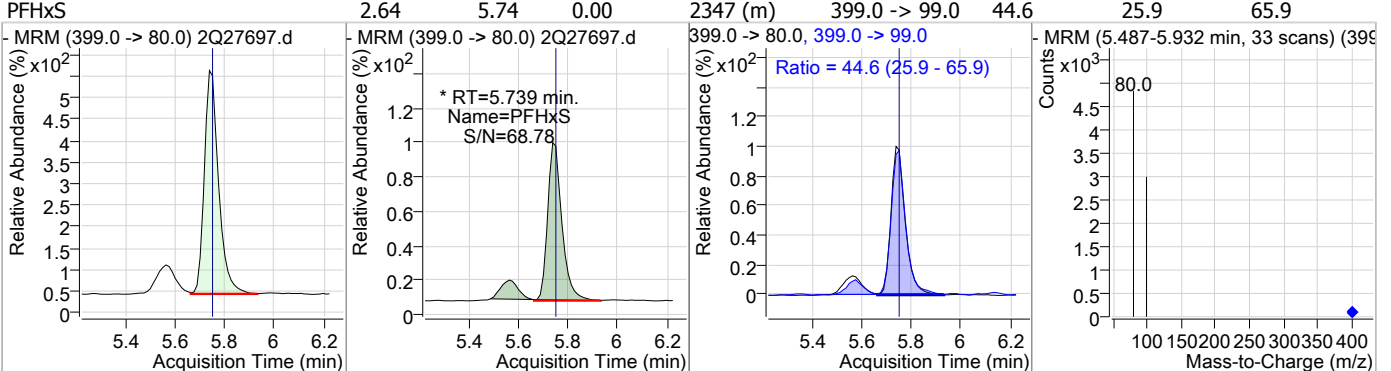
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



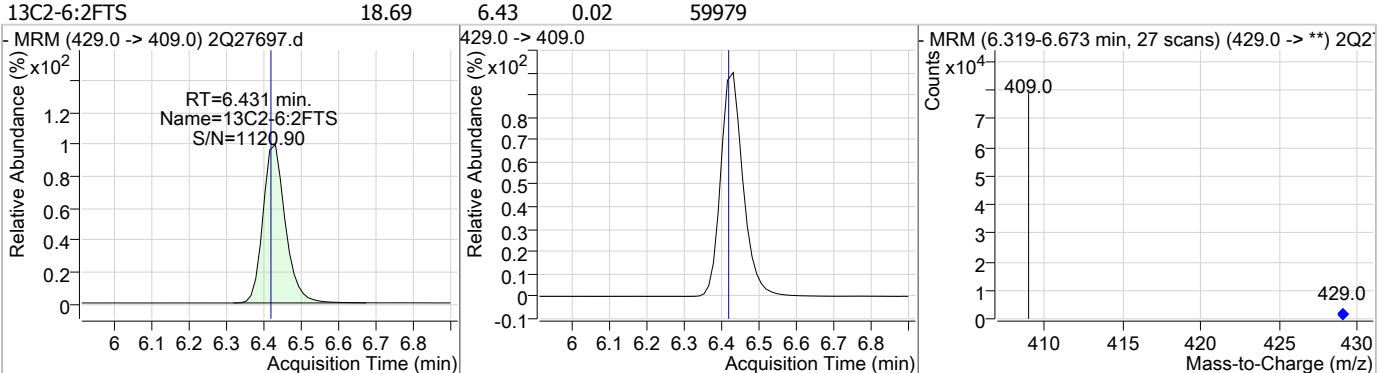
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

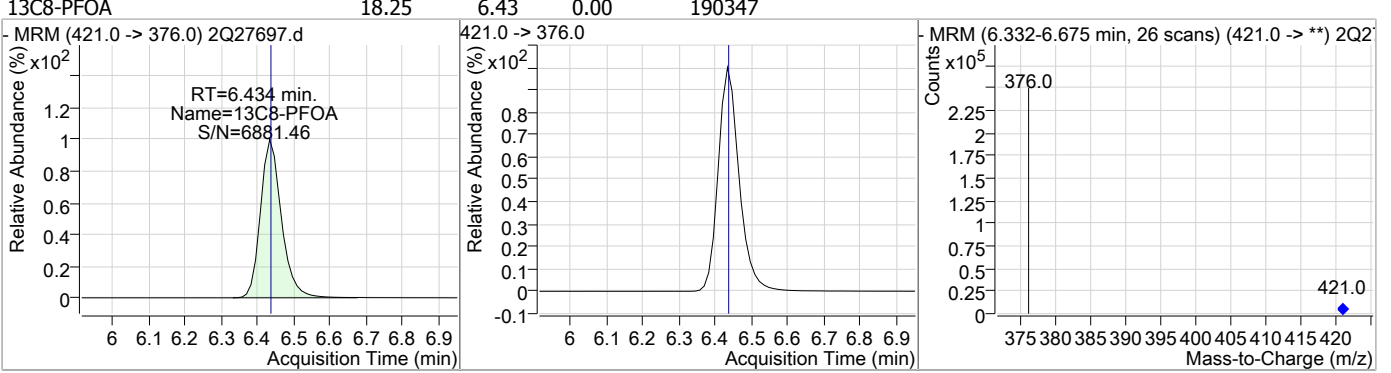


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

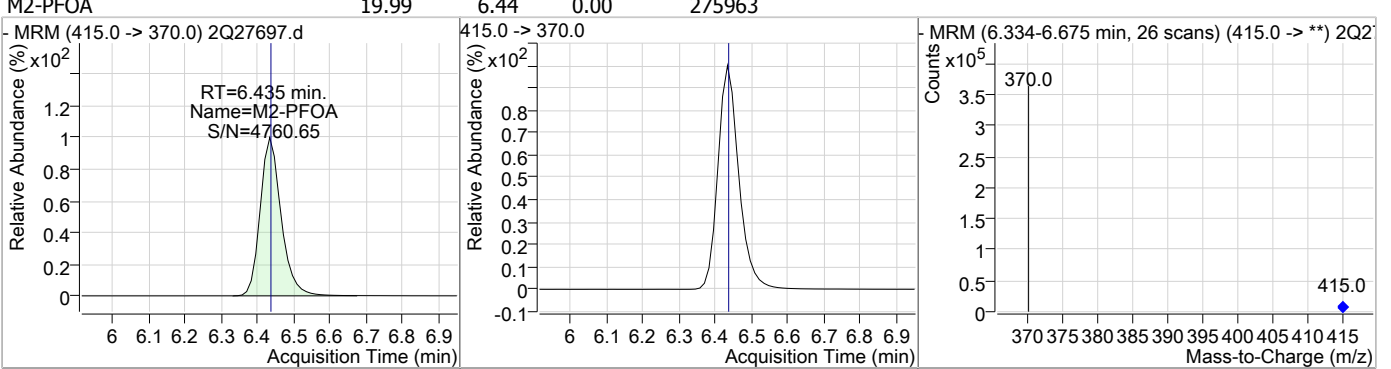


### Perfluorinated Compounds by LC/MS/MS

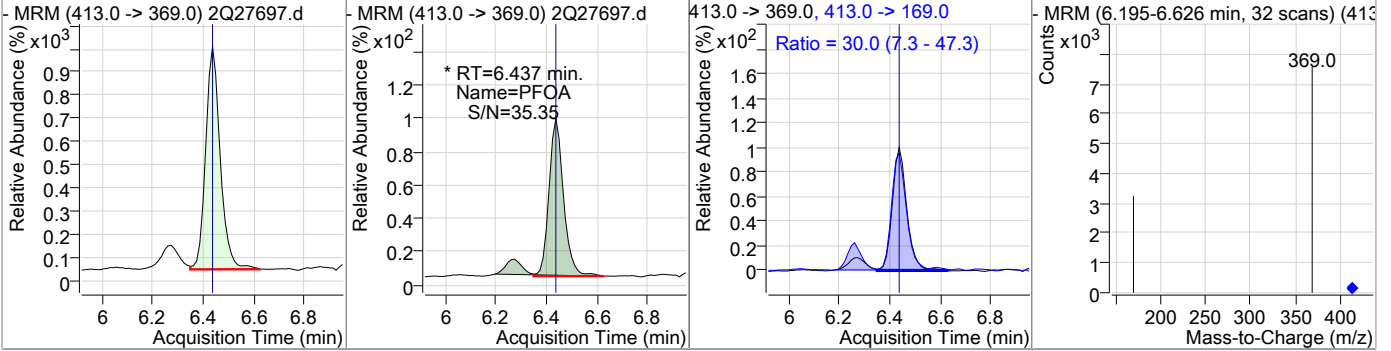
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



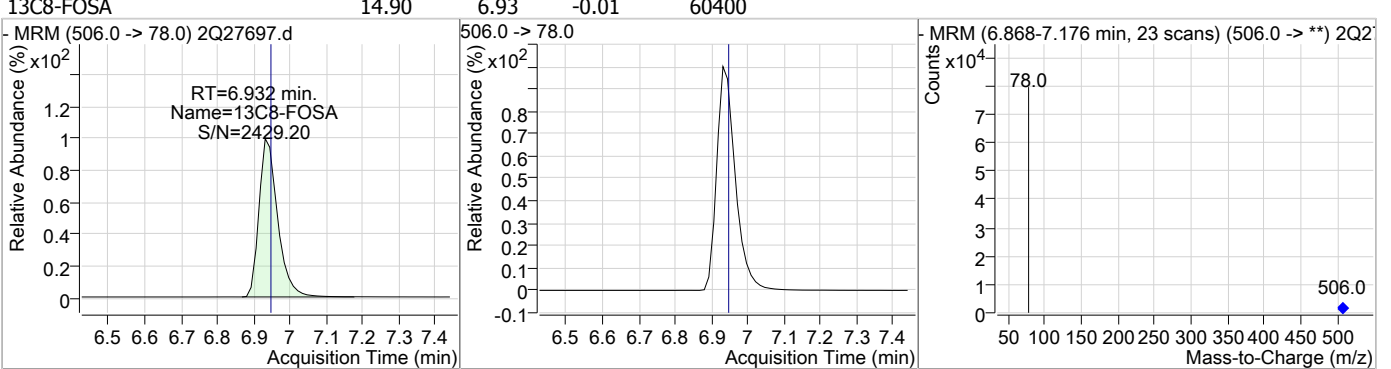
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



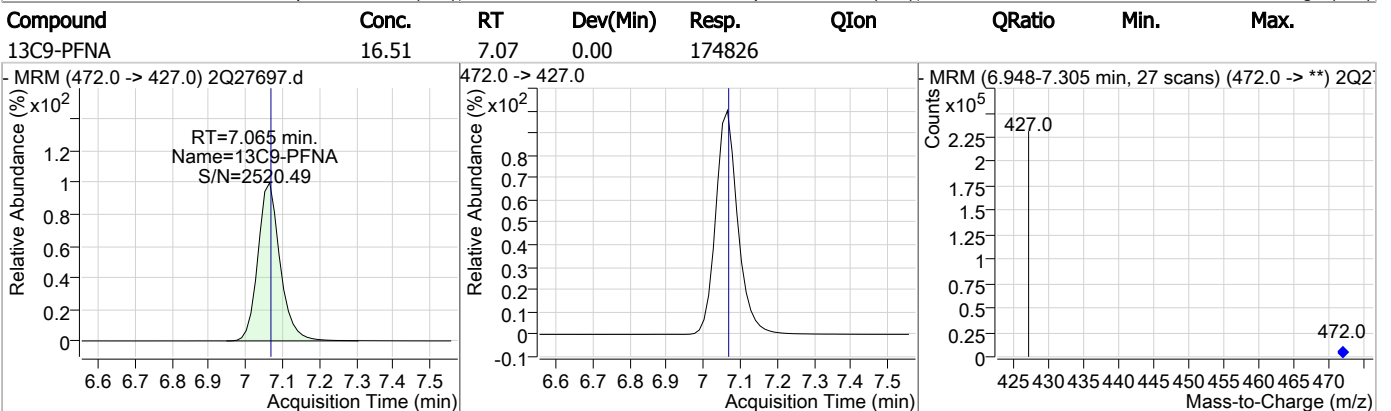
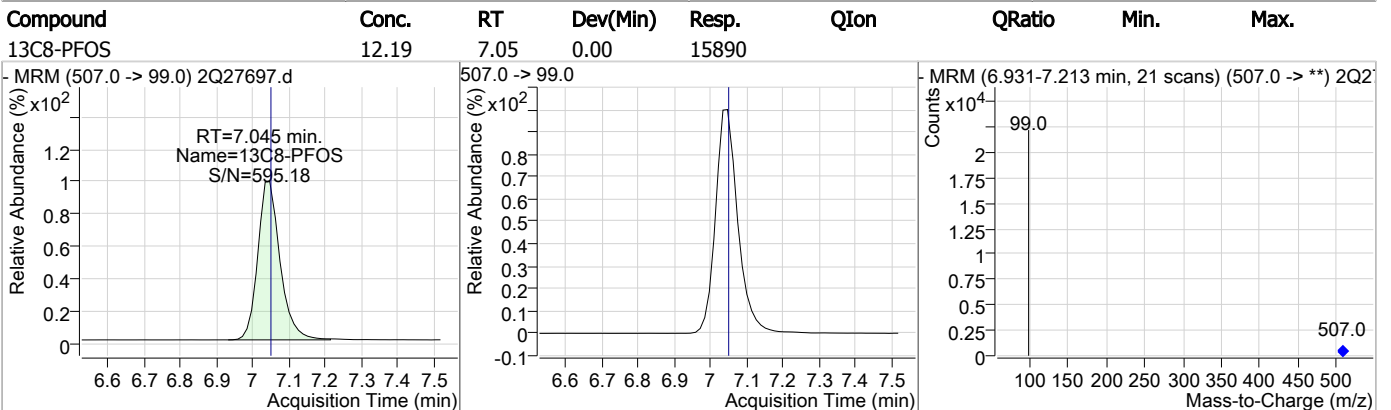
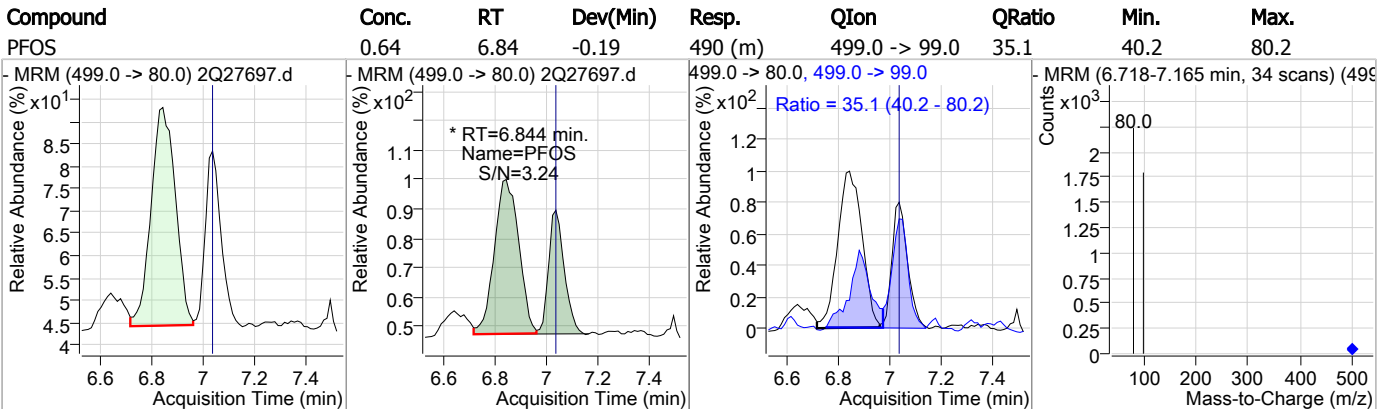
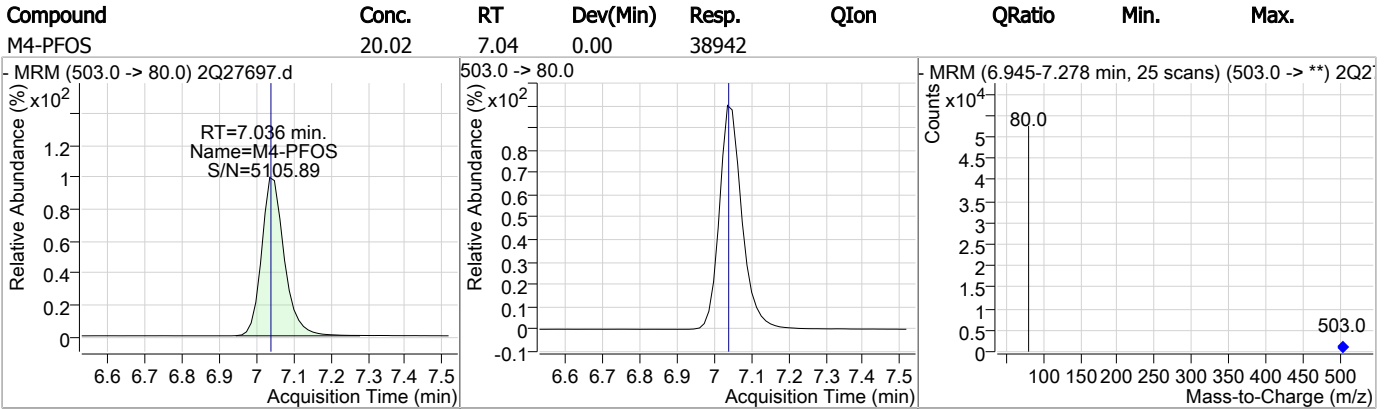
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



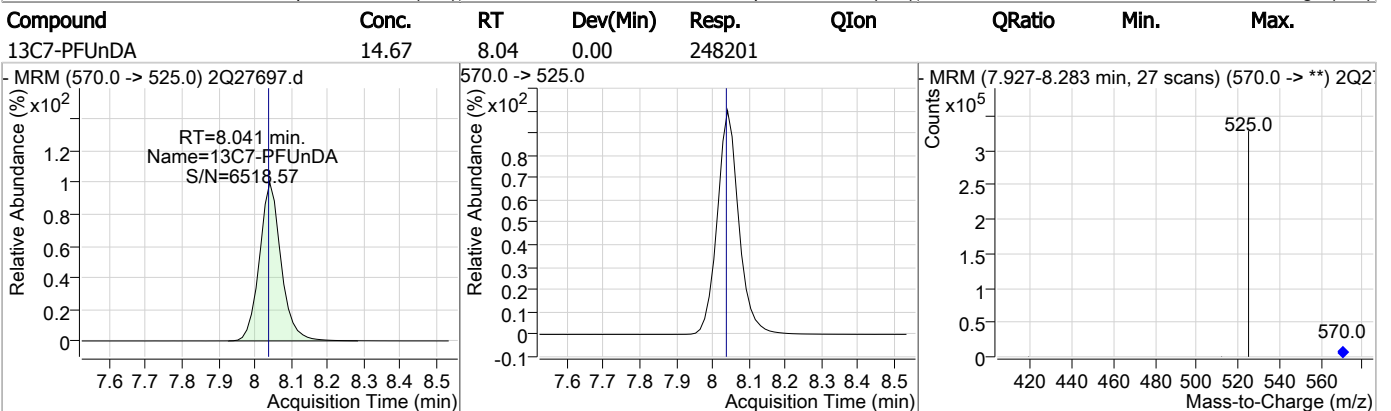
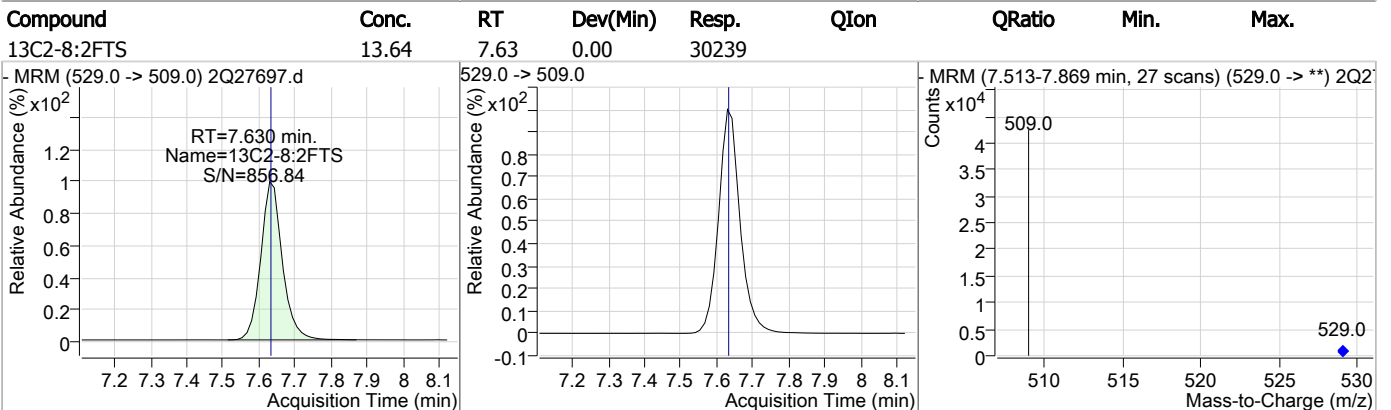
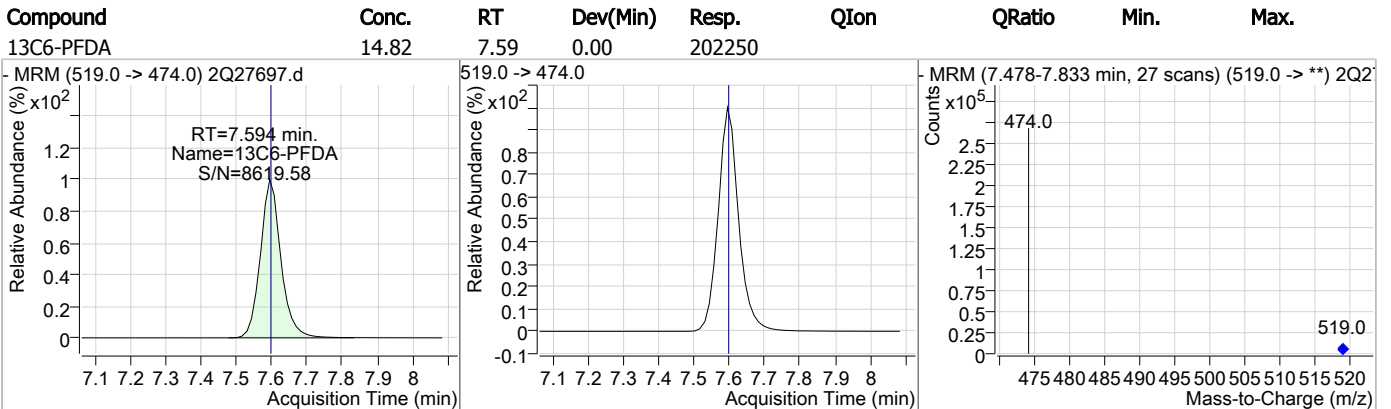
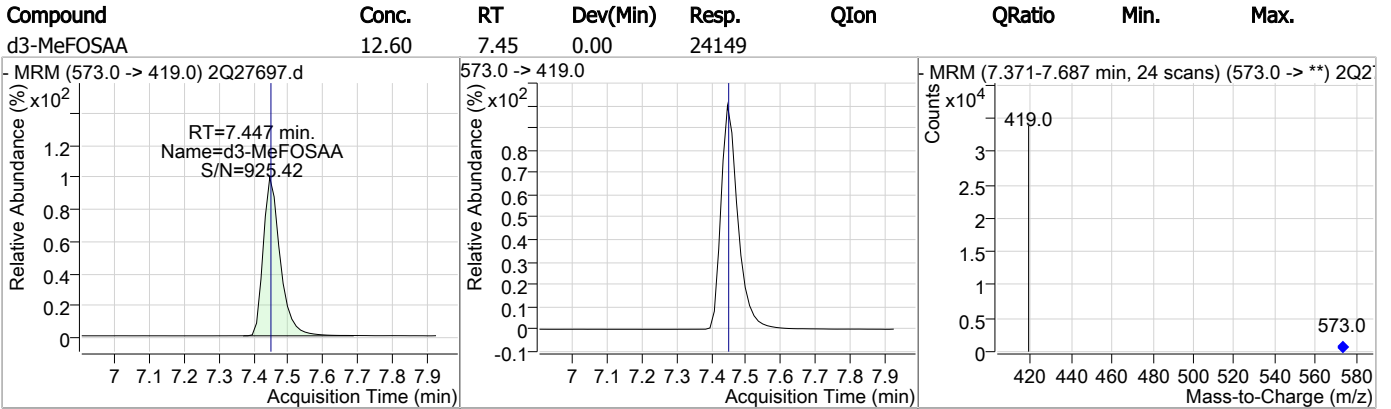
### Perfluorinated Compounds by LC/MS/MS



7.1.3

7

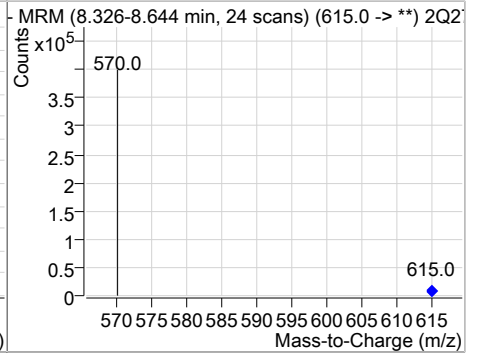
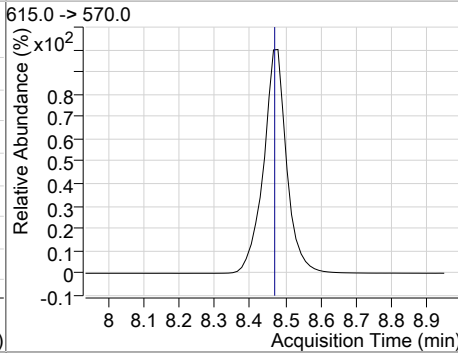
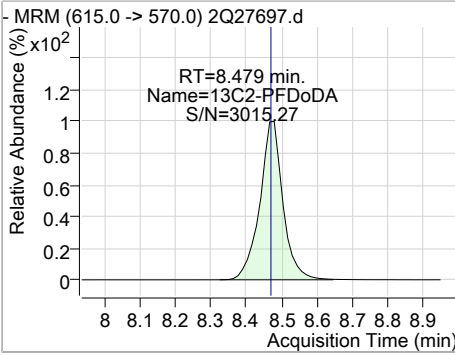
### Perfluorinated Compounds by LC/MS/MS



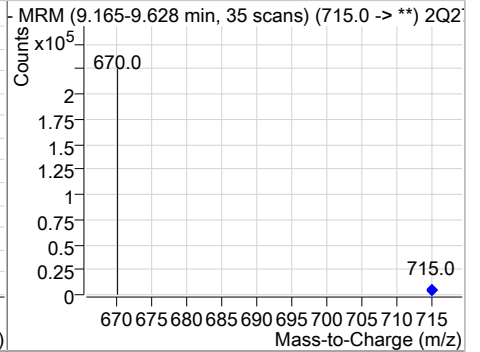
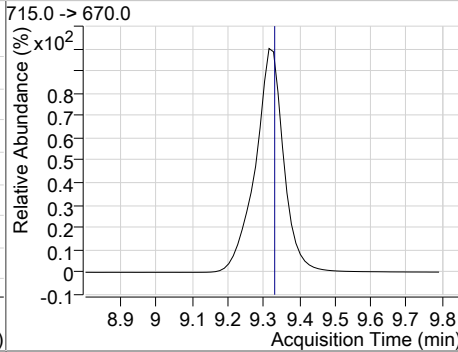
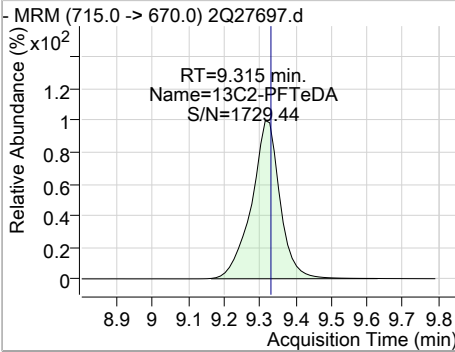


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 16.07 | 8.48 | 0.01     | 302312 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 12.91 | 9.31 | -0.01    | 165695 |      |        |      |      |



7.1.3  
7



# Manual Integration Approval Summary

**Sample Number:** FA62220-3      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27697.D      **Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Injection Time:** 03/18/19 17:19      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanoic acid       | 335-67-1  |      | 6.44           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 6.84           | Split peak |

7.1.3.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Mike Eger  
 03/24/19 19:15

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1986.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 1:36:17 PM  
 Sample Name : fa62220-4  
 Vial : P3-B6  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74233,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 278317 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 188238 | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 253363 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 295116 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 289259 | 20.00 µg/L       | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 290287 | 20.00 µg/L       | -0.013   |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 306873 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 297253 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 269113 | 20.00 µg/L       | -0.013   |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 265271 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 146142 | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.867                | 302.0 -> 99.0  | 43366  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.947                | 402.0 -> 99.0  | 44607  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 68669  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 78201  | 20.00 µg/L       | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 79258  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 47354  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.735                | 573.0 -> 419.0 | 35319  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 406659 | 20.00 µg/L       | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 120535 | 20.00 µg/L       | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 78163  | 16.47 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.4% |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 79334  | 17.36 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.8% |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 47412  | 16.96 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.8% |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 269122 | 13.76 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 68.8% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 265334 | 14.50 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 72.5% |          |
| 13C3-PFBS                          | 3.867                | 302.0 -> 99.0  | 43051  | 17.07 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.3% |          |
| 13C3-PFHxS                         | 5.947                | 402.0 -> 99.0  | 44536  | 17.62 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.1% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 267742 | 16.42 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.1% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 294662 | 17.65 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.3% |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 252330 | 17.15 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.7% |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 186903 | 16.88 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.4% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 310112 | 18.62 µg/L       | 0.000    |

7.14  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.1%  |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 297391 | 16.04 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 80.2%  |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 146121 | 13.88 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 69.4%  |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 289213 | 18.28 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 91.4%  |          |
| 13C8-PFOS             | 7.183                | 507.0 -> 99.0  | 69290  | 17.99 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 89.9%  |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 290054 | 19.41 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.0%  |          |
| d3-MeFOSAA            | 7.735                | 573.0 -> 419.0 | 35308  | 14.87 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.4%  |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 406659 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 120535 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.710 | 213.0 -> 169.0 | 2766  | 1.05 µg/L   | 100    |
| PFBS             | 3.870 | 299.0 -> 80.0  | 1177  | 0.39 µg/L   | 93     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | 5.894 | 363.0 -> 319.0 | 4210  | 0.32 µg/L   | m 97   |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.952 | 313.0 -> 269.0 | 9411  | 2.09 µg/L   | 98     |
| PFHxS            | 5.937 | 399.0 -> 80.0  | 1443  | 0.59 µg/L   | m 91   |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | 6.623 | 413.0 -> 369.0 | 4752  | 0.61 µg/L   | m 100  |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | 3.564 | 263.0 -> 219.0 | 22958 | 2.41 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

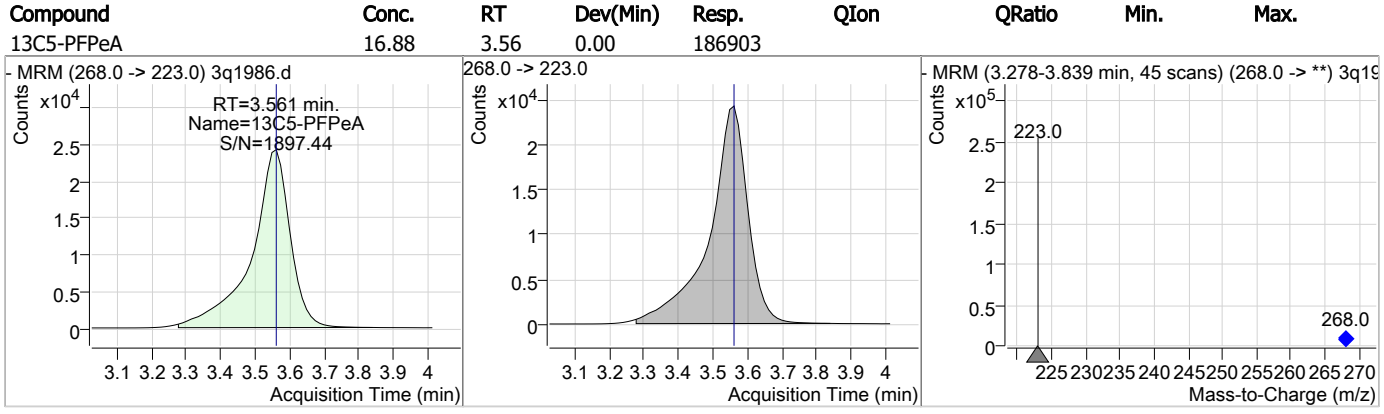
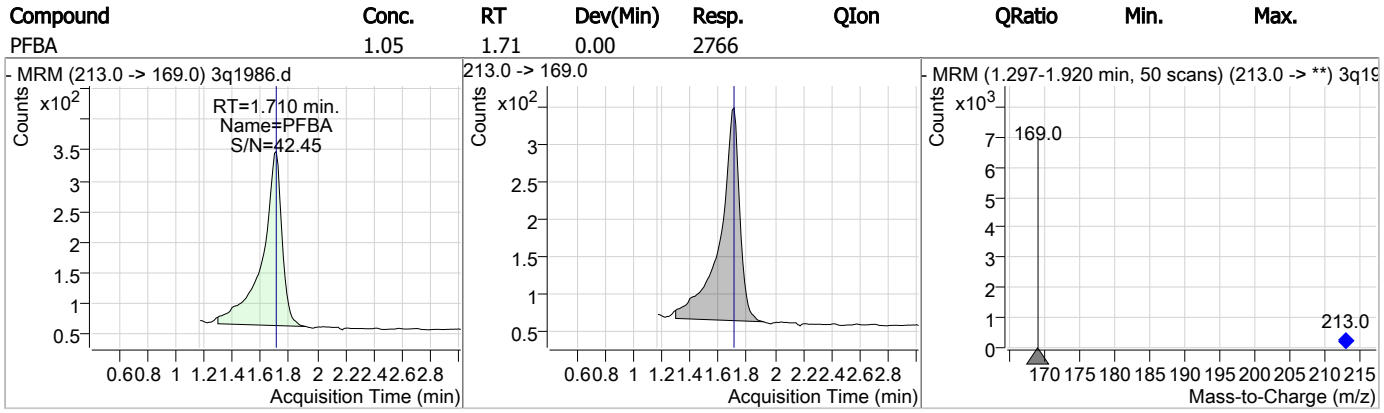
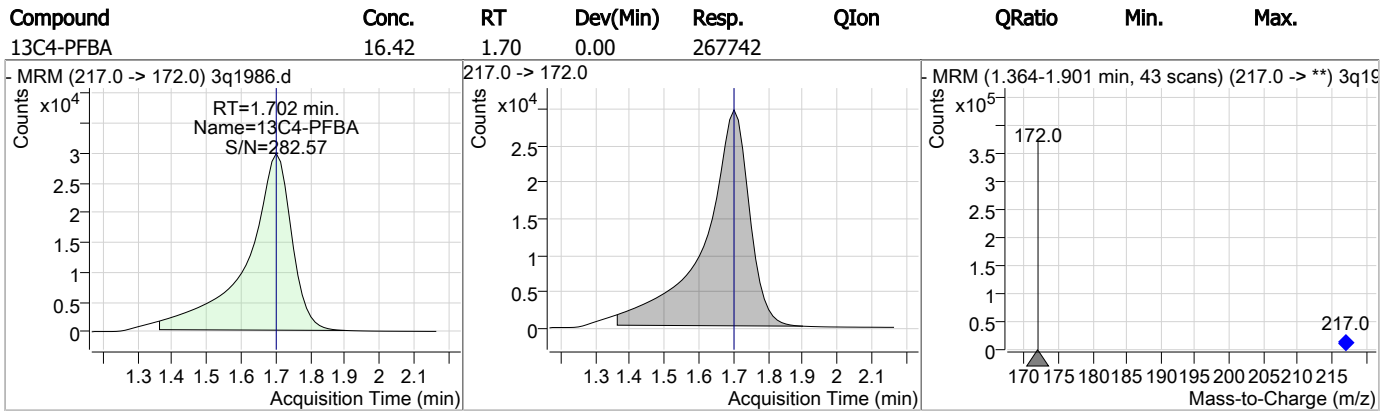
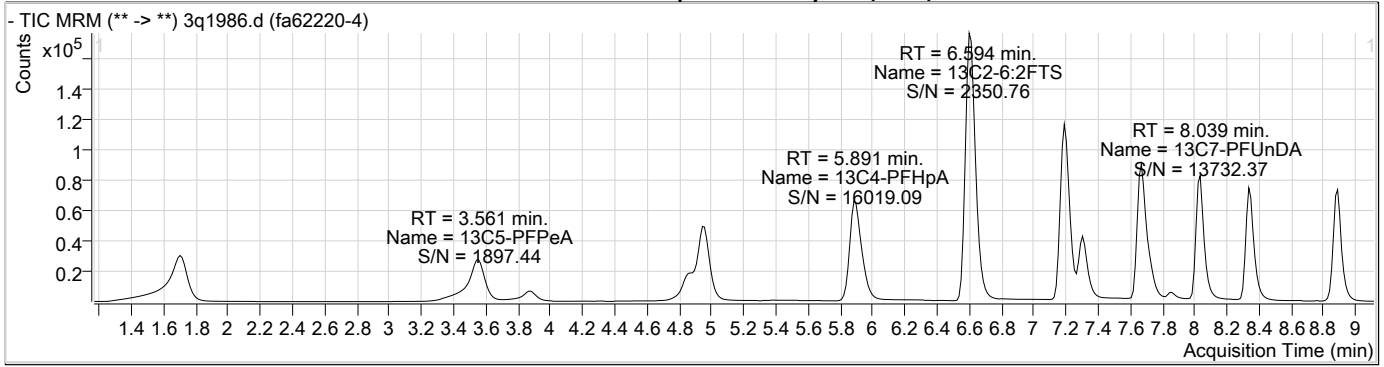
# = Qualifier out of range, m = manually integrated, + = Area summed

7.14

7



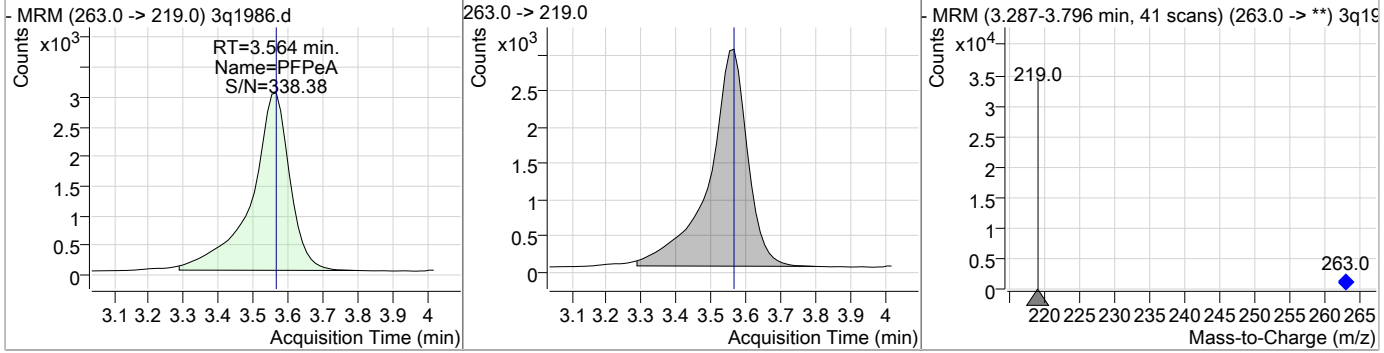
### Perfluorinated Compounds by LC/MS/MS



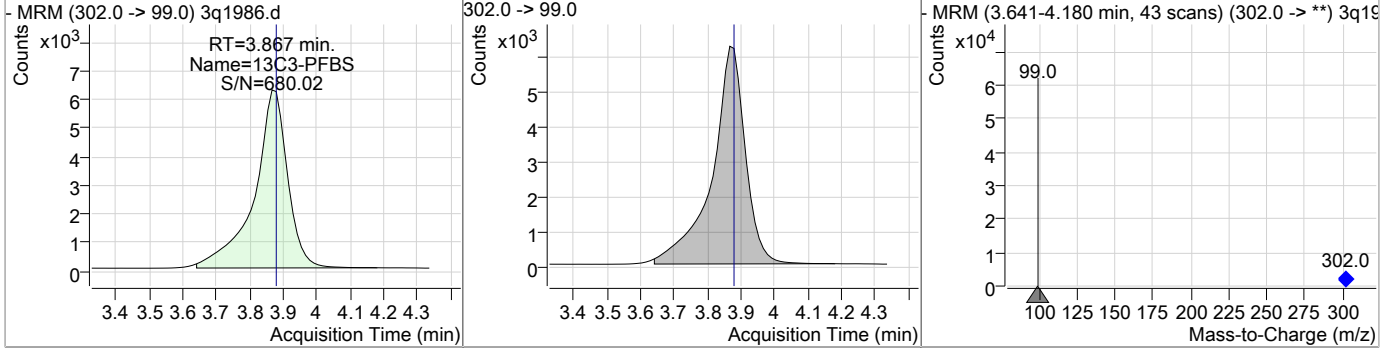
7.14  
7

### Perfluorinated Compounds by LC/MS/MS

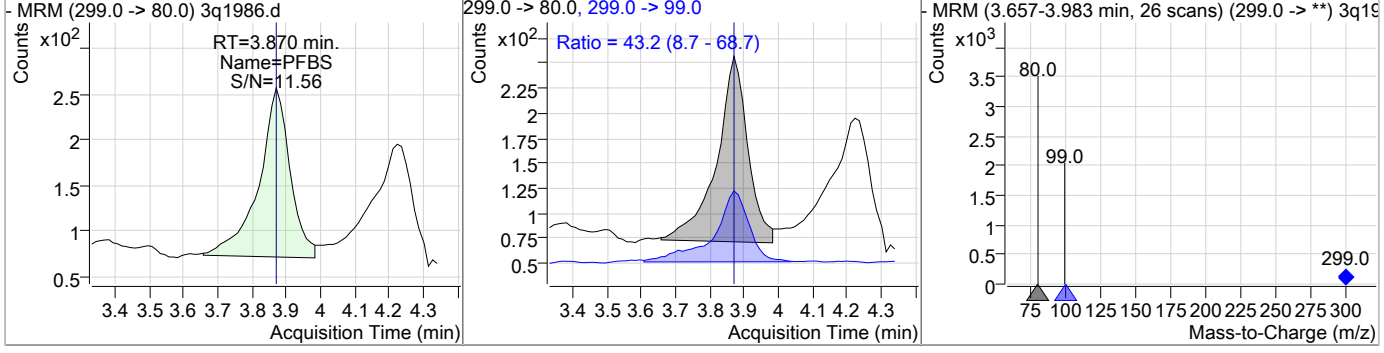
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



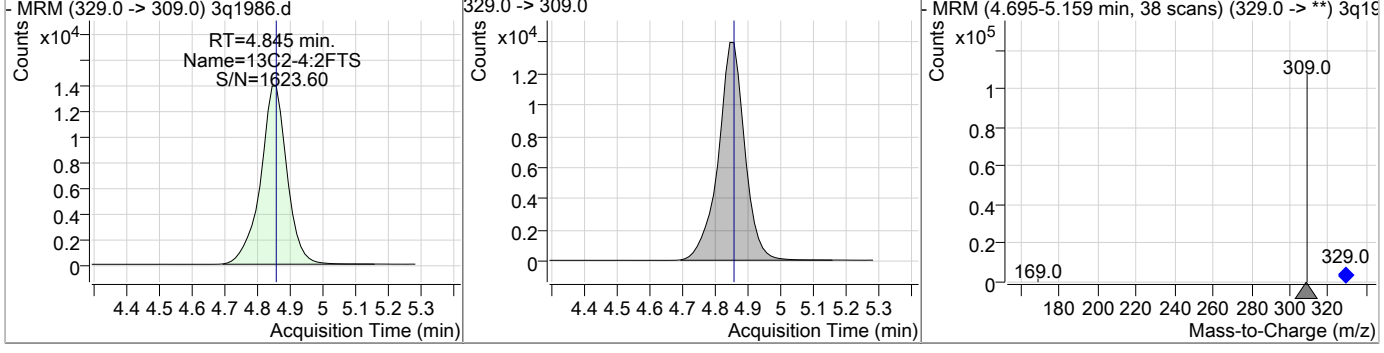
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



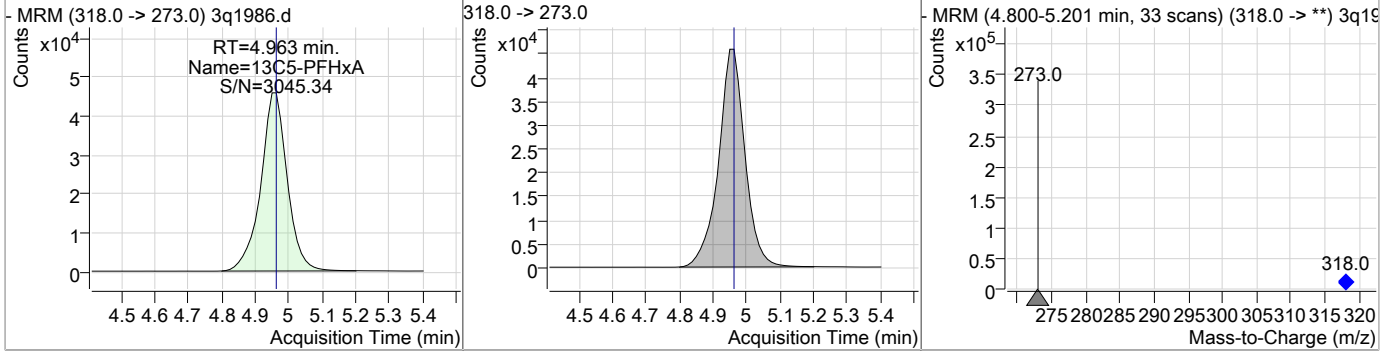
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



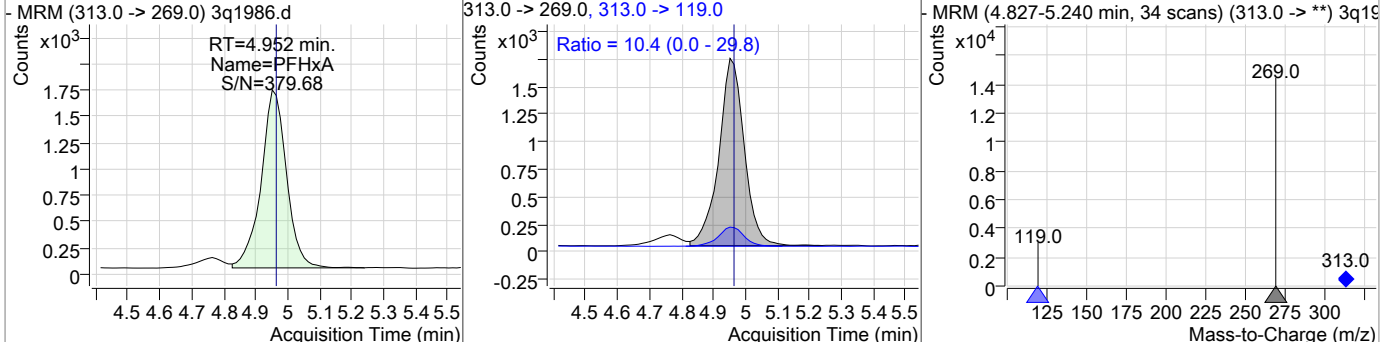
7.1.4

### Perfluorinated Compounds by LC/MS/MS

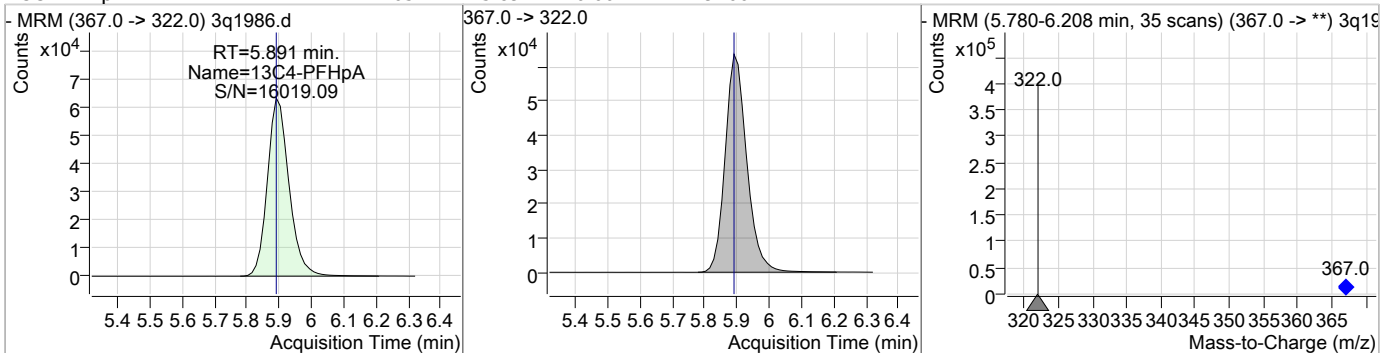
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 17.15 | 4.96 | 0.00     | 252330 |      |        |      |      |



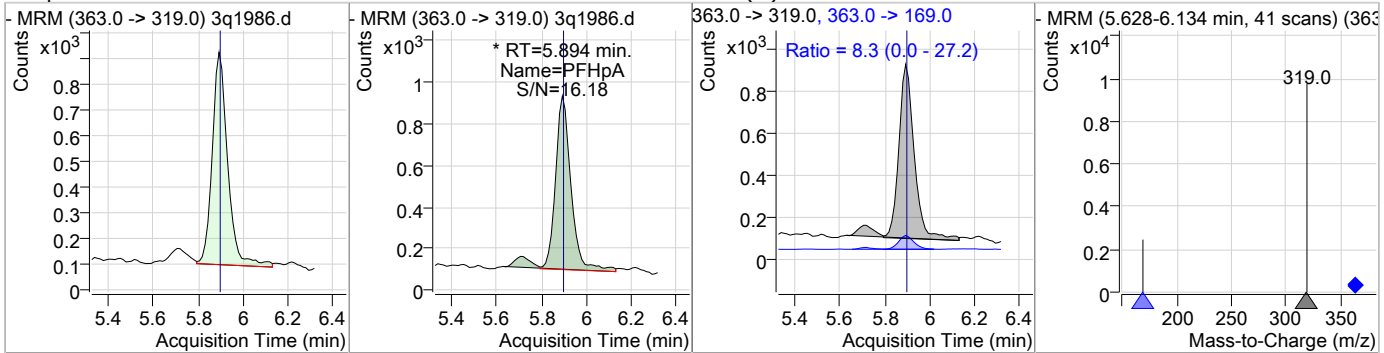
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon     | QRatio | Min. | Max. |      |
|----------|-------|------|----------|-------|----------|--------|------|------|------|
| PFHxA    | 2.09  | 4.95 | -0.01    | 9411  | 313.0 -> | 119.0  | 10.4 | 0.0  | 29.8 |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 17.65 | 5.89 | 0.00     | 294662 |      |        |      |      |



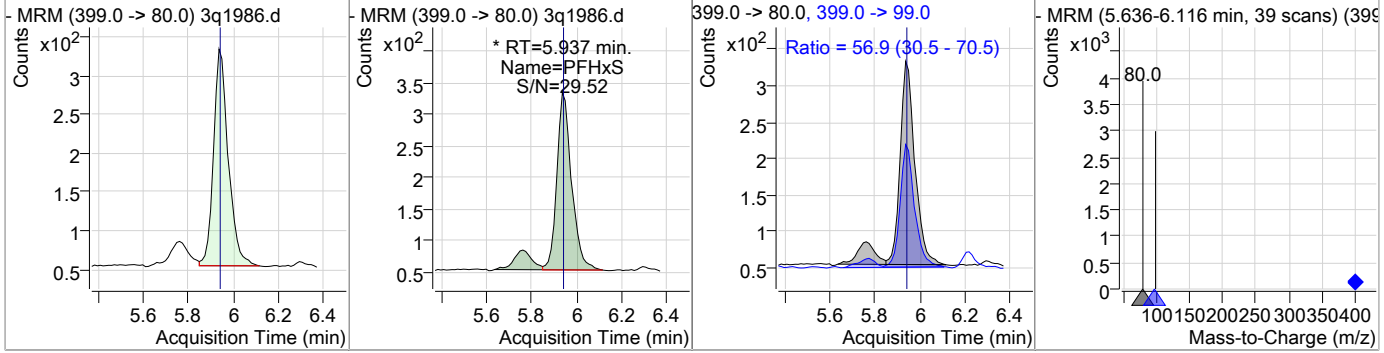
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon     | QRatio | Min. | Max. |      |
|----------|-------|------|----------|----------|----------|--------|------|------|------|
| PFHpA    | 0.32  | 5.89 | 0.00     | 4210 (m) | 363.0 -> | 169.0  | 8.3  | 0.0  | 27.2 |



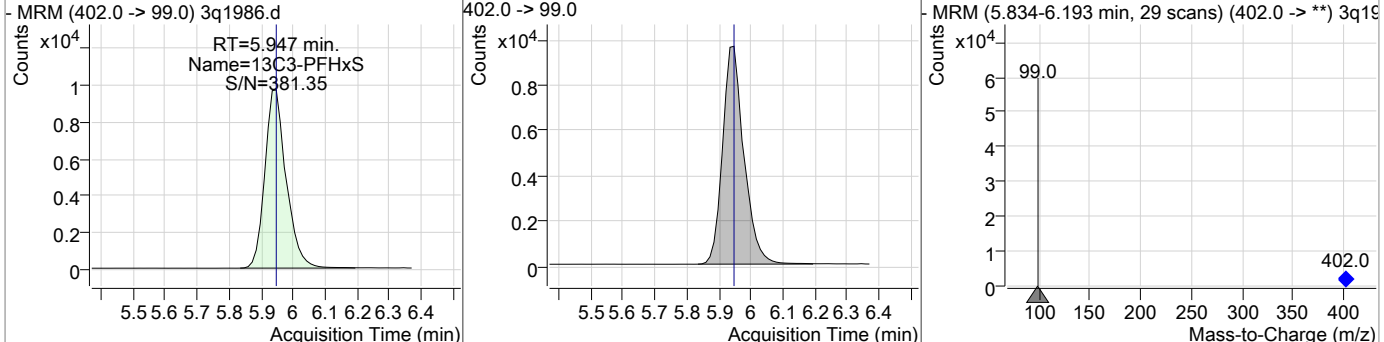
7.1.4  
7

### Perfluorinated Compounds by LC/MS/MS

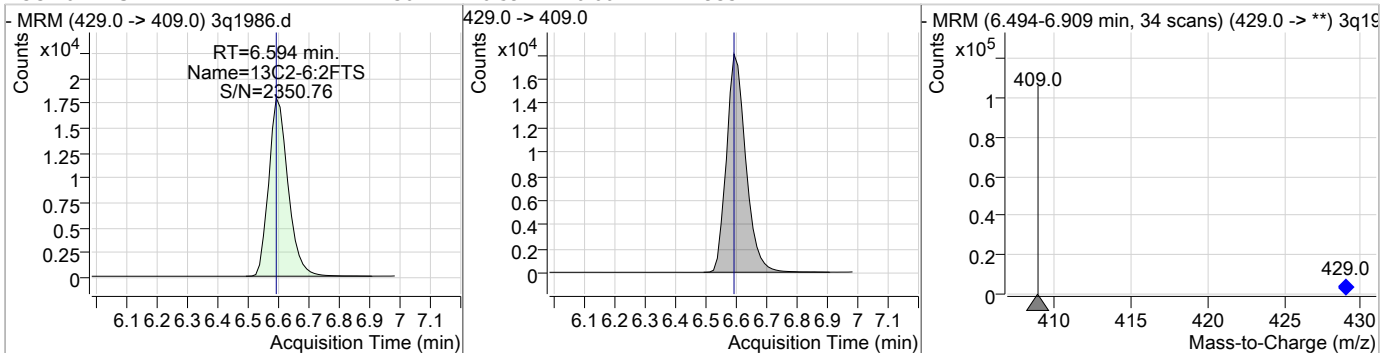
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFHxS    | 0.59  | 5.94 | 0.00     | 1443 (m) | 399.0 -> 99.0 | 56.9   | 30.5 | 70.5 |



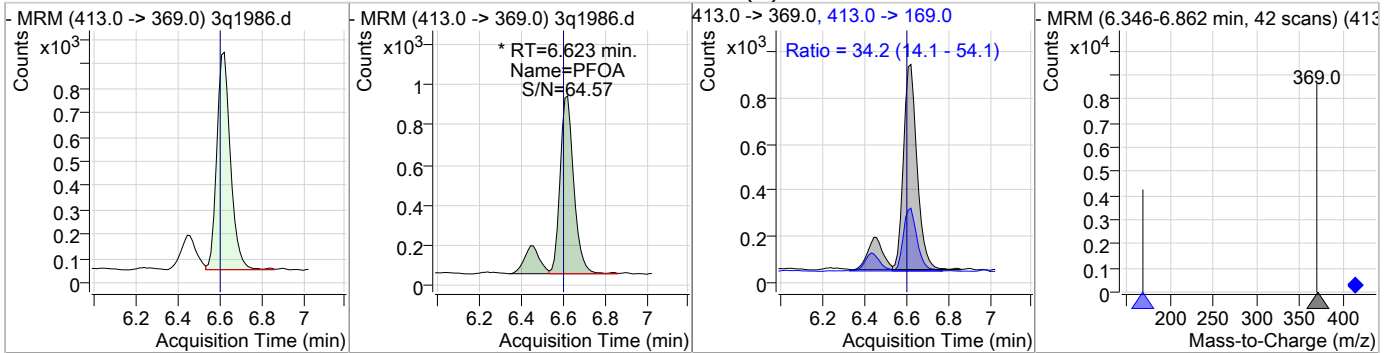
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 17.62 | 5.95 | 0.00     | 44536 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-6:2FTS | 17.36 | 6.59 | 0.00     | 79334 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|----------------|--------|------|------|
| PFOA     | 0.61  | 6.62 | 0.01     | 4752 (m) | 413.0 -> 169.0 | 34.2   | 14.1 | 54.1 |

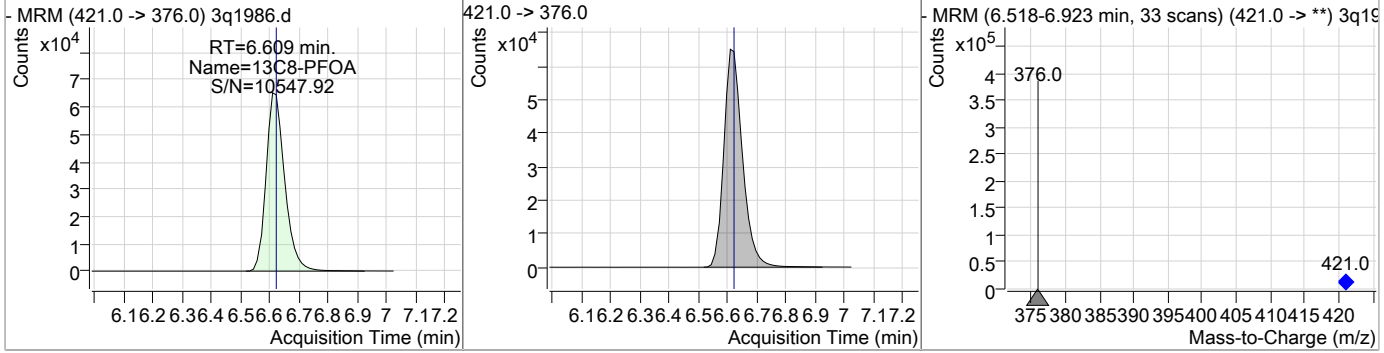


7.1.4  
7

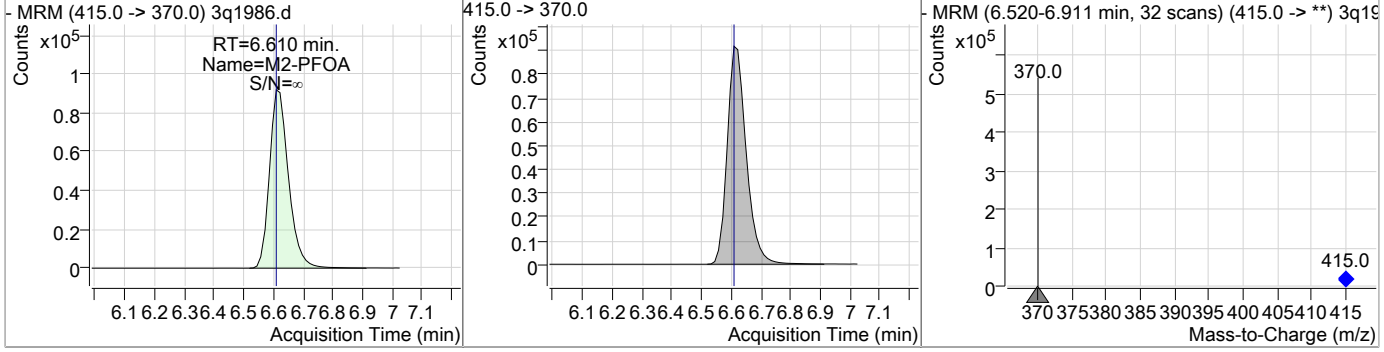


### Perfluorinated Compounds by LC/MS/MS

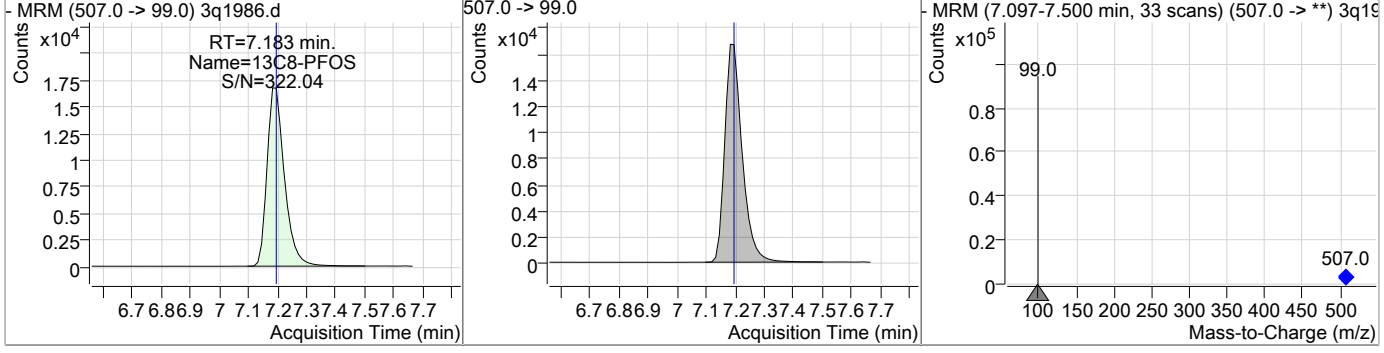
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



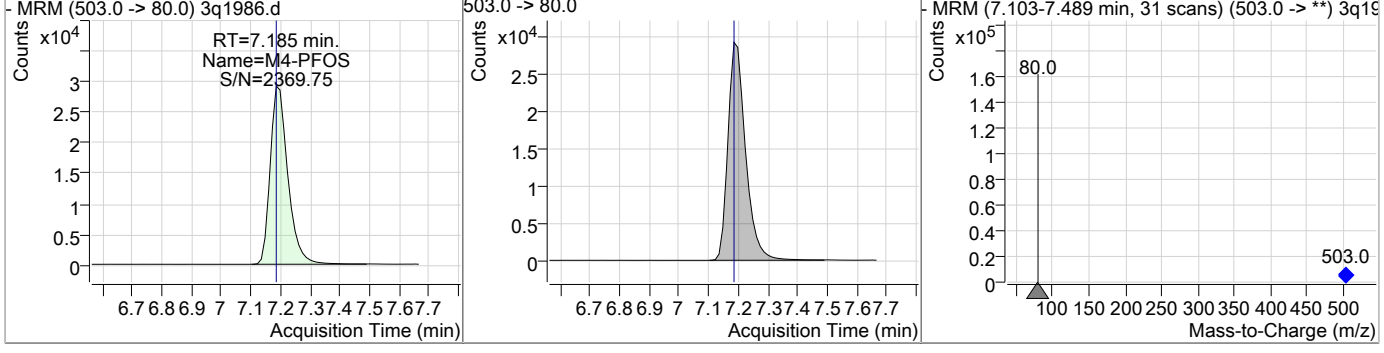
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



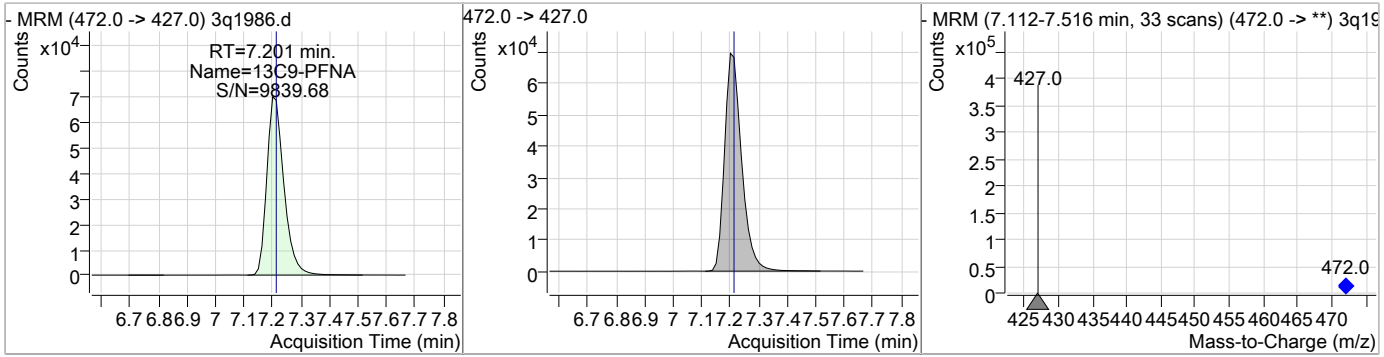
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



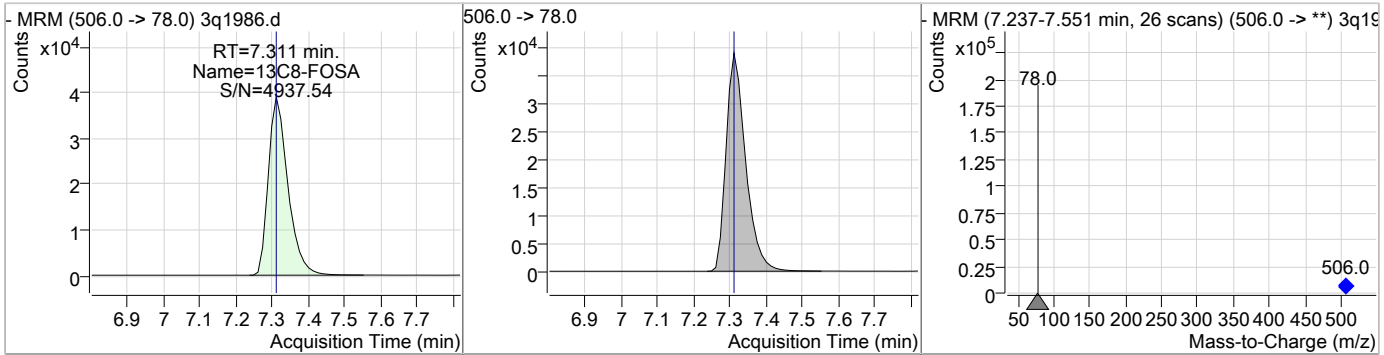
7.1.4  
7

### Perfluorinated Compounds by LC/MS/MS

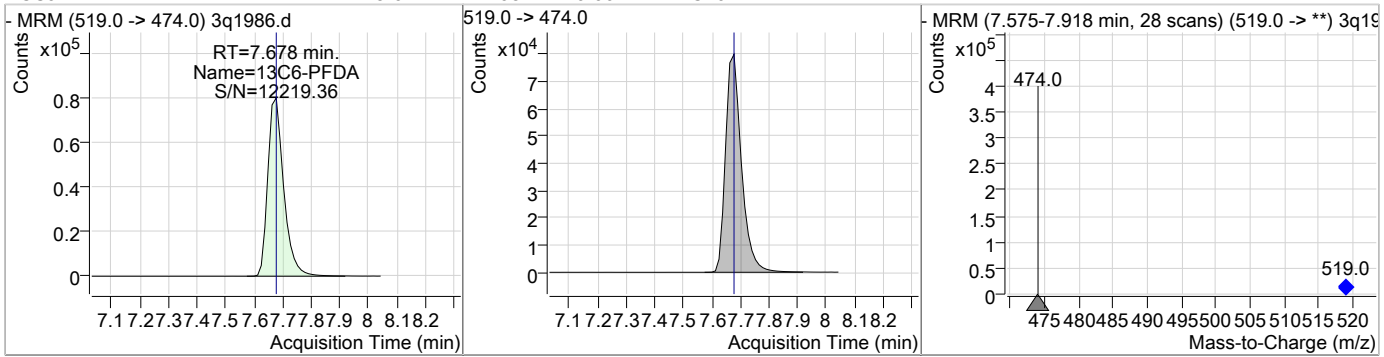
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



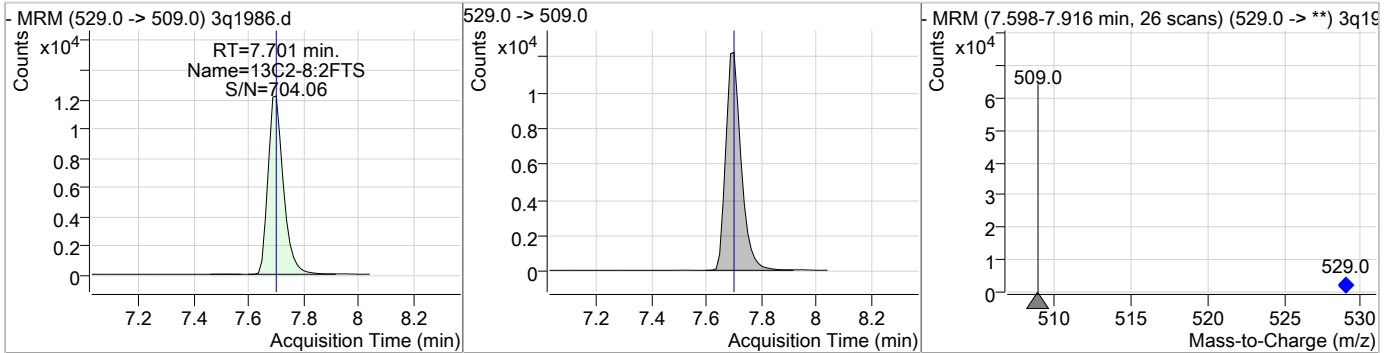
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



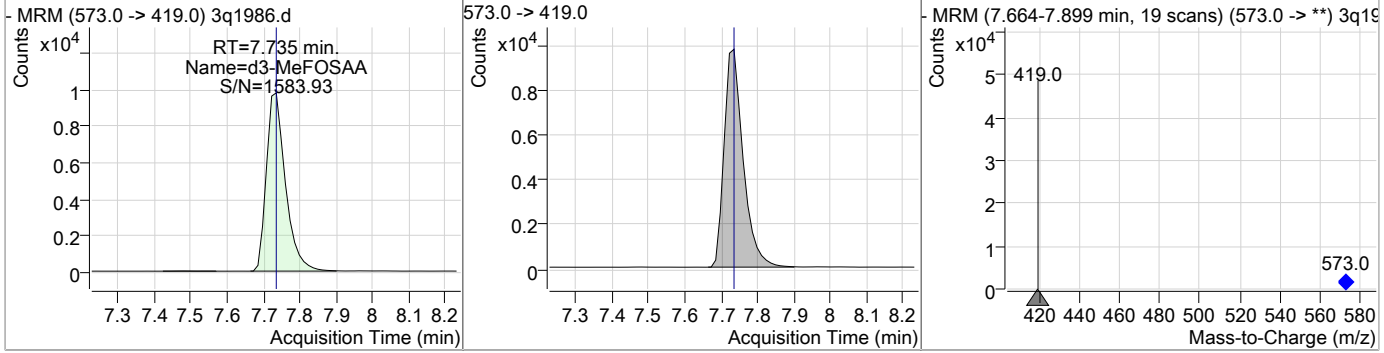
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



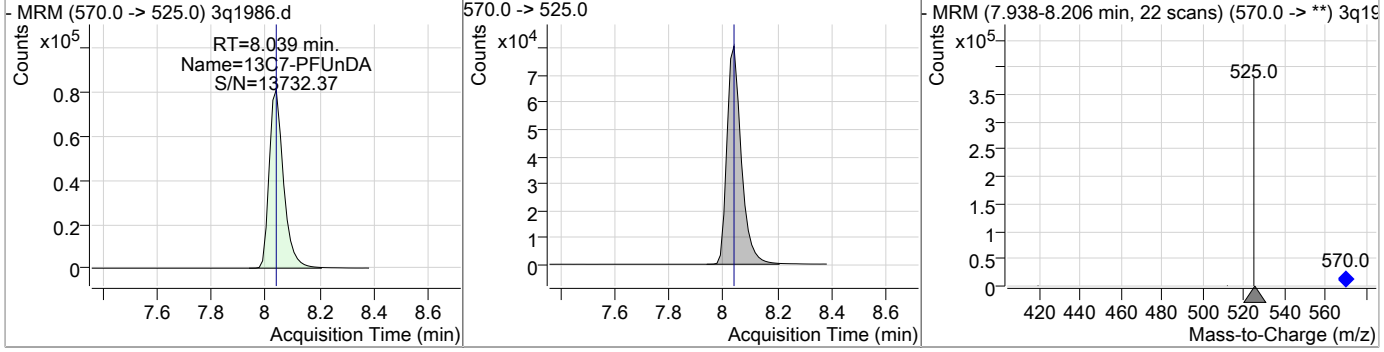
7.1.4  
7

### Perfluorinated Compounds by LC/MS/MS

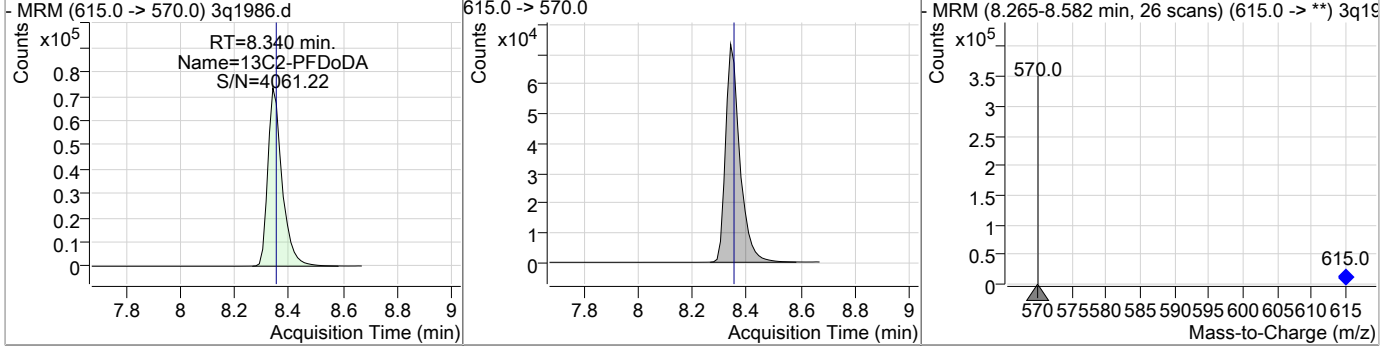
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



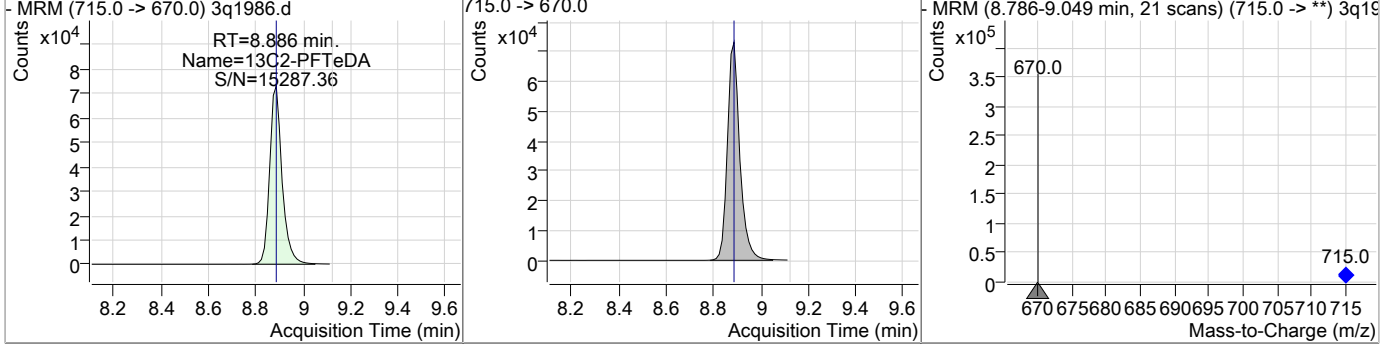
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



7.1.4

# Manual Integration Approval Summary

**Sample Number:** FA62220-4      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1986.D      **Analyst approved:** 03/22/19 11:48 Nancy Saunders  
**Injection Time:** 03/21/19 13:36      **Supervisor approved:** 03/24/19 19:15 Mike Eger

| Parameter                    | CAS      | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|----------|------|----------------|------------|
| Perfluoroheptanoic acid      | 375-85-9 |      | 5.89           | Split peak |
| Perfluorohexanesulfonic acid | 355-46-4 |      | 5.94           | Split peak |
| Perfluorooctanoic acid       | 335-67-1 |      | 6.62           | Split peak |

7.1.4.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27699.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 5:51:18 PM  
 Sample Name : fa62220-5  
 Vial : Vial 21  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 271948 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 37601  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 97032  | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 82287  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 116966 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 171871 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 184145 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 175378 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 202317 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 249476 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 294662 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 170554 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 54186  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 13895  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 15388  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 16286  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 46256  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 58794  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 30418  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 24027  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 53     | 100.00 µg/L      | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 46131  | 15.51 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.6% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 58779  | 18.31 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.6% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 30417  | 13.72 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 68.6% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 294559 | 15.66 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.3% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 170286 | 13.26 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.3% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 13859  | 15.20 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.0% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 15388  | 15.09 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.5% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 96828  | 16.15 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.7% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 171687 | 16.60 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.0% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 116999 | 16.10 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.5% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 82140  | 16.16 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.8% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 202185 | 14.82 µg/L       | 0.000    |

7.15  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.1%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 249399 | 14.74 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.7%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 54161  | 13.36 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 66.8%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 184079 | 17.65 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.2%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 16296  | 12.50 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.5%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 175356 | 16.56 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.8%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 24009  | 12.53 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.6%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 272082 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 37666  | 20.03 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 53     | 0.03 µg/L         | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 0.0%   |          |

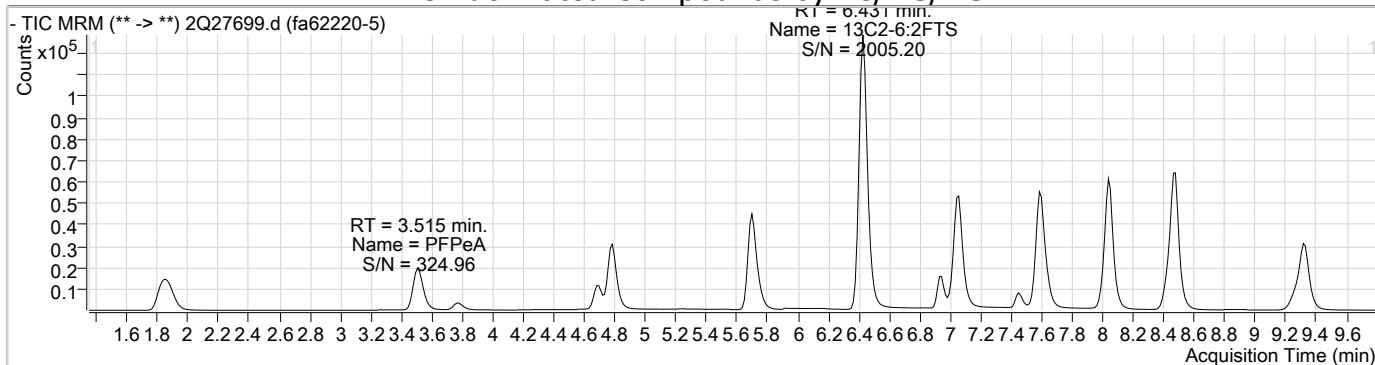
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 1045  | 1.09 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 463   | 0.42 µg/L   | 96     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 4281  | 2.13 µg/L   | 98     |
| PFHxS            | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 9229  | 2.59 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

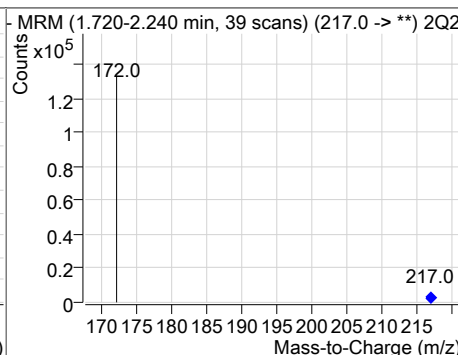
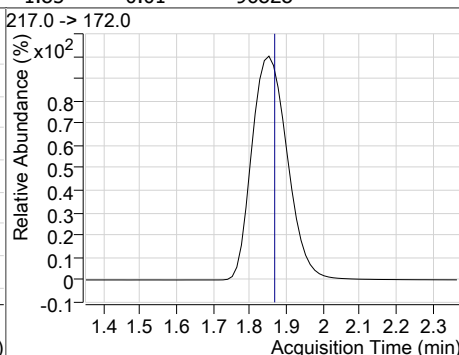
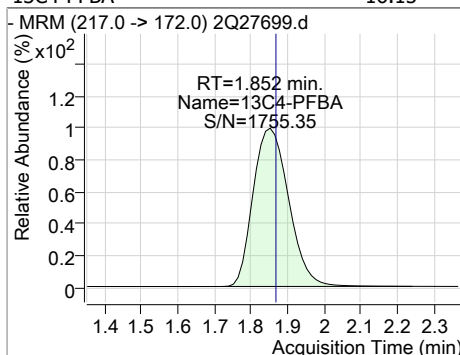
# = Qualifier out of range, m = manually integrated, + = Area summed

7.15  
7

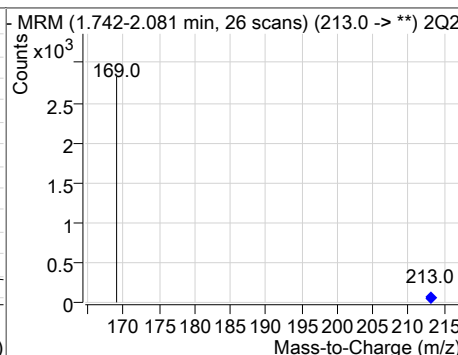
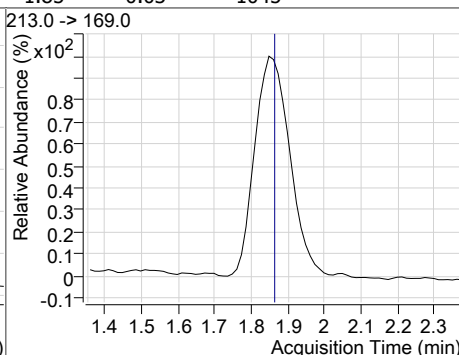
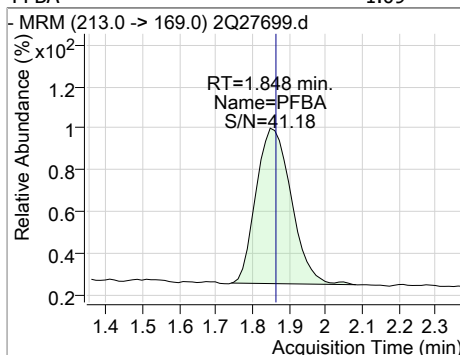
### Perfluorinated Compounds by LC/MS/MS



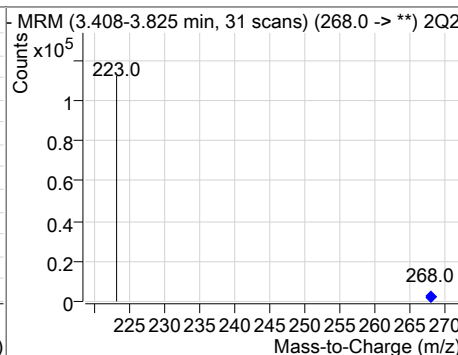
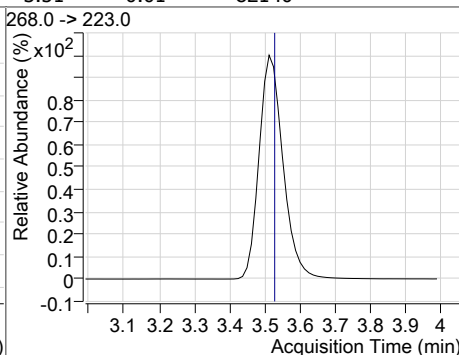
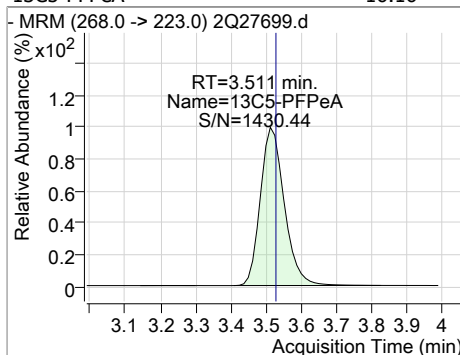
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C4-PFBA | 16.15 | 1.85 | -0.01    | 96828 |      |        |      |      |



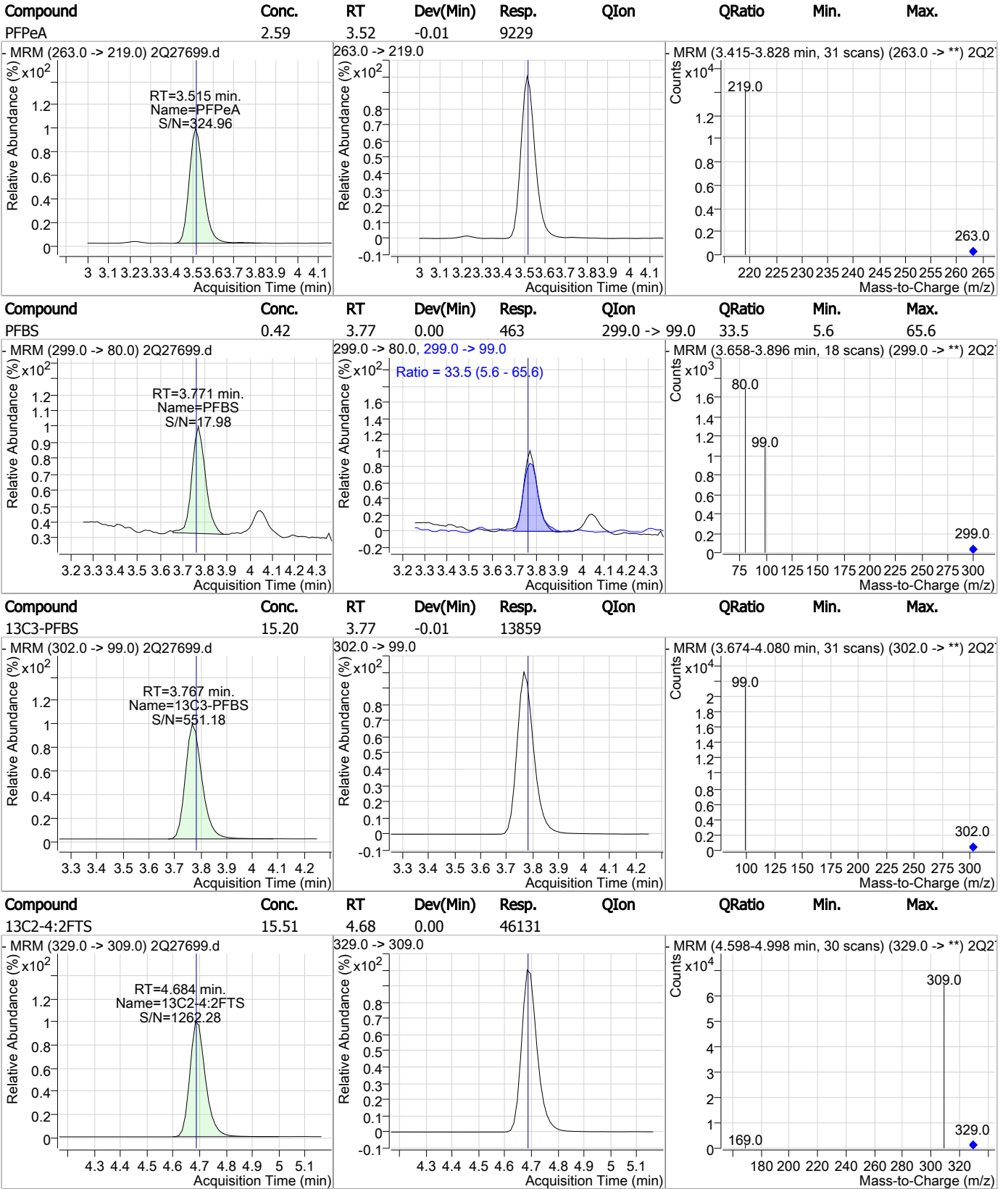
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 1.09  | 1.85 | -0.03    | 1045  |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C5-PFPeA | 16.16 | 3.51 | -0.01    | 82140 |      |        |      |      |



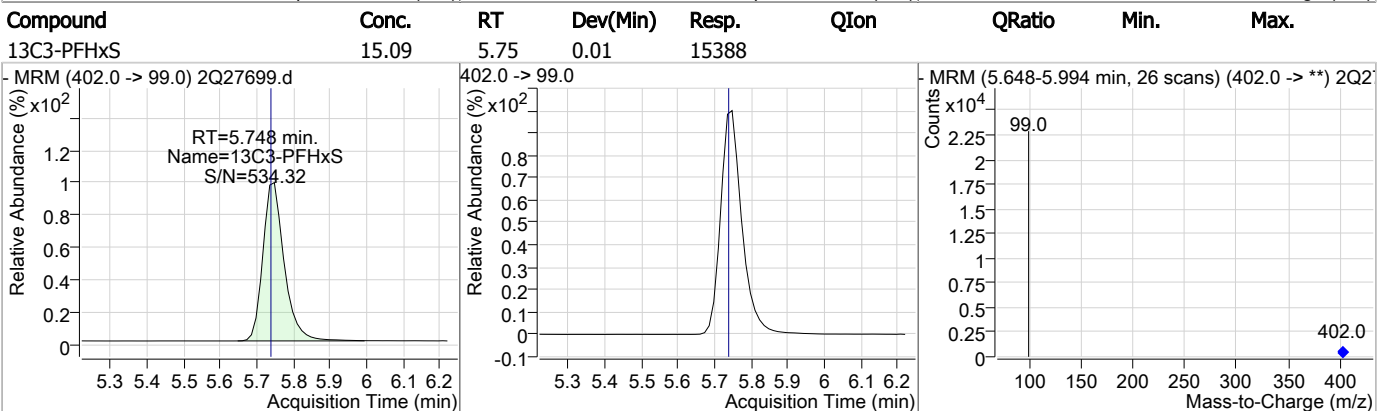
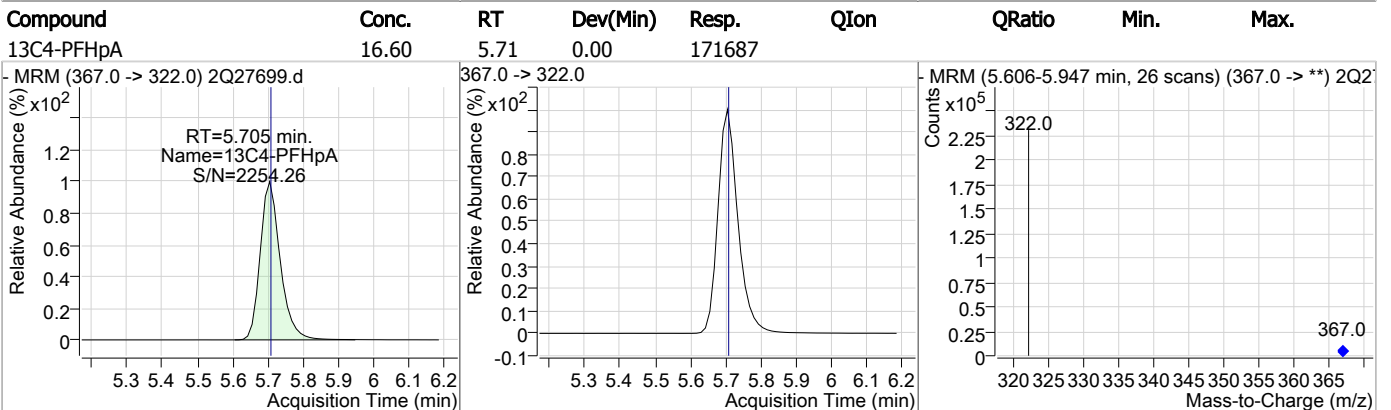
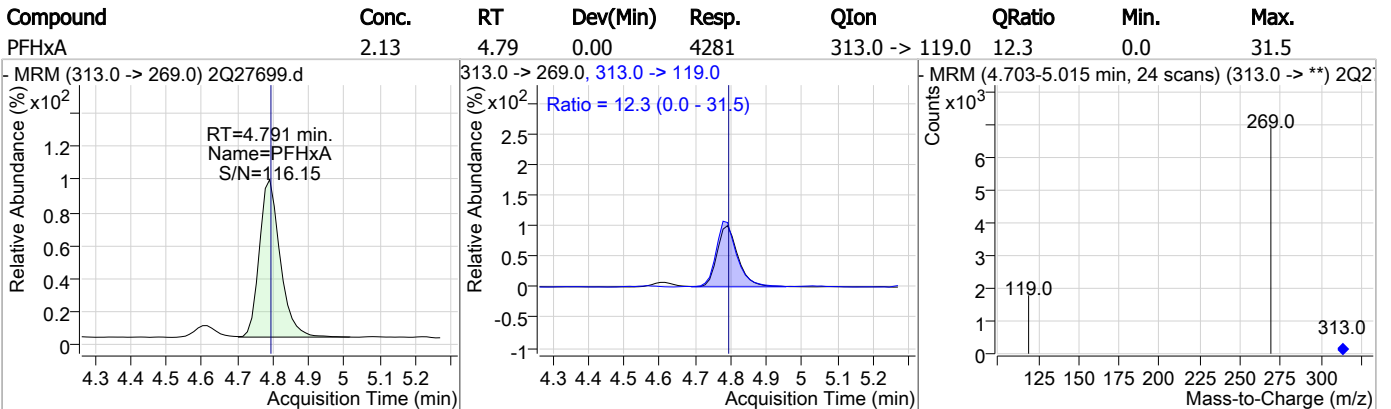
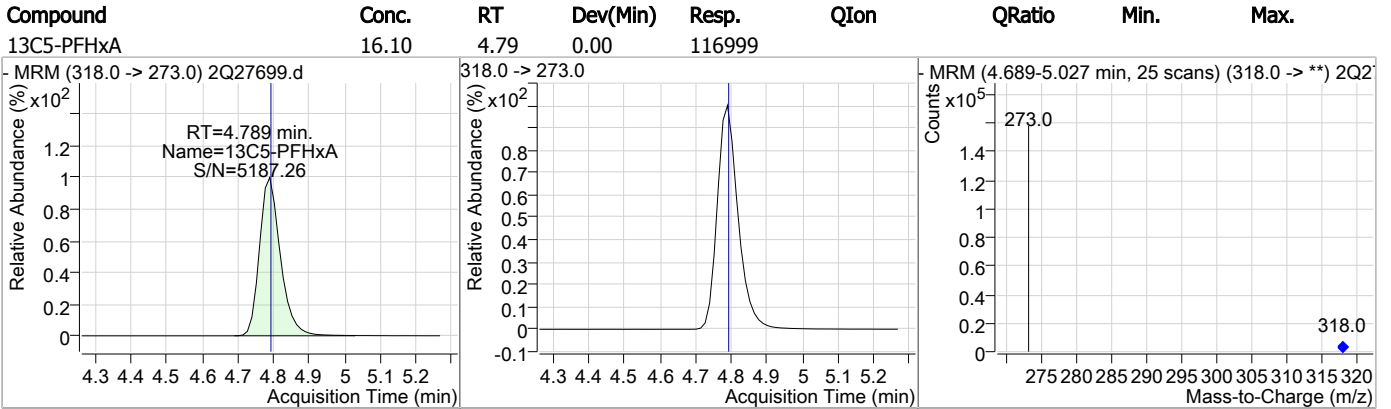
### Perfluorinated Compounds by LC/MS/MS



7.15  
7



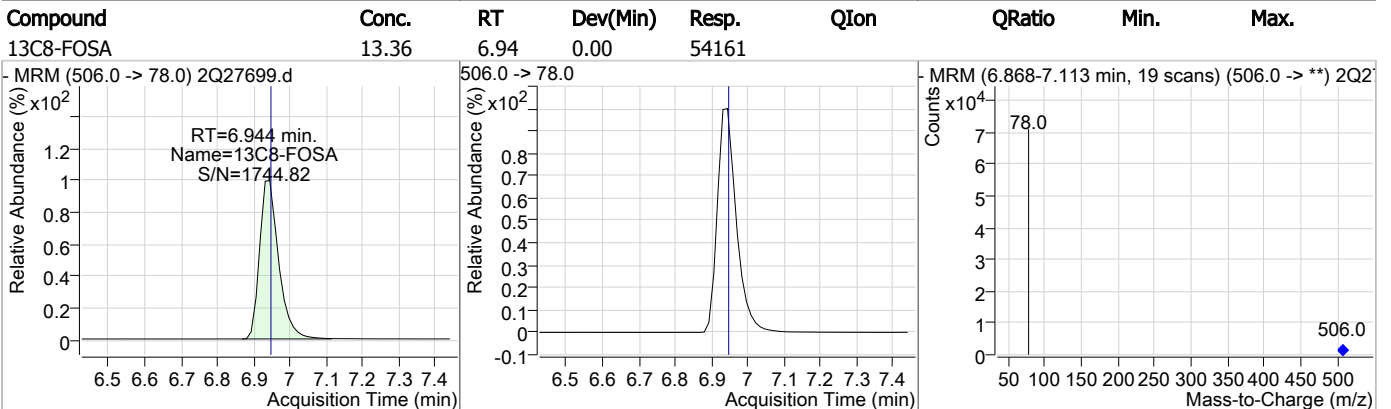
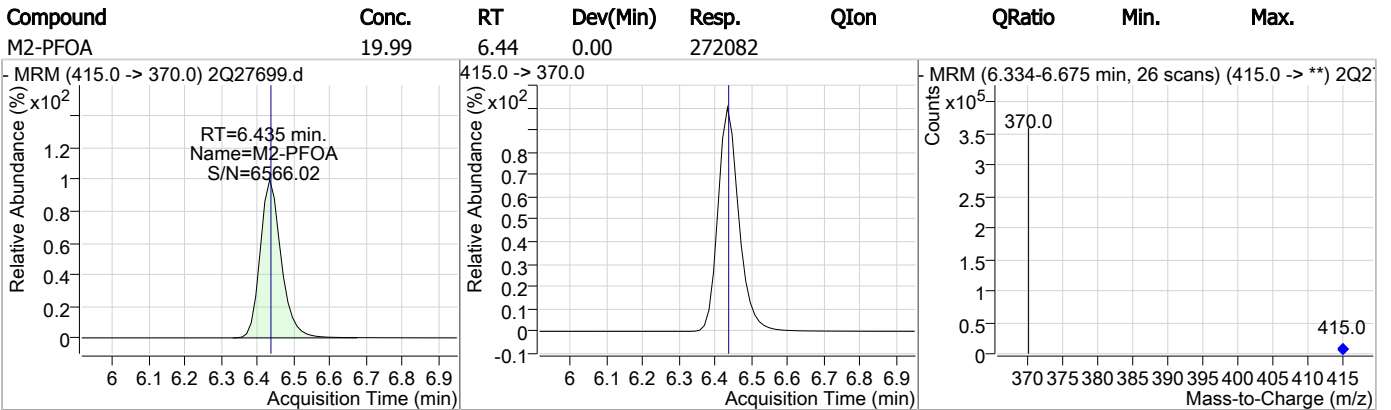
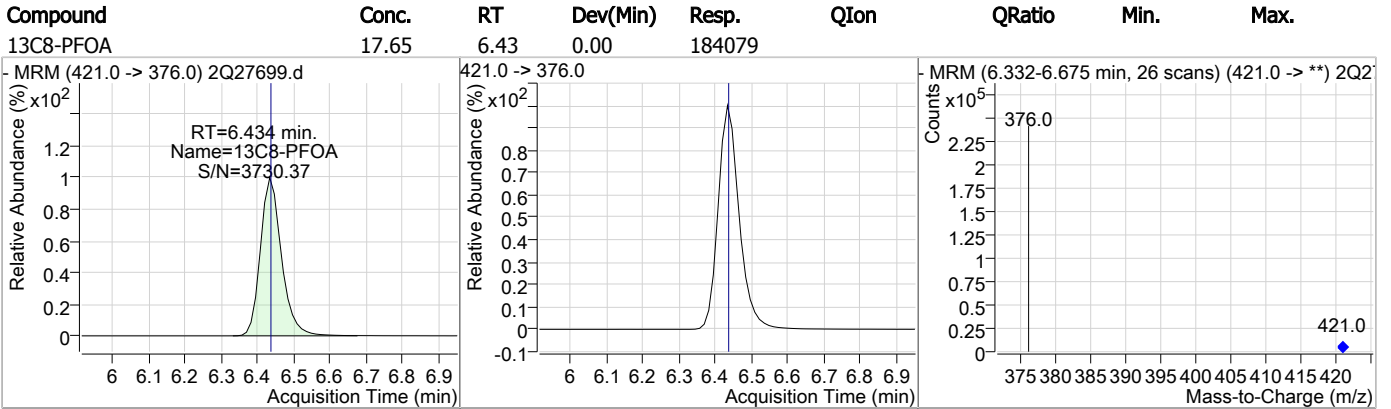
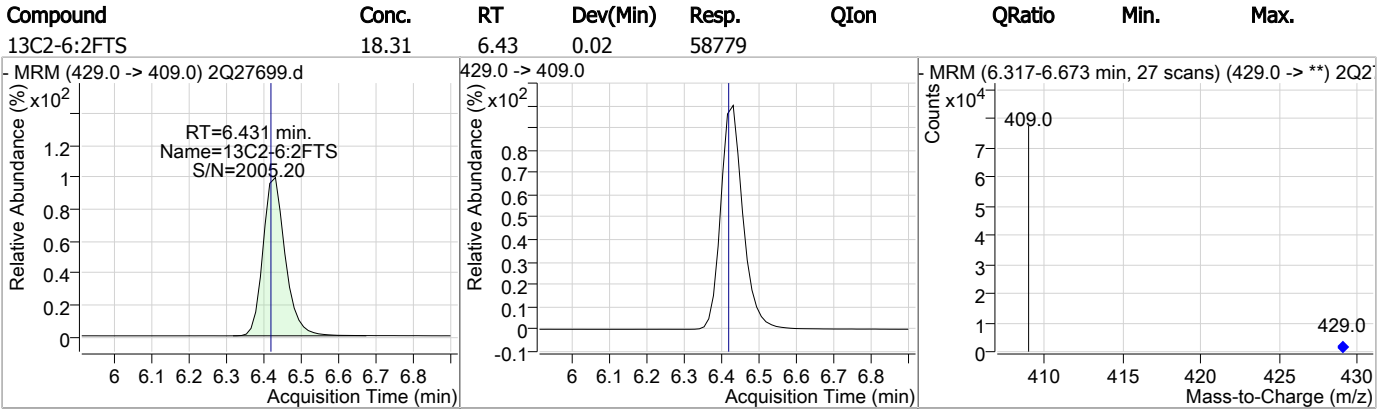
### Perfluorinated Compounds by LC/MS/MS



7.15

7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

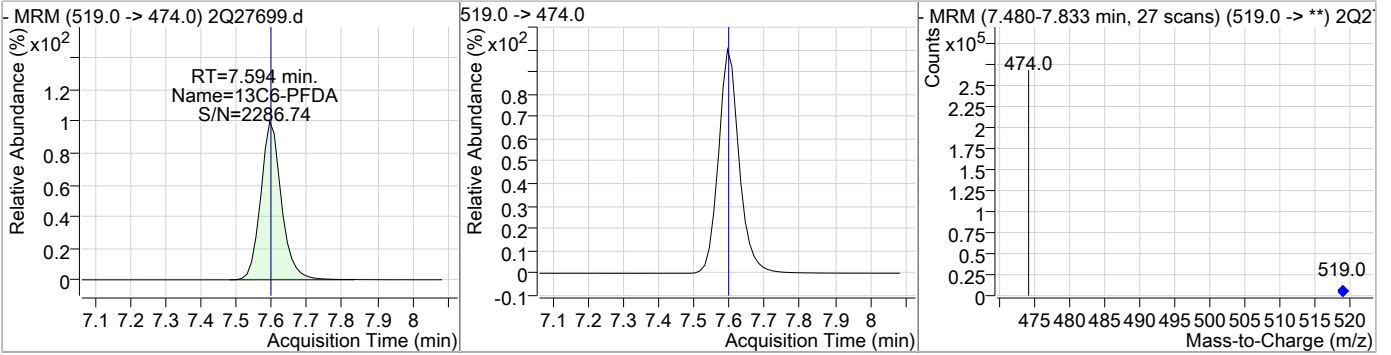
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| M4-PFOS    | 20.03 | 7.04 | 0.00     | 37666  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| 13C8-PFOS  | 12.50 | 7.05 | 0.00     | 16296  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| 13C9-PFNA  | 16.56 | 7.07 | 0.00     | 175356 |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| d3-MeFOSAA | 12.53 | 7.45 | 0.00     | 24009  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |

7.15  
7

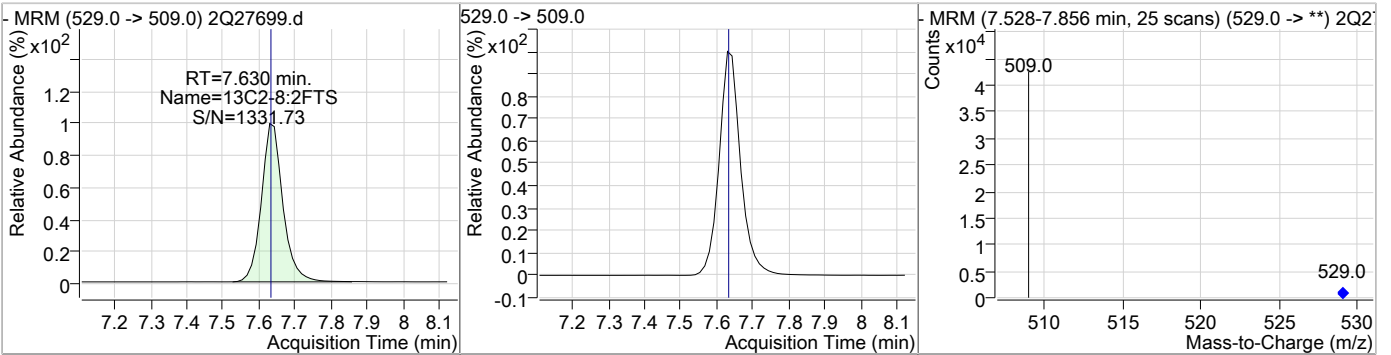


### Perfluorinated Compounds by LC/MS/MS

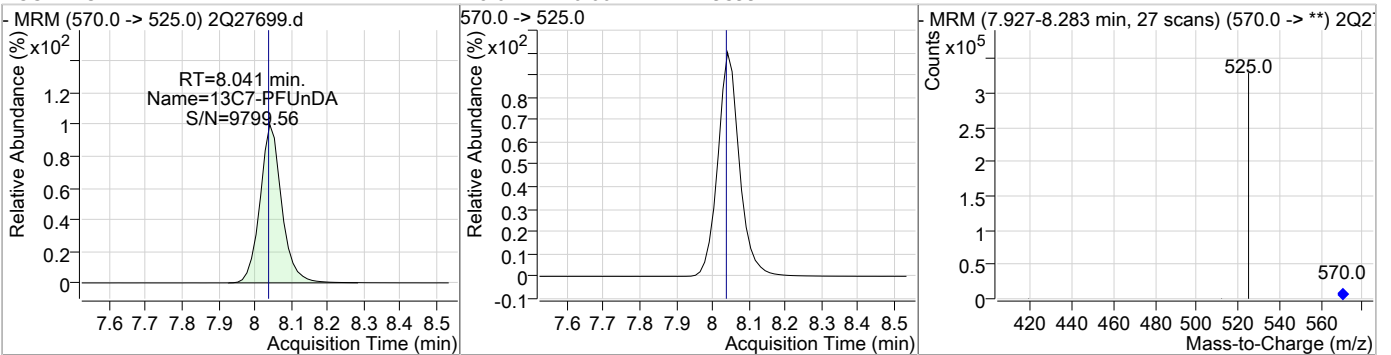
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 14.82 | 7.59 | 0.00     | 202185 |      |        |      |      |



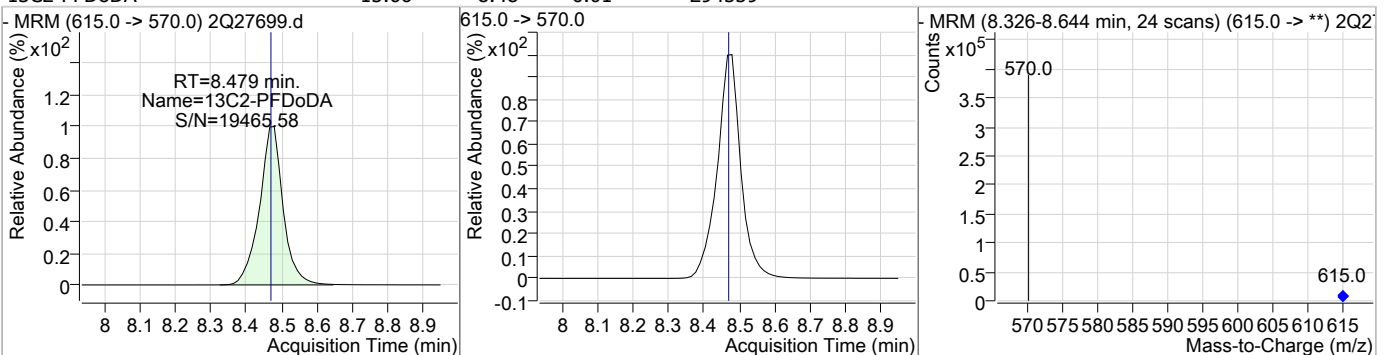
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 13.72 | 7.63 | 0.00     | 30417 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 14.74 | 8.04 | 0.00     | 249399 |      |        |      |      |

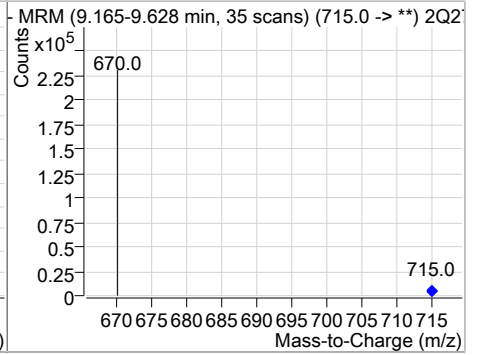
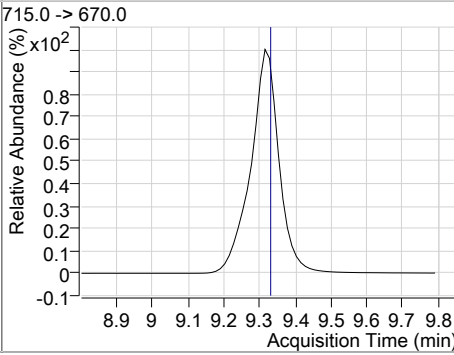
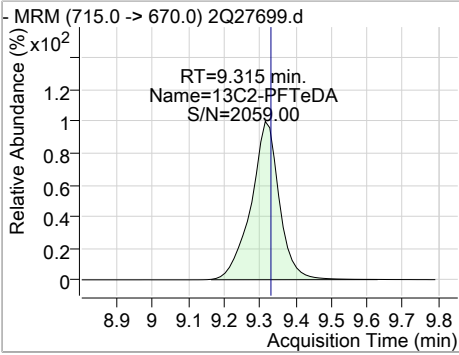


| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 15.66 | 8.48 | 0.01     | 294559 |      |        |      |      |



Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 13.26 | 9.31 | -0.01    | 170286 |      |        |      |      |



7.15  
7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27700.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 6:07:01 PM  
 Sample Name : fa62220-6  
 Vial : Vial 22  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT    | QIon                 | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|-------|----------------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |       |                      |        |                   |          |
| 13C2-PFOA                          | 6.435 | 415.0 -> 370.0       | 272791 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036 | 503.0 -> 80.0        | 37188  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.840 | 217.0 -> 172.0       | 100634 | 20.00 µg/L        | -0.025   |
| M5-PFPeA                           | 3.511 | 268.0 -> 223.0       | 85982  | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.776 | 318.0 -> 273.0       | 123979 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.705 | 367.0 -> 322.0       | 182369 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434 | 421.0 -> 376.0       | 200154 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.066 | 472.0 -> 427.0       | 186585 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594 | 519.0 -> 474.0       | 229382 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041 | 570.0 -> 525.0       | 300992 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466 | 615.0 -> 570.0       | 366773 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.315 | 715.0 -> 670.0       | 204276 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 6.932 | 506.0 -> 78.0        | 62750  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.767 | 302.0 -> 99.0        | 14764  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.736 | 402.0 -> 99.0        | 16719  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.033 | 507.0 -> 99.0        | 18422  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.684 | 329.0 -> 309.0       | 49535  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416 | 429.0 -> 409.0       | 64363  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630 | 529.0 -> 509.0       | 34155  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447 | 573.0 -> 419.0       | 28962  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | -     | 287.0 -> 169.0       | -      | N.D.              |          |
| <b>System Monitoring Compounds</b> |       |                      |        |                   |          |
| 13C2-4:2FTS                        | 4.684 | 329.0 -> 309.0       | 49516  | 16.65 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 83.3%  |          |
| 13C2-6:2FTS                        | 6.416 | 429.0 -> 409.0       | 64344  | 20.05 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 100.2% |          |
| 13C2-8:2FTS                        | 7.630 | 529.0 -> 509.0       | 34412  | 15.52 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 77.6%  |          |
| 13C2-PFDoDA                        | 8.466 | 615.0 -> 570.0       | 366466 | 19.48 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 97.4%  |          |
| 13C2-PFTeDA                        | 9.315 | 715.0 -> 670.0       | 203528 | 15.85 µg/L        | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 79.3%  |          |
| 13C3-PFBS                          | 3.767 | 302.0 -> 99.0        | 14754  | 16.18 µg/L        | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 80.9%  |          |
| 13C3-PFHxS                         | 5.736 | 402.0 -> 99.0        | 16718  | 16.40 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 82.0%  |          |
| 13C4-PFBA                          | 1.840 | 217.0 -> 172.0       | 100365 | 16.74 µg/L        | -0.025   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 83.7%  |          |
| 13C4-PFHpA                         | 5.705 | 367.0 -> 322.0       | 182301 | 17.63 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 88.1%  |          |
| 13C5-PFHxA                         | 4.776 | 318.0 -> 273.0       | 123883 | 17.05 µg/L        | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 85.2%  |          |
| 13C5-PFPeA                         | 3.511 | 268.0 -> 223.0       | 86047  | 16.93 µg/L        | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 84.6%  |          |
| 13C6-PFDA                          | 7.594 | 519.0 -> 474.0       | 229268 | 16.80 µg/L        | 0.000    |

7.1.6  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 84.0%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 300785 | 17.77 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.9%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 62742  | 15.47 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 77.4%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 200055 | 19.18 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.9%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 18426  | 14.14 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 70.7%  |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 186551 | 17.62 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.1%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 28921  | 15.09 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 75.4%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 272880 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 37244  | 20.02 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

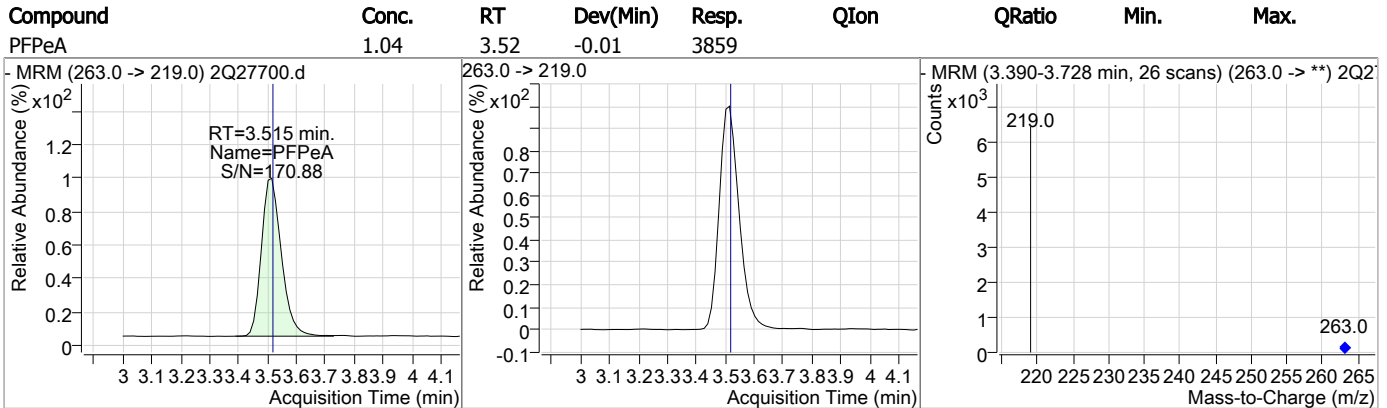
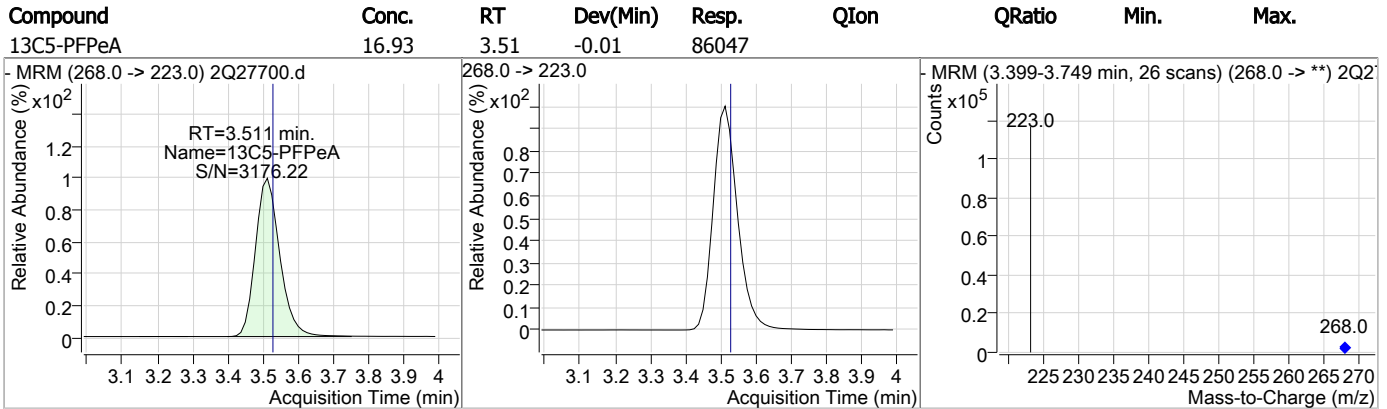
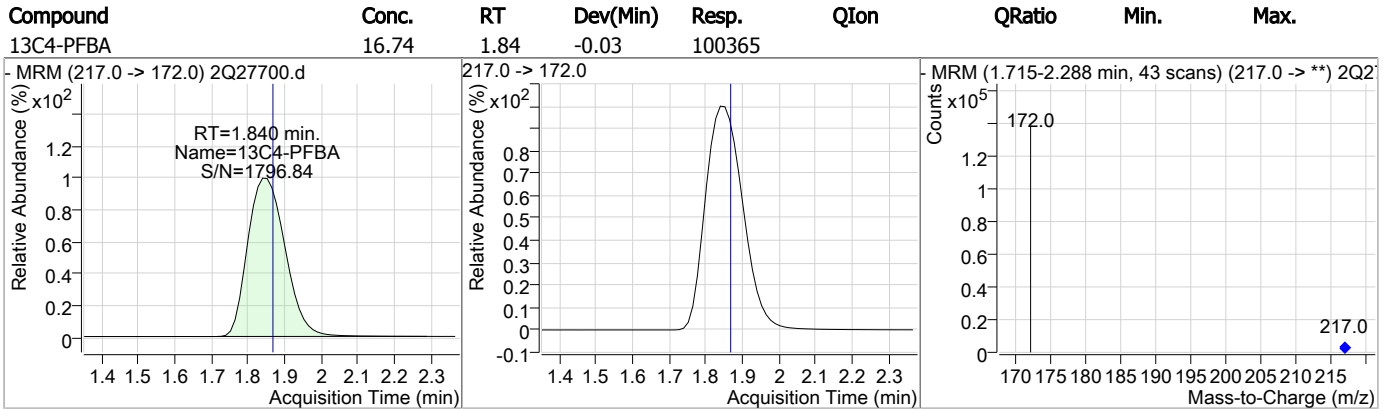
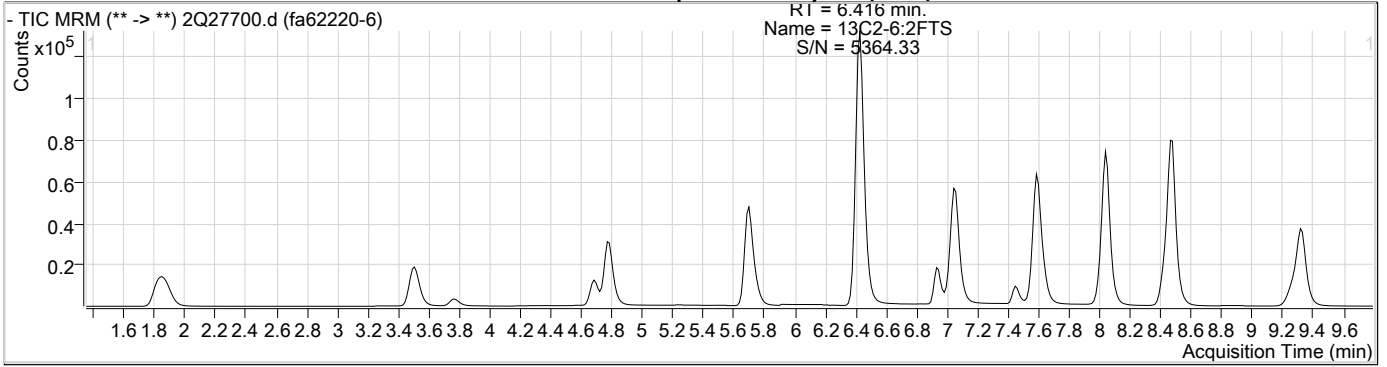
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -     | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 4229  | 0.54 µg/L   | 100    |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.778 | 313.0 -> 269.0 | 1254  | 0.59 µg/L   | 98     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 622   | 0.67 µg/L   | m 98   |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | 7.037 | 499.0 -> 80.0  | 432   | 0.48 µg/L   | m 77   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 3859  | 1.04 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

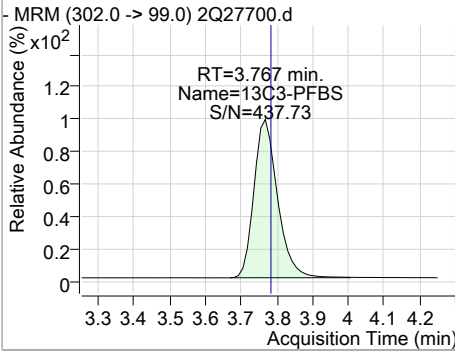
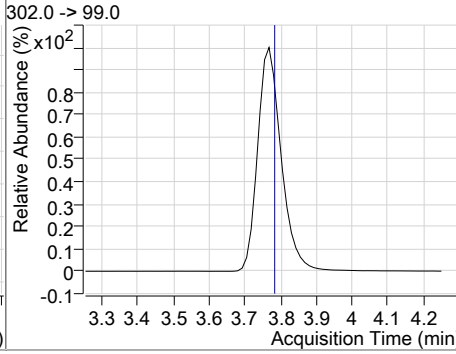
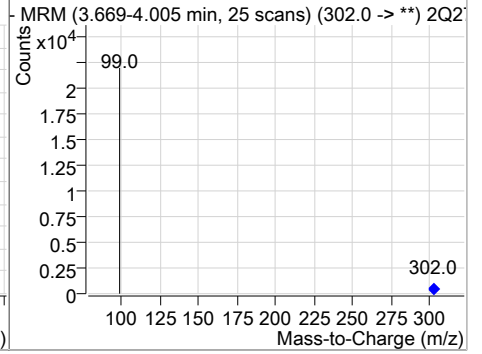
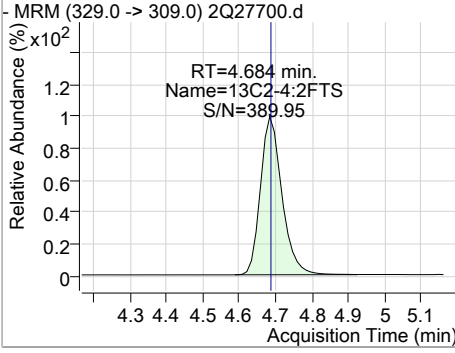
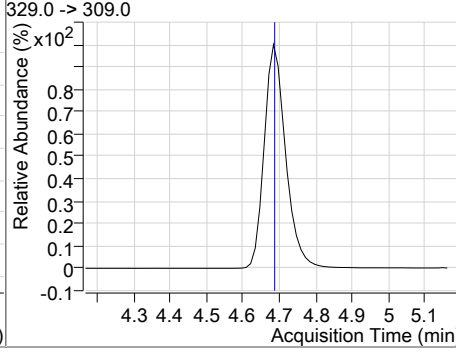
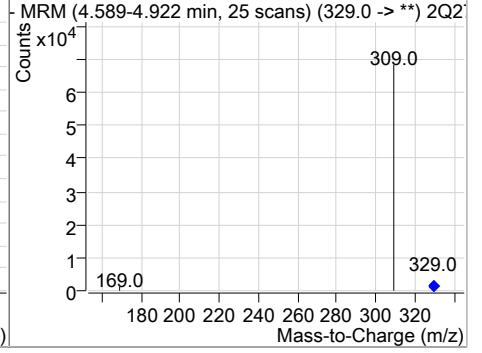
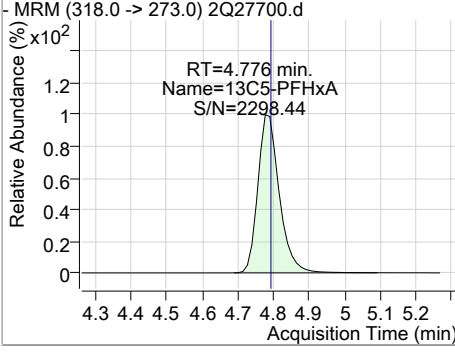
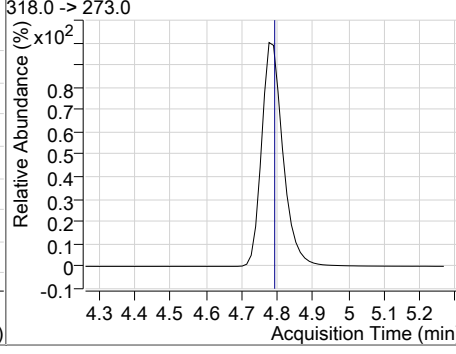
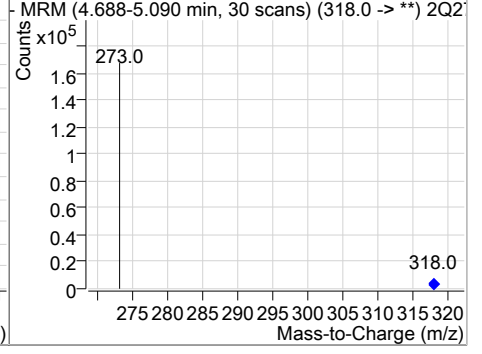
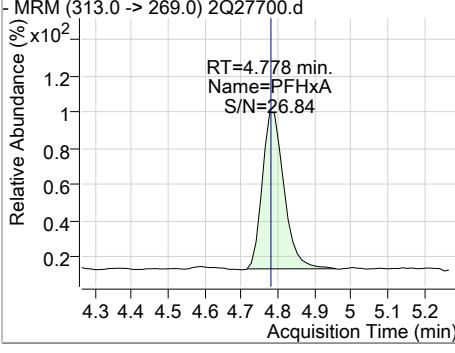
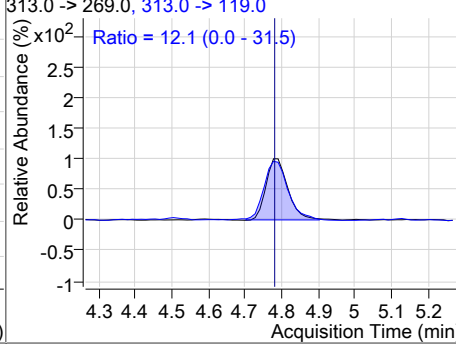
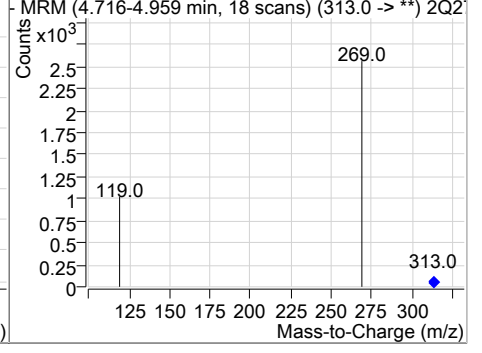
7.1.6  
7

### Perfluorinated Compounds by LC/MS/MS



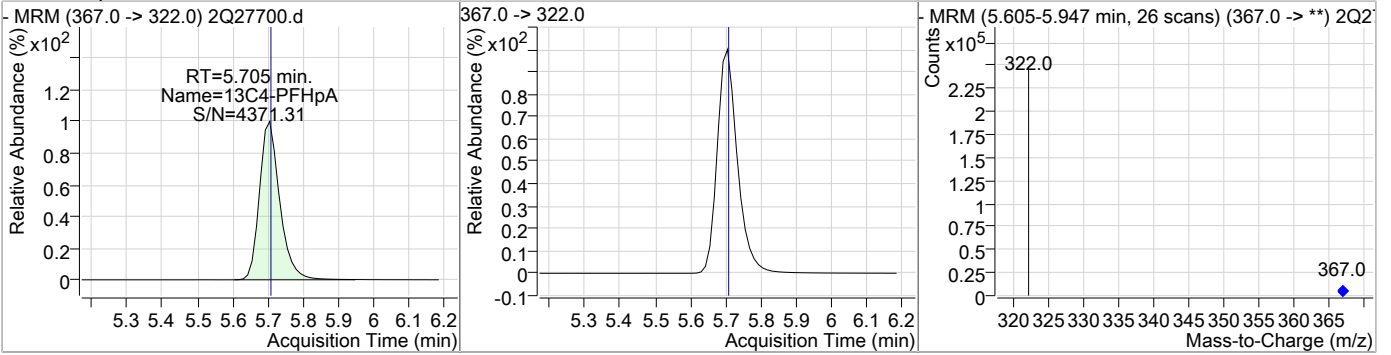


### Perfluorinated Compounds by LC/MS/MS

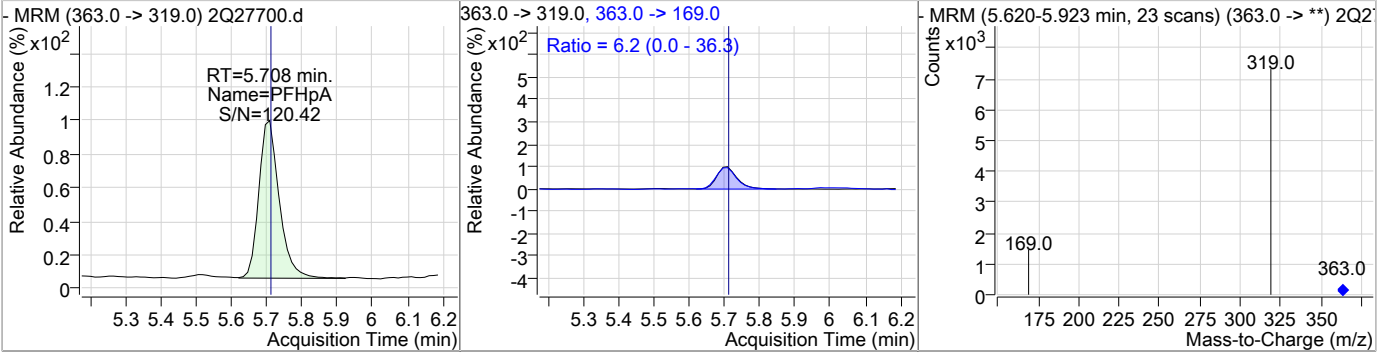
| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon           | QRatio   | Min. | Max. |
|--|-------|------|---|--------|----------------|--|------|------|
| 13C3-PFBS  | 16.18 | 3.77 | -0.01   | 14754  |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| 13C2-4:2FTS  | 16.65 | 4.68 | 0.00  | 49516  |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| 13C5-PFHxA   | 17.05 | 4.78 | -0.01   | 123883 |                |  |      |      |
|  |       |      |  |        |                |  |      |      |
| PFHxA  | 0.59  | 4.78 | -0.01   | 1254   | 313.0 -> 119.0 | 12.1   | 0.0  | 31.5 |
|  |       |      |  |        |                |  |      |      |

### Perfluorinated Compounds by LC/MS/MS

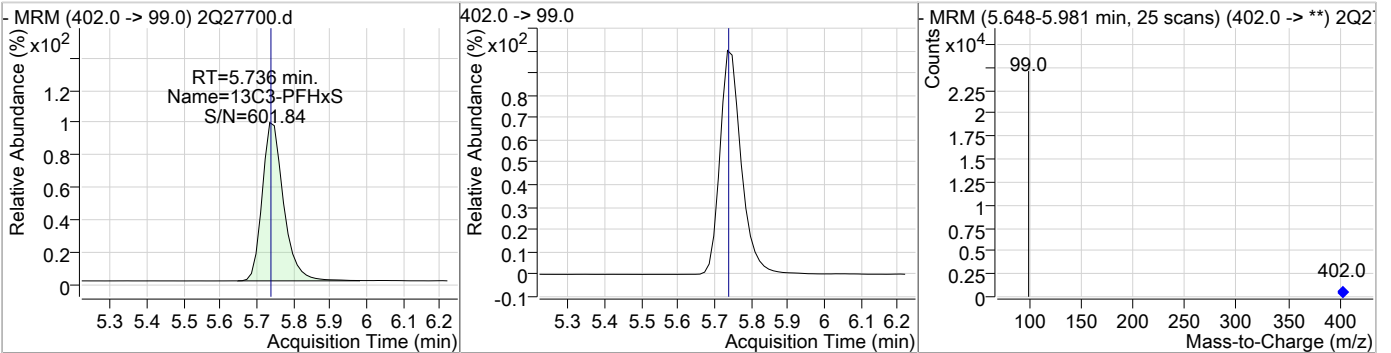
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



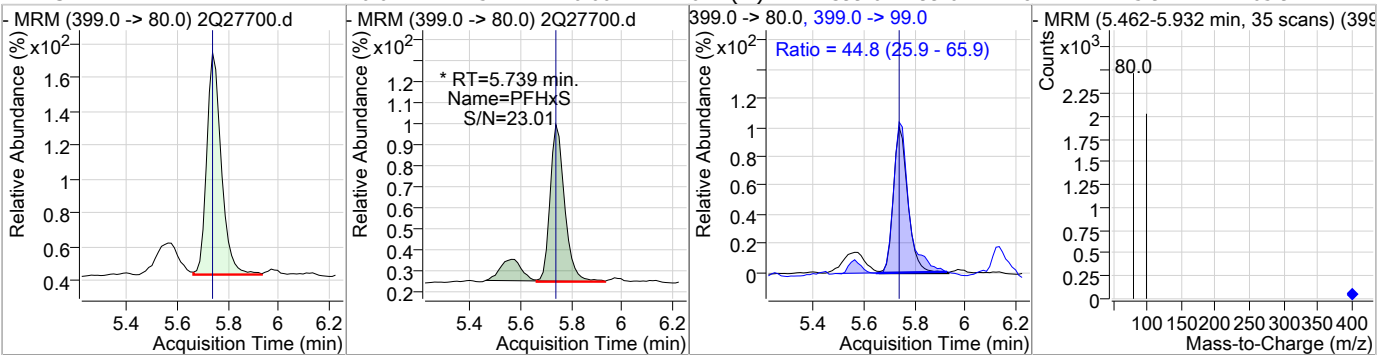
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



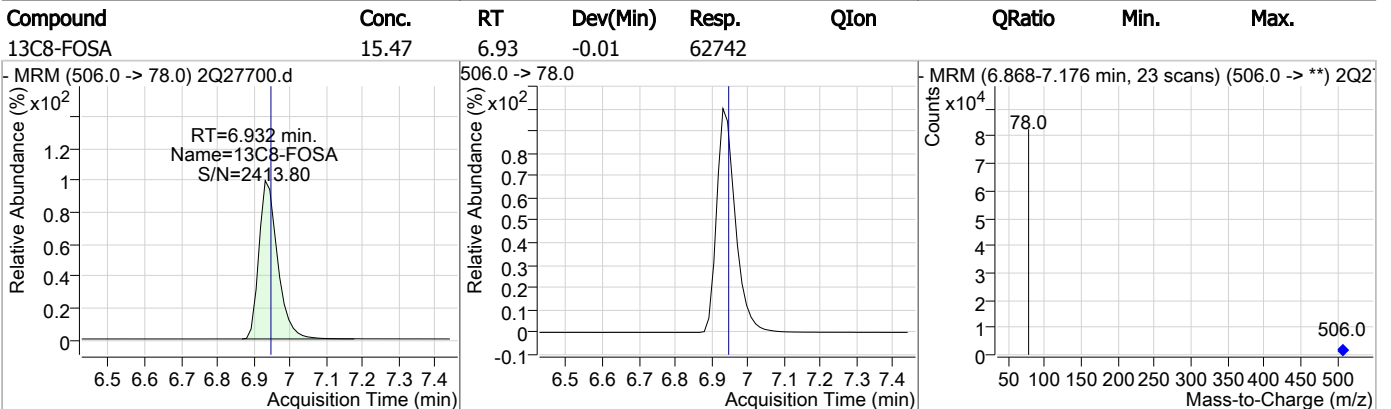
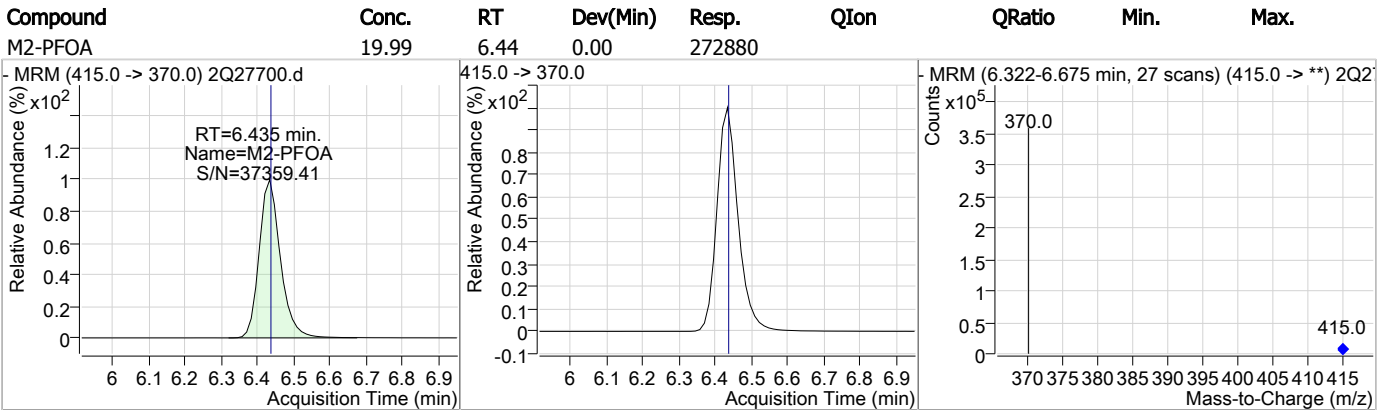
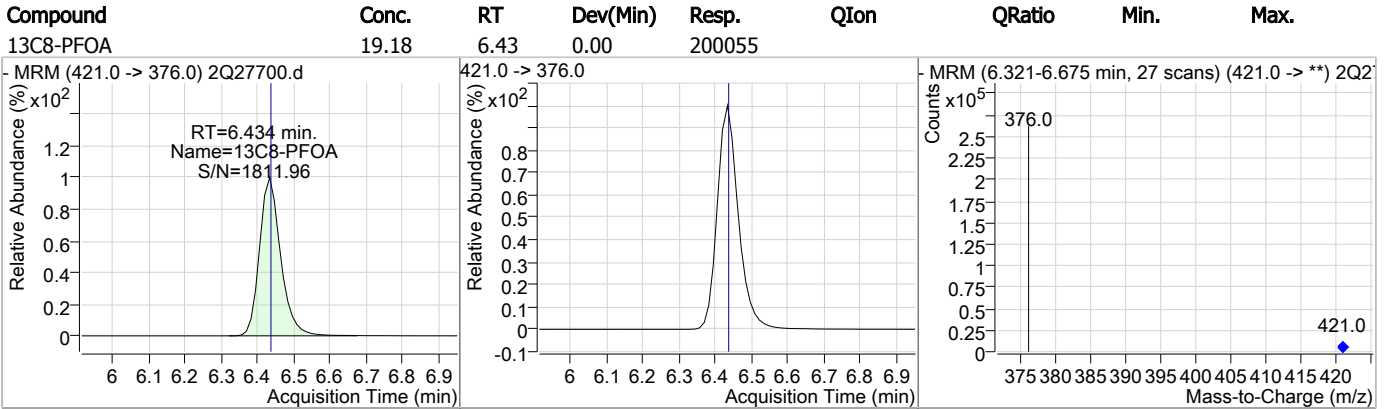
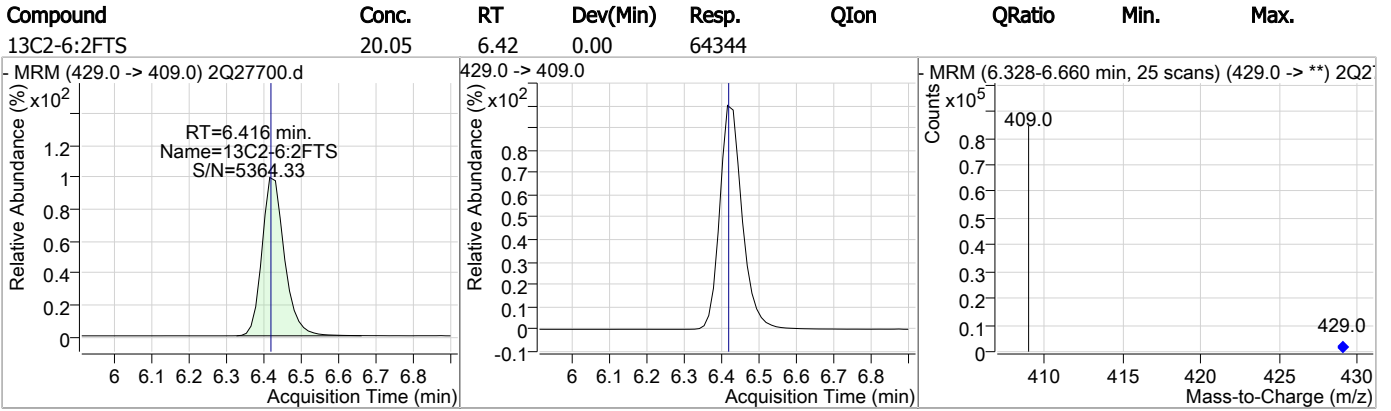
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



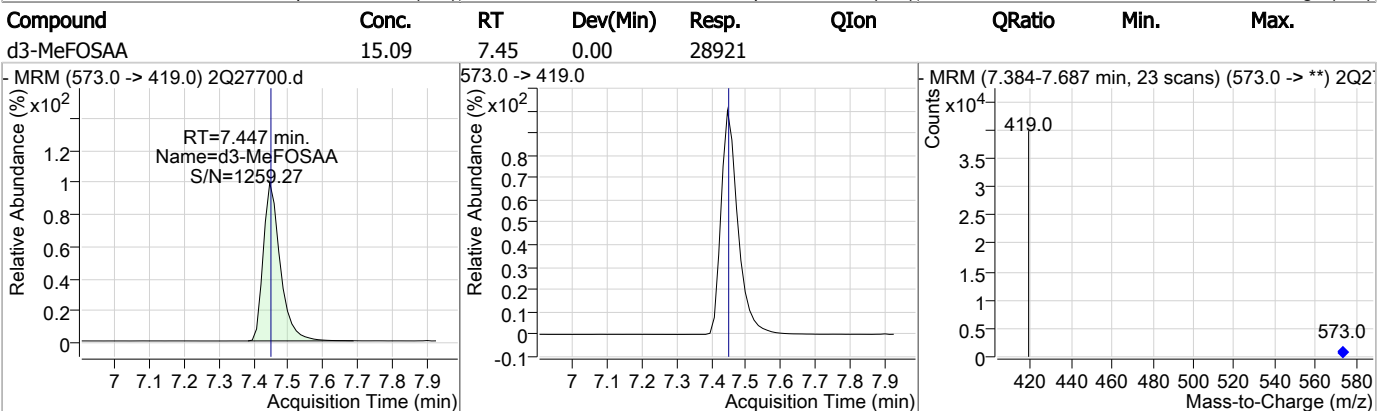
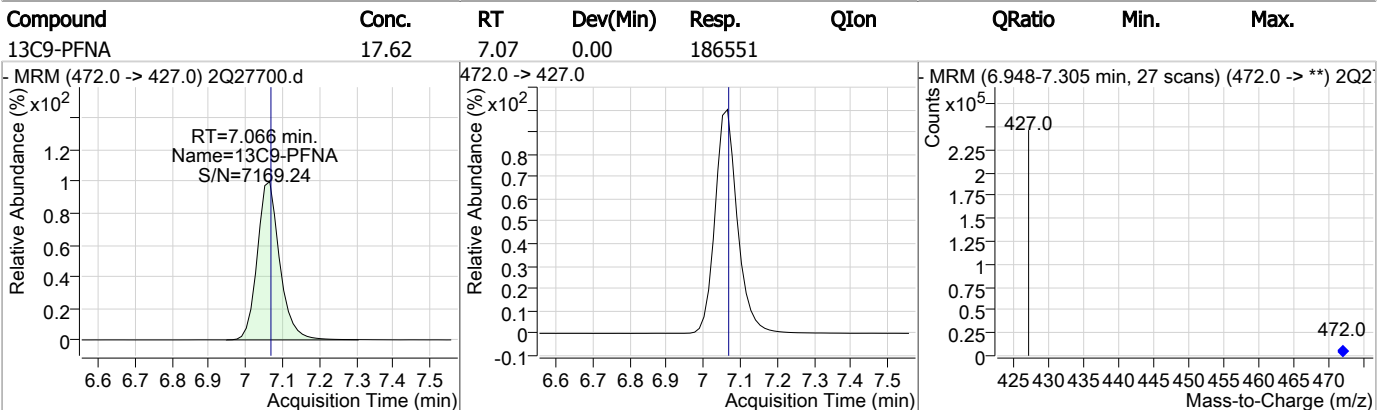
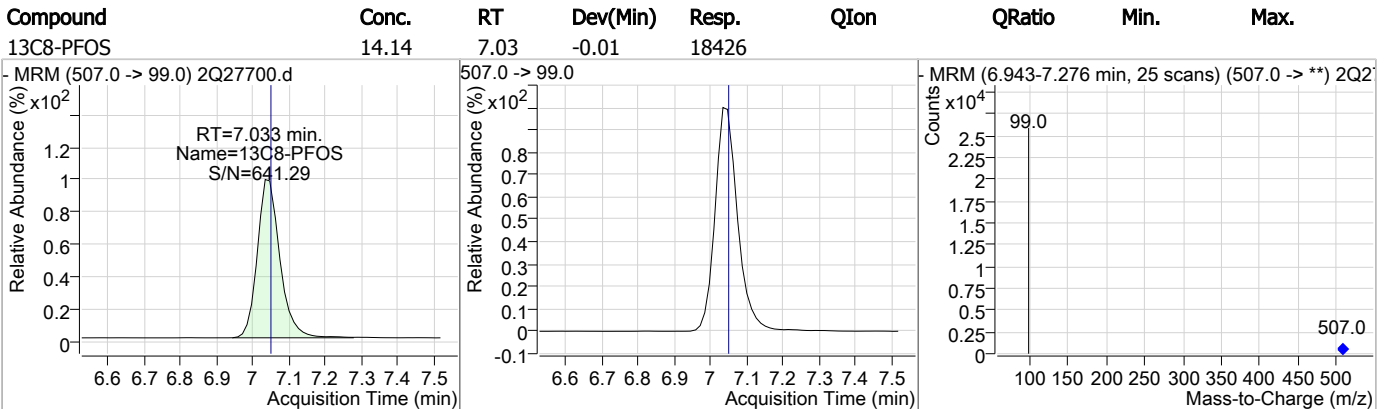
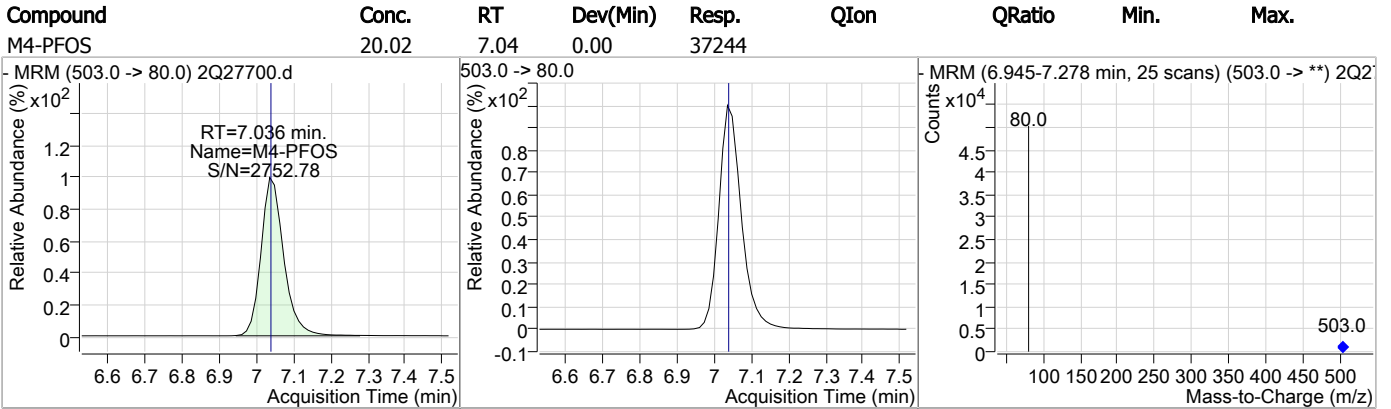
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



7.1.6

7

### Perfluorinated Compounds by LC/MS/MS

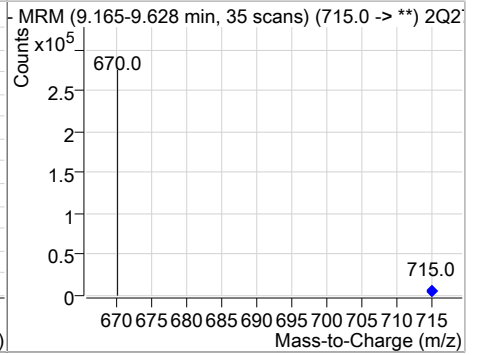
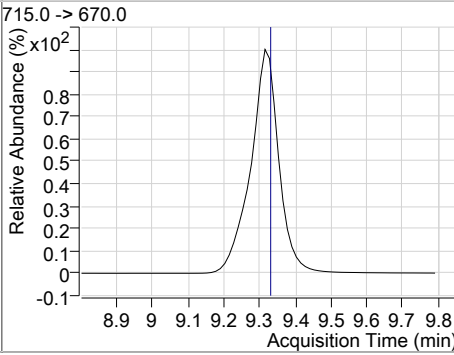
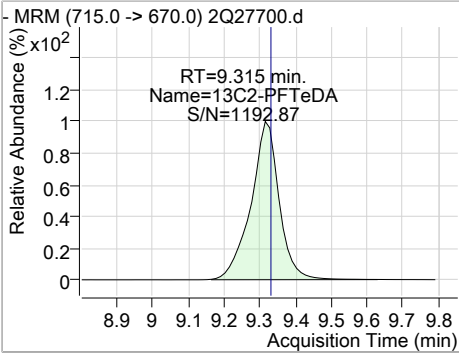
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA   | 16.80 | 7.59 | 0.00     | 229268 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-8:2FTS | 15.52 | 7.63 | 0.00     | 34412  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C7-PFUnDA | 17.77 | 8.04 | 0.00     | 300785 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-PFDoDA | 19.48 | 8.47 | 0.00     | 366466 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.1.6

7

Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.85 | 9.31 | -0.01    | 203528 |      |        |      |      |



7.1.6  
7

# Manual Integration Approval Summary

**Sample Number:** FA62220-6      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27700.D      **Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Injection Time:** 03/18/19 18:07      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.1.6.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27703.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 6:54:12 PM  
 Sample Name : fa62220-7  
 Vial : Vial 23  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 263784 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 36605  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.840                | 217.0 -> 172.0 | 98965  | 20.00 µg/L       | -0.025   |
| M5-PFPeA                           | 3.499                | 268.0 -> 223.0 | 84621  | 20.00 µg/L       | -0.025   |
| M5-PFHxA                           | 4.776                | 318.0 -> 273.0 | 119455 | 20.00 µg/L       | -0.013   |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 175596 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 189378 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 180369 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 225569 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 292290 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 324818 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 187223 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 60995  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.755                | 302.0 -> 99.0  | 14168  | 20.00 µg/L       | -0.025   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 15632  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 18467  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 47905  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 60089  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 34293  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 27477  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 47909  | 16.11 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.6% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 60026  | 18.70 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.5% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 34312  | 15.47 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.4% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 324824 | 17.27 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.3% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 187007 | 14.57 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 72.8% |          |
| 13C3-PFBS                          | 3.755                | 302.0 -> 99.0  | 14134  | 15.50 µg/L       | -0.025   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.5% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 15626  | 15.33 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.6% |          |
| 13C4-PFBA                          | 1.840                | 217.0 -> 172.0 | 98754  | 16.47 µg/L       | -0.025   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.3% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 175490 | 16.97 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.8% |          |
| 13C5-PFHxA                         | 4.776                | 318.0 -> 273.0 | 119408 | 16.43 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.2% |          |
| 13C5-PFPeA                         | 3.499                | 268.0 -> 223.0 | 84382  | 16.60 µg/L       | -0.025   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.0% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 225473 | 16.52 µg/L       | 0.000    |

7.17  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|-----------------------|----------------------|----------------|--------|------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.6% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 292151 | 17.26 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.3% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 60982  | 15.04 µg/L       | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 75.2% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 189328 | 18.15 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.7% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 18466  | 14.17 µg/L       | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 70.8% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 180388 | 17.04 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 85.2% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 27476  | 14.33 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.7% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 263861 | 19.99 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 36589  | 19.98 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%   |          |

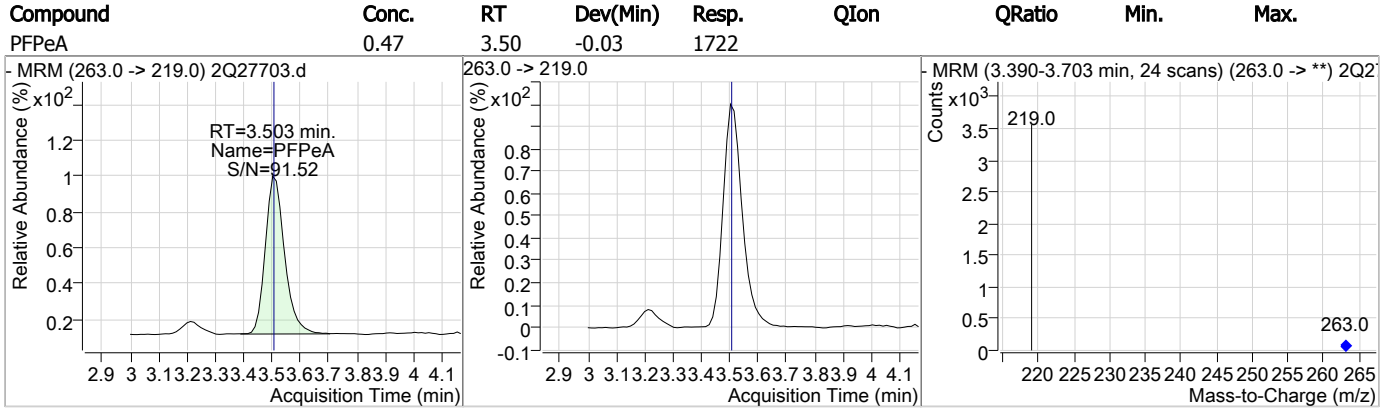
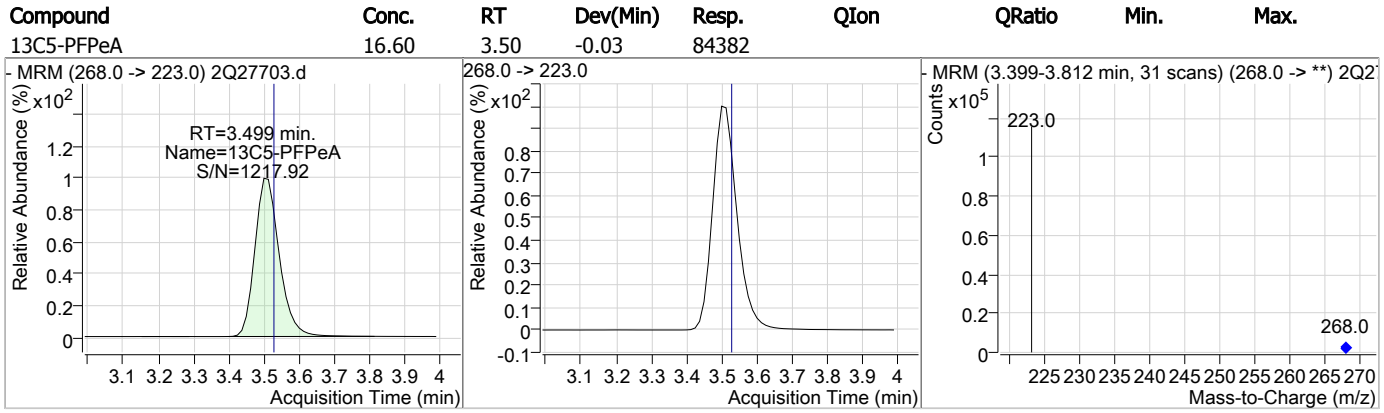
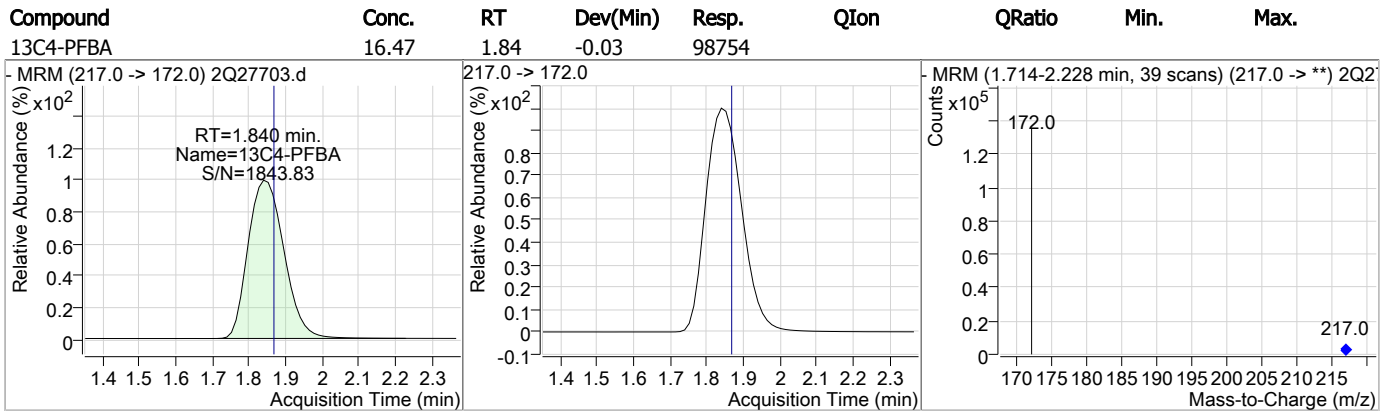
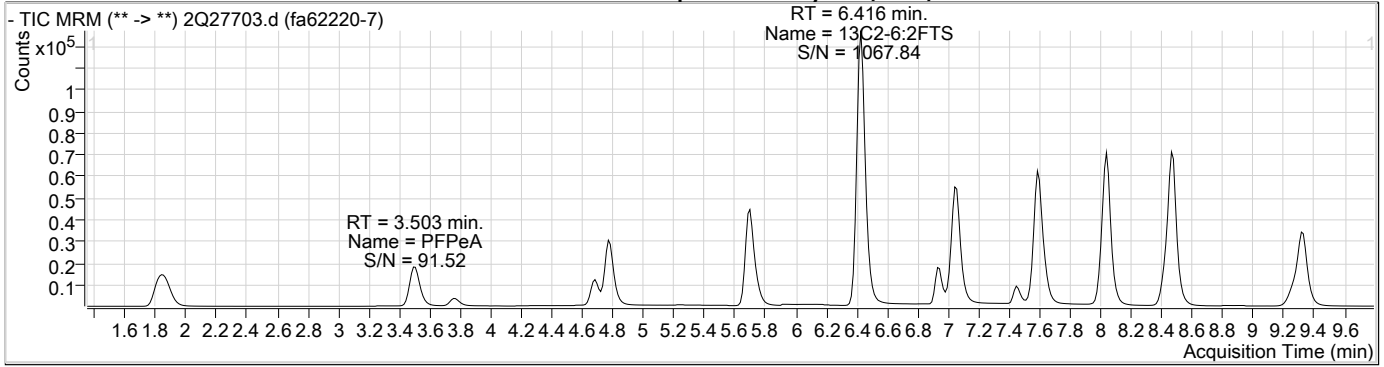
Target Compounds

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS       | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS       | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA      | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA         | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA      | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA         | 1.848 | 213.0 -> 169.0 | 453   | 0.46 µg/L   | 100    |
| PFBS         | 3.758 | 299.0 -> 80.0  | 1108  | 0.98 µg/L   | 90     |
| PFDA         | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA       | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS         | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA        | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS        | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA        | -     | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS        | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA         | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS         | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA         | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS         | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA        | 3.503 | 263.0 -> 219.0 | 1722  | 0.47 µg/L   | 100    |
| PFPeS        | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA       | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA      | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA       | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.17  
7

### Perfluorinated Compounds by LC/MS/MS

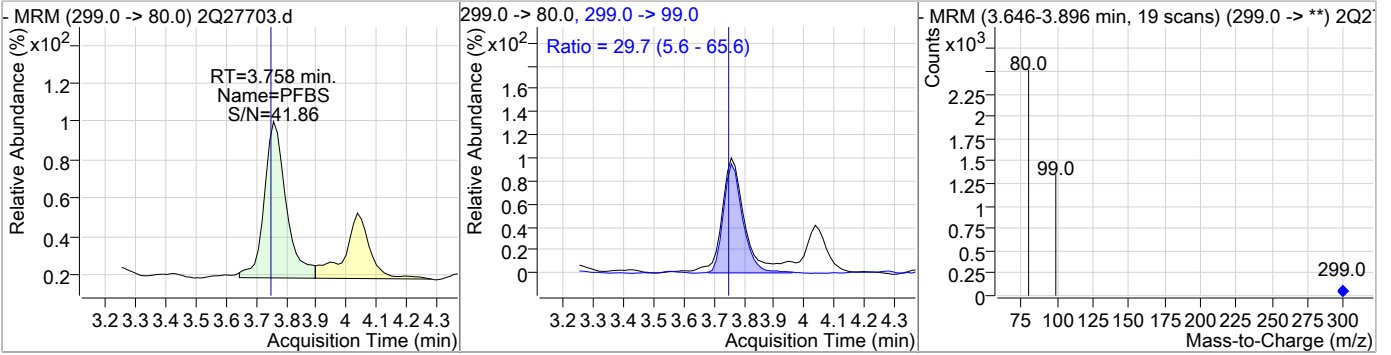


7.1.7

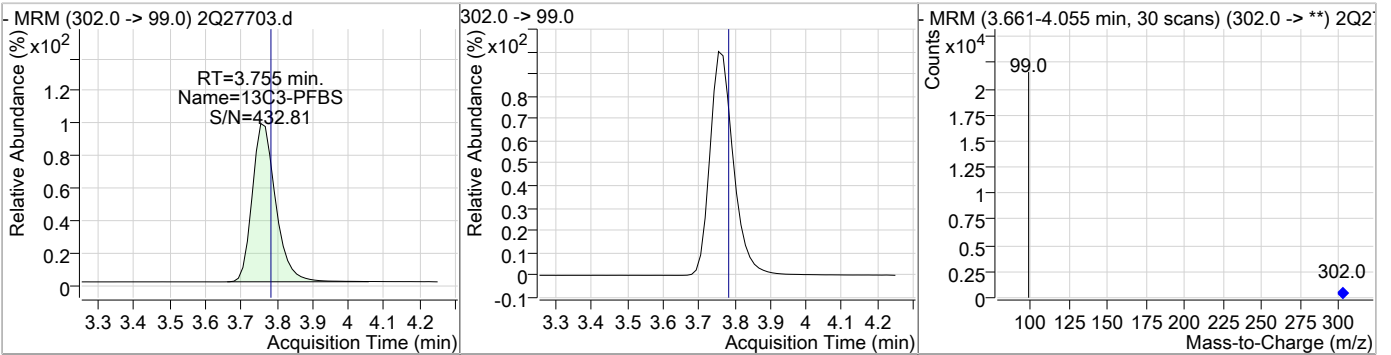


### Perfluorinated Compounds by LC/MS/MS

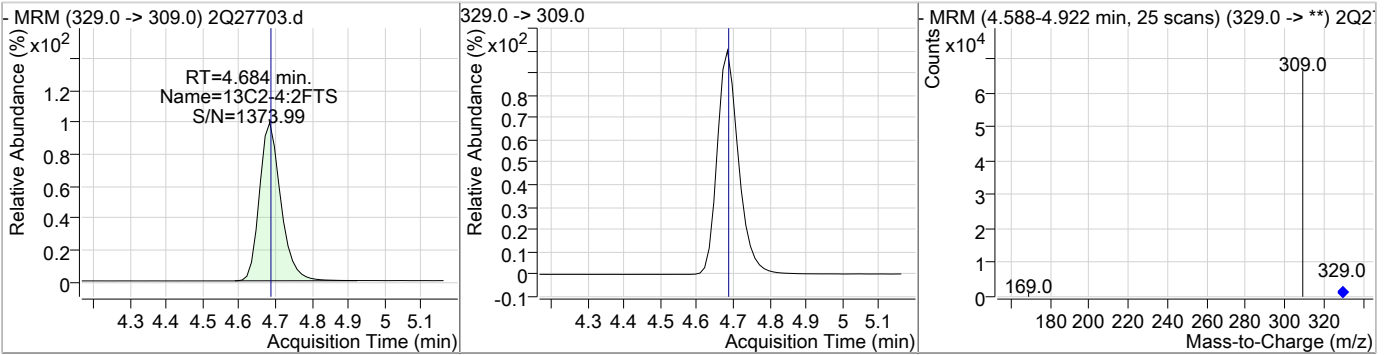
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFBS     | 0.98  | 3.76 | -0.01    | 1108  | 299.0 -> 99.0 | 29.7   | 5.6  | 65.6 |



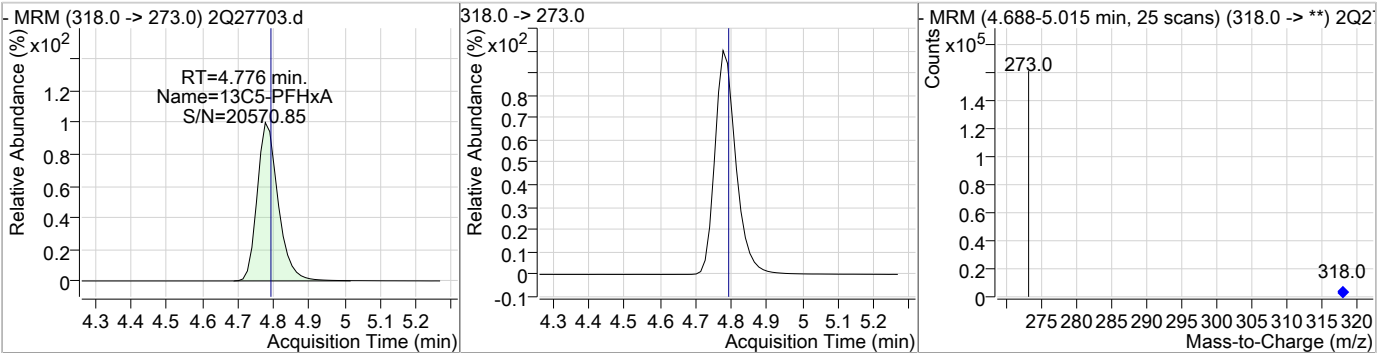
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFBS | 15.50 | 3.75 | -0.03    | 14134 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-4:2FTS | 16.11 | 4.68 | 0.00     | 47909 |      |        |      |      |

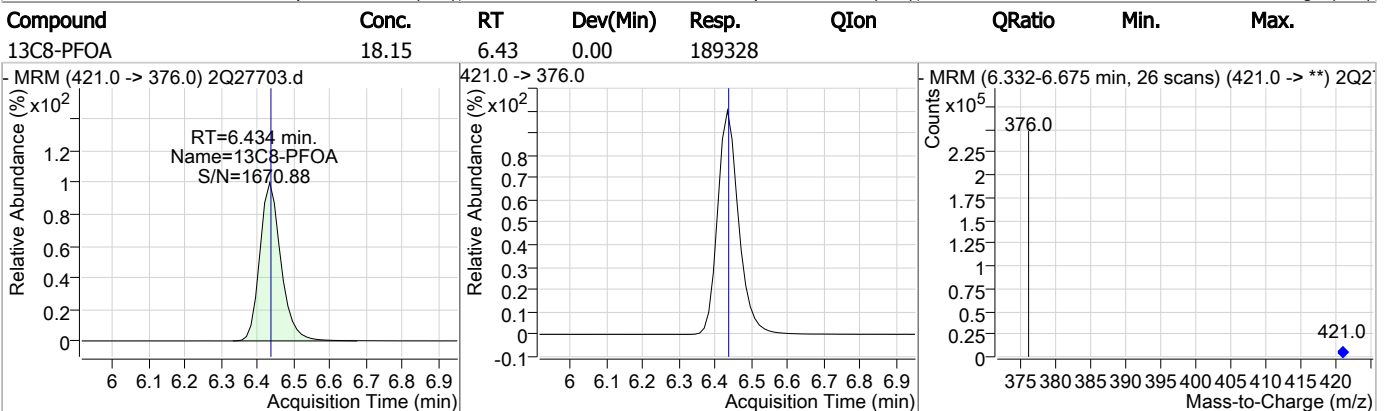
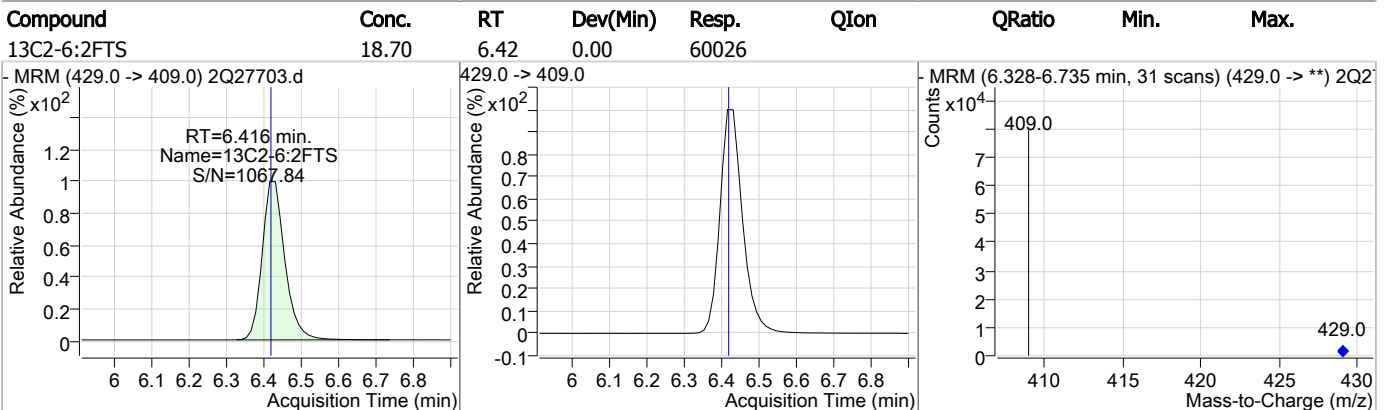
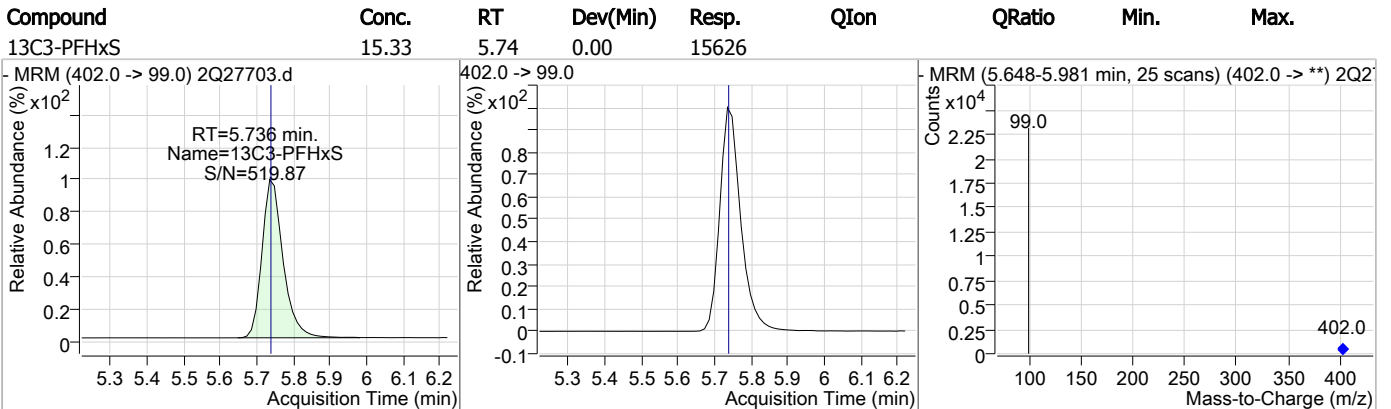
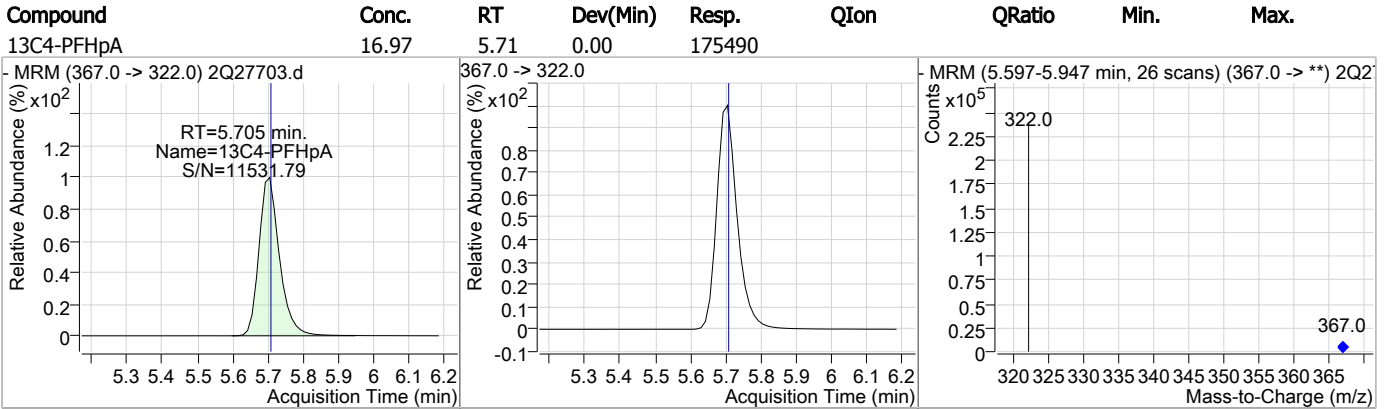


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 16.43 | 4.78 | -0.01    | 119408 |      |        |      |      |



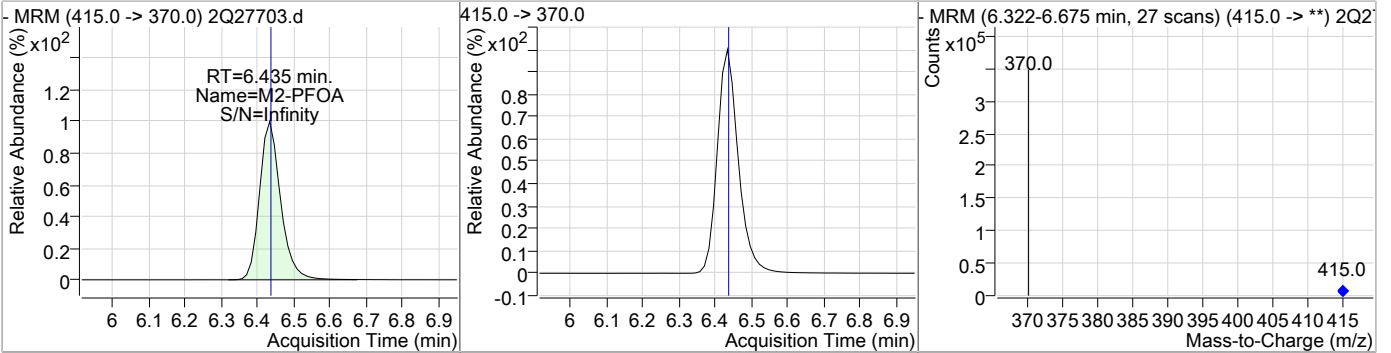
7.17  
7

### Perfluorinated Compounds by LC/MS/MS

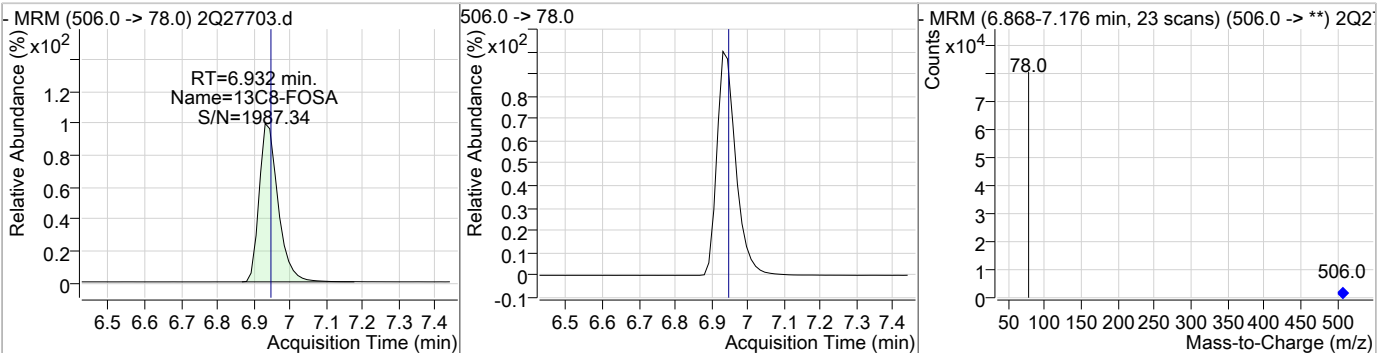


### Perfluorinated Compounds by LC/MS/MS

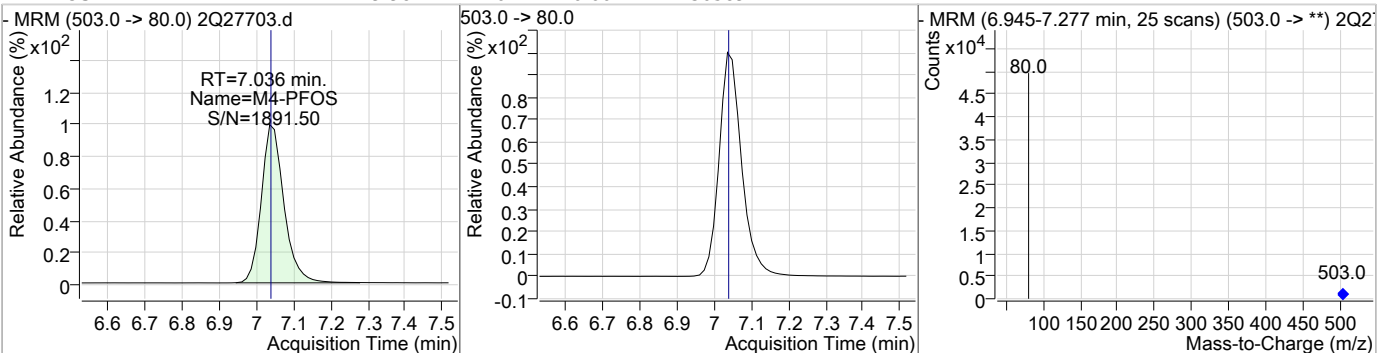
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



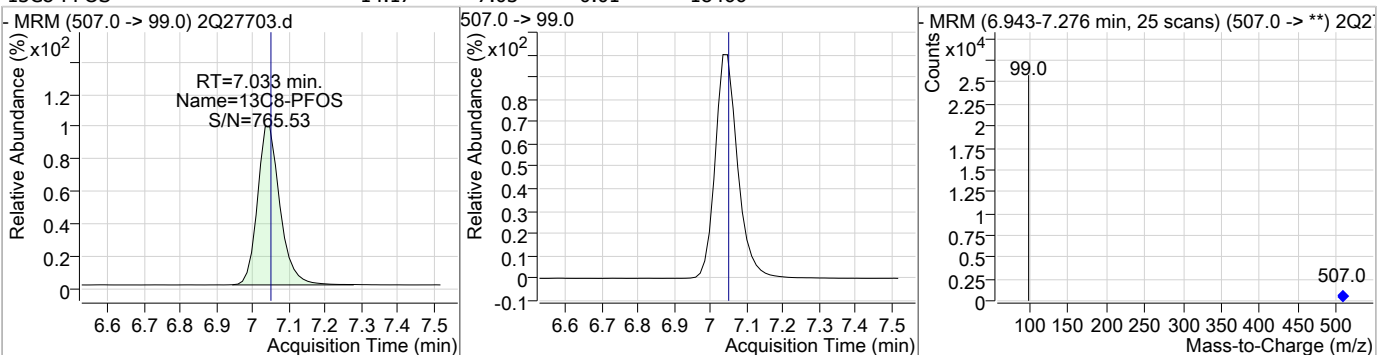
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

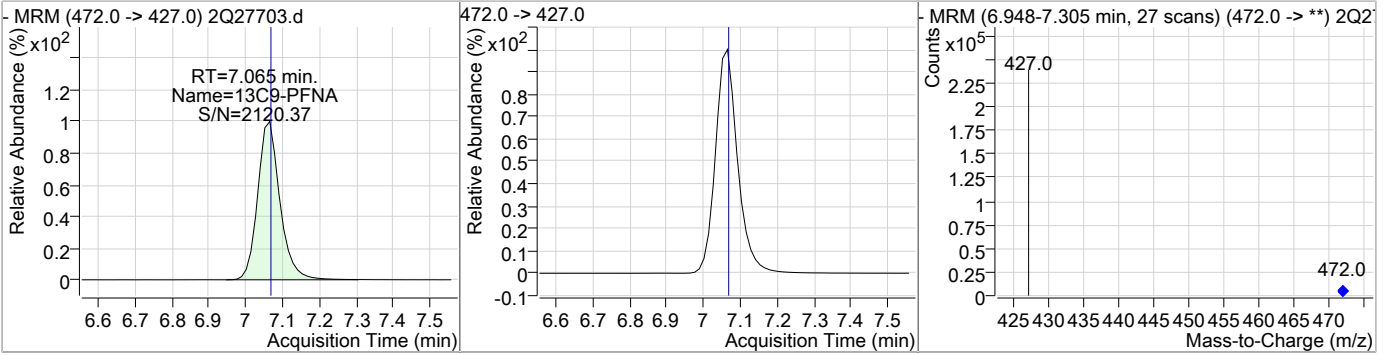


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

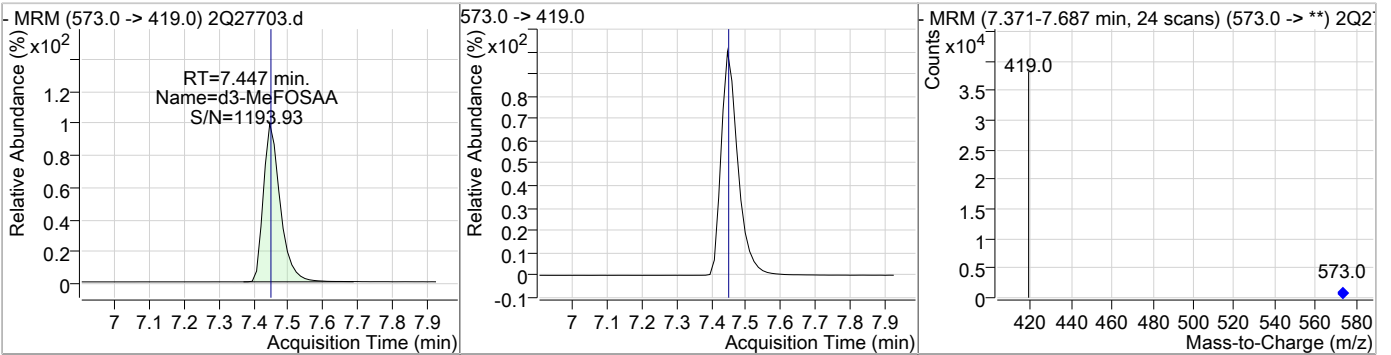


### Perfluorinated Compounds by LC/MS/MS

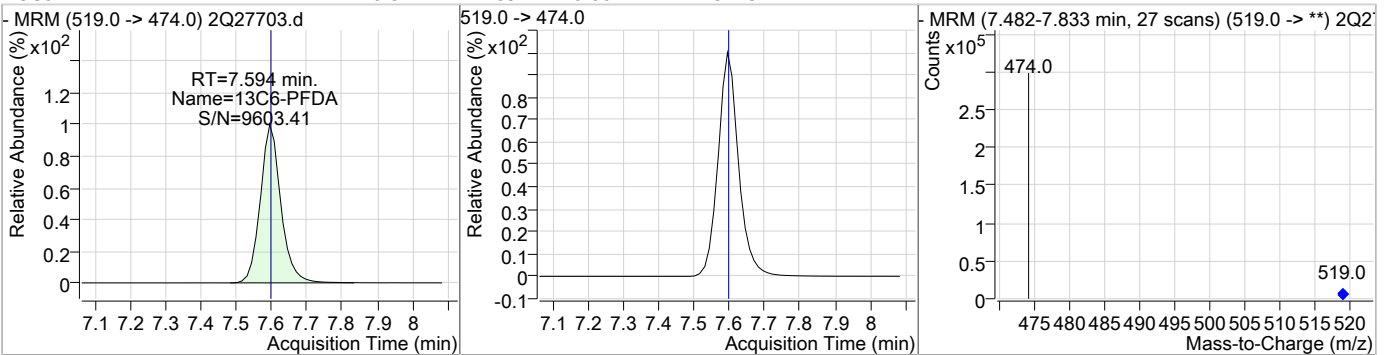
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



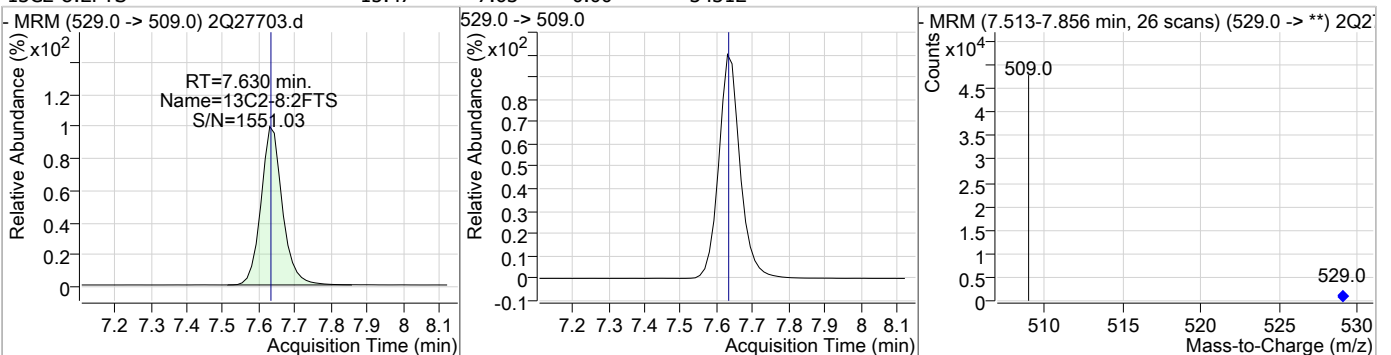
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

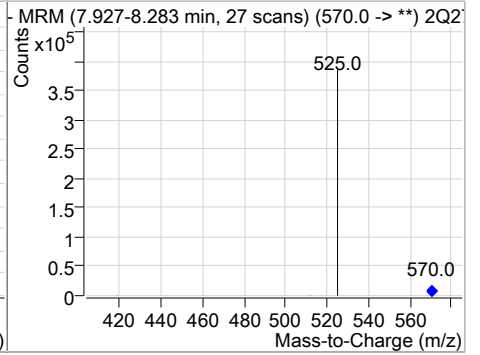
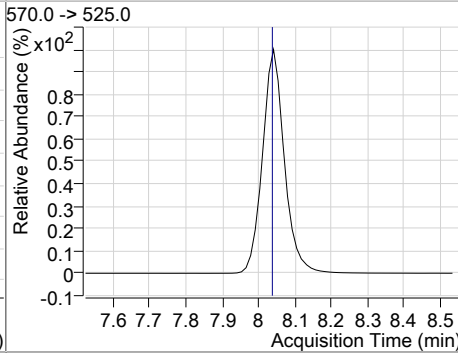
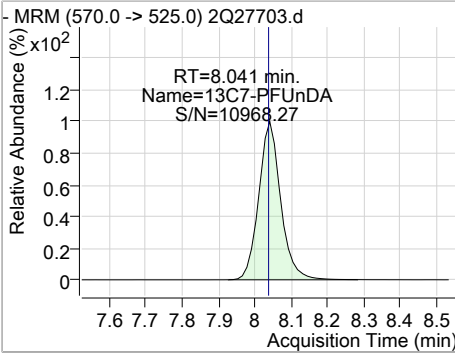


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

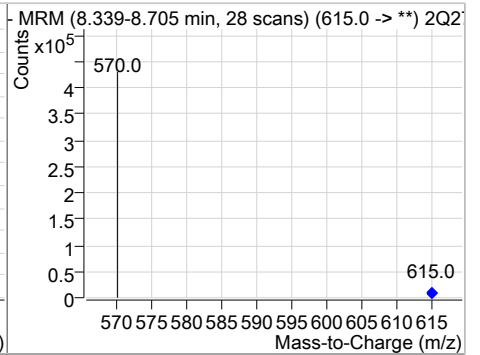
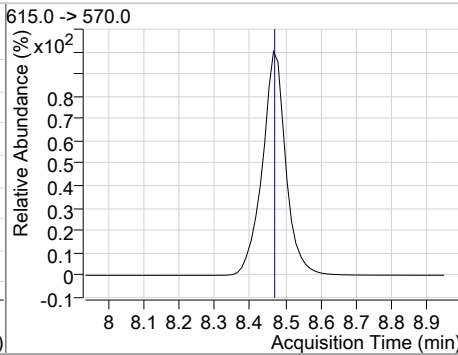
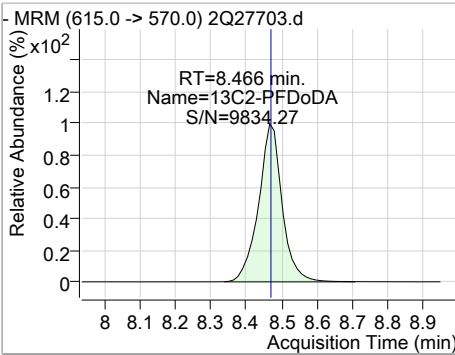


### Perfluorinated Compounds by LC/MS/MS

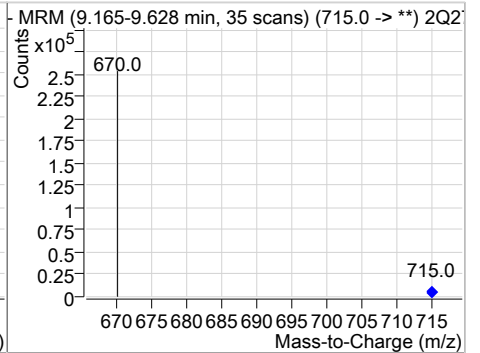
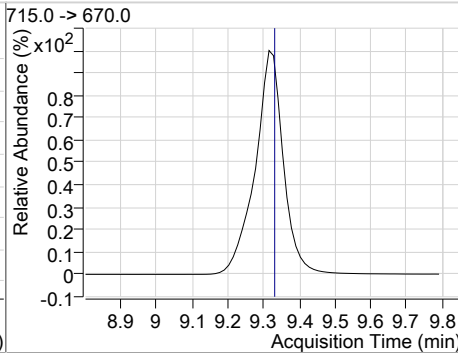
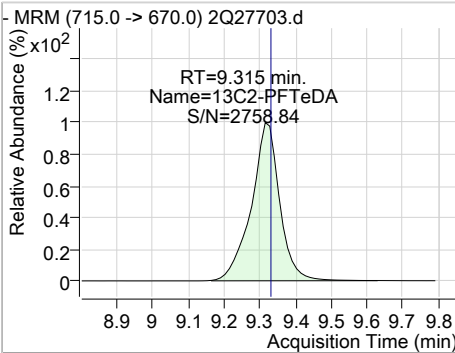
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 17.26 | 8.04 | 0.00     | 292151 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 17.27 | 8.47 | 0.00     | 324824 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 14.57 | 9.31 | -0.01    | 187007 |      |        |      |      |



Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Mike Eger  
 03/24/19 19:15

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1987.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 1:51:24 PM  
 Sample Name : fa62220-8  
 Vial : P3-B7  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74233,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT    | QIon                 | Resp.  | Conc.  | Units  | Dev(Min)         |
|------------------------------------|-------|----------------------|--------|--------|--------|------------------|
| <b>Internal Standards</b>          |       |                      |        |        |        |                  |
| M4-PFBA                            | 1.627 | 217.0 -> 172.0       | 209388 | 20.00  | µg/L   | -0.075           |
| M5-PFPeA                           | 3.486 | 268.0 -> 223.0       | 164686 | 20.00  | µg/L   | -0.075           |
| M5-PFHxA                           | 4.913 | 318.0 -> 273.0       | 228222 | 20.00  | µg/L   | -0.050           |
| M4-PFHpA                           | 5.879 | 367.0 -> 322.0       | 277186 | 20.00  | µg/L   | -0.013           |
| M8-PFOA                            | 6.609 | 421.0 -> 376.0       | 288229 | 20.00  | µg/L   | -0.013           |
| M9-PFNA                            | 7.201 | 472.0 -> 427.0       | 291162 | 20.00  | µg/L   | -0.013           |
| M6-PFDA                            | 7.678 | 519.0 -> 474.0       | 320173 | 20.00  | µg/L   | 0.000            |
| M7-PFUnDA                          | 8.039 | 570.0 -> 525.0       | 351475 | 20.00  | µg/L   | 0.000            |
| M2-PFDoDA                          | 8.340 | 615.0 -> 570.0       | 337330 | 20.00  | µg/L   | -0.013           |
| M2-PFTeDA                          | 8.886 | 715.0 -> 670.0       | 313076 | 20.00  | µg/L   | 0.000            |
| M8-FOSA                            | 7.311 | 506.0 -> 78.0        | 171728 | 20.00  | µg/L   | 0.000            |
| M3-PFBS                            | 3.817 | 302.0 -> 99.0        | 36174  | 20.00  | µg/L   | -0.063           |
| M3-PFHxS                           | 5.922 | 402.0 -> 99.0        | 38216  | 20.00  | µg/L   | -0.025           |
| M8-PFOS                            | 7.196 | 507.0 -> 99.0        | 66100  | 20.00  | µg/L   | 0.000            |
| M2-4:2FTS                          | 4.808 | 329.0 -> 309.0       | 78922  | 20.00  | µg/L   | -0.050           |
| M2-6:2FTS                          | 6.594 | 429.0 -> 409.0       | 85504  | 20.00  | µg/L   | 0.000            |
| M2-8:2FTS                          | 7.701 | 529.0 -> 509.0       | 51594  | 20.00  | µg/L   | 0.000            |
| M3-MeFOSAA                         | 7.735 | 573.0 -> 419.0       | 40940  | 20.00  | µg/L   | 0.000            |
| M3-HFPO-DA                         | 5.179 | 287.0 -> 169.0       | 0      | 100.00 | µg/L m | -0.075           |
| 13C2-PFOA                          | 6.610 | 415.0 -> 370.0       | 400221 | 20.00  | µg/L   | -0.013           |
| 13C4-PFOS                          | 7.198 | 503.0 -> 80.0        | 118438 | 20.00  | µg/L   | 0.000            |
| <b>System Monitoring Compounds</b> |       |                      |        |        |        |                  |
| 13C2-4:2FTS                        | 4.808 | 329.0 -> 309.0       | 78870  | 16.62  | µg/L   | -0.050           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 83.1% |
| 13C2-6:2FTS                        | 6.594 | 429.0 -> 409.0       | 85586  | 18.73  | µg/L   | 0.000            |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 93.6% |
| 13C2-8:2FTS                        | 7.701 | 529.0 -> 509.0       | 51598  | 18.46  | µg/L   | 0.000            |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 92.3% |
| 13C2-PFDoDA                        | 8.340 | 615.0 -> 570.0       | 337512 | 17.26  | µg/L   | -0.013           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 86.3% |
| 13C2-PFTeDA                        | 8.886 | 715.0 -> 670.0       | 313058 | 17.11  | µg/L   | 0.000            |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 85.6% |
| 13C3-PFBS                          | 3.817 | 302.0 -> 99.0        | 36490  | 14.47  | µg/L   | -0.063           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 72.3% |
| 13C3-PFHxS                         | 5.922 | 402.0 -> 99.0        | 38212  | 15.12  | µg/L   | -0.025           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 75.6% |
| 13C4-PFBA                          | 1.627 | 217.0 -> 172.0       | 197367 | 12.10  | µg/L   | -0.075           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 60.5% |
| 13C4-PFHpA                         | 5.879 | 367.0 -> 322.0       | 278304 | 16.67  | µg/L   | -0.013           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 83.4% |
| 13C5-PFHxA                         | 4.913 | 318.0 -> 273.0       | 227609 | 15.47  | µg/L   | -0.050           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 77.3% |
| 13C5-PFPeA                         | 3.486 | 268.0 -> 223.0       | 162759 | 14.70  | µg/L   | -0.075           |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        |        |        | Recovery = 73.5% |
| 13C6-PFDA                          | 7.678 | 519.0 -> 474.0       | 320254 | 19.23  | µg/L   | 0.000            |

7.18  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.1%  |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 351539 | 18.96 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 94.8%  |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 171662 | 16.31 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.6%  |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 288436 | 18.23 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 91.2%  |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 66236  | 17.19 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.0%  |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 291326 | 19.49 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.5%  |          |
| d3-MeFOSAA            | 7.735                | 573.0 -> 419.0 | 41155  | 17.34 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.7%  |          |
| 13C3-HFPO-DA          | 5.179                | 287.0 -> 169.0 | 0      | 0.00 µg/L         | m -0.075 |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 400221 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.198                | 503.0 -> 80.0  | 118438 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

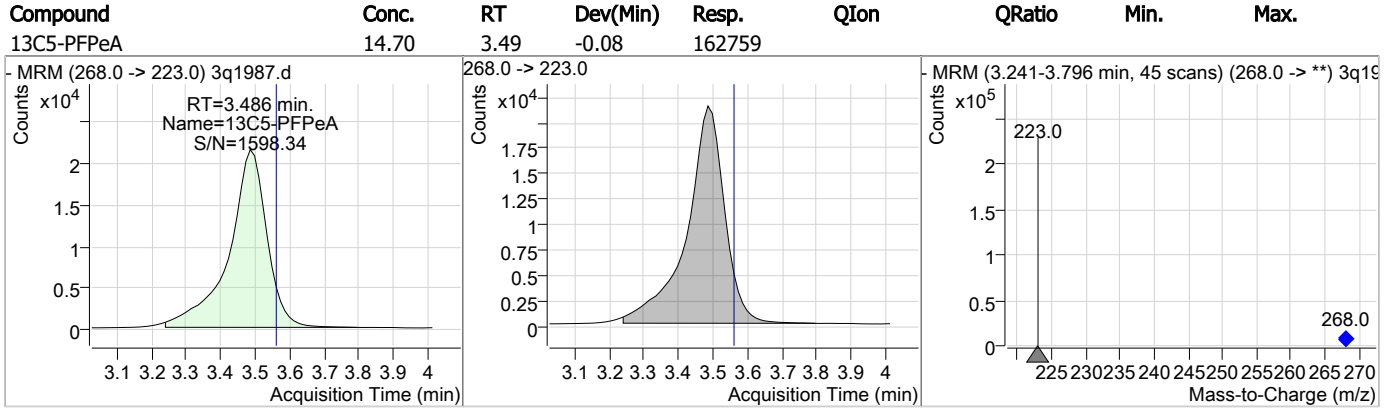
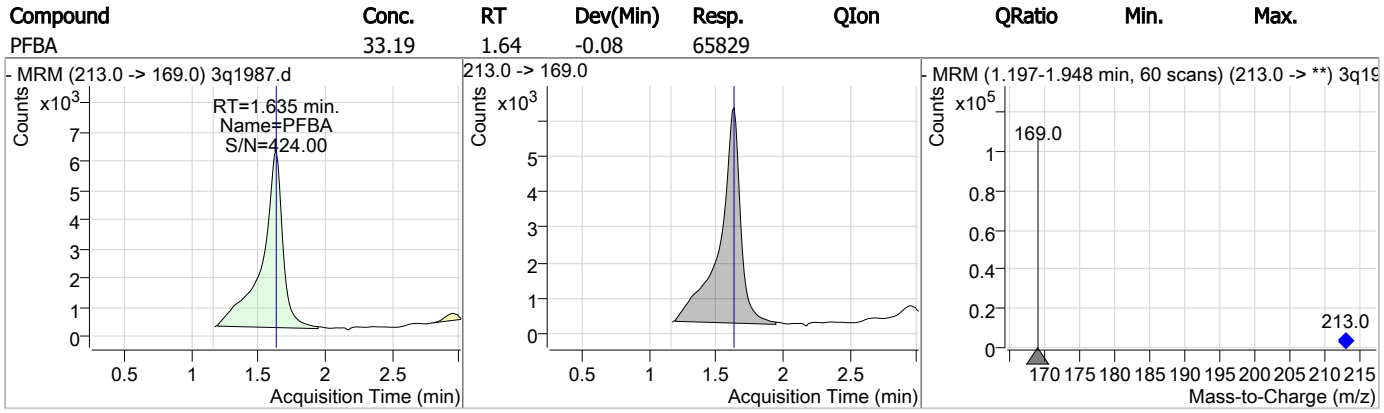
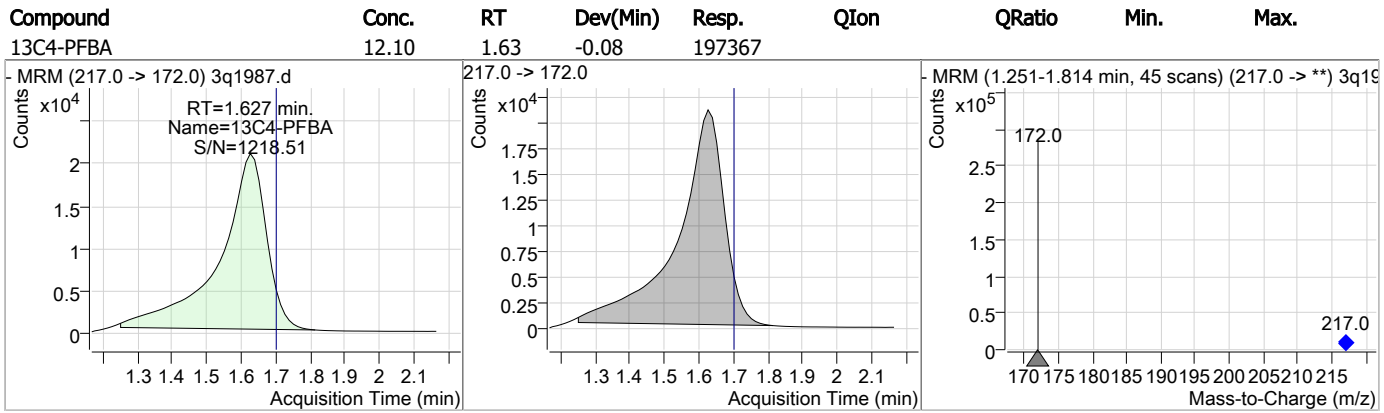
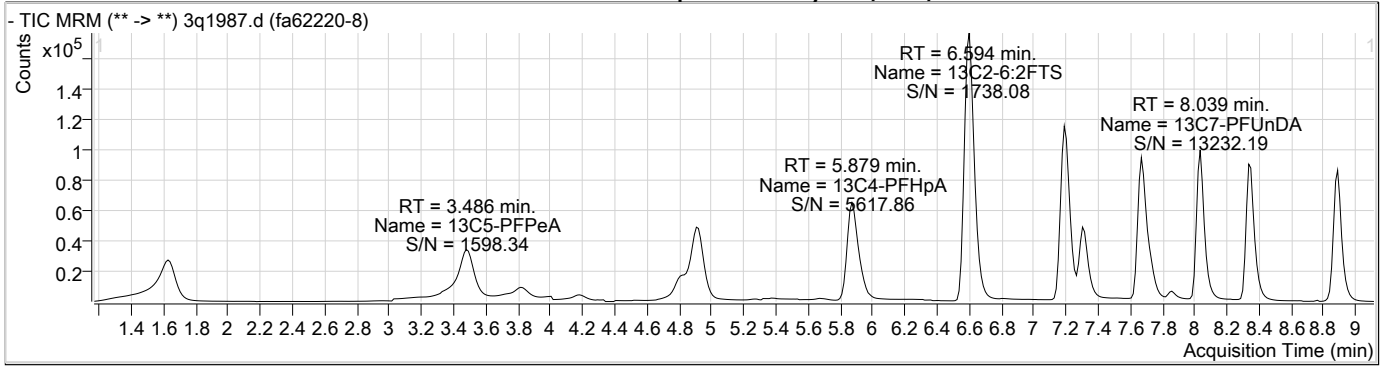
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | Dev(Min) | QValue |
|------------------|-------|----------------|-------|-------------|----------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |          |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |          |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |          |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |          |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |          |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |          |        |
| PFBA             | 1.635 | 213.0 -> 169.0 | 65829 | 33.19 µg/L  |          | 100    |
| PFBS             | 3.820 | 299.0 -> 80.0  | 9391  | 3.73 µg/L   |          | 85     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |          |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |          |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |          |        |
| PFHpA            | 5.881 | 363.0 -> 319.0 | 16305 | 1.33 µg/L   | m        | 98     |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |          |        |
| PFHxA            | 4.914 | 313.0 -> 269.0 | 40216 | 9.90 µg/L   |          | 100    |
| PFHxS            | -     | 399.0 -> 80.0  | -     | N.D.        |          |        |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |          |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |          |        |
| PFOA             | 6.598 | 413.0 -> 369.0 | 1324  | 0.17 µg/L   | m        | 71     |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |          |        |
| PFPeA            | 3.489 | 263.0 -> 219.0 | 83486 | 10.01 µg/L  |          | 100    |
| PFPeS            | 5.069 | 349.0 -> 80.0  | 906   | 0.58 µg/L   |          | 91     |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |          |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |          |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |          |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |          |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |          |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |          |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |          |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

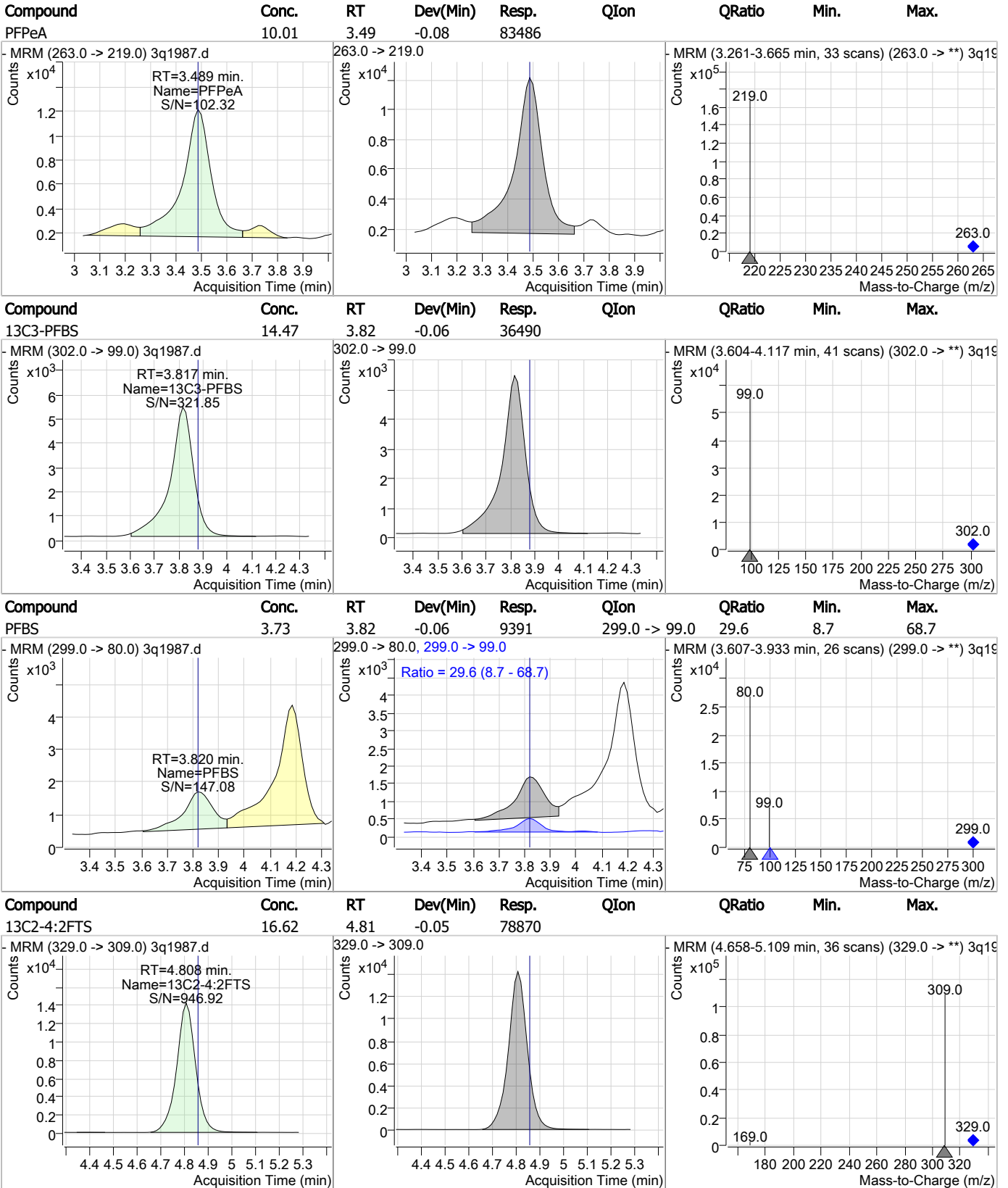
7.18  
7

### Perfluorinated Compounds by LC/MS/MS



7.1.8

### Perfluorinated Compounds by LC/MS/MS

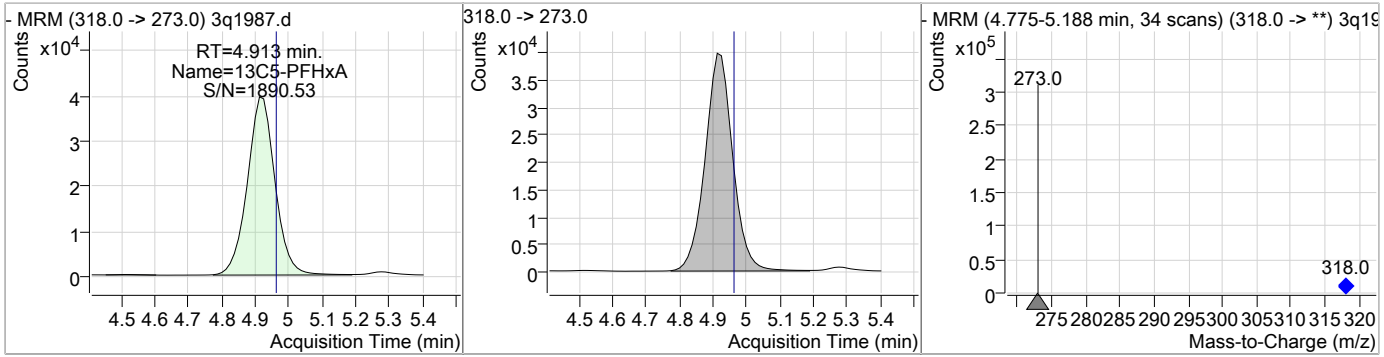


7.1.8

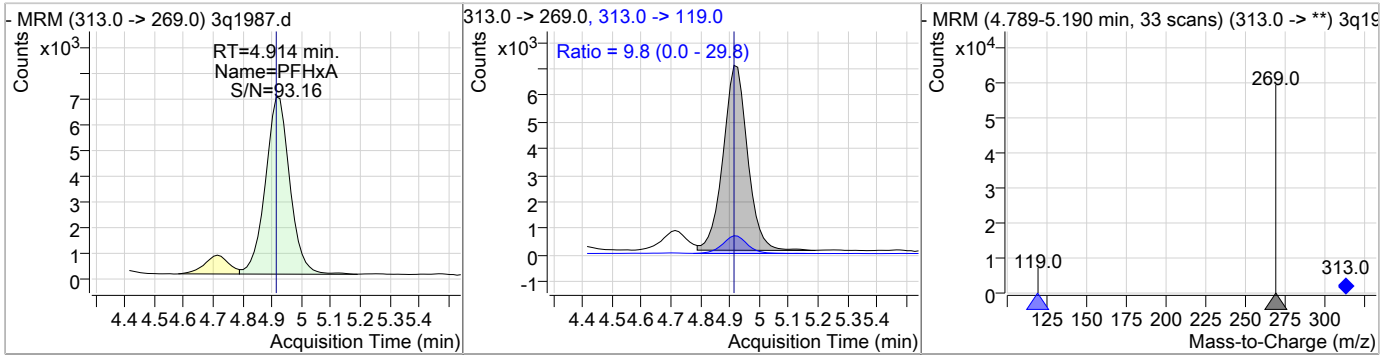
7

### Perfluorinated Compounds by LC/MS/MS

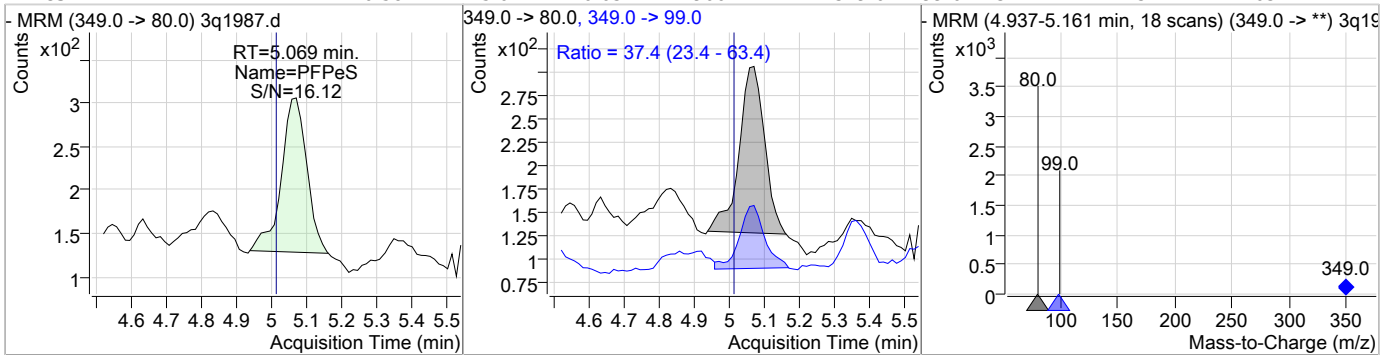
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



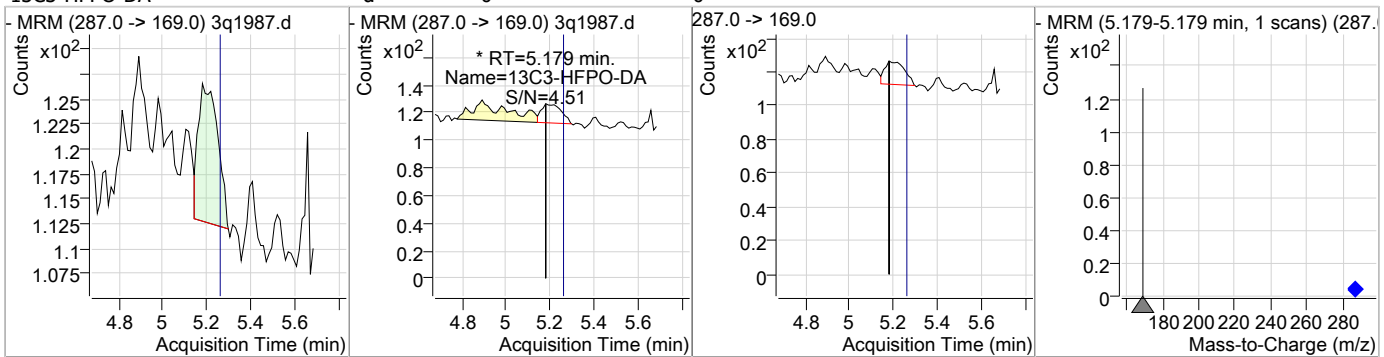
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



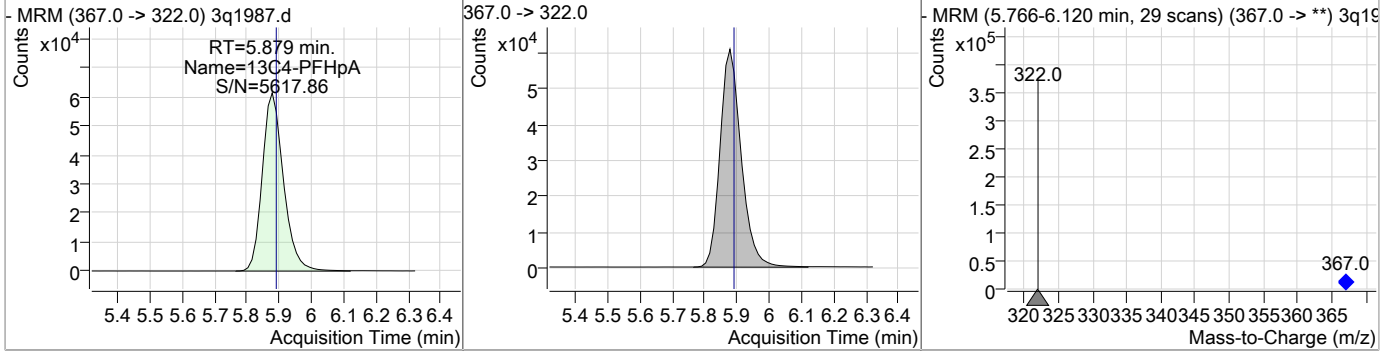
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



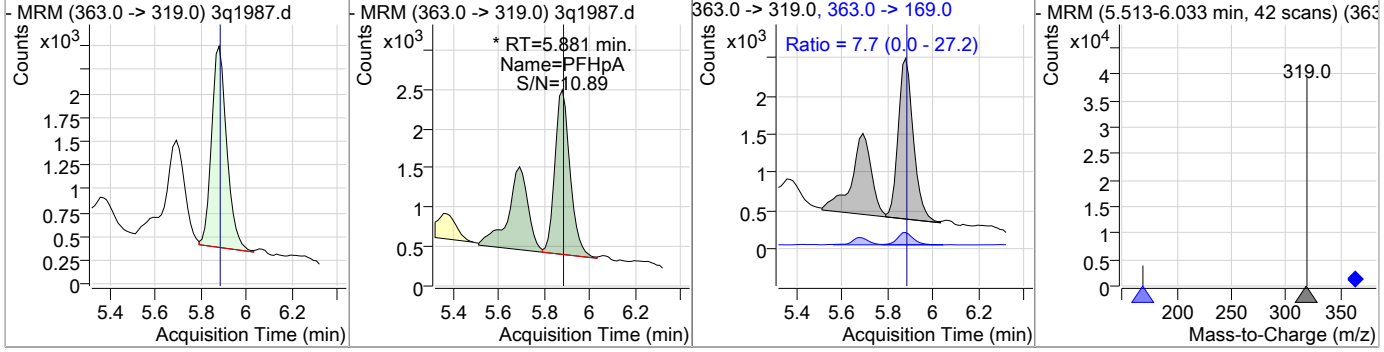
7.18  
7

### Perfluorinated Compounds by LC/MS/MS

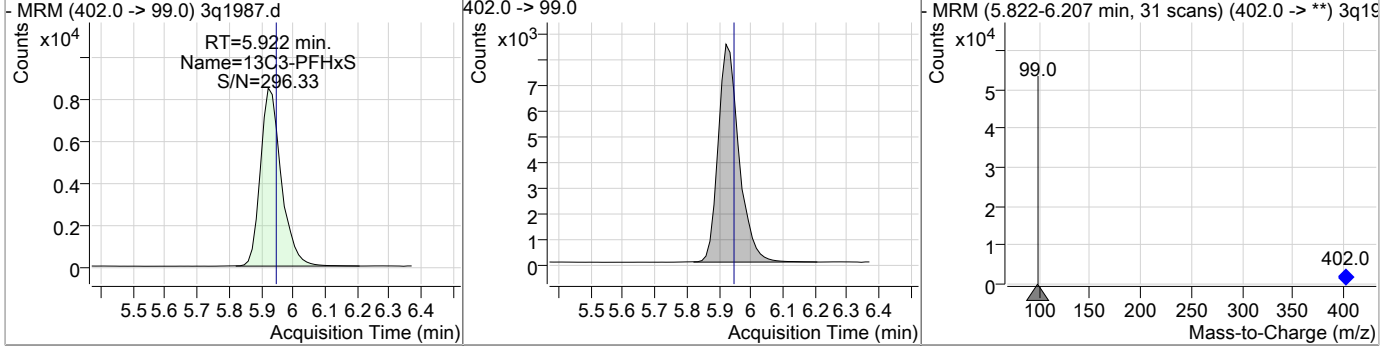
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



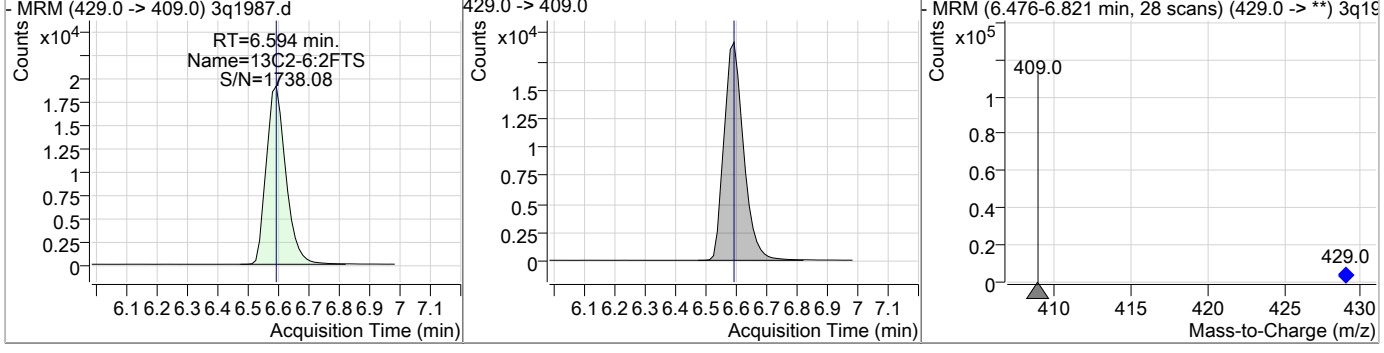
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

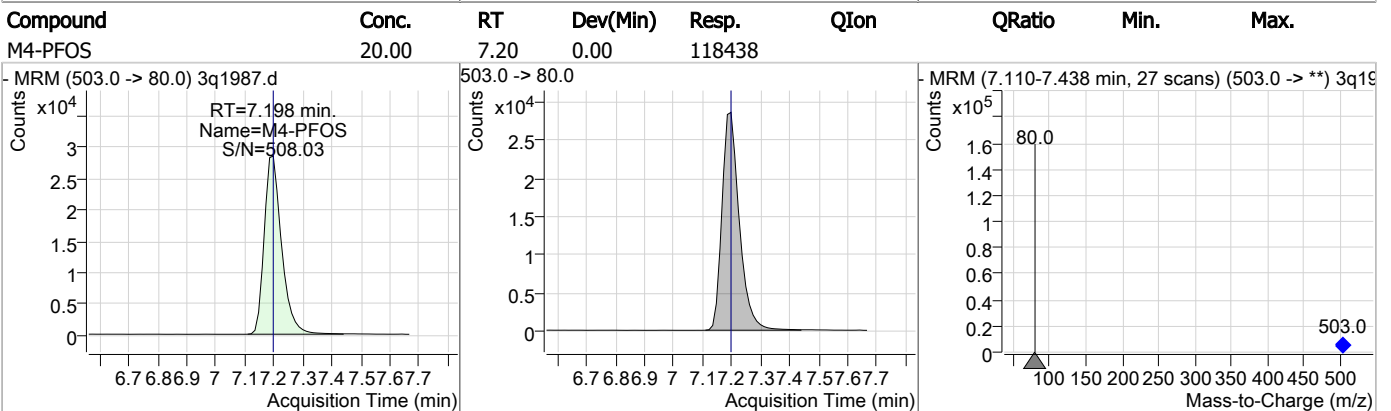
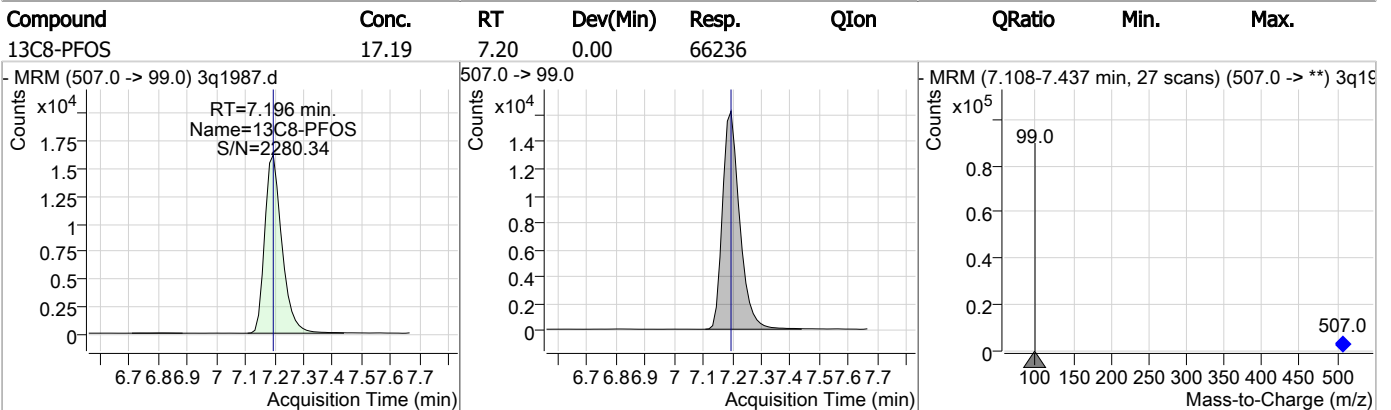
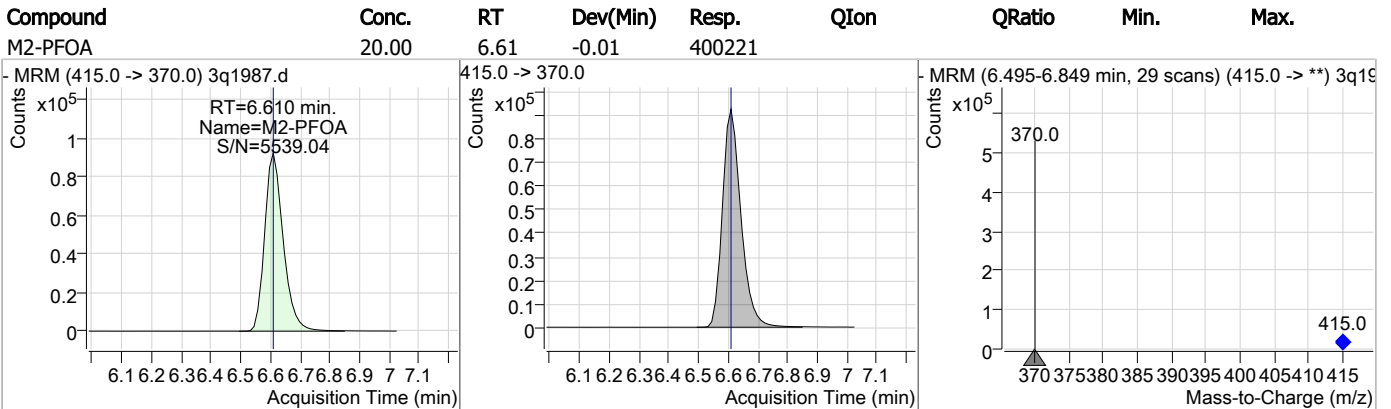
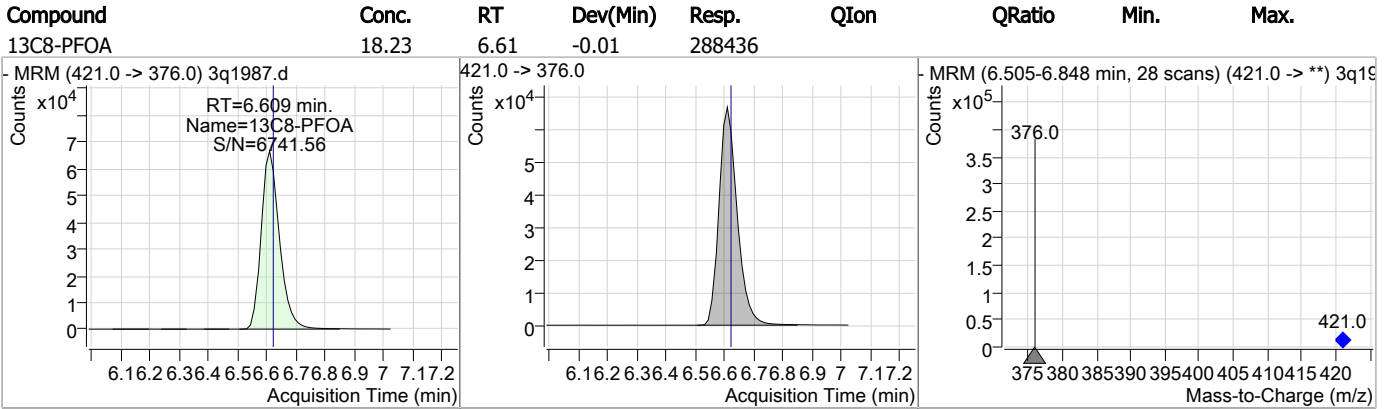


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



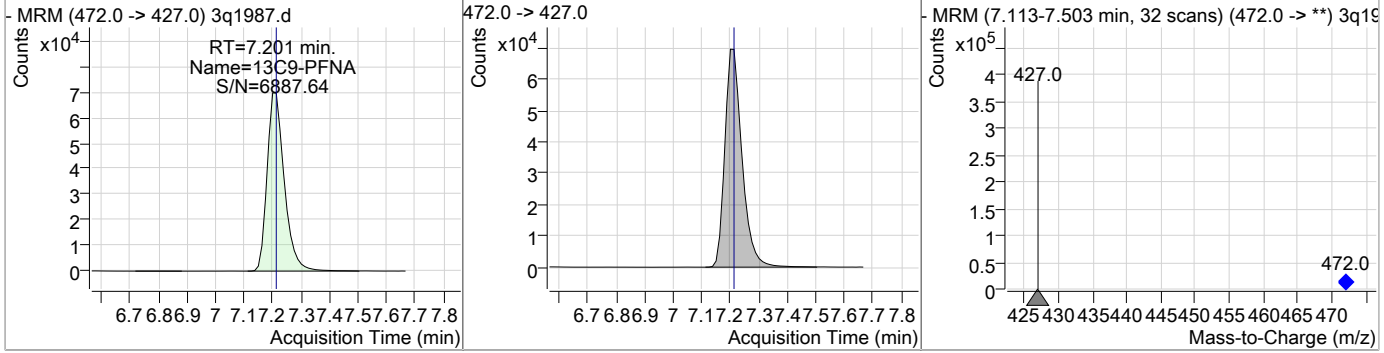
7.1.8  
7

### Perfluorinated Compounds by LC/MS/MS

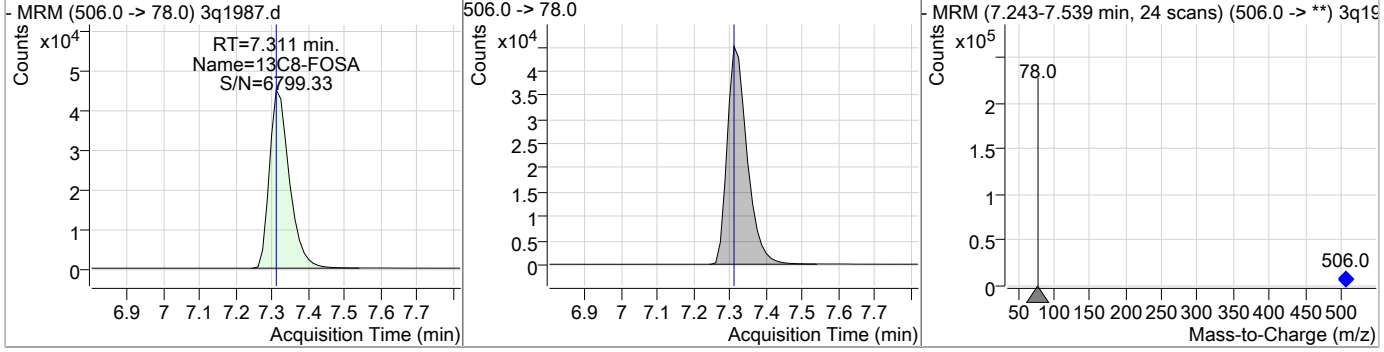


### Perfluorinated Compounds by LC/MS/MS

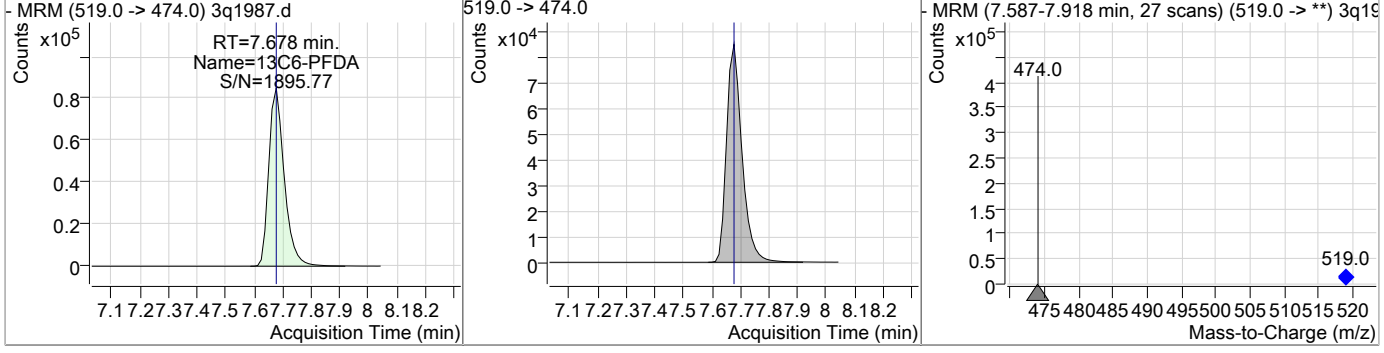
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



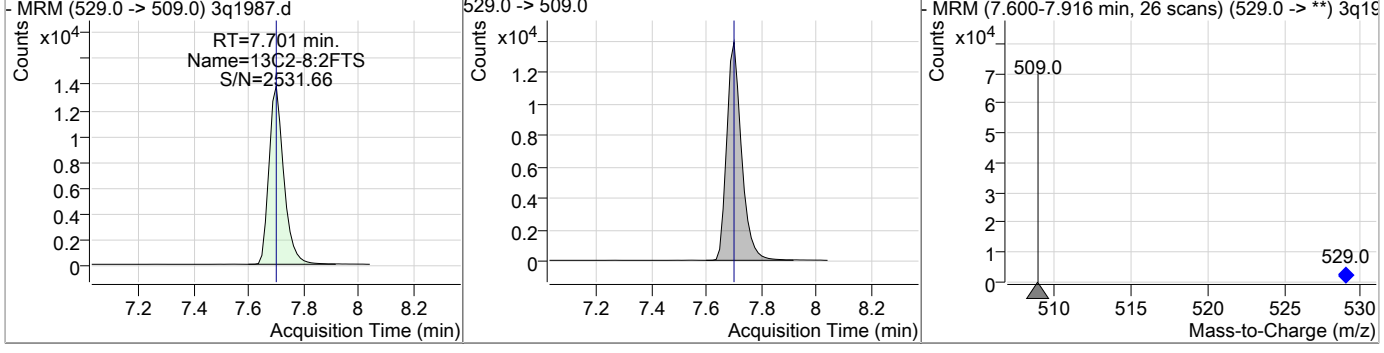
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



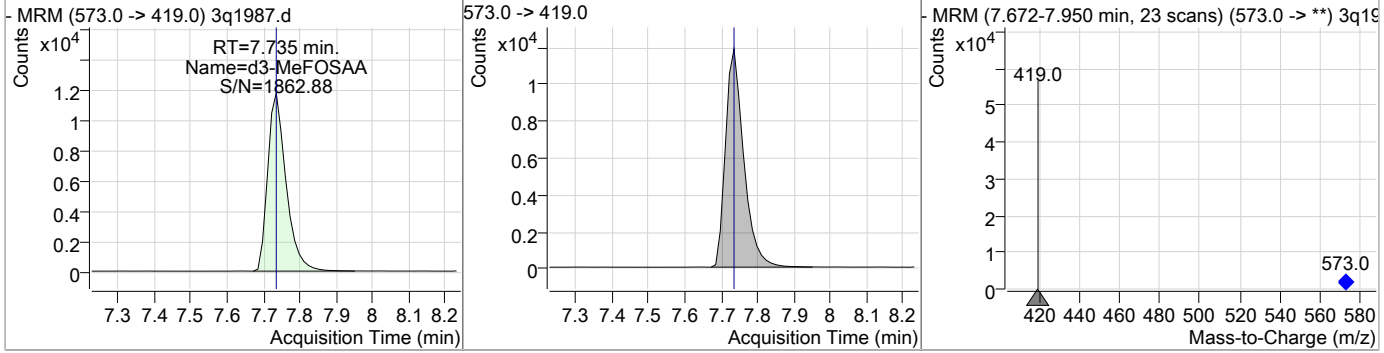
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



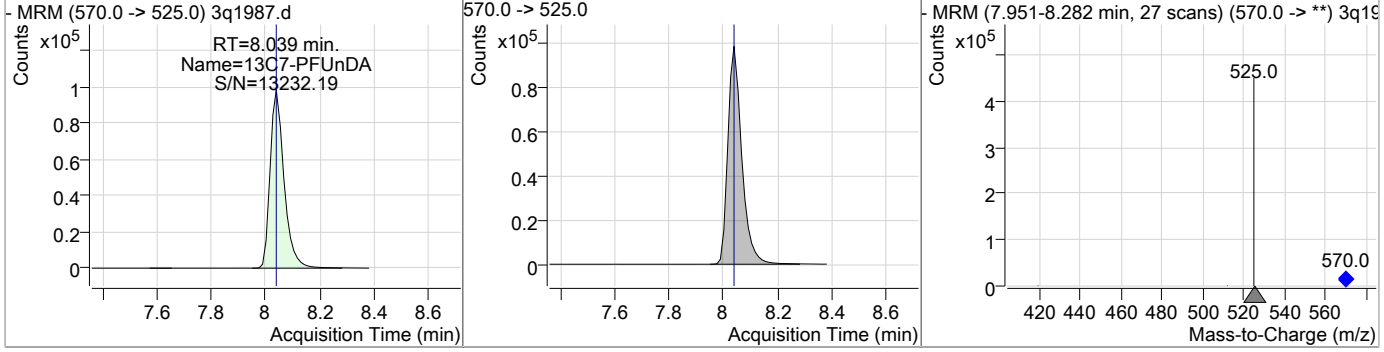
7.1.8

### Perfluorinated Compounds by LC/MS/MS

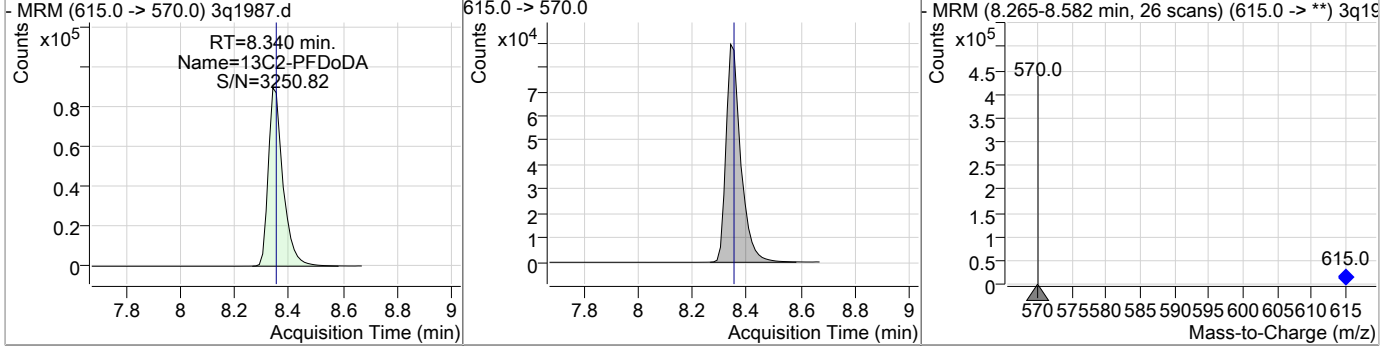
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



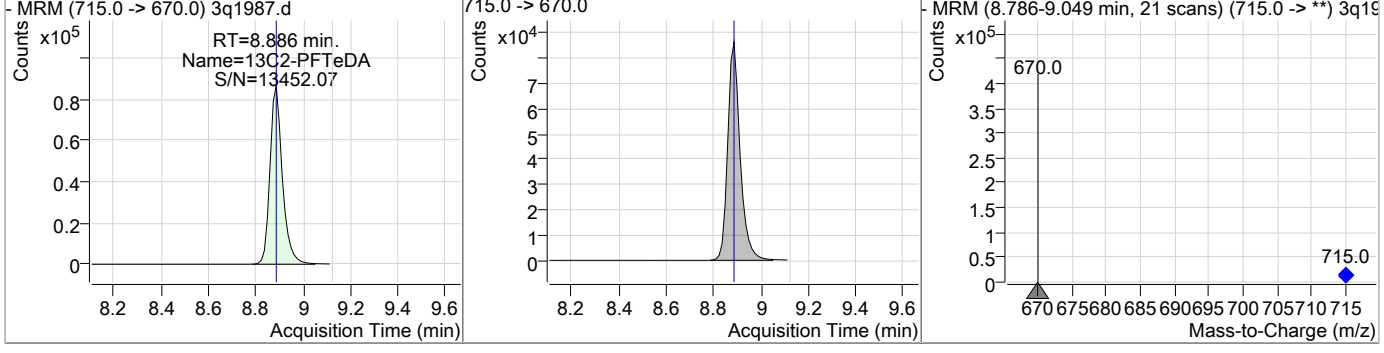
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



7.1.8



# Manual Integration Approval Summary

**Sample Number:** FA62220-8      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1987.D      **Analyst approved:** 03/22/19 11:48 Nancy Saunders  
**Injection Time:** 03/21/19 13:51      **Supervisor approved:** 03/24/19 19:15 Mike Eger

| Parameter               | CAS      | Sig# | R.T.<br>(min.) | Reason     |
|-------------------------|----------|------|----------------|------------|
| Perfluoroheptanoic acid | 375-85-9 |      | 5.88           | Split peak |
| Perfluorooctanoic acid  | 335-67-1 |      | 6.60           | Split peak |

7.1.8.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27705.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 7:25:41 PM  
 Sample Name : fa62220-9  
 Vial : Vial 25  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT    | QIon                 | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|-------|----------------------|--------|------------------|----------|
| <b>Internal Standards</b>          |       |                      |        |                  |          |
| 13C2-PFOA                          | 6.435 | 415.0 -> 370.0       | 258399 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036 | 503.0 -> 80.0        | 35871  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.865 | 217.0 -> 172.0       | 101558 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524 | 268.0 -> 223.0       | 84908  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789 | 318.0 -> 273.0       | 121429 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705 | 367.0 -> 322.0       | 174120 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434 | 421.0 -> 376.0       | 189080 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065 | 472.0 -> 427.0       | 175127 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594 | 519.0 -> 474.0       | 200396 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041 | 570.0 -> 525.0       | 247666 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.466 | 615.0 -> 570.0       | 282103 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.315 | 715.0 -> 670.0       | 159055 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944 | 506.0 -> 78.0        | 61570  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.780 | 302.0 -> 99.0        | 14355  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748 | 402.0 -> 99.0        | 15078  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045 | 507.0 -> 99.0        | 16327  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696 | 329.0 -> 309.0       | 46414  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431 | 429.0 -> 409.0       | 59847  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630 | 529.0 -> 509.0       | 30020  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447 | 573.0 -> 419.0       | 23987  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -     | 287.0 -> 169.0       | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |       |                      |        |                  |          |
| 13C2-4:2FTS                        | 4.696 | 329.0 -> 309.0       | 46445  | 15.62 µg/L       | 0.013    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 78.1% |          |
| 13C2-6:2FTS                        | 6.431 | 429.0 -> 409.0       | 59837  | 18.64 µg/L       | 0.015    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 93.2% |          |
| 13C2-8:2FTS                        | 7.630 | 529.0 -> 509.0       | 30096  | 13.57 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 67.9% |          |
| 13C2-PFDoDA                        | 8.466 | 615.0 -> 570.0       | 281849 | 14.99 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 74.9% |          |
| 13C2-PFTeDA                        | 9.315 | 715.0 -> 670.0       | 158436 | 12.34 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 61.7% |          |
| 13C3-PFBS                          | 3.780 | 302.0 -> 99.0        | 14313  | 15.70 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 78.5% |          |
| 13C3-PFHxS                         | 5.748 | 402.0 -> 99.0        | 15075  | 14.79 µg/L       | 0.013    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 73.9% |          |
| 13C4-PFBA                          | 1.865 | 217.0 -> 172.0       | 101289 | 16.89 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 84.5% |          |
| 13C4-PFHpA                         | 5.705 | 367.0 -> 322.0       | 174065 | 16.83 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 84.1% |          |
| 13C5-PFHxA                         | 4.789 | 318.0 -> 273.0       | 121351 | 16.70 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 83.5% |          |
| 13C5-PFPeA                         | 3.524 | 268.0 -> 223.0       | 84828  | 16.69 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 83.4% |          |
| 13C6-PFDA                          | 7.594 | 519.0 -> 474.0       | 200325 | 14.68 µg/L       | 0.000    |

7.19  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.4%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 247510 | 14.63 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.1%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 61628  | 15.20 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 76.0%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 189043 | 18.12 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.6%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 16330  | 12.53 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.6%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 175104 | 16.54 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.7%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 23967  | 12.50 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.5%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 258493 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 35891  | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

Target Compounds

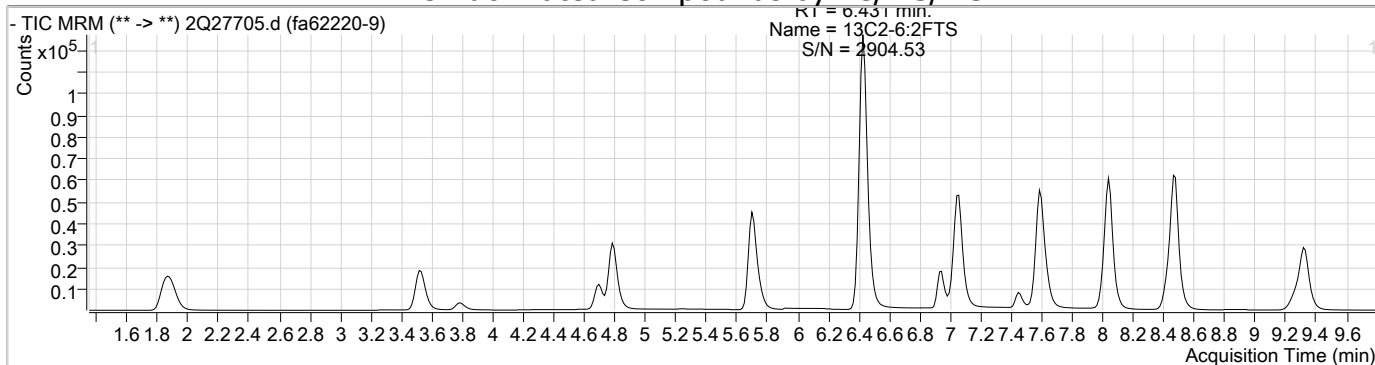
| Target Compounds | RT | QIon           | Resp. | Conc. Units | QValue |
|------------------|----|----------------|-------|-------------|--------|
| 4:2FTS           | -  | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -  | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -  | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -  | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -  | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -  | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -  | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -  | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -  | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -  | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -  | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -  | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -  | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -  | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -  | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -  | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -  | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -  | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -  | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | -  | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS            | -  | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -  | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -  | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -  | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -  | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -  | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -  | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -  | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

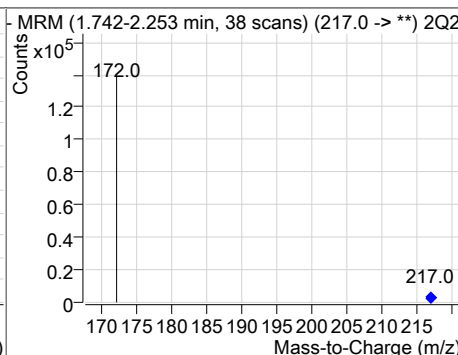
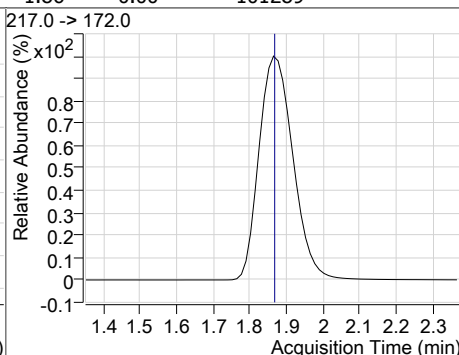
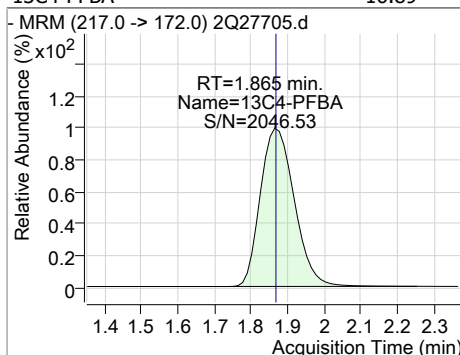
7.1.9

7

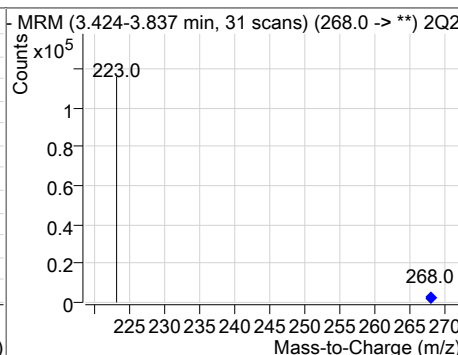
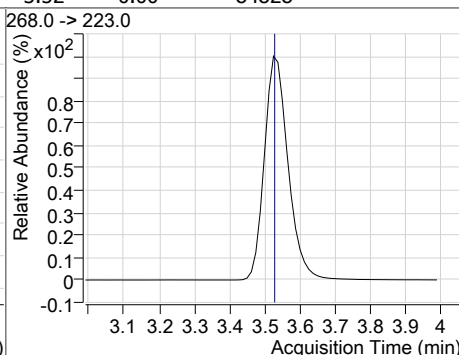
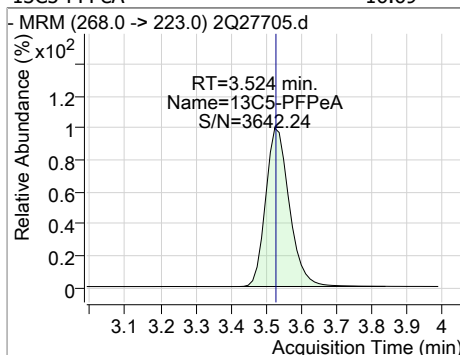
### Perfluorinated Compounds by LC/MS/MS



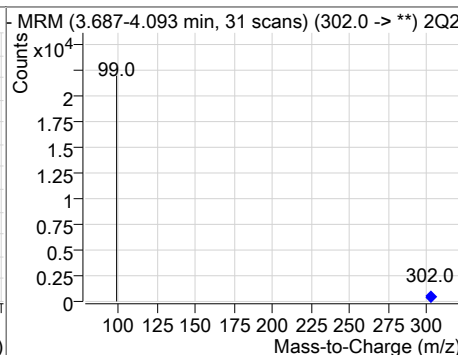
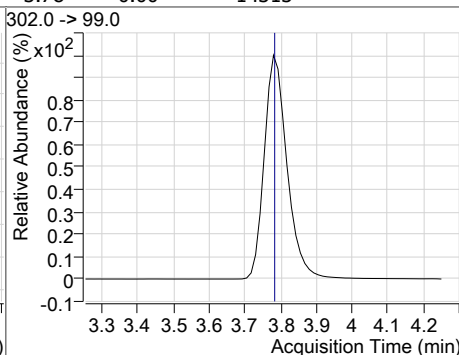
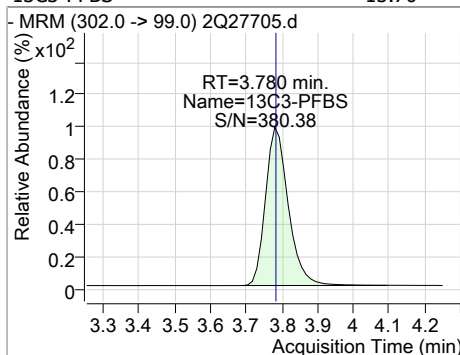
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 16.89 | 1.86 | 0.00     | 101289 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C5-PFPeA | 16.69 | 3.52 | 0.00     | 84828 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFBS | 15.70 | 3.78 | 0.00     | 14313 |      |        |      |      |

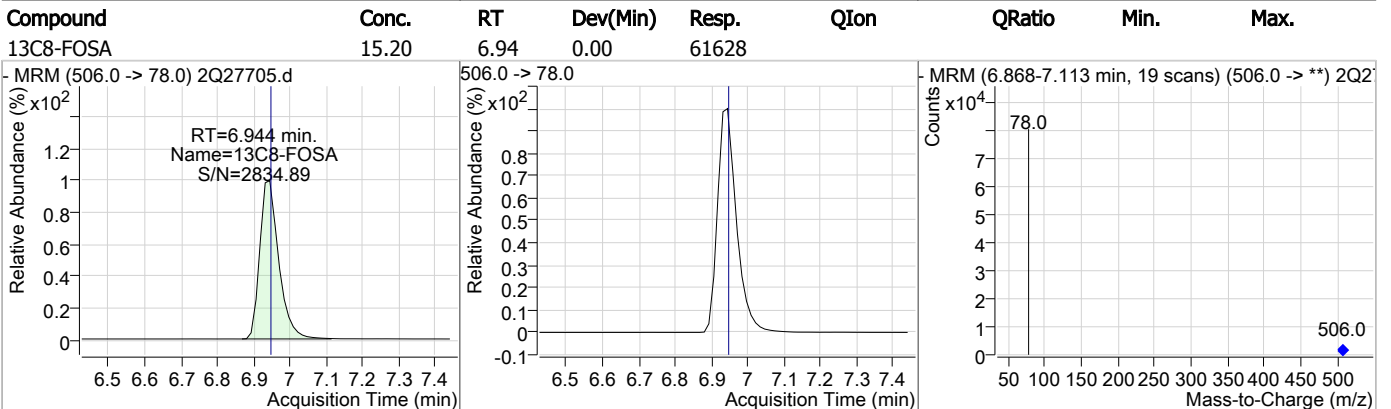
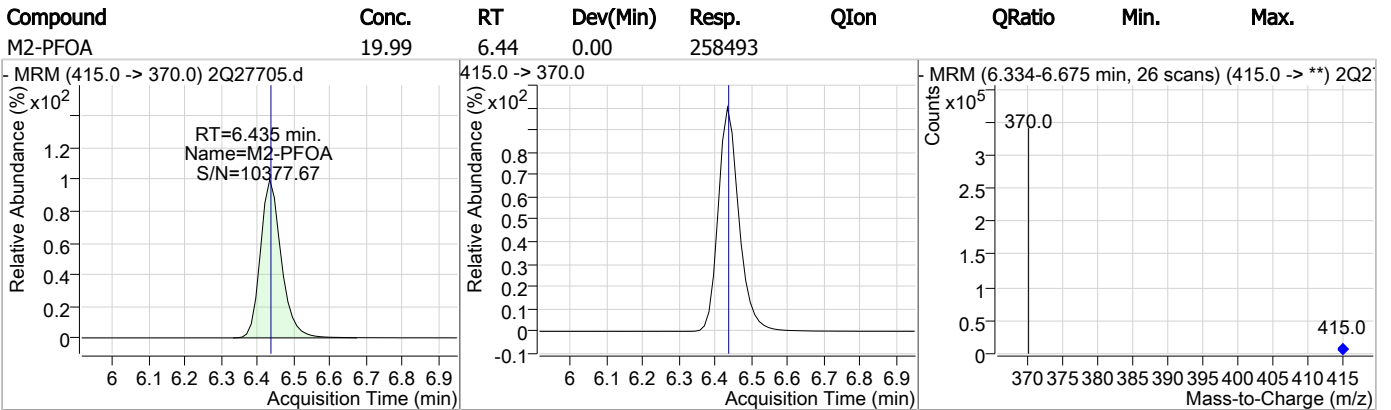
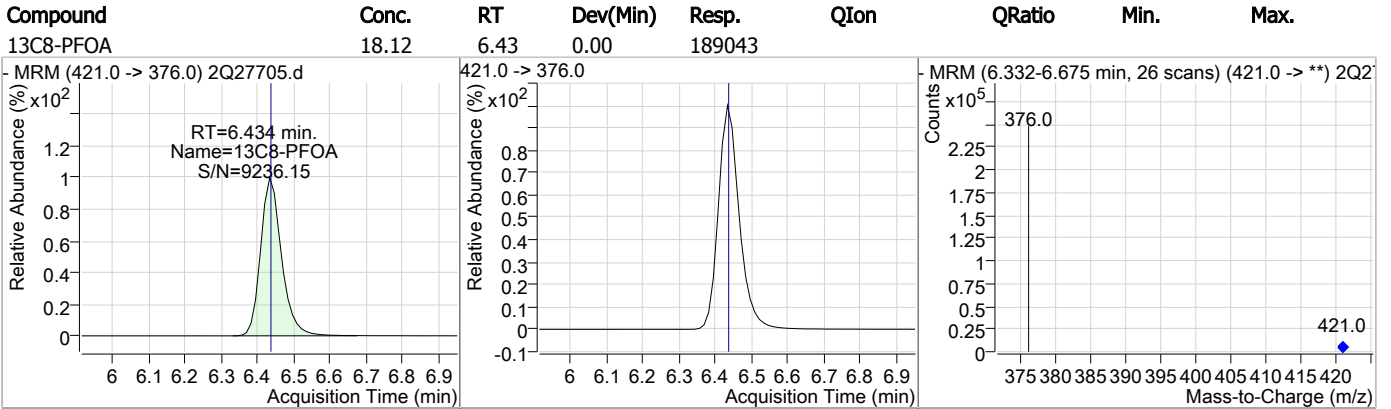
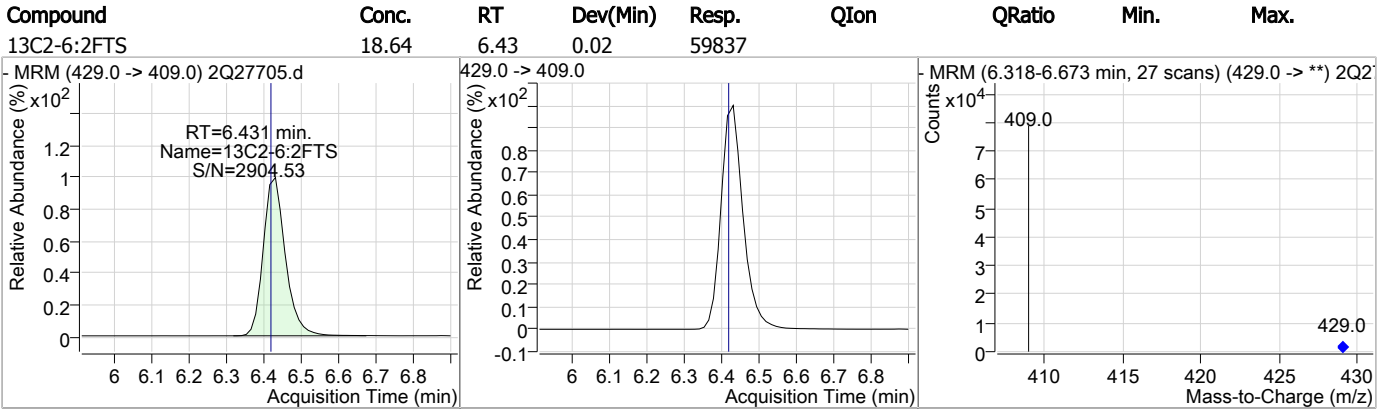


7.1.9  
7

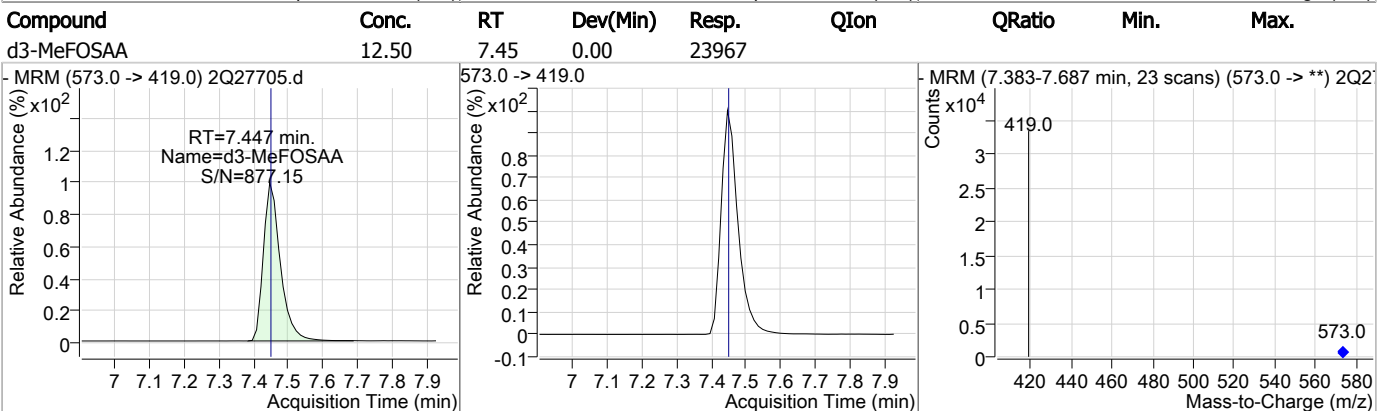
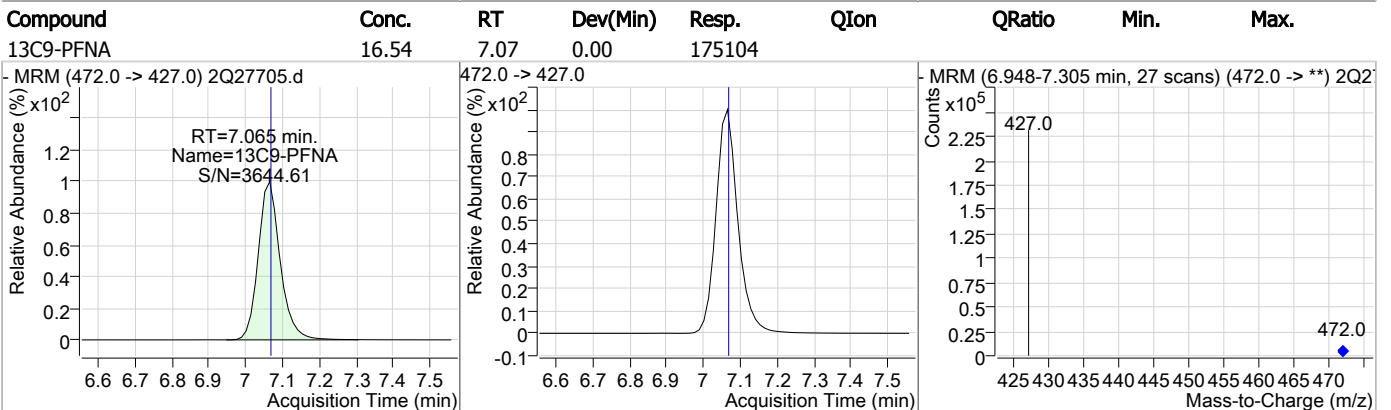
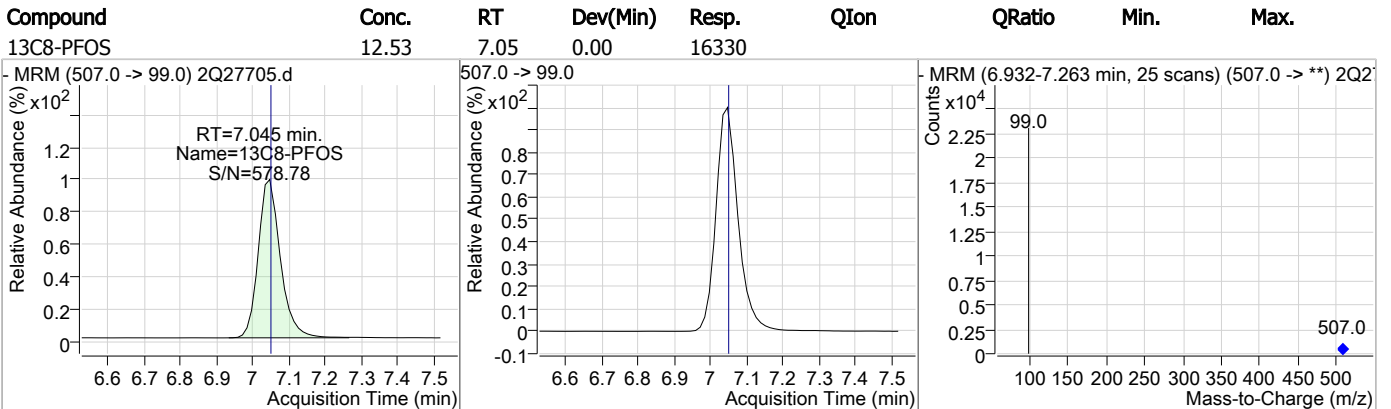
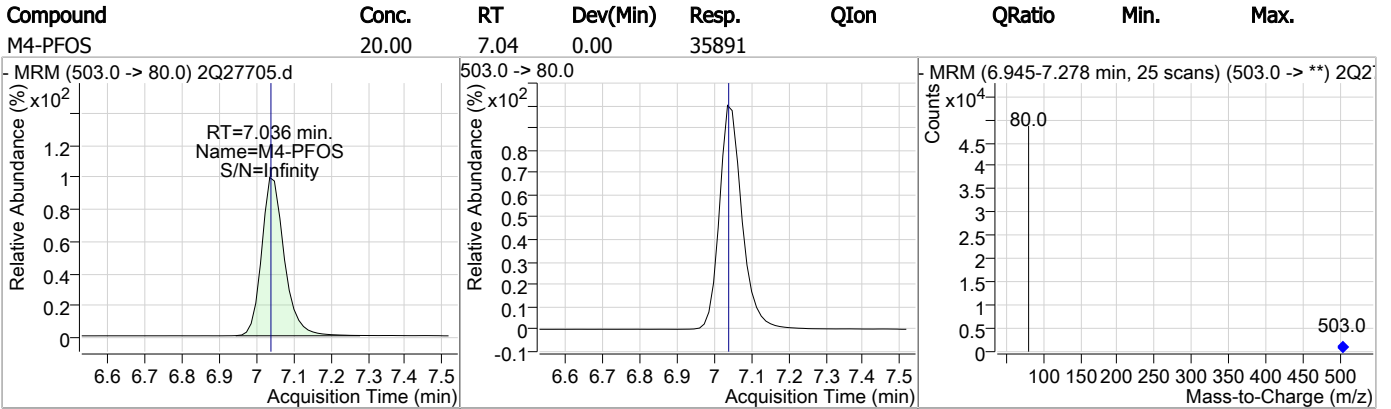
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-4:2FTS | 15.62 | 4.70 | 0.01     | 46445  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C5-PFHxA  | 16.70 | 4.79 | 0.00     | 121351 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C4-PFHpA  | 16.83 | 5.71 | 0.00     | 174065 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C3-PFHxS  | 14.79 | 5.75 | 0.01     | 15075  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

### Perfluorinated Compounds by LC/MS/MS

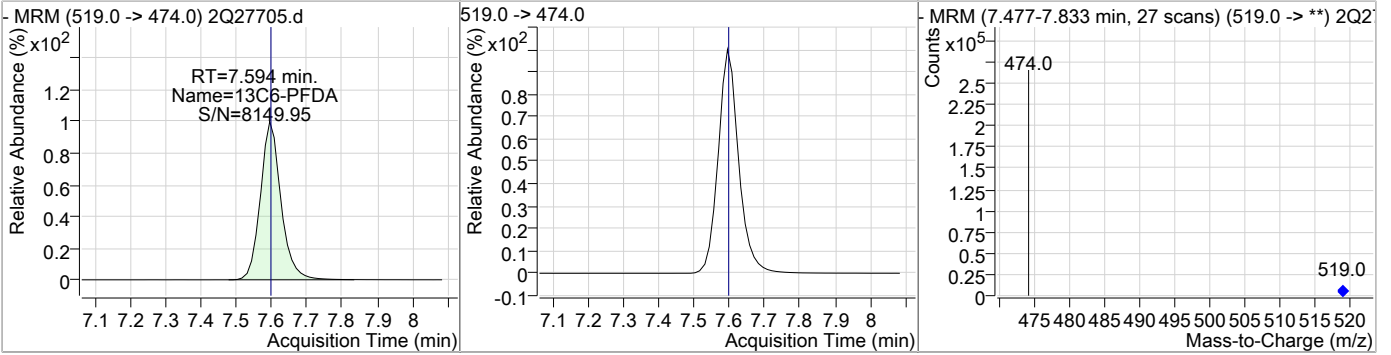


### Perfluorinated Compounds by LC/MS/MS

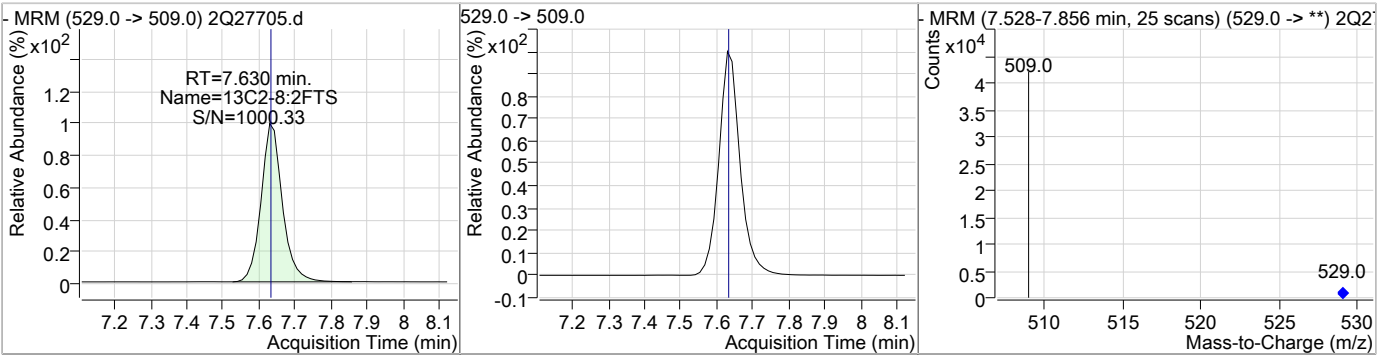


### Perfluorinated Compounds by LC/MS/MS

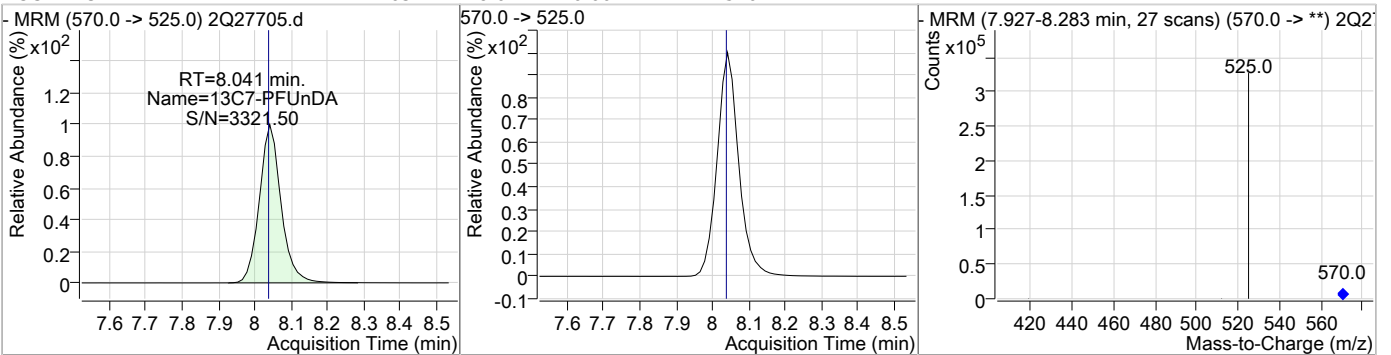
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



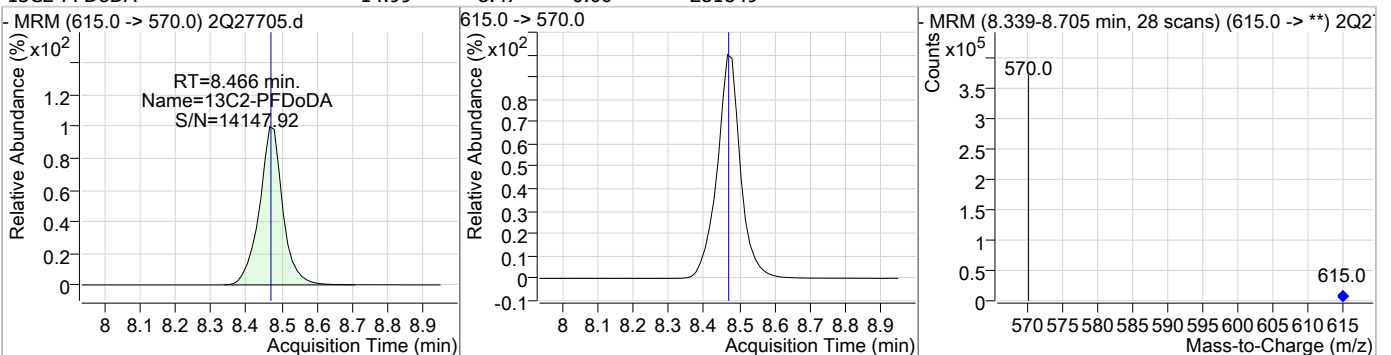
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

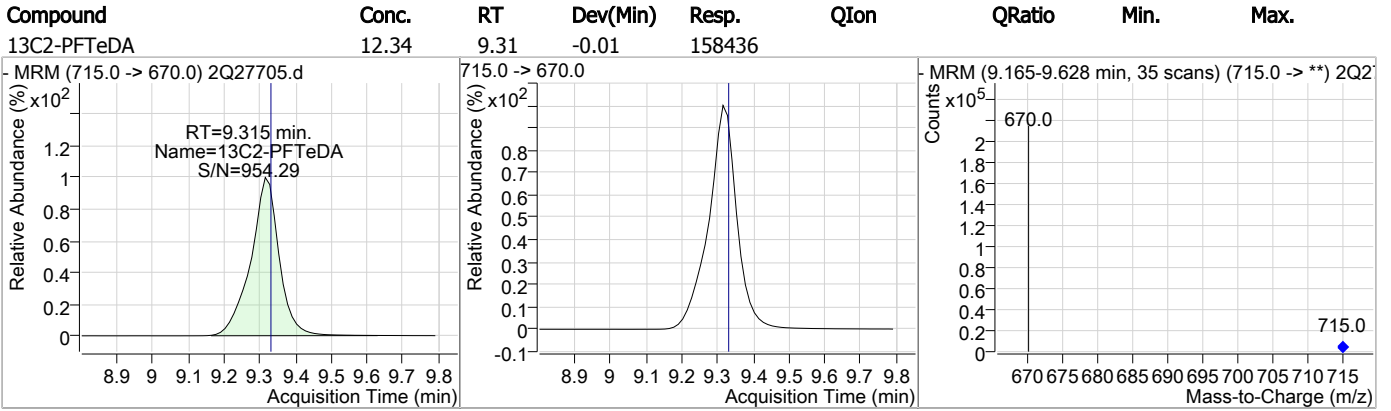


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|





Perfluorinated Compounds by LC/MS/MS



7.1.9

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27706.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 7:41:25 PM  
 Sample Name : fa62220-10  
 Vial : Vial 26  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 252566 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 35615  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 97548  | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 82383  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 117368 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 173236 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 185392 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.052                | 472.0 -> 427.0 | 182669 | 20.00 µg/L       | -0.013   |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 229367 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 288599 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 306866 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 165400 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 58949  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 13860  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 15497  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 18938  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 46212  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 57991  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 34660  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 28175  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 46188  | 15.53 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.7% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 57974  | 18.06 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.3% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 34652  | 15.63 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.1% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 306690 | 16.31 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.5% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 165168 | 12.86 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 64.3% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 13851  | 15.19 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.0% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 15481  | 15.19 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.9% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 97348  | 16.23 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.2% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 173137 | 16.74 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.7% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 117335 | 16.15 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.7% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 82383  | 16.21 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.0% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 229266 | 16.80 µg/L       | 0.000    |

7.1.10  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 84.0%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 288376 | 17.04 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 85.2%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 58938  | 14.53 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 72.7%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 185246 | 17.76 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.8%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 18922  | 14.52 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 72.6%  |          |
| 13C9-PFNA             | 7.052                | 472.0 -> 427.0 | 182632 | 17.25 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.2%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 28201  | 14.71 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.6%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 252596 | 19.98 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 35626  | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

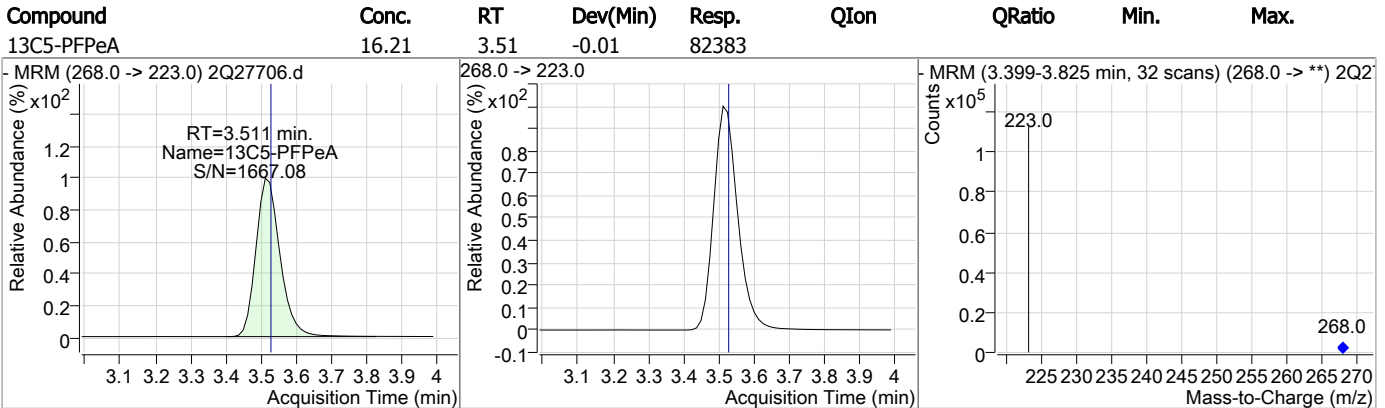
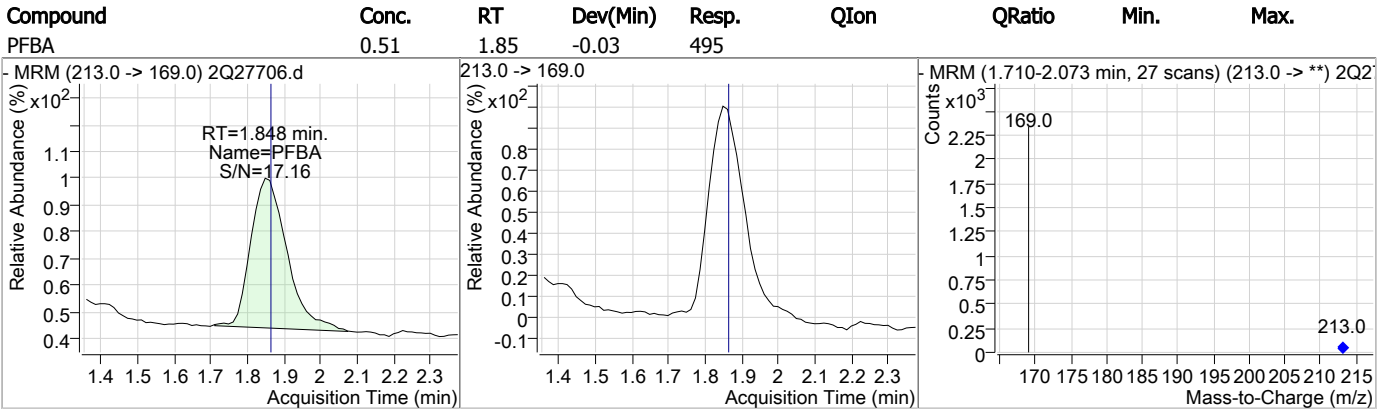
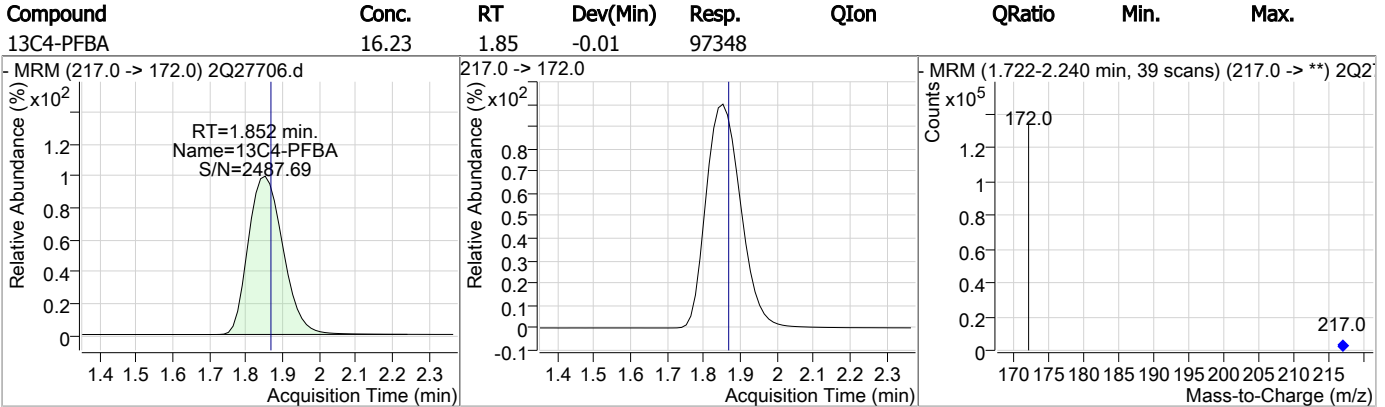
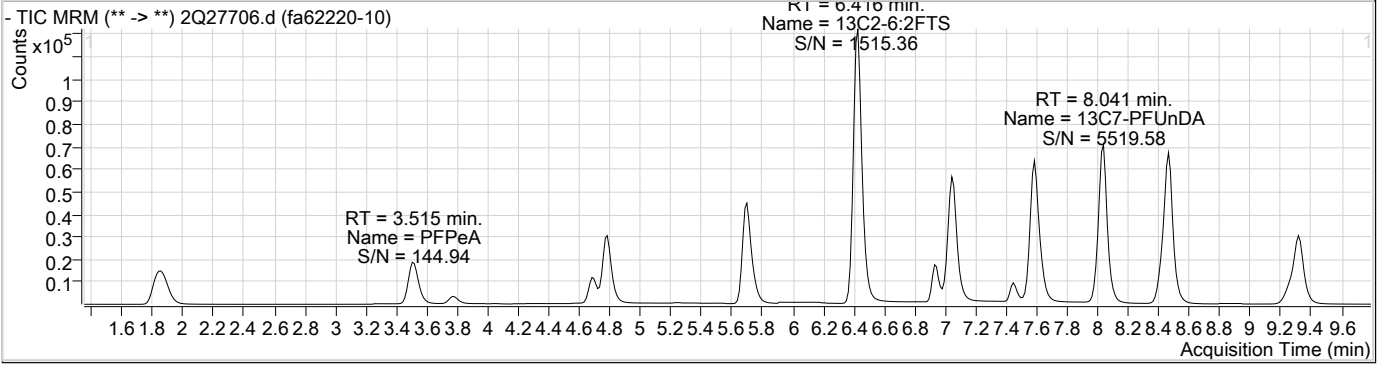
7.1.10  
7

Target Compounds

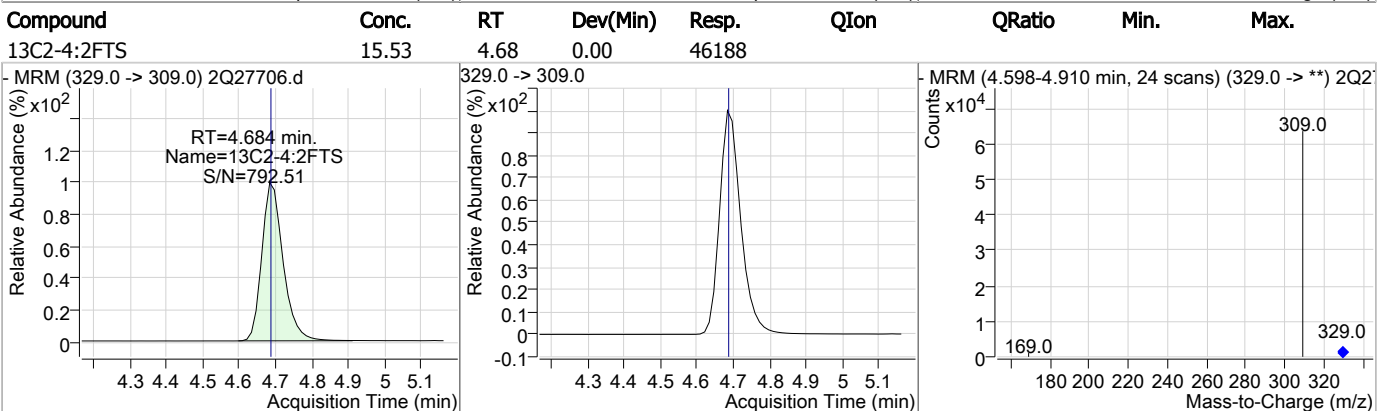
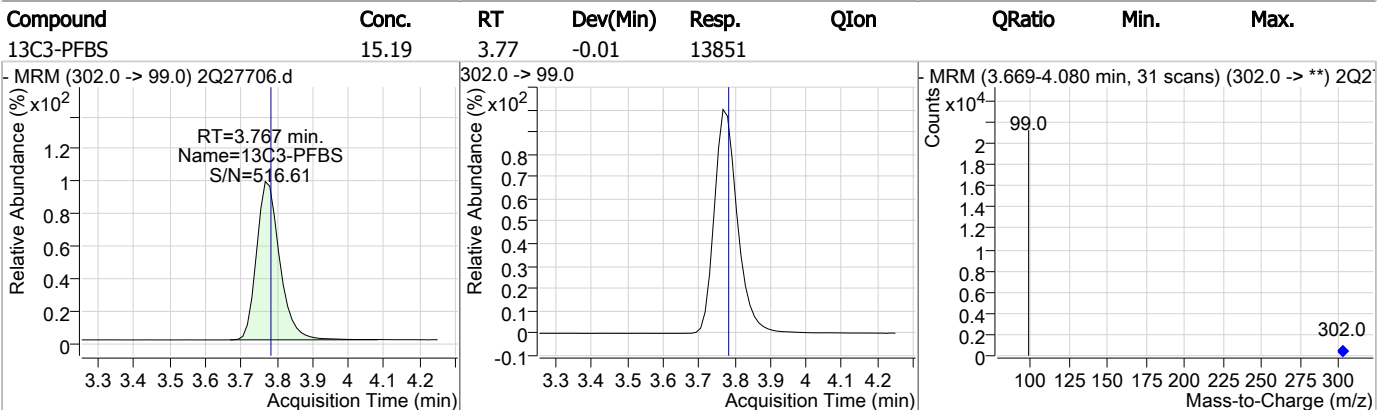
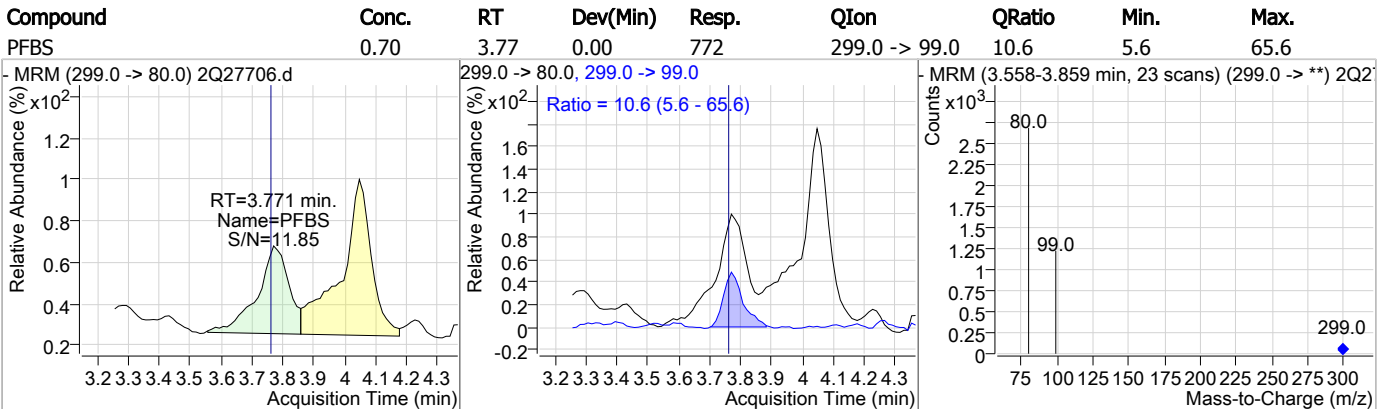
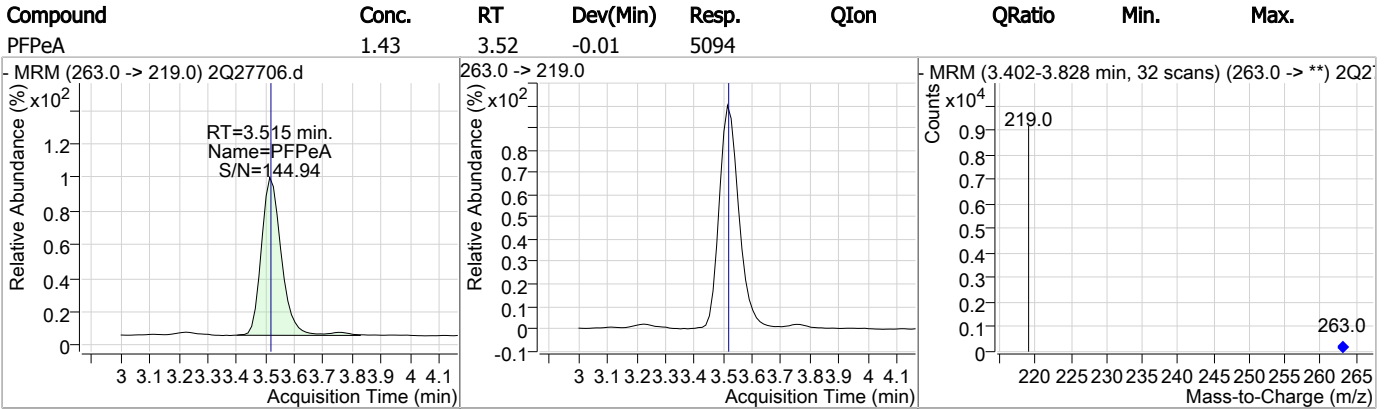
| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 495   | 0.51 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 772   | 0.70 µg/L   | 57     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 2957  | 1.46 µg/L   | 96     |
| PFHxS            | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 5094  | 1.43 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

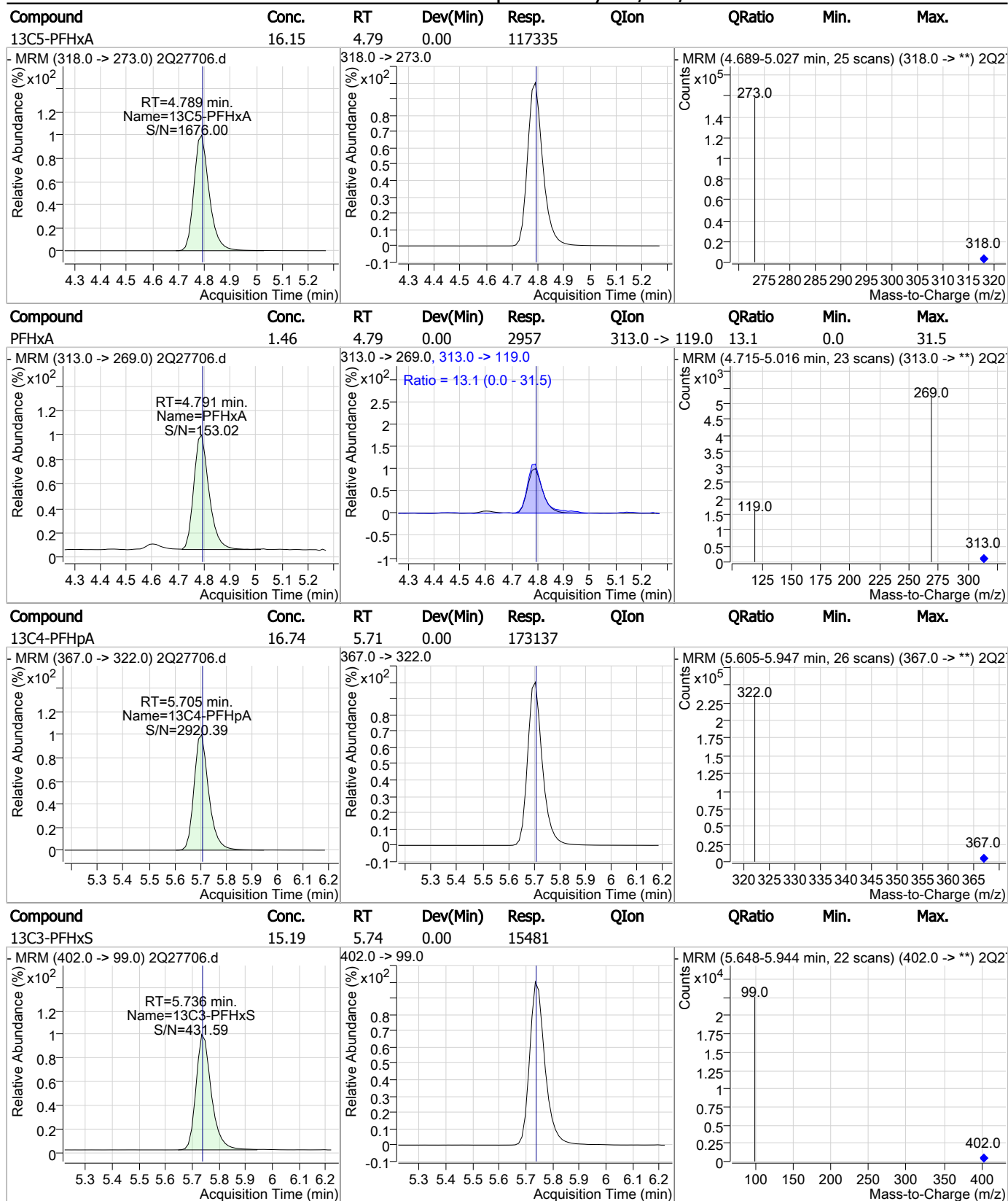
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



7.1.10  
7



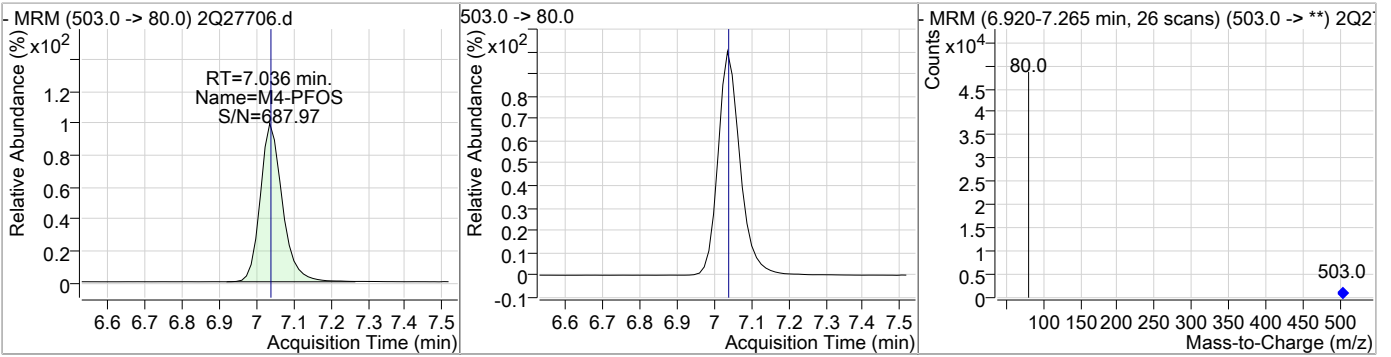
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-6:2FTS | 18.06 | 6.42 | 0.00     | 57974  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 17.76 | 6.43 | 0.00     | 185246 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 19.98 | 6.44 | 0.00     | 252596 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-FOSA   | 14.53 | 6.93 | -0.01    | 58938  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

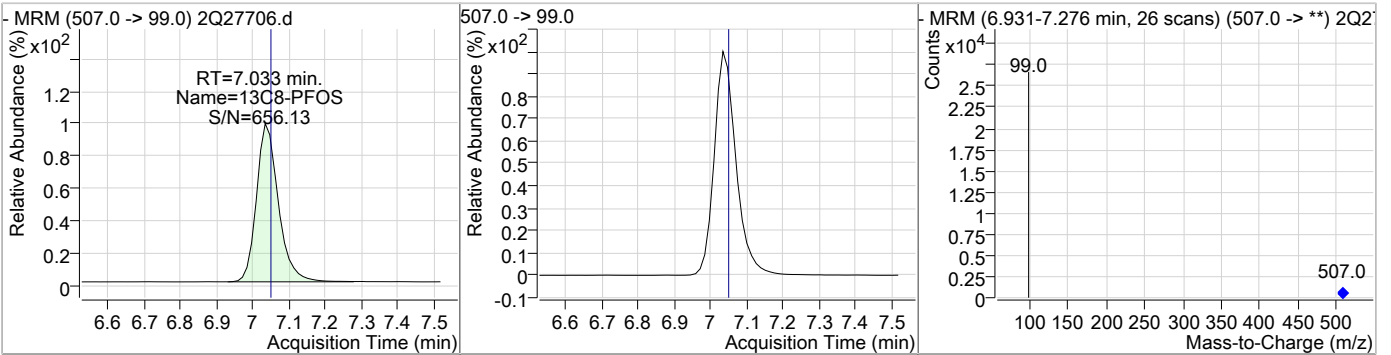
7.1.10  
7

### Perfluorinated Compounds by LC/MS/MS

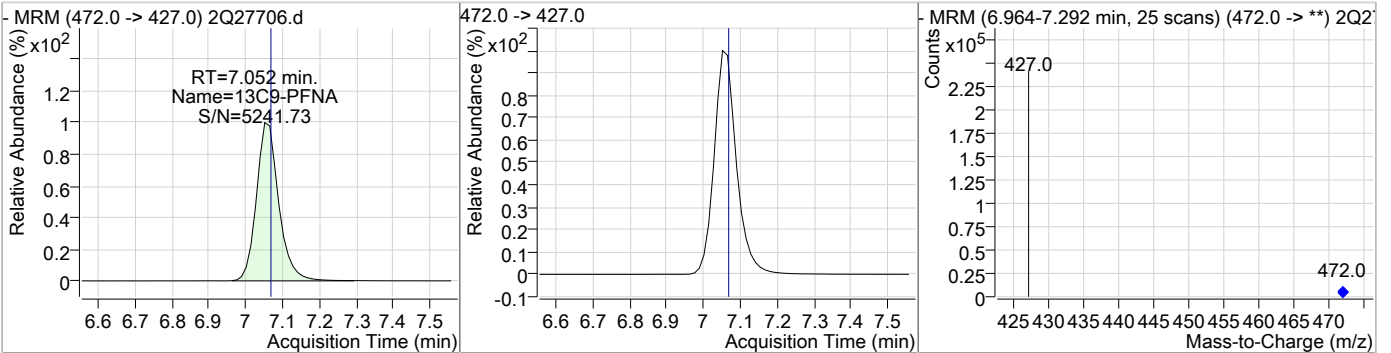
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



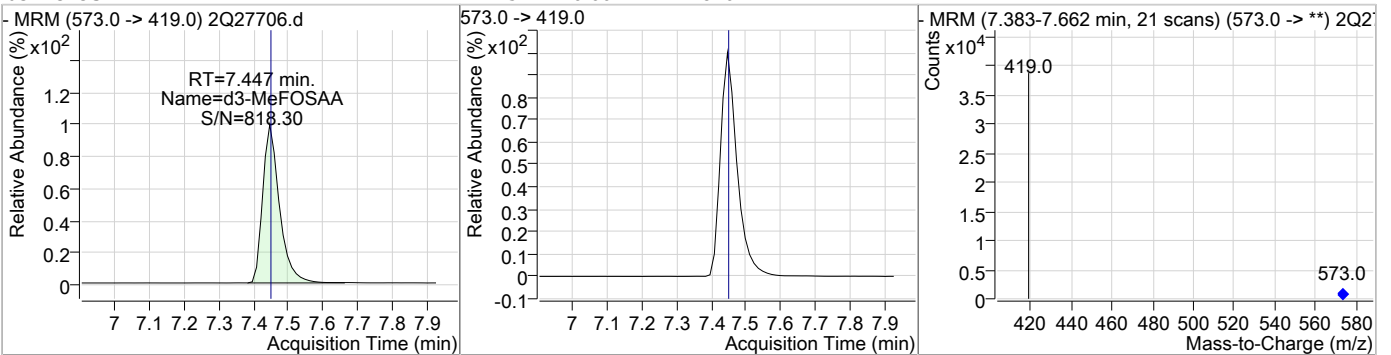
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



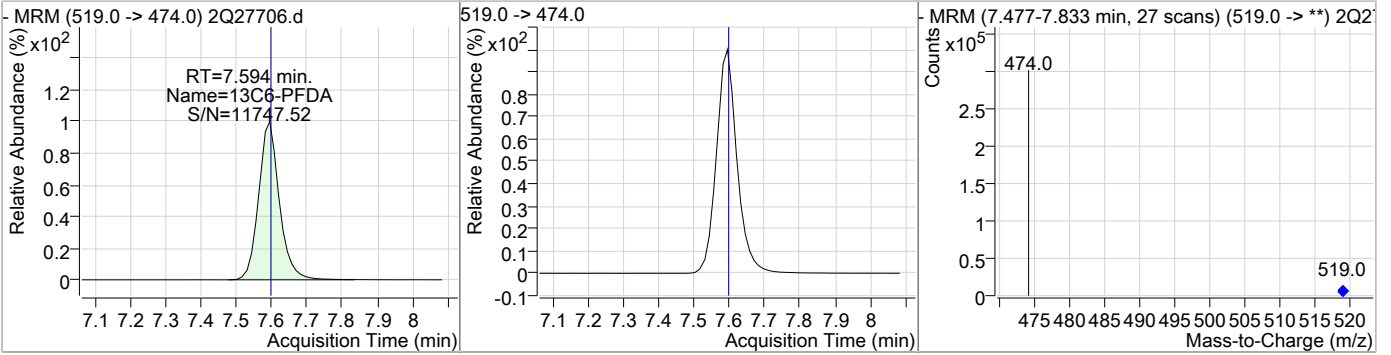
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



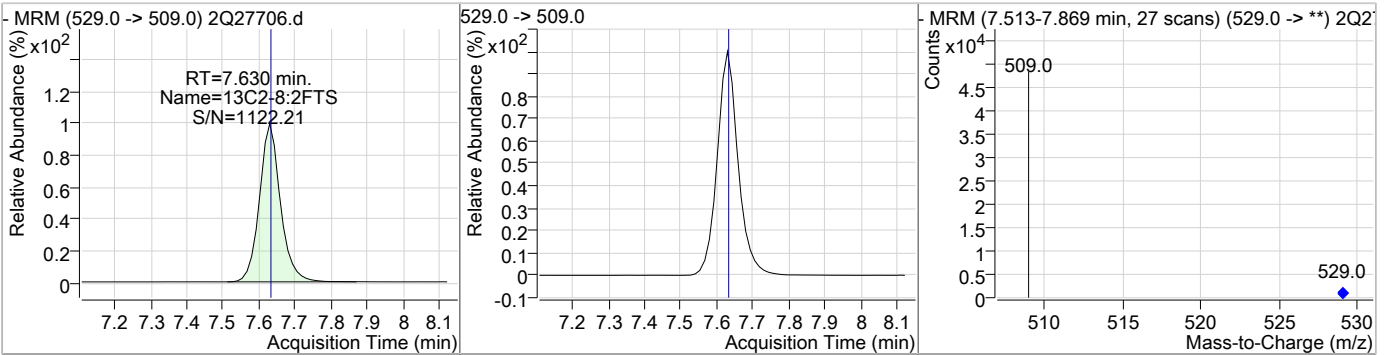


### Perfluorinated Compounds by LC/MS/MS

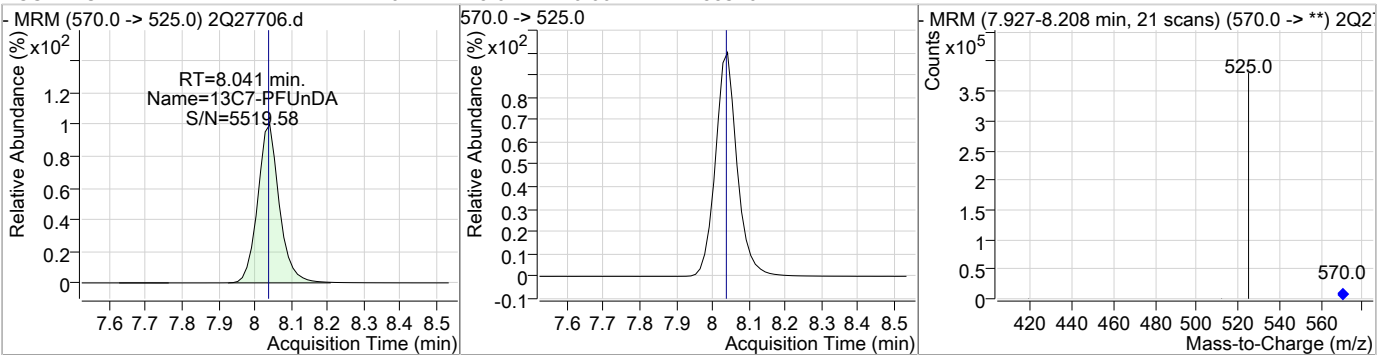
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 16.80 | 7.59 | 0.00     | 229266 |      |        |      |      |



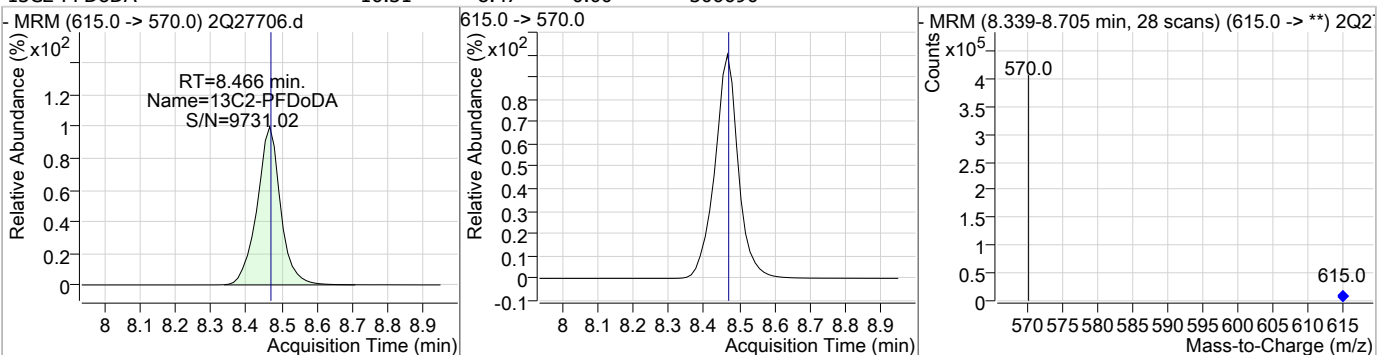
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 15.63 | 7.63 | 0.00     | 34652 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 17.04 | 8.04 | 0.00     | 288376 |      |        |      |      |

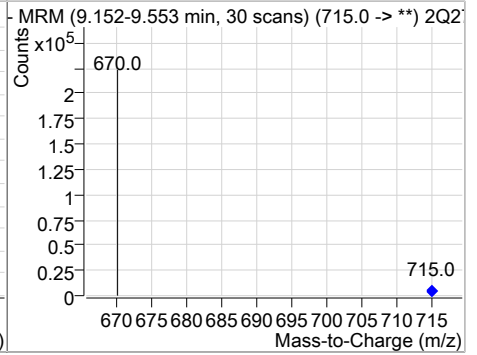
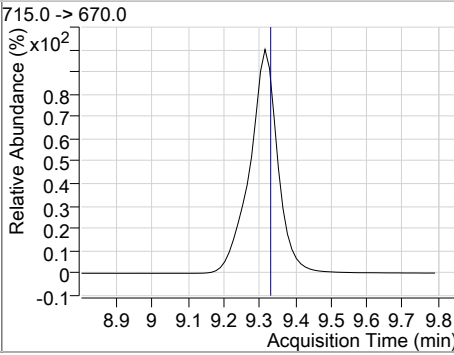
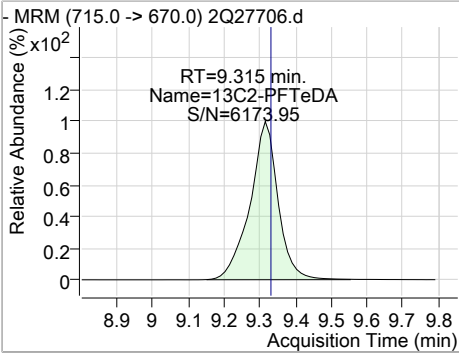


| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 16.31 | 8.47 | 0.00     | 306690 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 12.86 | 9.31 | -0.01    | 165168 |      |        |      |      |



7.1.10  
7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27707.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 7:57:09 PM  
 Sample Name : fa62220-11  
 Vial : Vial 27  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT    | QIon                 | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|-------|----------------------|--------|------------------|----------|
| <b>Internal Standards</b>          |       |                      |        |                  |          |
| 13C2-PFOA                          | 6.435 | 415.0 -> 370.0       | 242545 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048 | 503.0 -> 80.0        | 33698  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.865 | 217.0 -> 172.0       | 92126  | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524 | 268.0 -> 223.0       | 76811  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789 | 318.0 -> 273.0       | 107727 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705 | 367.0 -> 322.0       | 155844 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434 | 421.0 -> 376.0       | 174851 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065 | 472.0 -> 427.0       | 165410 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594 | 519.0 -> 474.0       | 208427 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041 | 570.0 -> 525.0       | 294329 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479 | 615.0 -> 570.0       | 352688 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315 | 715.0 -> 670.0       | 193658 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944 | 506.0 -> 78.0        | 57096  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.780 | 302.0 -> 99.0        | 13404  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748 | 402.0 -> 99.0        | 14010  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045 | 507.0 -> 99.0        | 16723  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696 | 329.0 -> 309.0       | 43596  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431 | 429.0 -> 409.0       | 56977  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.642 | 529.0 -> 509.0       | 32015  | 20.00 µg/L       | 0.013    |
| M3-MeFOSAA                         | 7.459 | 573.0 -> 419.0       | 26705  | 20.00 µg/L       | 0.013    |
| M3-HFPO-DA                         | -     | 287.0 -> 169.0       | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |       |                      |        |                  |          |
| 13C2-4:2FTS                        | 4.696 | 329.0 -> 309.0       | 43469  | 14.62 µg/L       | 0.013    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 73.1% |          |
| 13C2-6:2FTS                        | 6.431 | 429.0 -> 409.0       | 56989  | 17.76 µg/L       | 0.015    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 88.8% |          |
| 13C2-8:2FTS                        | 7.642 | 529.0 -> 509.0       | 32021  | 14.44 µg/L       | 0.013    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 72.2% |          |
| 13C2-PFDoDA                        | 8.479 | 615.0 -> 570.0       | 352562 | 18.74 µg/L       | 0.013    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 93.7% |          |
| 13C2-PFTeDA                        | 9.315 | 715.0 -> 670.0       | 192887 | 15.02 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 75.1% |          |
| 13C3-PFBS                          | 3.780 | 302.0 -> 99.0        | 13386  | 14.68 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 73.4% |          |
| 13C3-PFHxS                         | 5.748 | 402.0 -> 99.0        | 13998  | 13.73 µg/L       | 0.013    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 68.7% |          |
| 13C4-PFBA                          | 1.865 | 217.0 -> 172.0       | 91908  | 15.33 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 76.6% |          |
| 13C4-PFHpA                         | 5.705 | 367.0 -> 322.0       | 155798 | 15.06 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 75.3% |          |
| 13C5-PFHxA                         | 4.789 | 318.0 -> 273.0       | 107605 | 14.81 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 74.0% |          |
| 13C5-PFPeA                         | 3.524 | 268.0 -> 223.0       | 76901  | 15.13 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 75.6% |          |
| 13C6-PFDA                          | 7.594 | 519.0 -> 474.0       | 208593 | 15.29 µg/L       | 0.000    |

7.1.11  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 76.4%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 294161 | 17.38 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.9%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 57099  | 14.08 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 70.4%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 174762 | 16.75 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.8%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 16718  | 12.83 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 64.1%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 165399 | 15.62 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 78.1%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 26711  | 13.93 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 69.7%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 242619 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 33719  | 20.00 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

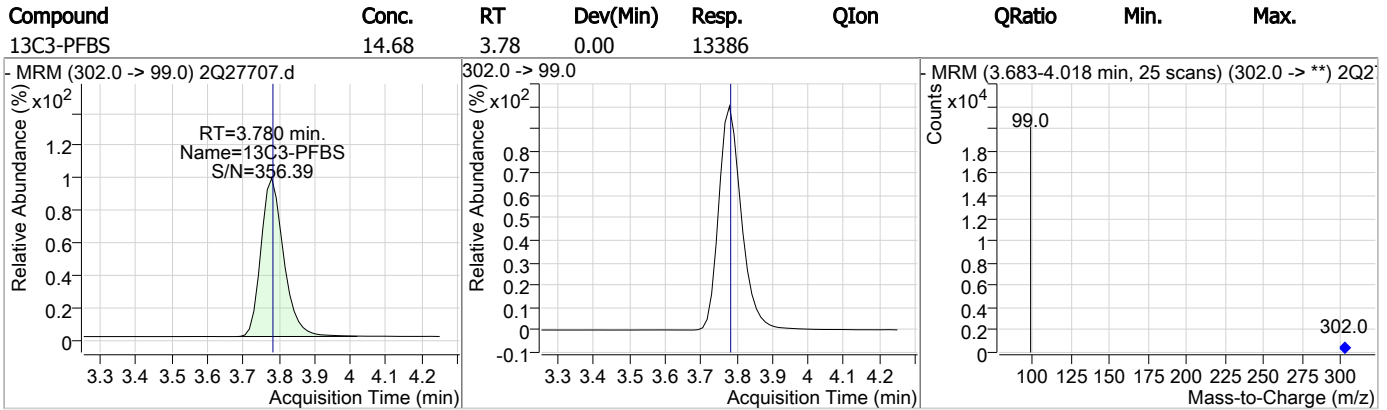
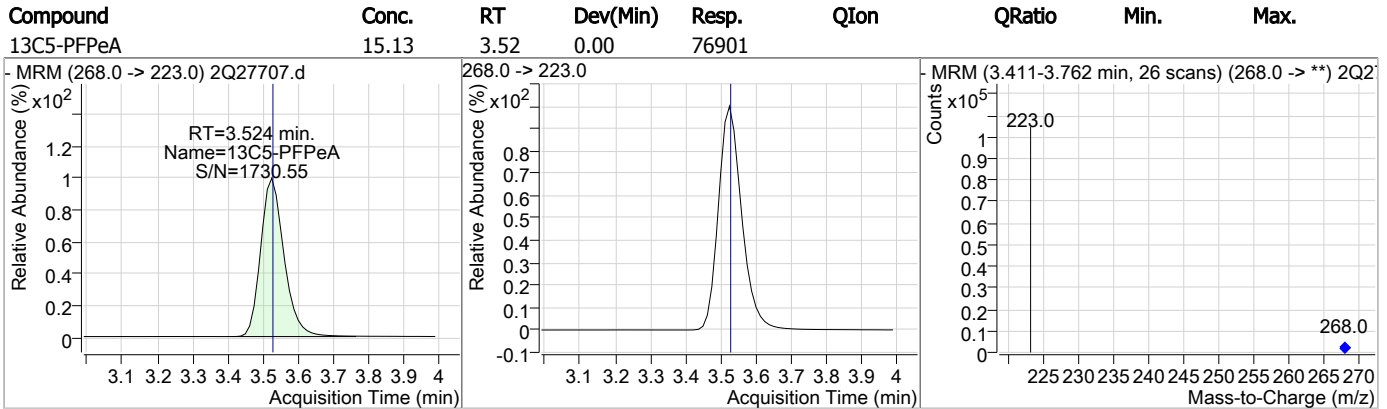
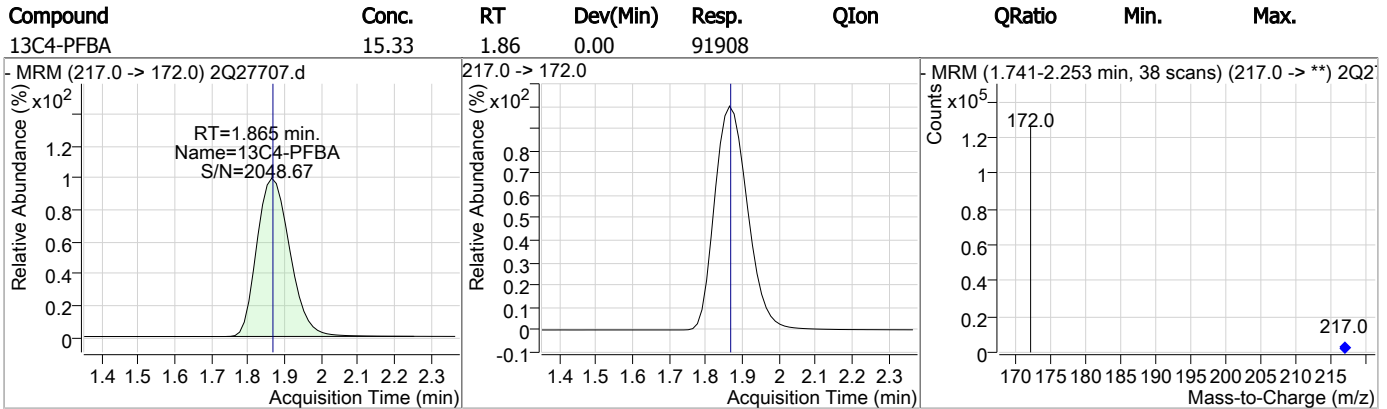
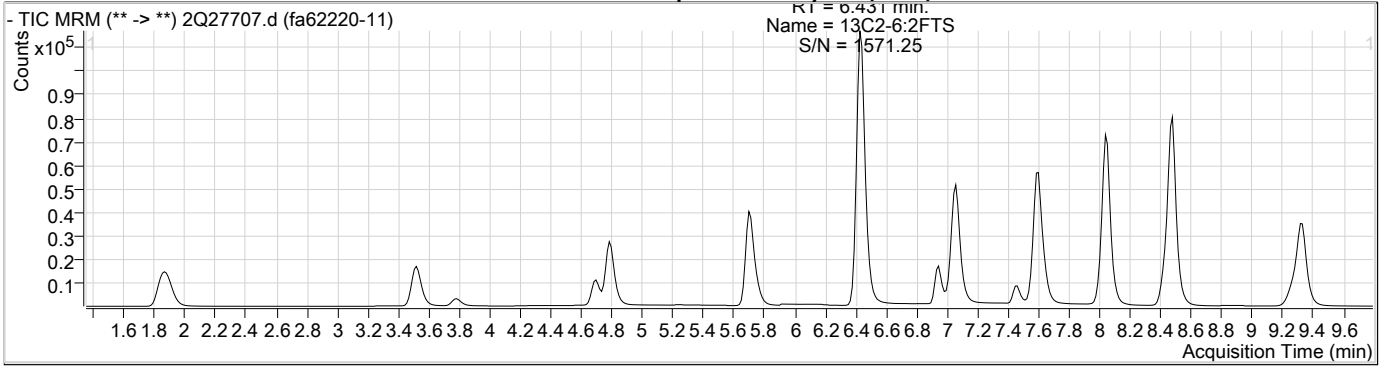
Target Compounds

| Target Compounds | RT | QIon           | Resp. | Conc. Units | QValue |
|------------------|----|----------------|-------|-------------|--------|
| 4:2FTS           | -  | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -  | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -  | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -  | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -  | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -  | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -  | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -  | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -  | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -  | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -  | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -  | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -  | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -  | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -  | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -  | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -  | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -  | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -  | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | -  | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS            | -  | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -  | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -  | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -  | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -  | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -  | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -  | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -  | 329.0 -> 169.0 | -     | N.D.        |        |

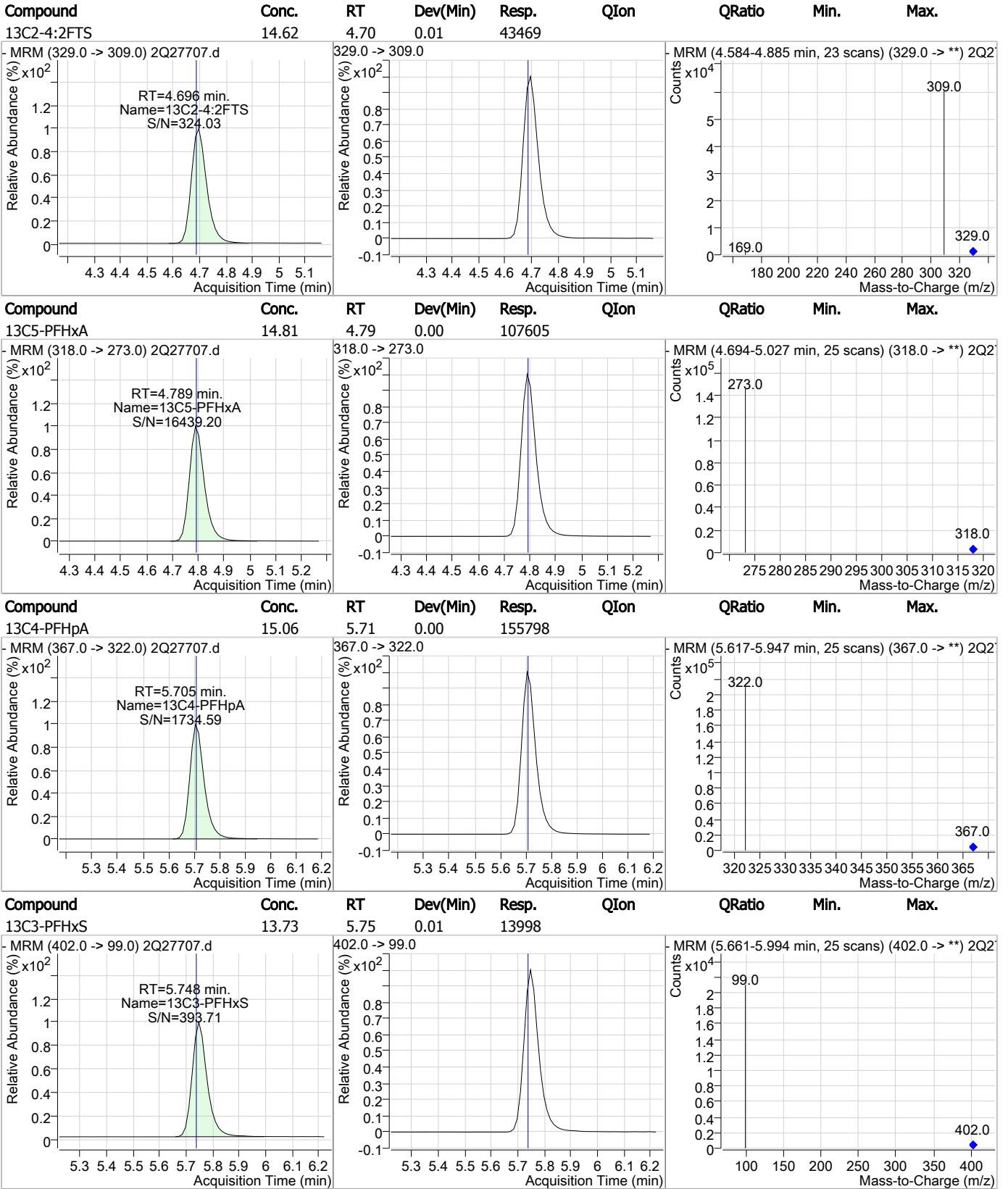
# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.11  
7

### Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

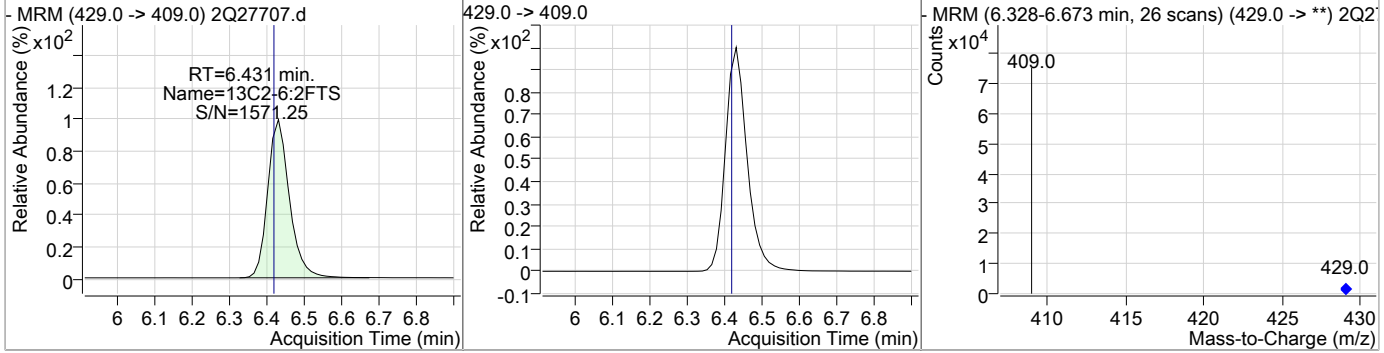


7.1.11  
7

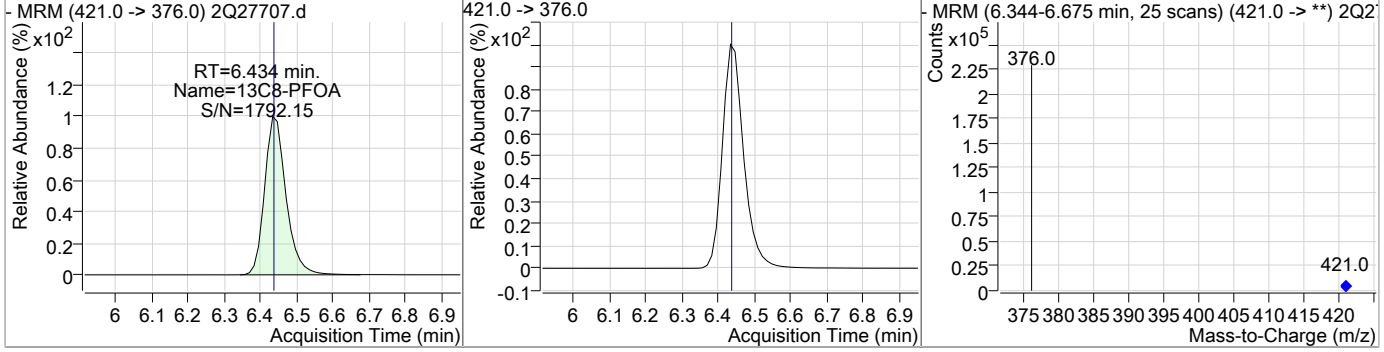


### Perfluorinated Compounds by LC/MS/MS

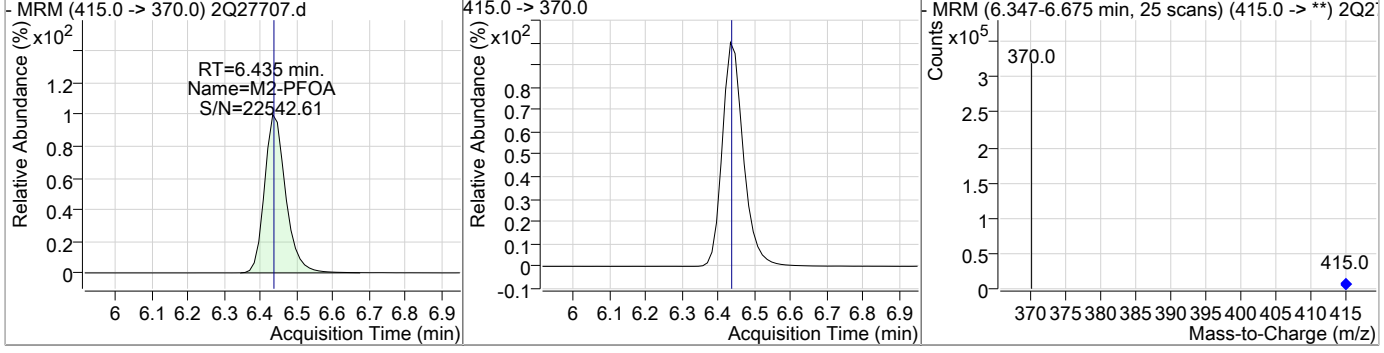
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



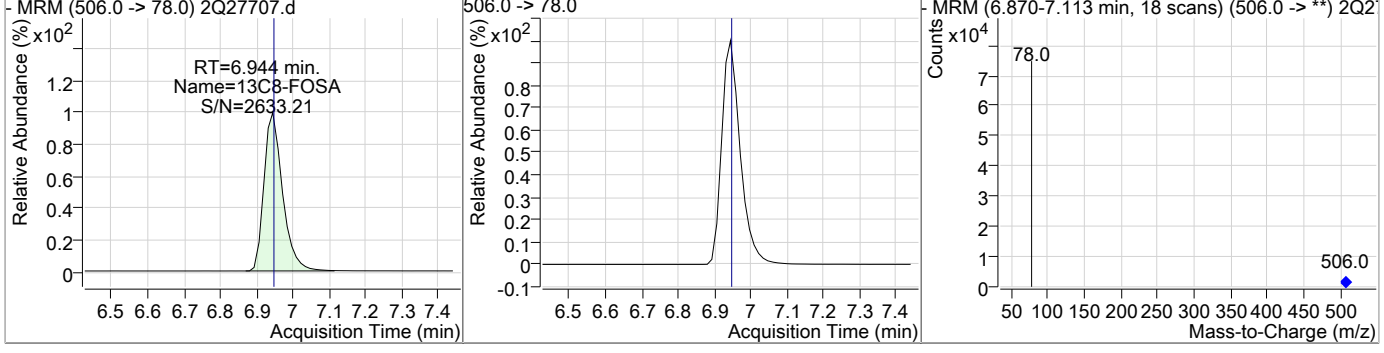
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



### Perfluorinated Compounds by LC/MS/MS

| Compound                        | Conc. | RT   | Dev(Min)       | Resp.  | QIon | QRatio   | Min. | Max. |
|---------------------------------|-------|------|----------------|--------|------|--|------|------|
| M4-PFOS                         | 20.00 | 7.05 | 0.01           | 33719  |      |  |      |      |
| -MRM (503.0 -> 80.0) 2Q27707.d  |       |      | 503.0 -> 80.0  |        |      | -MRM (6.933-7.278 min, 26 scans) (503.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |
| 13C8-PFOS                       | 12.83 | 7.05 | 0.00           | 16718  |      |  |      |      |
| -MRM (507.0 -> 99.0) 2Q27707.d  |       |      | 507.0 -> 99.0  |        |      | -MRM (6.931-7.289 min, 27 scans) (507.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |
| 13C9-PFNA                       | 15.62 | 7.07 | 0.00           | 165399 |      |  |      |      |
| -MRM (472.0 -> 427.0) 2Q27707.d |       |      | 472.0 -> 427.0 |        |      | -MRM (6.949-7.305 min, 27 scans) (472.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |
| d3-MeFOSAA                      | 13.93 | 7.46 | 0.01           | 26711  |      |  |      |      |
| -MRM (573.0 -> 419.0) 2Q27707.d |       |      | 573.0 -> 419.0 |        |      | -MRM (7.371-7.624 min, 19 scans) (573.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |

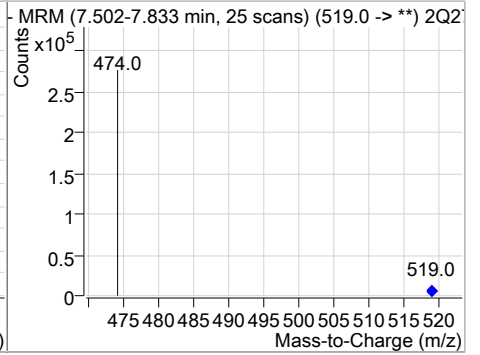
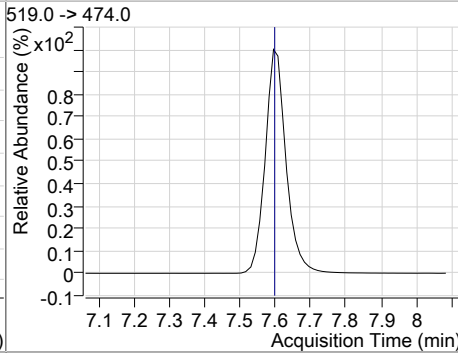
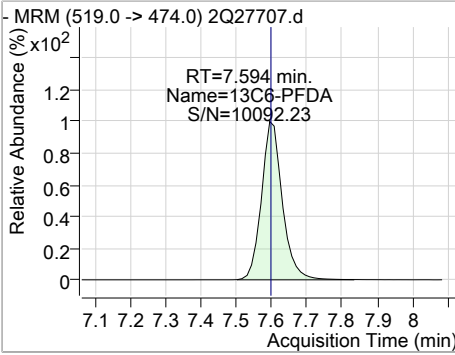
7.1.11  
7



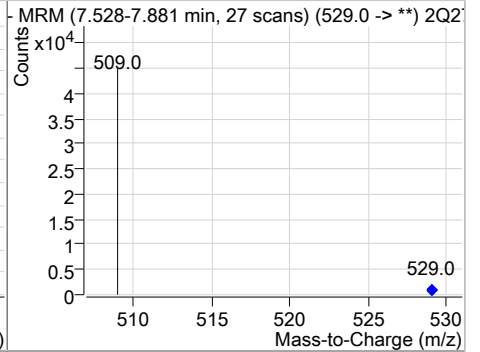
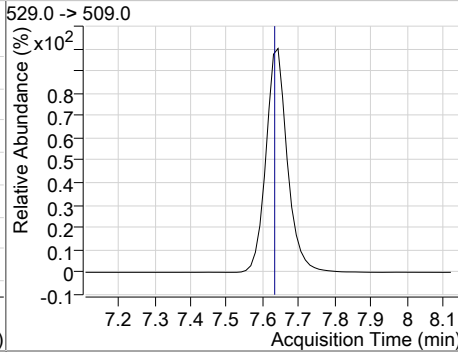
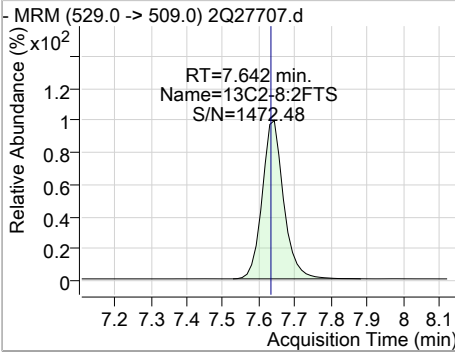


### Perfluorinated Compounds by LC/MS/MS

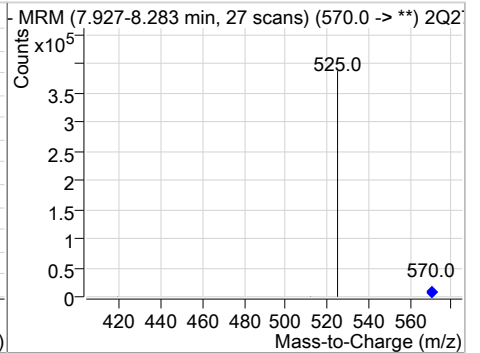
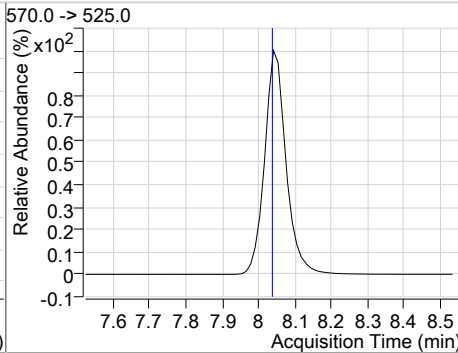
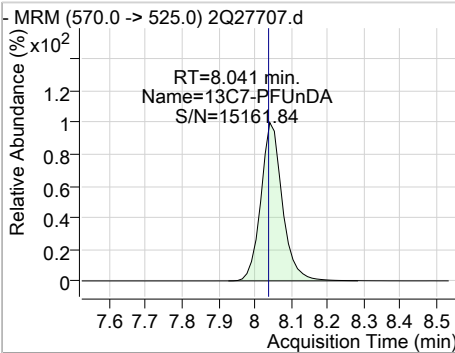
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 15.29 | 7.59 | 0.00     | 208593 |      |        |      |      |



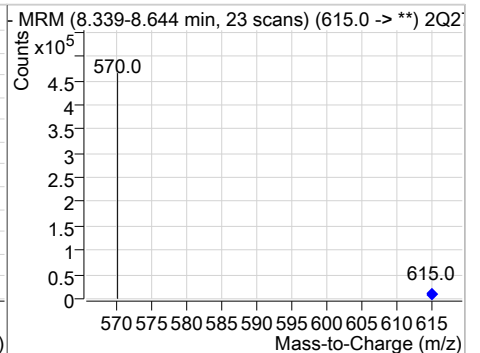
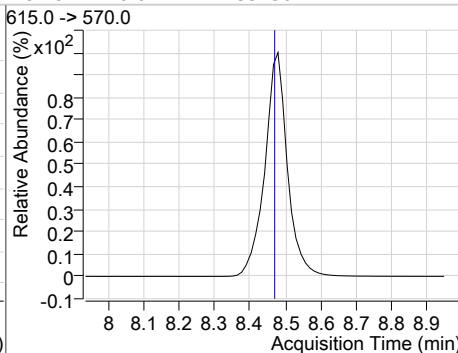
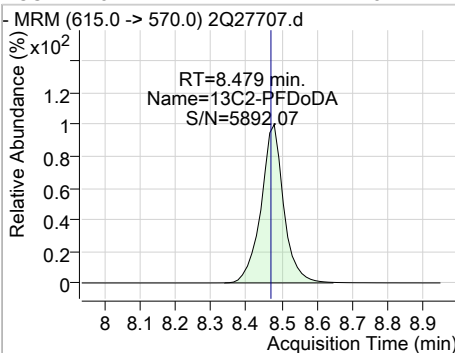
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 14.44 | 7.64 | 0.01     | 32021 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 17.38 | 8.04 | 0.00     | 294161 |      |        |      |      |

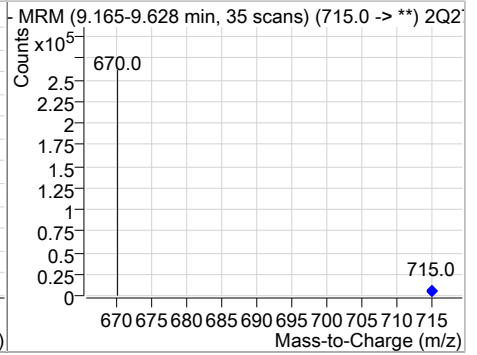
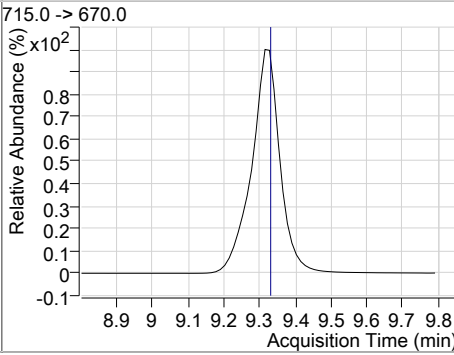
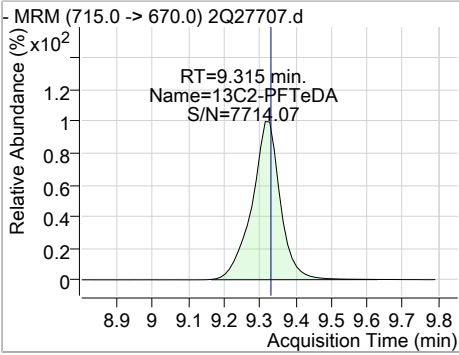


| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 18.74 | 8.48 | 0.01     | 352562 |      |        |      |      |



Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.02 | 9.31 | -0.01    | 192887 |      |        |      |      |



7.1.11

7



Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27708.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 8:12:53 PM  
 Sample Name : fa62220-12  
 Vial : Vial 28  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 216370 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 30828  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 83665  | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 70851  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 100674 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 146433 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 155558 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 150420 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 183121 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 243290 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 280615 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 144162 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 47378  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 12108  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 13481  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 15017  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 40739  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 49748  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 28353  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 22428  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 40684  | 13.68 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 68.4% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 49736  | 15.50 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.5% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 28324  | 12.77 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 63.9% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 280501 | 14.91 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.6% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 143852 | 11.20 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 56.0% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 12088  | 13.26 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.3% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 13485  | 13.23 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.1% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 83509  | 13.93 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.6% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 146302 | 14.15 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 70.7% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 100581 | 13.84 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.2% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 70859  | 13.94 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.7% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 183112 | 13.42 µg/L       | 0.000    |

7.1.12  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 67.1%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 243200 | 14.37 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.9%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 47384  | 11.69 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 58.4%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 155449 | 14.90 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.5%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 15031  | 11.53 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 57.7%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 150446 | 14.21 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.0%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 22416  | 11.69 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 58.5%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 216511 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 30845  | 20.00 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

Target Compounds

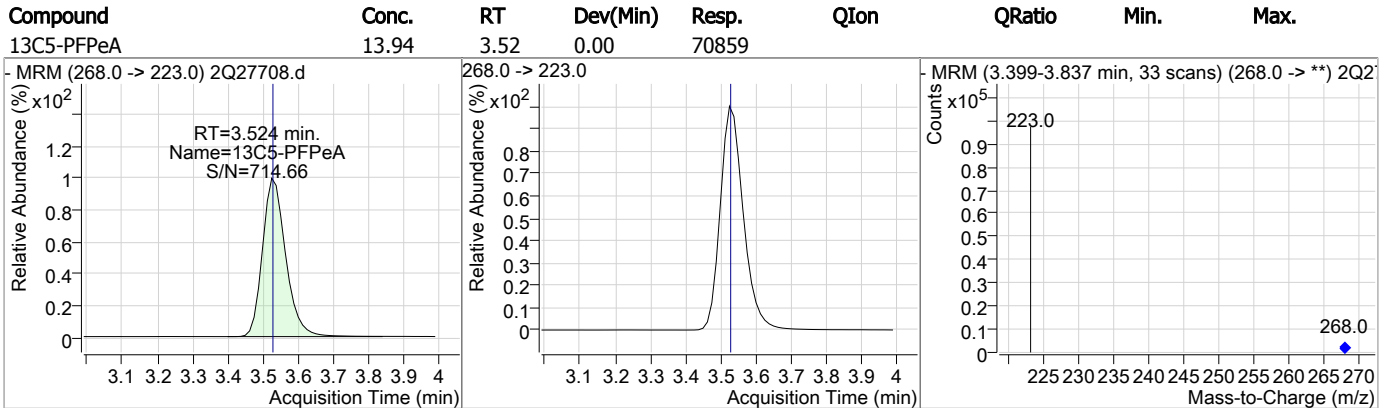
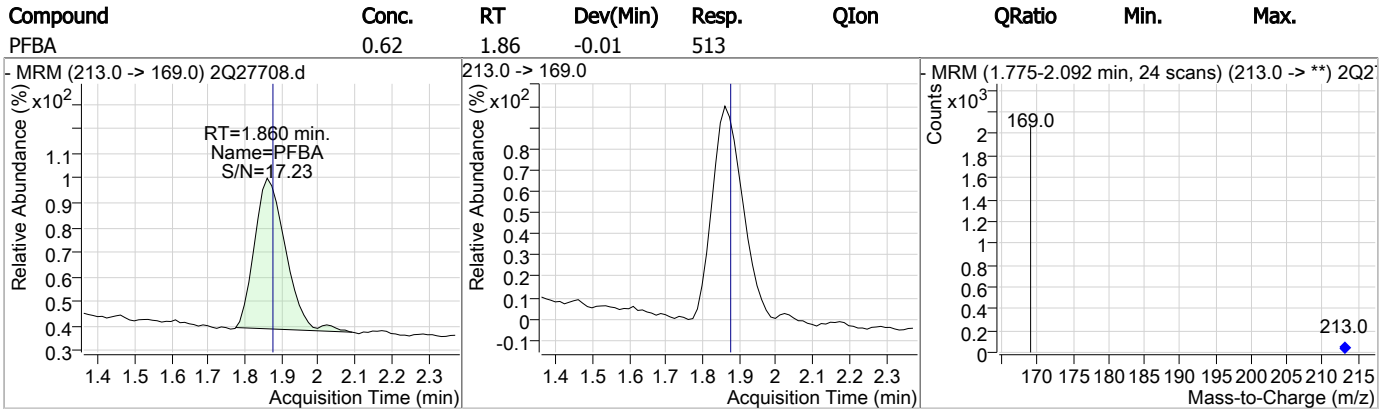
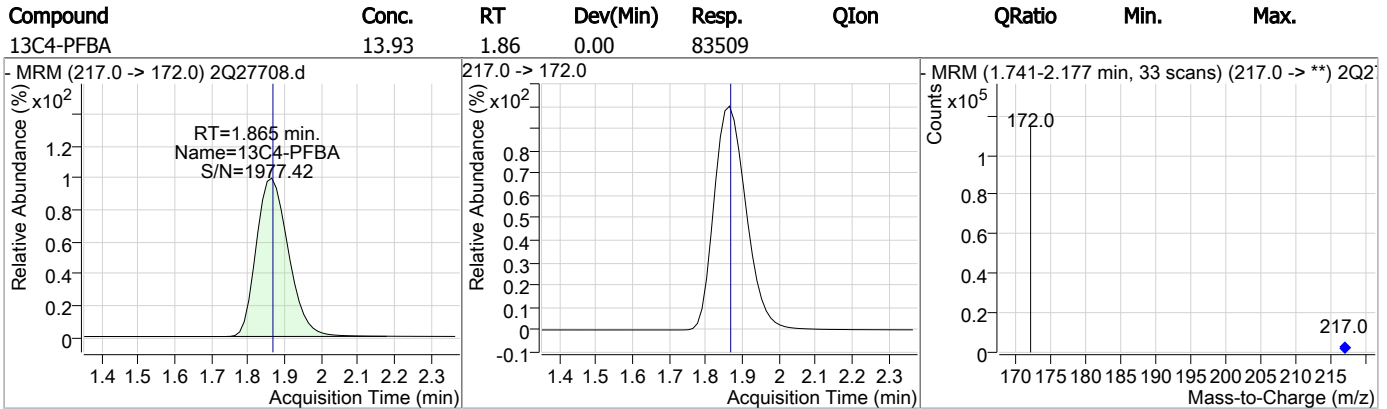
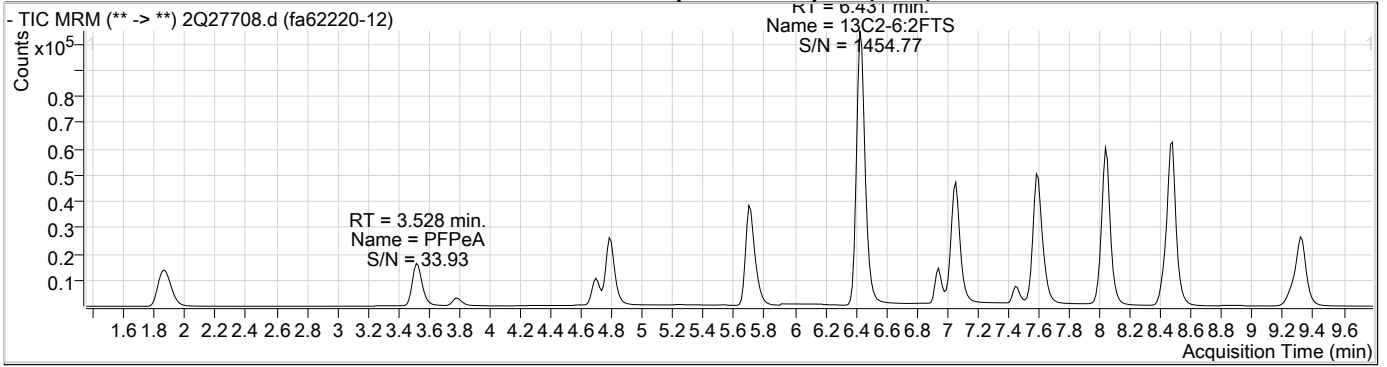
| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.860 | 213.0 -> 169.0 | 513   | 0.62 µg/L   | 100    |
| PFBS             | 3.783 | 299.0 -> 80.0  | 487   | 0.51 µg/L   | 89     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 1637  | 0.94 µg/L   | 98     |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 2619  | 3.51 µg/L   | m 96   |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | 6.437 | 413.0 -> 369.0 | 3249  | 0.77 µg/L   | m 100  |
| PFOS             | 6.832 | 499.0 -> 80.0  | 624   | 0.86 µg/L   | #m 66  |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 2604  | 0.85 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.12  
7



### Perfluorinated Compounds by LC/MS/MS

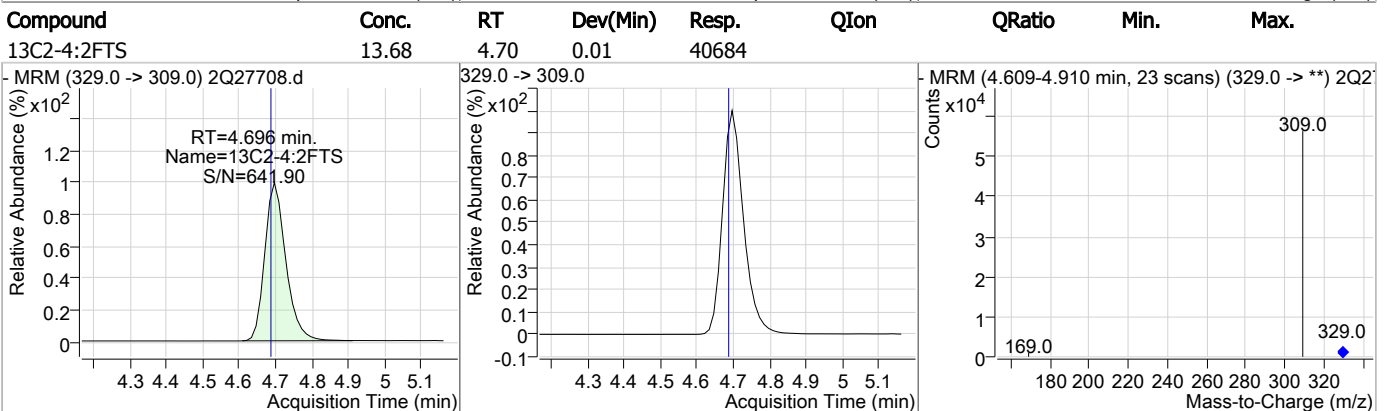
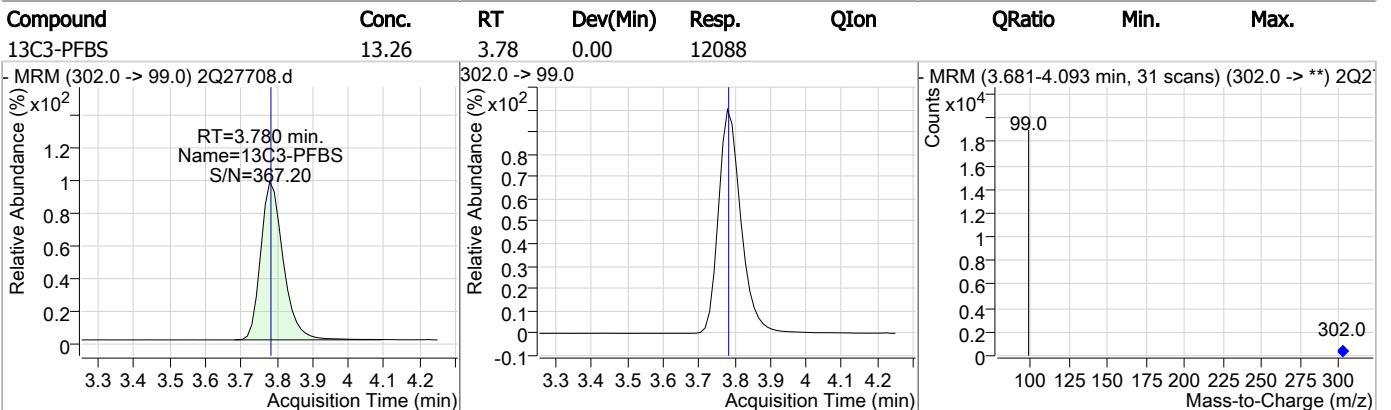
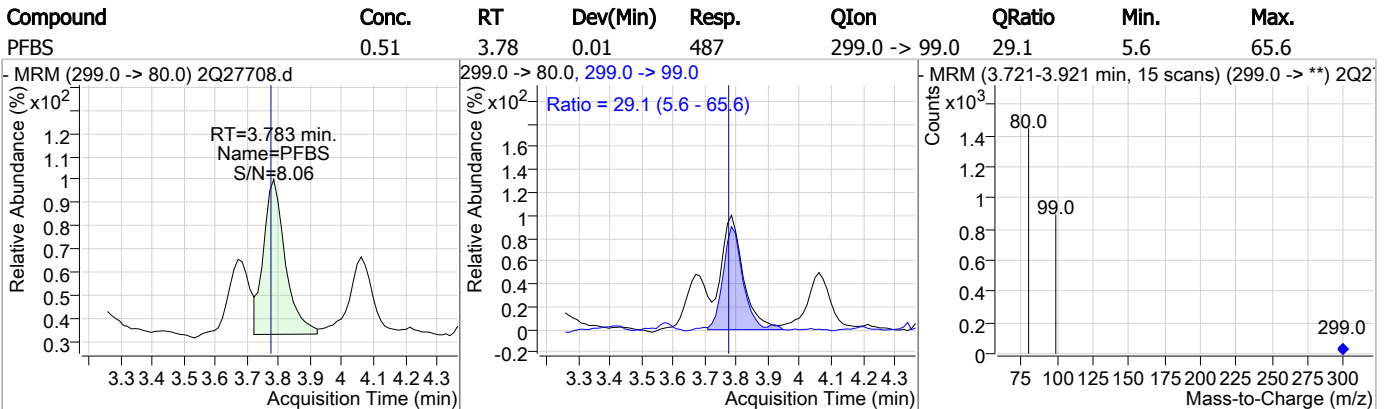
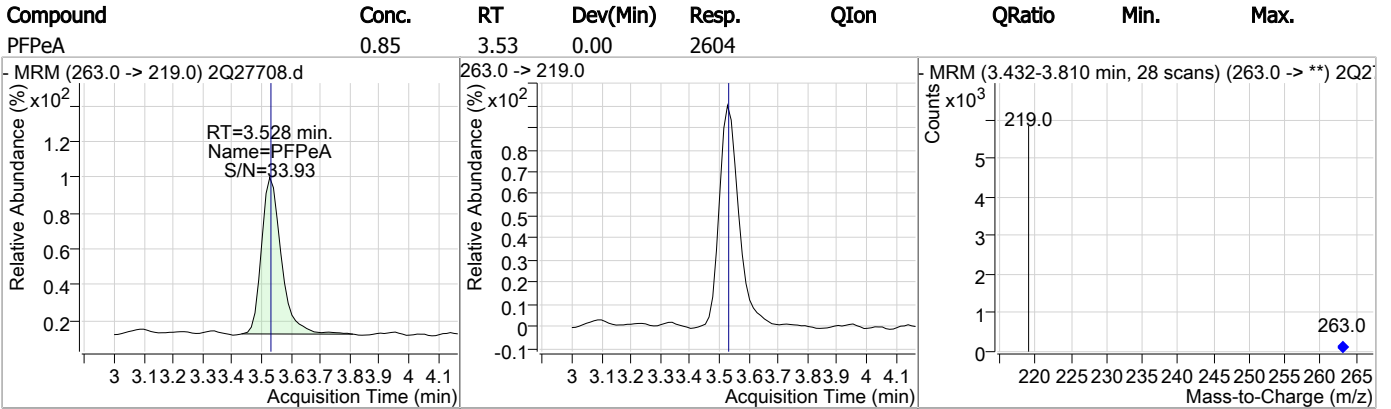


7.1.12

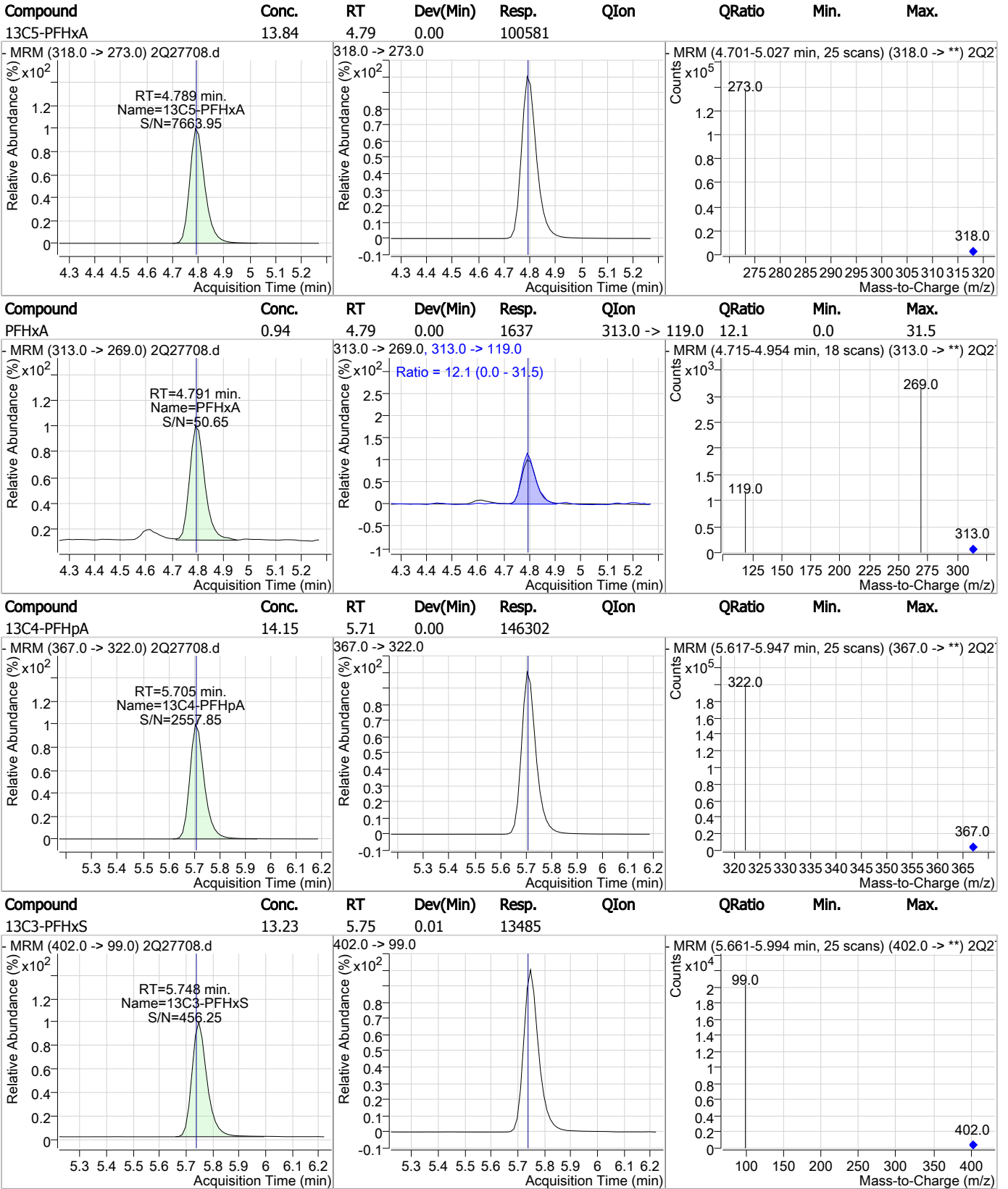
7



### Perfluorinated Compounds by LC/MS/MS



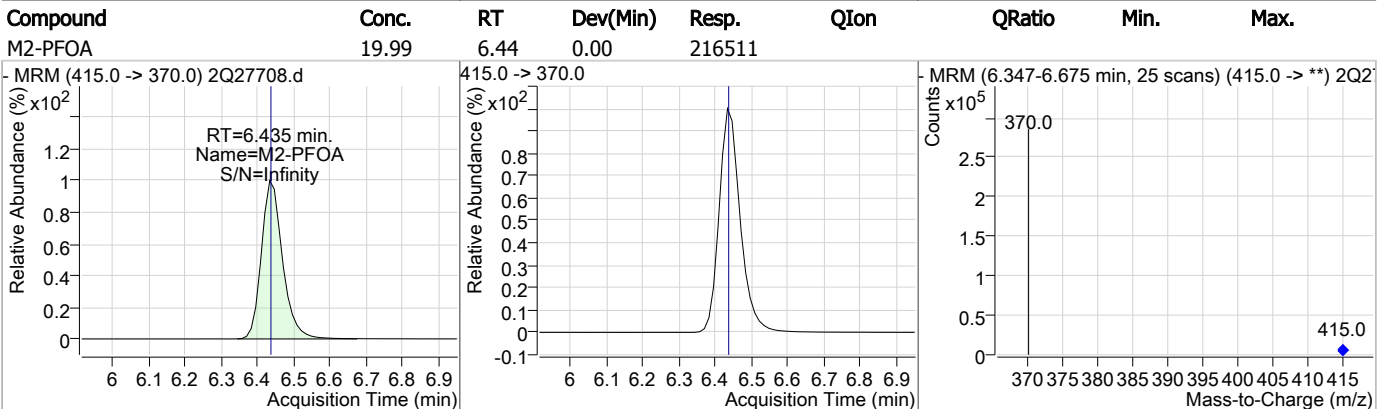
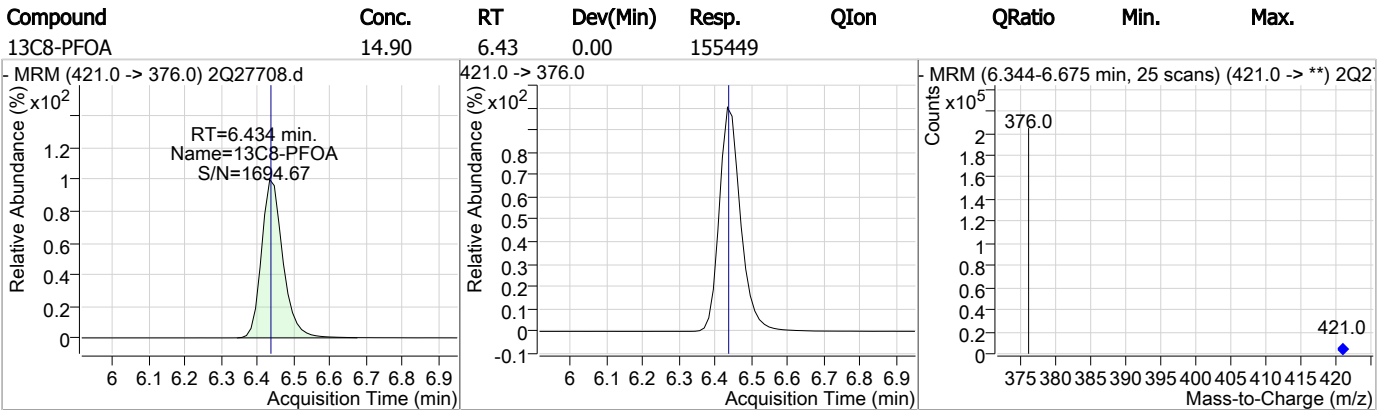
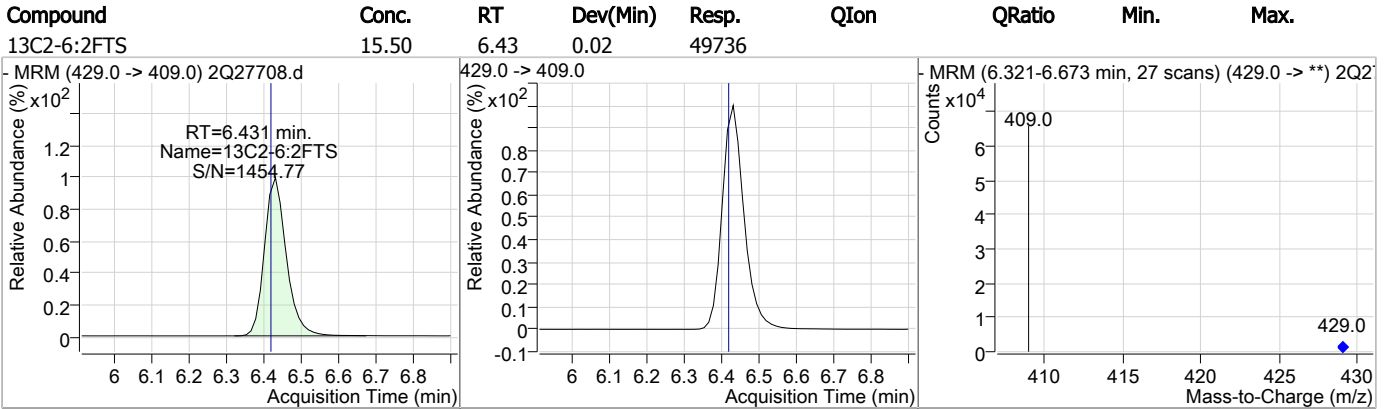
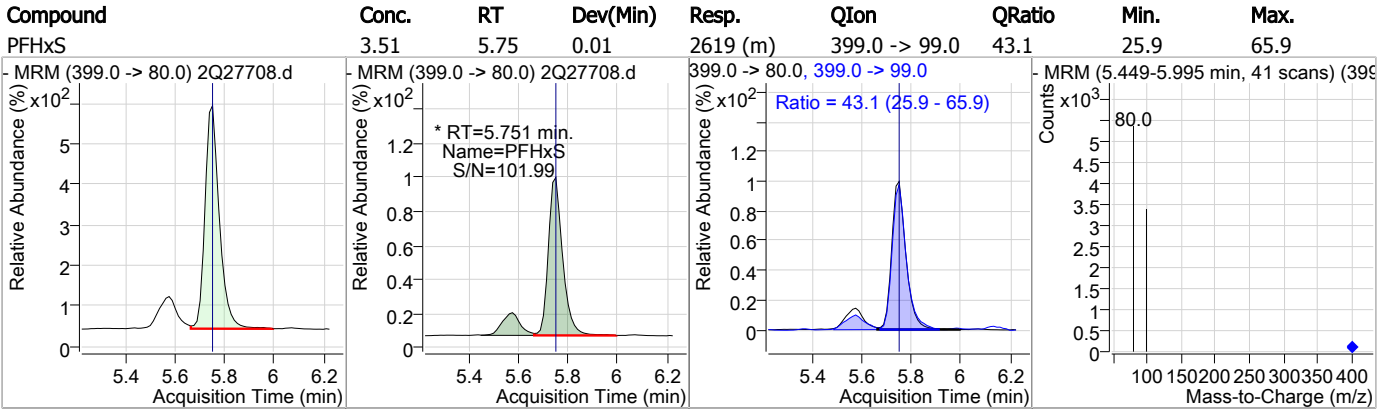
### Perfluorinated Compounds by LC/MS/MS



7.1.12  
7



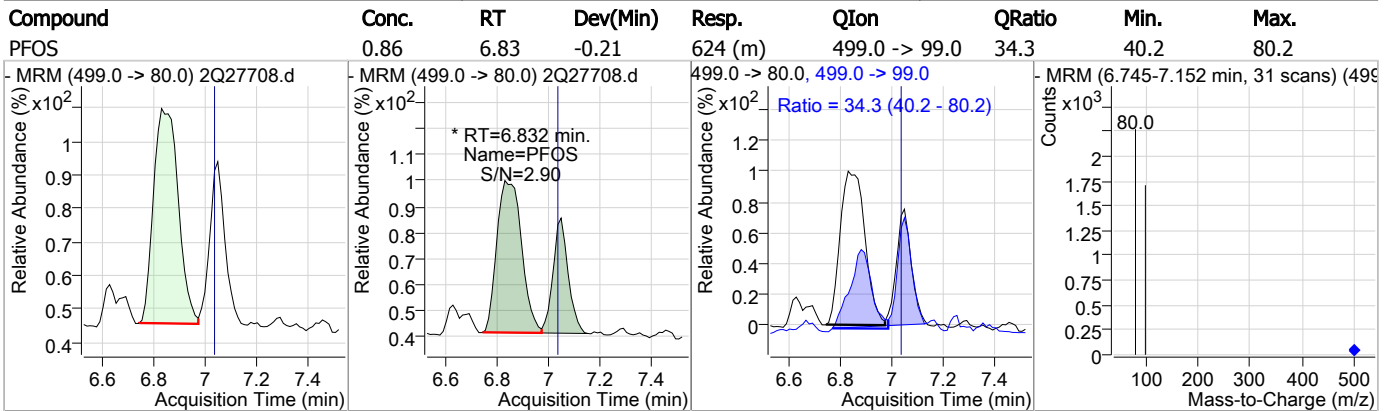
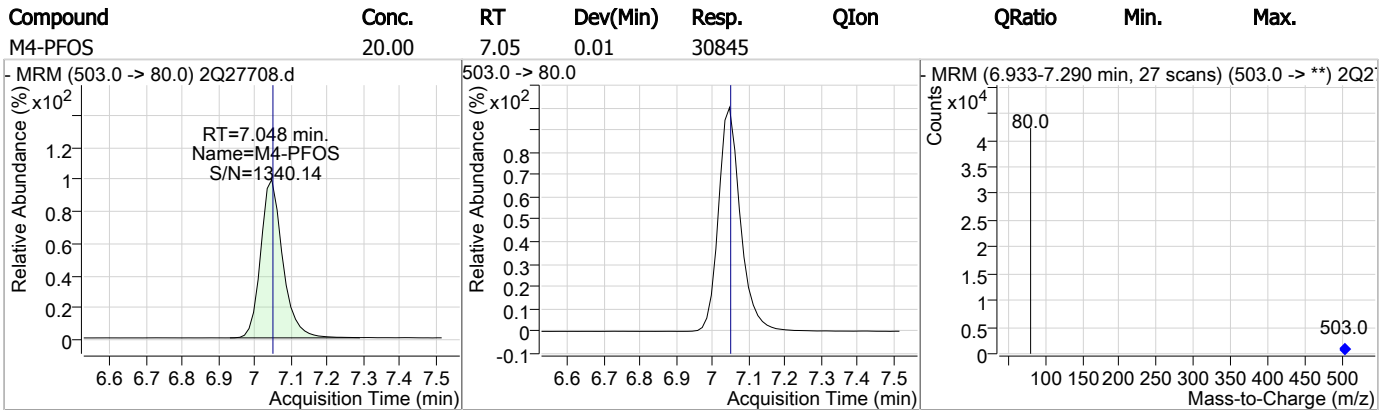
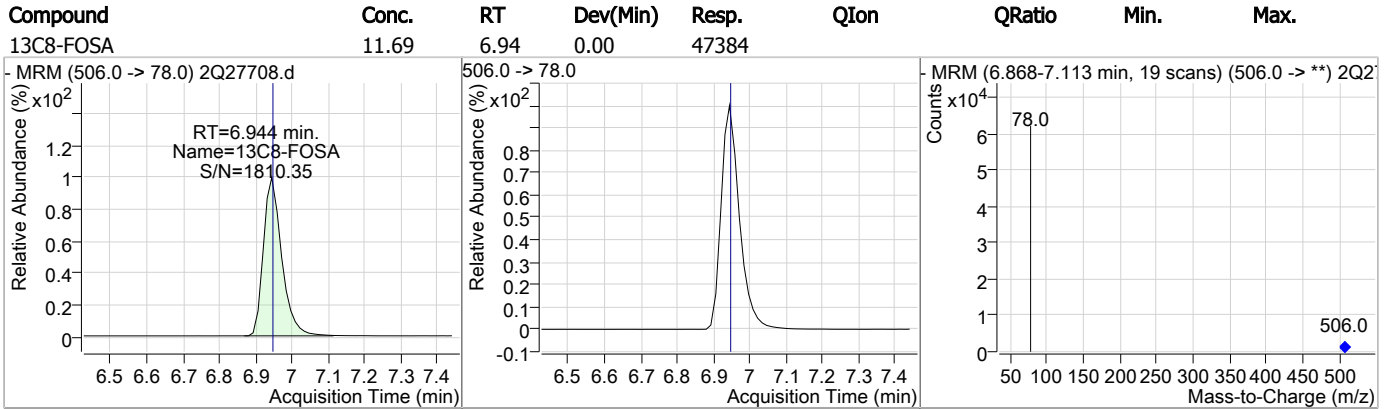
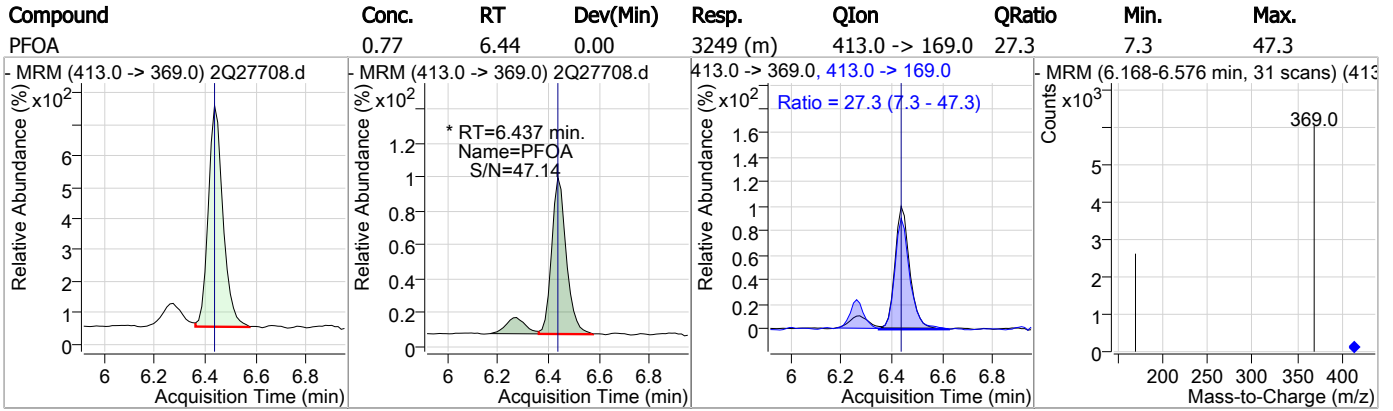
### Perfluorinated Compounds by LC/MS/MS



7.1.12  
7



### Perfluorinated Compounds by LC/MS/MS

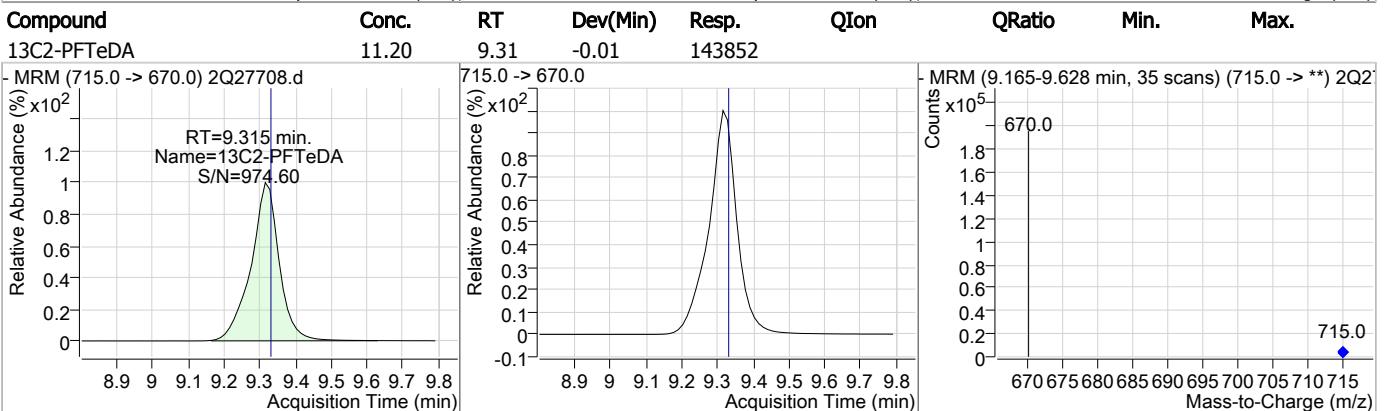
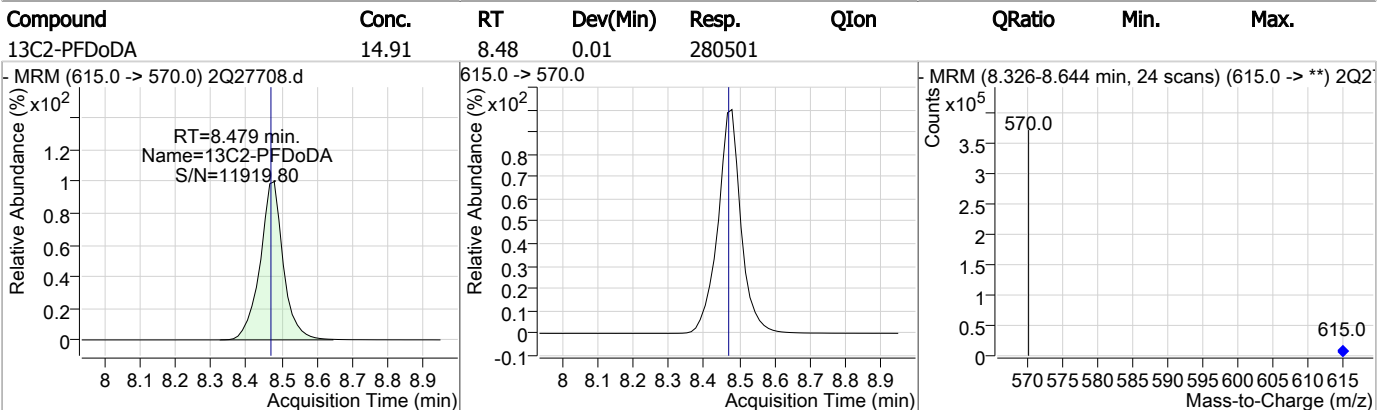
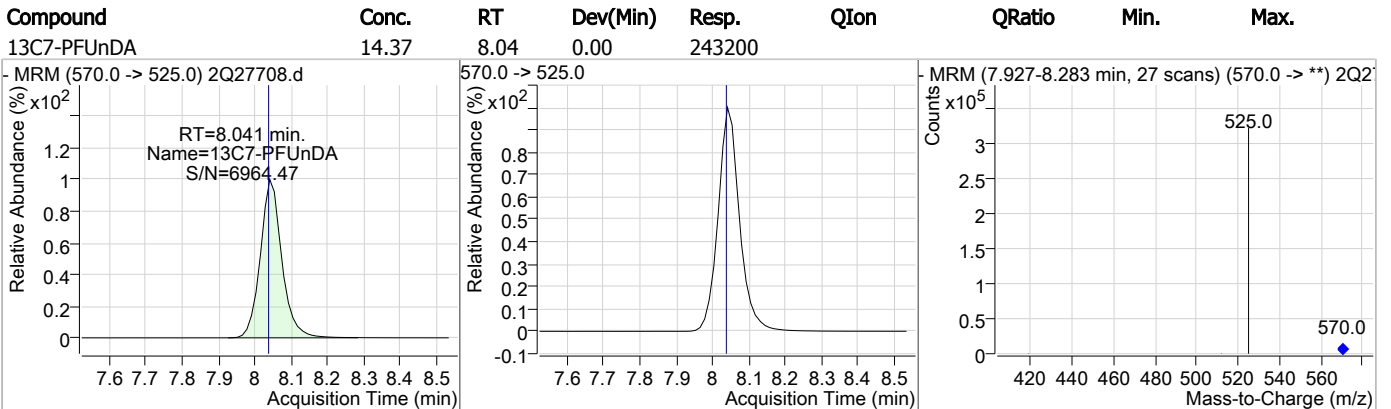
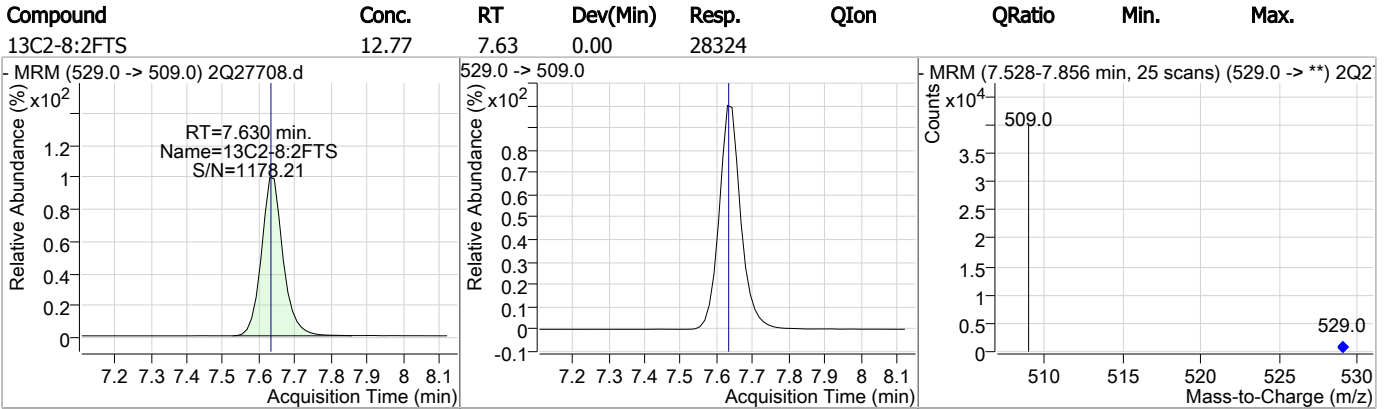


### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOS  | 11.53 | 7.05 | 0.00     | 15031  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| 13C9-PFNA  | 14.21 | 7.07 | 0.00     | 150446 |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| d3-MeFOSAA | 11.69 | 7.45 | 0.00     | 22416  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| 13C6-PFDA  | 13.42 | 7.59 | 0.00     | 183112 |      |        |      |      |
|            |       |      |          |        |      |        |      |      |

7.1.12  
7

### Perfluorinated Compounds by LC/MS/MS



# Manual Integration Approval Summary

**Sample Number:** FA62220-12      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27708.D      **Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Injection Time:** 03/18/19 20:12      **Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanoic acid       | 335-67-1  |      | 6.44           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 6.83           | Split peak |

7.1.12.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27709.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 8:28:38 PM  
 Sample Name : fa62220-13  
 Vial : Vial 29  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 286411 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 38937  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 104610 | 20.00 µg/L        | -0.013   |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 89457  | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 128320 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 186432 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 200942 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 187237 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 226109 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 304648 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 348750 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 185354 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 62257  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 15494  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16797  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 17609  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 51559  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 64697  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 34372  | 20.00 µg/L        | 0.013    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 28711  | 20.00 µg/L        | 0.013    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 51538  | 17.33 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.7%  |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 64705  | 20.16 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.8% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 34378  | 15.50 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.5%  |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 348665 | 18.54 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.7%  |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 185081 | 14.42 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 72.1%  |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 15467  | 16.96 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.8%  |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16795  | 16.48 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.4%  |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 104354 | 17.40 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.0%  |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 186319 | 18.01 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.1%  |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 128329 | 17.66 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.3%  |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 89375  | 17.58 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.9%  |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 226103 | 16.57 µg/L        | 0.000    |

7.1.13  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.8%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 304632 | 18.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.0%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 62330  | 15.37 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 76.9%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 200827 | 19.25 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.3%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 17582  | 13.49 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 67.4%  |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 187184 | 17.68 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.4%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 28686  | 14.96 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.8%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 286874 | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 38938  | 19.99 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

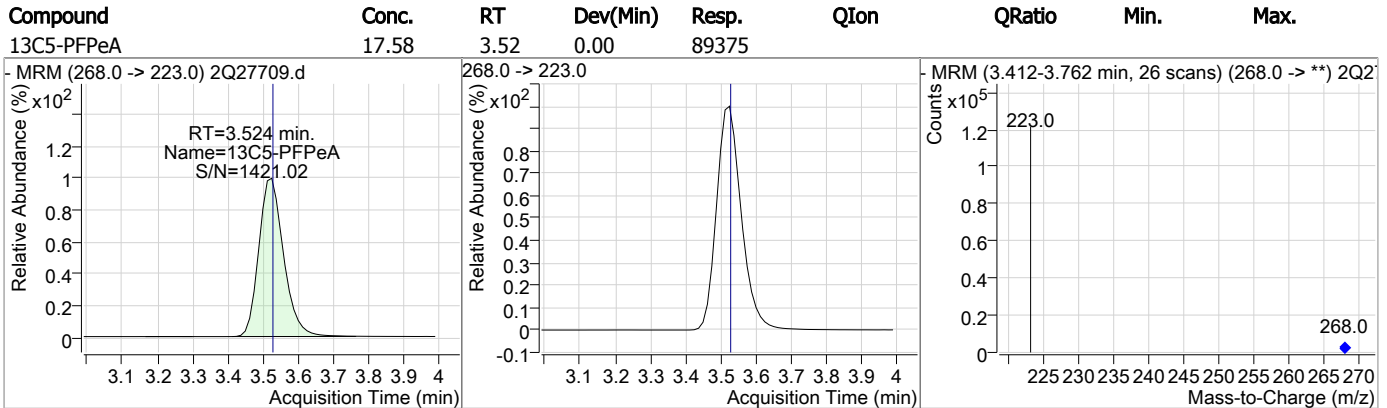
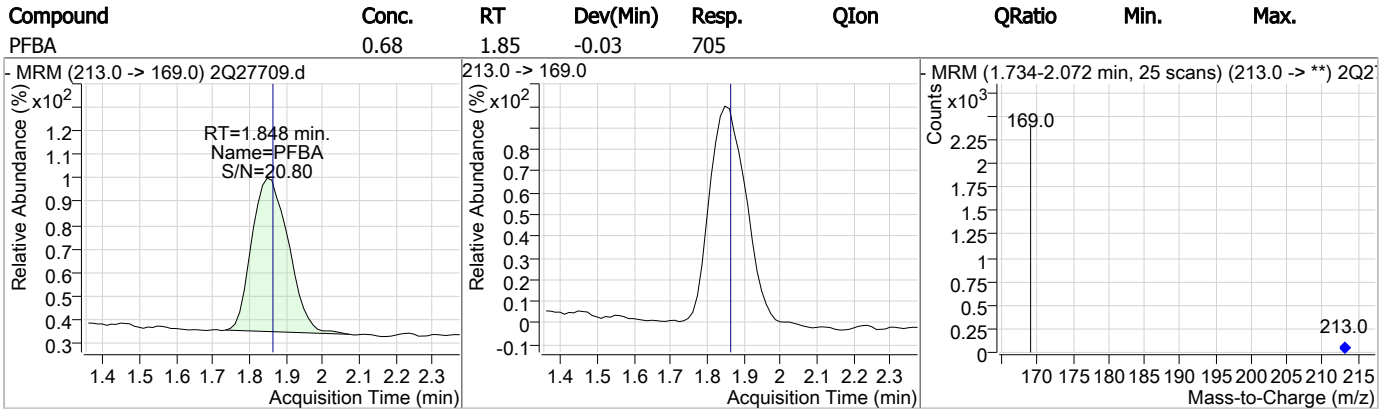
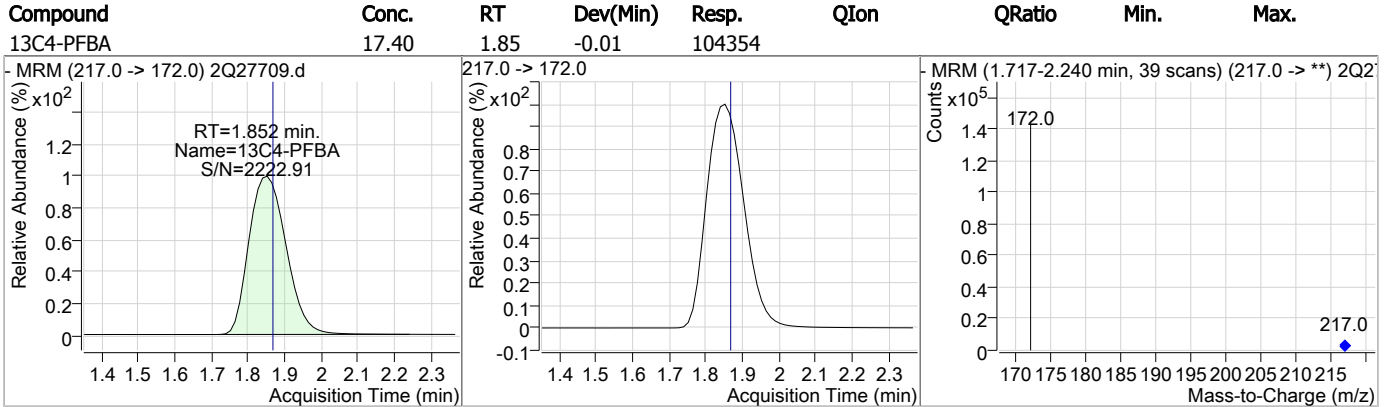
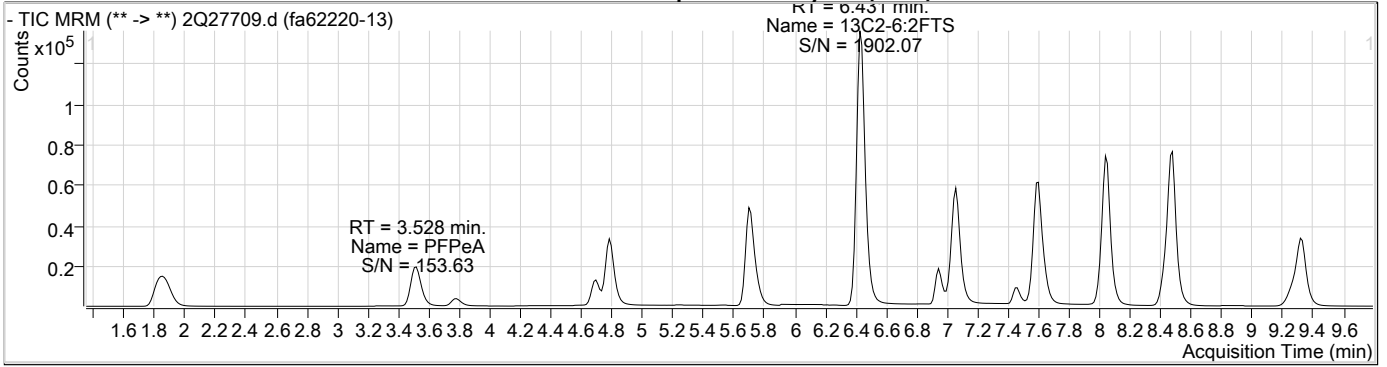
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 705   | 0.68 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 777   | 0.63 µg/L   | 93     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 2923  | 1.32 µg/L   | 99     |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 2881  | 3.10 µg/L   | m 99   |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | 6.437 | 413.0 -> 369.0 | 3416  | 0.63 µg/L   | m 93   |
| PFOS             | 6.844 | 499.0 -> 80.0  | 0     | 0.00 µg/L   | m 1    |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 4719  | 1.22 µg/L   | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 397   | 0.50 µg/L   | 98     |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.13  
7

### Perfluorinated Compounds by LC/MS/MS

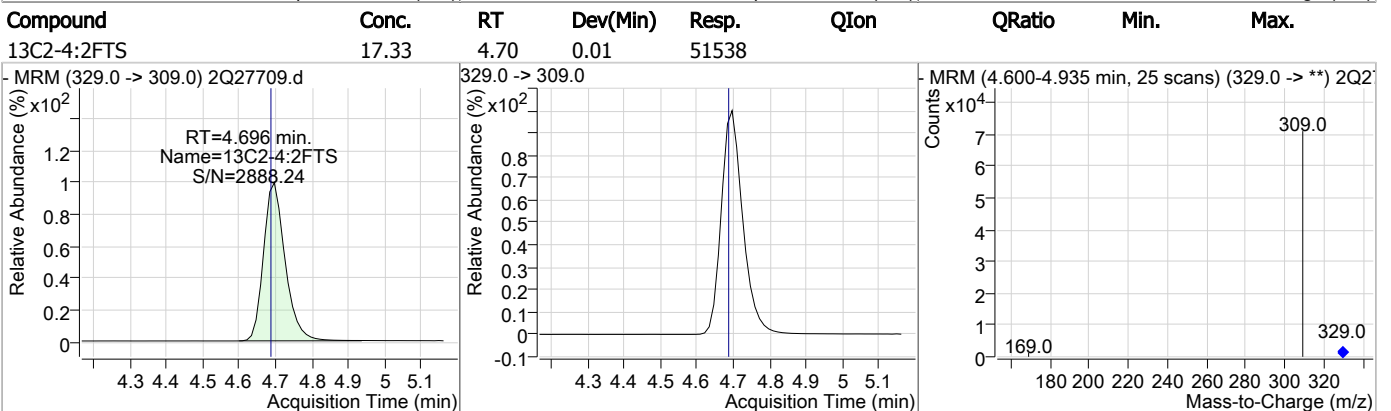
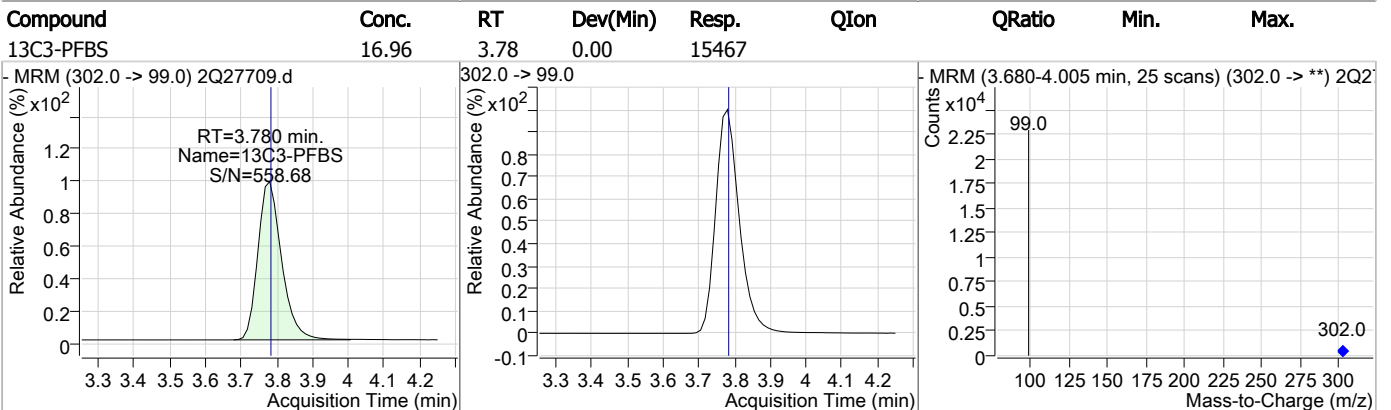
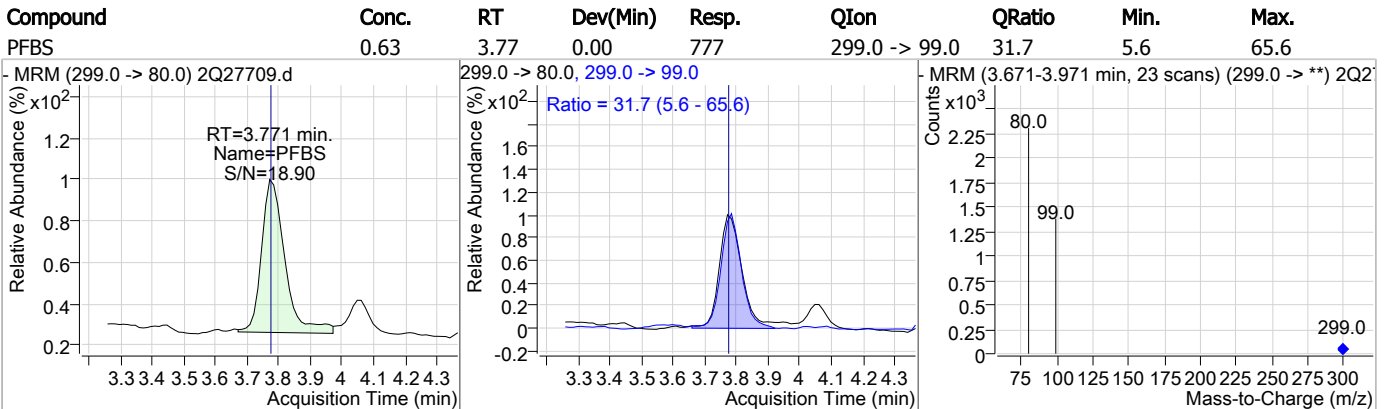
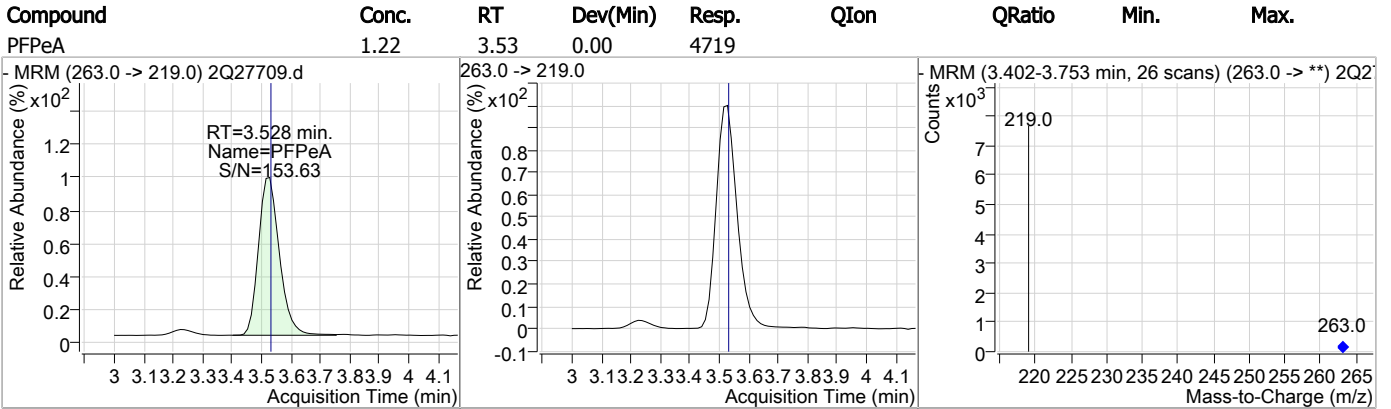


7.1.13

7



### Perfluorinated Compounds by LC/MS/MS

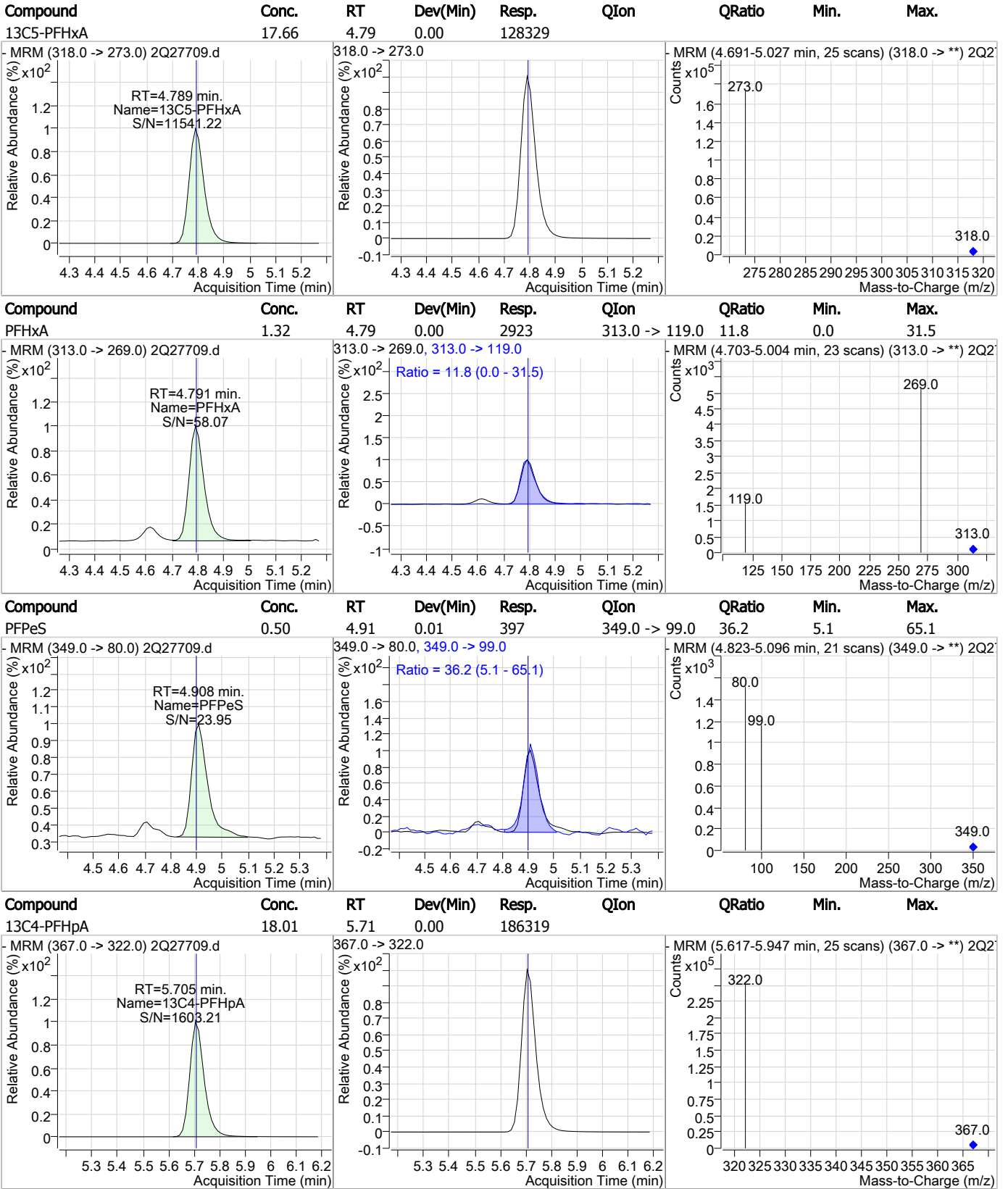


7.1.13  
7





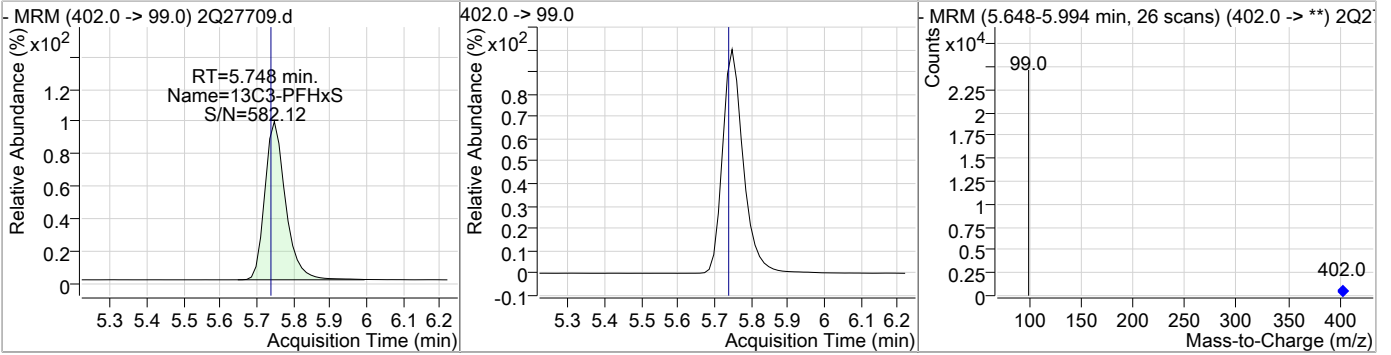
### Perfluorinated Compounds by LC/MS/MS



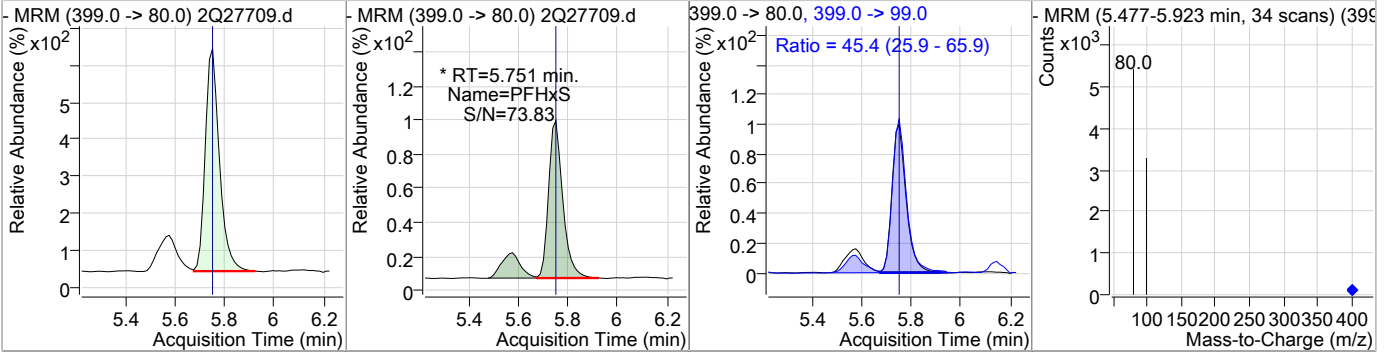
7.1.13  
7

### Perfluorinated Compounds by LC/MS/MS

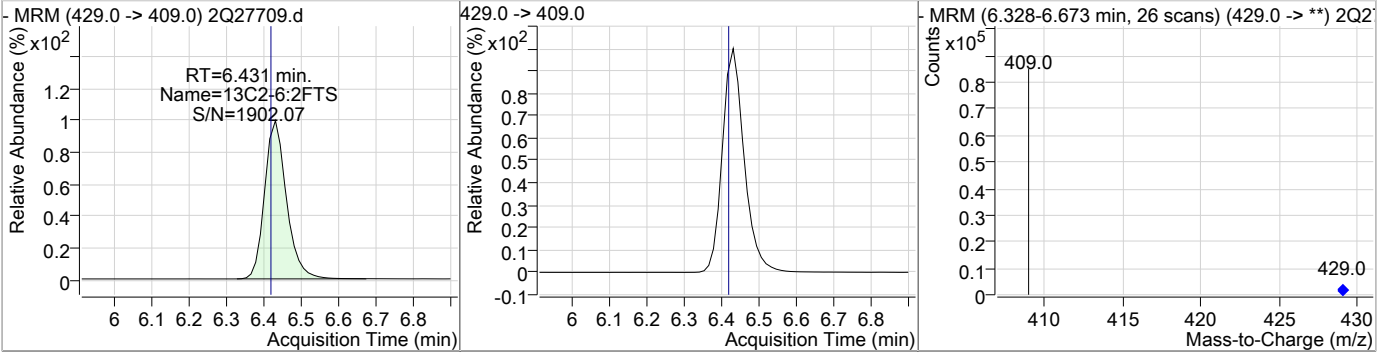
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 16.48 | 5.75 | 0.01     | 16795 |      |        |      |      |



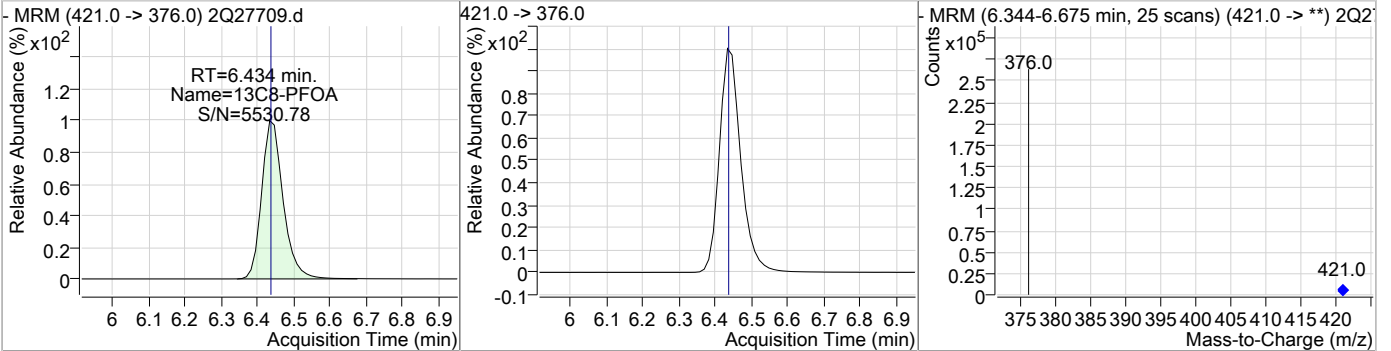
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFHxS    | 3.10  | 5.75 | 0.01     | 2881 (m) | 399.0 -> 99.0 | 45.4   | 25.9 | 65.9 |



| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-6:2FTS | 20.16 | 6.43 | 0.02     | 64705 |      |        |      |      |

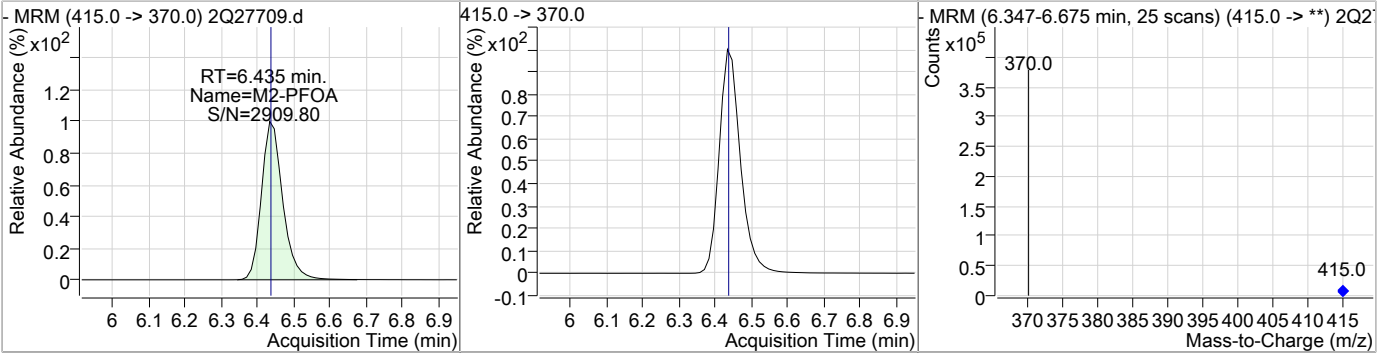


| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 19.25 | 6.43 | 0.00     | 200827 |      |        |      |      |

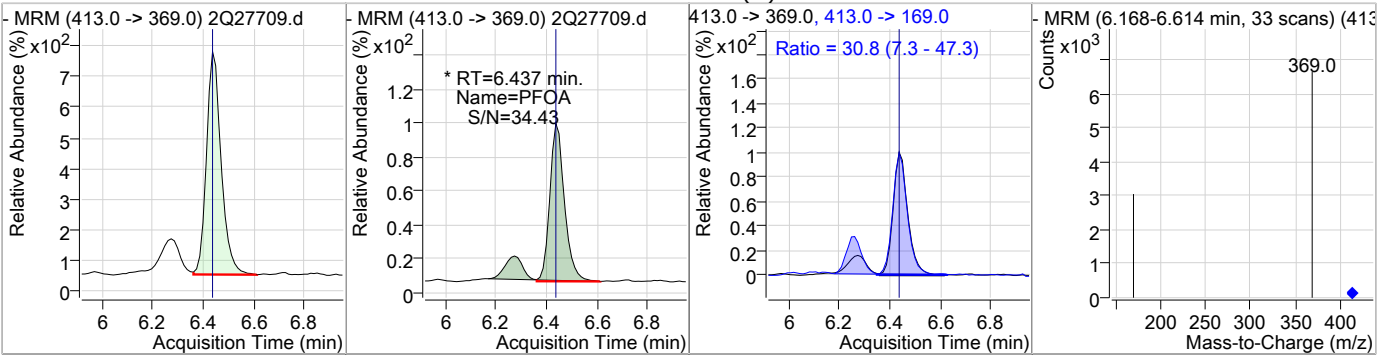


### Perfluorinated Compounds by LC/MS/MS

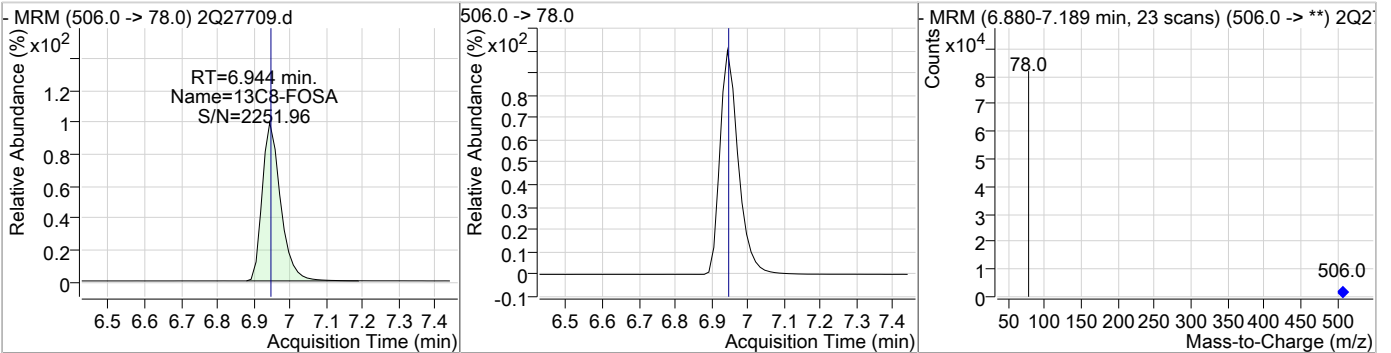
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.01 | 6.44 | 0.00     | 286874 |      |        |      |      |



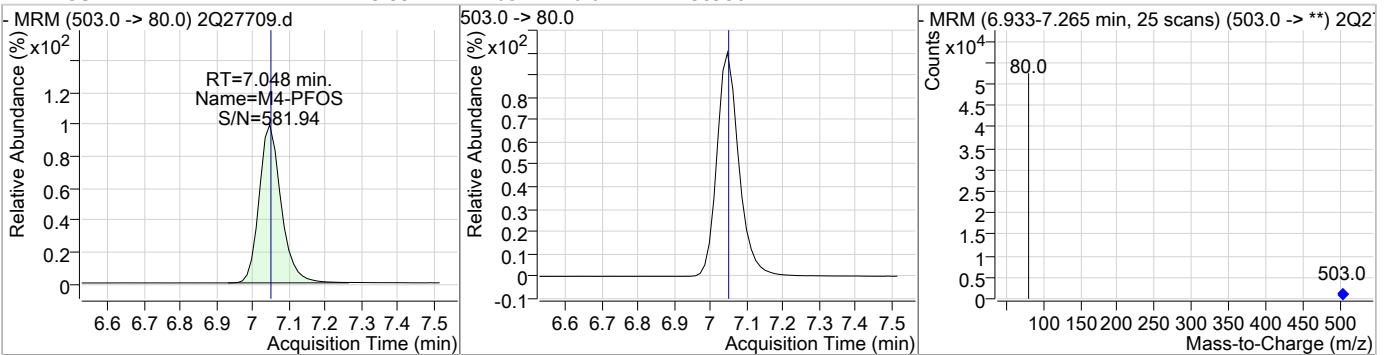
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|----------------|--------|------|------|
| PFOA     | 0.63  | 6.44 | 0.00     | 3416 (m) | 413.0 -> 169.0 | 30.8   | 7.3  | 47.3 |



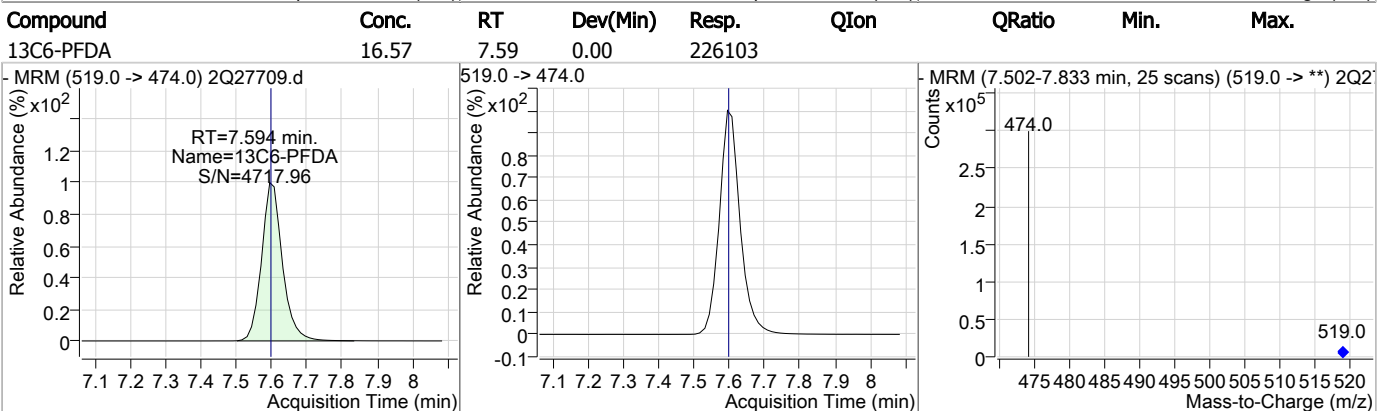
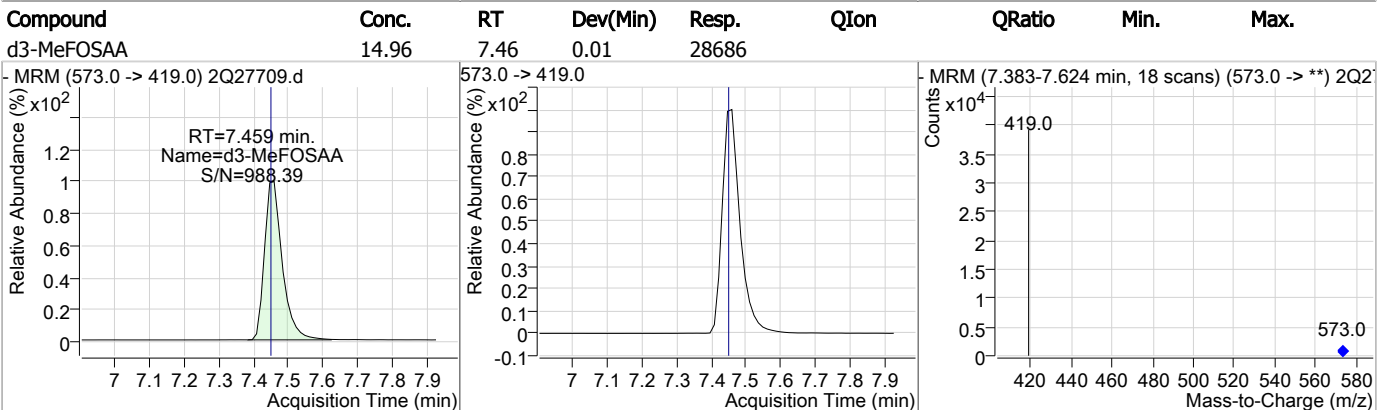
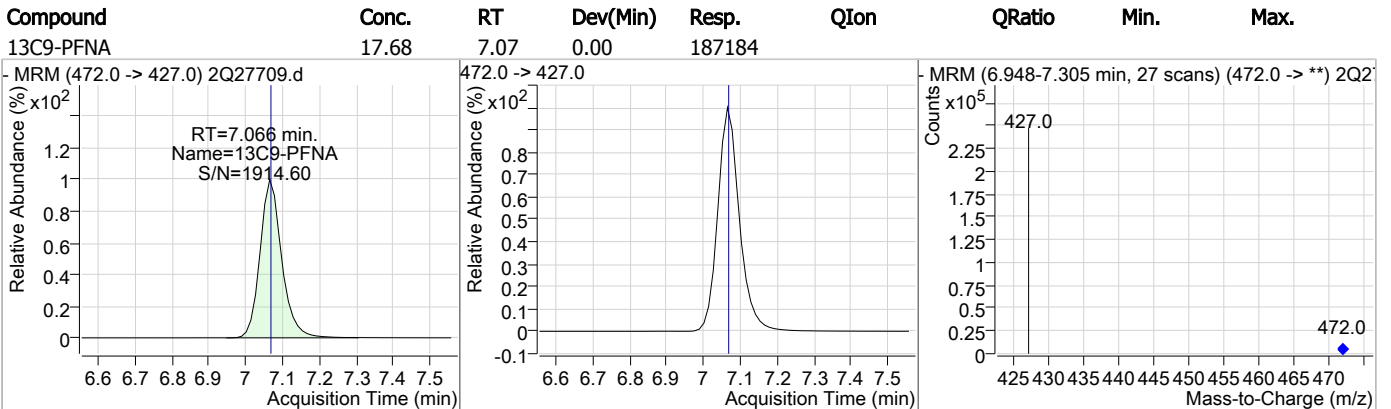
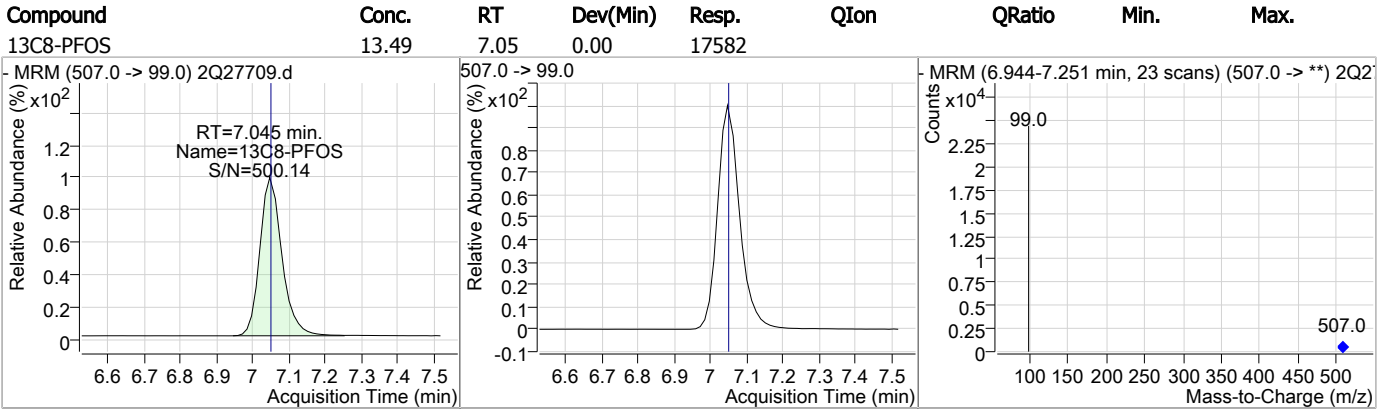
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-FOSA | 15.37 | 6.94 | 0.00     | 62330 |      |        |      |      |



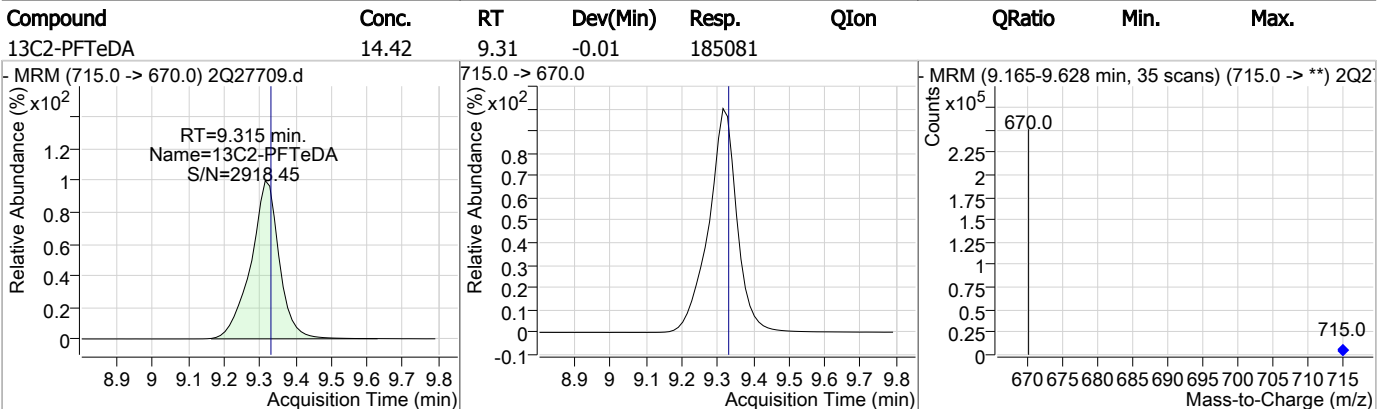
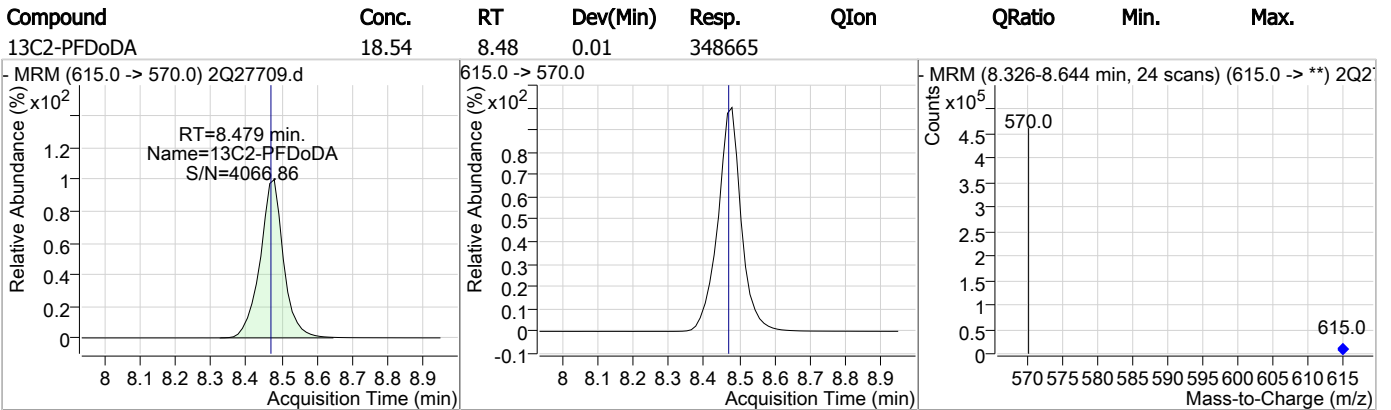
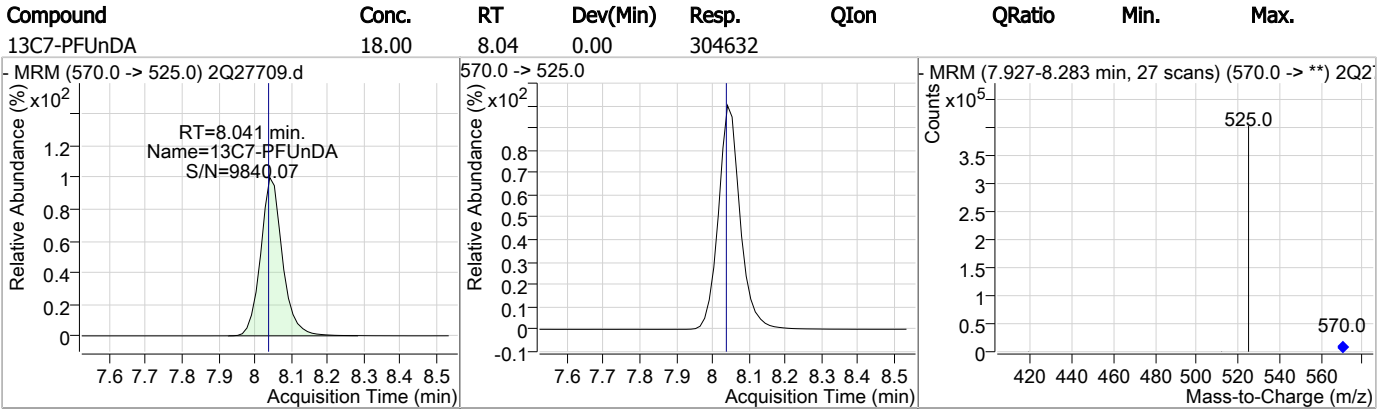
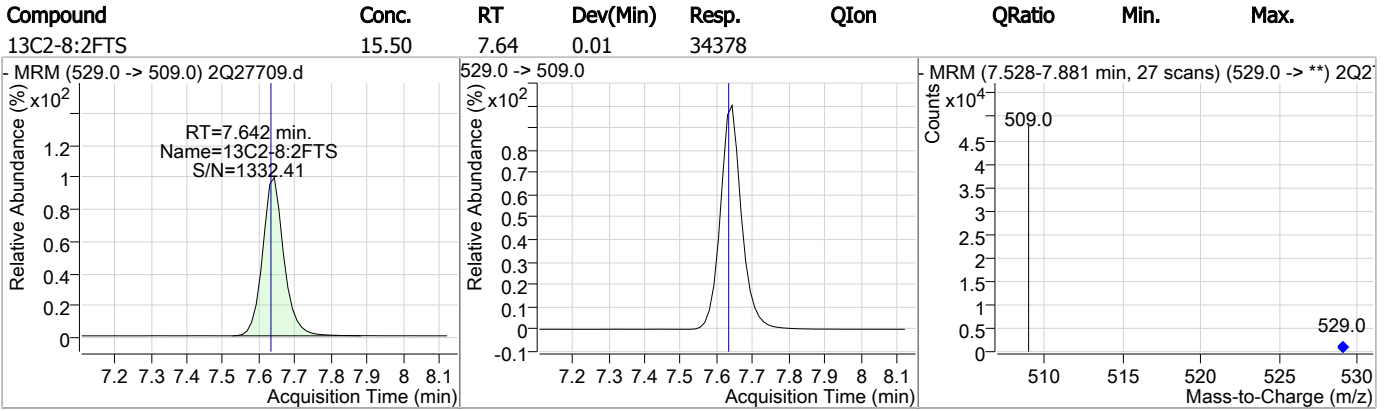
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| M4-PFOS  | 19.99 | 7.05 | 0.01     | 38938 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



# Manual Integration Approval Summary

**Sample Number:** FA62220-13  
**Lab FileID:** 2Q27709.D  
**Injection Time:** 03/18/19 20:28

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS      | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4 |      | 5.75           | Split peak |
| Perfluorooctanoic acid       | 335-67-1 |      | 6.44           | Split peak |

7.1.13.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27710.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 8:44:24 PM  
 Sample Name : fa62220-14  
 Vial : Vial 30  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 218359 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 29899  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 80150  | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 67834  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 96584  | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 140687 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 150826 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 142494 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 175395 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 219476 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 262224 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 149564 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 48877  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 11396  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 12375  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 13840  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 37463  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 46813  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 26220  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 21280  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 37338  | 12.56 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 62.8% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 46837  | 14.59 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 73.0% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 26212  | 11.82 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 59.1% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 262123 | 13.94 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.7% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 149480 | 11.64 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 58.2% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 11390  | 12.49 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 62.5% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 12363  | 12.13 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 60.6% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 80002  | 13.34 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.7% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 140643 | 13.60 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 68.0% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 96464  | 13.28 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.4% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 67634  | 13.31 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.5% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 175384 | 12.85 µg/L       | 0.000    |

7.1.14  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 64.3%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 219450 | 12.97 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 64.8%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 48872  | 12.05 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 60.3%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 150734 | 14.45 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 72.2%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 13834  | 10.61 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 53.1%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 142466 | 13.46 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 67.3%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 21287  | 11.10 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 55.5%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 218458 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 29948  | 20.02 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

7.1.14  
7

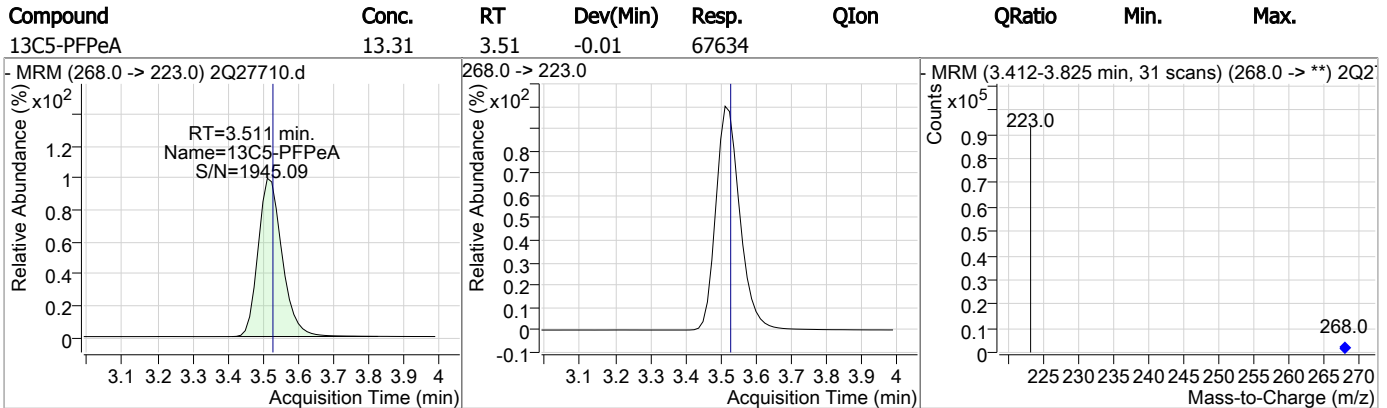
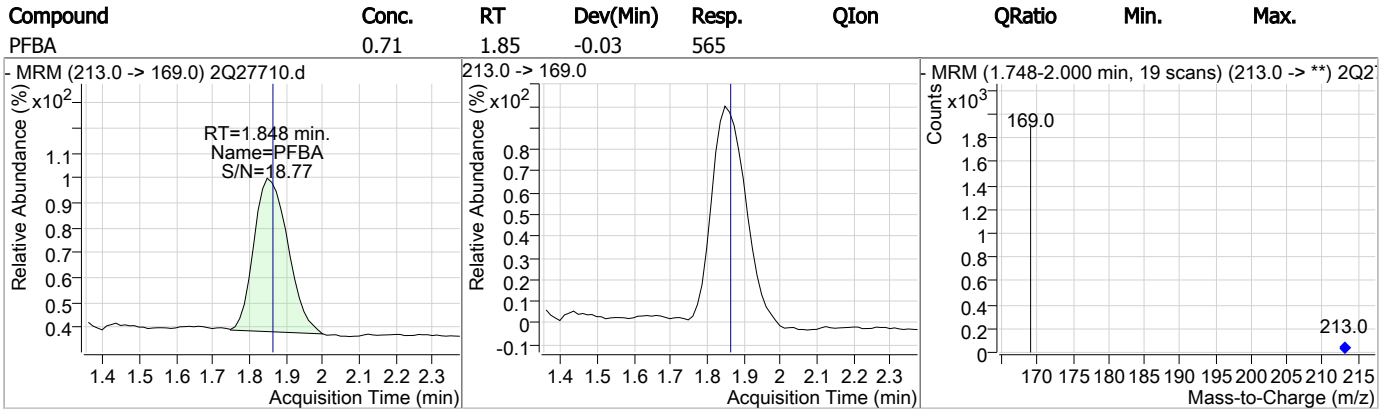
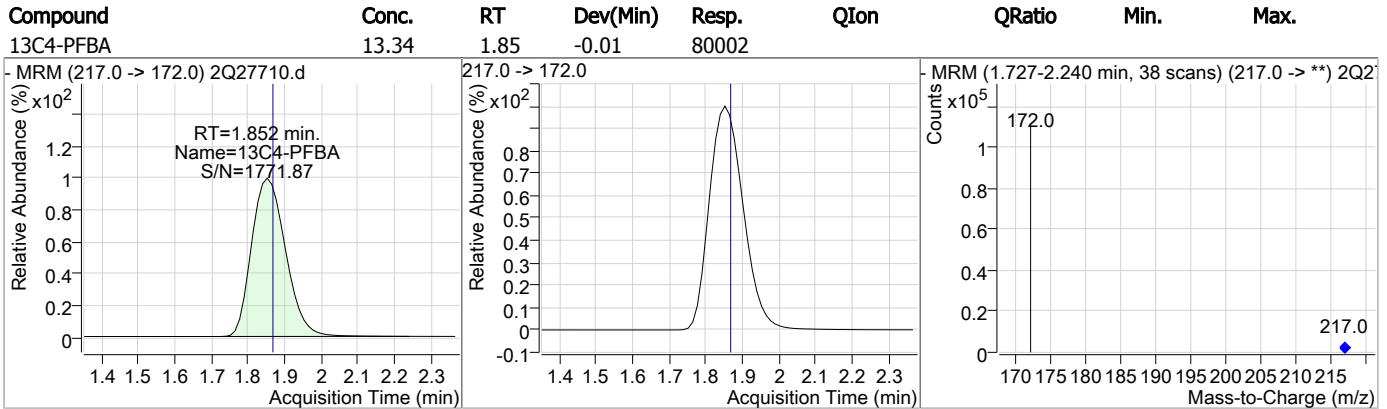
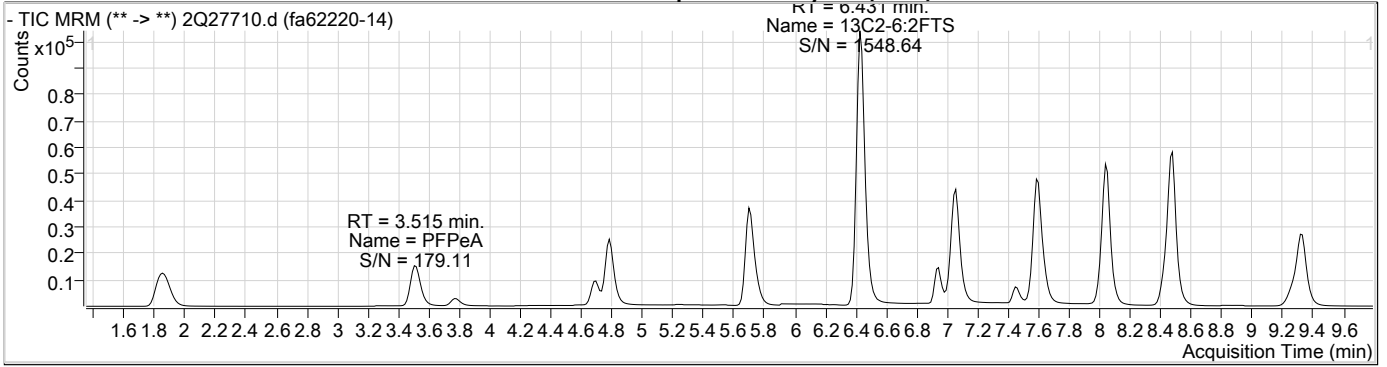
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 565   | 0.71 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 627   | 0.69 µg/L   | 94     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 2332  | 1.40 µg/L   | 98     |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 2218  | 3.24 µg/L   | m 93   |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | 6.869 | 499.0 -> 80.0  | 0     | 0.00 µg/L   | m 1    |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 3887  | 1.32 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

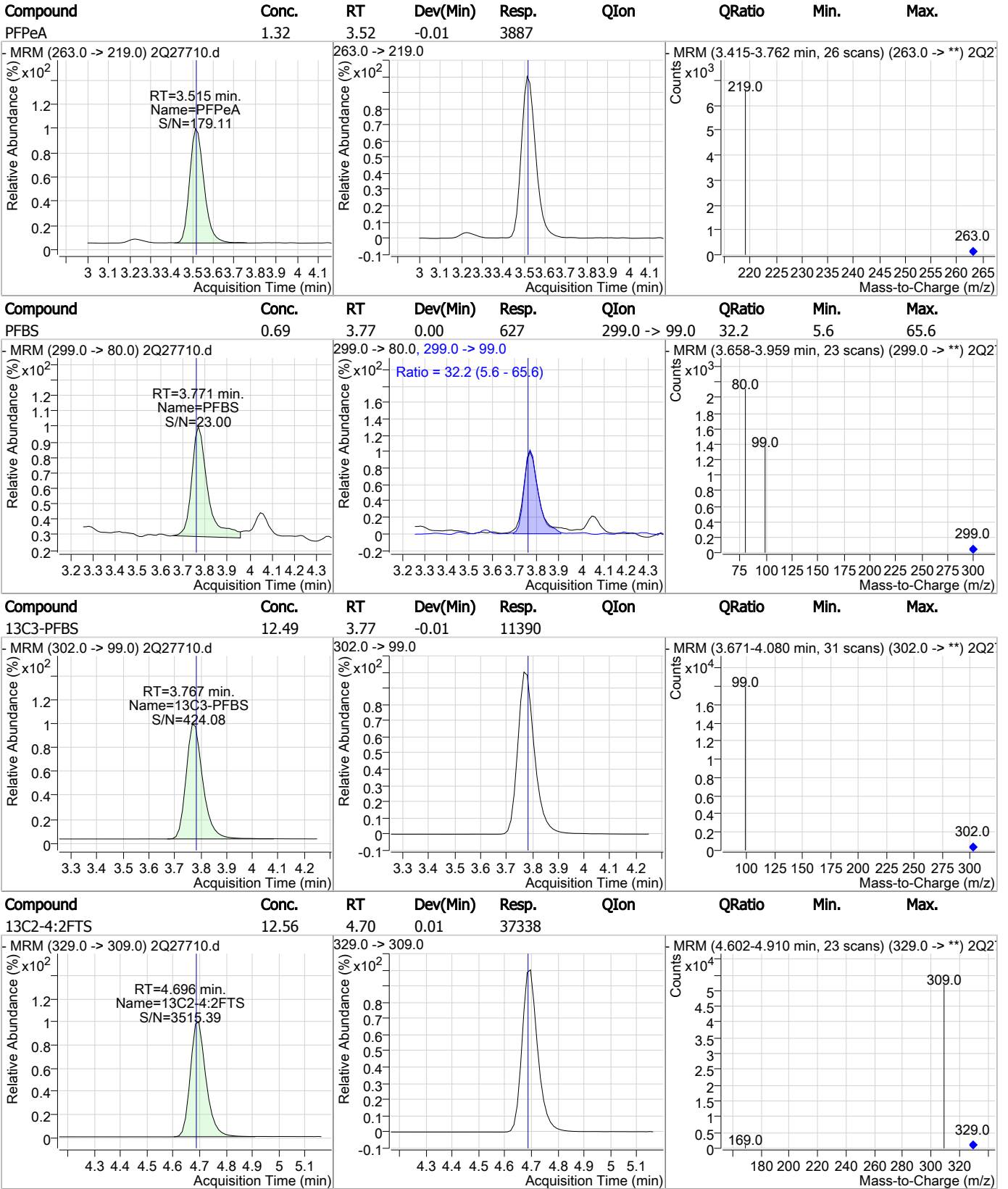
# = Qualifier out of range, m = manually integrated, + = Area summed



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

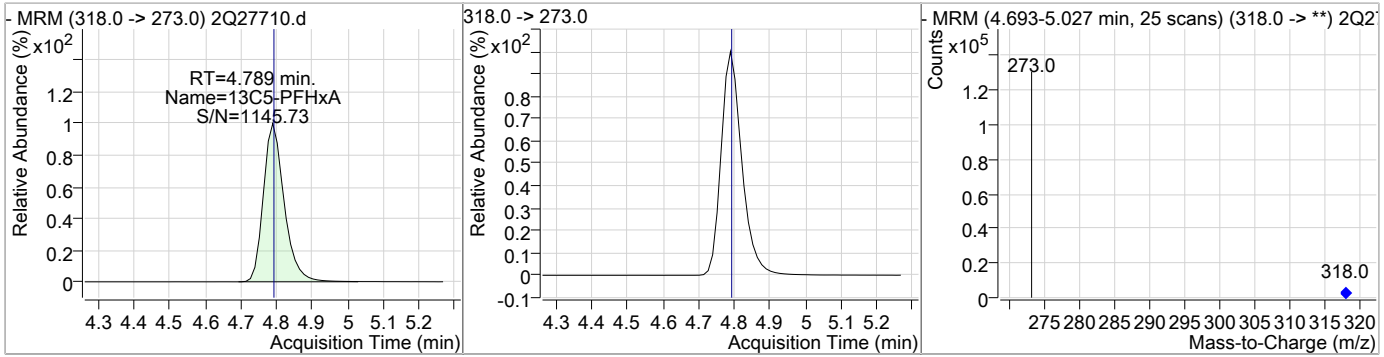


7.1.14  
7

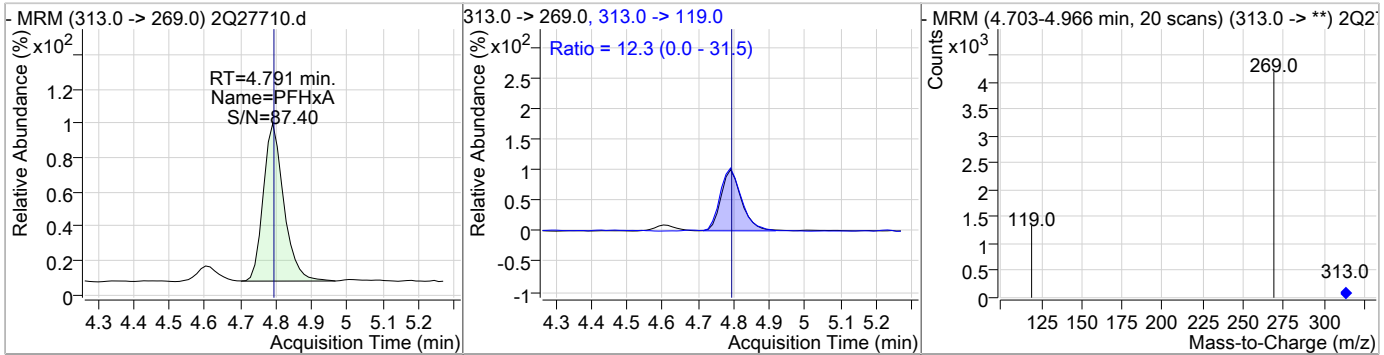


### Perfluorinated Compounds by LC/MS/MS

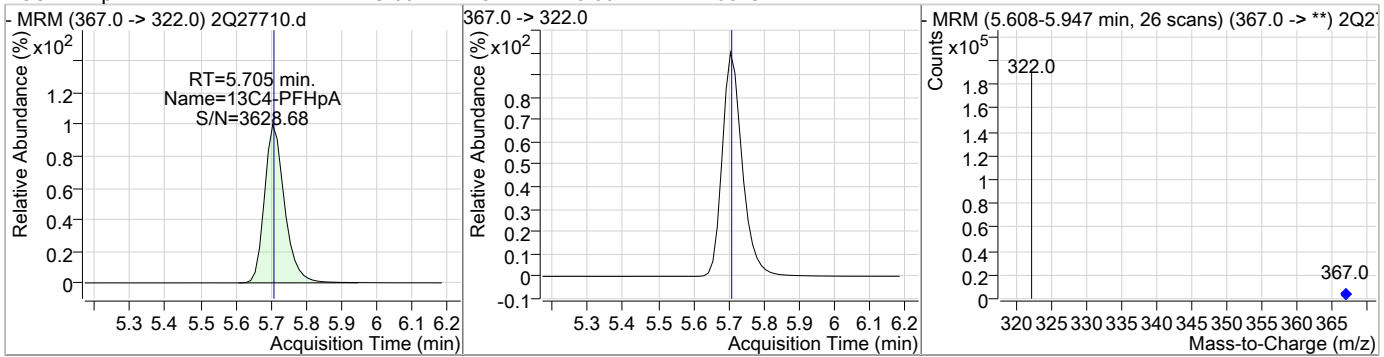
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C5-PFHxA | 13.28 | 4.79 | 0.00     | 96464 |      |        |      |      |



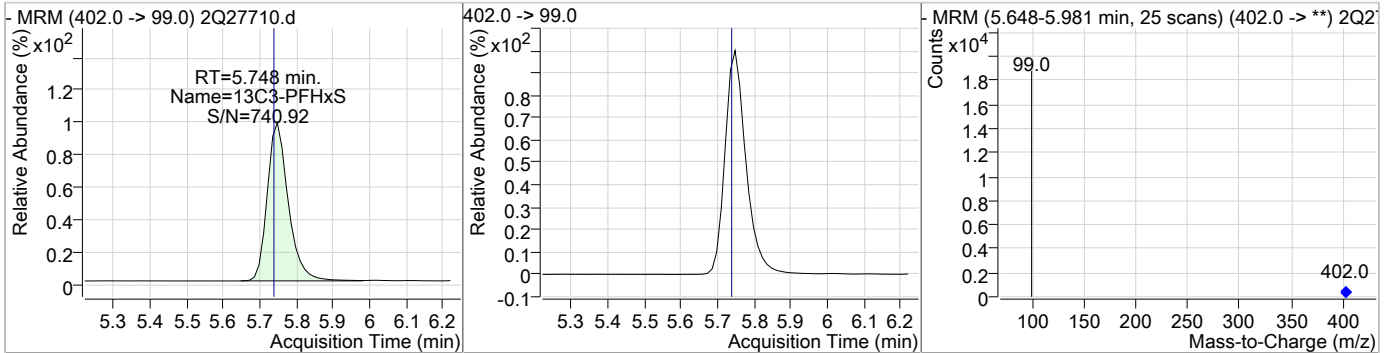
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon     | QRatio     | Min. | Max. |
|----------|-------|------|----------|-------|----------|------------|------|------|
| PFHxA    | 1.40  | 4.79 | 0.00     | 2332  | 313.0 -> | 119.0 12.3 | 0.0  | 31.5 |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 13.60 | 5.71 | 0.00     | 140643 |      |        |      |      |

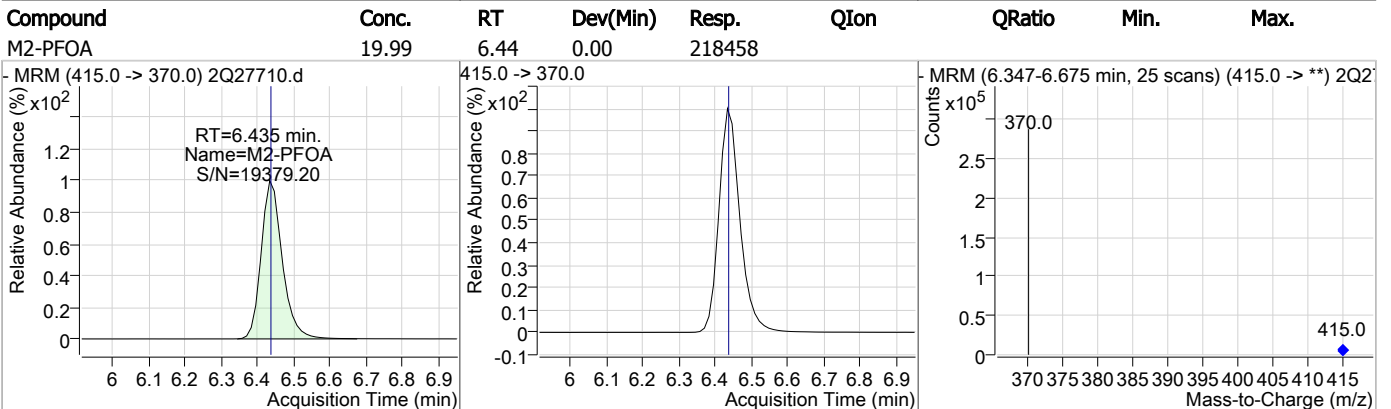
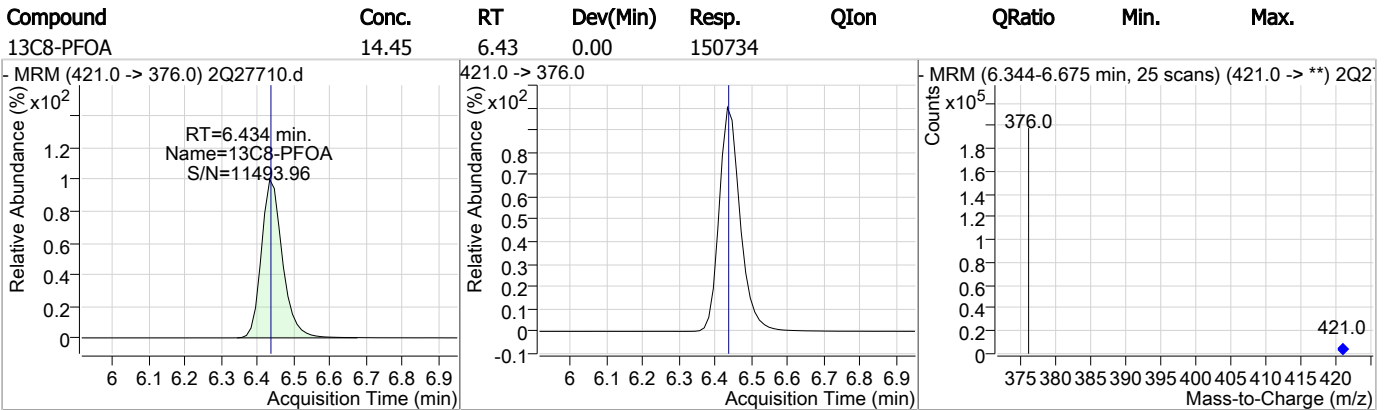
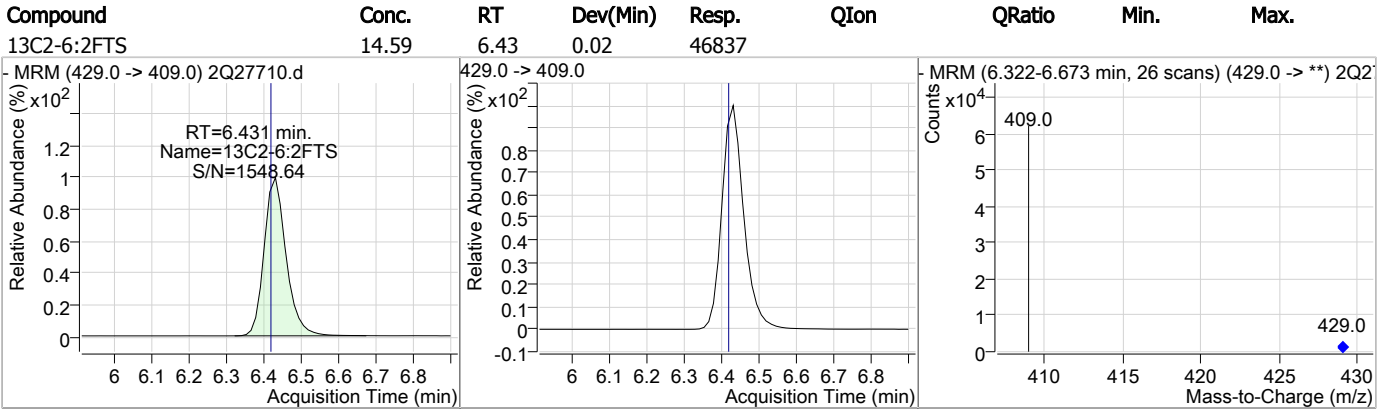
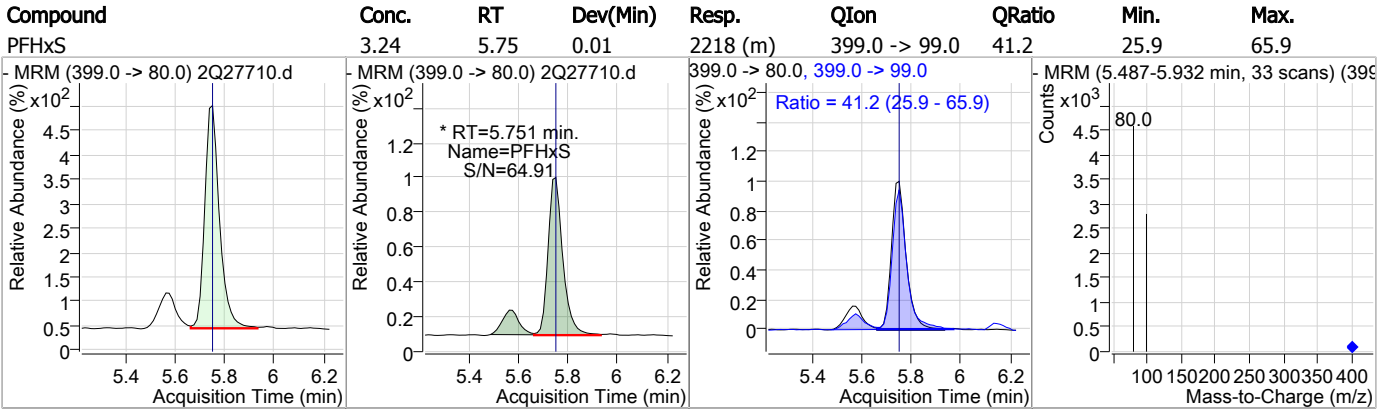


| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 12.13 | 5.75 | 0.01     | 12363 |      |        |      |      |

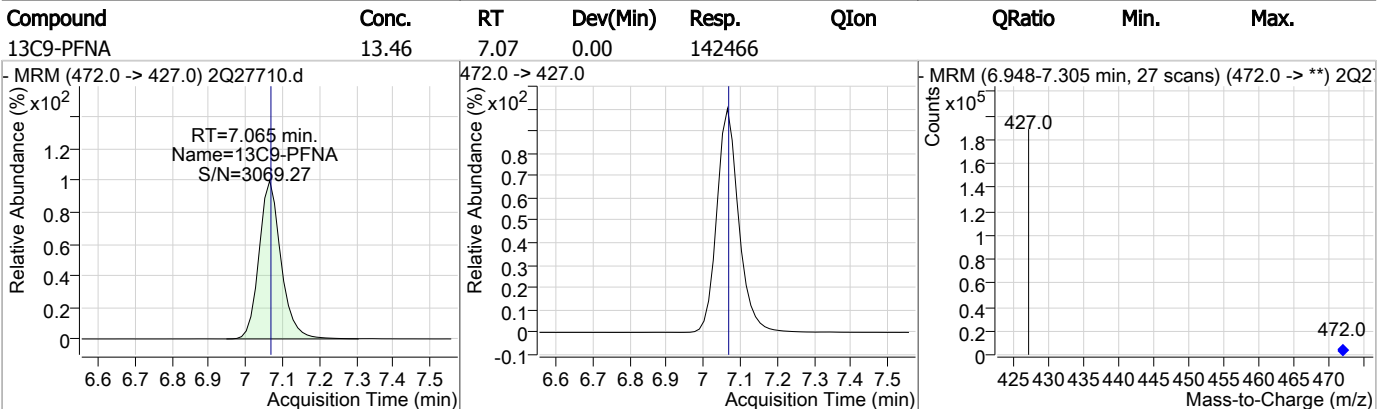
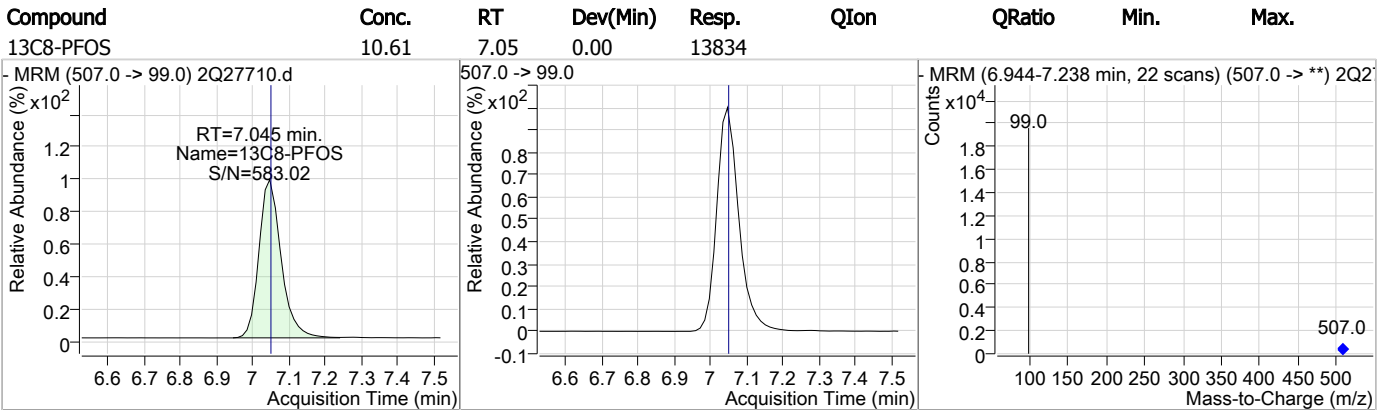
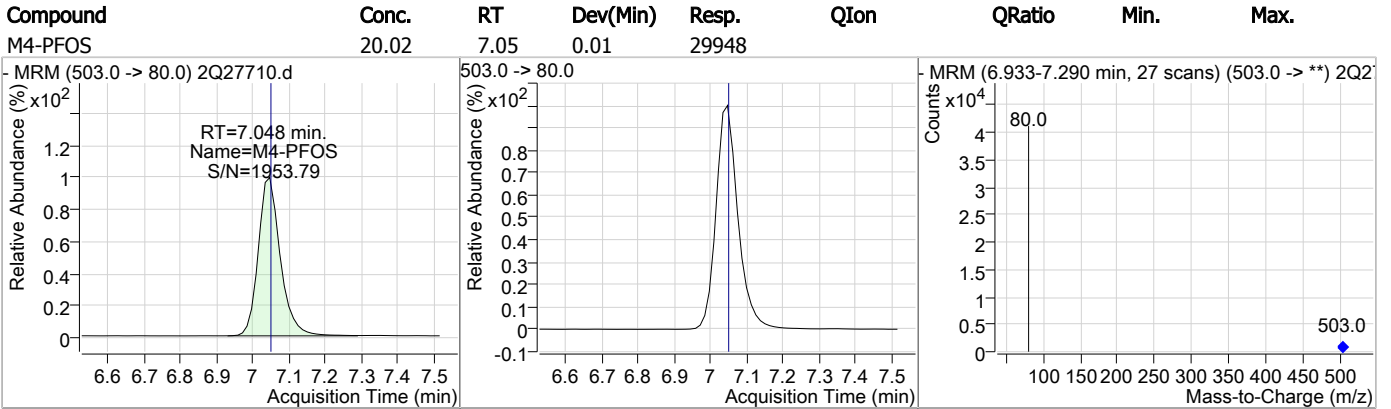
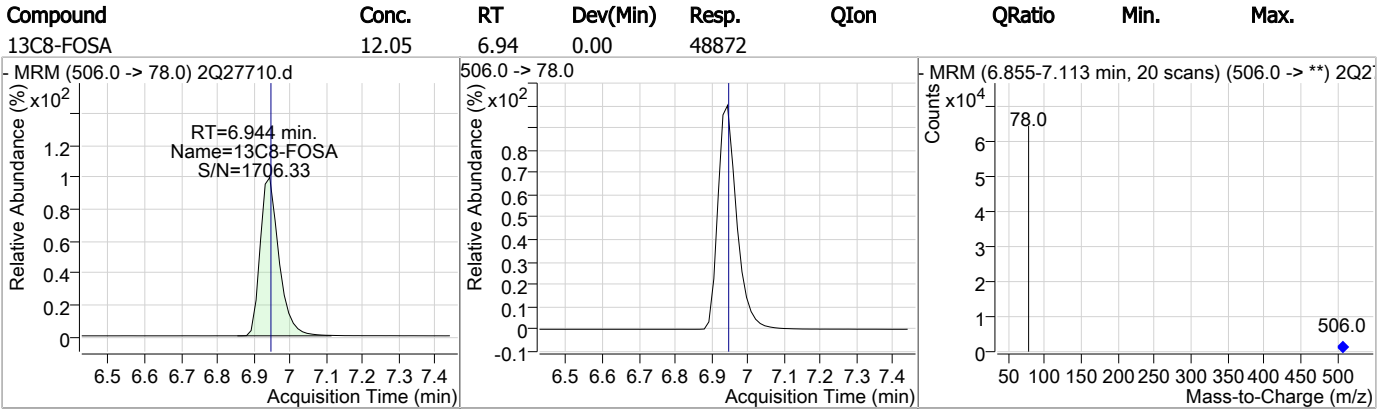


7.1.14  
7

### Perfluorinated Compounds by LC/MS/MS

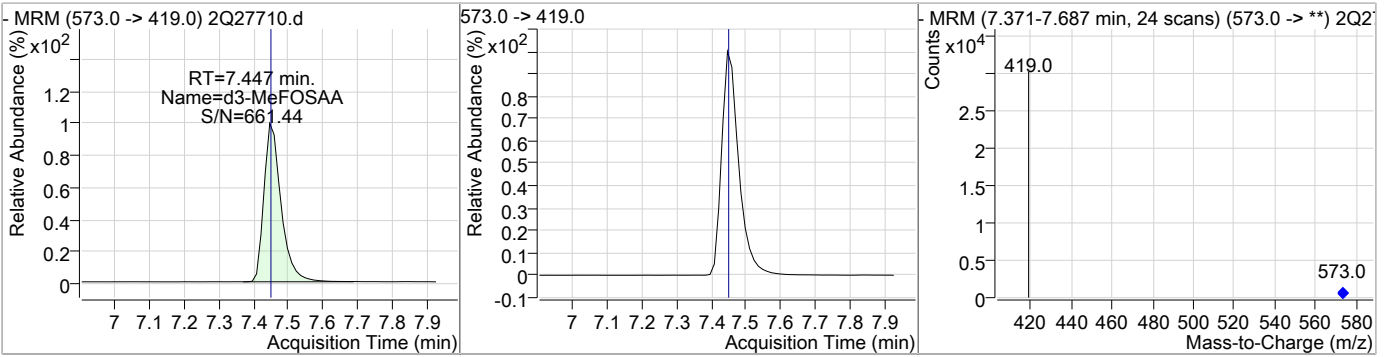


### Perfluorinated Compounds by LC/MS/MS

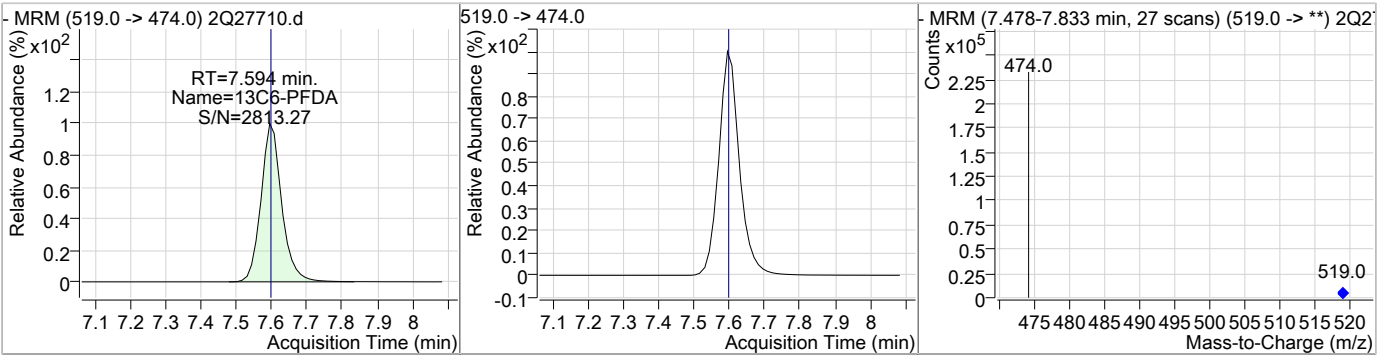


### Perfluorinated Compounds by LC/MS/MS

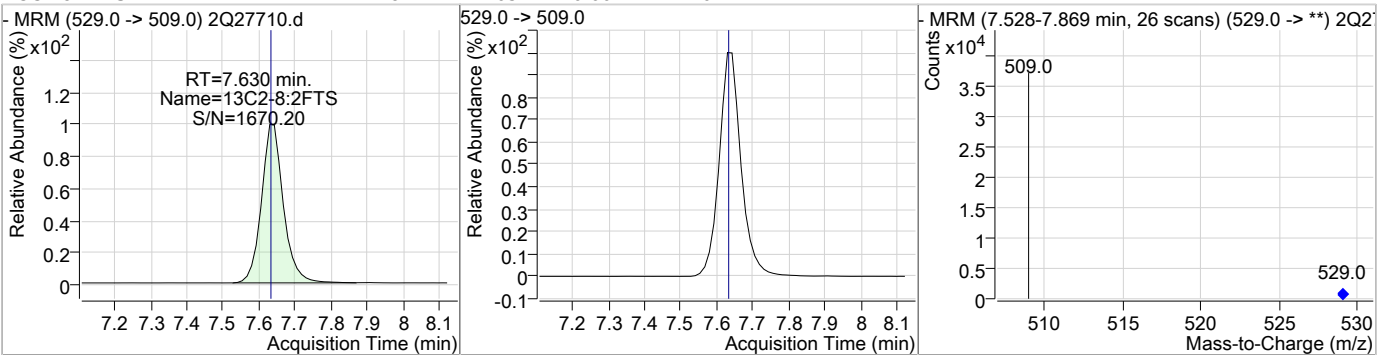
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



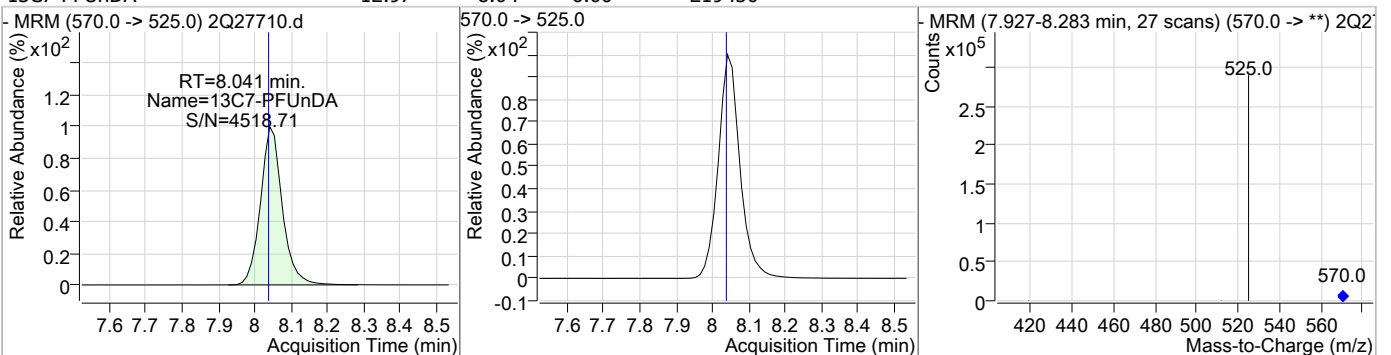
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

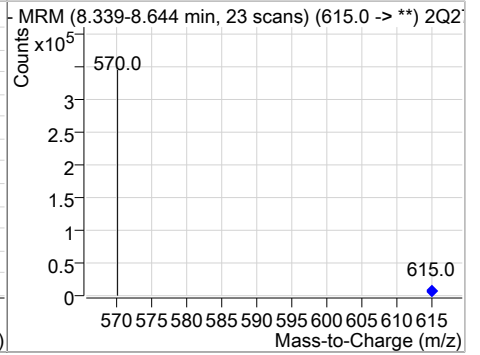
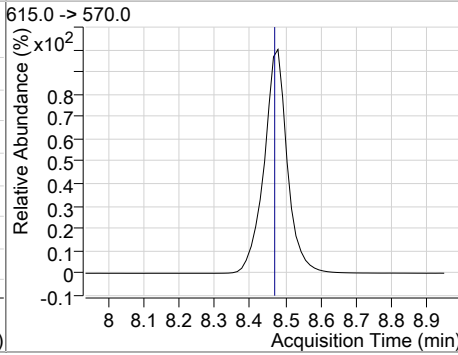
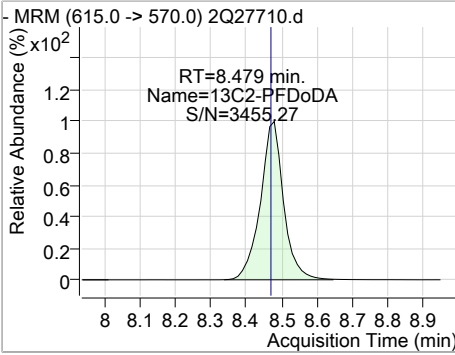


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

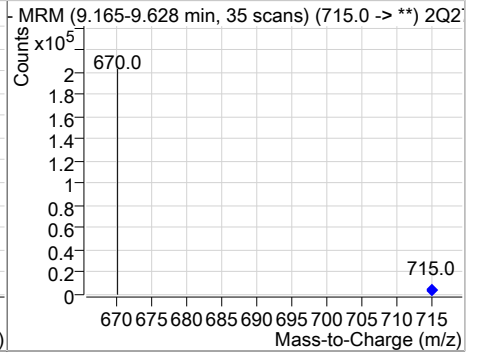
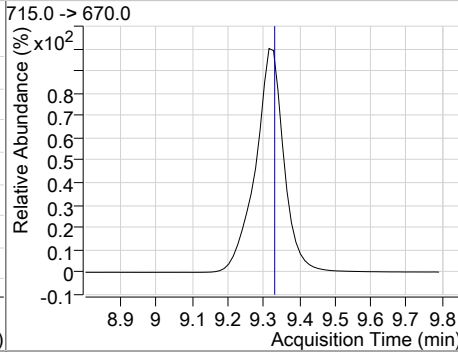
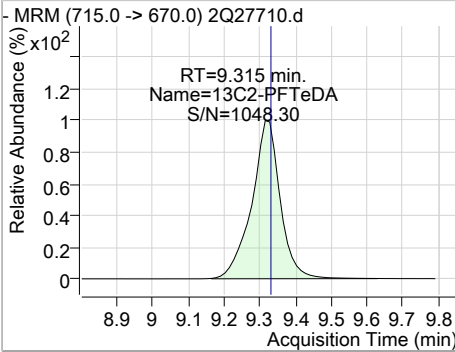


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 13.94 | 8.48 | 0.01     | 262123 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 11.64 | 9.31 | -0.01    | 149480 |      |        |      |      |



7.1.14  
7



# Manual Integration Approval Summary

**Sample Number:** FA62220-14

**Method:** EPA 537M QSM5.1 B-15

**Lab FileID:** 2Q27710.D

**Analyst approved:** 03/19/19 09:52 Nancy Saunders

**Injection Time:** 03/18/19 20:44

**Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS      | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4 |      | 5.75           | Split peak |

7.1.14.1

7



Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Norman Farmer  
 03/20/19 09:24

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27711.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 9:00:07 PM  
 Sample Name : fa62220-15  
 Vial : Vial 31  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 277830 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 37290  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 101517 | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 85846  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 120934 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 175478 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 189397 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 173053 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 201111 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 249446 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 290007 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 166112 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 58262  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 14239  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 15600  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 15529  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 48222  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 61042  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 30049  | 20.00 µg/L       | 0.013    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 23603  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 48306  | 16.25 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.2% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 61017  | 19.01 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.1% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 30034  | 13.55 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 67.7% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 289794 | 15.41 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.0% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 165818 | 12.92 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 64.6% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 14232  | 15.61 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.0% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 15601  | 15.30 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.5% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 101415 | 16.91 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.6% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 175358 | 16.95 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.8% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 120925 | 16.64 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.2% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 85834  | 16.89 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.4% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 201105 | 14.74 µg/L       | 0.000    |

7.1.15  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.7%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 249257 | 14.73 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.6%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 58251  | 14.37 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.8%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 189293 | 18.15 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.7%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 15534  | 11.92 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 59.6%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 173010 | 16.34 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.7%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 23596  | 12.31 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 61.5%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 277969 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 37330  | 20.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

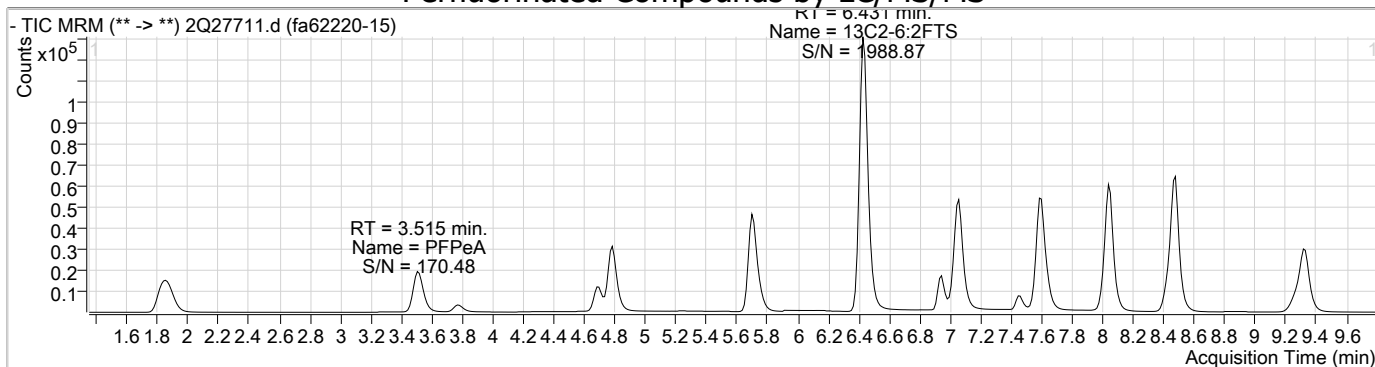
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 569   | 0.57 µg/L   | 100    |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 5825  | 0.77 µg/L   | 99     |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 2726  | 1.31 µg/L   | 100    |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 638   | 0.74 µg/L   | m 94   |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | 7.049 | 499.0 -> 80.0  | 661   | 0.88 µg/L   | #m 72  |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 5072  | 1.36 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

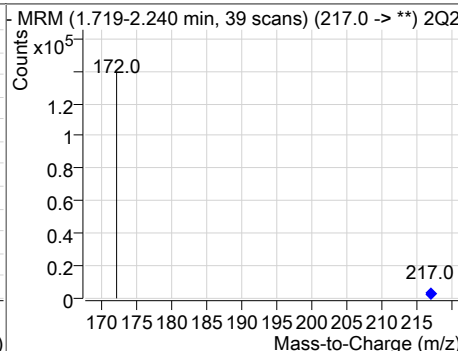
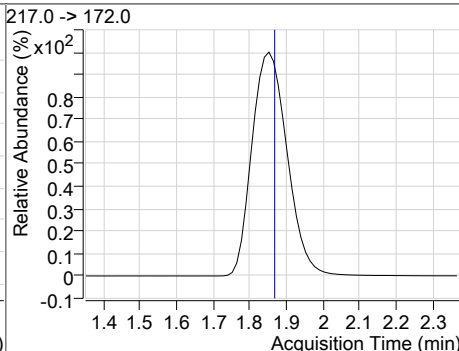
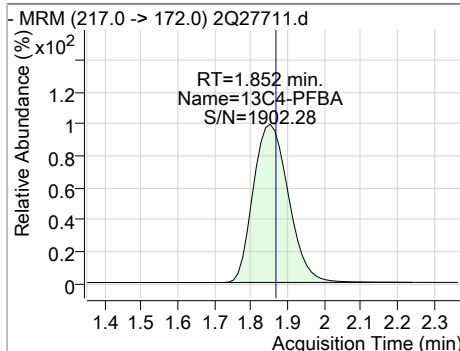
# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.15  
7

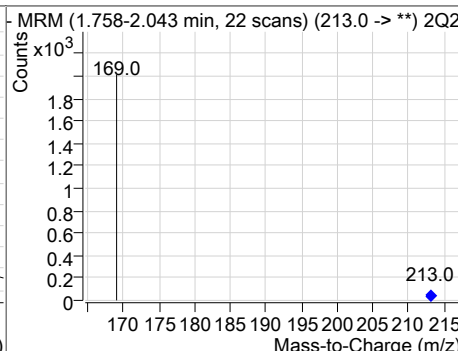
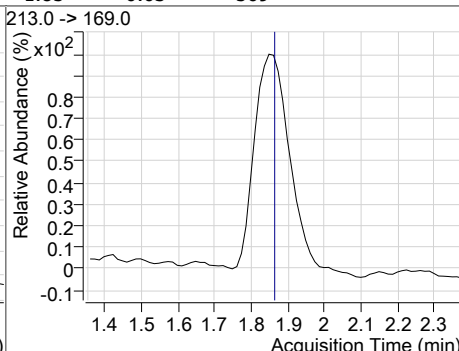
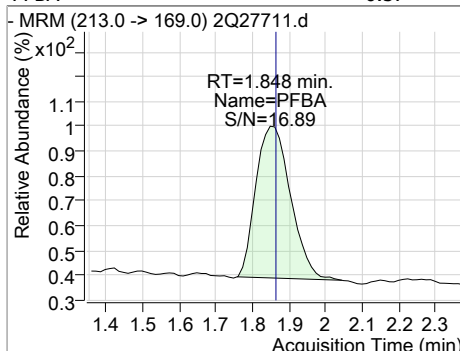
### Perfluorinated Compounds by LC/MS/MS



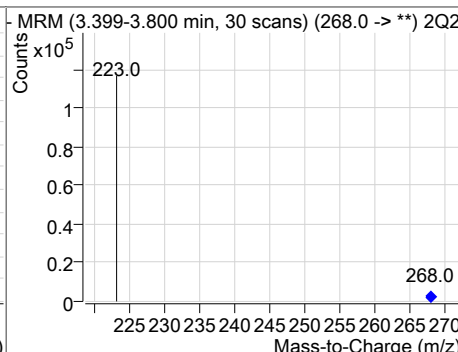
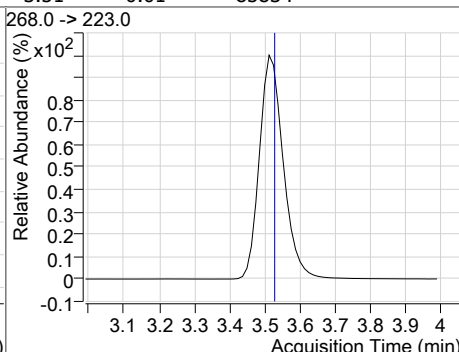
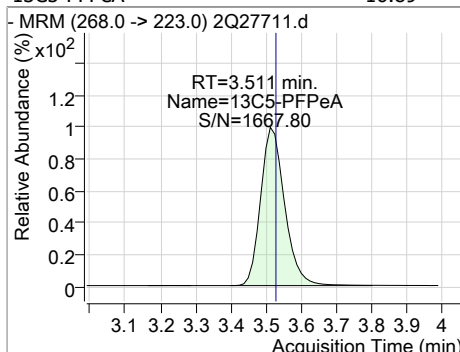
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 16.91 | 1.85 | -0.01    | 101415 |      |        |      |      |



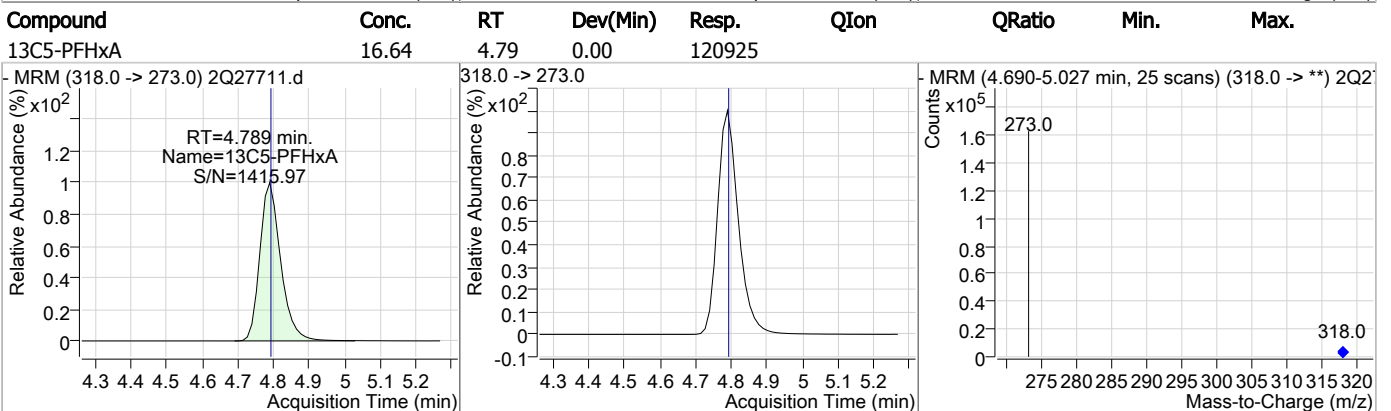
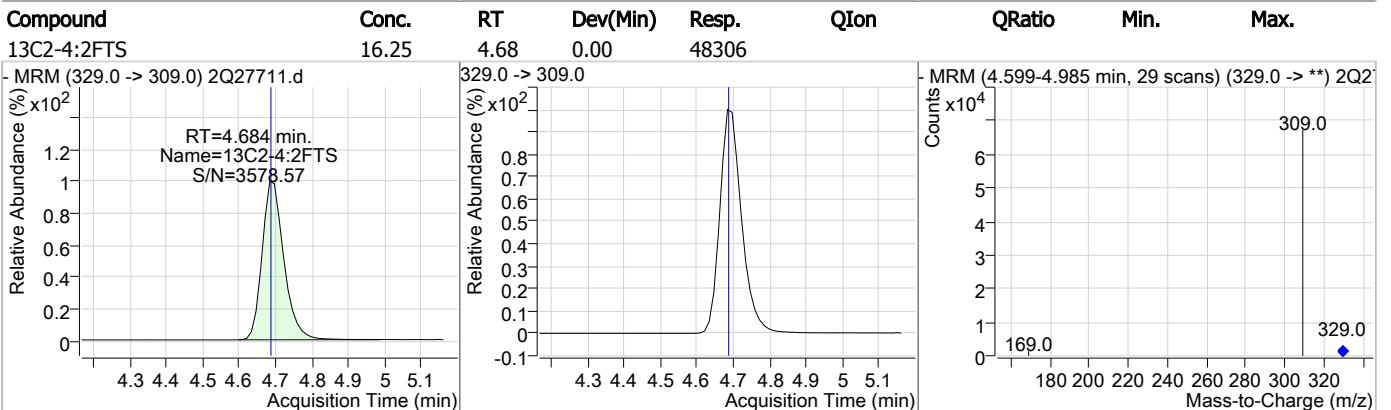
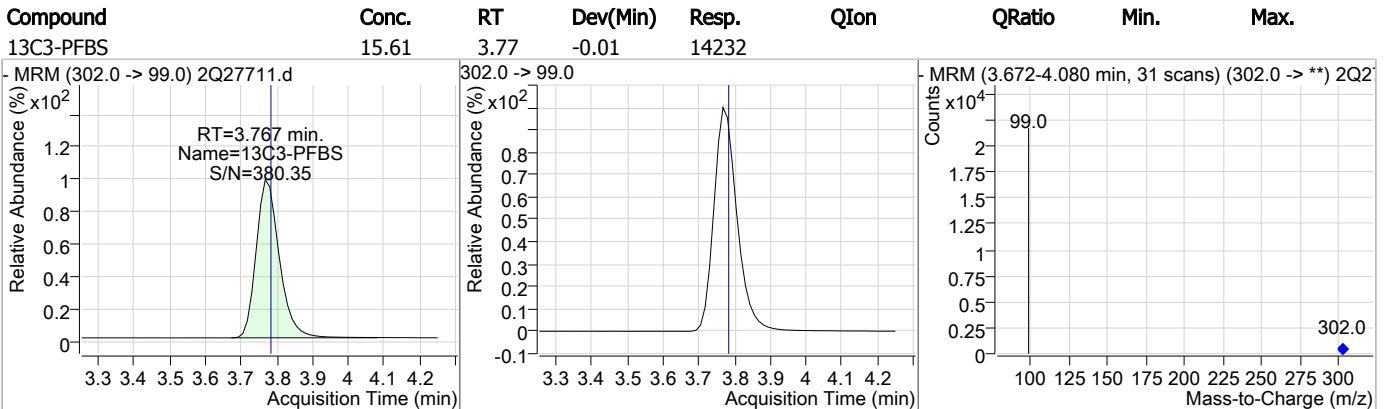
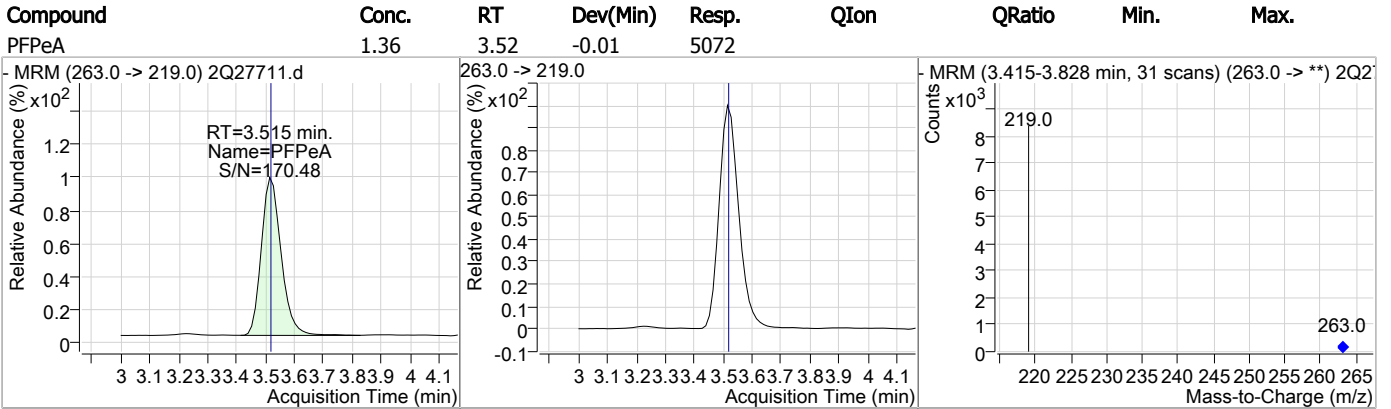
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 0.57  | 1.85 | -0.03    | 569   |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C5-PFPeA | 16.89 | 3.51 | -0.01    | 85834 |      |        |      |      |

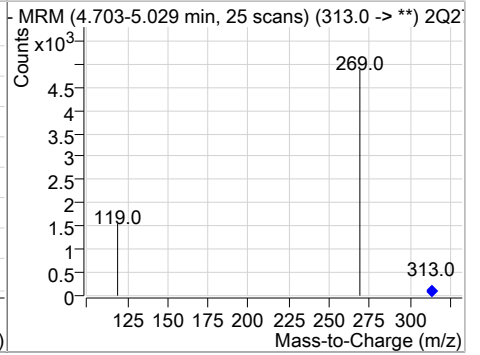
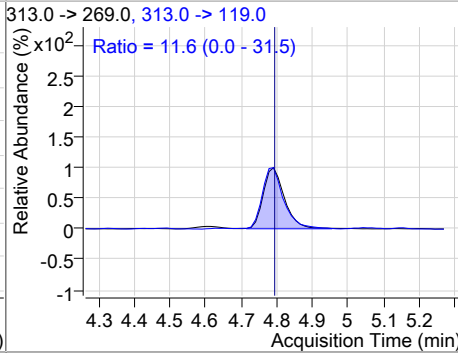
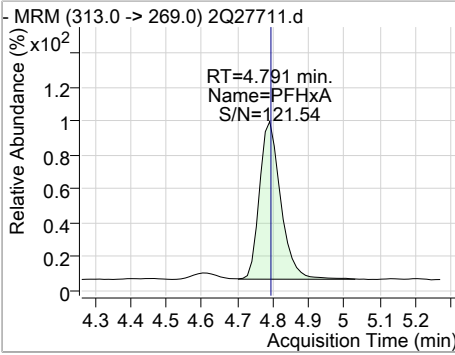


### Perfluorinated Compounds by LC/MS/MS

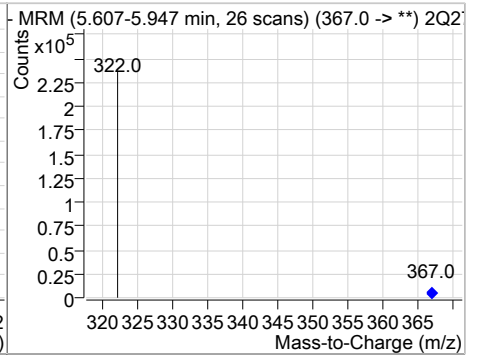
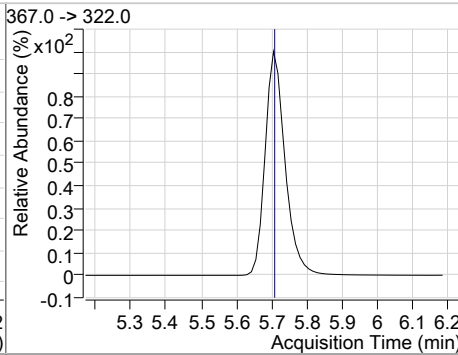
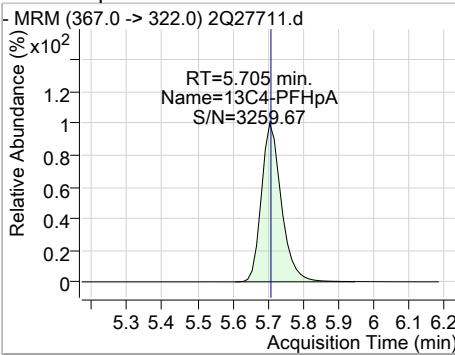


### Perfluorinated Compounds by LC/MS/MS

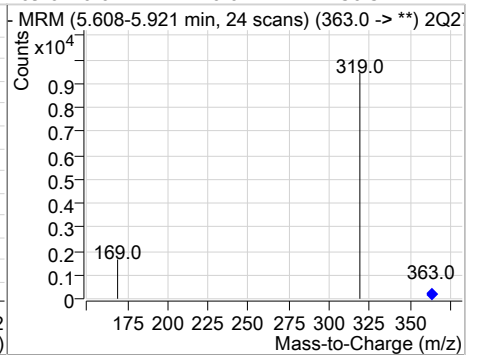
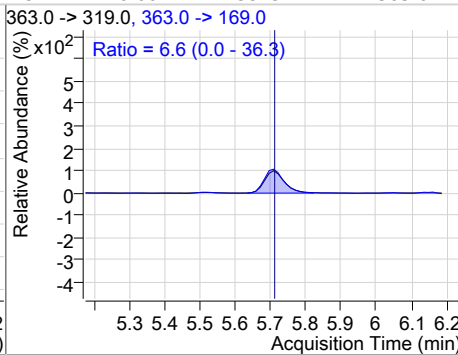
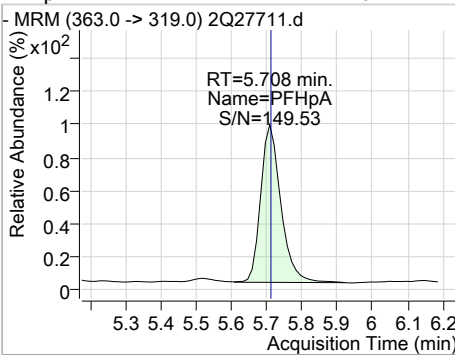
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 1.31  | 4.79 | 0.00     | 2726  | 313.0 -> 119.0 | 11.6   | 0.0  | 31.5 |



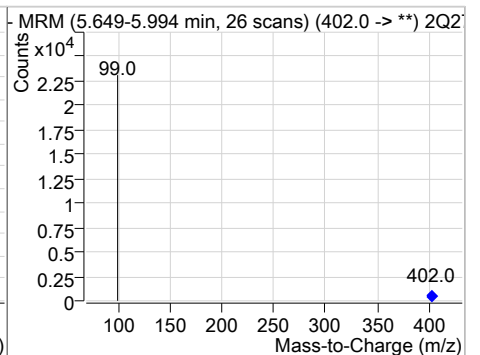
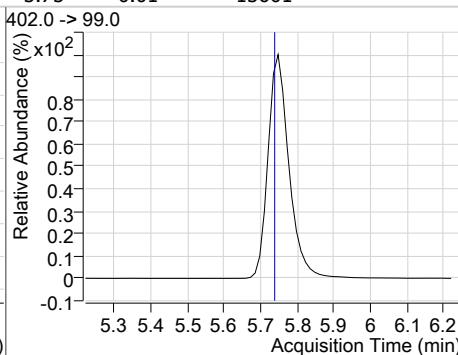
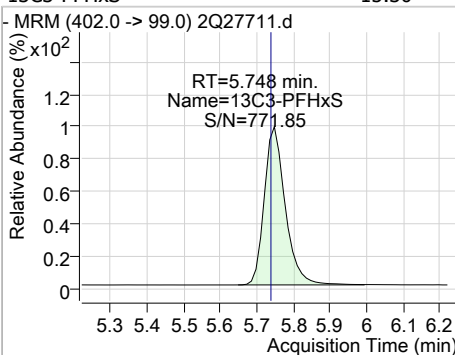
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 16.95 | 5.71 | 0.00     | 175358 |      |        |      |      |



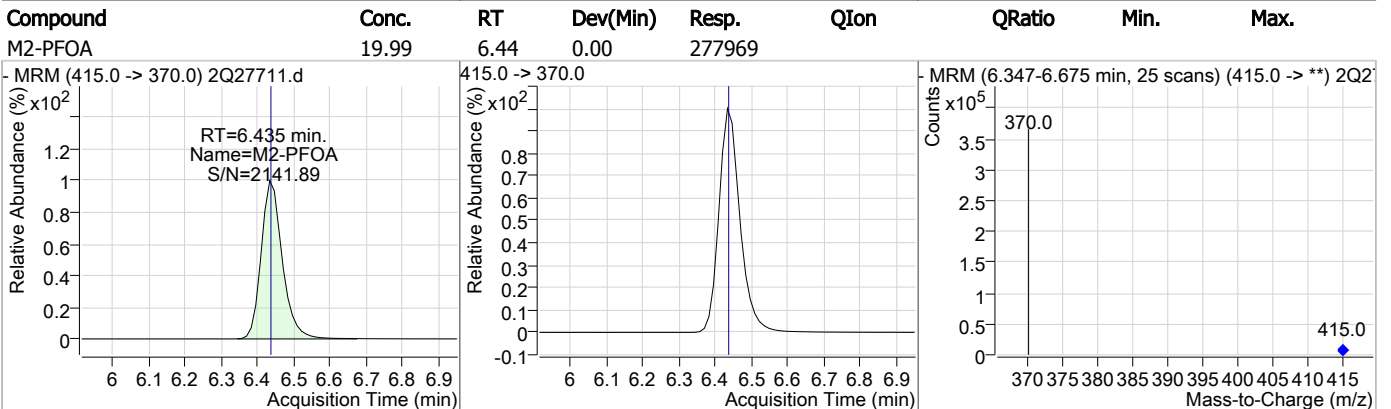
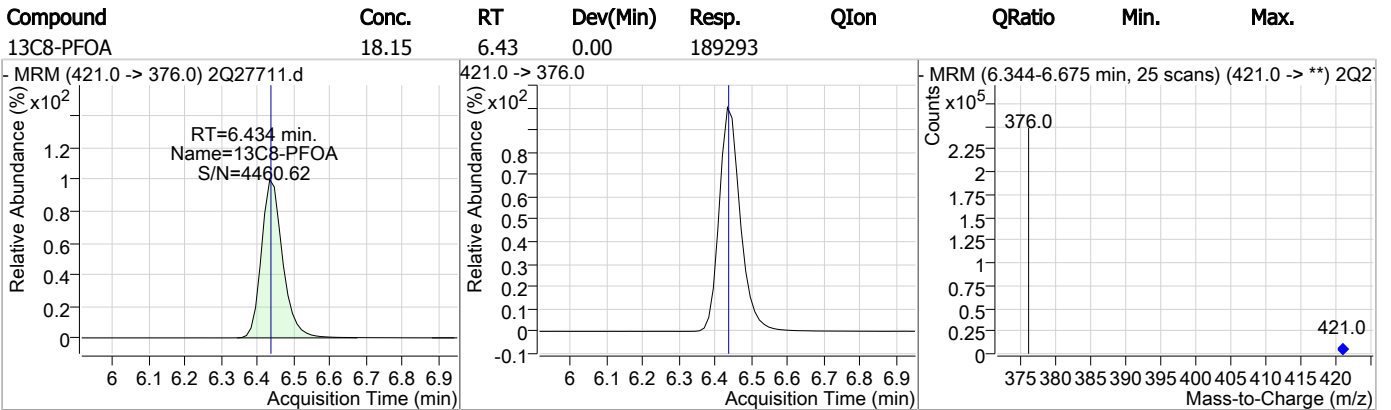
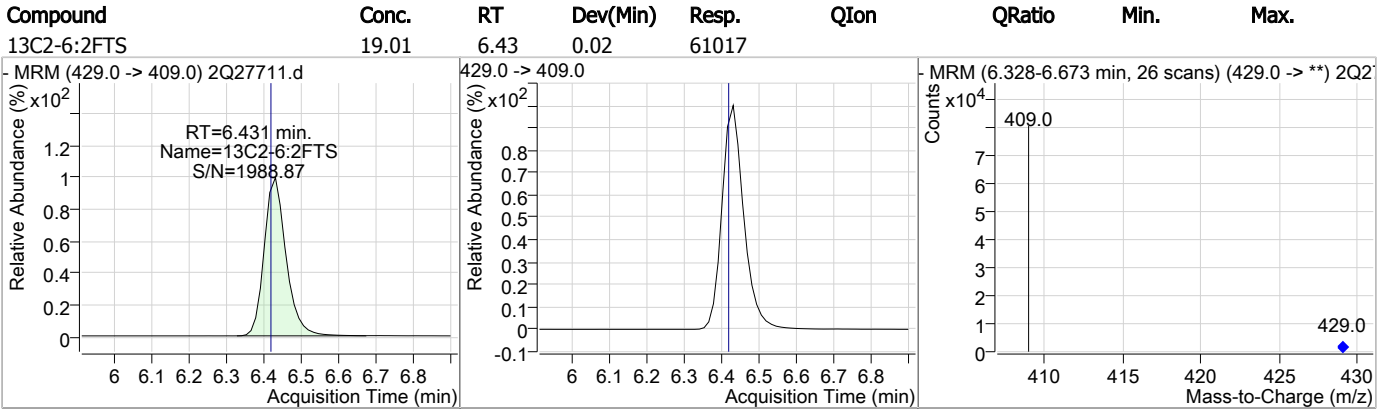
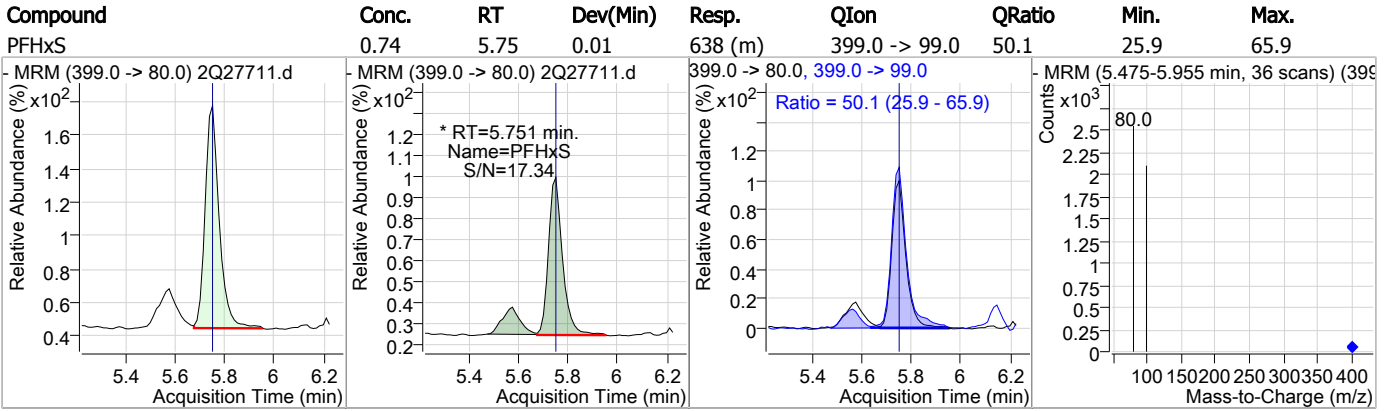
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 0.77  | 5.71 | 0.00     | 5825  | 363.0 -> 169.0 | 6.6    | 0.0  | 36.3 |



| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 15.30 | 5.75 | 0.01     | 15601 |      |        |      |      |

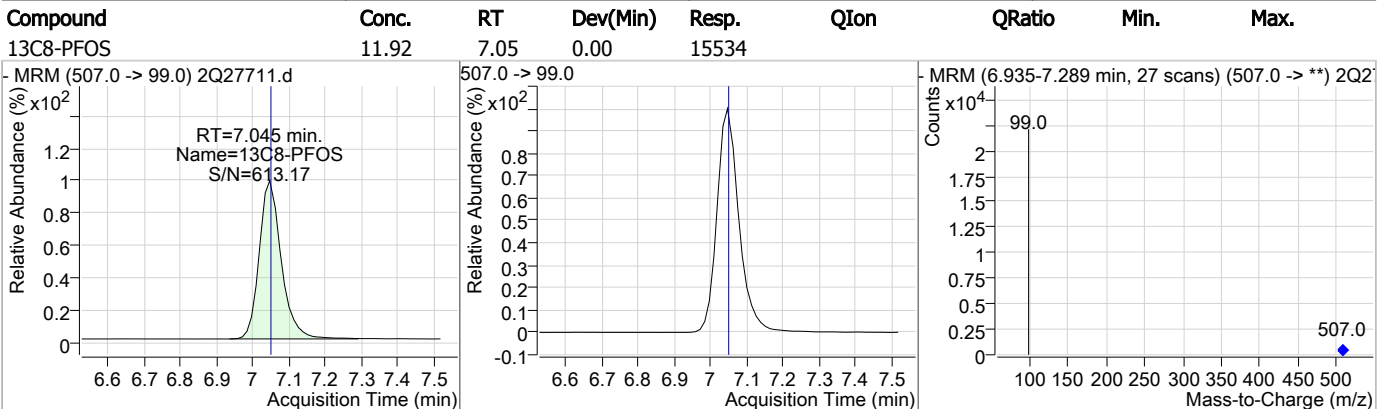
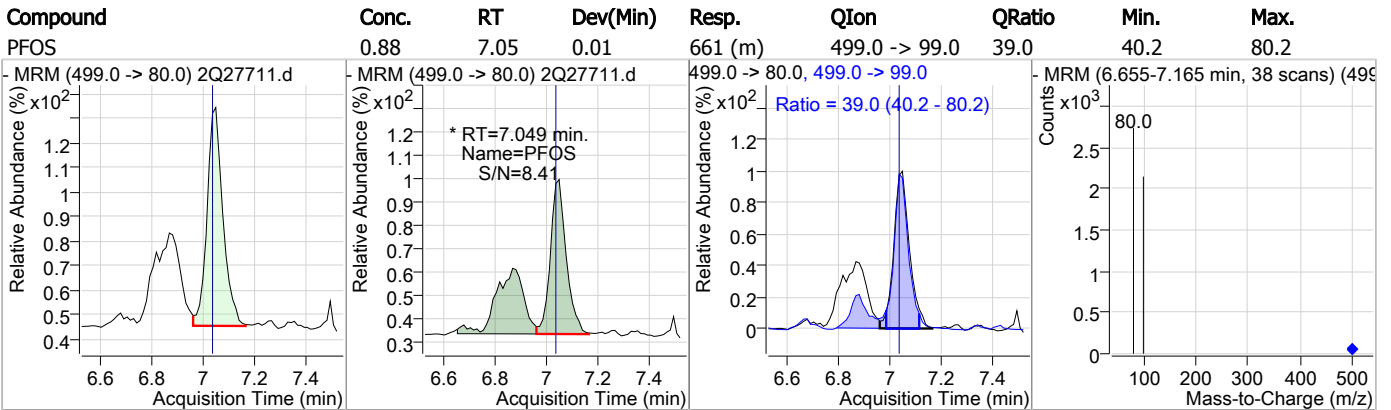
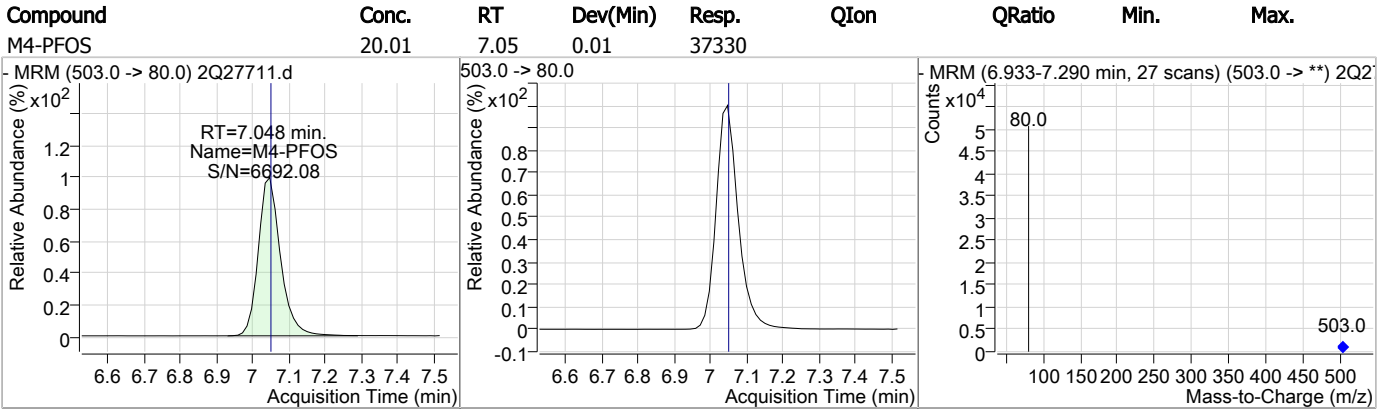
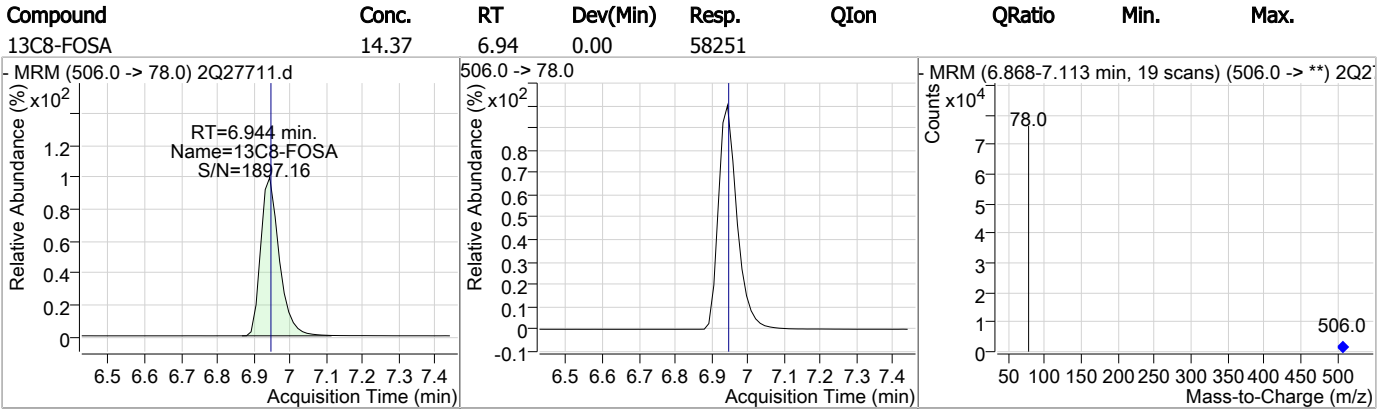


### Perfluorinated Compounds by LC/MS/MS



7.1.15  
7

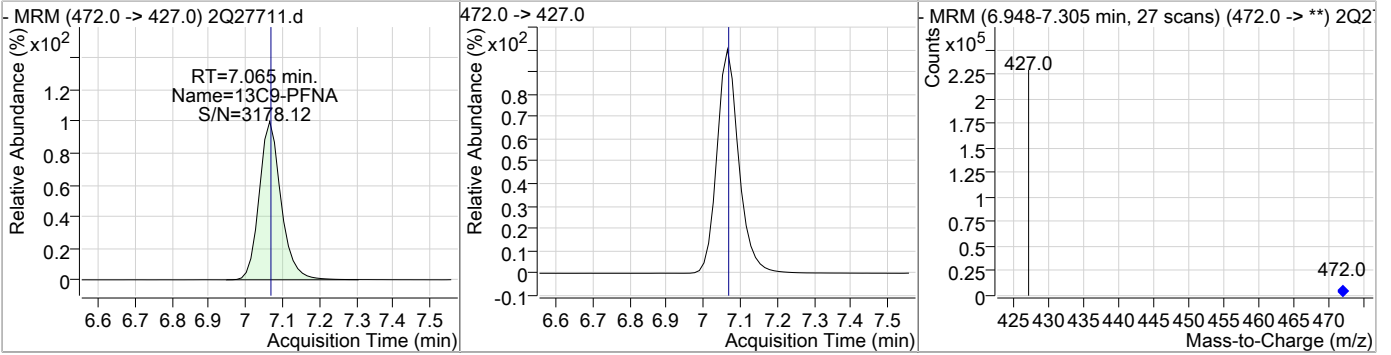
### Perfluorinated Compounds by LC/MS/MS



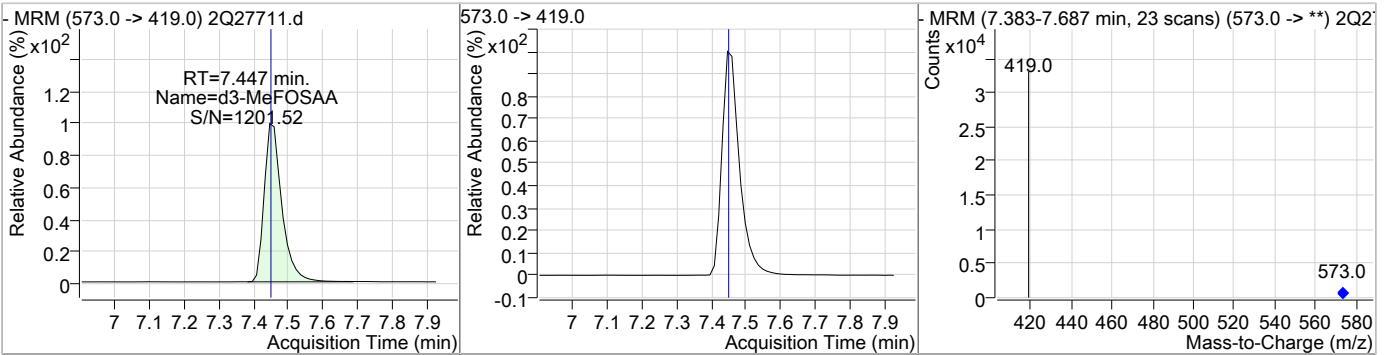
7.1.15  
7

### Perfluorinated Compounds by LC/MS/MS

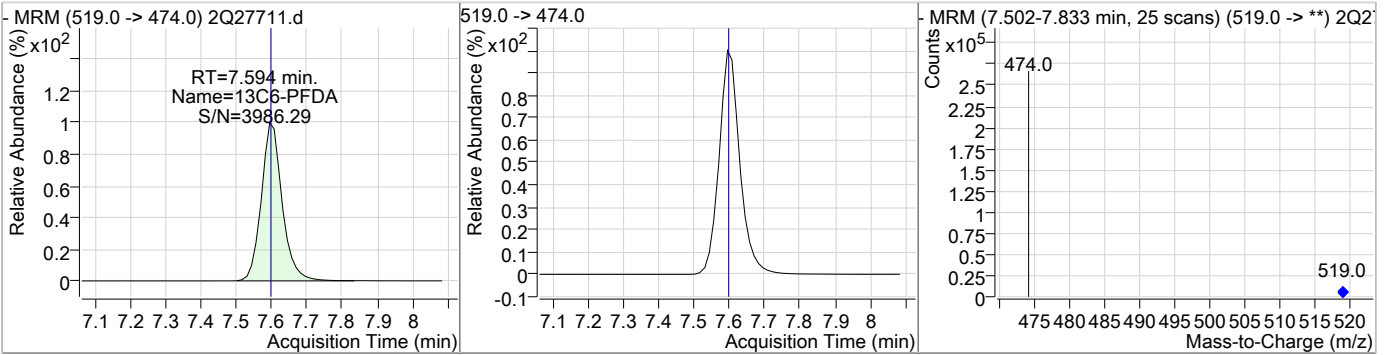
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



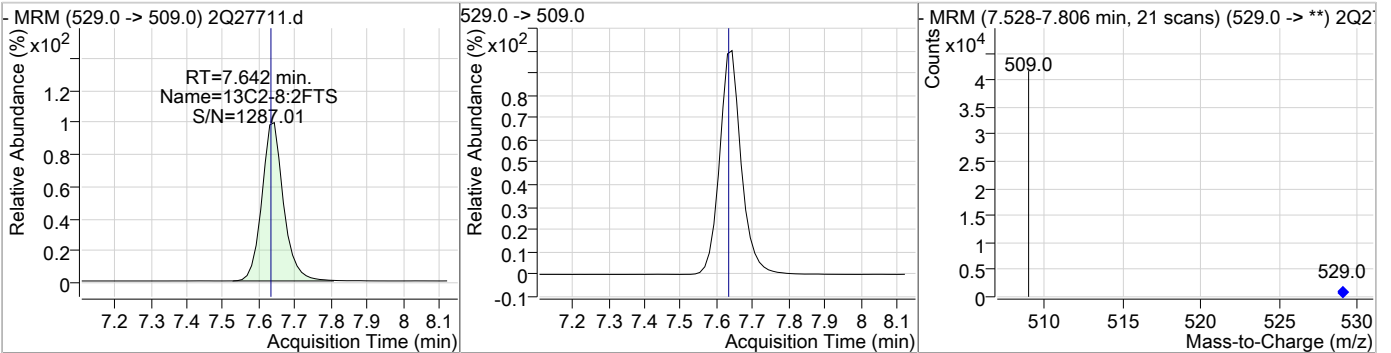
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



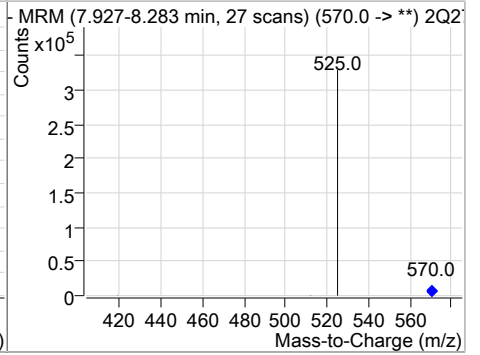
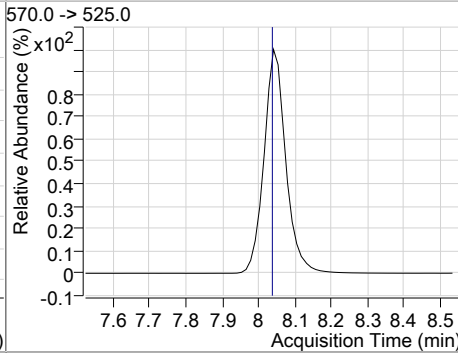
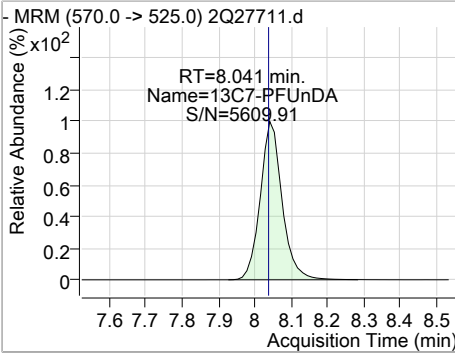
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



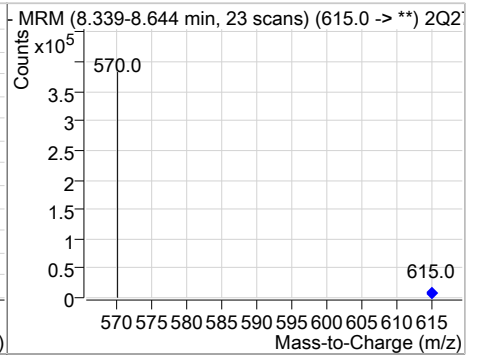
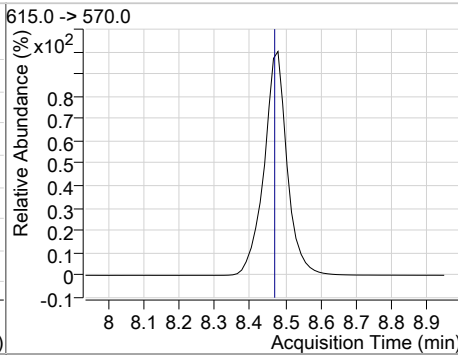
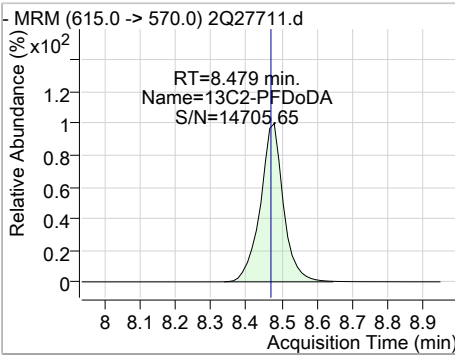


### Perfluorinated Compounds by LC/MS/MS

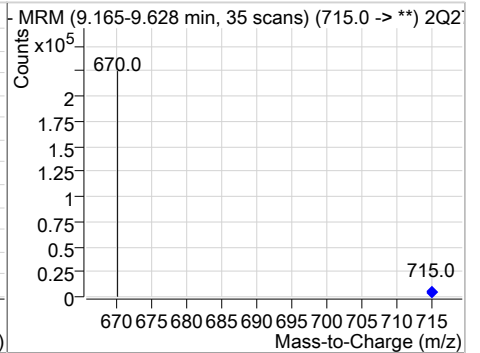
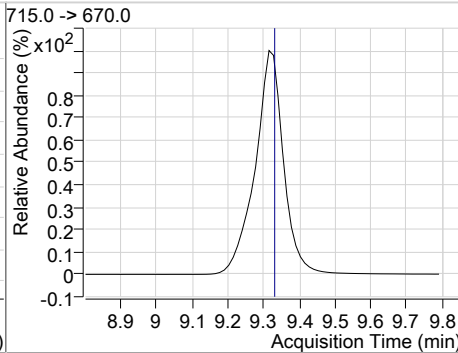
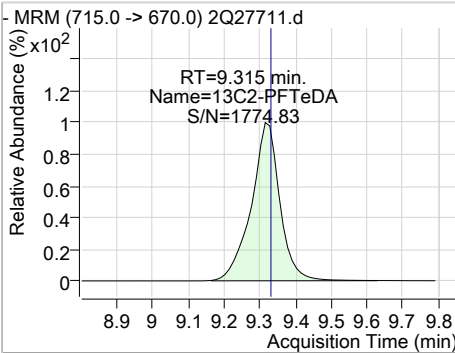
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 14.73 | 8.04 | 0.00     | 249257 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 15.41 | 8.48 | 0.01     | 289794 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 12.92 | 9.31 | -0.01    | 165818 |      |        |      |      |



7.1.15  
7



# Manual Integration Approval Summary

**Sample Number:** FA62220-15      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27711.D      **Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Injection Time:** 03/18/19 21:00      **Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.1.15.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27712.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 9:15:50 PM  
 Sample Name : fa62220-16  
 Vial : Vial 32  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 283404 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 38941  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 103034 | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 87118  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 122157 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 181298 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 194879 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 176553 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 208358 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 277458 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 328884 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 194998 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 59995  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 14700  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16170  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 16311  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 49838  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 62371  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 32607  | 20.00 µg/L       | 0.013    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 25690  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 49791  | 16.74 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.7% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 62294  | 19.41 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.0% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 32592  | 14.70 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 73.5% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 328691 | 17.48 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.4% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 194336 | 15.14 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.7% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 14670  | 16.09 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.4% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16196  | 15.89 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.4% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 102932 | 17.17 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.8% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 181304 | 17.53 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.6% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 122064 | 16.80 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.0% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 86935  | 17.10 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.5% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 209848 | 15.38 µg/L       | 0.000    |

7.1.16  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|-----------------------|----------------------|----------------|--------|------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 76.9% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 277452 | 16.39 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.0% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 59994  | 14.80 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.0% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 194779 | 18.67 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.4% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 16301  | 12.51 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.5% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 176586 | 16.68 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.4% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 25706  | 13.41 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 67.1% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 283466 | 19.99 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 38924  | 19.98 µg/L       | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%   |          |

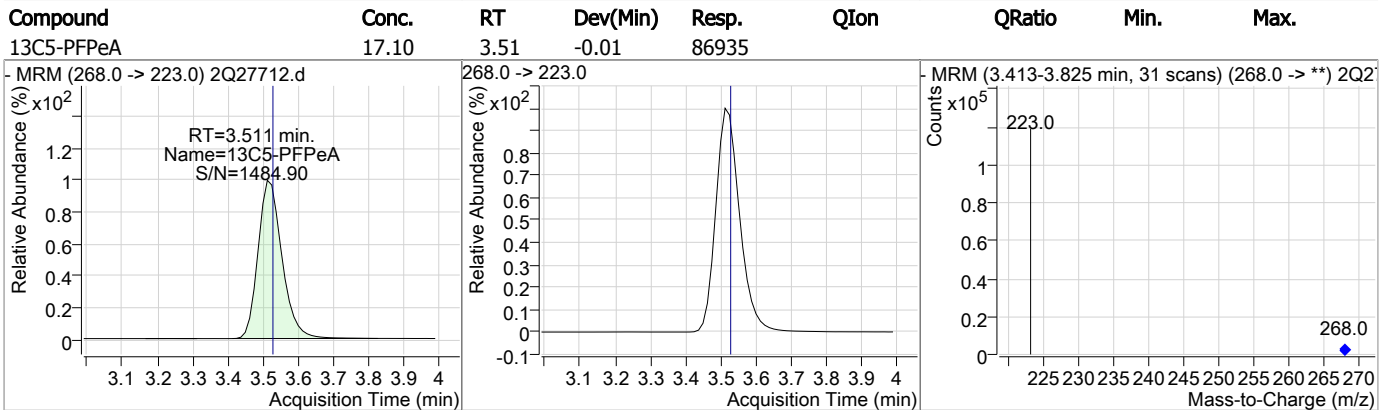
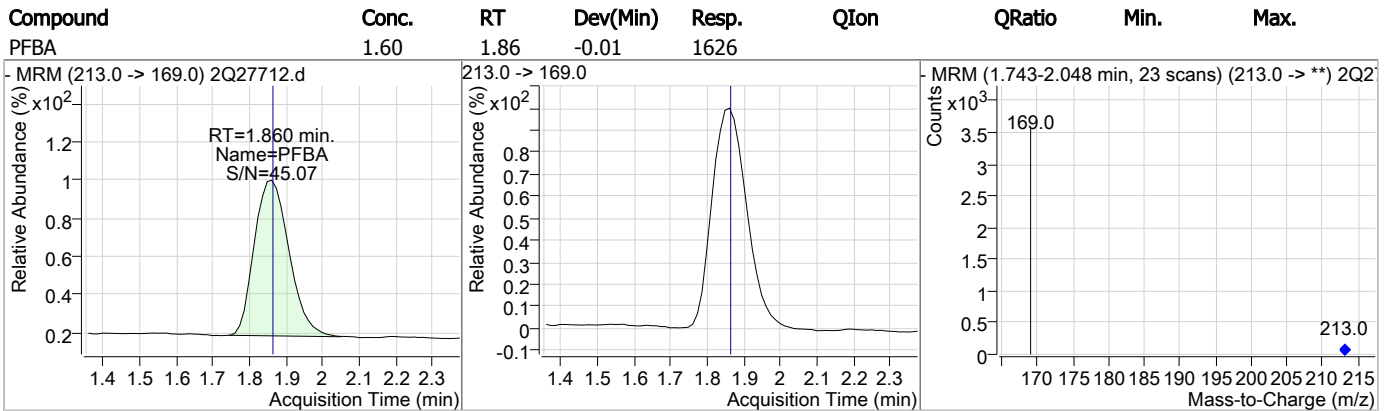
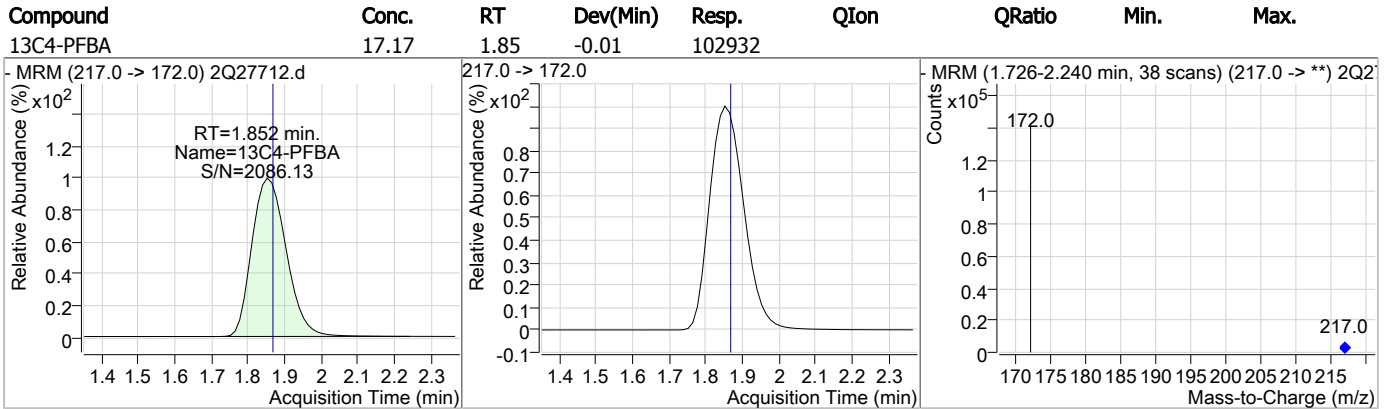
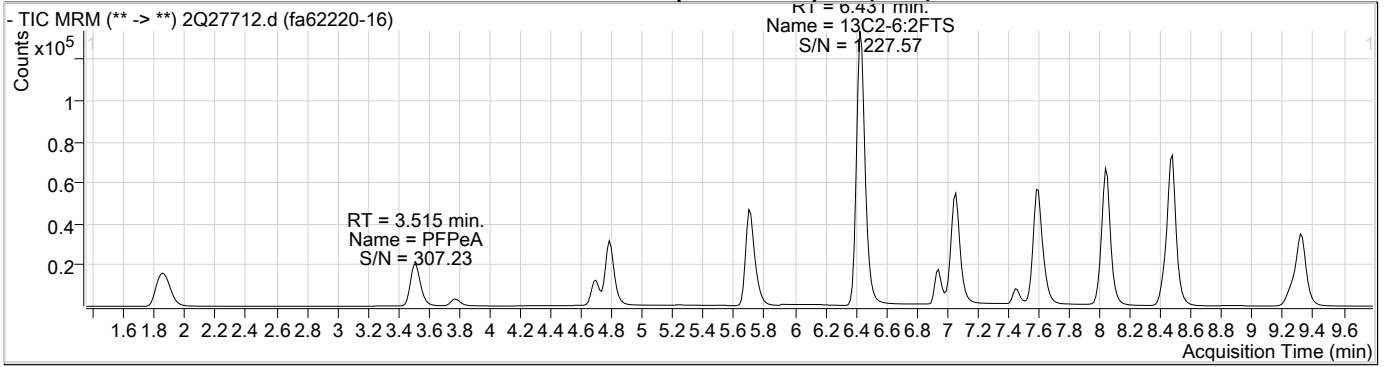
7.1.16  
7

Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.860 | 213.0 -> 169.0 | 1626  | 1.60 µg/L   | 100    |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 2448  | 1.16 µg/L   | 100    |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 634   | 0.71 µg/L   | 98     |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 8910  | 2.36 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

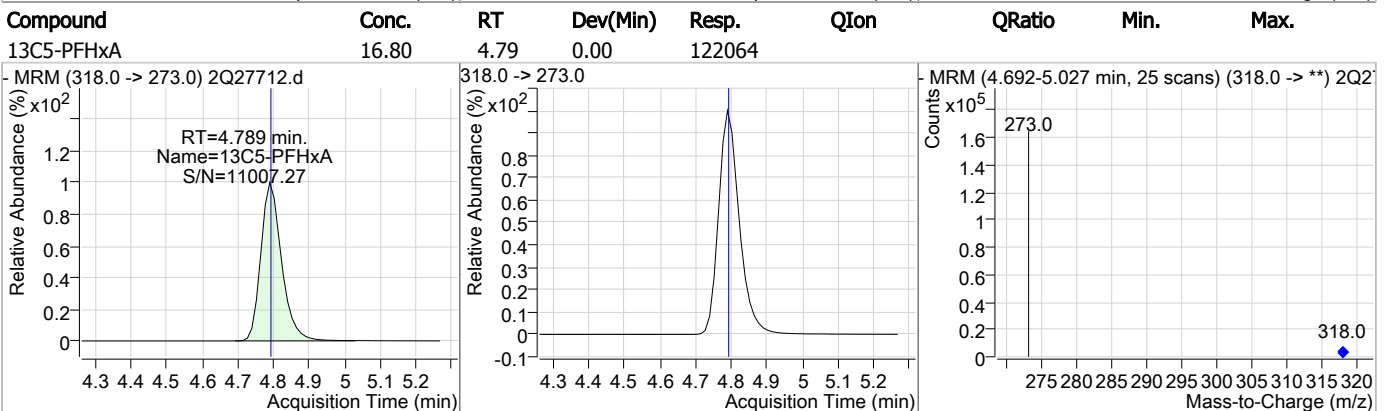
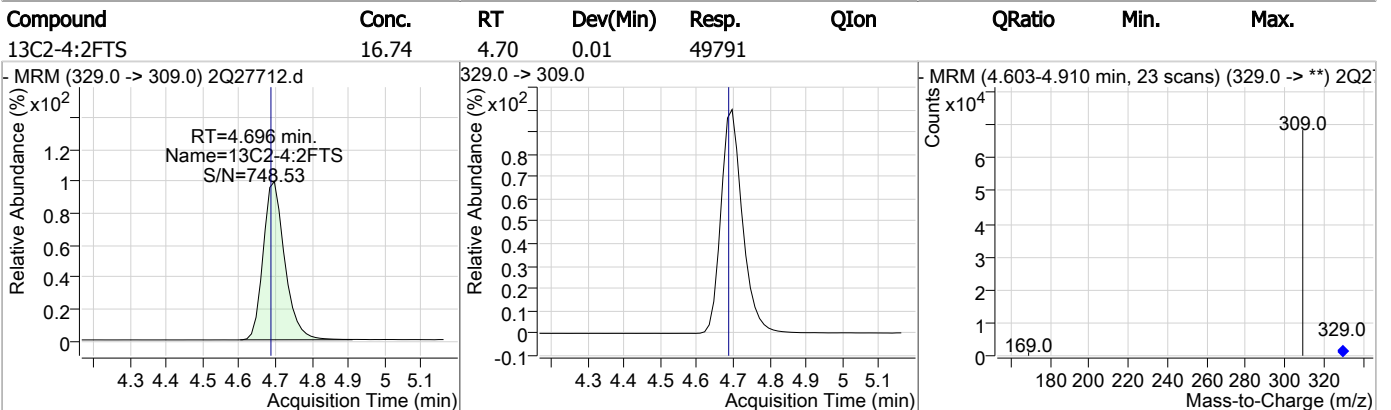
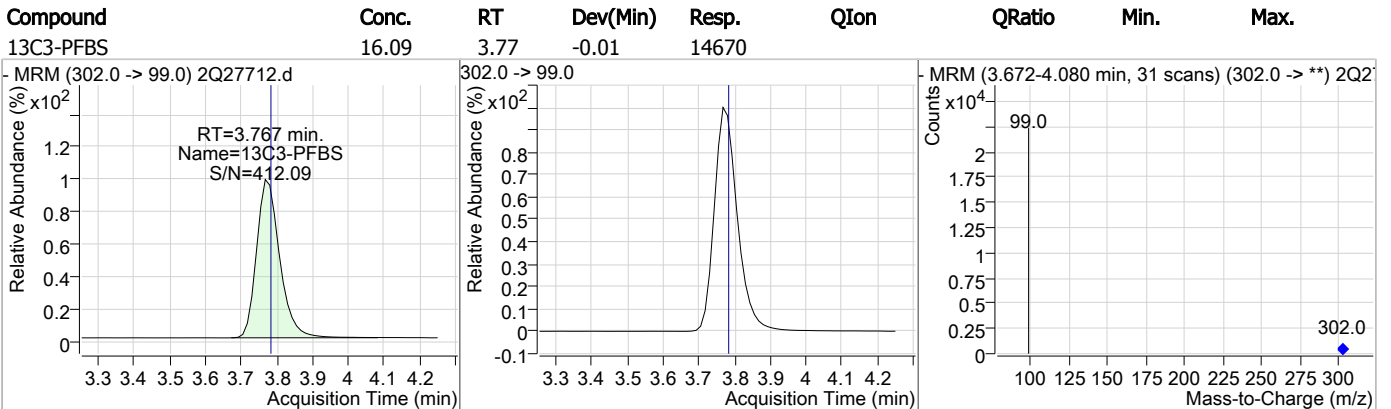
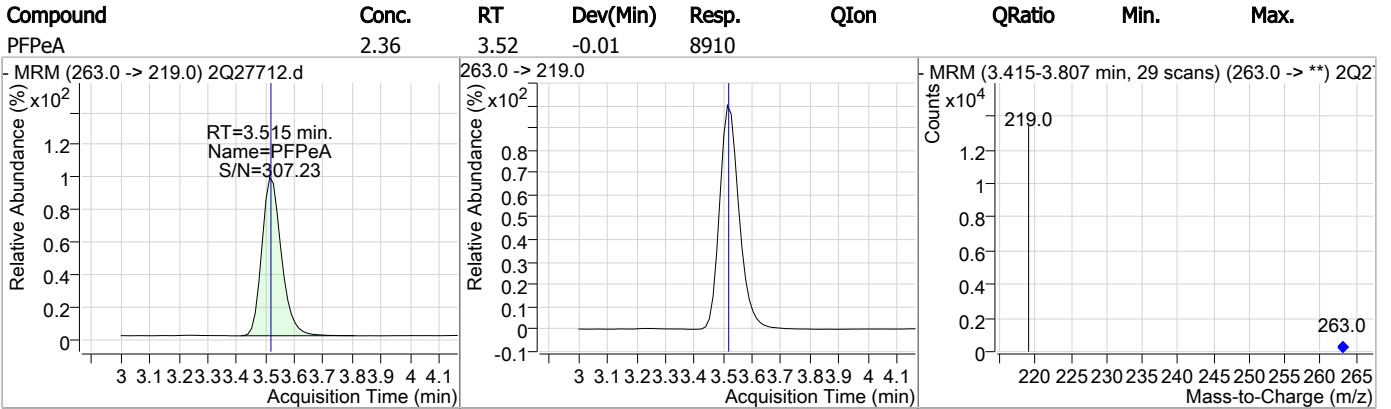
### Perfluorinated Compounds by LC/MS/MS



7.1.16  
7

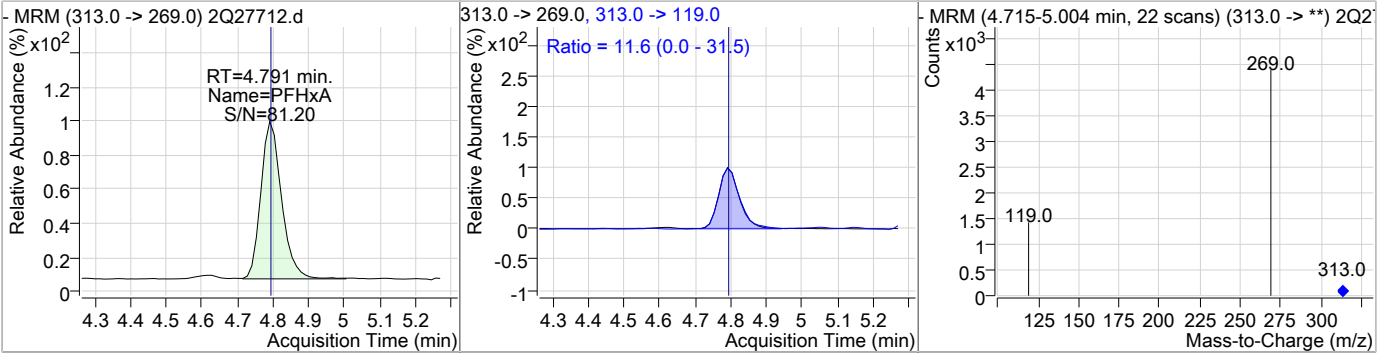


### Perfluorinated Compounds by LC/MS/MS

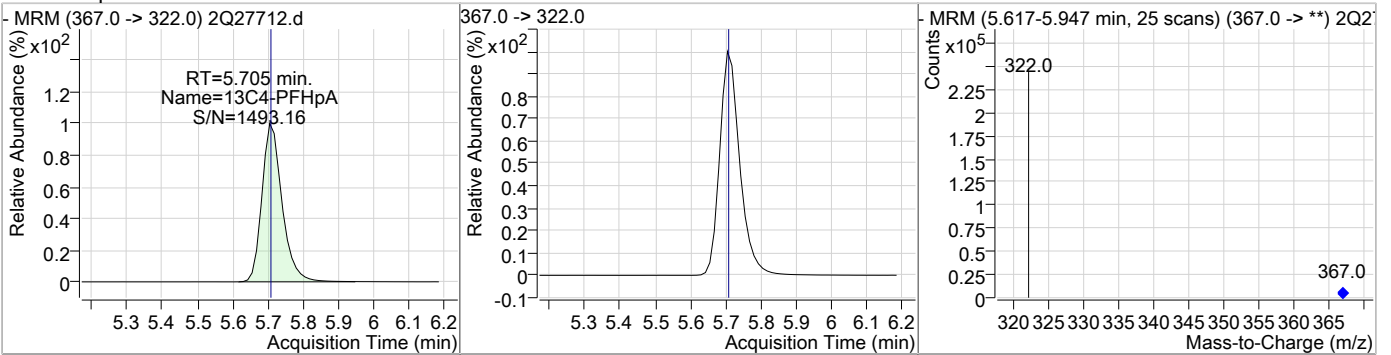


### Perfluorinated Compounds by LC/MS/MS

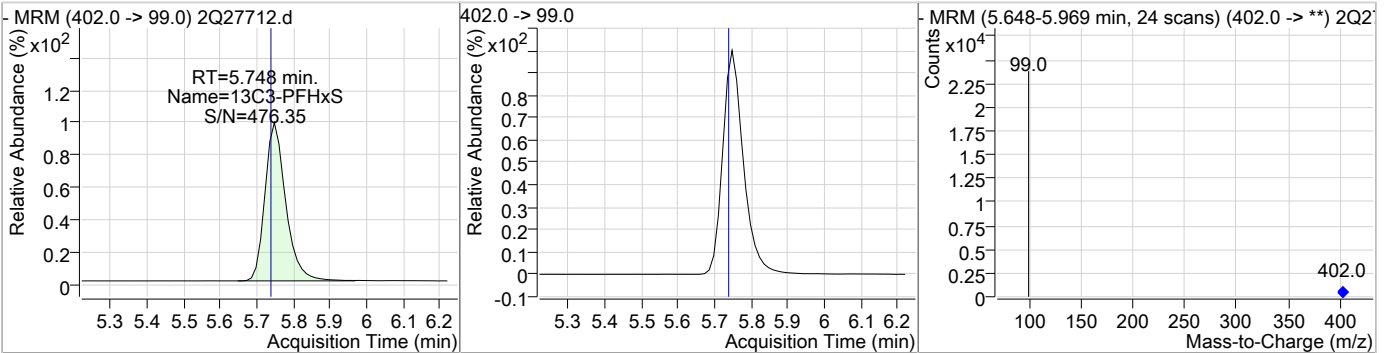
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 1.16  | 4.79 | 0.00     | 2448  | 313.0 -> 119.0 | 11.6   | 0.0  | 31.5 |



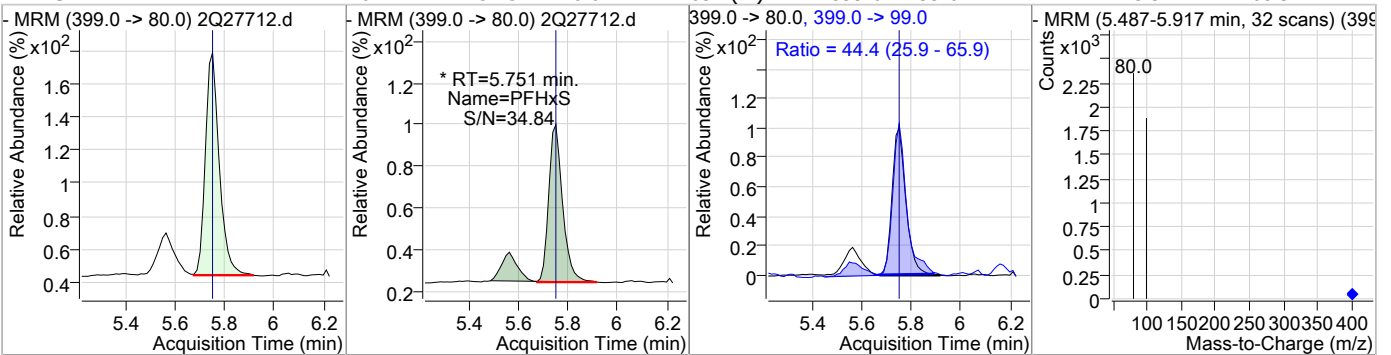
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 17.53 | 5.71 | 0.00     | 181304 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 15.89 | 5.75 | 0.01     | 16196 |      |        |      |      |



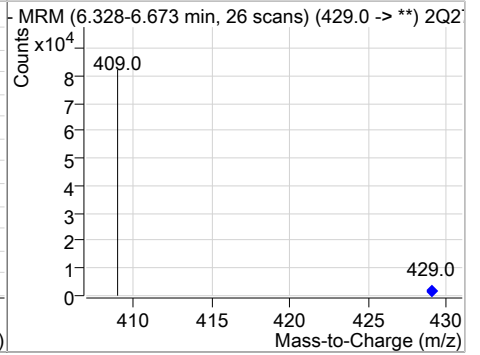
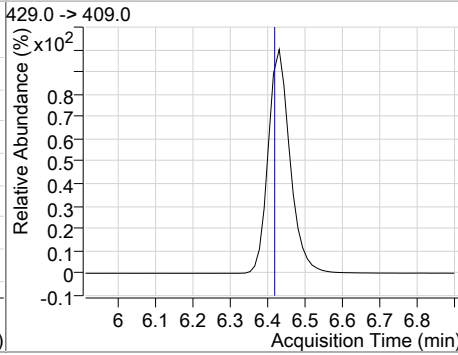
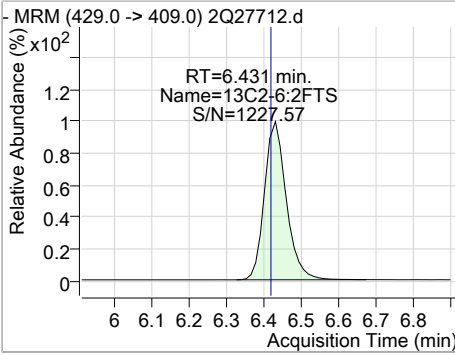
| Compound | Conc. | RT   | Dev(Min) | Resp.   | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|---------|---------------|--------|------|------|
| PFHxS    | 0.71  | 5.75 | 0.01     | 634 (m) | 399.0 -> 99.0 | 44.4   | 25.9 | 65.9 |



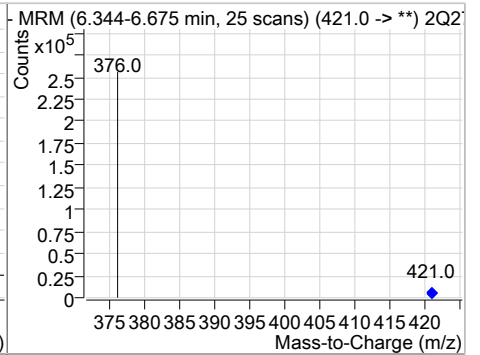
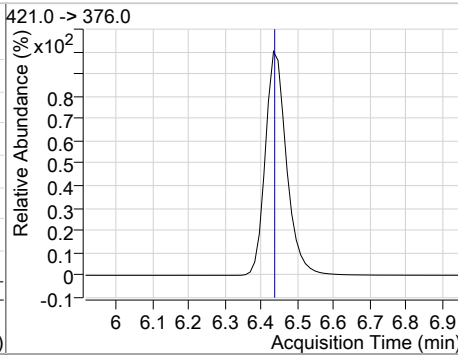
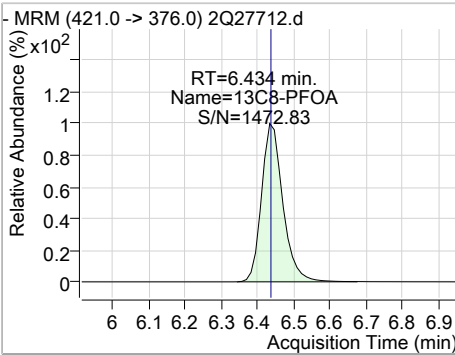
7.1.16  
7

### Perfluorinated Compounds by LC/MS/MS

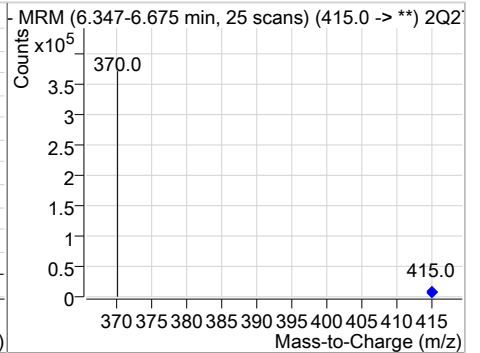
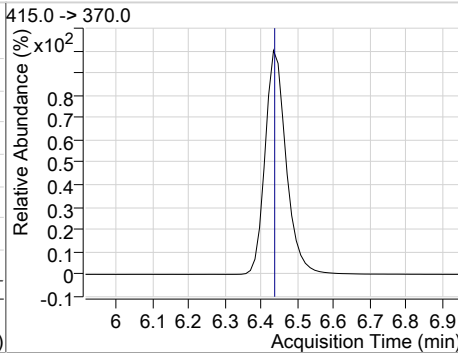
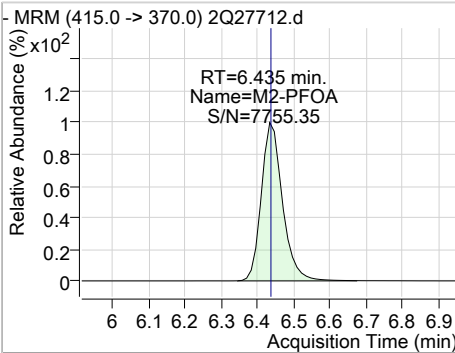
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-6:2FTS | 19.41 | 6.43 | 0.02     | 62294 |      |        |      |      |



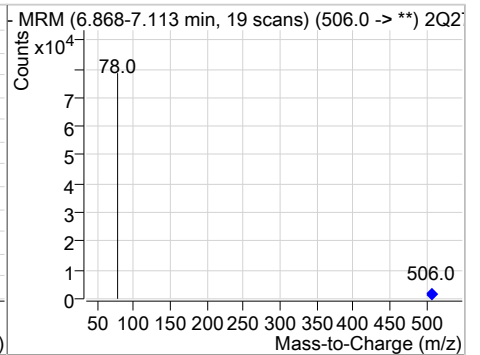
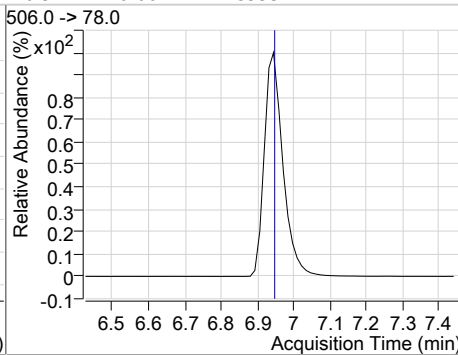
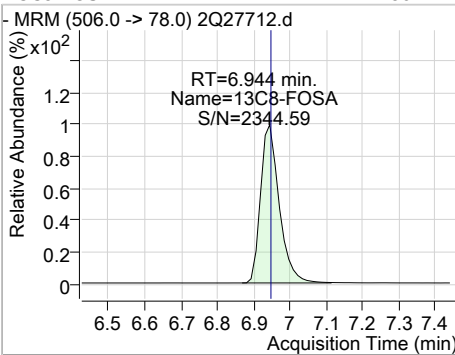
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 18.67 | 6.43 | 0.00     | 194779 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.99 | 6.44 | 0.00     | 283466 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-FOSA | 14.80 | 6.94 | 0.00     | 59994 |      |        |      |      |





### Perfluorinated Compounds by LC/MS/MS

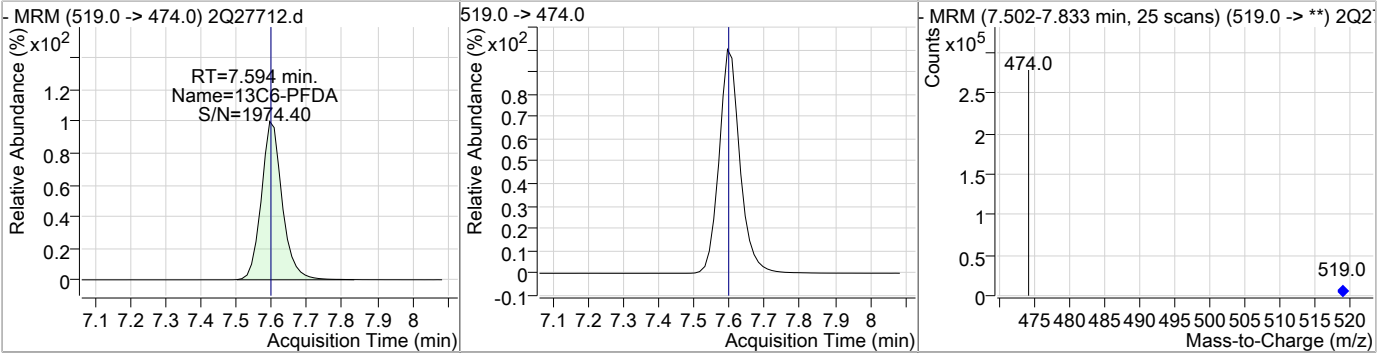
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| M4-PFOS    | 19.98 | 7.05 | 0.01     | 38924  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| 13C8-PFOS  | 12.51 | 7.05 | 0.00     | 16301  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| 13C9-PFNA  | 16.68 | 7.07 | 0.00     | 176586 |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| d3-MeFOSAA | 13.41 | 7.45 | 0.00     | 25706  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |

7.1.16  
7

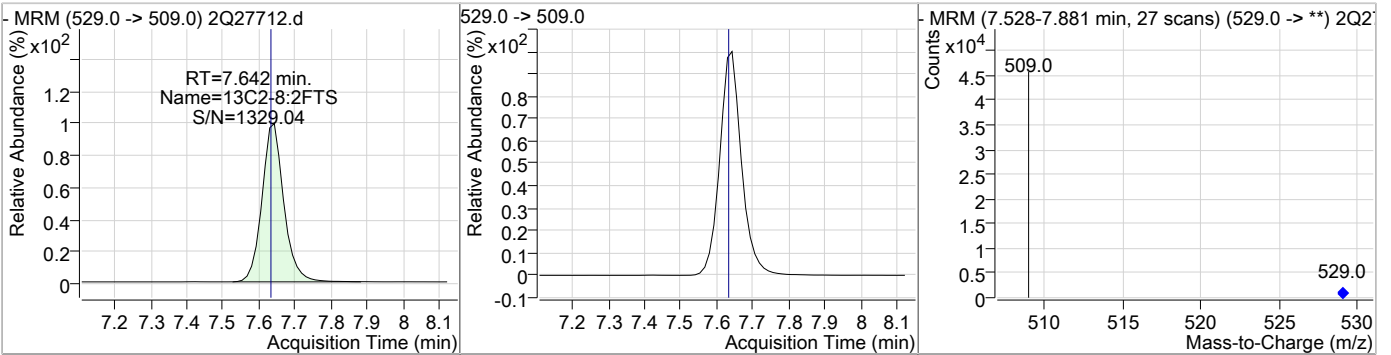


### Perfluorinated Compounds by LC/MS/MS

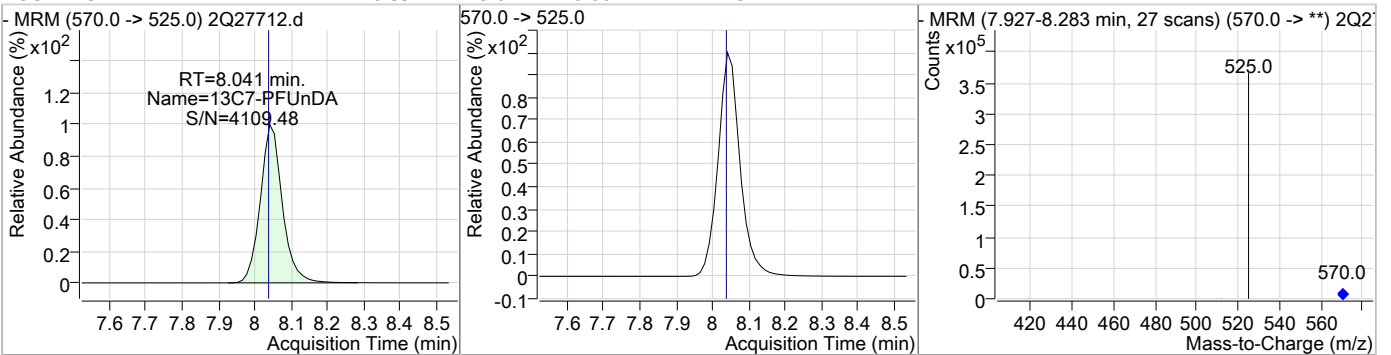
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 15.38 | 7.59 | 0.00     | 209848 |      |        |      |      |



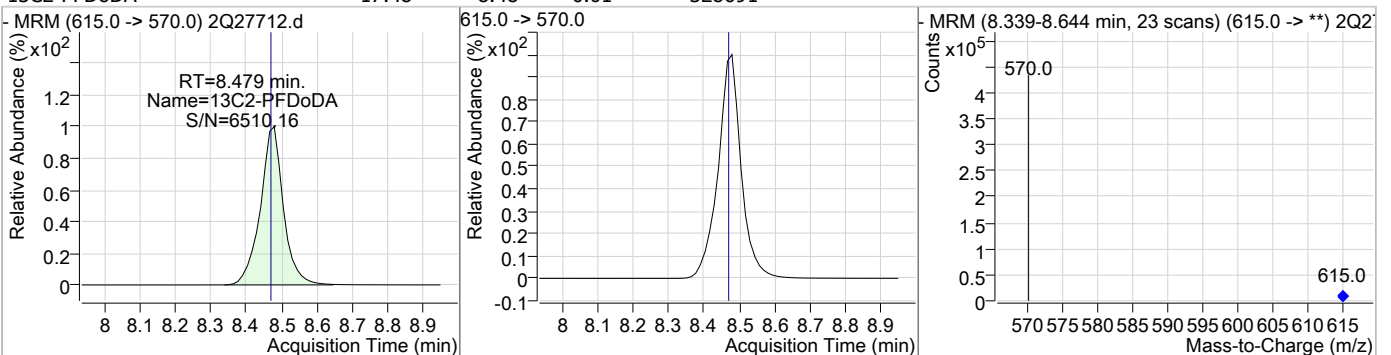
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 14.70 | 7.64 | 0.01     | 32592 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 16.39 | 8.04 | 0.00     | 277452 |      |        |      |      |

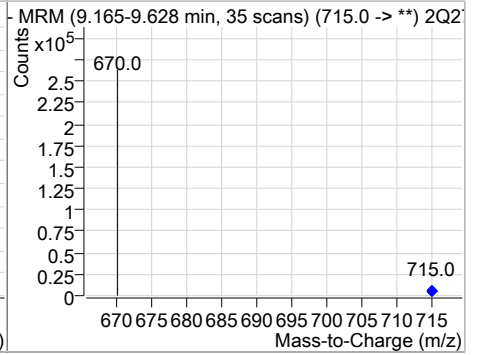
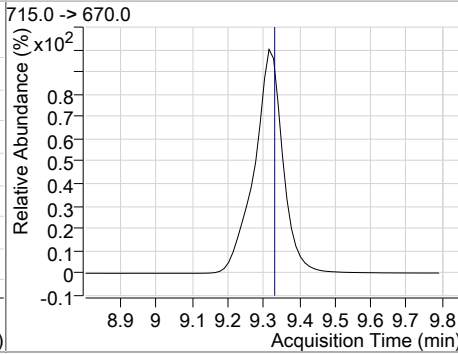
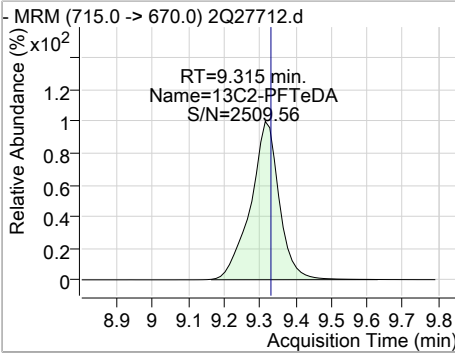


| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 17.48 | 8.48 | 0.01     | 328691 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.14 | 9.31 | -0.01    | 194336 |      |        |      |      |



7.1.16  
7



# Manual Integration Approval Summary

**Sample Number:** FA62220-16

**Method:** EPA 537M QSM5.1 B-15

**Lab FileID:** 2Q27712.D

**Analyst approved:** 03/19/19 09:52 Nancy Saunders

**Injection Time:** 03/18/19 21:15

**Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS      | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4 |      | 5.75           | Split peak |

7.1.16.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27715.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 10:03:00 PM  
 Sample Name : fa62220-17  
 Vial : Vial 33  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT    | QIon                 | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|-------|----------------------|--------|------------------|----------|
| <b>Internal Standards</b>          |       |                      |        |                  |          |
| 13C2-PFOA                          | 6.435 | 415.0 -> 370.0       | 275006 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036 | 503.0 -> 80.0        | 37581  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852 | 217.0 -> 172.0       | 99535  | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511 | 268.0 -> 223.0       | 83903  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.789 | 318.0 -> 273.0       | 119346 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705 | 367.0 -> 322.0       | 174963 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434 | 421.0 -> 376.0       | 188592 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.052 | 472.0 -> 427.0       | 177386 | 20.00 µg/L       | -0.013   |
| M6-PFDA                            | 7.594 | 519.0 -> 474.0       | 226938 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041 | 570.0 -> 525.0       | 300188 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.466 | 615.0 -> 570.0       | 334653 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.315 | 715.0 -> 670.0       | 183180 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.932 | 506.0 -> 78.0        | 62883  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.767 | 302.0 -> 99.0        | 14182  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.736 | 402.0 -> 99.0        | 15413  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033 | 507.0 -> 99.0        | 17152  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684 | 329.0 -> 309.0       | 47149  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416 | 429.0 -> 409.0       | 58256  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630 | 529.0 -> 509.0       | 33807  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447 | 573.0 -> 419.0       | 27737  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -     | 287.0 -> 169.0       | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |       |                      |        |                  |          |
| 13C2-4:2FTS                        | 4.684 | 329.0 -> 309.0       | 47580  | 16.00 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 80.0% |          |
| 13C2-6:2FTS                        | 6.416 | 429.0 -> 409.0       | 58197  | 18.13 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 90.7% |          |
| 13C2-8:2FTS                        | 7.630 | 529.0 -> 509.0       | 33797  | 15.24 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 76.2% |          |
| 13C2-PFDoDA                        | 8.466 | 615.0 -> 570.0       | 334515 | 17.79 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 88.9% |          |
| 13C2-PFTeDA                        | 9.315 | 715.0 -> 670.0       | 182631 | 14.23 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 71.1% |          |
| 13C3-PFBS                          | 3.767 | 302.0 -> 99.0        | 14166  | 15.54 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 77.7% |          |
| 13C3-PFHxS                         | 5.736 | 402.0 -> 99.0        | 15408  | 15.11 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 75.6% |          |
| 13C4-PFBA                          | 1.852 | 217.0 -> 172.0       | 99429  | 16.58 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 82.9% |          |
| 13C4-PFHpA                         | 5.705 | 367.0 -> 322.0       | 174952 | 16.92 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 84.6% |          |
| 13C5-PFHxA                         | 4.789 | 318.0 -> 273.0       | 119330 | 16.42 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 82.1% |          |
| 13C5-PFPeA                         | 3.511 | 268.0 -> 223.0       | 83641  | 16.45 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 82.3% |          |
| 13C6-PFDA                          | 7.594 | 519.0 -> 474.0       | 226811 | 16.62 µg/L       | 0.000    |

7.1.17  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|-----------------------|----------------------|----------------|--------|------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.1% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 300153 | 17.74 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.7% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 62856  | 15.50 µg/L       | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 77.5% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 188600 | 18.08 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.4% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 17136  | 13.15 µg/L       | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 65.7% |          |
| 13C9-PFNA             | 7.052                | 472.0 -> 427.0 | 177366 | 16.75 µg/L       | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.8% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 27730  | 14.47 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 72.3% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 275025 | 19.98 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 37457  | 19.92 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.6% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%   |          |

Target Compounds

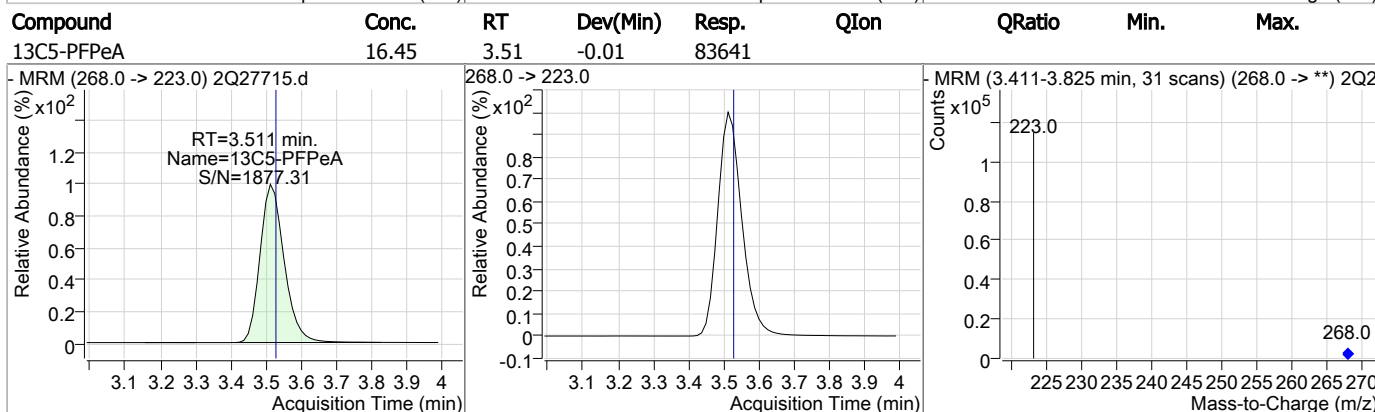
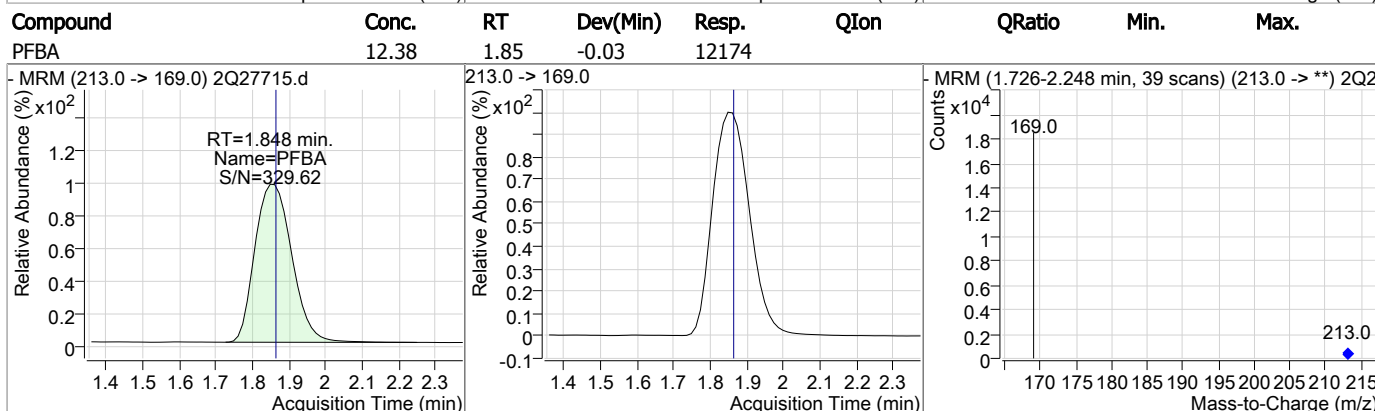
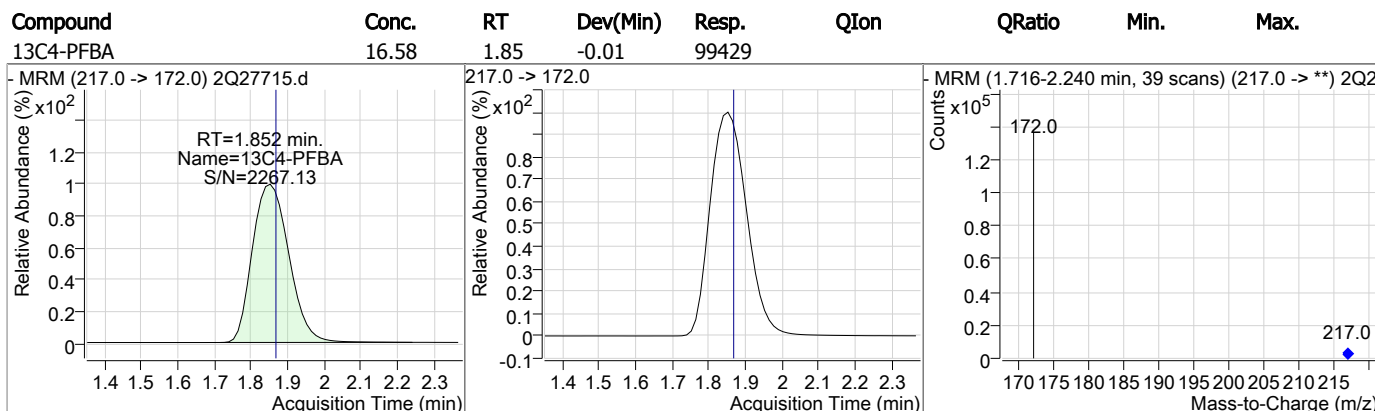
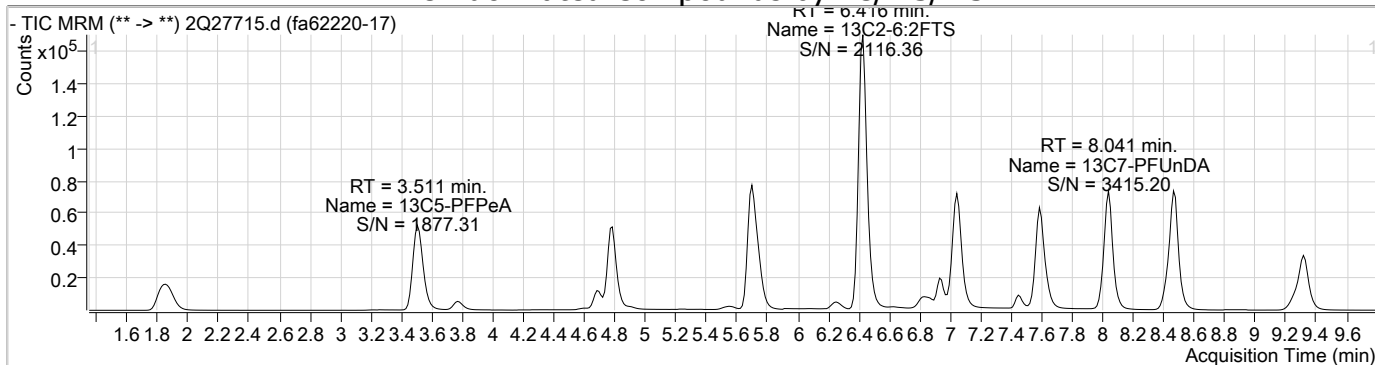
| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -      | N.D.        |        |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 4480   | 3.13 µg/L   | 99     |
| 8:2FTS           | -     | 527.0 -> 507.0 | -      | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -      | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -      | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -      | N.D.        |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 12174  | 12.38 µg/L  | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 6677   | 5.93 µg/L   | 99     |
| PFDA             | -     | 513.0 -> 469.0 | -      | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -      | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -      | N.D.        |        |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 107363 | 14.24 µg/L  | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 1875   | 2.51 µg/L   | m 98   |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 80926  | 39.38 µg/L  | 100    |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 53226  | 62.47 µg/L  | m 94   |
| PFNA             | -     | 463.0 -> 419.0 | -      | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -      | N.D.        |        |
| PFOA             | 6.437 | 413.0 -> 369.0 | 143912 | 28.25 µg/L  | m 99   |
| PFOS             | 7.037 | 499.0 -> 80.0  | 90490  | 108.63 µg/L | m 75   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 164232 | 45.22 µg/L  | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 3675   | 5.10 µg/L   | m 95   |
| PFTeDA           | -     | 713.0 -> 669.0 | -      | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -      | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -      | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.17  
7

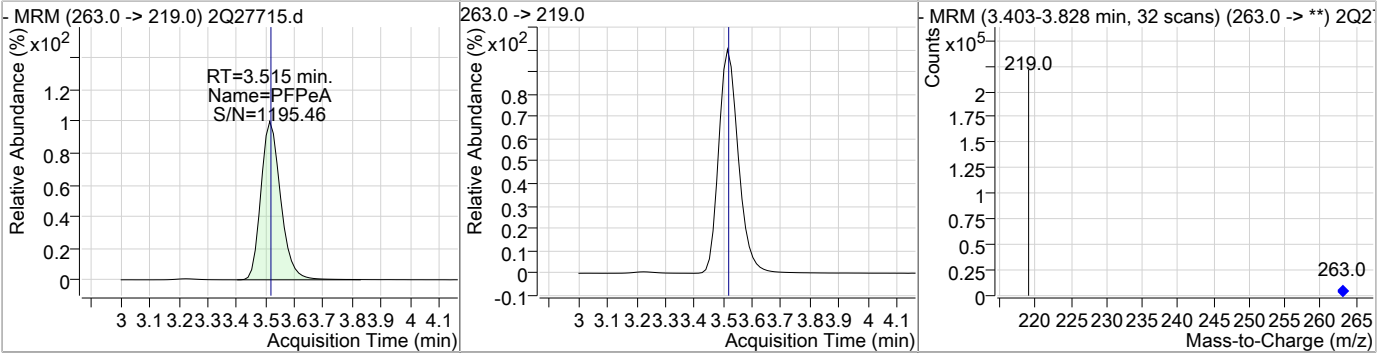


### Perfluorinated Compounds by LC/MS/MS

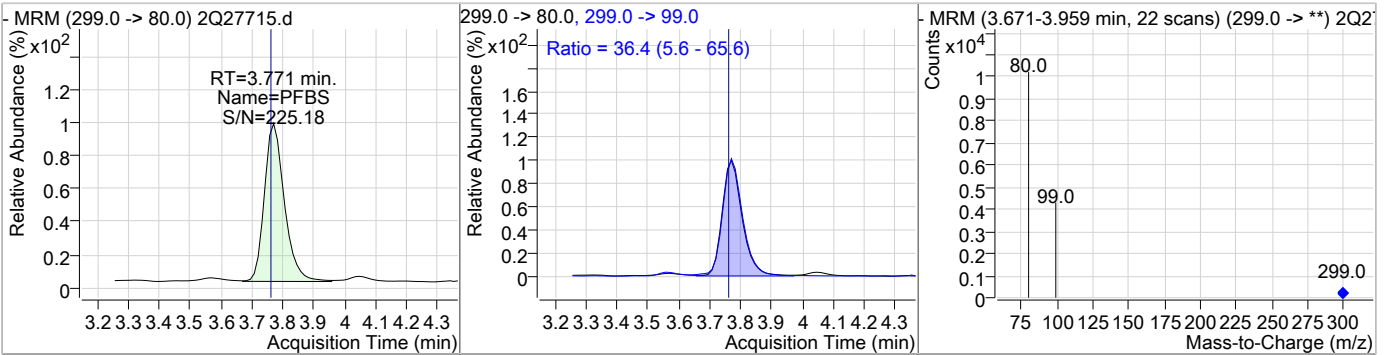


### Perfluorinated Compounds by LC/MS/MS

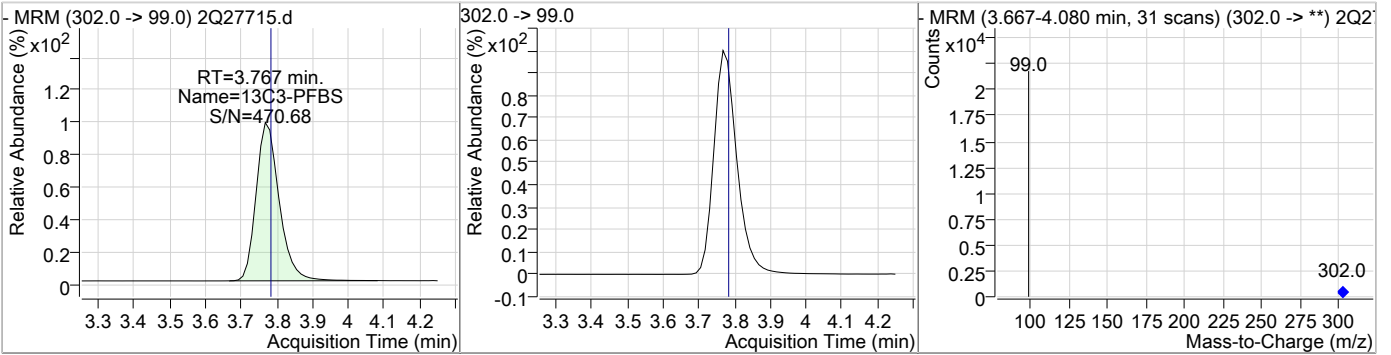
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| PFPeA    | 45.22 | 3.52 | -0.01    | 164232 |      |        |      |      |



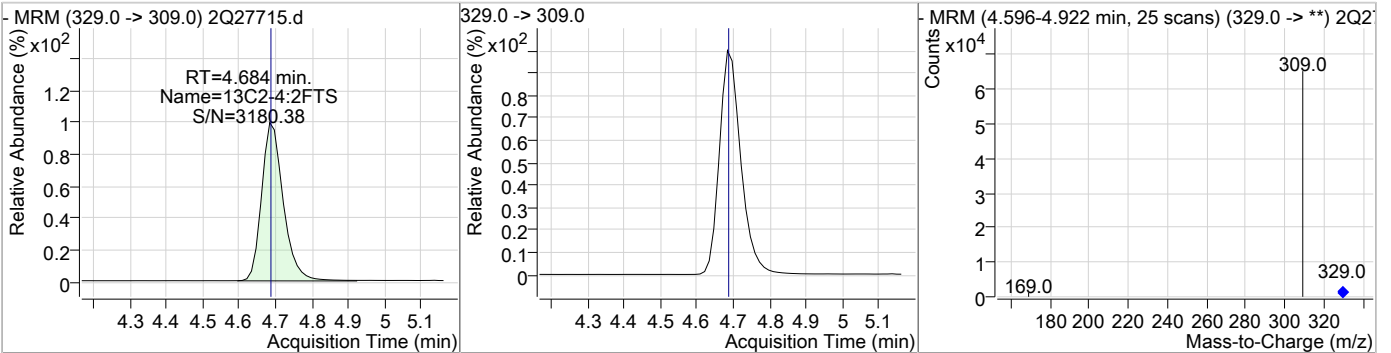
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFBS     | 5.93  | 3.77 | 0.00     | 6677  | 299.0 -> 99.0 | 36.4   | 5.6  | 65.6 |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFBS | 15.54 | 3.77 | -0.01    | 14166 |      |        |      |      |



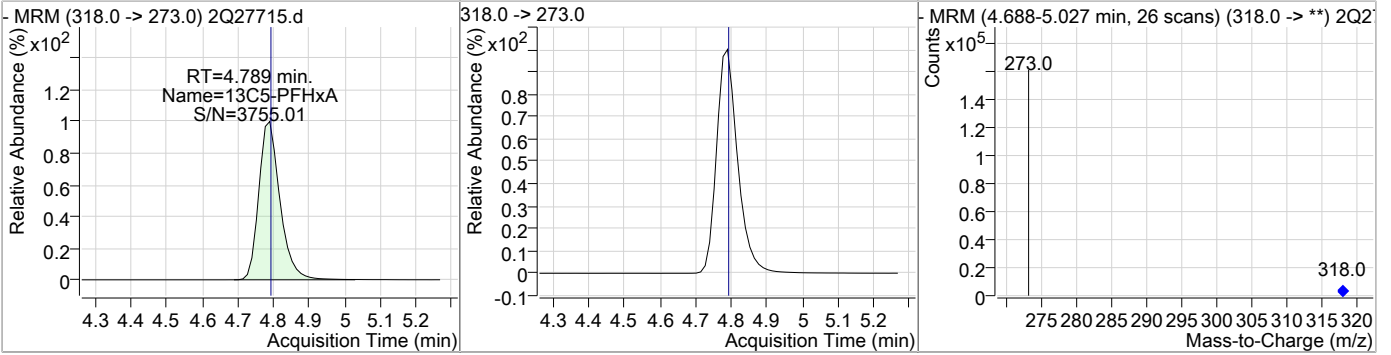
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-4:2FTS | 16.00 | 4.68 | 0.00     | 47580 |      |        |      |      |



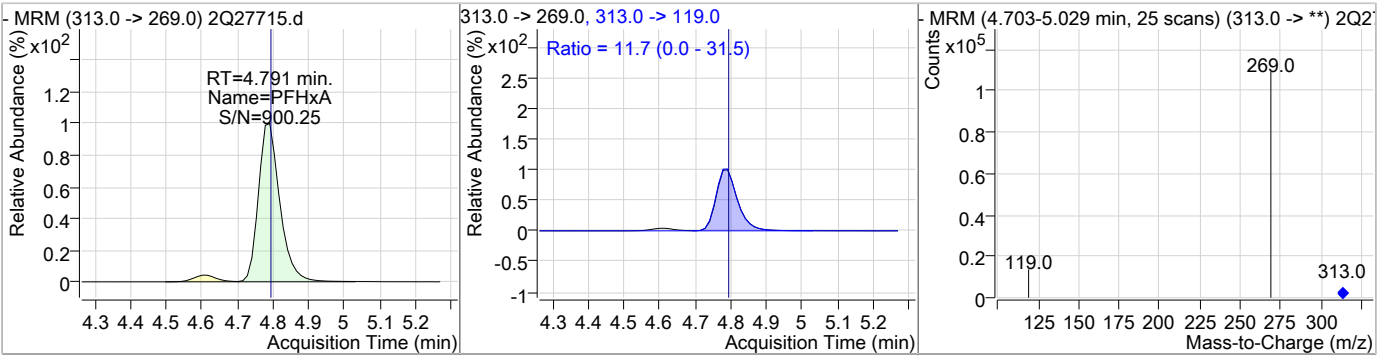


### Perfluorinated Compounds by LC/MS/MS

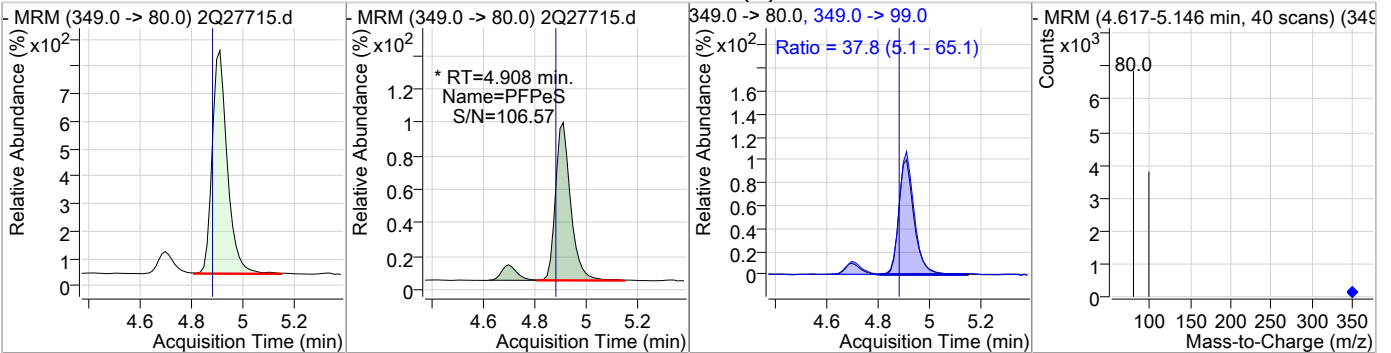
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 16.42 | 4.79 | 0.00     | 119330 |      |        |      |      |



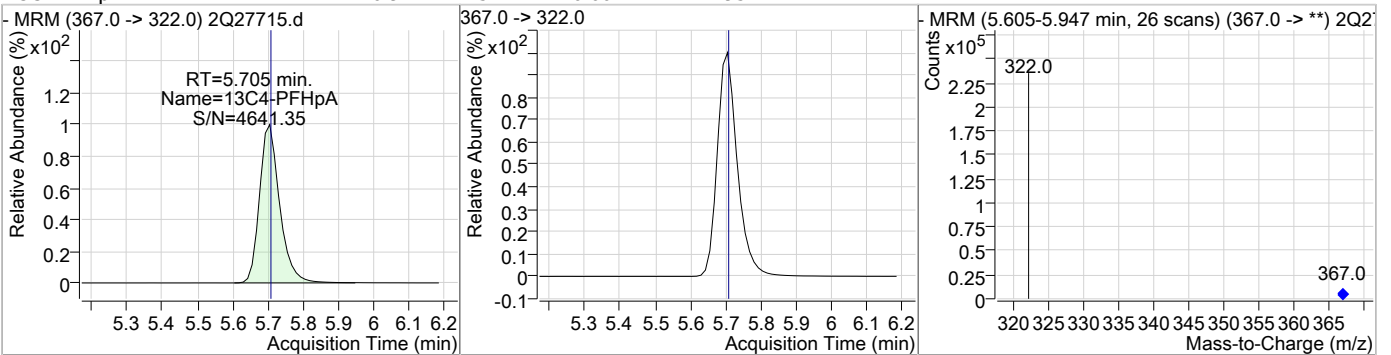
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 39.38 | 4.79 | 0.00     | 80926 | 313.0 -> 119.0 | 11.7   | 0.0  | 31.5 |



| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFPeS    | 5.10  | 4.91 | 0.01     | 3675 (m) | 349.0 -> 99.0 | 37.8   | 5.1  | 65.1 |

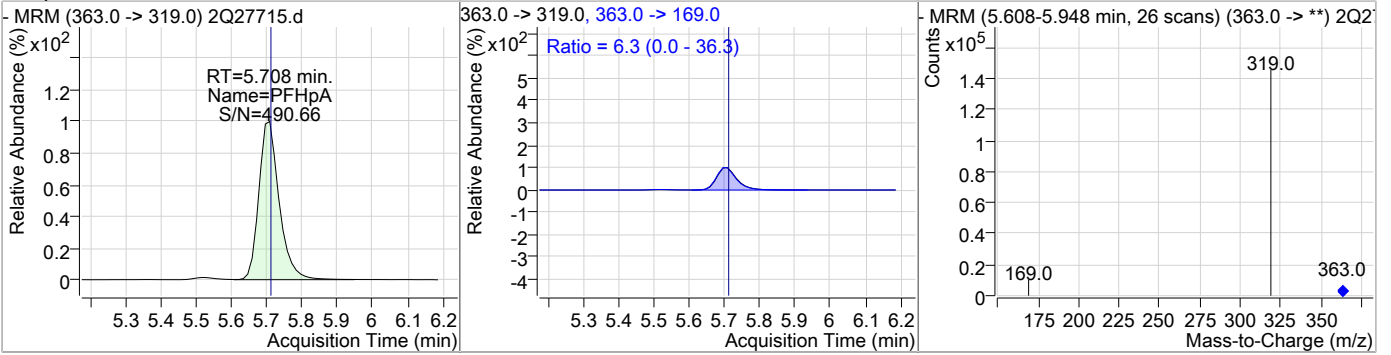


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 16.92 | 5.71 | 0.00     | 174952 |      |        |      |      |

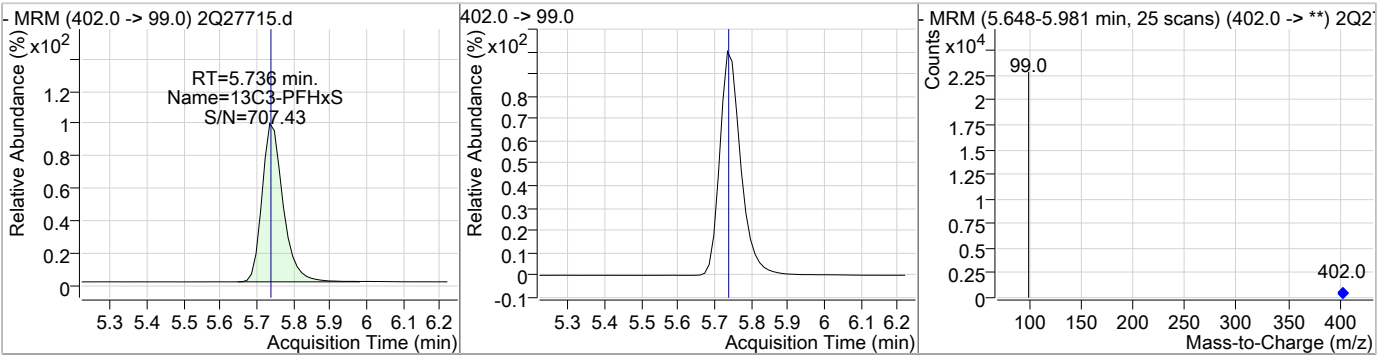


### Perfluorinated Compounds by LC/MS/MS

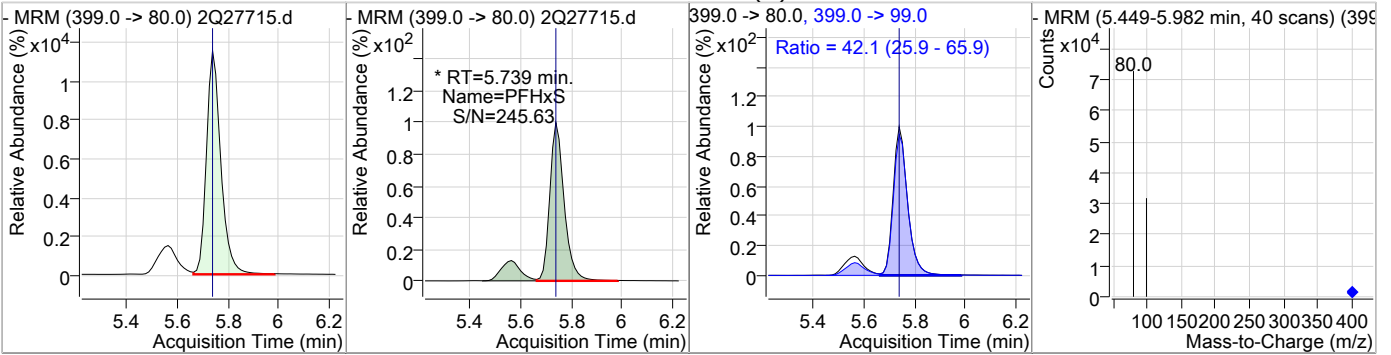
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 14.24 | 5.71 | 0.00     | 107363 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



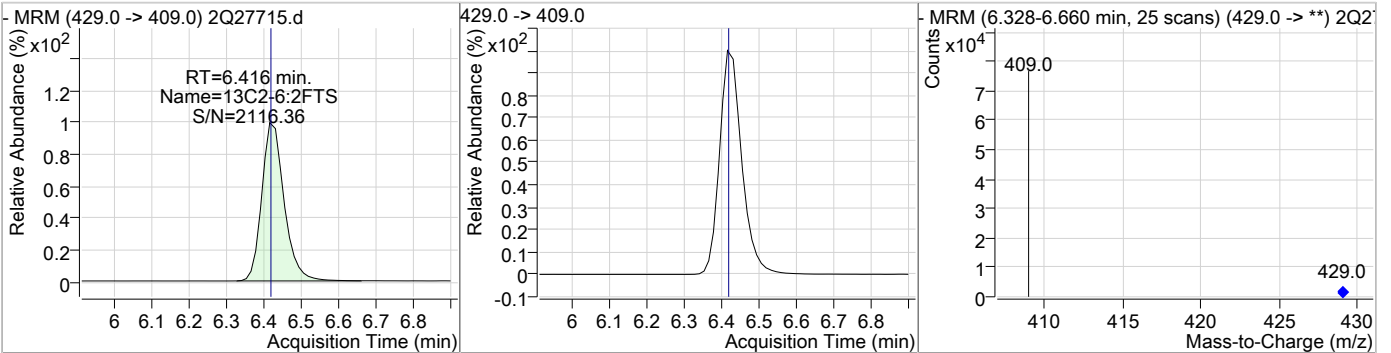
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 15.11 | 5.74 | 0.00     | 15408 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFHxS    | 62.47 | 5.74 | 0.00     | 53226 (m) | 399.0 -> 99.0 | 42.1   | 25.9 | 65.9 |

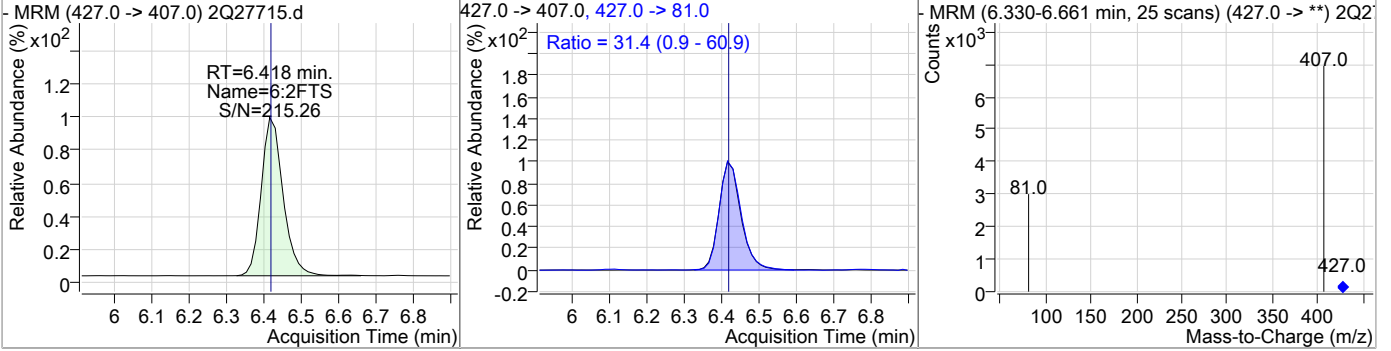


| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-6:2FTS | 18.13 | 6.42 | 0.00     | 58197 |      |        |      |      |

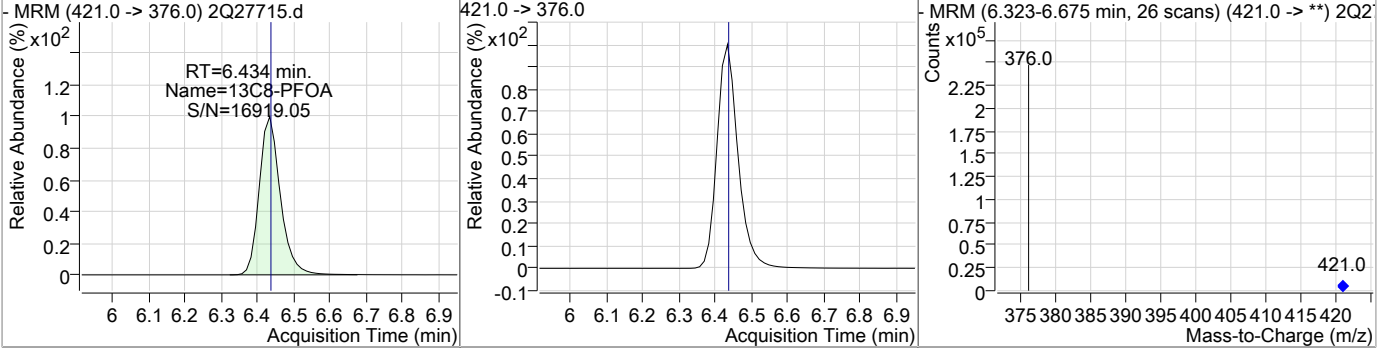


### Perfluorinated Compounds by LC/MS/MS

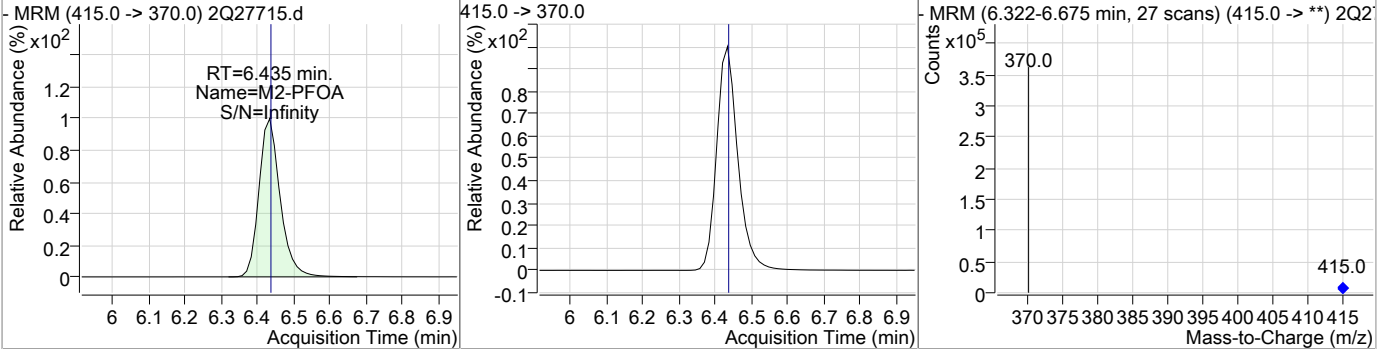
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 3.13  | 6.42 | 0.00     | 4480  | 427.0 -> 81.0 | 31.4   | 0.9  | 60.9 |



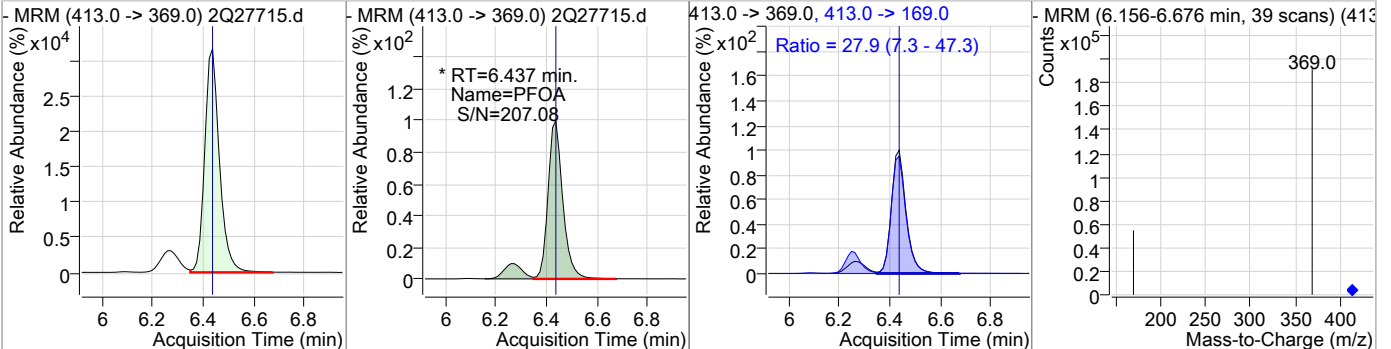
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 18.08 | 6.43 | 0.00     | 188600 |      |        |      |      |



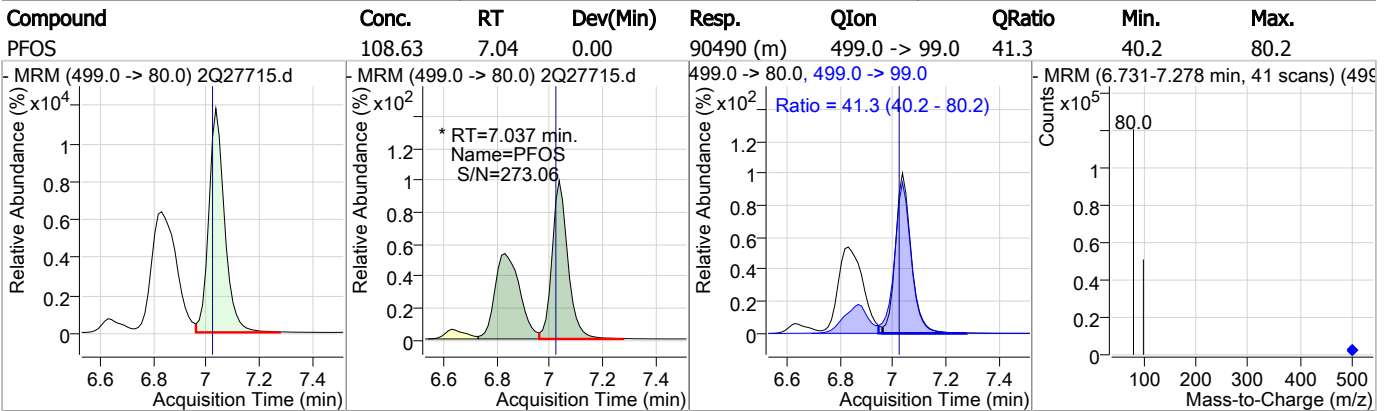
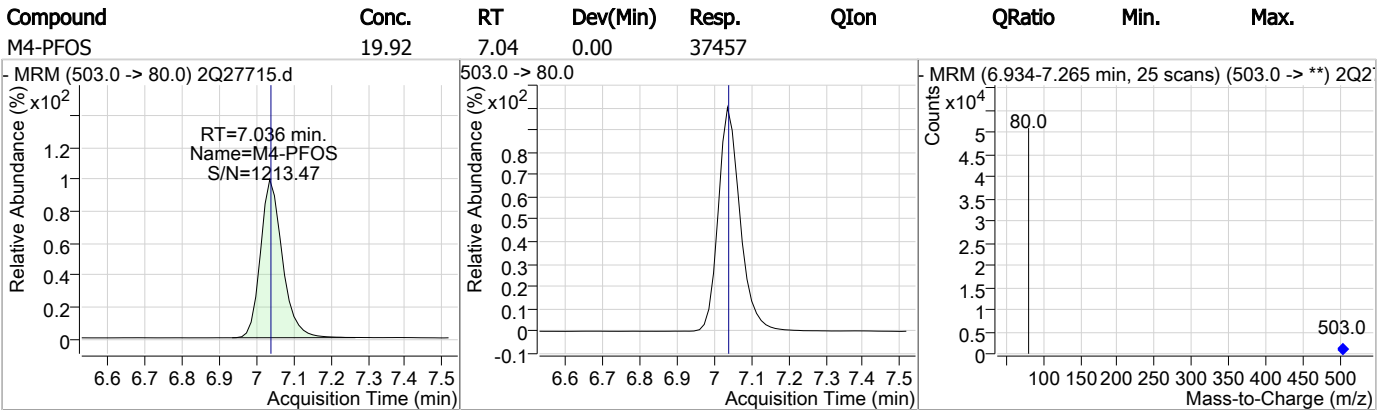
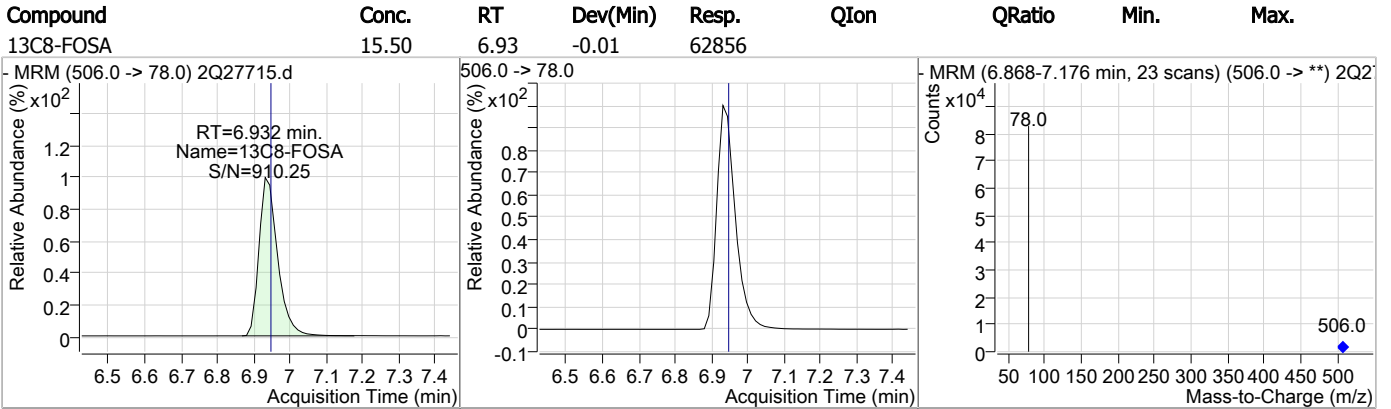
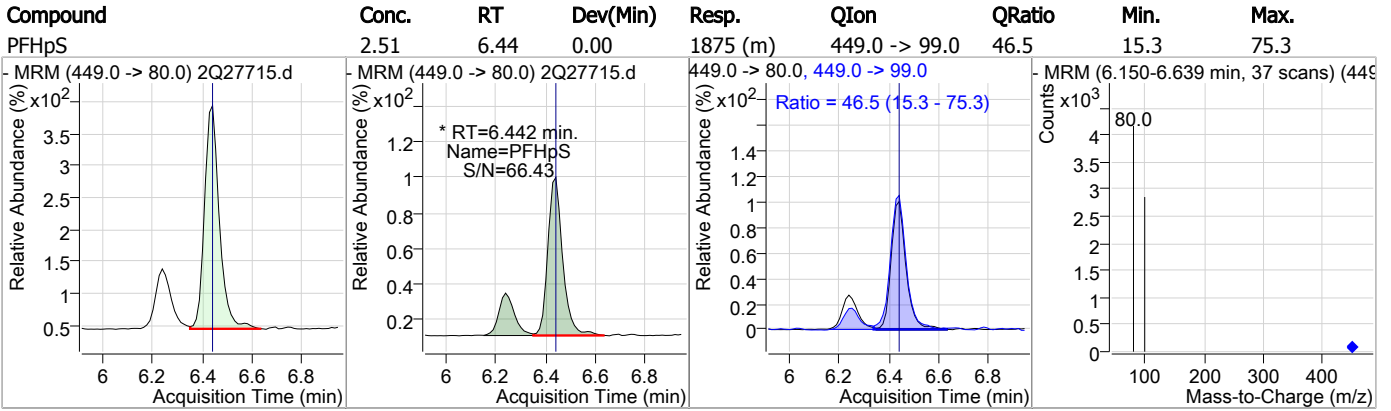
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.98 | 6.44 | 0.00     | 275025 |      |        |      |      |



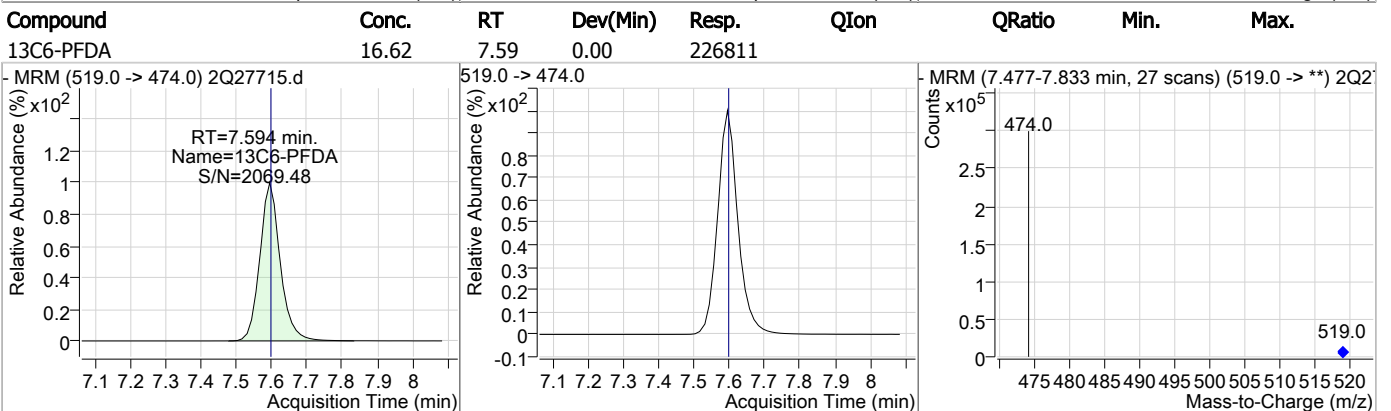
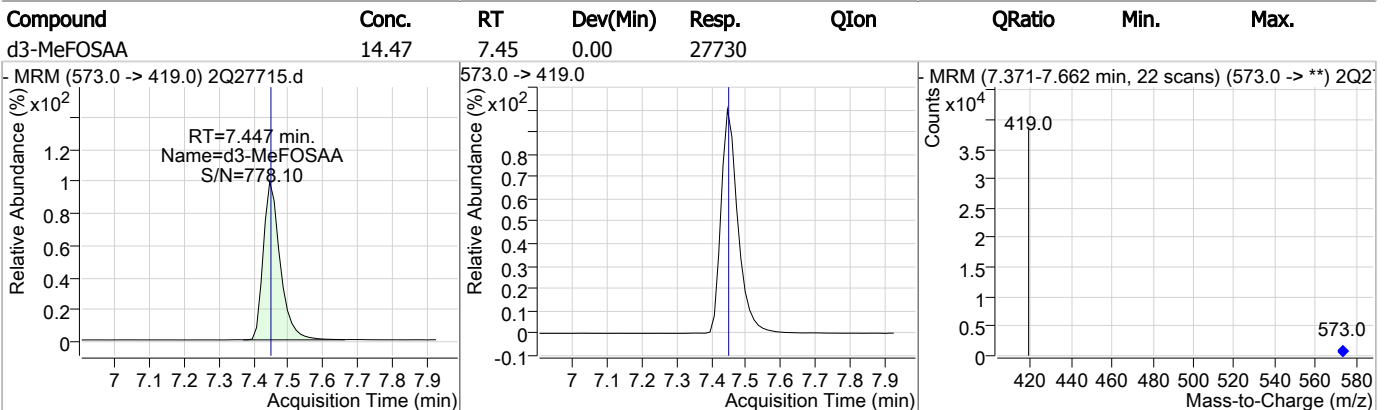
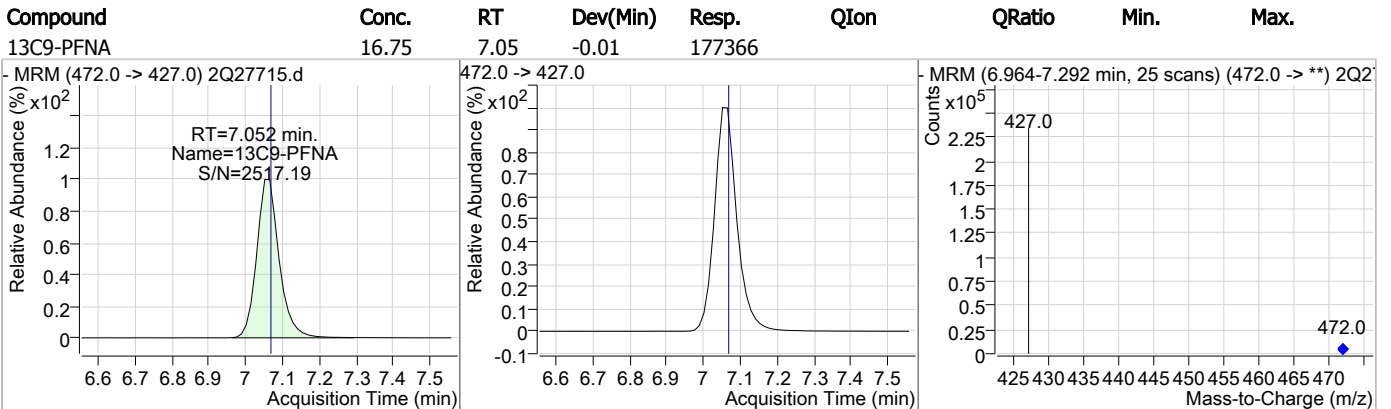
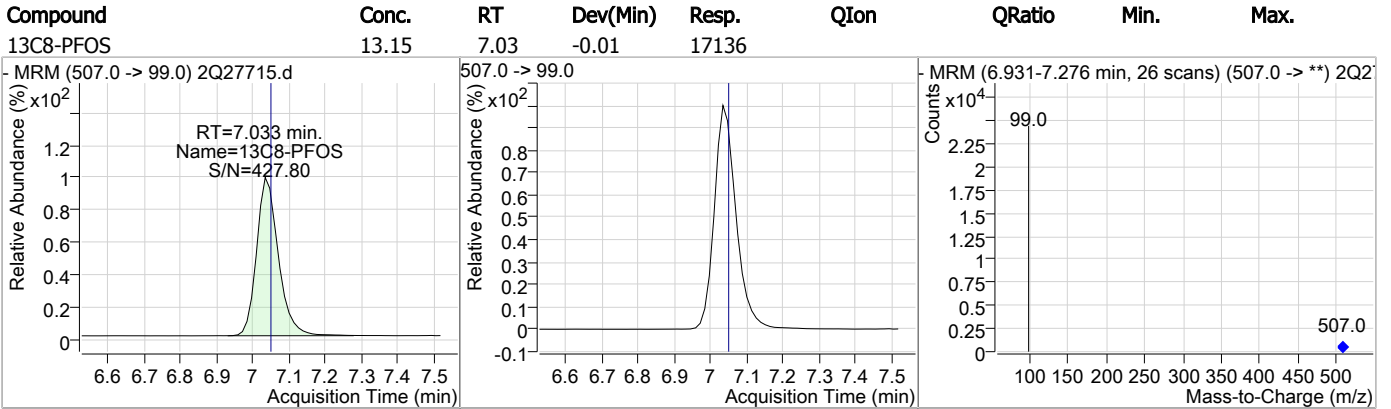
| Compound | Conc. | RT   | Dev(Min) | Resp.      | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|------------|----------------|--------|------|------|
| PFOA     | 28.25 | 6.44 | 0.00     | 143912 (m) | 413.0 -> 169.0 | 27.9   | 7.3  | 47.3 |



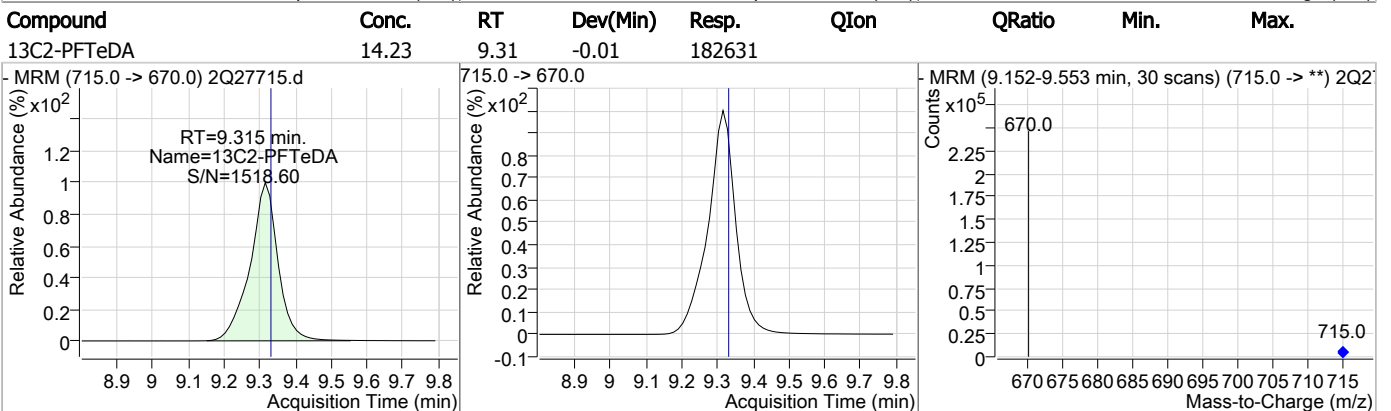
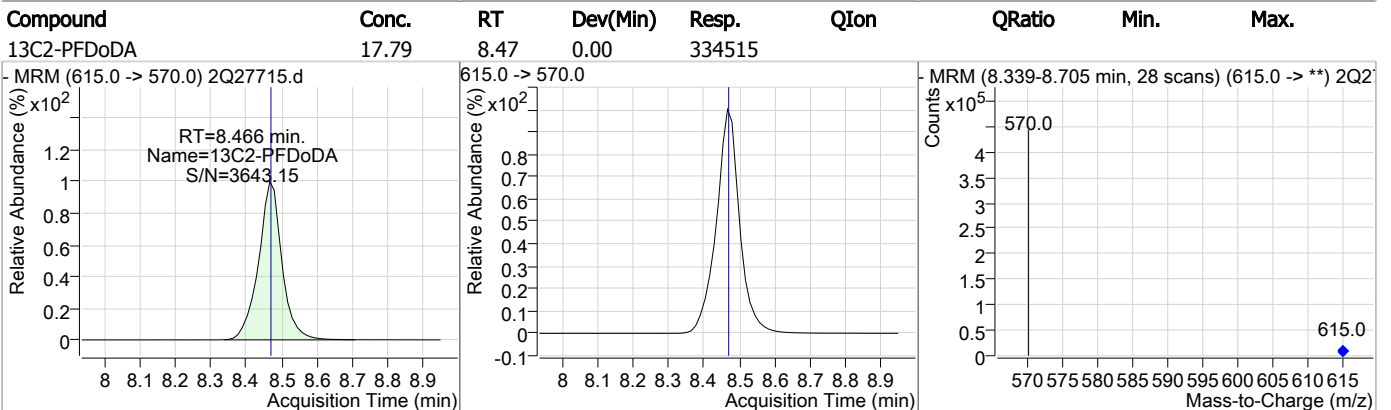
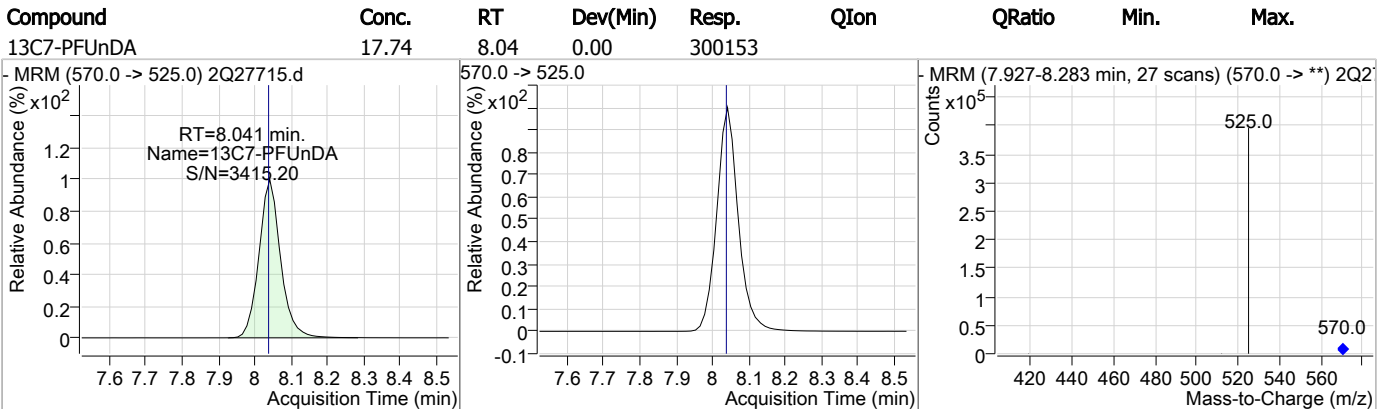
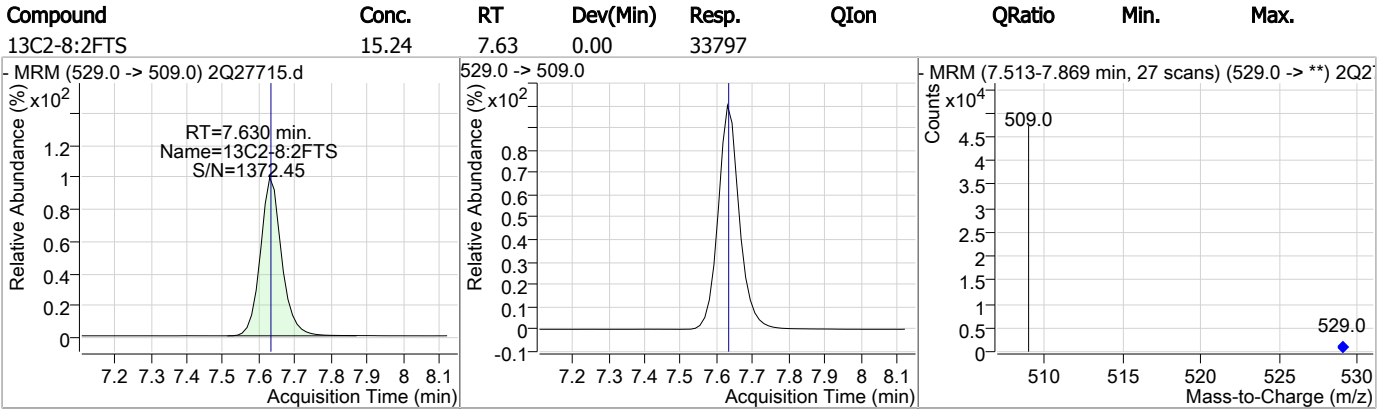
### Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



# Manual Integration Approval Summary

**Sample Number:** FA62220-17  
**Lab FileID:** 2Q27715.D  
**Injection Time:** 03/18/19 22:03

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/20/19 08:59 Nancy Saunders  
**Supervisor approved:** 03/20/19 09:26 Norman Farmer

| Parameter                     | CAS       | Sig# | R.T. (min.) | Reason     |
|-------------------------------|-----------|------|-------------|------------|
| Perfluoropentanesulfonic acid | 2706-91-4 |      | 4.91        | Split peak |
| Perfluorohexanesulfonic acid  | 355-46-4  |      | 5.74        | Split peak |
| Perfluorooctanoic acid        | 335-67-1  |      | 6.44        | Split peak |
| Perfluoroheptanesulfonic acid | 375-92-8  |      | 6.44        | Split peak |
| Perfluorooctanesulfonic acid  | 1763-23-1 |      | 7.04        | Split peak |

7.1.17.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27752.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/19/2019 5:52:53 PM  
 Sample Name : FA62220-17  
 Vial : Vial 16  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q443.batch.bin  
 Sample Information : op74180,S2Q443,250,,,,1.0,2,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 316900 | 20.00 µg/L       | 0.013    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 44894  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 55473  | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 46181  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 65462  | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 95728  | 20.00 µg/L       | 0.013    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 101317 | 20.00 µg/L       | 0.013    |
| M9-PFNA                            | 7.078                | 472.0 -> 427.0 | 96010  | 20.00 µg/L       | 0.013    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 119609 | 20.00 µg/L       | 0.013    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 149862 | 20.00 µg/L       | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 181276 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 91628  | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 33661  | 20.00 µg/L       | 0.015    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 8175   | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 8761   | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 9394   | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 26134  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 33300  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 17930  | 20.00 µg/L       | 0.013    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 15405  | 20.00 µg/L       | 0.013    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 71     | 100.00 µg/L      | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 25998  | 8.74 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 43.7% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 33297  | 10.37 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 51.9% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 17944  | 8.09 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 40.5% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 181451 | 9.65 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 48.2% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 91441  | 7.12 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 35.6% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 8168   | 8.96 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 44.8% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 8744   | 8.58 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 42.9% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 55281  | 9.22 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 46.1% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 95747  | 9.26 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 46.3% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 65451  | 9.01 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 45.0% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 46204  | 9.09 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 45.4% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 119623 | 8.77 µg/L        | 0.013    |

7.1.18  
7



## Perfluorinated Compounds by LC/MS/MS

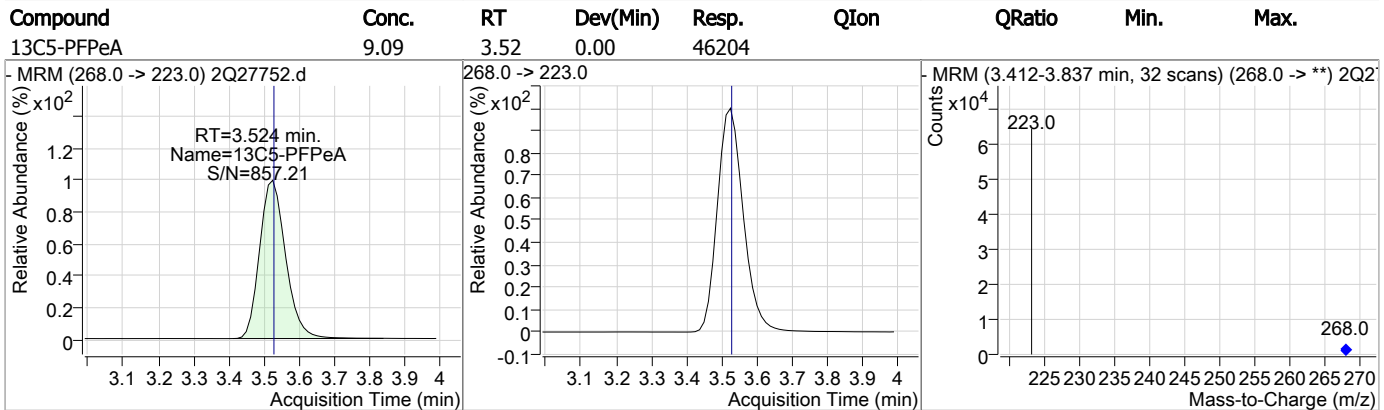
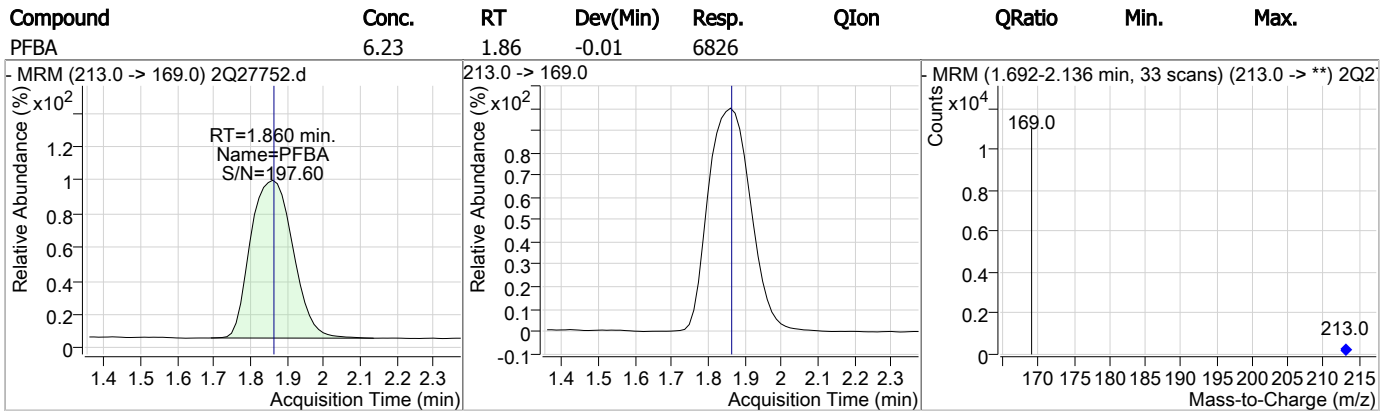
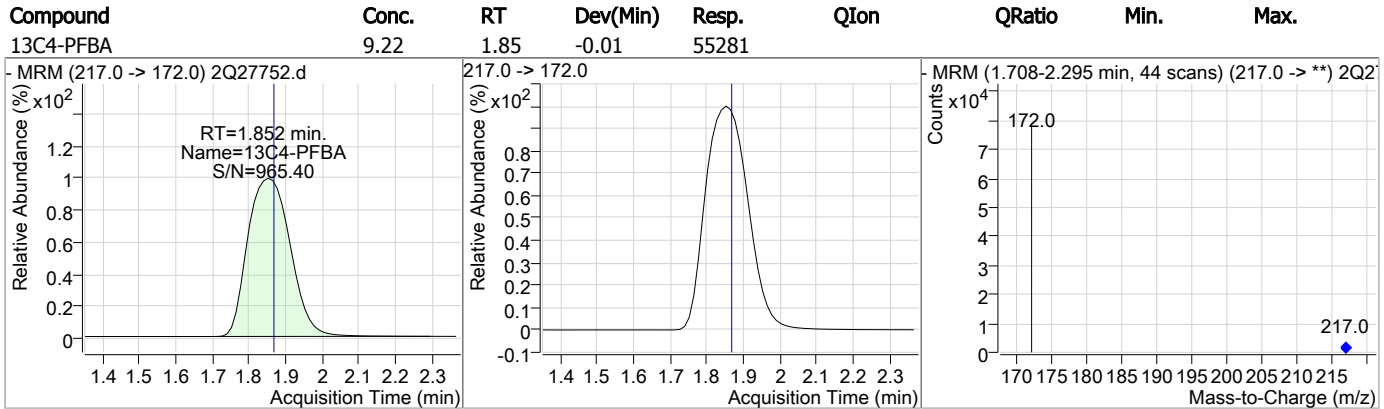
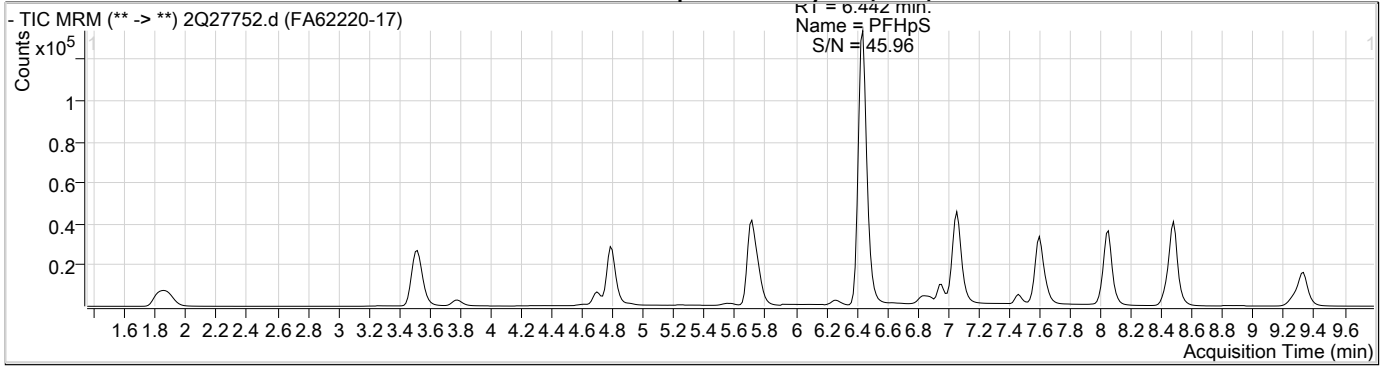
| Compound              | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|-----------------------|----------------------|----------------|--------|------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 43.8% |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 149792 | 8.85 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 44.3% |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 33672  | 8.30 µg/L        | 0.015    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 41.5% |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 101315 | 9.71 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 48.6% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 9391   | 7.20 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 36.0% |          |
| 13C9-PFNA             | 7.078                | 472.0 -> 427.0 | 95953  | 9.06 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 45.3% |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 15469  | 8.07 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 40.3% |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 317642 | 10.01 µg/L       | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 50.1% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 44843  | 9.98 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 49.9% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 0      | 0.00 µg/L        | m 0.013  |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%   |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | Dev(Min) | QValue |
|------------------|-------|----------------|-------|-------------|----------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |          |        |
| 6:2FTS           | 6.432 | 427.0 -> 407.0 | 2612  | 1.59 µg/L   |          | 98     |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |          |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |          |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |          |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |          |        |
| PFBA             | 1.860 | 213.0 -> 169.0 | 6826  | 6.23 µg/L   |          | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 3789  | 2.92 µg/L   |          | 99     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |          |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |          |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |          |        |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 58385 | 7.08 µg/L   |          | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 1102  | 1.30 µg/L   | m        | 97     |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 45567 | 20.21 µg/L  |          | 100    |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 29195 | 30.14 µg/L  | m        | 96     |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |          |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |          |        |
| PFOA             | 6.450 | 413.0 -> 369.0 | 77863 | 14.23 µg/L  | m        | 98     |
| PFOS             | 7.049 | 499.0 -> 80.0  | 50969 | 55.86 µg/L  | m        | 77     |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 90816 | 22.72 µg/L  |          | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 2066  | 2.49 µg/L   | m        | 96     |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |          |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |          |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |          |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |          |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |          |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |          |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |          |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.1.18  
7



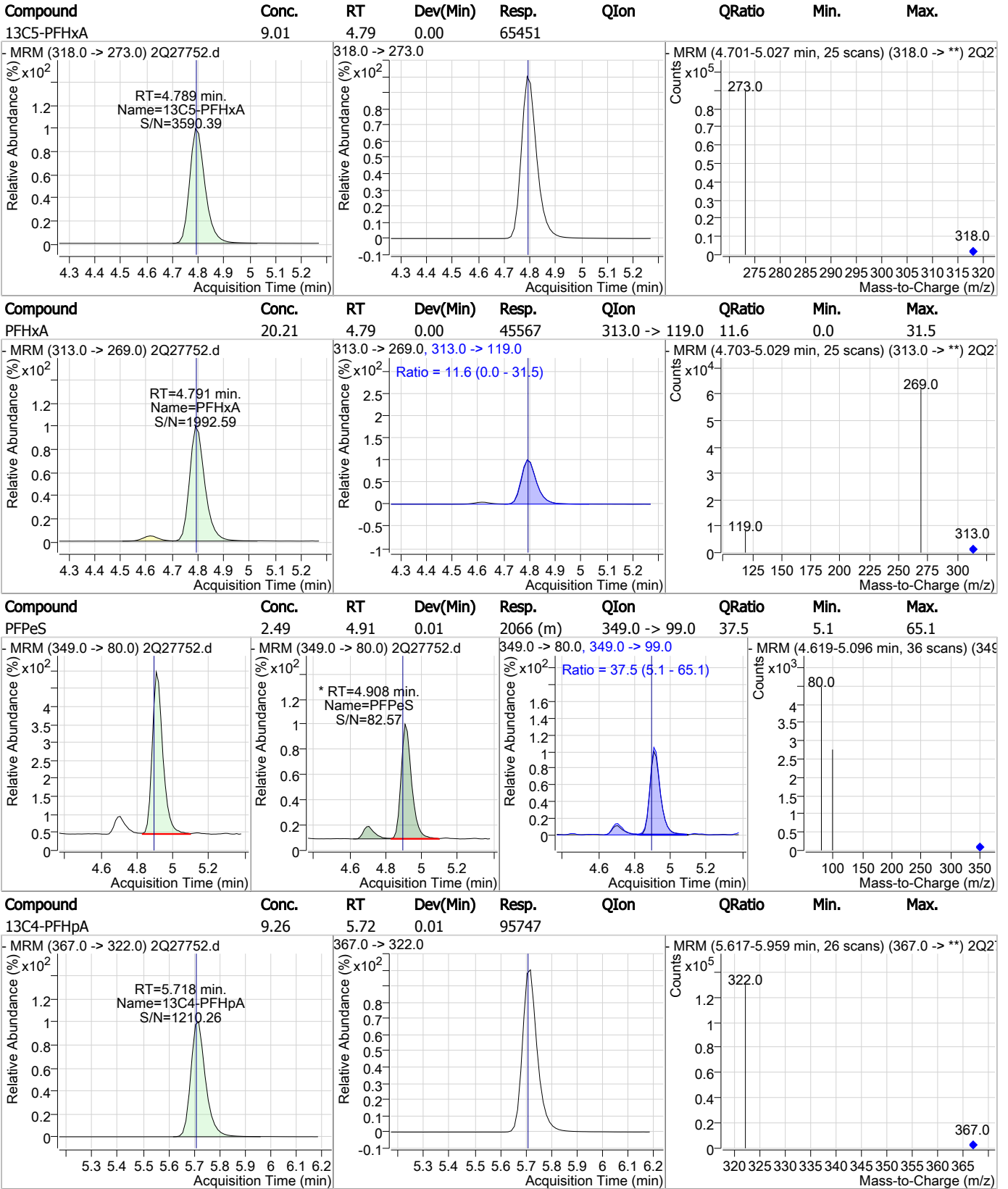
Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeA       | 22.72 | 3.53 | 0.00     | 90816 |               |        |      |      |
|             |       |      |          |       |               |        |      |      |
| PFBS        | 2.92  | 3.77 | 0.00     | 3789  | 299.0 -> 99.0 | 36.4   | 5.6  | 65.6 |
|             |       |      |          |       |               |        |      |      |
| 13C3-PFBS   | 8.96  | 3.78 | 0.00     | 8168  |               |        |      |      |
|             |       |      |          |       |               |        |      |      |
| 13C2-4:2FTS | 8.74  | 4.70 | 0.01     | 25998 |               |        |      |      |
|             |       |      |          |       |               |        |      |      |

7.1.18  
7



### Perfluorinated Compounds by LC/MS/MS

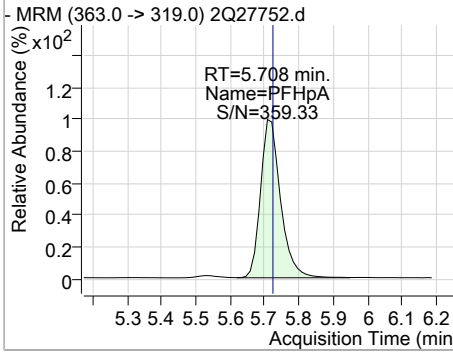
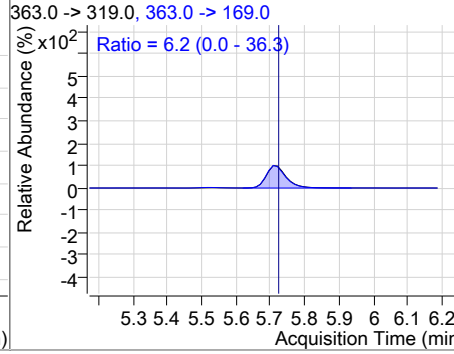
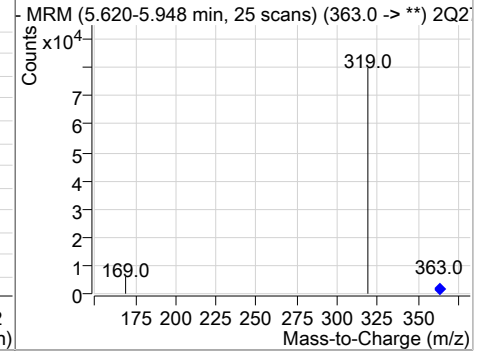
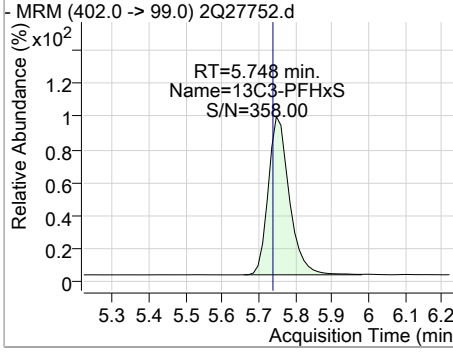
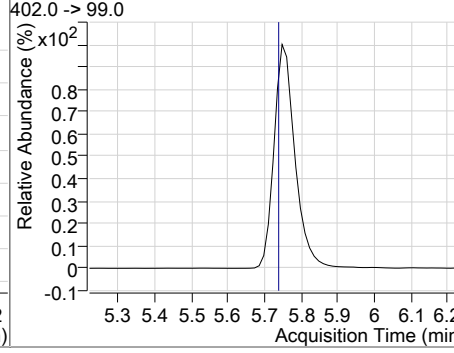
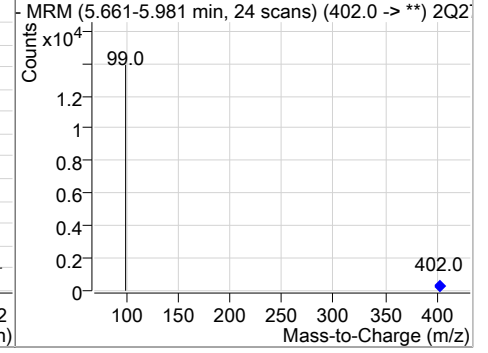
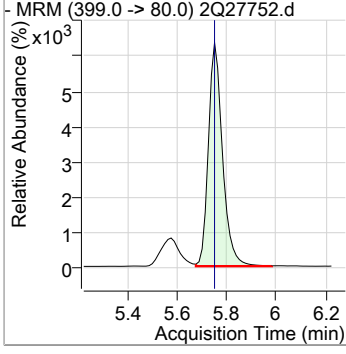
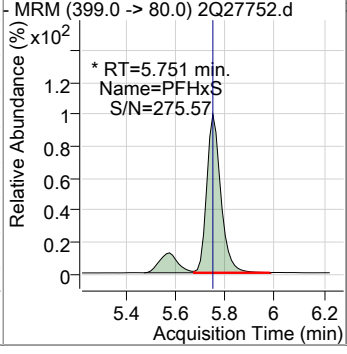
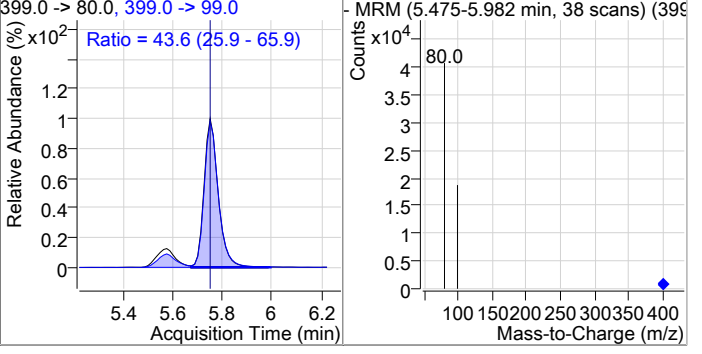
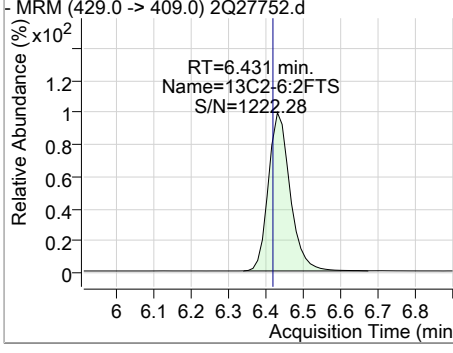
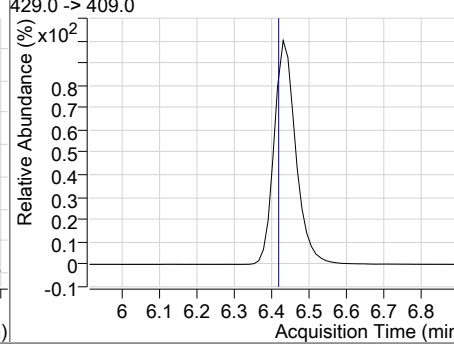
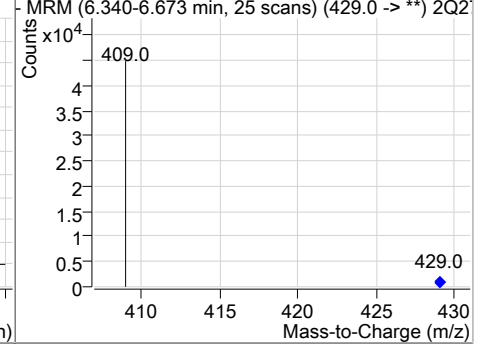


7.1.18

7



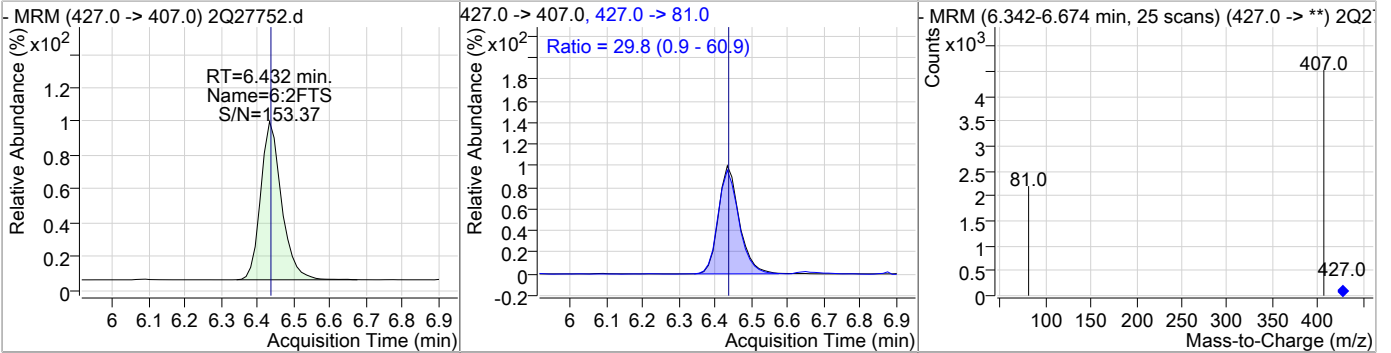
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)  | Resp.     | QIon           | QRatio   | Min. | Max. |
|--|-------|------|---|-----------|----------------|--|------|------|
| PFHpA  | 7.08  | 5.71 | 0.00  | 58385     | 363.0 -> 169.0 | 6.2  | 0.0  | 36.3 |
|    |       |      |    |           |                |    |      |      |
| 13C3-PFHxS   | 8.58  | 5.75 | 0.01  | 8744      |                |  |      |      |
|    |       |      |    |           |                |    |      |      |
| PFHxS  | 30.14 | 5.75 | 0.01  | 29195 (m) | 399.0 -> 99.0  | 43.6   | 25.9 | 65.9 |
|  |       |      |  |           |                |  |      |      |
| 13C2-6:2FTS  | 10.37 | 6.43 | 0.02  | 33297     |                |  |      |      |
|  |       |      |  |           |                |  |      |      |

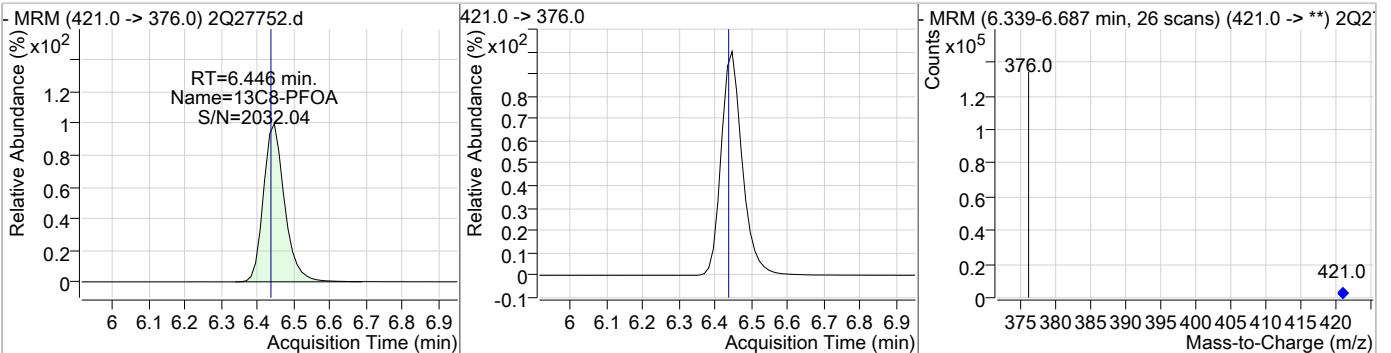
7.1.18  
7

Perfluorinated Compounds by LC/MS/MS

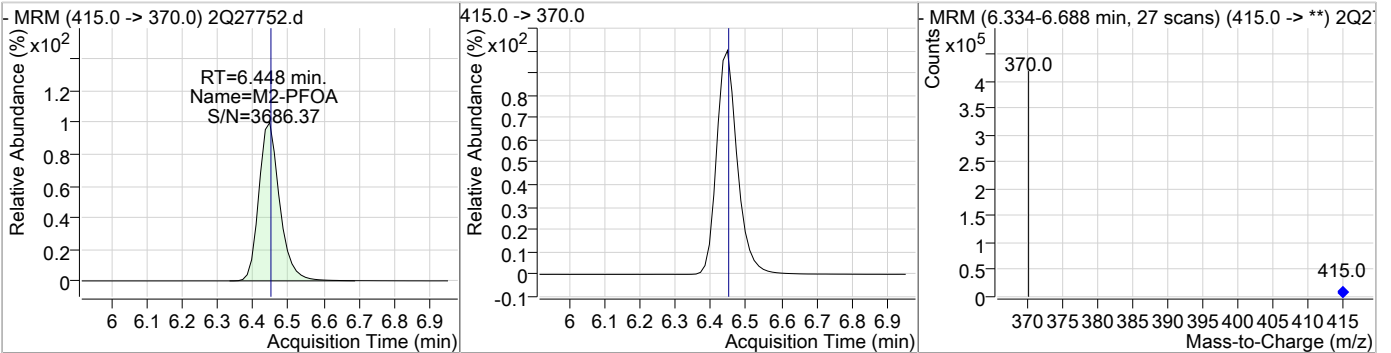
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 1.59  | 6.43 | 0.01     | 2612  | 427.0 -> 81.0 | 29.8   | 0.9  | 60.9 |



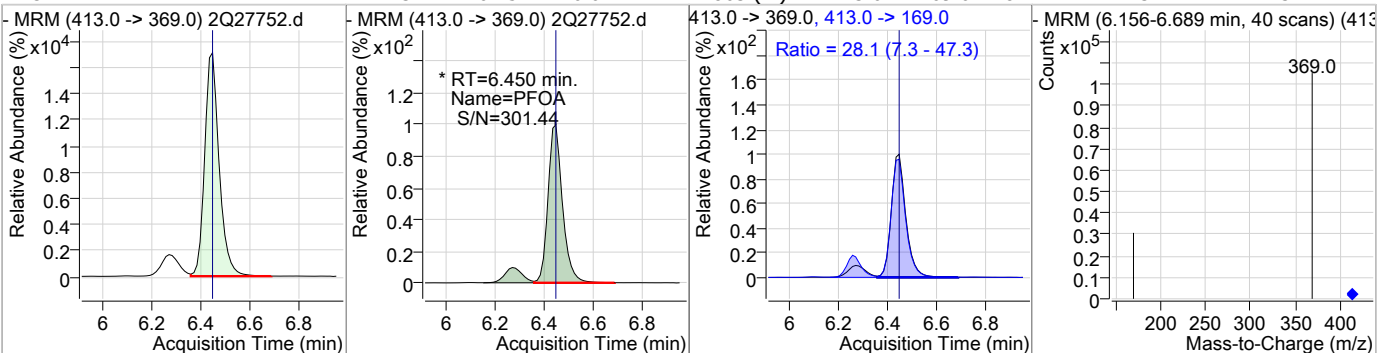
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 9.71  | 6.45 | 0.01     | 101315 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 10.01 | 6.45 | 0.01     | 317642 |      |        |      |      |

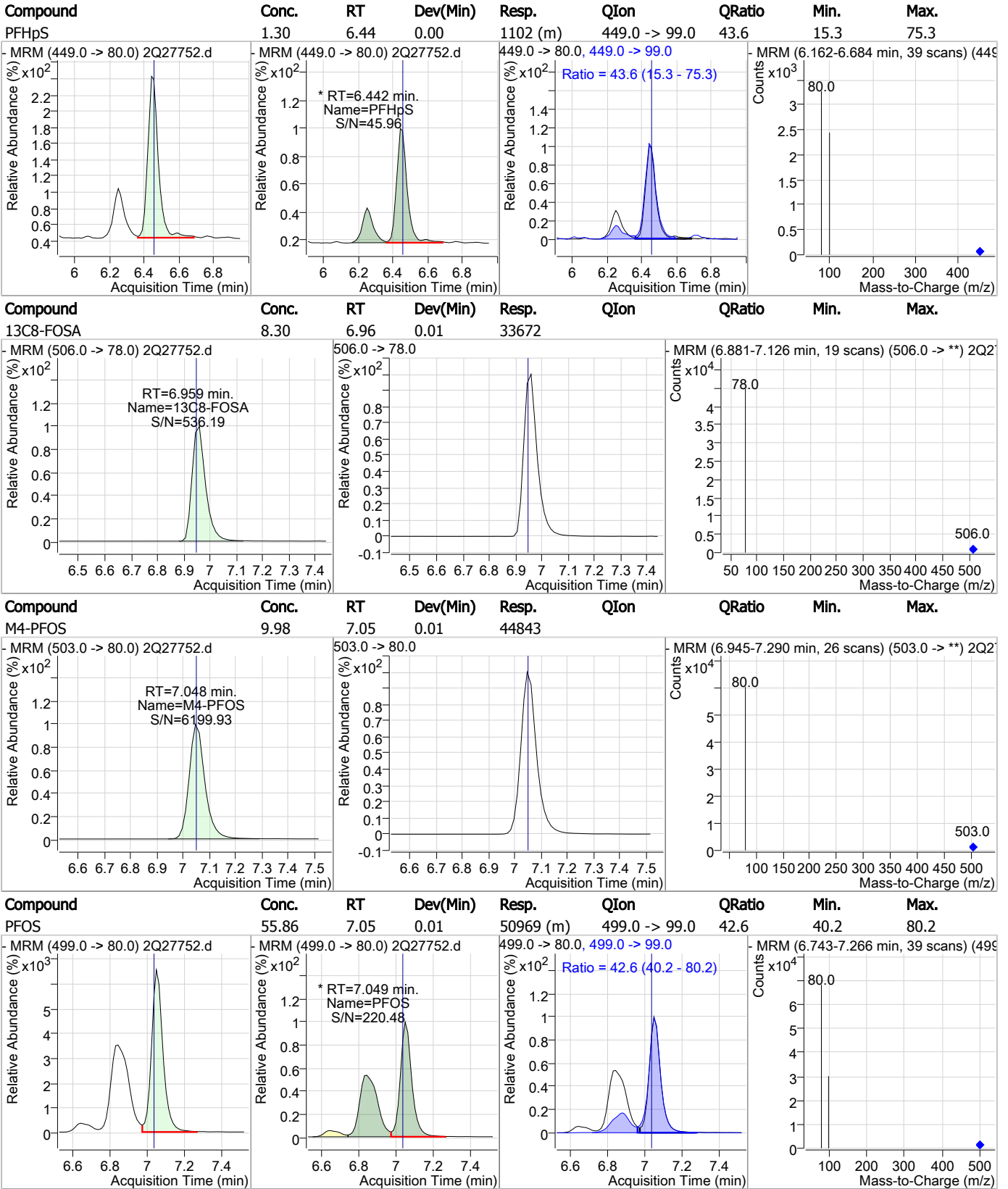


| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|----------------|--------|------|------|
| PFOA     | 14.23 | 6.45 | 0.01     | 77863 (m) | 413.0 -> 169.0 | 28.1   | 7.3  | 47.3 |



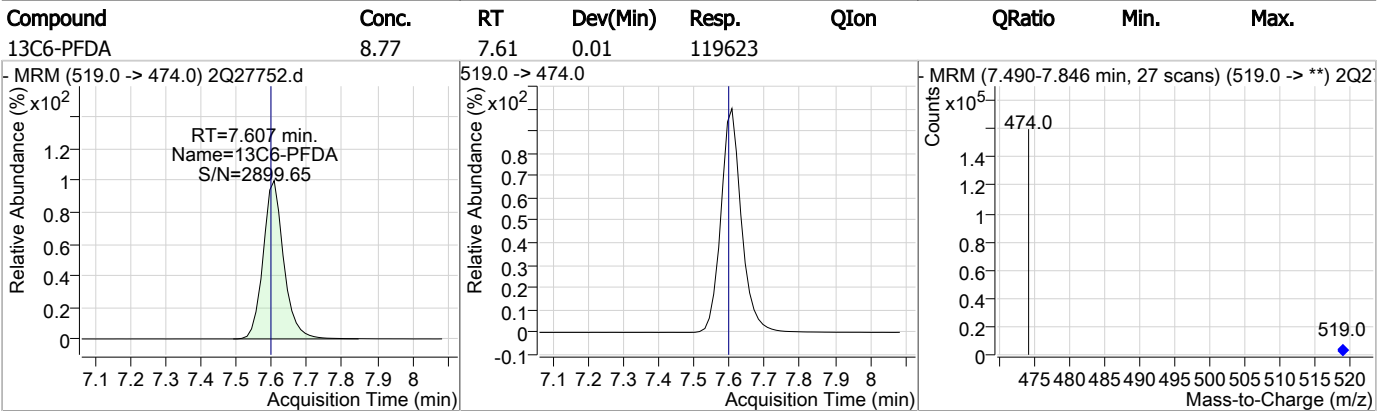
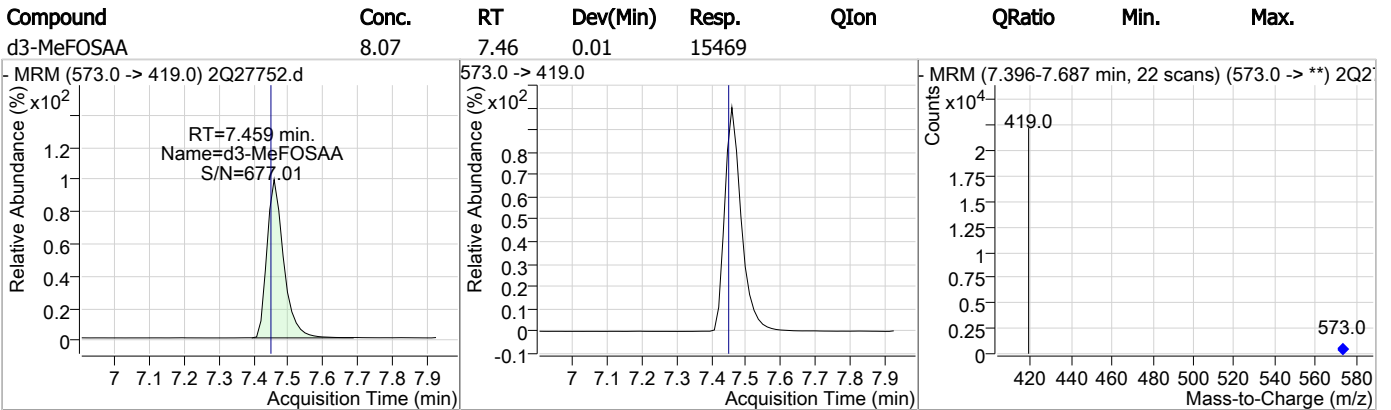
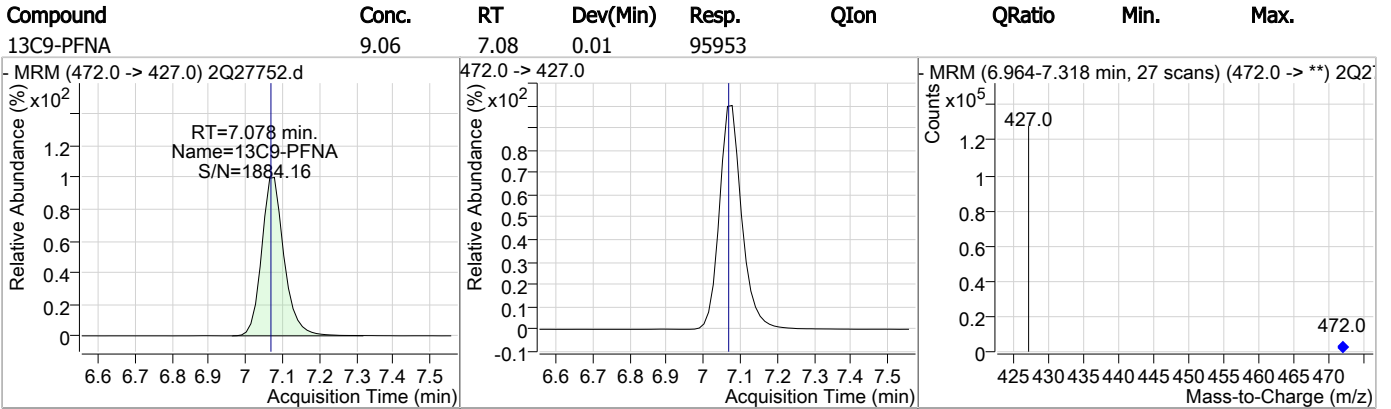
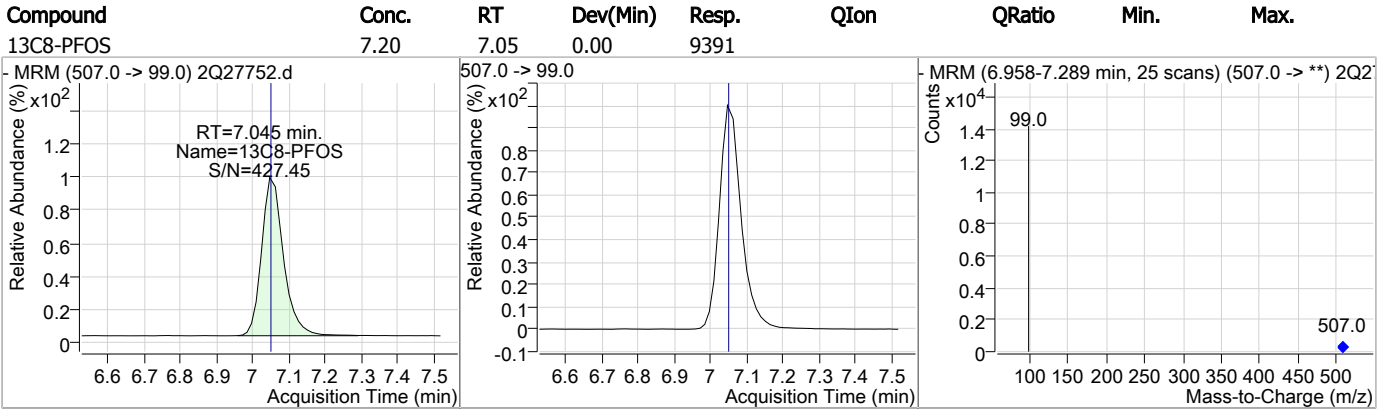
7.1.18  
7

### Perfluorinated Compounds by LC/MS/MS



7.1.18  
7

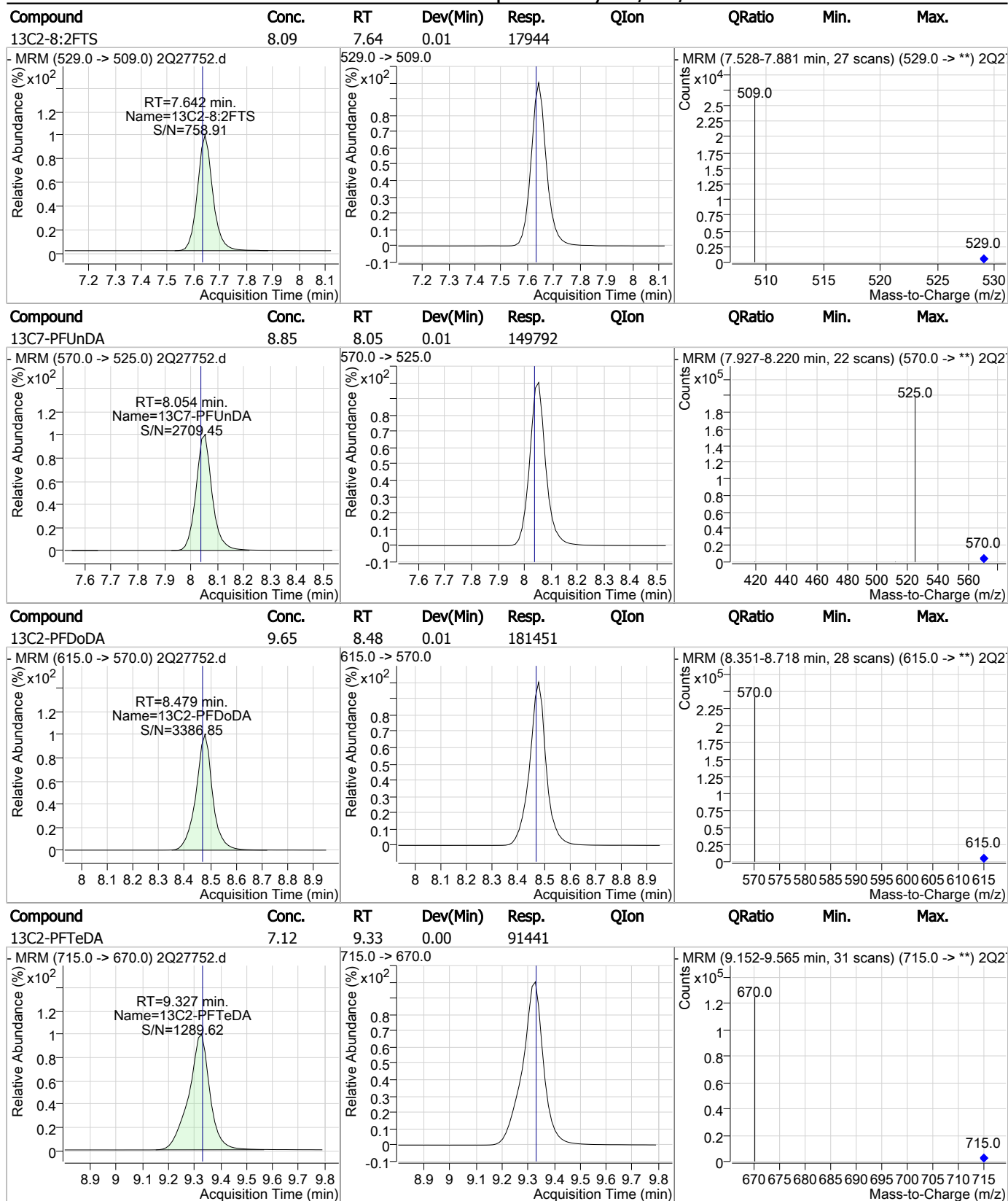
Perfluorinated Compounds by LC/MS/MS



7.1.18  
7



## Perfluorinated Compounds by LC/MS/MS



# Manual Integration Approval Summary

**Sample Number:** FA62220-17  
**Lab FileID:** 2Q27752.D  
**Injection Time:** 03/19/19 17:52

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/20/19 08:59 Nancy Saunders  
**Supervisor approved:** 03/20/19 09:26 Norman Farmer

| Parameter                     | CAS       | Sig# | R.T. (min.) | Reason     |
|-------------------------------|-----------|------|-------------|------------|
| Perfluoropentanesulfonic acid | 2706-91-4 |      | 4.91        | Split peak |
| Perfluorohexanesulfonic acid  | 355-46-4  |      | 5.75        | Split peak |
| Perfluoroheptanesulfonic acid | 375-92-8  |      | 6.44        | Split peak |
| Perfluorooctanoic acid        | 335-67-1  |      | 6.45        | Split peak |
| Perfluorooctanesulfonic acid  | 1763-23-1 |      | 7.05        | Split peak |

7.1.18.1  
7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Norman Farmer  
 03/20/19 09:31

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27751.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/19/2019 5:37:10 PM  
 Sample Name : FA62220-18  
 Vial : Vial 15  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q443.batch.bin  
 Sample Information : op74180,S2Q443,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 276743 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 39253  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 105178 | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 89280  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 126819 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 188121 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 202788 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 183913 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 220921 | 20.00 µg/L       | 0.013    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 275650 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 332164 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 167817 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 61571  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 15162  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16788  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 17930  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 49885  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 63904  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 33197  | 20.00 µg/L       | 0.013    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 27522  | 20.00 µg/L       | 0.013    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 49929  | 16.79 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.0% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 63841  | 19.89 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.5% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 33166  | 14.96 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.8% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 331879 | 17.65 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.2% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 167056 | 13.01 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 65.1% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 15147  | 16.61 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.1% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16780  | 16.46 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.3% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 104938 | 17.50 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.5% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 188028 | 18.18 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.9% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 126828 | 17.45 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.3% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 89282  | 17.56 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.8% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 220842 | 16.18 µg/L       | 0.013    |

7.1.19  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 80.9%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 275620 | 16.29 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.4%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 61576  | 15.19 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 75.9%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 202728 | 19.43 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.2%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 17939  | 13.76 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 68.8%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 183862 | 17.37 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.8%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 27524  | 14.36 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.8%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 277139 | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 39281  | 20.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

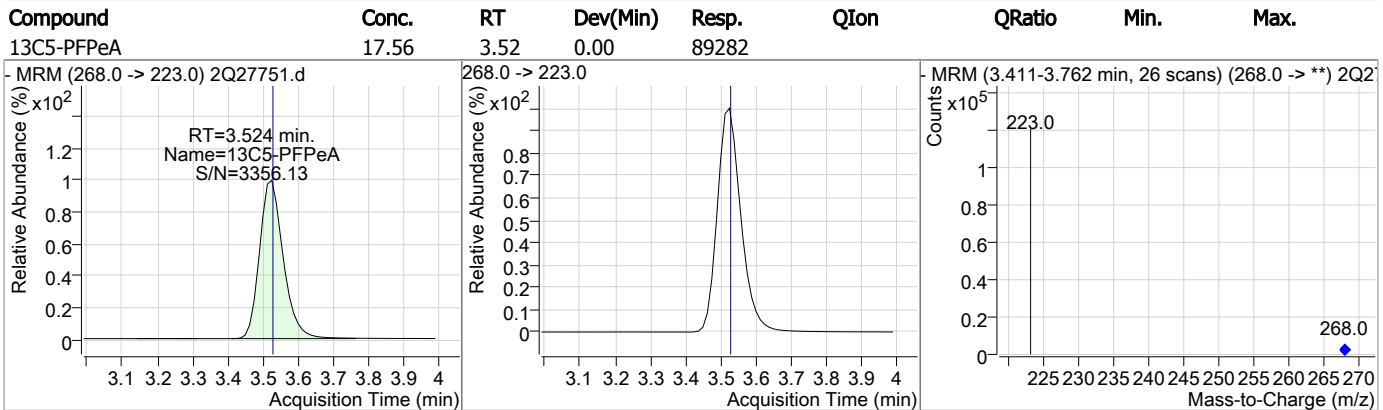
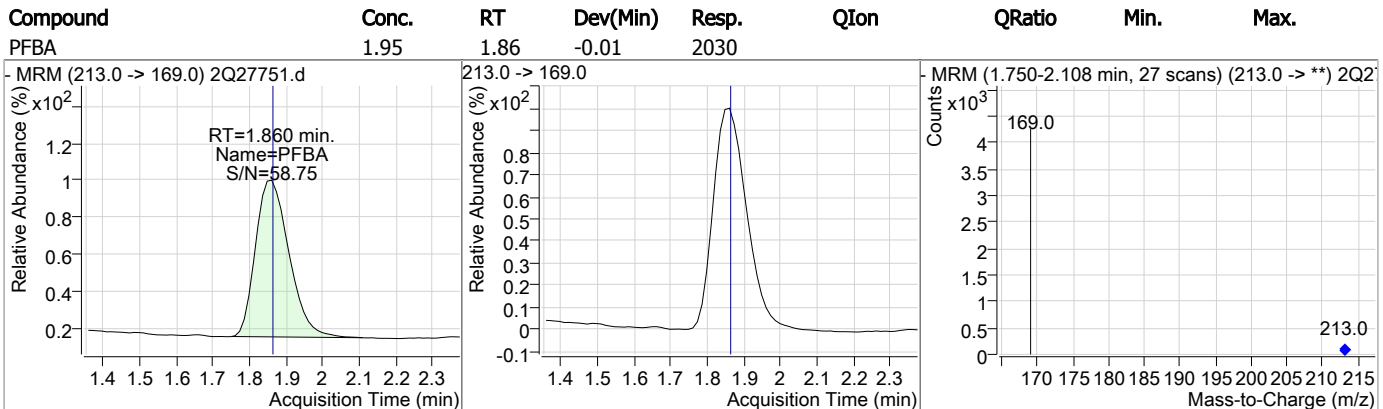
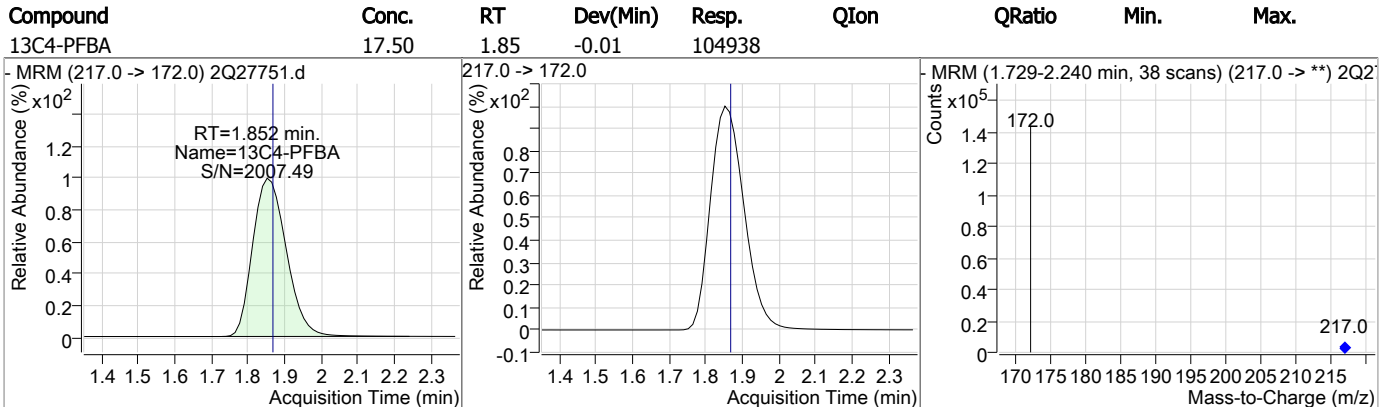
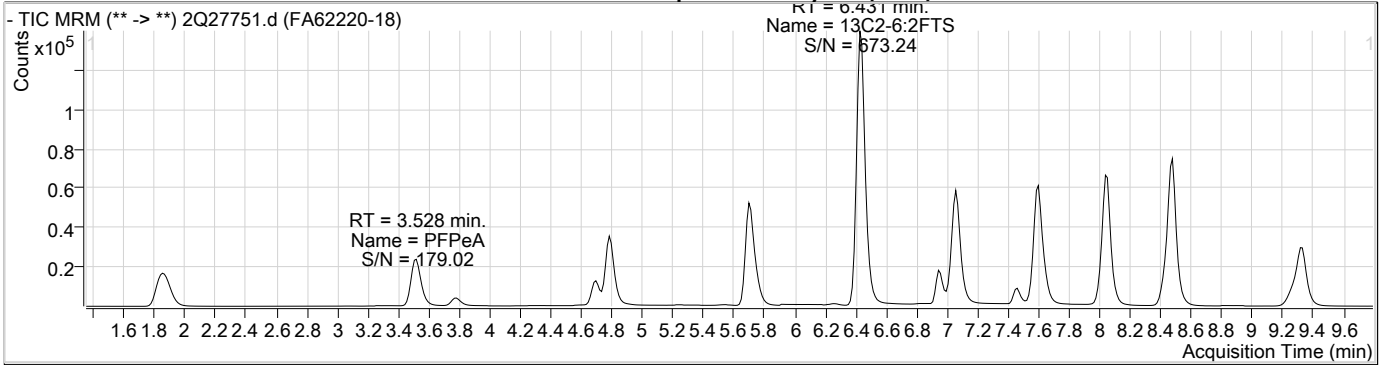
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units  | QValue |
|------------------|-------|----------------|-------|--------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.         |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.         |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.         |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.         |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.         |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.         |        |
| PFBA             | 1.860 | 213.0 -> 169.0 | 2030  | 1.95 µg/L    | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 1717  | 1.43 µg/L    | 99     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.         |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.         |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.         |        |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 13436 | 1.66 µg/L m  | 100    |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.         |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 10772 | 4.93 µg/L    | 99     |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 7396  | 7.97 µg/L m  | 96     |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.         |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.         |        |
| PFOA             | 6.437 | 413.0 -> 369.0 | 21299 | 3.89 µg/L m  | 98     |
| PFOS             | 7.049 | 499.0 -> 80.0  | 3337  | 3.83 µg/L #m | 69     |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 20615 | 5.33 µg/L    | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 919   | 1.19 µg/L m  | 96     |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.         |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.         |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.         |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.         |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.         |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.         |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.         |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.19  
7

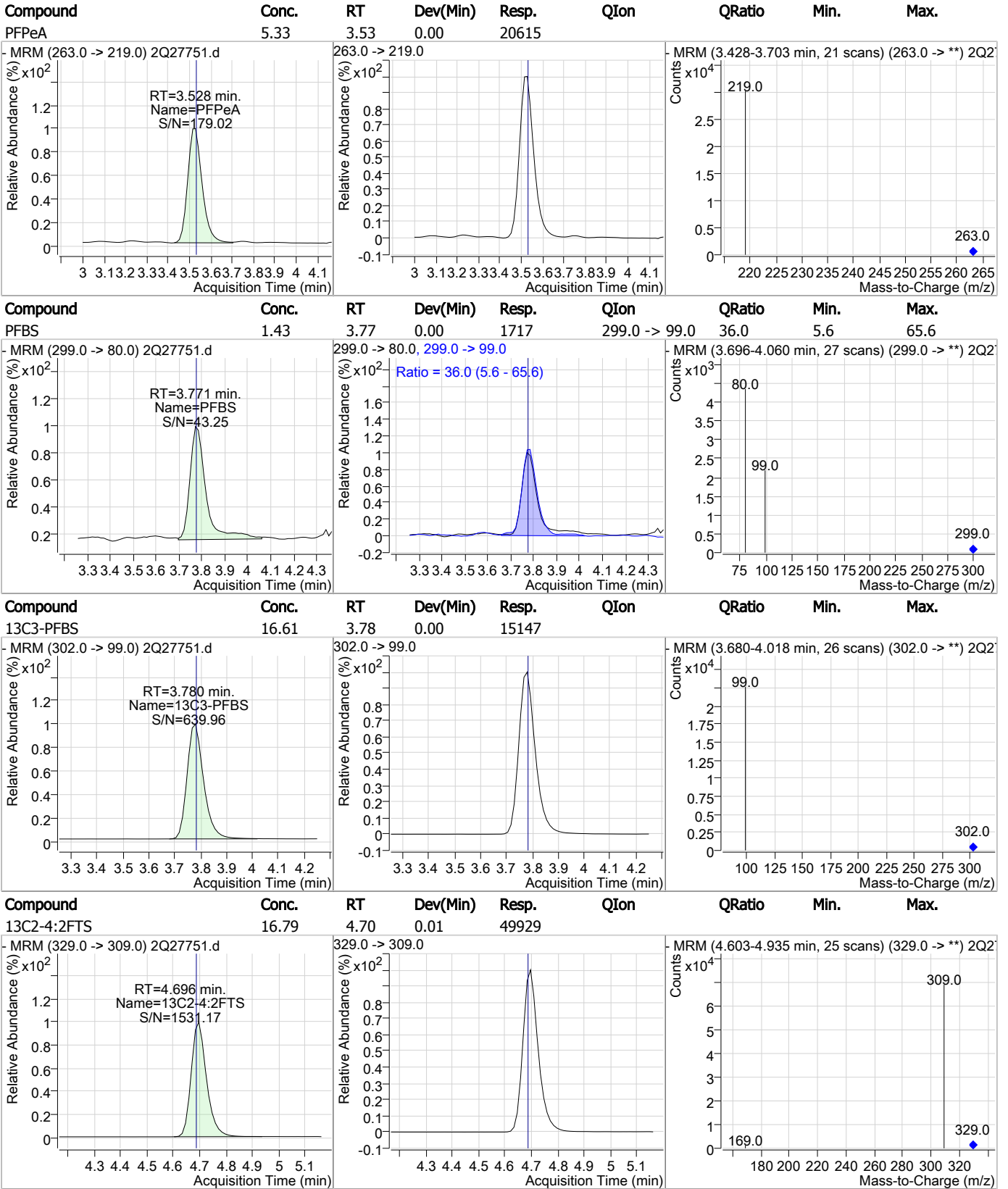
### Perfluorinated Compounds by LC/MS/MS



7.1.19

7

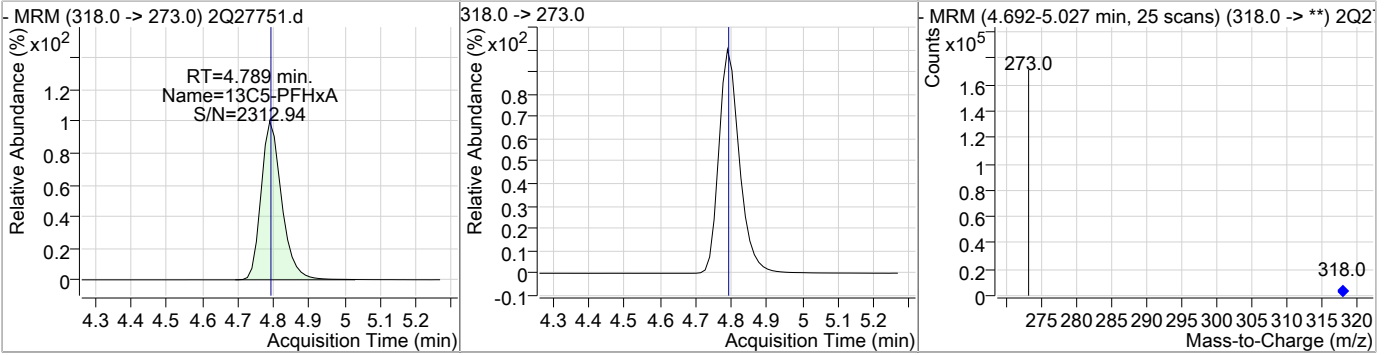
### Perfluorinated Compounds by LC/MS/MS



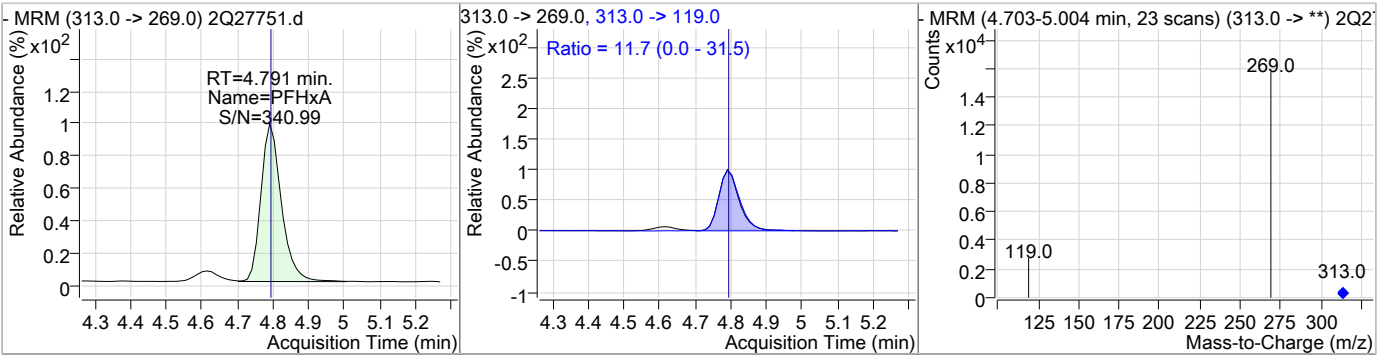
7.1.19  
7

### Perfluorinated Compounds by LC/MS/MS

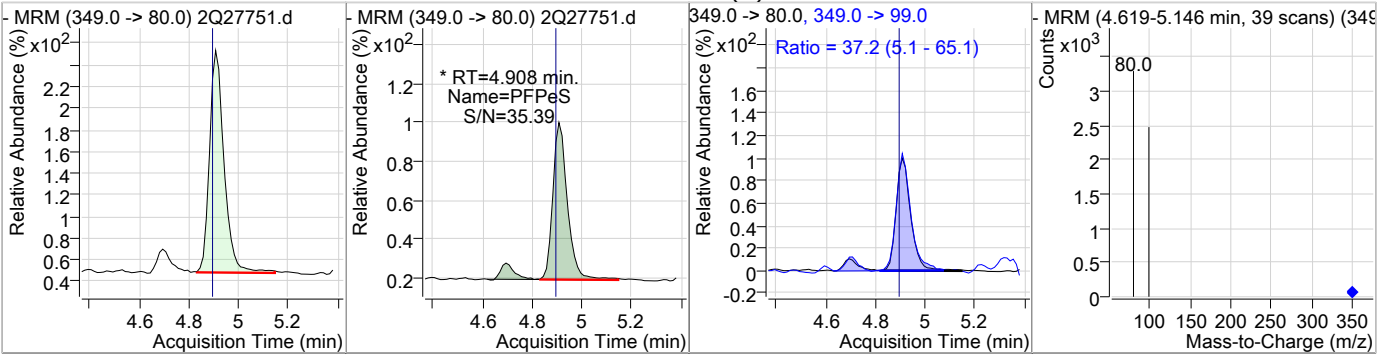
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 17.45 | 4.79 | 0.00     | 126828 |      |        |      |      |



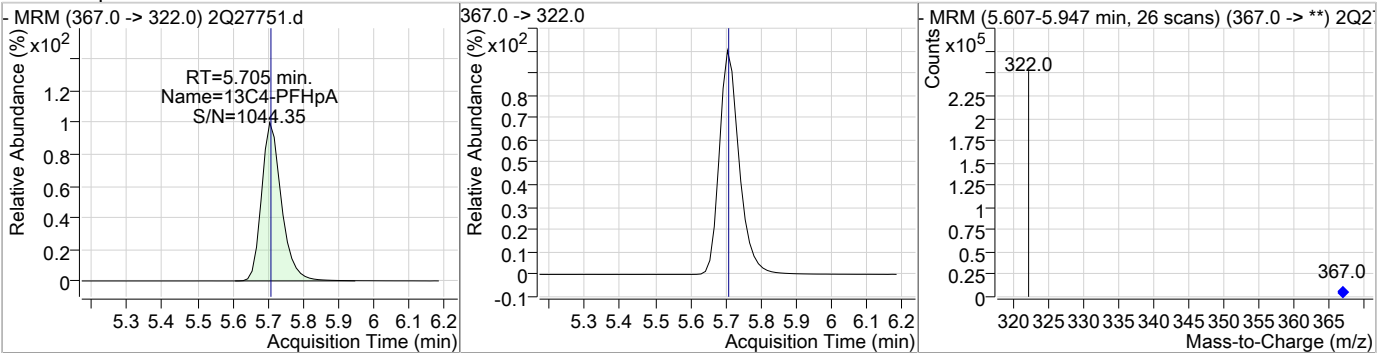
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 4.93  | 4.79 | 0.00     | 10772 | 313.0 -> 119.0 | 11.7   | 0.0  | 31.5 |



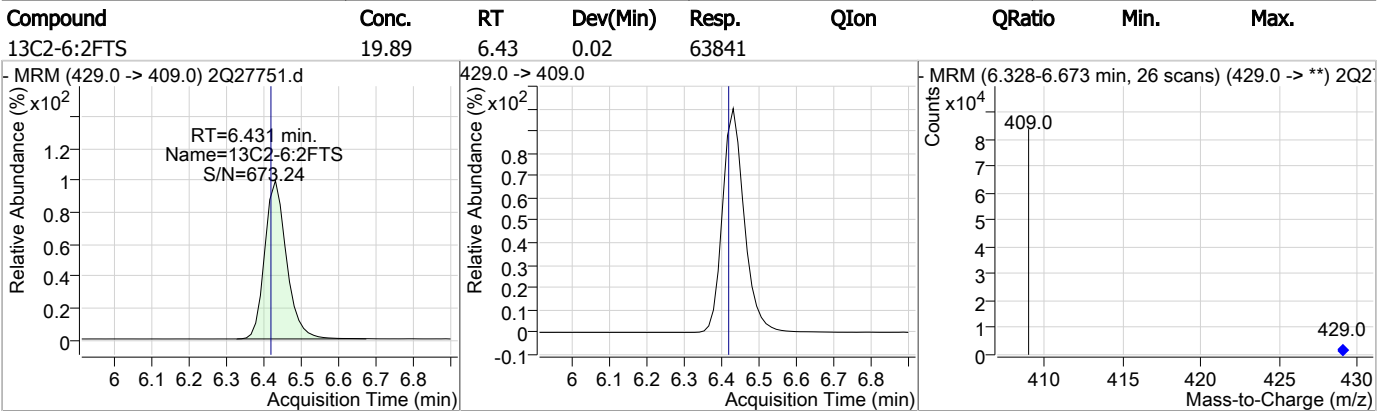
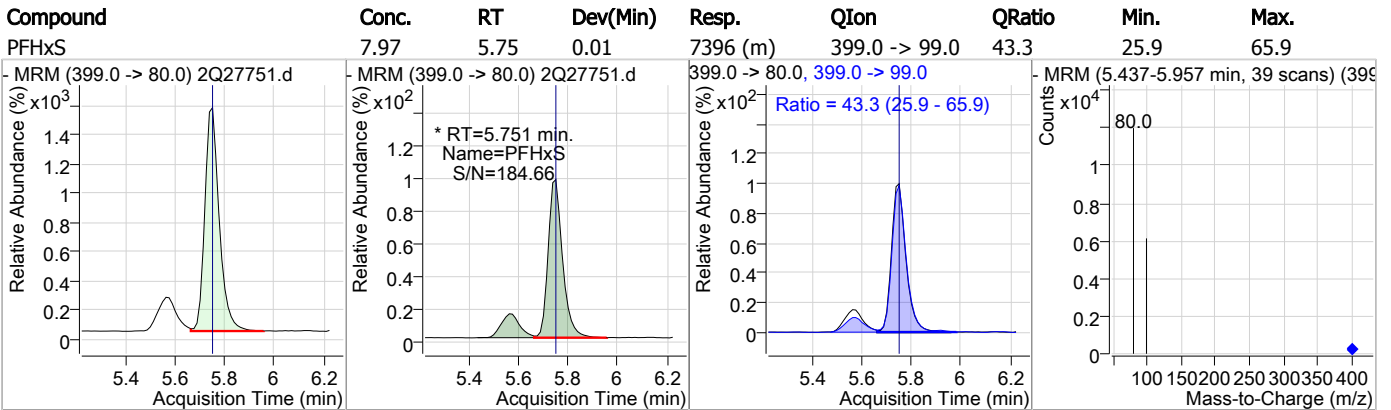
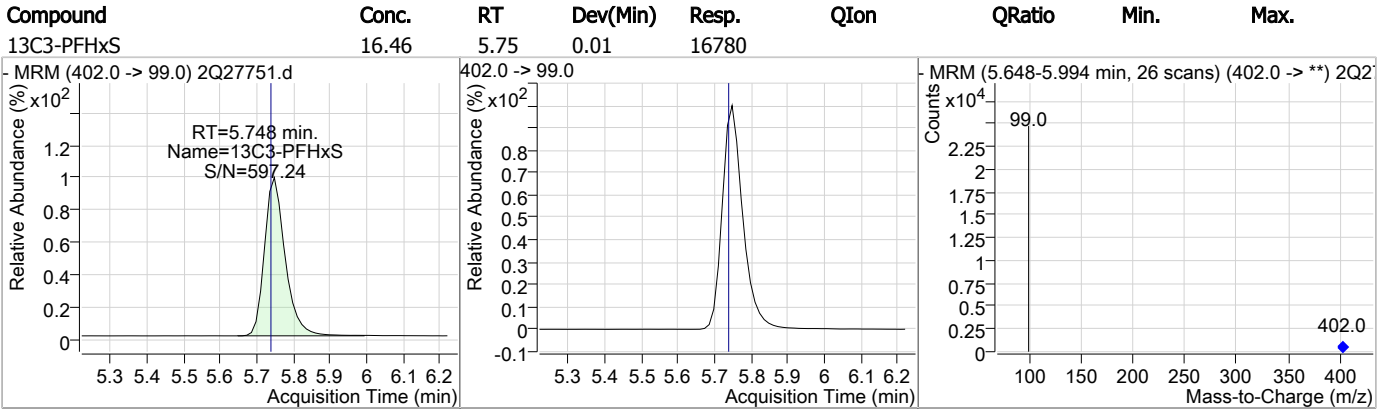
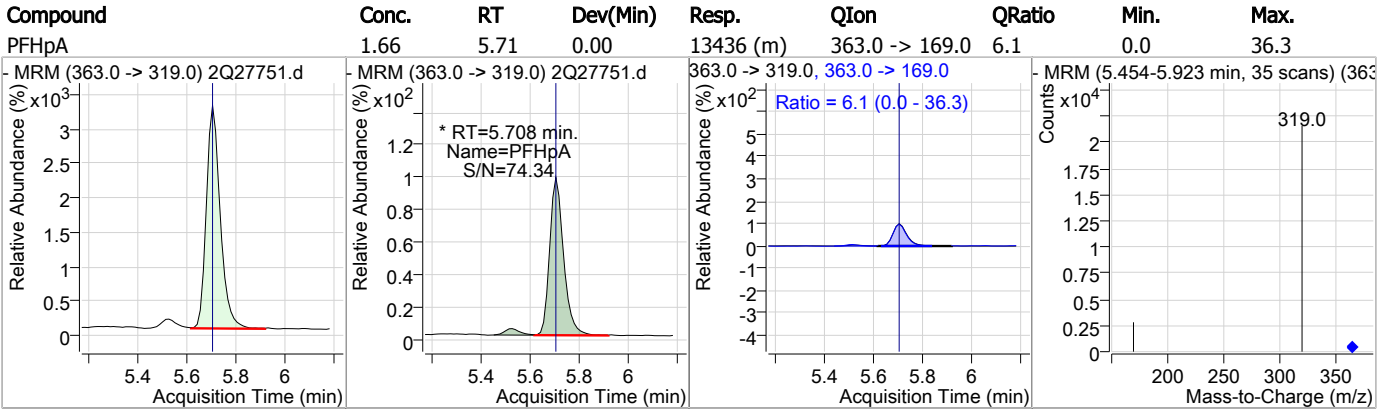
| Compound | Conc. | RT   | Dev(Min) | Resp.   | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|---------|---------------|--------|------|------|
| PFPeS    | 1.19  | 4.91 | 0.01     | 919 (m) | 349.0 -> 99.0 | 37.2   | 5.1  | 65.1 |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 18.18 | 5.71 | 0.00     | 188028 |      |        |      |      |



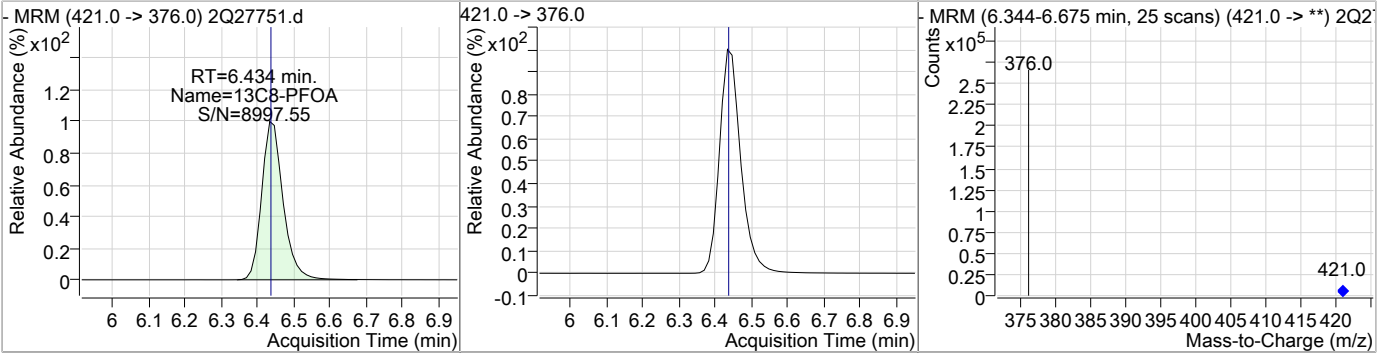
### Perfluorinated Compounds by LC/MS/MS



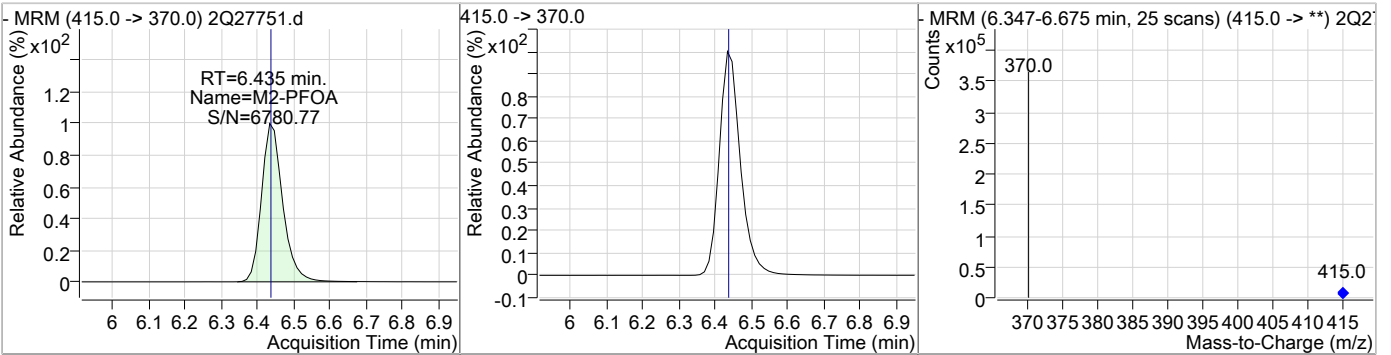


### Perfluorinated Compounds by LC/MS/MS

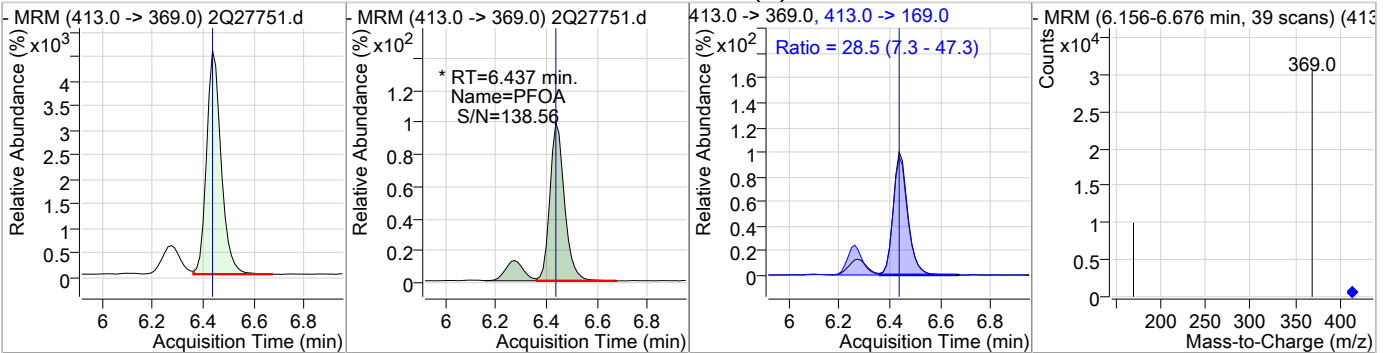
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 19.43 | 6.43 | 0.00     | 202728 |      |        |      |      |



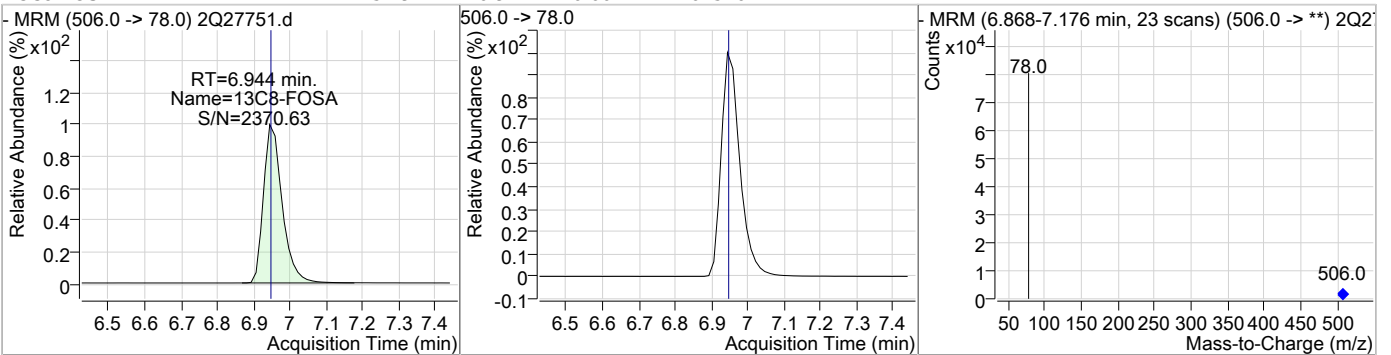
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.01 | 6.44 | 0.00     | 277139 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|----------------|--------|------|------|
| PFOA     | 3.89  | 6.44 | 0.00     | 21299 (m) | 413.0 -> 169.0 | 28.5   | 7.3  | 47.3 |

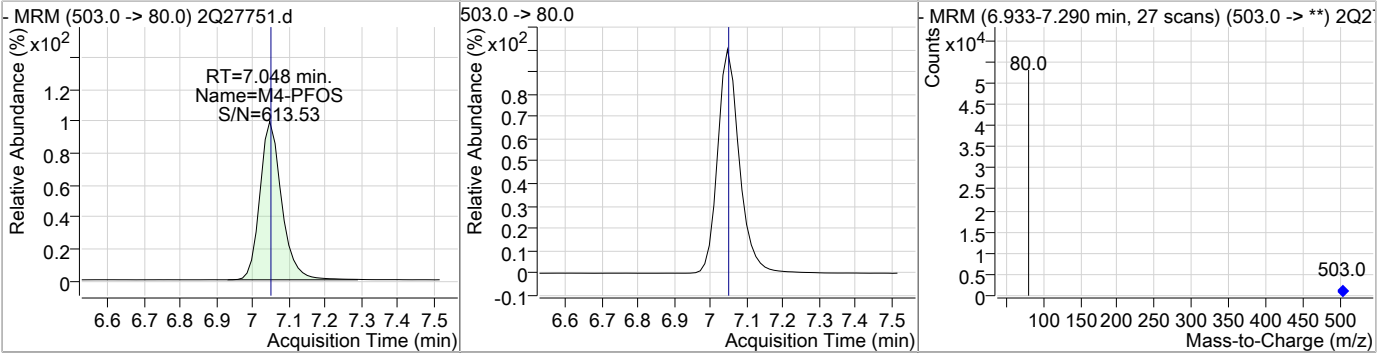


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-FOSA | 15.19 | 6.94 | 0.00     | 61576 |      |        |      |      |

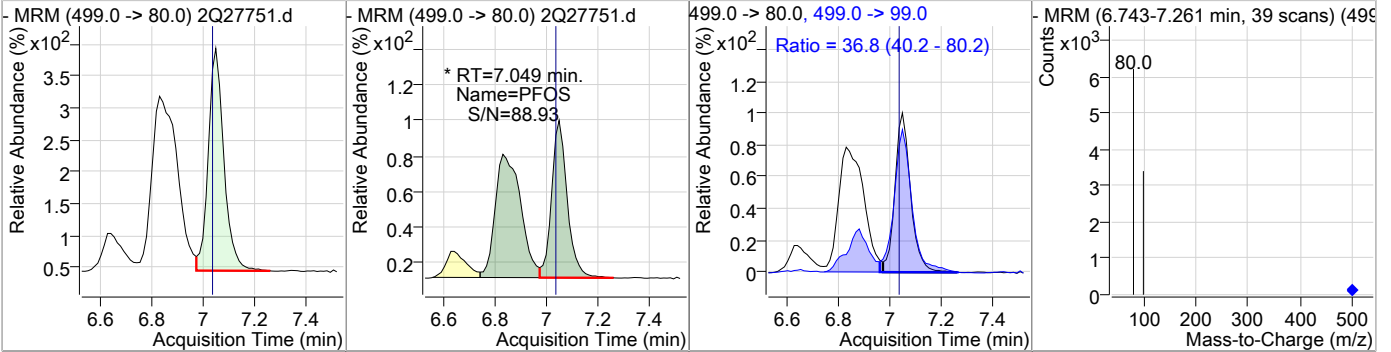


### Perfluorinated Compounds by LC/MS/MS

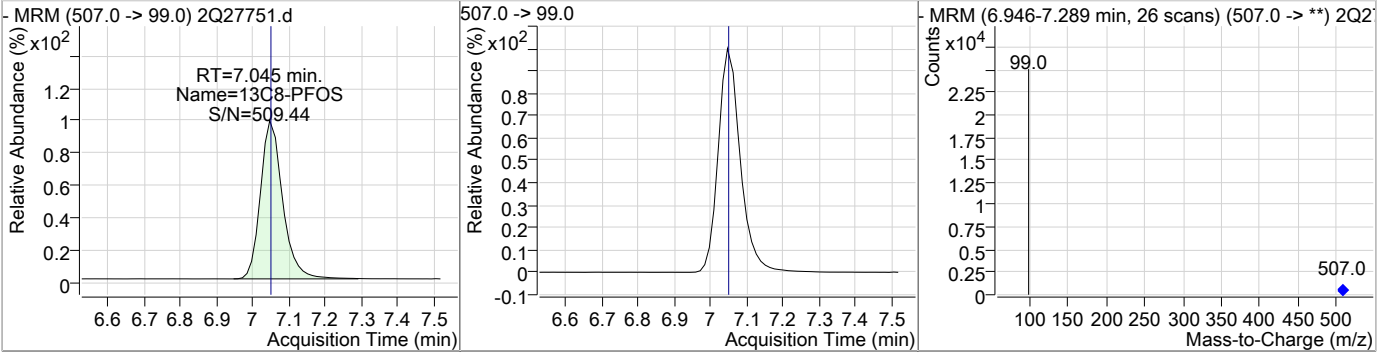
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| M4-PFOS  | 20.01 | 7.05 | 0.01     | 39281 |      |        |      |      |



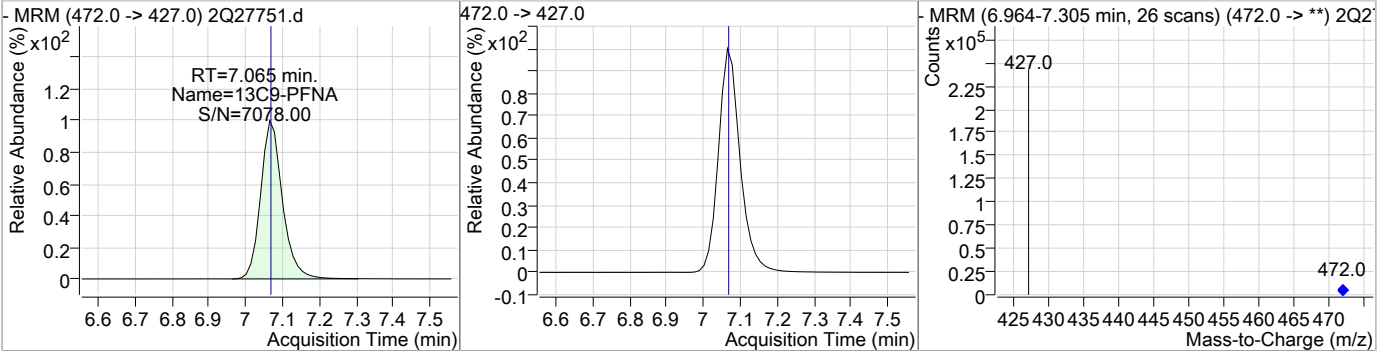
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFOS     | 3.83  | 7.05 | 0.01     | 3337 (m) | 499.0 -> 99.0 | 36.8   | 40.2 | 80.2 |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 13.76 | 7.05 | 0.00     | 17939 |      |        |      |      |

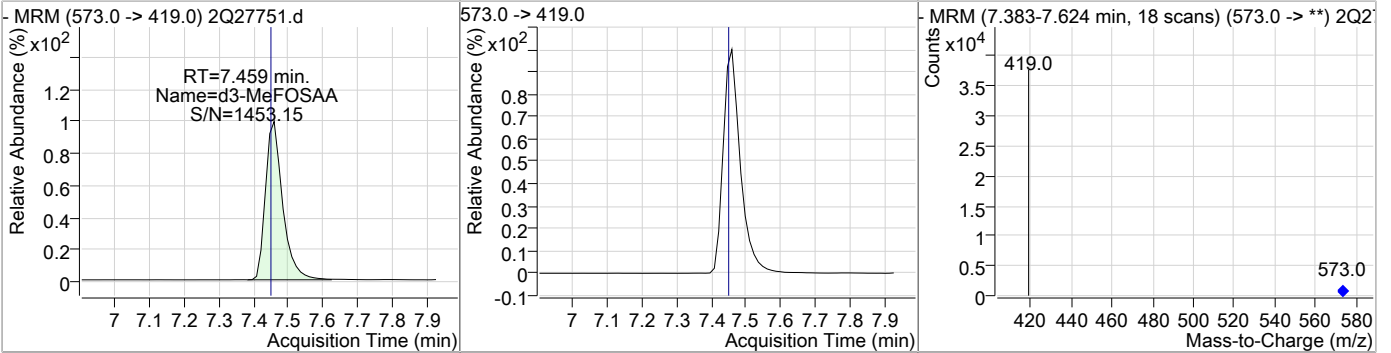


| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 17.37 | 7.07 | 0.00     | 183862 |      |        |      |      |

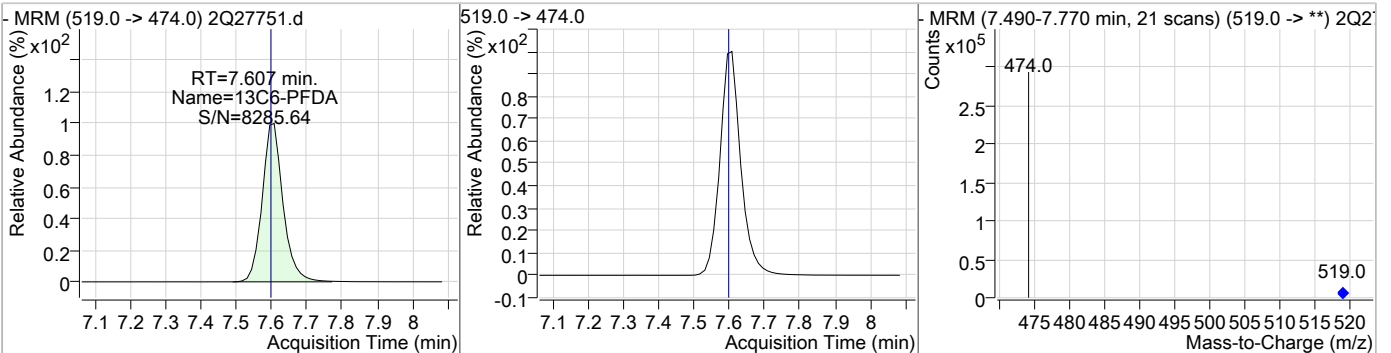


### Perfluorinated Compounds by LC/MS/MS

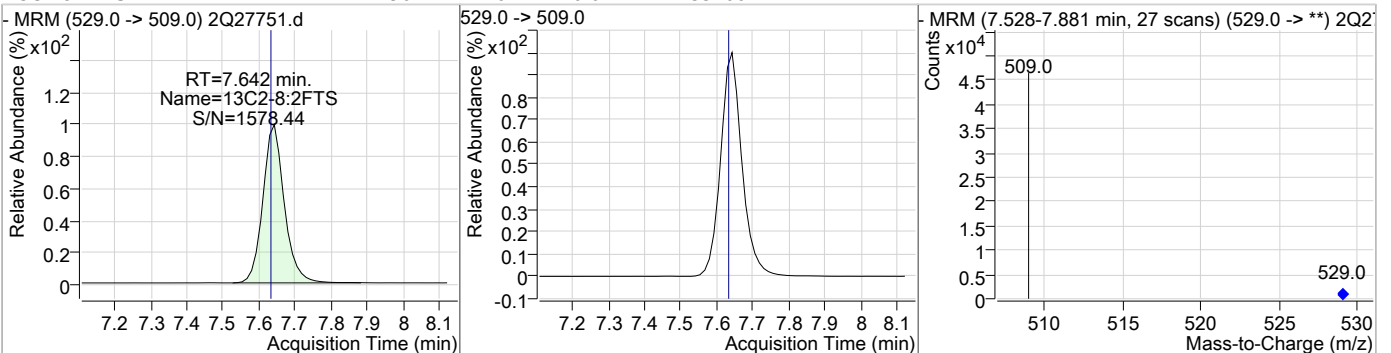
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



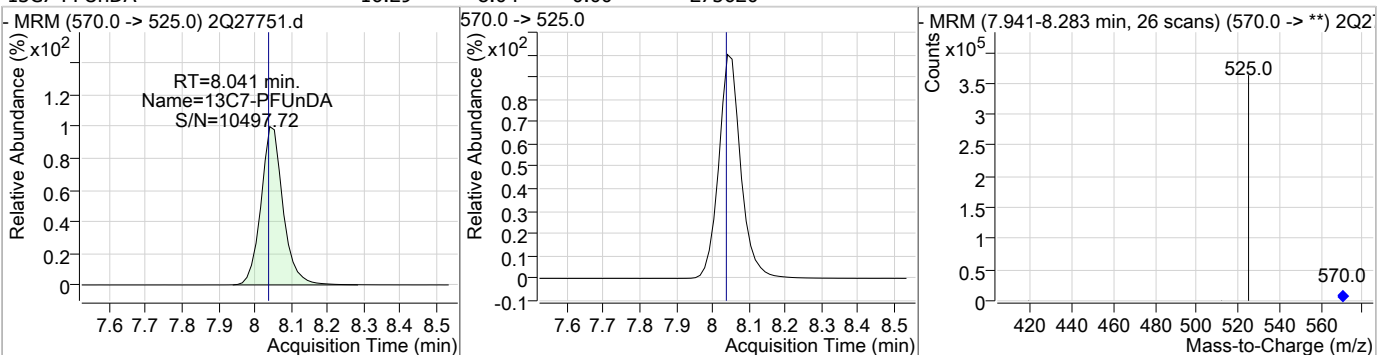
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

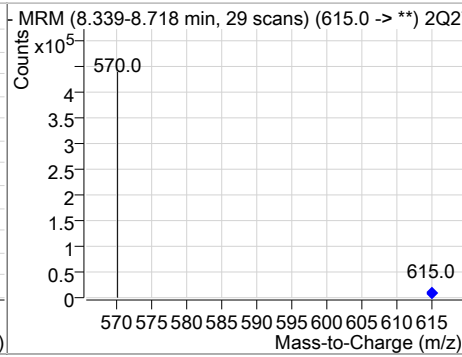
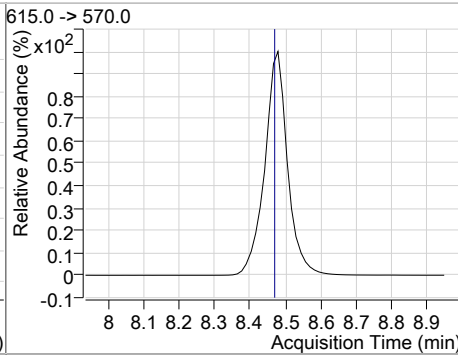
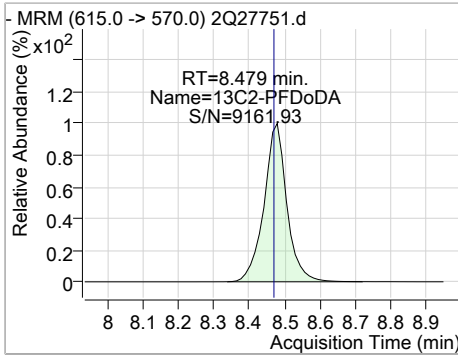


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

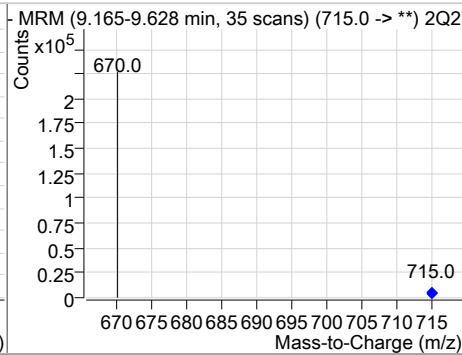
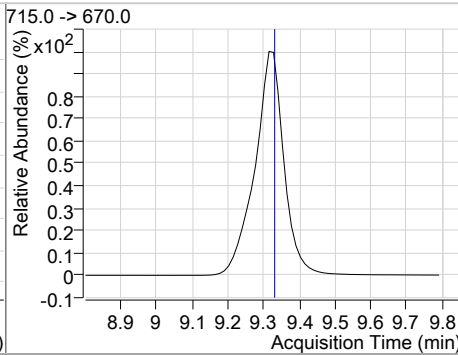
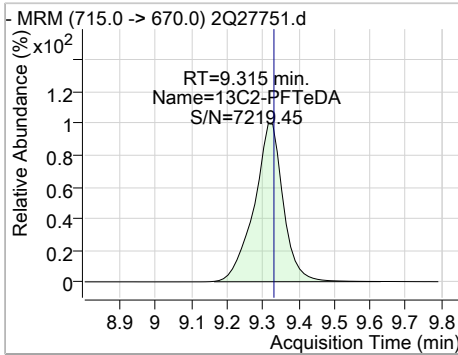


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 17.65 | 8.48 | 0.01     | 331879 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 13.01 | 9.31 | -0.01    | 167056 |      |        |      |      |



7.1.19  
7



# Manual Integration Approval Summary

**Sample Number:** FA62220-18  
**Lab FileID:** 2Q27751.D  
**Injection Time:** 03/19/19 17:37

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/20/19 08:59 Nancy Saunders  
**Supervisor approved:** 03/20/19 09:31 Norman Farmer

| Parameter                     | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|-------------------------------|-----------|------|----------------|------------|
| Perfluoropentanesulfonic acid | 2706-91-4 |      | 4.91           | Split peak |
| Perfluoroheptanoic acid       | 375-85-9  |      | 5.71           | Split peak |
| Perfluorohexanesulfonic acid  | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanoic acid        | 335-67-1  |      | 6.44           | Split peak |
| Perfluorooctanesulfonic acid  | 1763-23-1 |      | 7.05           | Split peak |

7.1.19.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27717.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 10:34:29 PM  
 Sample Name : fa62220-19  
 Vial : Vial 35  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 266068 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 35885  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 103462 | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 87458  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 123409 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 181838 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 197609 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 181542 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 217729 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 290214 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 343400 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 190788 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 64420  | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 14523  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 15862  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 17065  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 48838  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 62384  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 33137  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 27777  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 48622  | 16.35 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.8% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 62310  | 19.41 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.1% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 33134  | 14.94 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.7% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 343413 | 18.26 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.3% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 189966 | 14.80 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.0% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 14506  | 15.91 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.5% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 15883  | 15.58 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.9% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 103245 | 17.22 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.1% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 181811 | 17.58 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.9% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 123387 | 16.98 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.9% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 87383  | 17.19 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.9% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 217889 | 15.97 µg/L       | 0.000    |

7.1.20  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.8%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 290146 | 17.14 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 85.7%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 64427  | 15.89 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.4%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 197541 | 18.94 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 94.7%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 17114  | 13.13 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 65.6%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 181455 | 17.14 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 85.7%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 27810  | 14.51 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 72.5%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 266857 | 20.04 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.2% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 35928  | 20.02 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

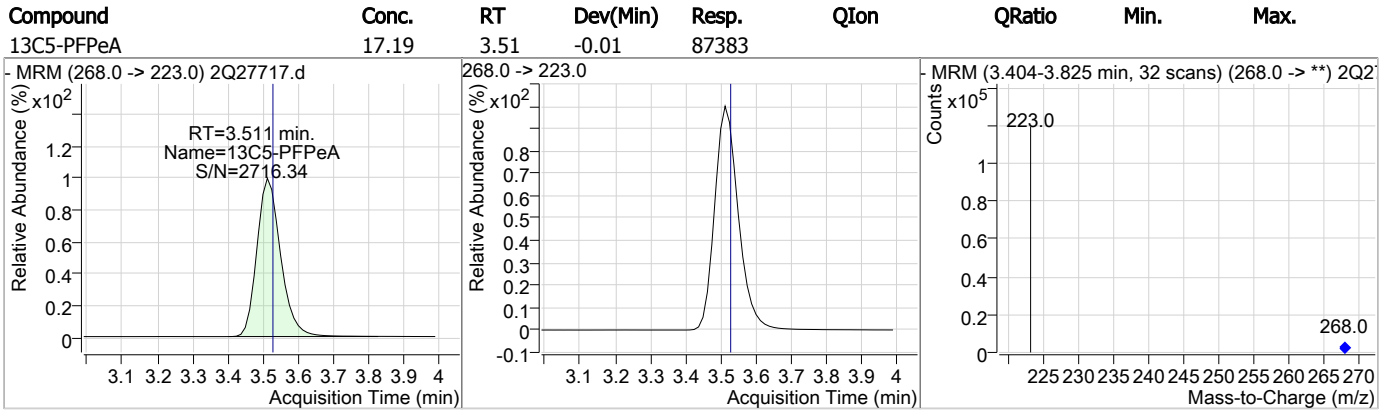
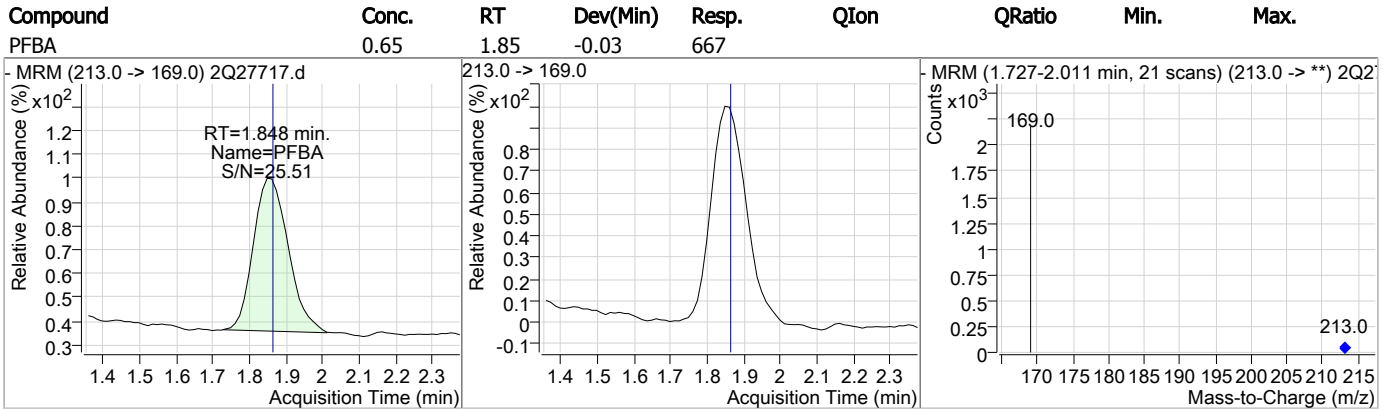
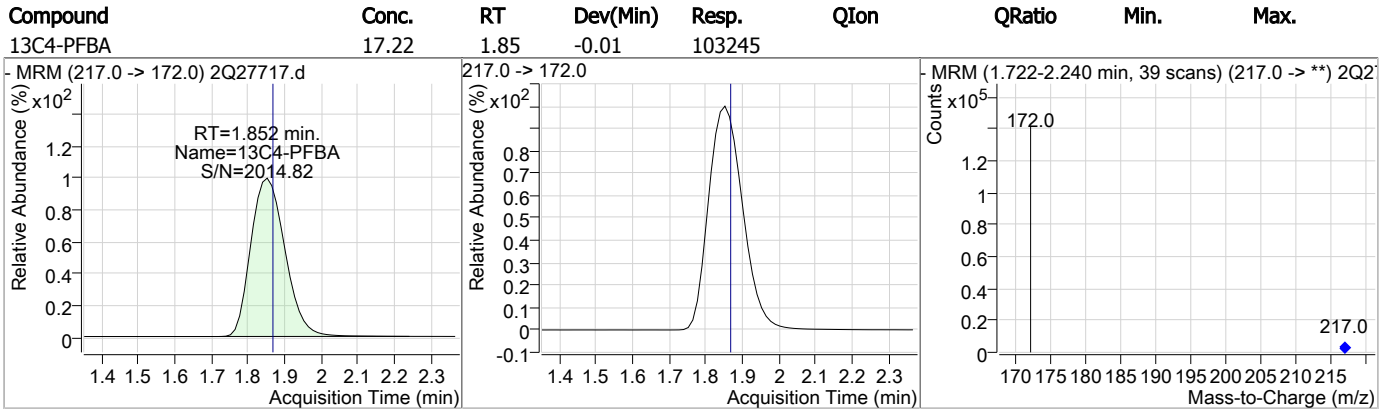
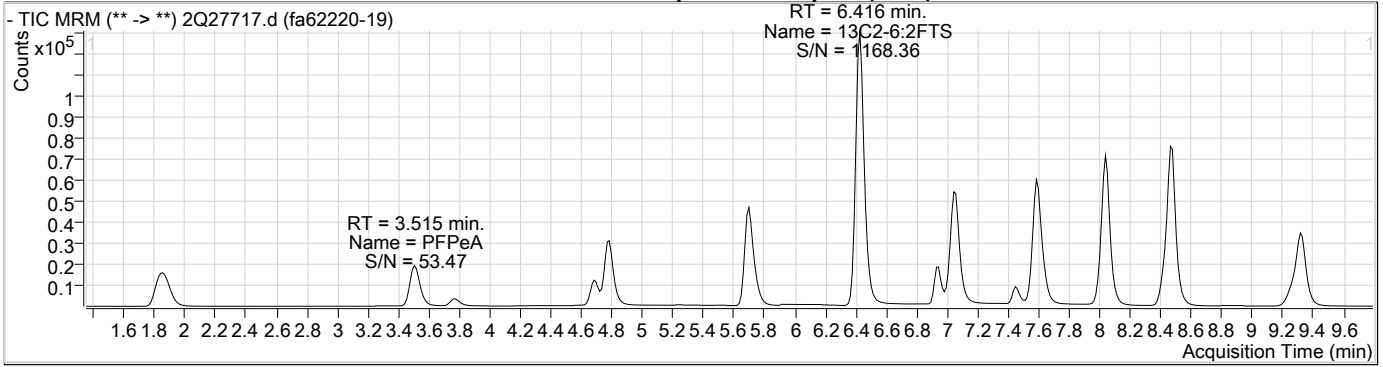
7.1.20  
7

Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.848 | 213.0 -> 169.0 | 667   | 0.65 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 470   | 0.41 µg/L   | 93     |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 1657  | 0.78 µg/L   | 98     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 1072  | 1.22 µg/L   | 89     |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 2558  | 0.68 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

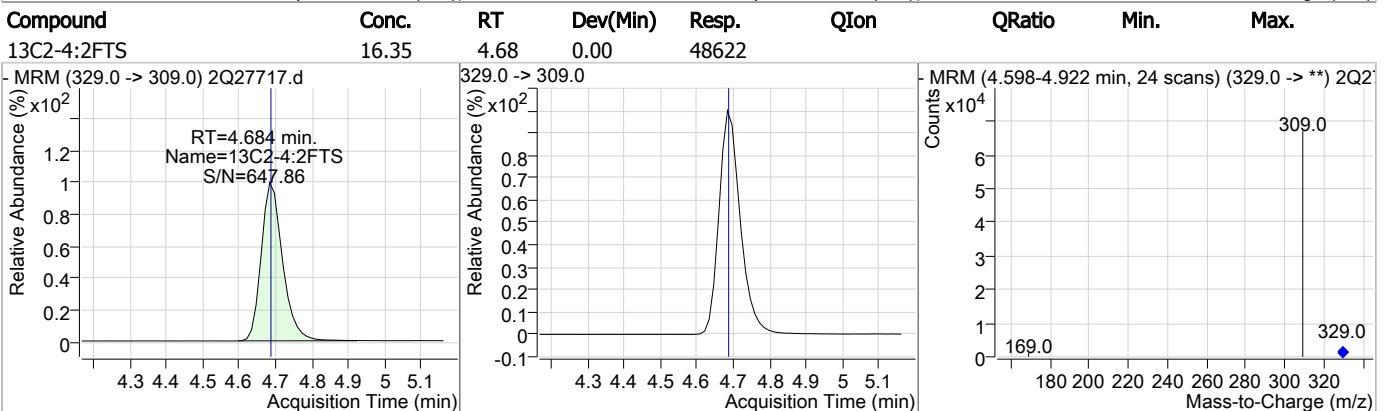
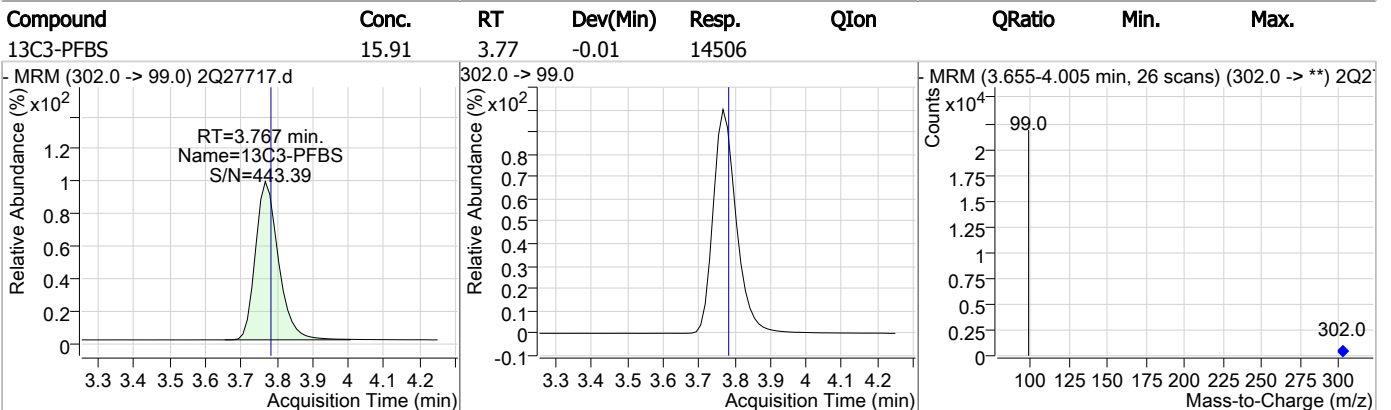
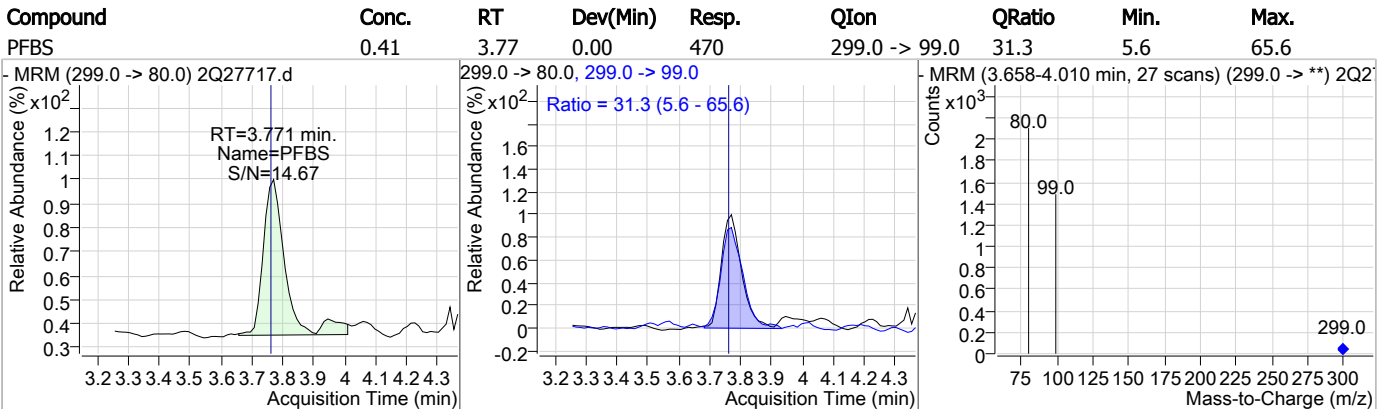
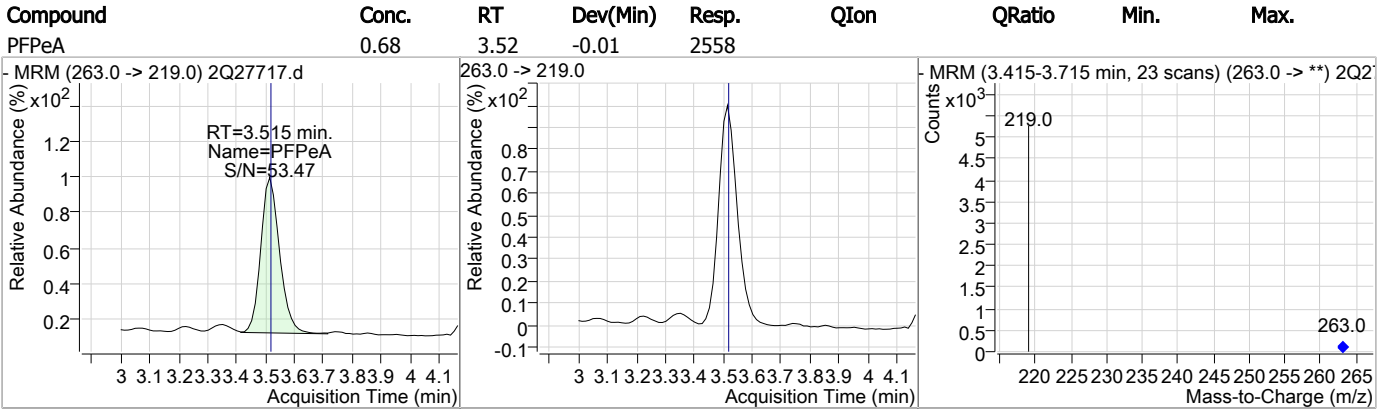
### Perfluorinated Compounds by LC/MS/MS



7.1.20  
7

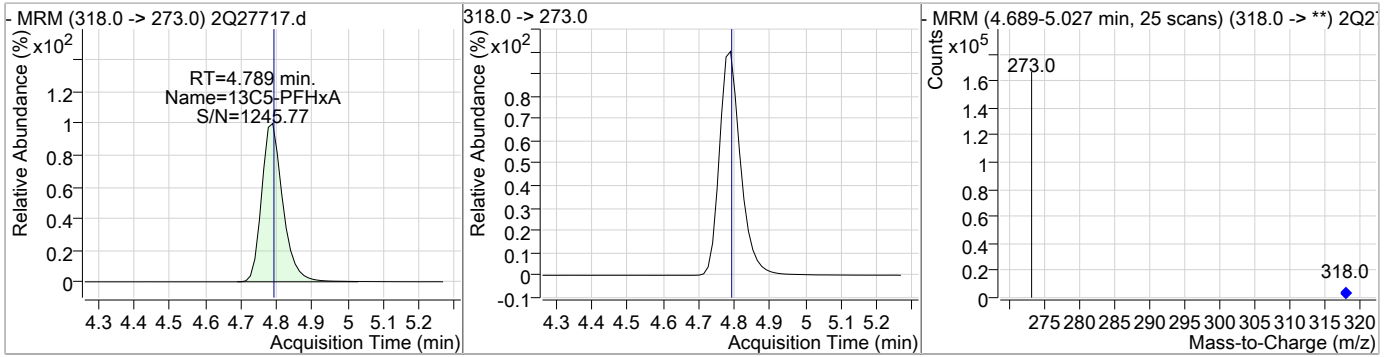


### Perfluorinated Compounds by LC/MS/MS

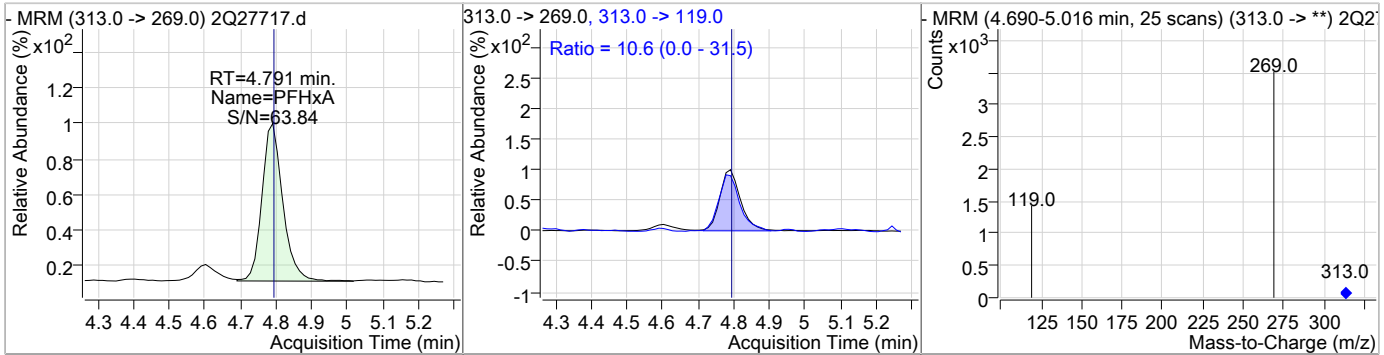


### Perfluorinated Compounds by LC/MS/MS

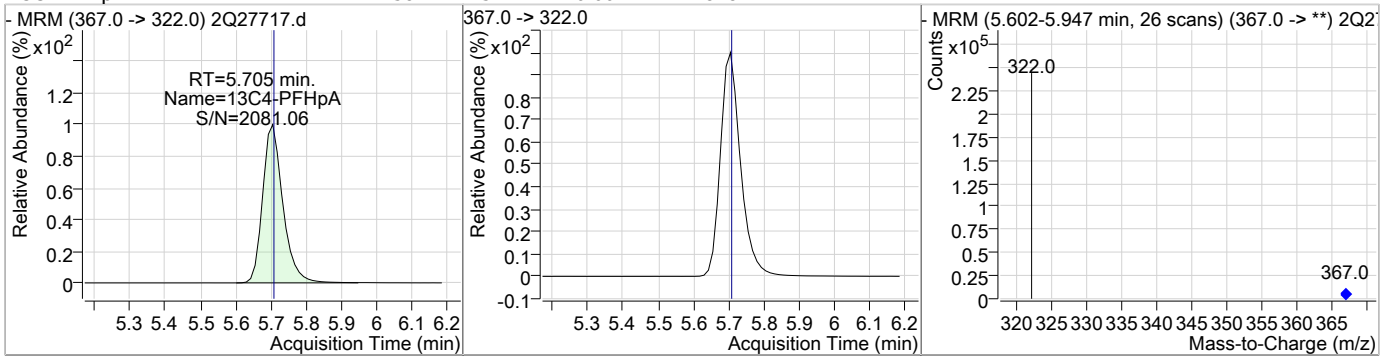
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 16.98 | 4.79 | 0.00     | 123387 |      |        |      |      |



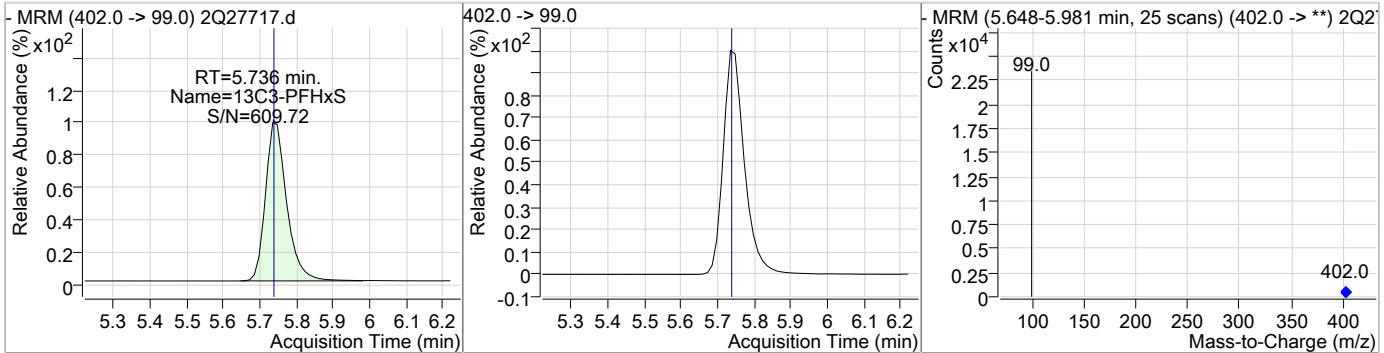
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon     | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------|--------|------|------|
| PFHxA    | 0.78  | 4.79 | 0.00     | 1657  | 313.0 -> | 119.0  | 10.6 | 0.0  |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 17.58 | 5.71 | 0.00     | 181811 |      |        |      |      |

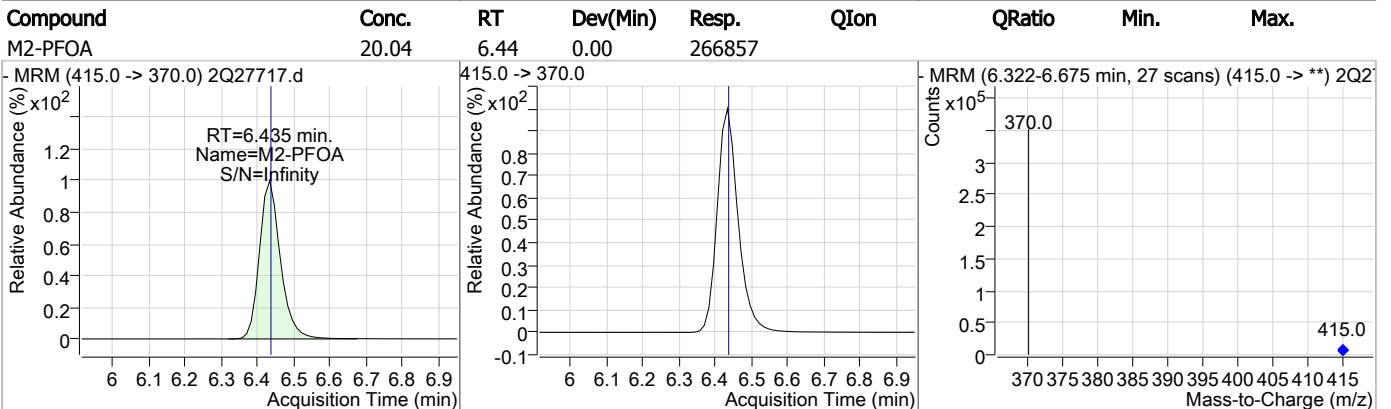
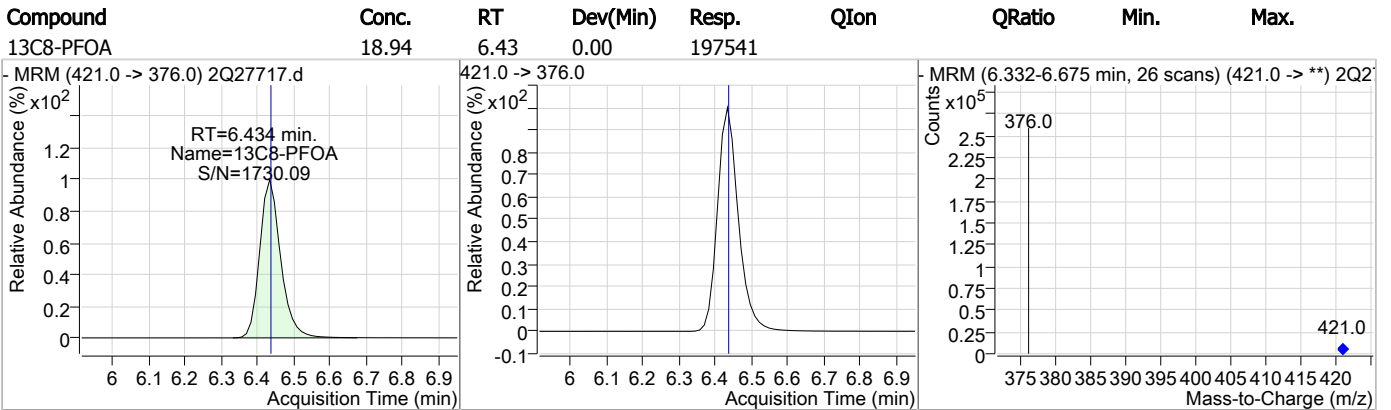
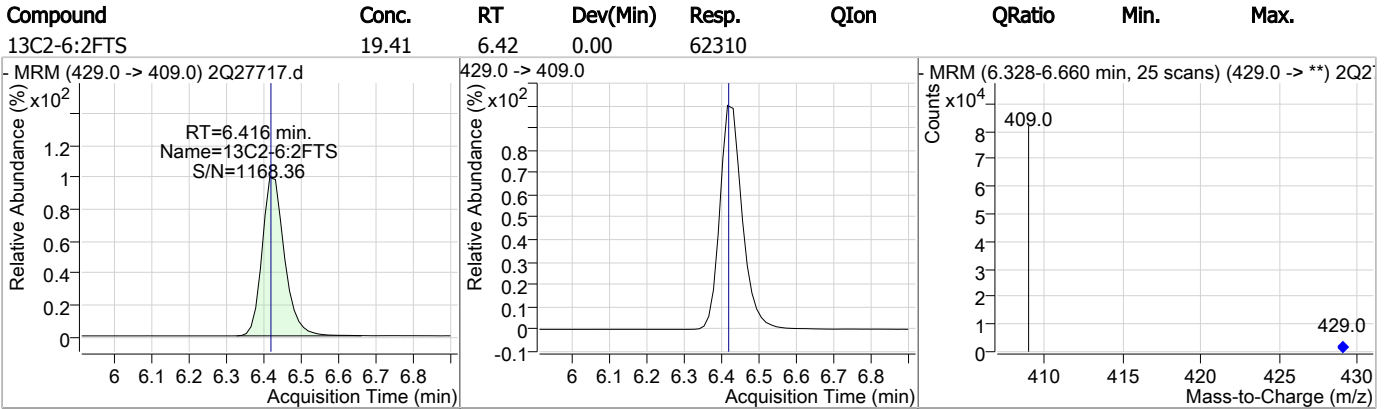
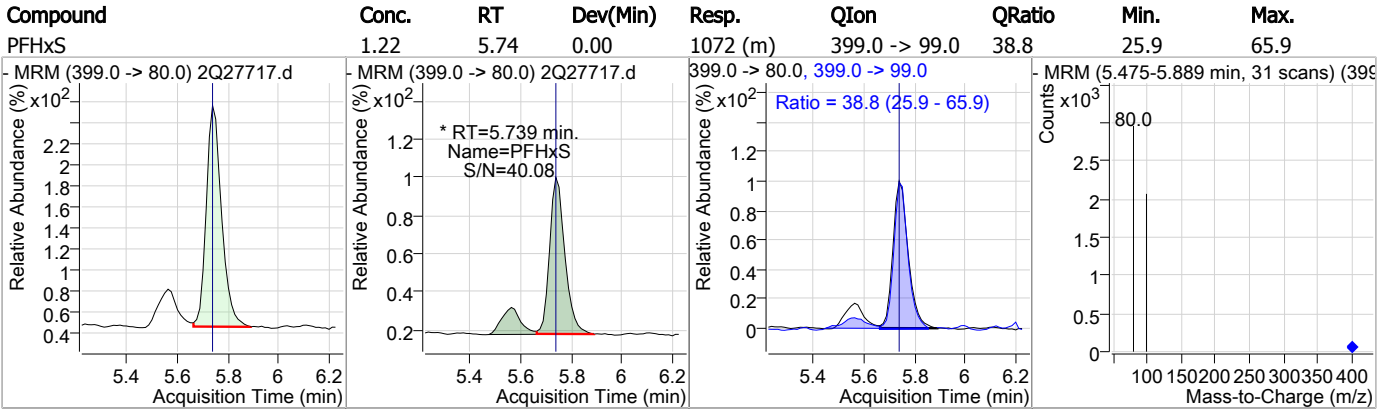


| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 15.58 | 5.74 | 0.00     | 15883 |      |        |      |      |



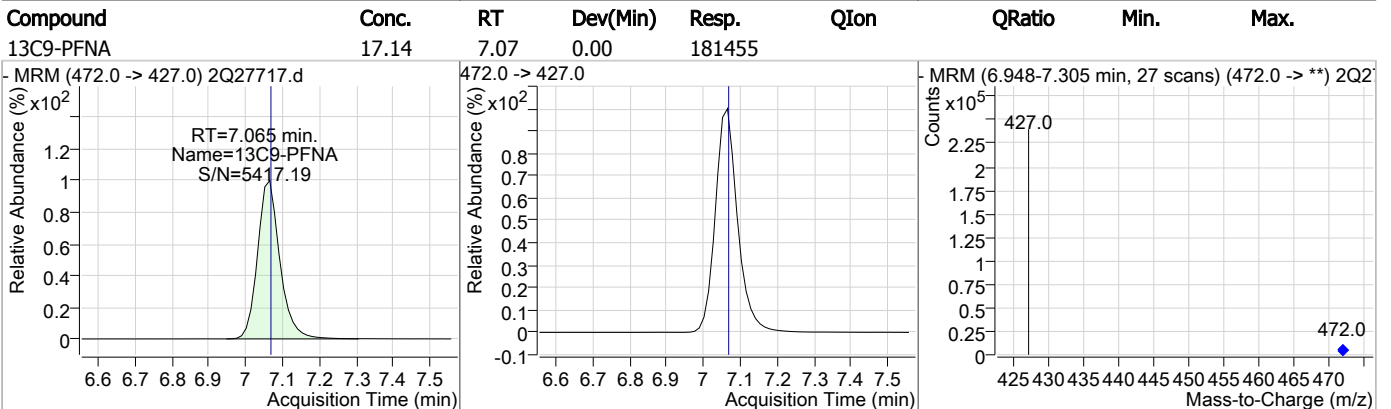
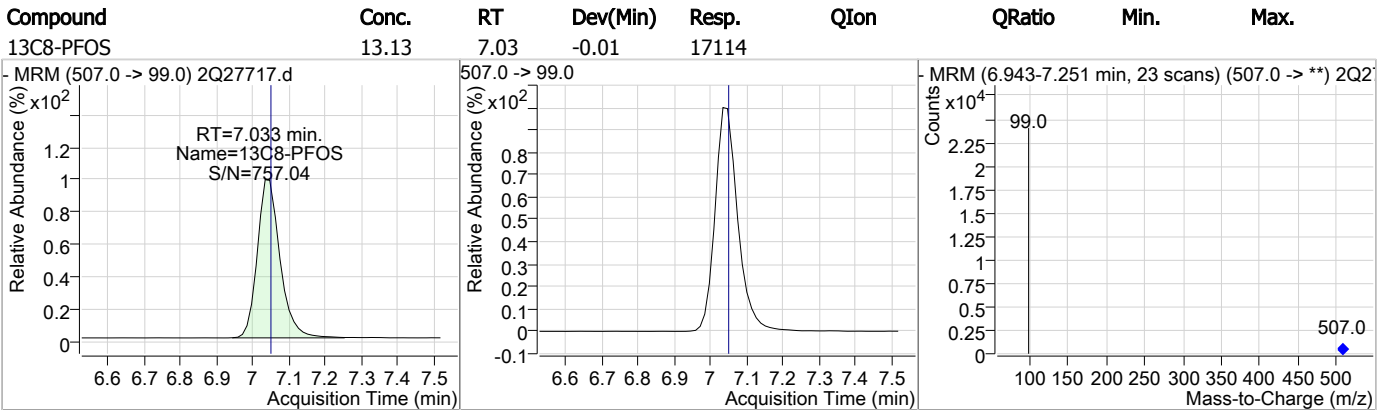
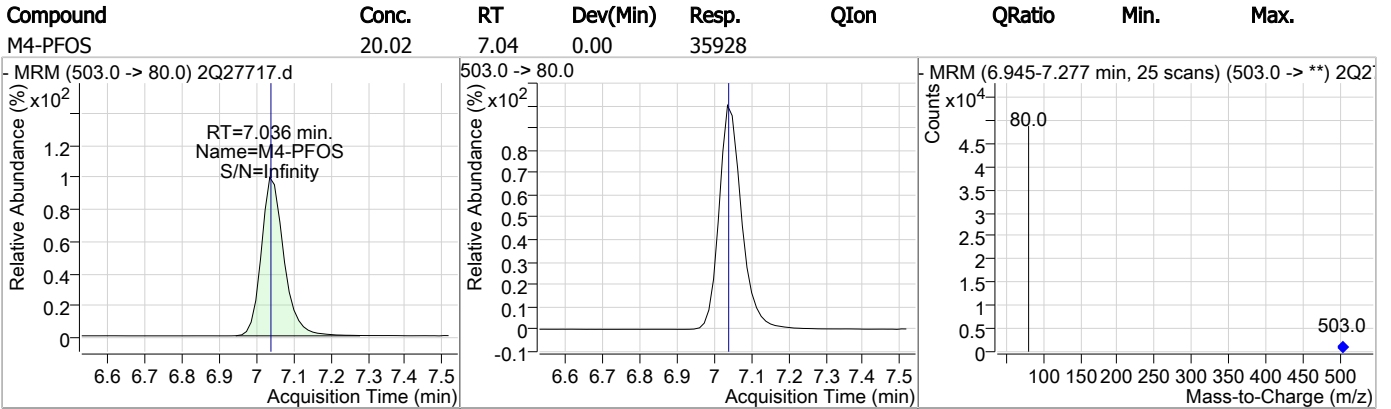
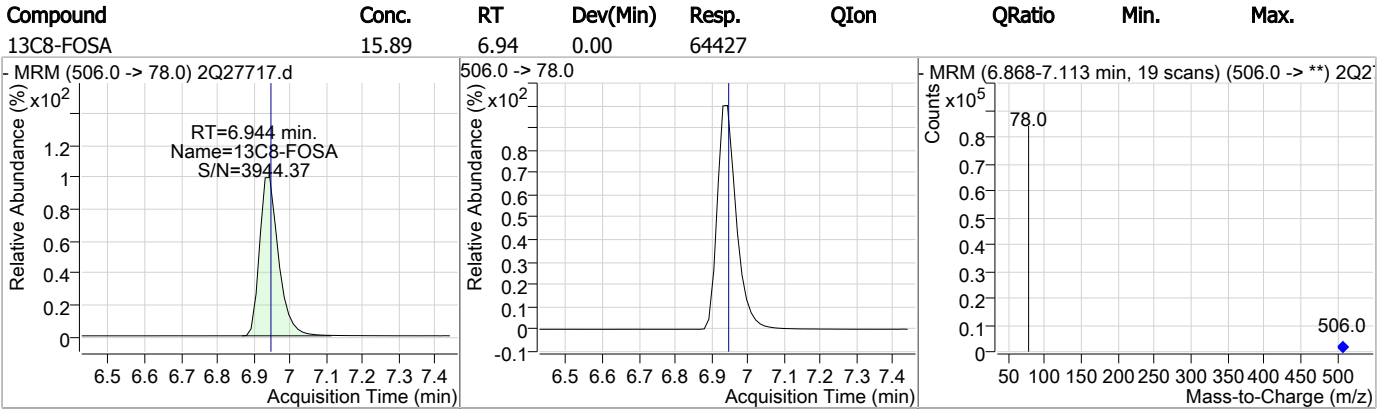
7.1.20  
7

### Perfluorinated Compounds by LC/MS/MS



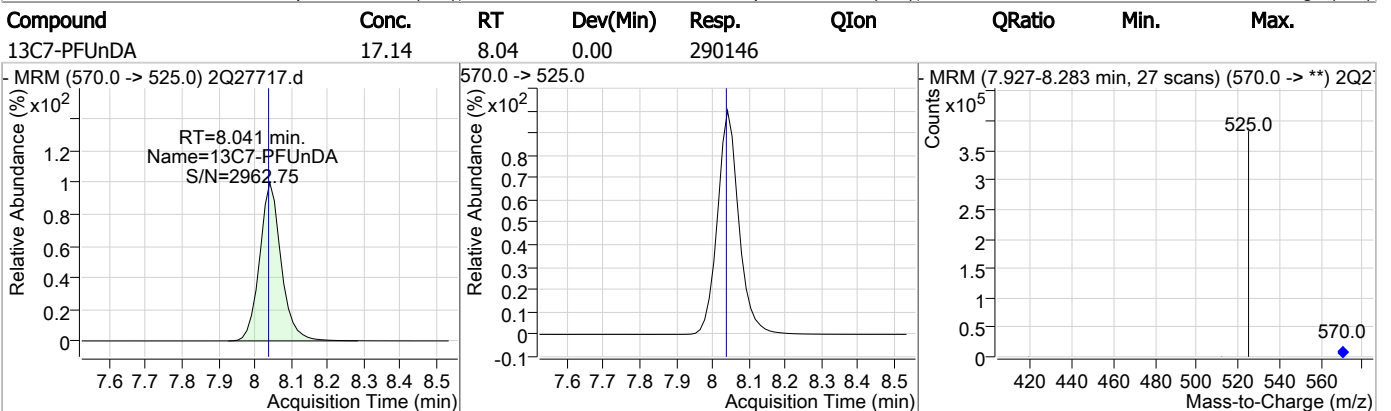
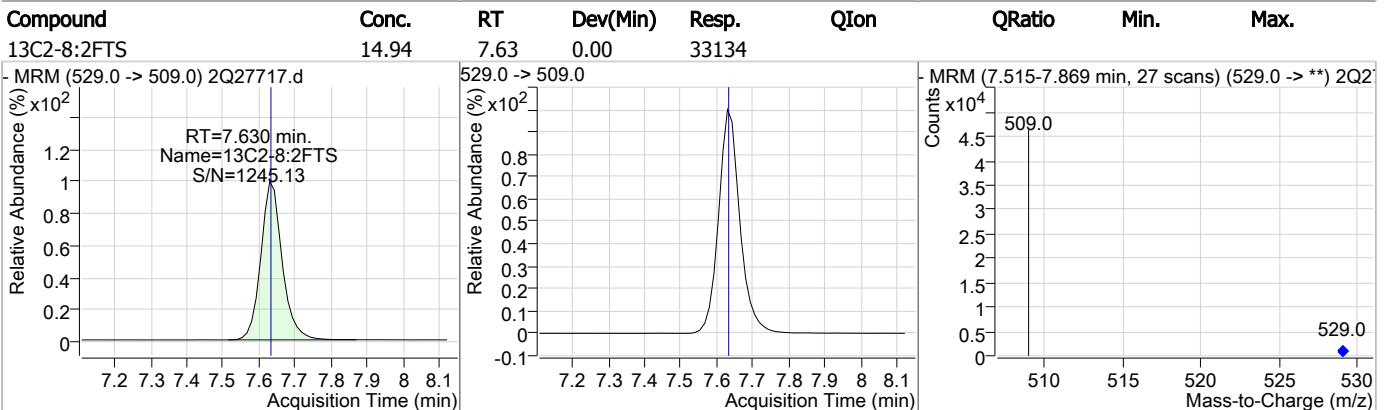
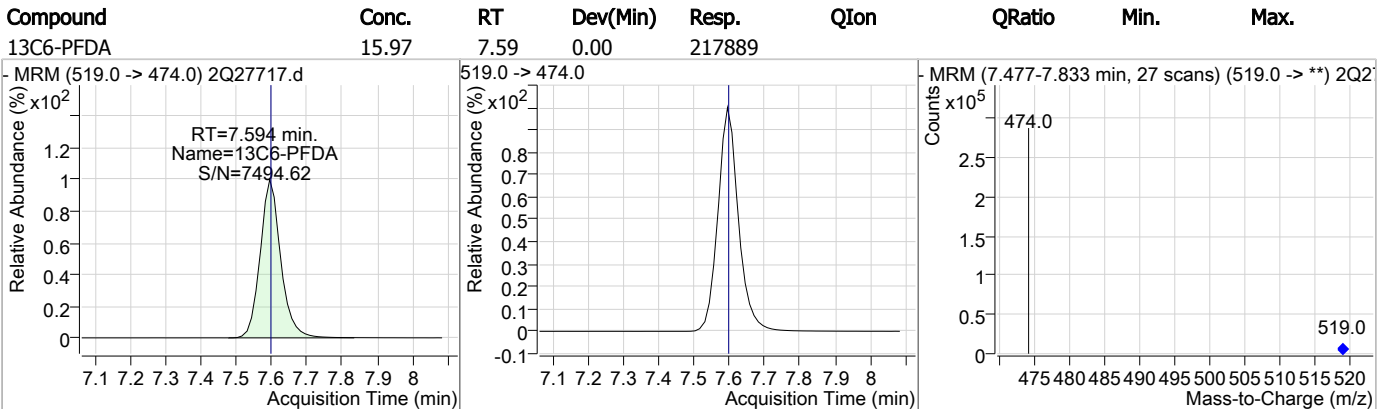
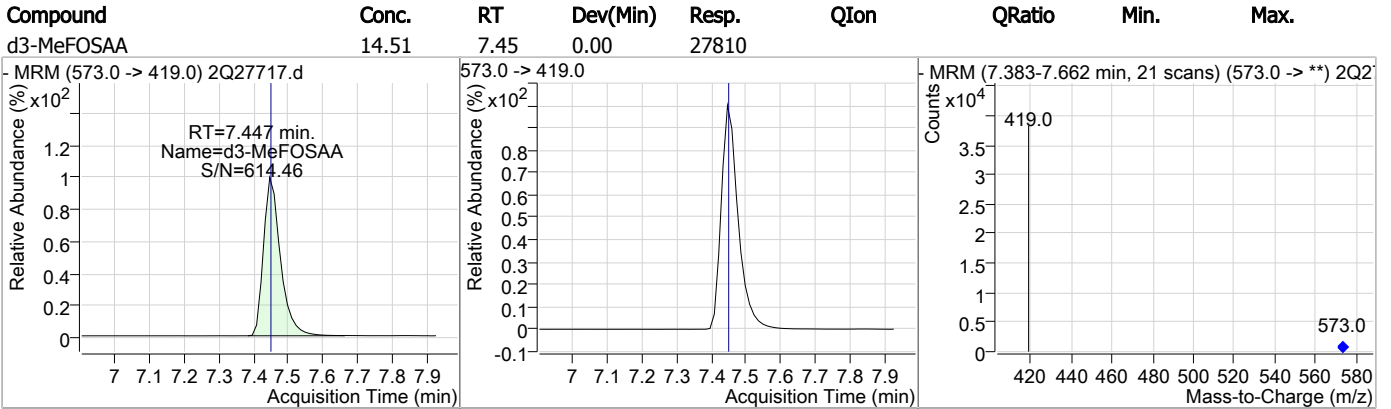
7.1.20  
7

### Perfluorinated Compounds by LC/MS/MS



7.1.20  
7

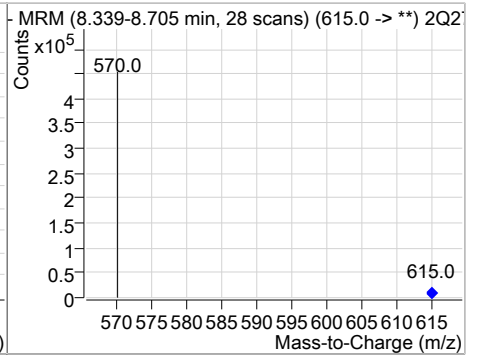
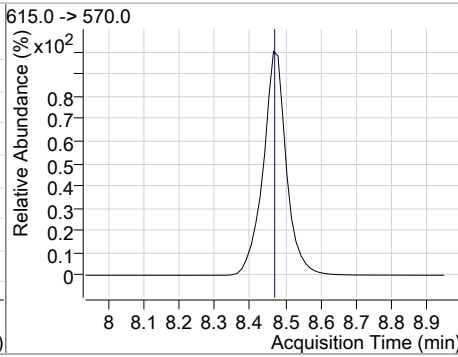
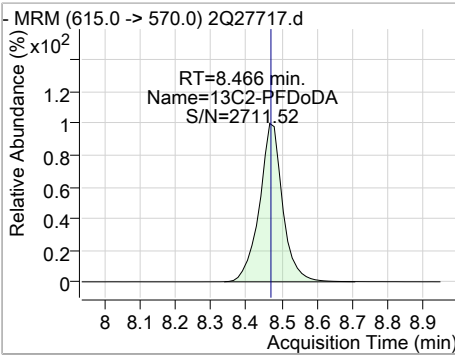
### Perfluorinated Compounds by LC/MS/MS



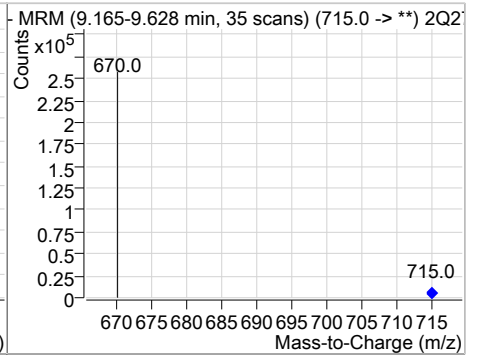
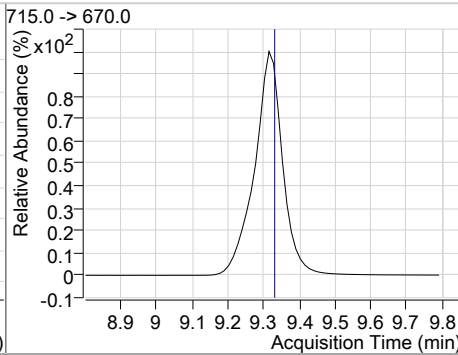
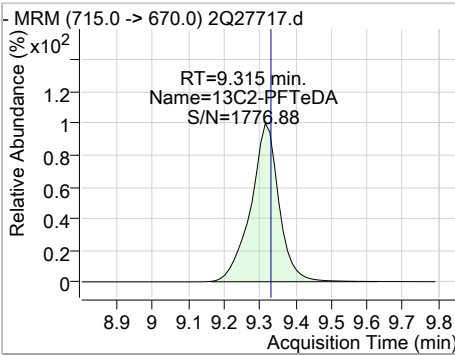
7.1.20  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 18.26 | 8.47 | 0.00     | 343413 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 14.80 | 9.31 | -0.01    | 189966 |      |        |      |      |



7.1.20 7

# Manual Integration Approval Summary

**Sample Number:** FA62220-19  
**Lab FileID:** 2Q27717.D  
**Injection Time:** 03/18/19 22:34

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS      | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4 |      | 5.74           | Split peak |

7.1.20.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27718.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 10:50:12 PM  
 Sample Name : fa62220-20  
 Vial : Vial 36  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 278424 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 37347  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 106880 | 20.00 µg/L        | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 89917  | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 126133 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 187125 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 204240 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 184166 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 222953 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 298456 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 359594 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 205490 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 66431  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 14930  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16476  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 17050  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 50038  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 66280  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 33344  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 28384  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 49831  | 16.76 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.8%  |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 66279  | 20.65 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.3% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 33329  | 15.03 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.2%  |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 359515 | 19.11 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.6%  |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 204857 | 15.96 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.8%  |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 14975  | 16.42 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.1%  |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16460  | 16.15 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.7%  |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 106633 | 17.78 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.9%  |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 186902 | 18.07 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.4%  |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 126014 | 17.34 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.7%  |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 89971  | 17.70 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.5%  |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 222860 | 16.33 µg/L        | 0.000    |

7.1.21  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.7%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 298298 | 17.63 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.1%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 66395  | 16.37 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.9%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 204138 | 19.57 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.8%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 17113  | 13.13 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 65.6%  |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 184245 | 17.40 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.0%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 28428  | 14.83 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.2%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 278493 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 37421  | 20.03 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.2% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

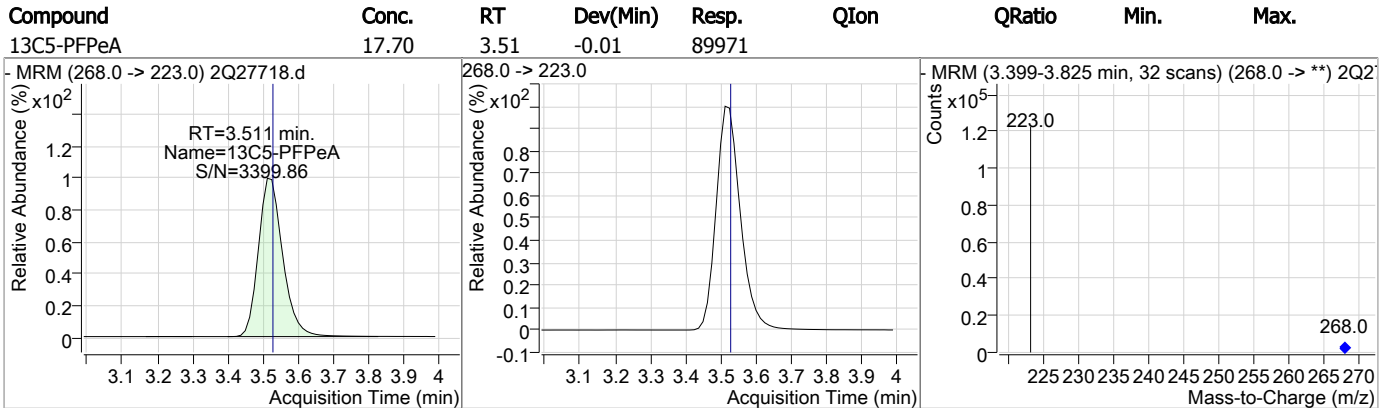
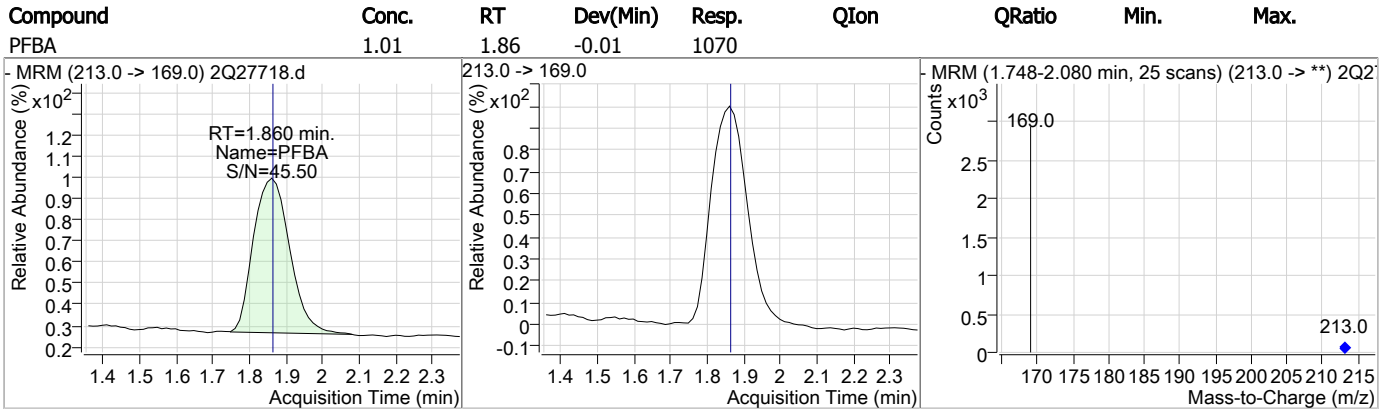
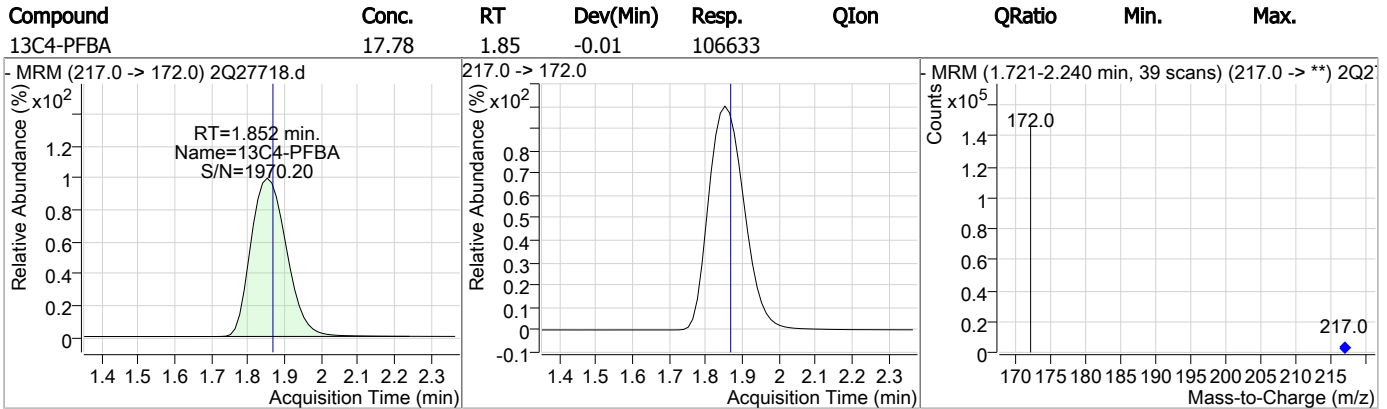
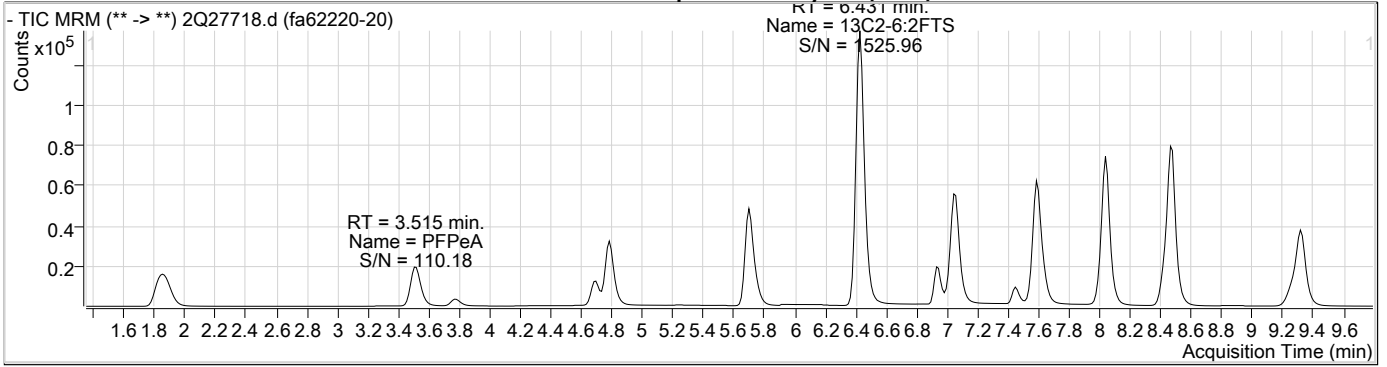
7.1.21  
7

Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.860 | 213.0 -> 169.0 | 1070  | 1.01 µg/L   | 100    |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -     | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 2354  | 0.60 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.1.21  
7

### Perfluorinated Compounds by LC/MS/MS

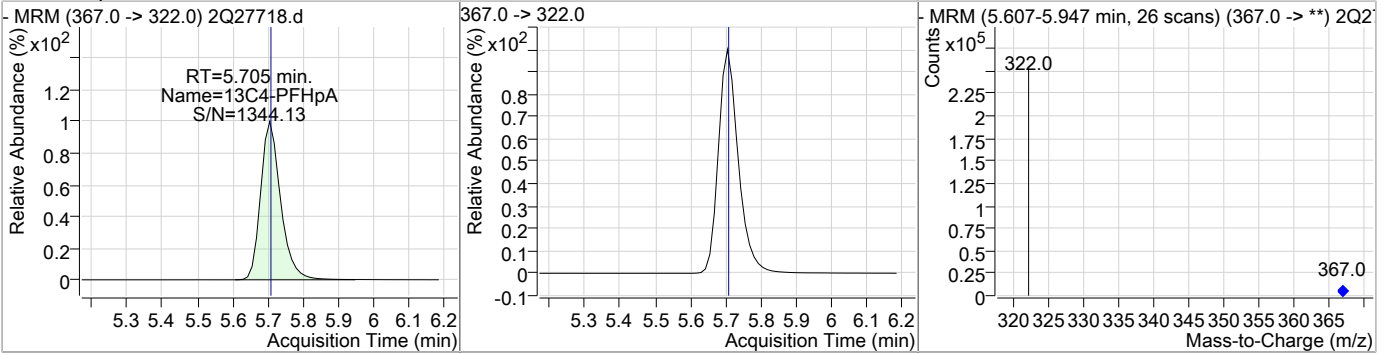
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| PFPeA       | 0.60  | 3.52 | -0.01    | 2354   |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C3-PFBS   | 16.42 | 3.77 | -0.01    | 14975  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-4:2FTS | 16.76 | 4.70 | 0.01     | 49831  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C5-PFHxA  | 17.34 | 4.79 | 0.00     | 126014 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.1.21  
7

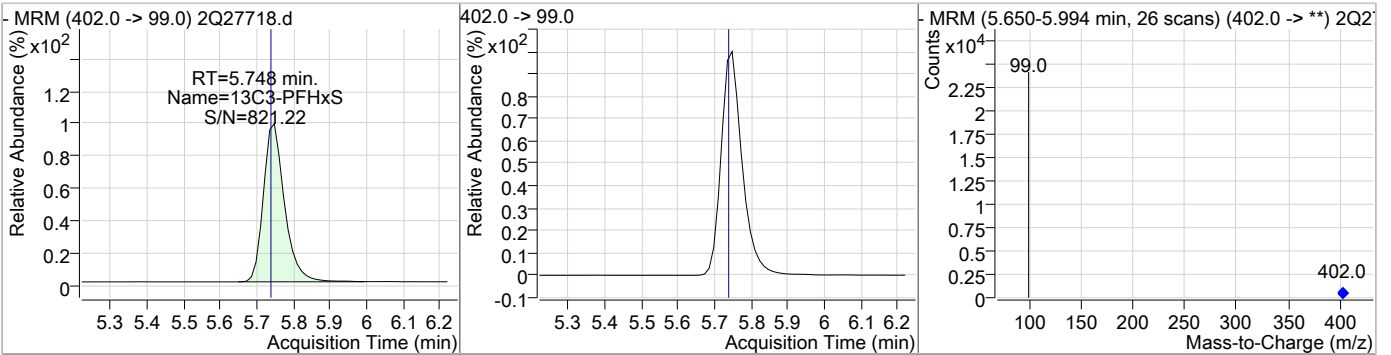


Perfluorinated Compounds by LC/MS/MS

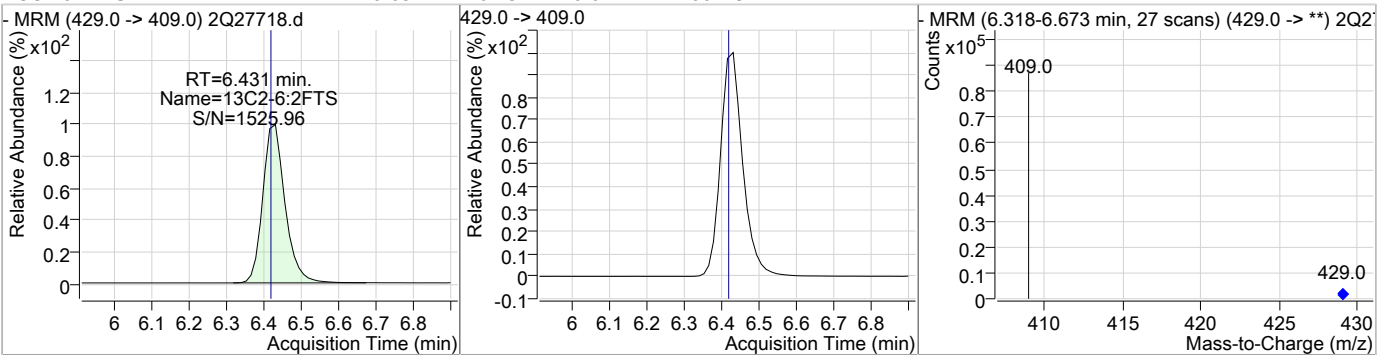
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



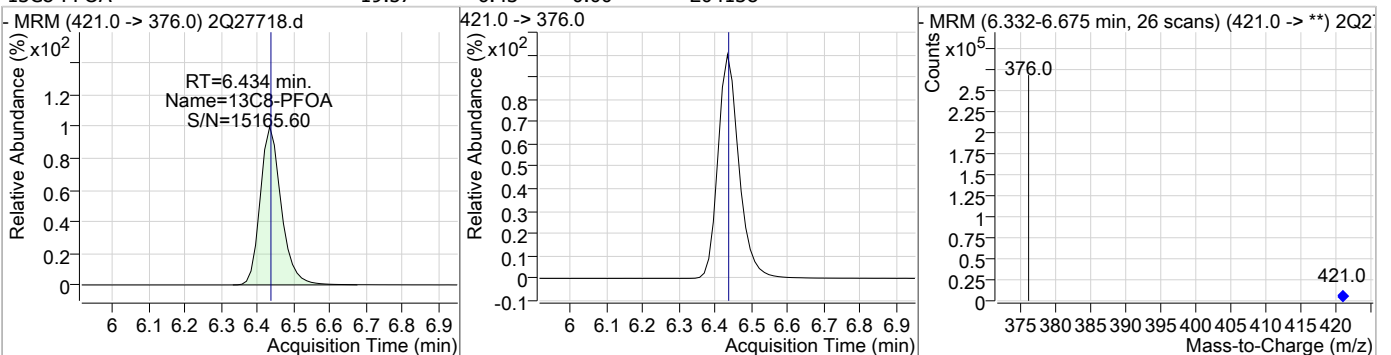
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

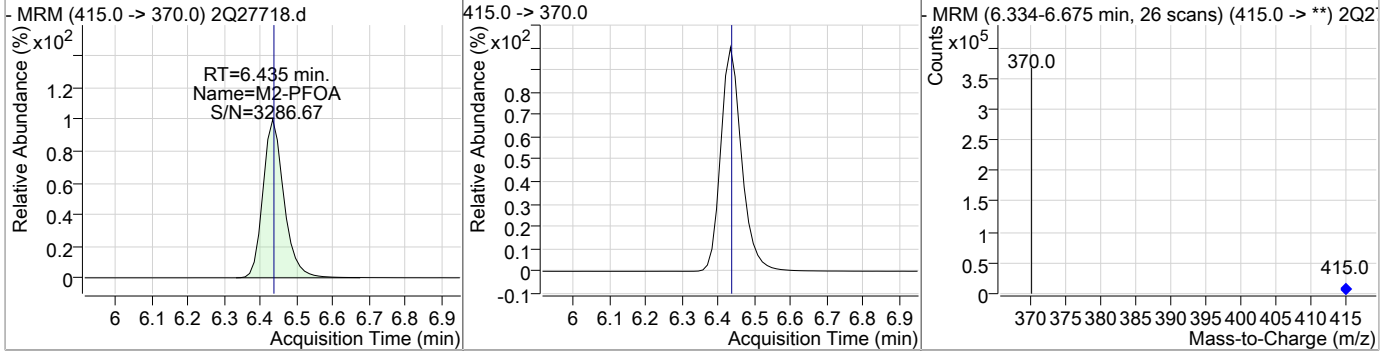


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

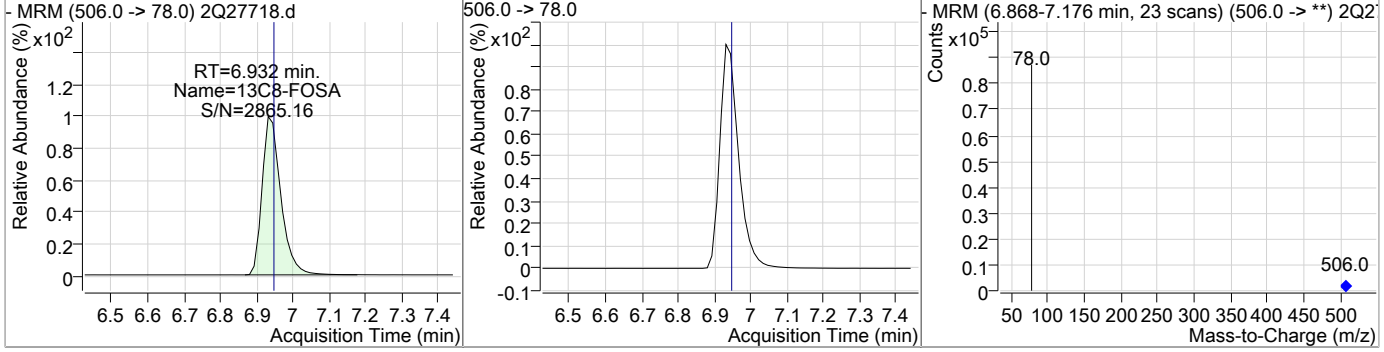


### Perfluorinated Compounds by LC/MS/MS

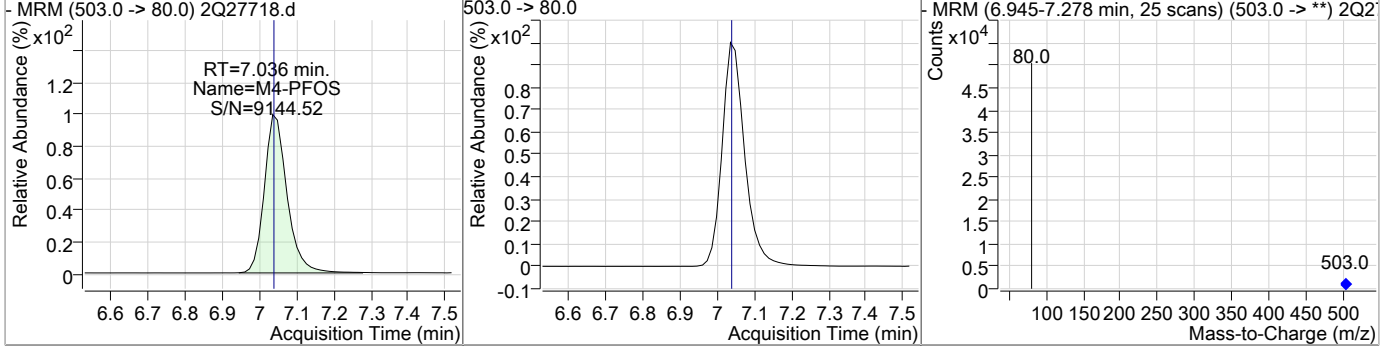
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



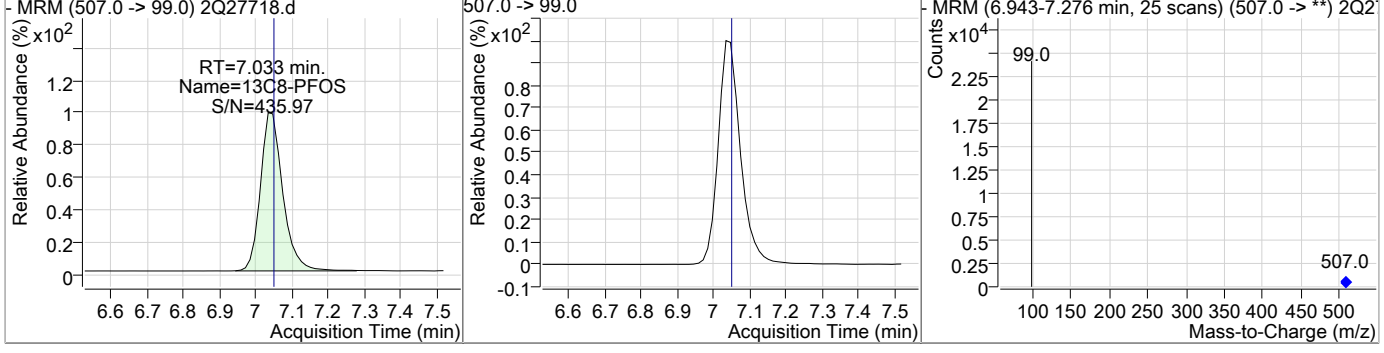
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



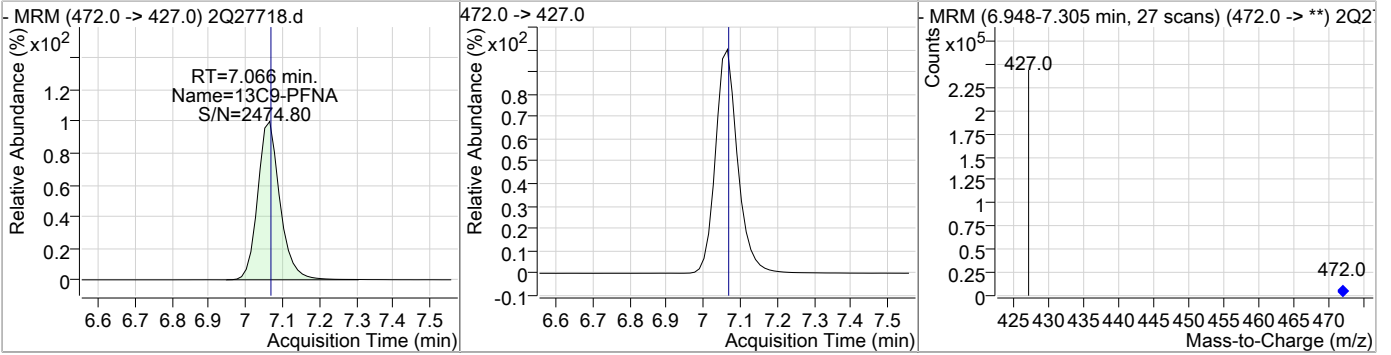
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



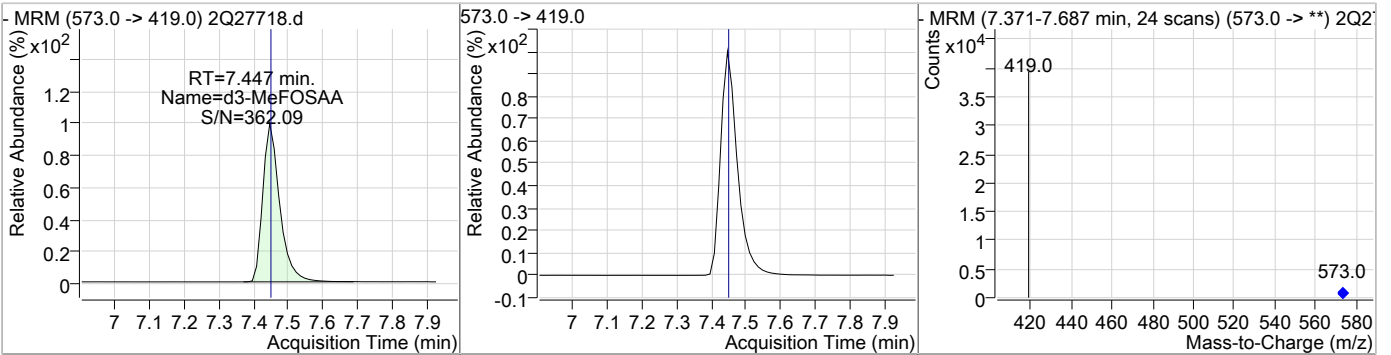
7.1.21

Perfluorinated Compounds by LC/MS/MS

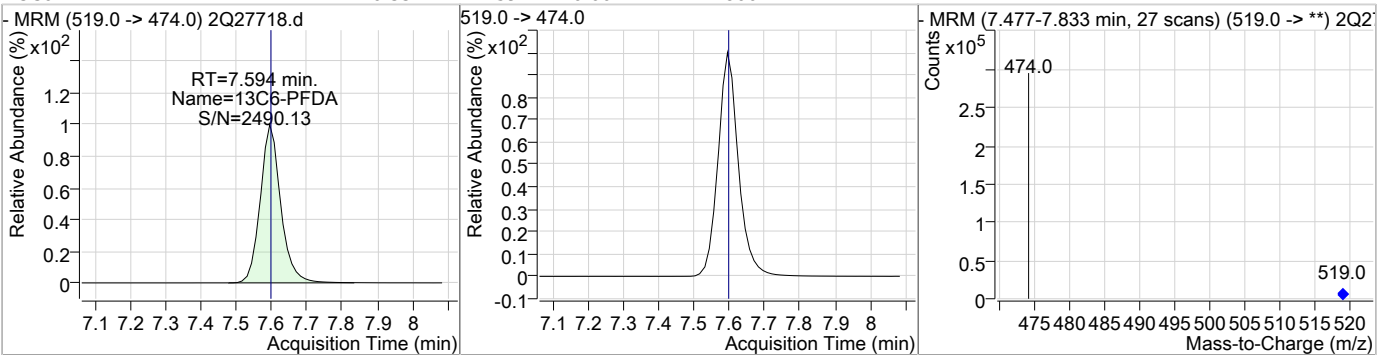
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



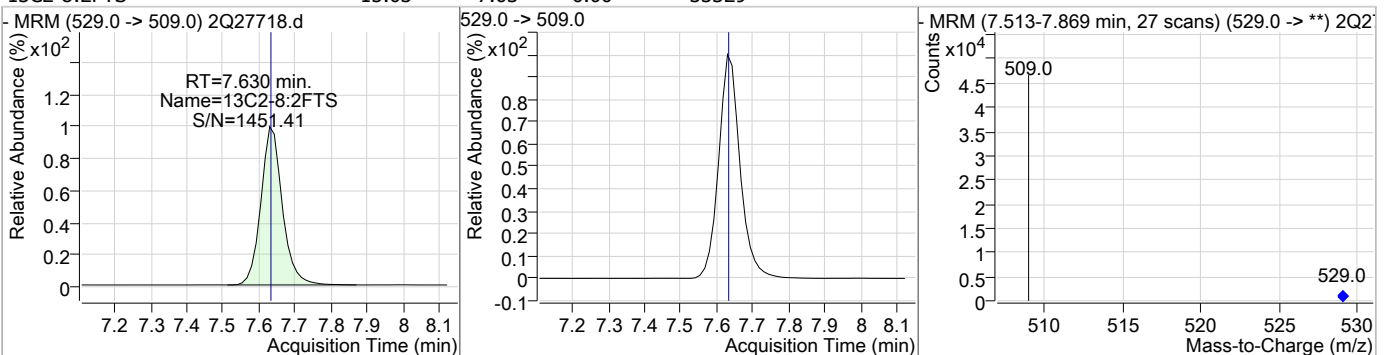
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

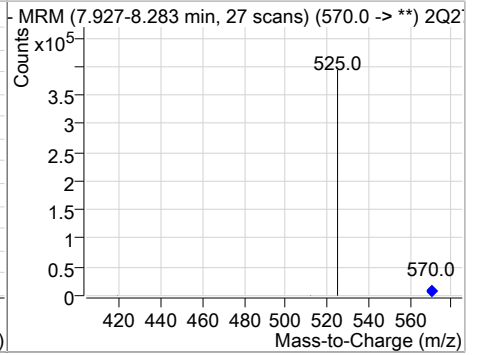
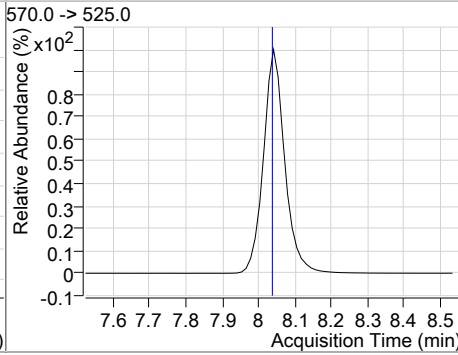
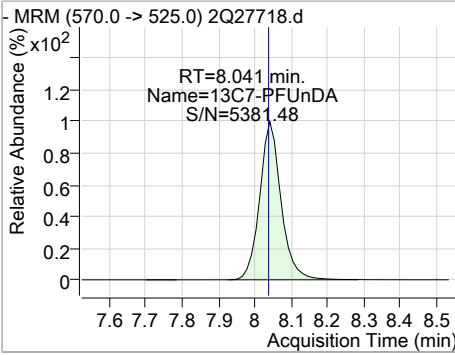


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

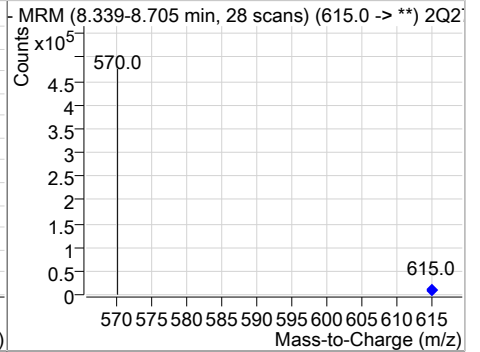
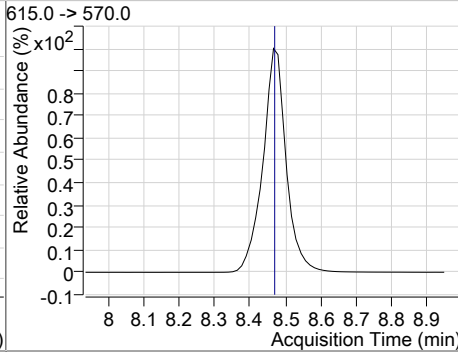
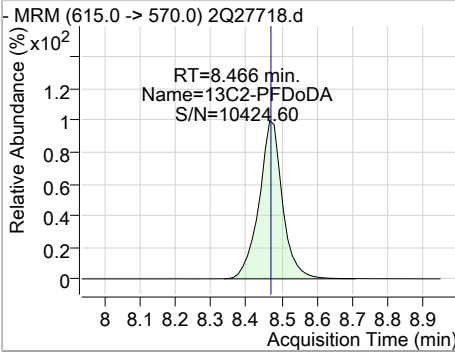


Perfluorinated Compounds by LC/MS/MS

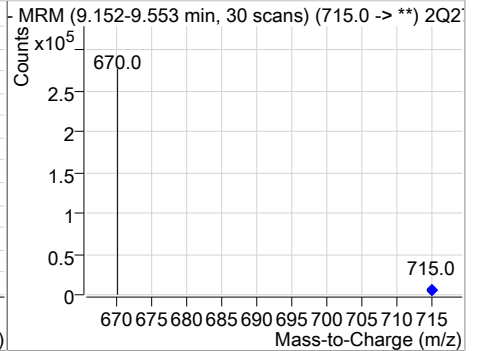
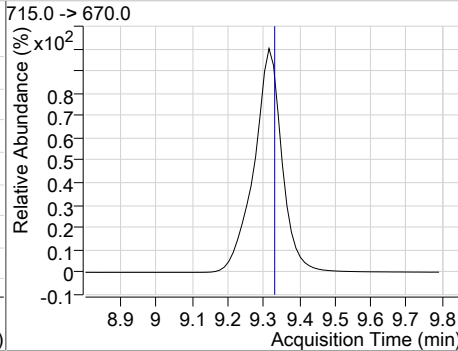
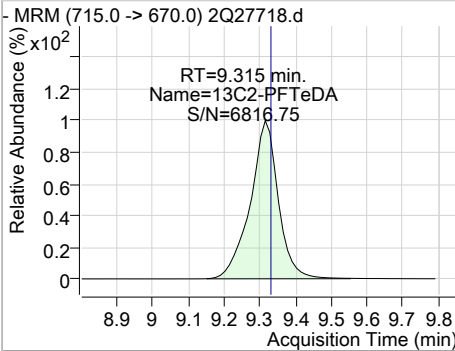
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 17.63 | 8.04 | 0.00     | 298298 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 19.11 | 8.47 | 0.00     | 359515 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.96 | 9.31 | -0.01    | 204857 |      |        |      |      |



Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27657.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 5:09:27 PM  
 Sample Name : FA62220-21  
 Vial : Vial 56  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op74164,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 321197 | 20.00 µg/L       | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 40464  | 20.00 µg/L       | 0.031    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 115908 | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 95873  | 20.00 µg/L       | 0.032    |
| M5-PFHxA                           | 4.801                | 318.0 -> 273.0 | 135891 | 20.00 µg/L       | 0.038    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 189810 | 20.00 µg/L       | 0.029    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 215487 | 20.00 µg/L       | 0.031    |
| M9-PFNA                            | 7.078                | 472.0 -> 427.0 | 191463 | 20.00 µg/L       | 0.033    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 234756 | 20.00 µg/L       | 0.033    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 333151 | 20.00 µg/L       | 0.028    |
| M2-PFDoDA                          | 8.478                | 615.0 -> 570.0 | 384241 | 20.00 µg/L       | 0.028    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 208624 | 20.00 µg/L       | 0.025    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 72309  | 20.00 µg/L       | 0.032    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 15809  | 20.00 µg/L       | 0.025    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16770  | 20.00 µg/L       | 0.026    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 17333  | 20.00 µg/L       | 0.030    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 52517  | 20.00 µg/L       | 0.028    |
| M2-6:2FTS                          | 6.443                | 429.0 -> 409.0 | 66597  | 20.00 µg/L       | 0.042    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 33831  | 20.00 µg/L       | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 27538  | 20.00 µg/L       | 0.029    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 52499  | 12.65 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 63.2% |          |
| 13C2-6:2FTS                        | 6.443                | 429.0 -> 409.0 | 66598  | 15.28 µg/L       | 0.042    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.4% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 33818  | 11.91 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 59.6% |          |
| 13C2-PFDoDA                        | 8.478                | 615.0 -> 570.0 | 384099 | 13.76 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 68.8% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 207954 | 10.76 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 53.8% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 15785  | 13.04 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 65.2% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16777  | 12.32 µg/L       | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 61.6% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 115671 | 13.34 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.7% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 189773 | 13.18 µg/L       | 0.029    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 65.9% |          |
| 13C5-PFHxA                         | 4.801                | 318.0 -> 273.0 | 135850 | 13.25 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.2% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 95665  | 13.34 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 66.7% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 234774 | 12.68 µg/L       | 0.033    |

7.1.22  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 63.4%  |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 333195 | 13.91 µg/L        | 0.028    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 69.5%  |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 72302  | 12.69 µg/L        | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 63.5%  |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 215322 | 14.46 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 72.3%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 17311  | 10.47 µg/L        | 0.030    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 52.3%  |          |
| 13C9-PFNA             | 7.078                | 472.0 -> 427.0 | 191416 | 13.36 µg/L        | 0.033    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 66.8%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 27578  | 11.53 µg/L        | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 57.7%  |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 321270 | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 40454  | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

Target Compounds

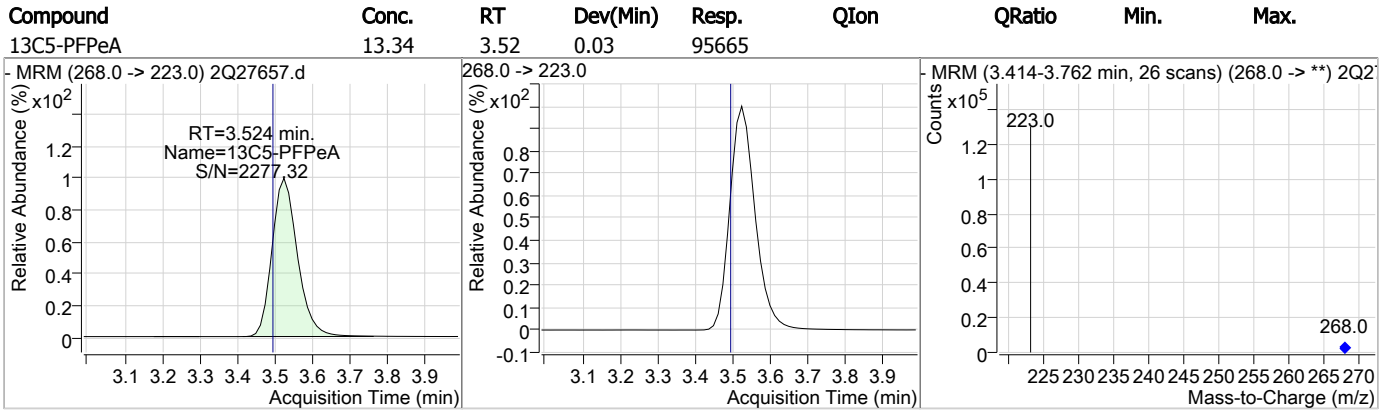
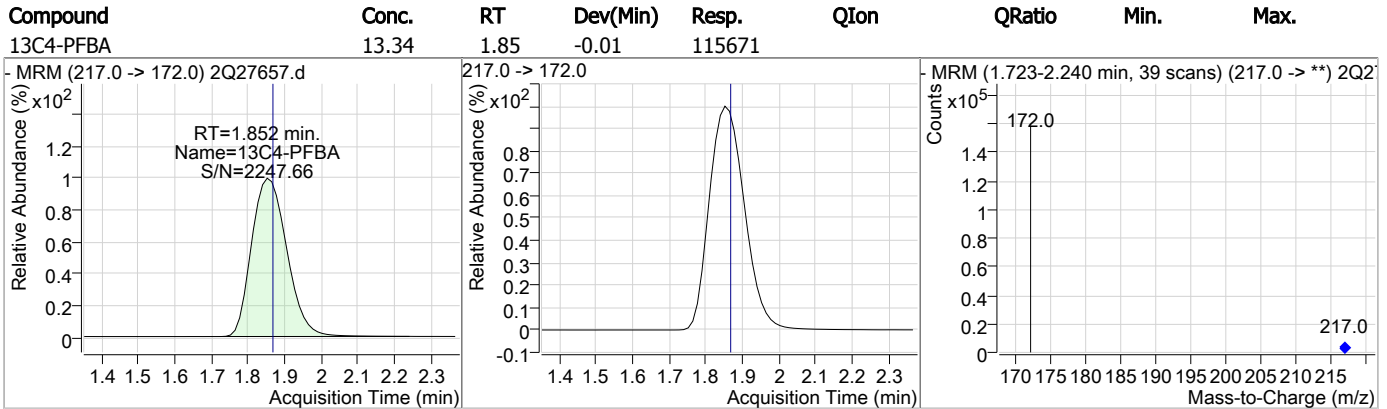
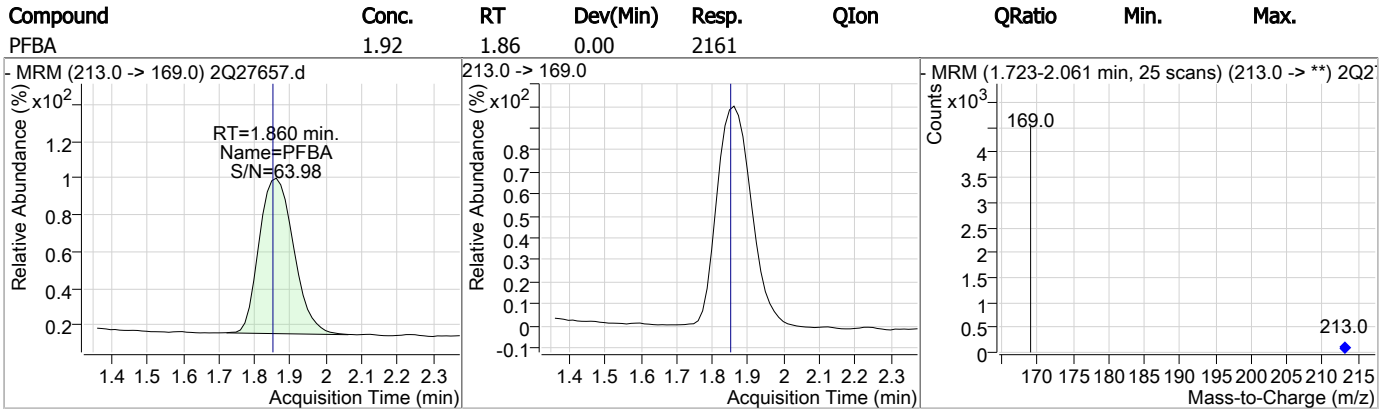
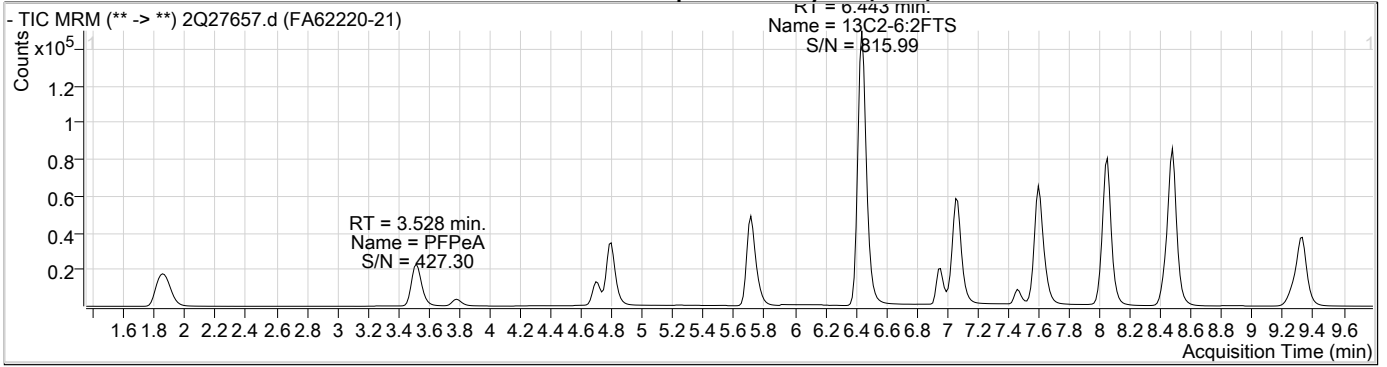
| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.860 | 213.0 -> 169.0 | 2161  | 1.92 µg/L   | 100    |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | 4.803 | 313.0 -> 269.0 | 2604  | 1.11 µg/L   | 99     |
| PFHxS            | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 11187 | 2.57 µg/L   | 100    |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.22  
7

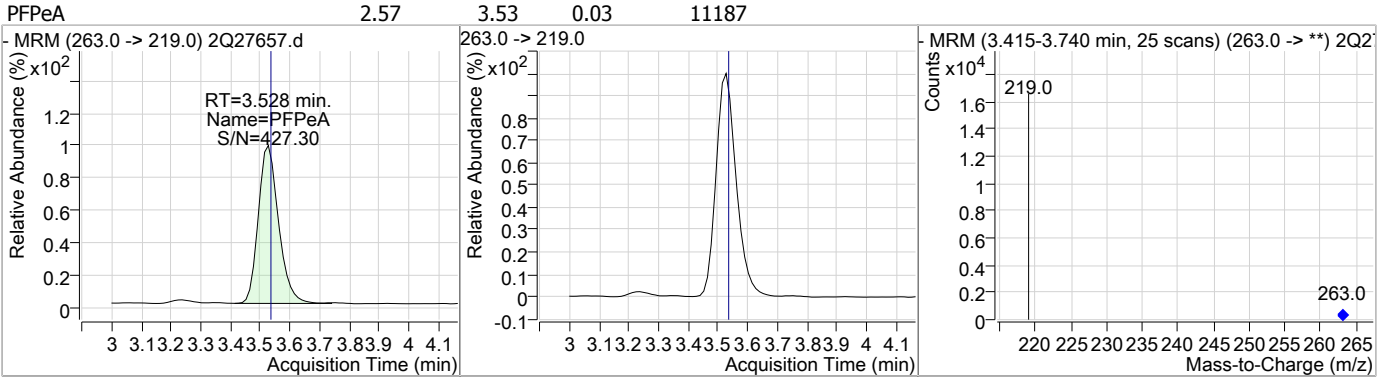


### Perfluorinated Compounds by LC/MS/MS

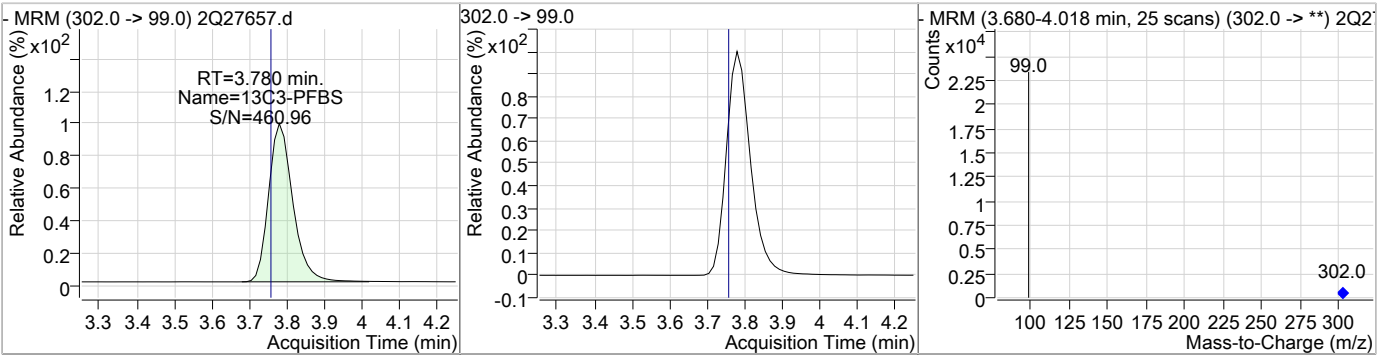


### Perfluorinated Compounds by LC/MS/MS

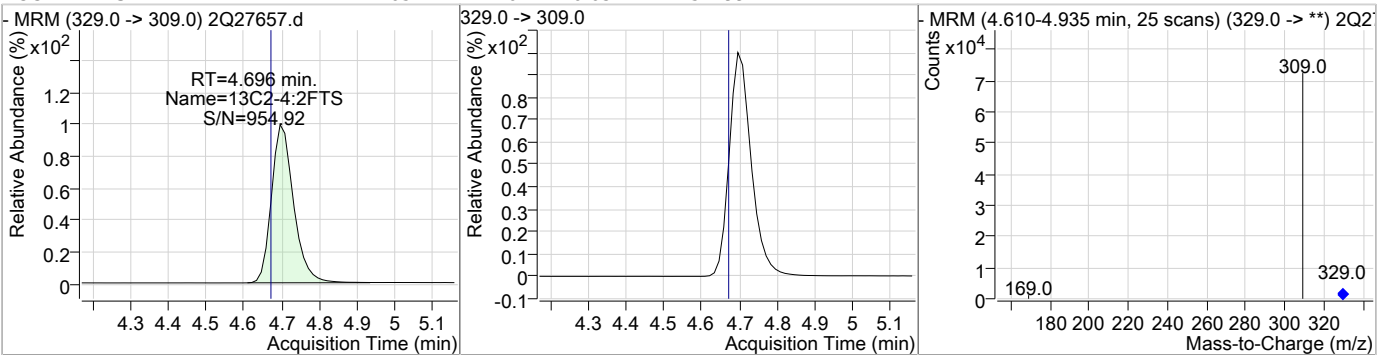
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



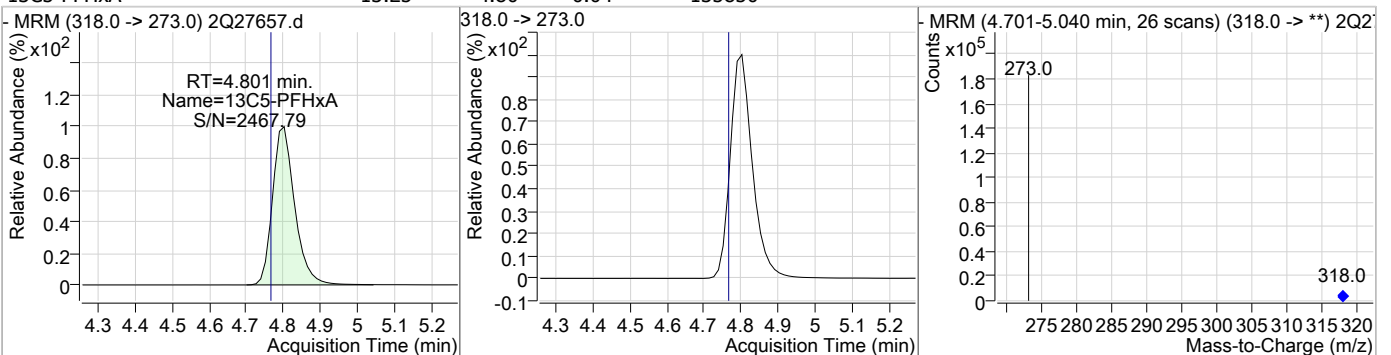
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



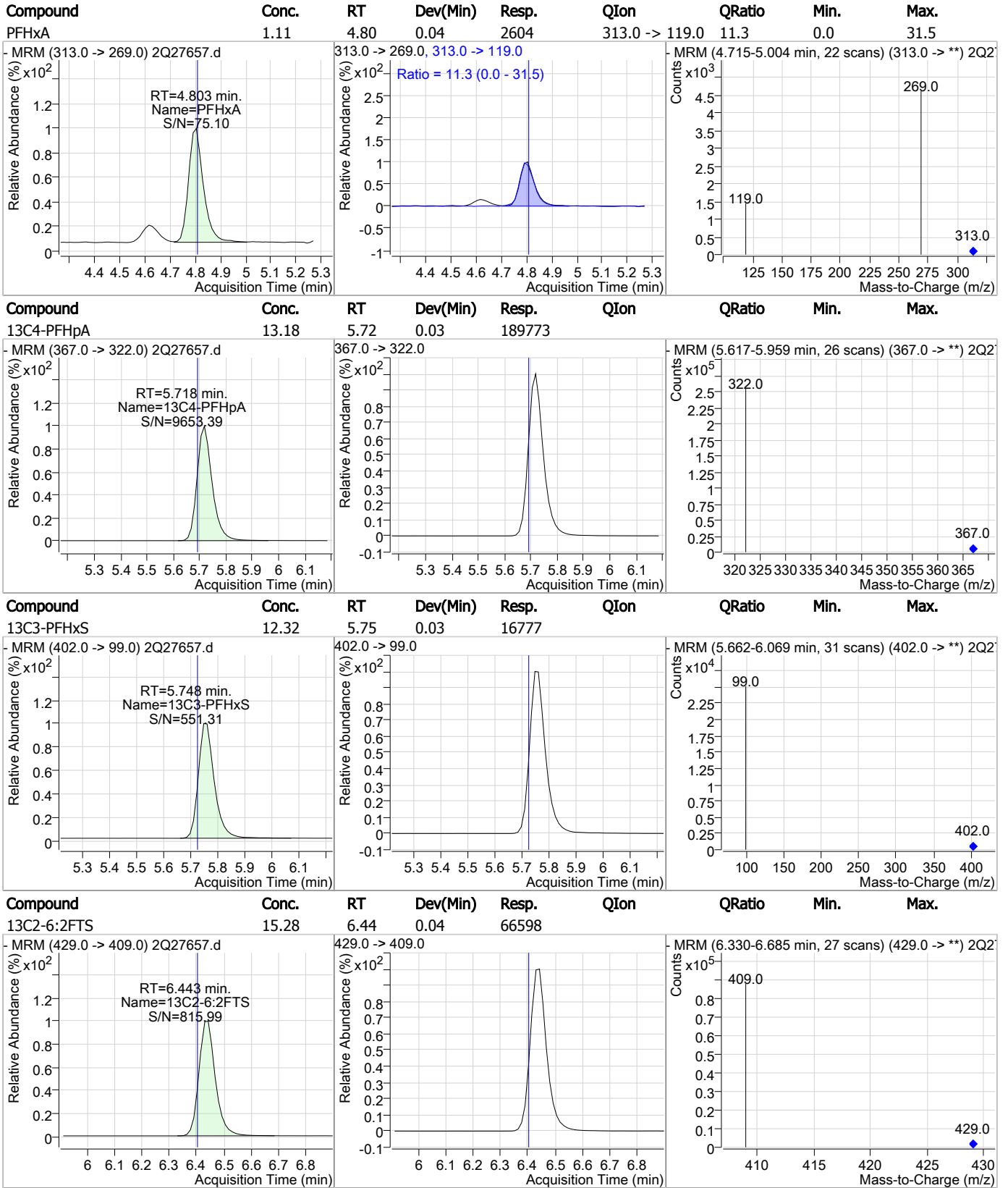
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



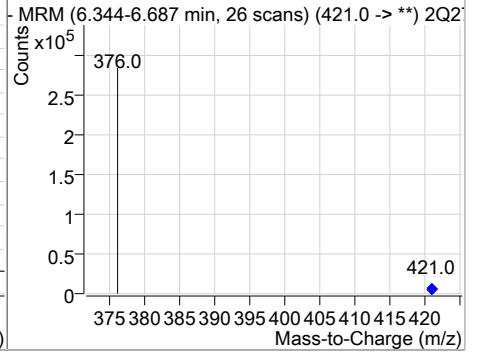
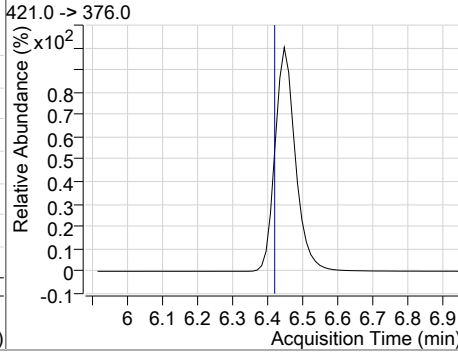
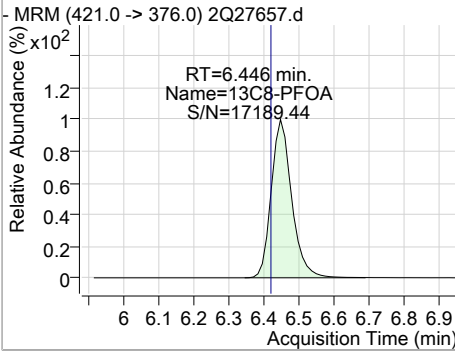
### Perfluorinated Compounds by LC/MS/MS



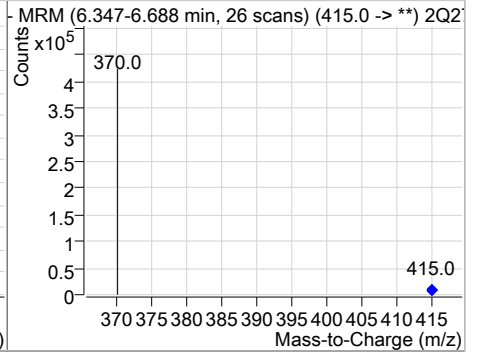
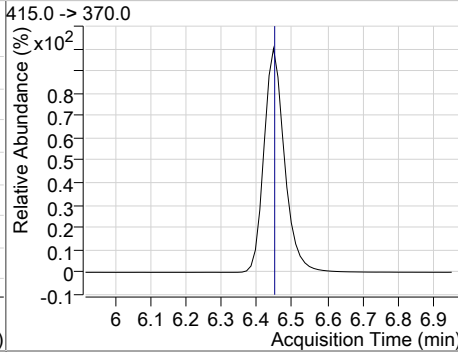
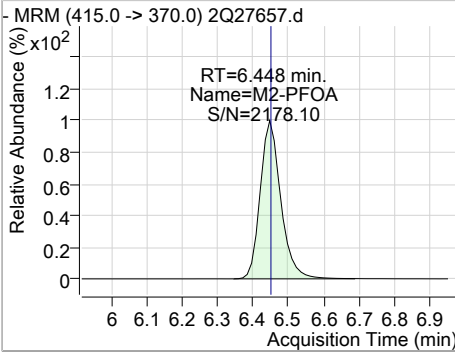
7.1.22  
7

### Perfluorinated Compounds by LC/MS/MS

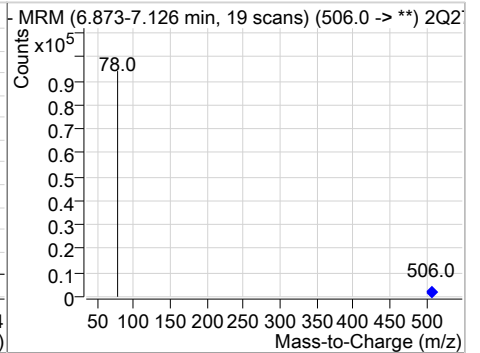
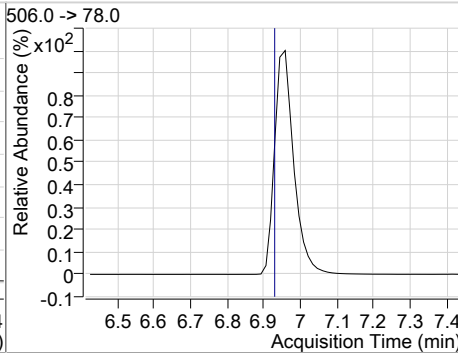
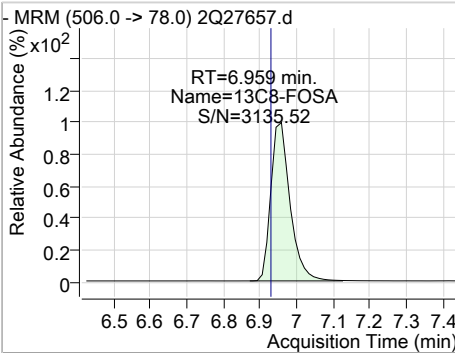
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 14.46 | 6.45 | 0.03     | 215322 |      |        |      |      |



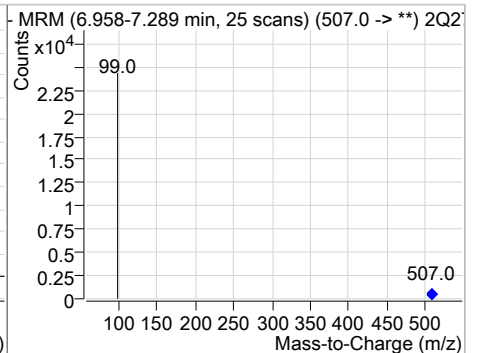
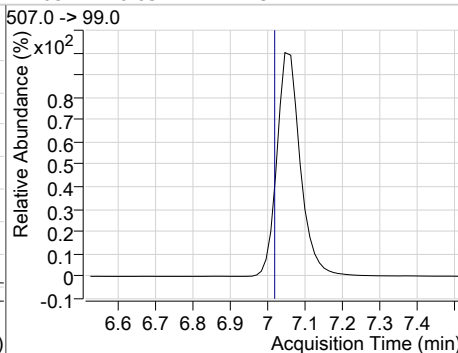
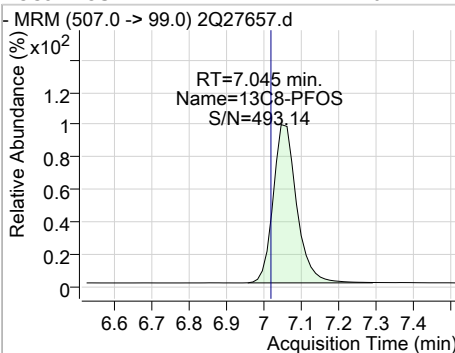
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.99 | 6.45 | 0.03     | 321270 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-FOSA | 12.69 | 6.96 | 0.03     | 72302 |      |        |      |      |

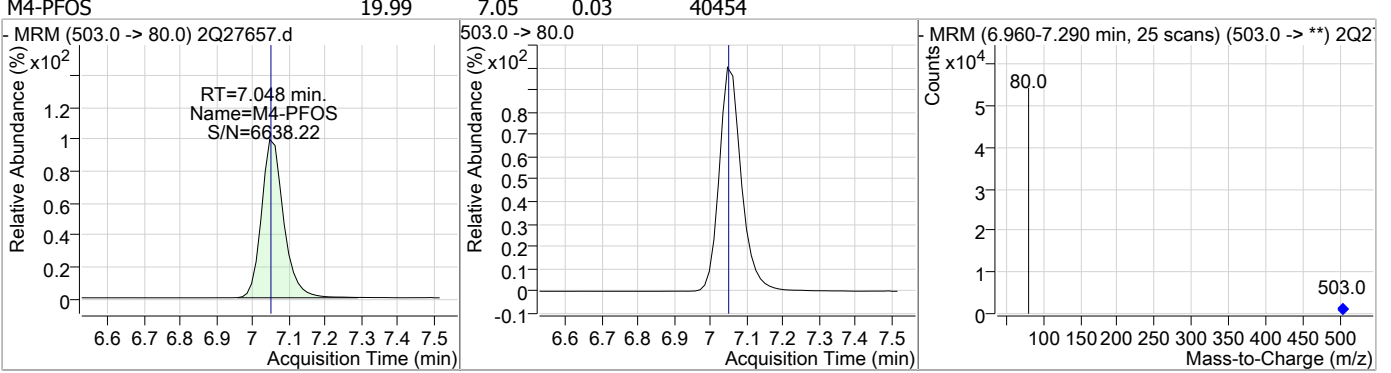


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 10.47 | 7.05 | 0.03     | 17311 |      |        |      |      |

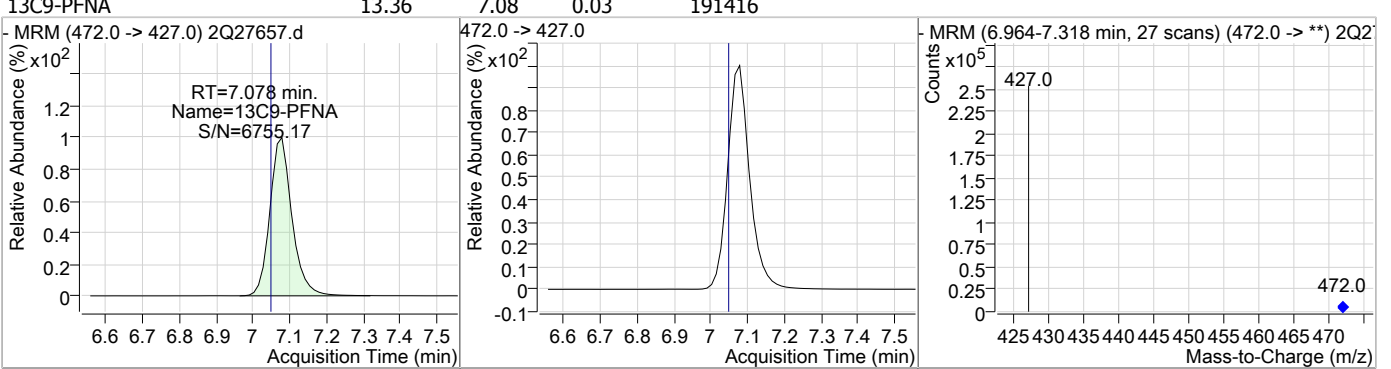


Perfluorinated Compounds by LC/MS/MS

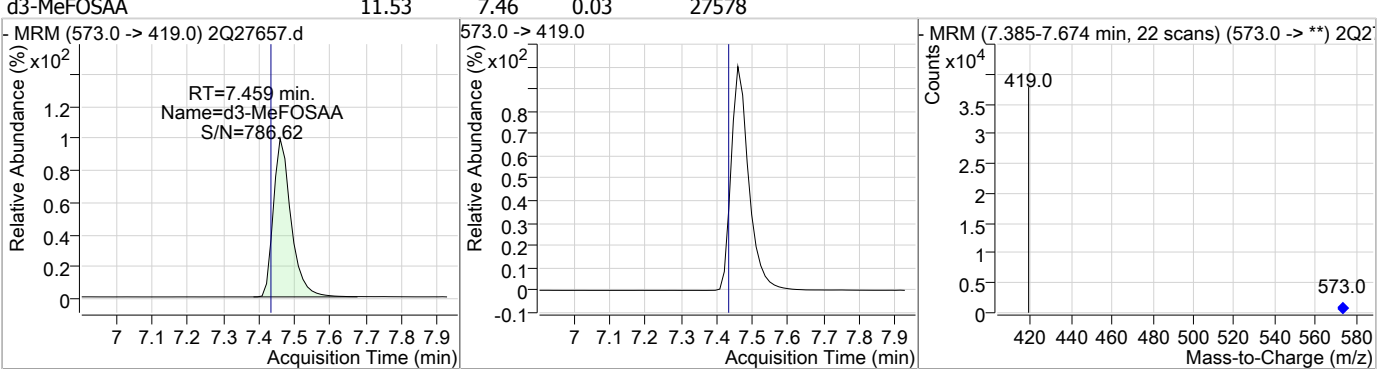
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



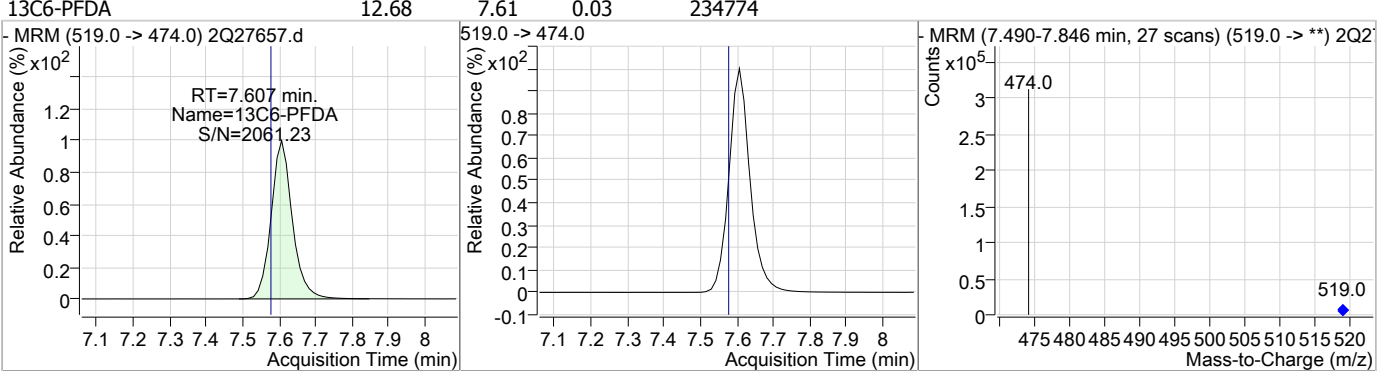
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



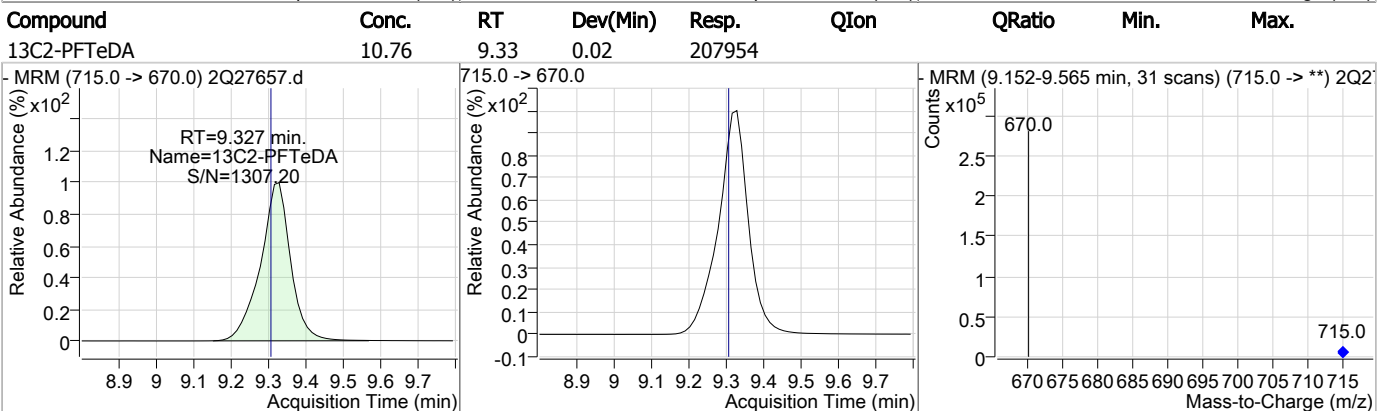
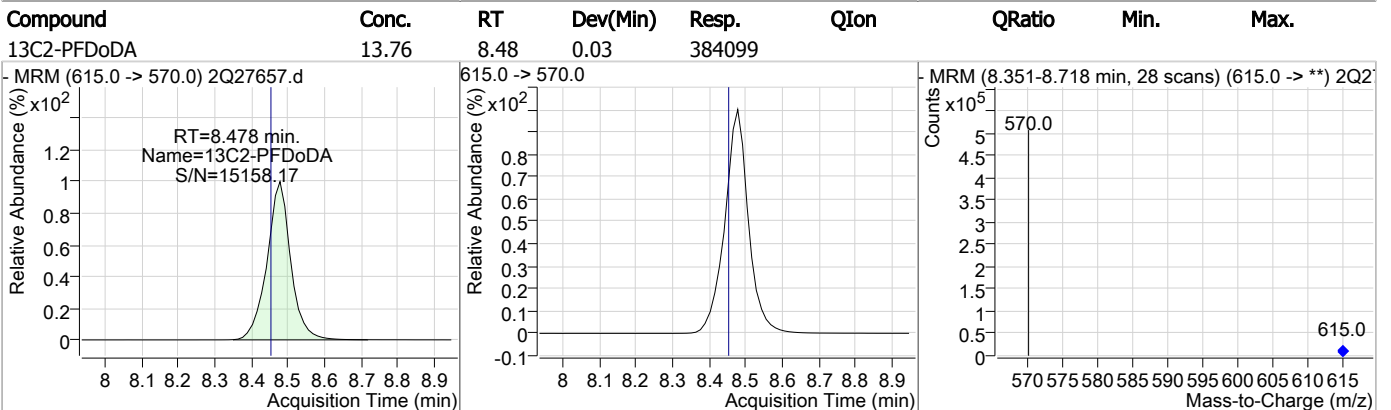
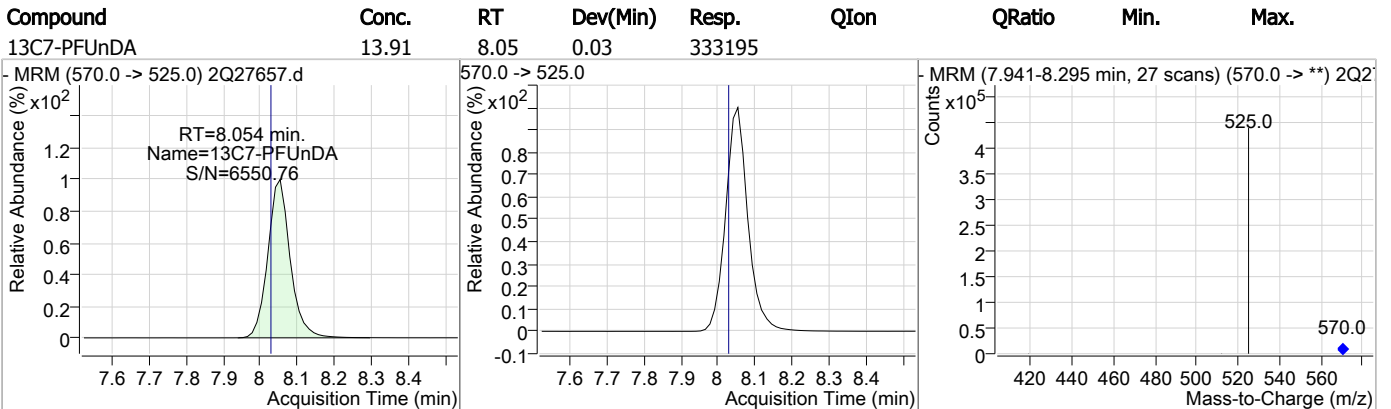
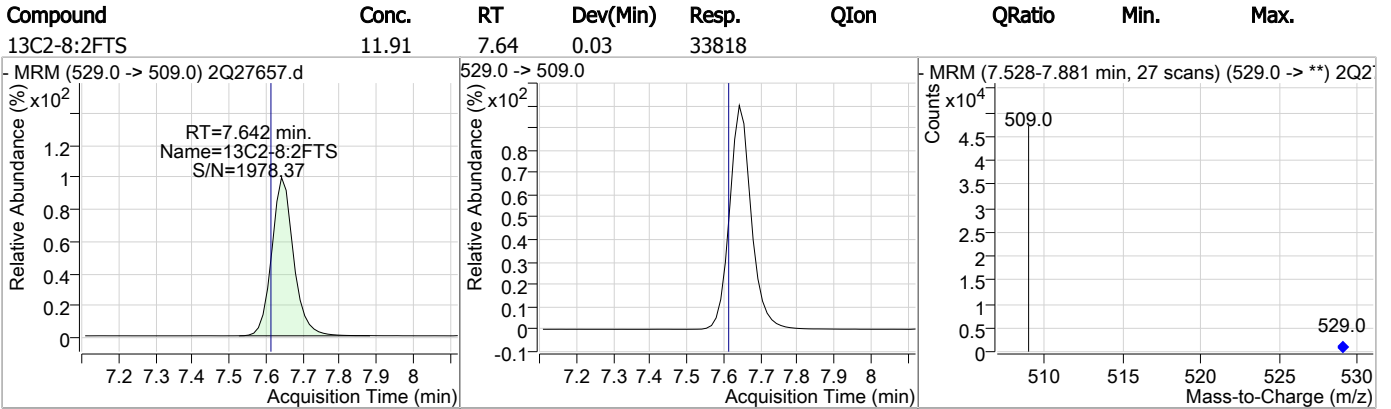
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



### Perfluorinated Compounds by LC/MS/MS



7.1.22  
7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27659.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 5:40:55 PM  
 Sample Name : FA62220-22  
 Vial : Vial 58  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op74164,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 323680 | 20.00 µg/L       | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 41340  | 20.00 µg/L       | 0.031    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 120372 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.537                | 268.0 -> 223.0 | 99518  | 20.00 µg/L       | 0.045    |
| M5-PFHxA                           | 4.801                | 318.0 -> 273.0 | 142875 | 20.00 µg/L       | 0.038    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 199830 | 20.00 µg/L       | 0.029    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 222700 | 20.00 µg/L       | 0.031    |
| M9-PFNA                            | 7.078                | 472.0 -> 427.0 | 193284 | 20.00 µg/L       | 0.033    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 232500 | 20.00 µg/L       | 0.033    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 305227 | 20.00 µg/L       | 0.028    |
| M2-PFDoDA                          | 8.478                | 615.0 -> 570.0 | 360506 | 20.00 µg/L       | 0.028    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 175733 | 20.00 µg/L       | 0.025    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 70645  | 20.00 µg/L       | 0.032    |
| M3-PFBS                            | 3.792                | 302.0 -> 99.0  | 16384  | 20.00 µg/L       | 0.038    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 17386  | 20.00 µg/L       | 0.026    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 17181  | 20.00 µg/L       | 0.030    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 54705  | 20.00 µg/L       | 0.028    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 69085  | 20.00 µg/L       | 0.030    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 33119  | 20.00 µg/L       | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 26467  | 20.00 µg/L       | 0.029    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 54574  | 13.15 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 65.7% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 69031  | 15.84 µg/L       | 0.030    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.2% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 33137  | 11.67 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 58.4% |          |
| 13C2-PFDoDA                        | 8.478                | 615.0 -> 570.0 | 360396 | 12.91 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 64.6% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 175196 | 9.06 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 45.3% |          |
| 13C3-PFBS                          | 3.792                | 302.0 -> 99.0  | 16348  | 13.50 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 67.5% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 17361  | 12.75 µg/L       | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 63.7% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 120100 | 13.86 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.3% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 199357 | 13.85 µg/L       | 0.029    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.2% |          |
| 13C5-PFHxA                         | 4.801                | 318.0 -> 273.0 | 142800 | 13.92 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.6% |          |
| 13C5-PFPeA                         | 3.537                | 268.0 -> 223.0 | 99612  | 13.89 µg/L       | 0.045    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 69.4% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 232448 | 12.56 µg/L       | 0.033    |

7.1.23  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.8%  |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 305070 | 12.73 µg/L        | 0.028    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 63.7%  |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 70633  | 12.40 µg/L        | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.0%  |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 222598 | 14.95 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.7%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 17231  | 10.42 µg/L        | 0.030    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 52.1%  |          |
| 13C9-PFNA             | 7.078                | 472.0 -> 427.0 | 193248 | 13.48 µg/L        | 0.033    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 67.4%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 26469  | 11.07 µg/L        | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 55.3%  |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 323659 | 19.98 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 41365  | 20.01 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

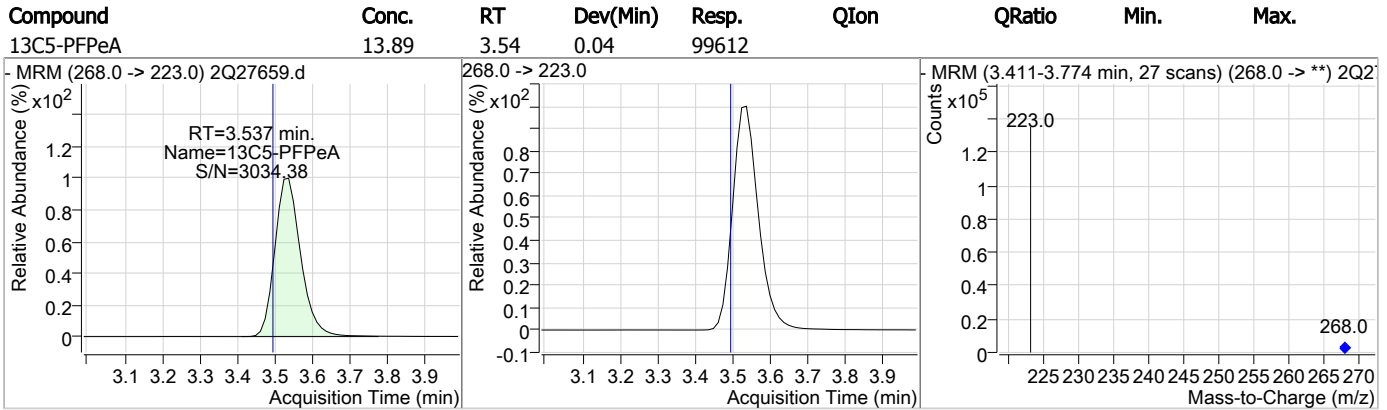
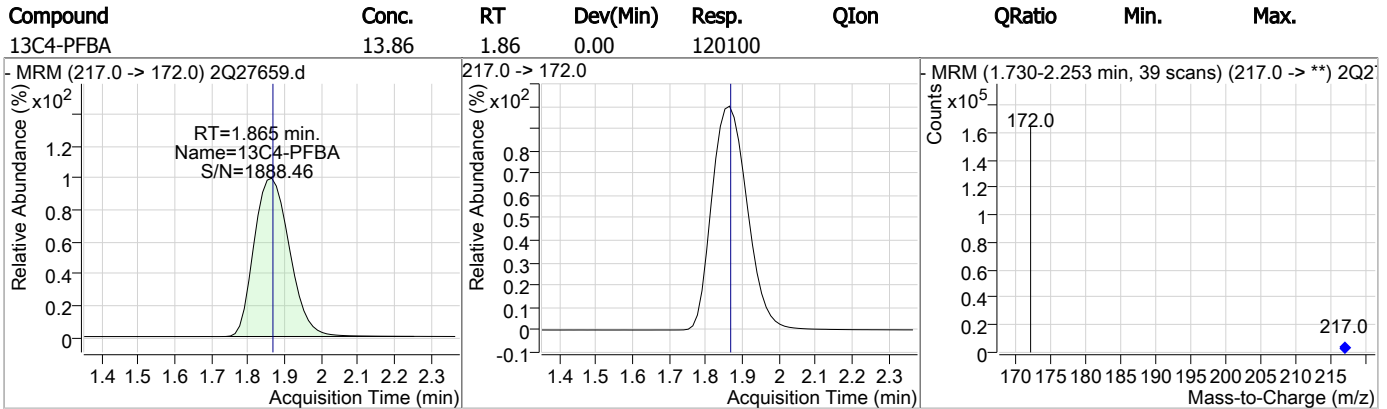
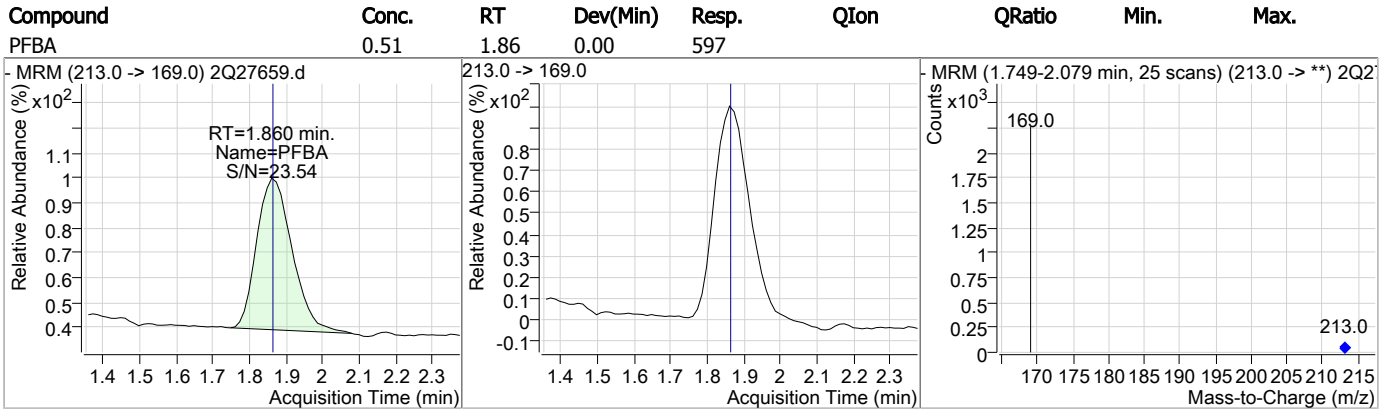
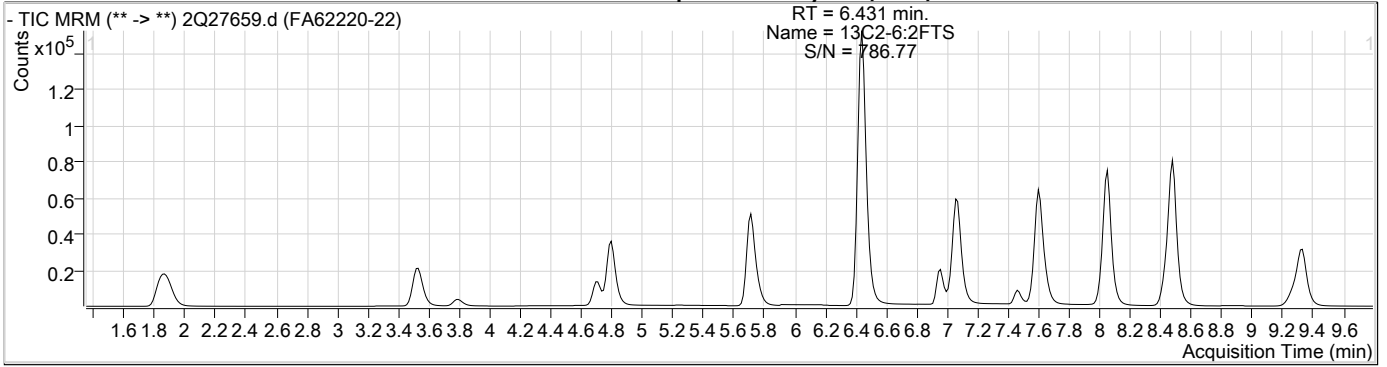
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | 1.860 | 213.0 -> 169.0 | 597   | 0.51 µg/L   | 100    |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -     | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | -     | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.1.23  
7

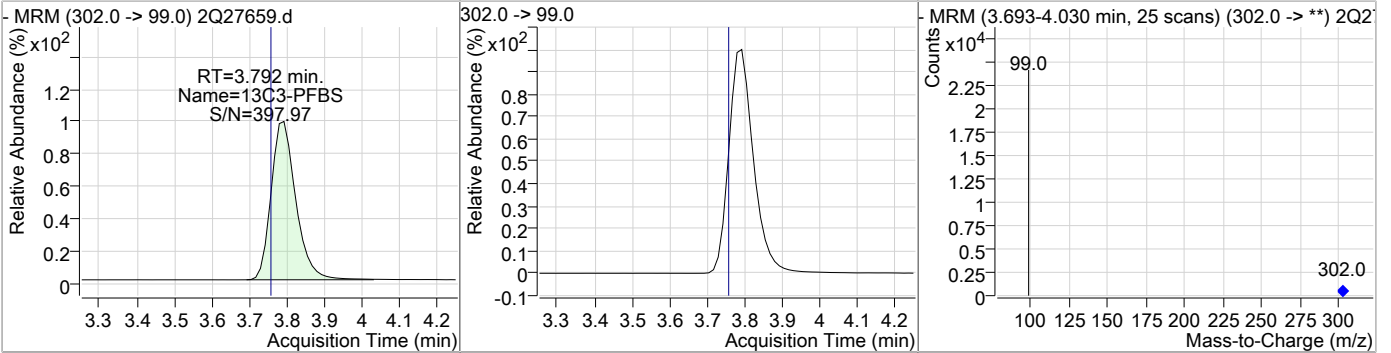
### Perfluorinated Compounds by LC/MS/MS



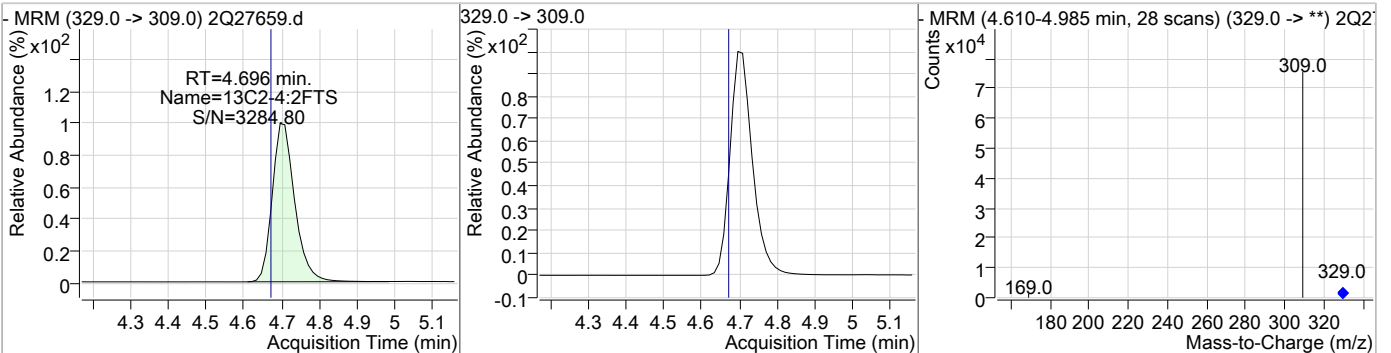
7.1.23  
7

### Perfluorinated Compounds by LC/MS/MS

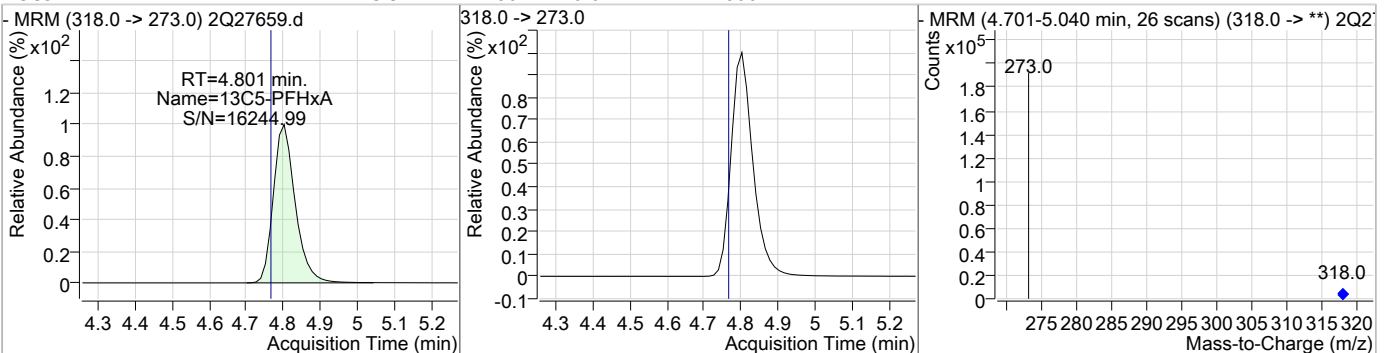
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



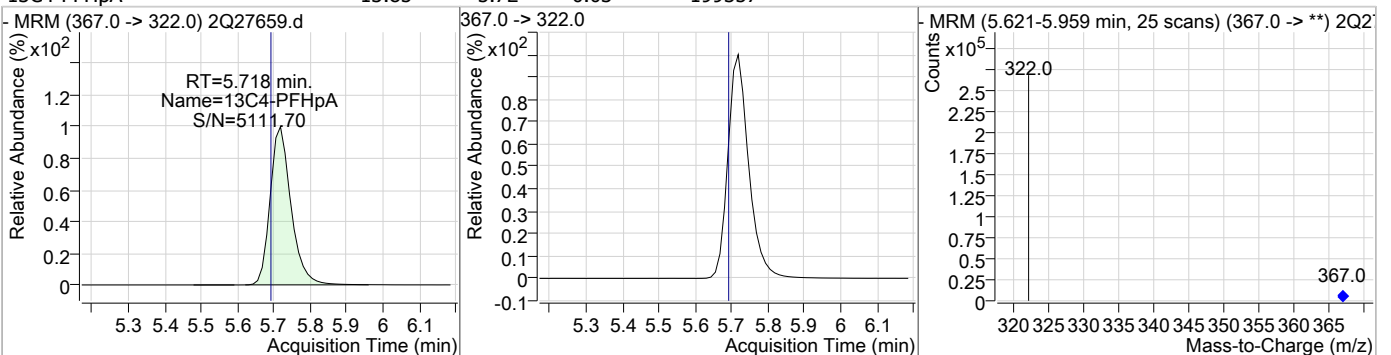
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



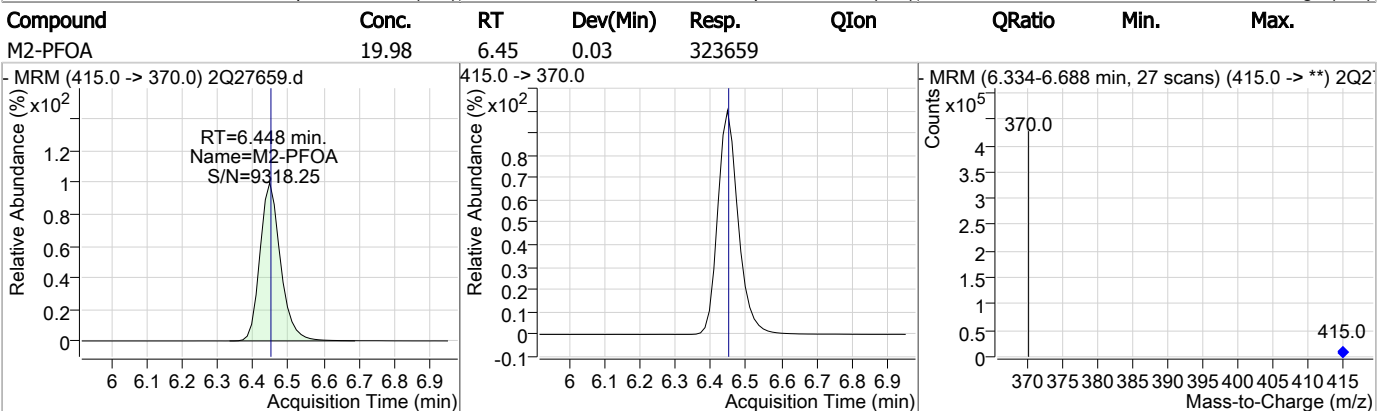
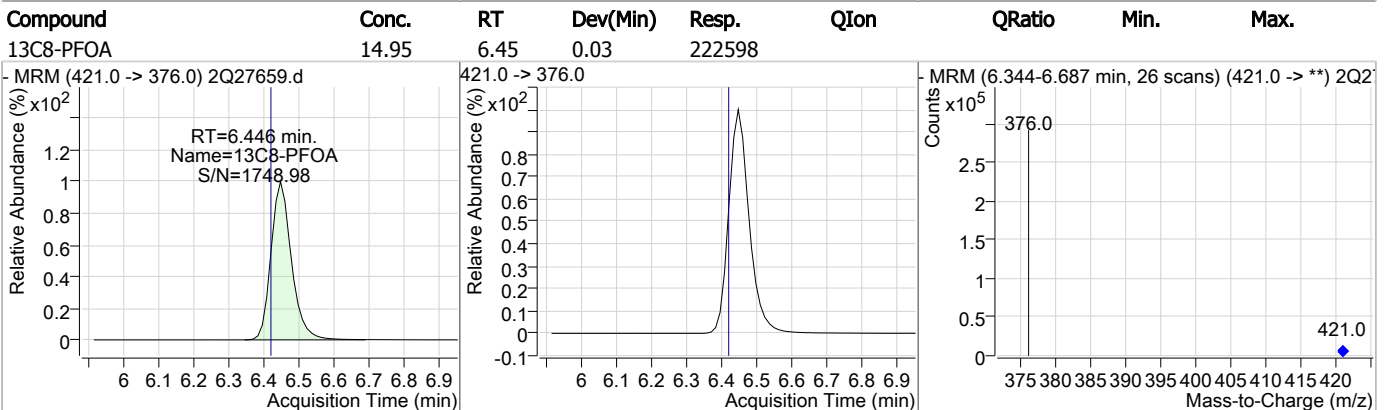
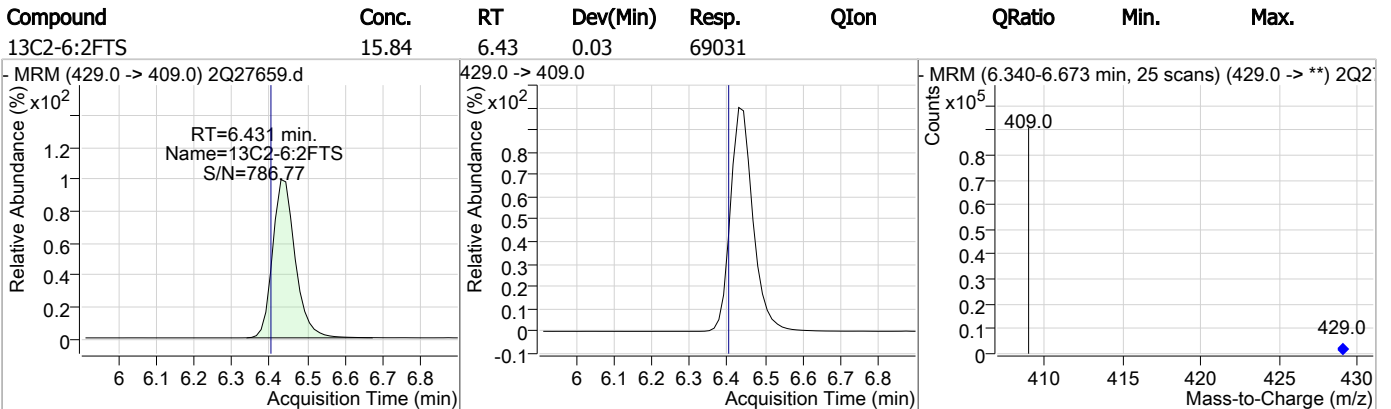
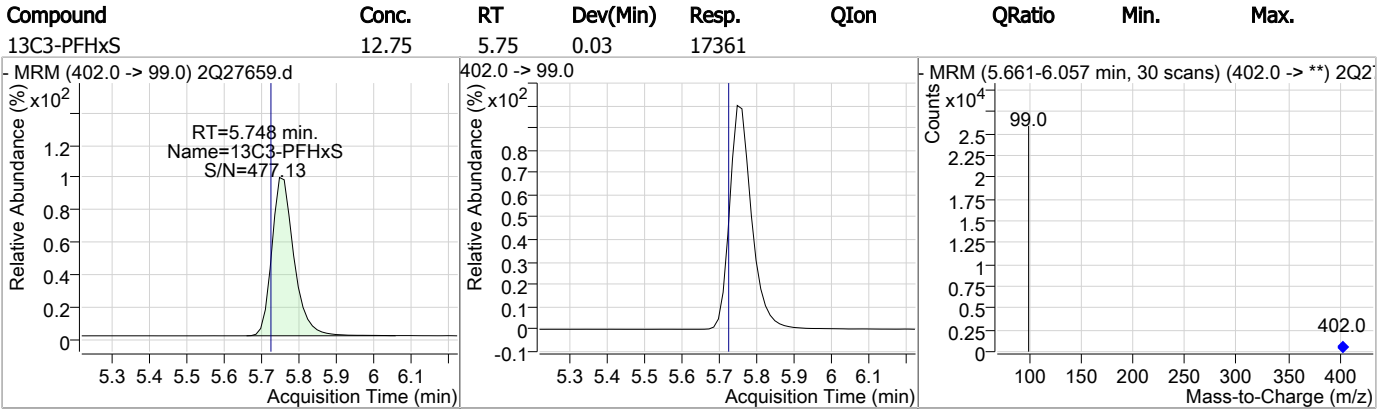
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



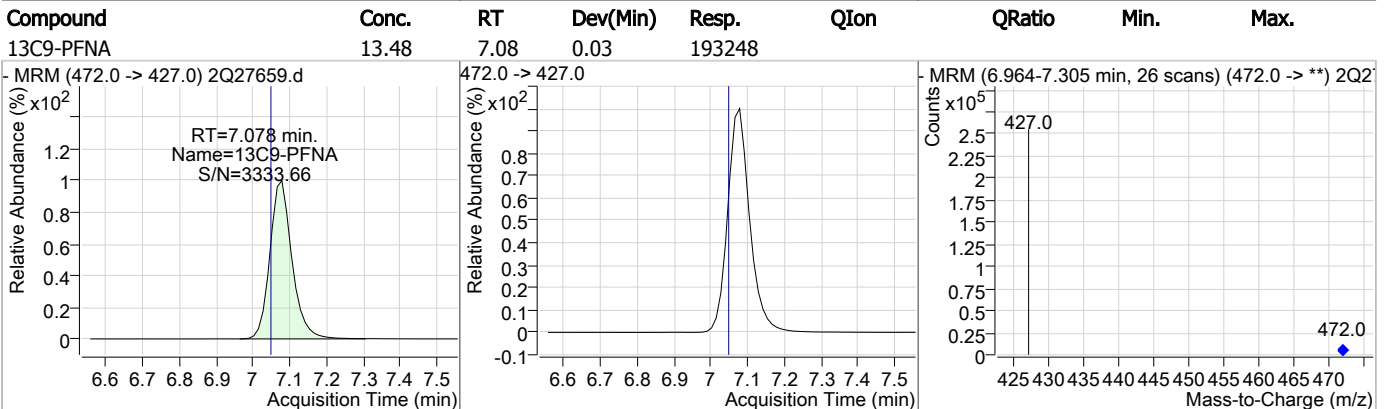
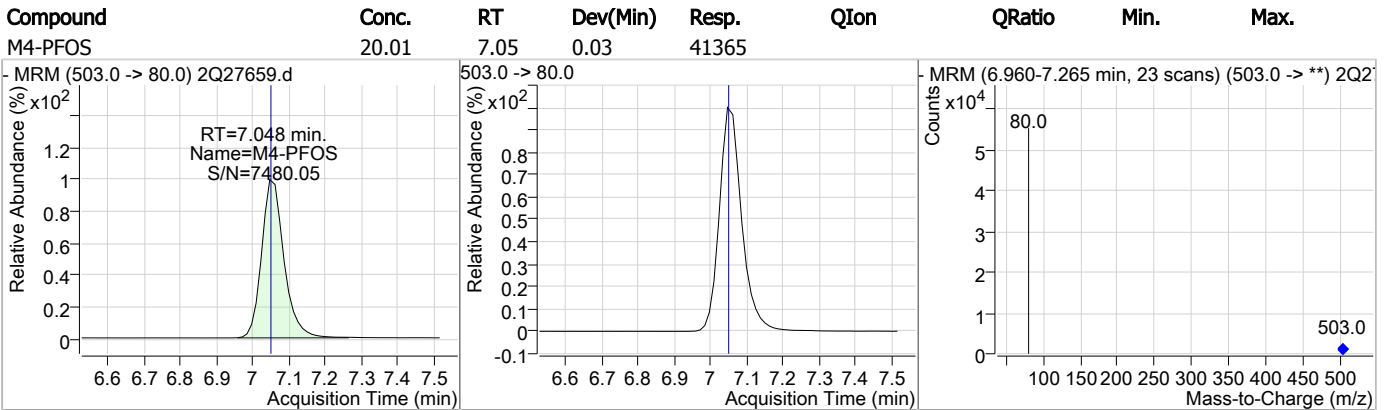
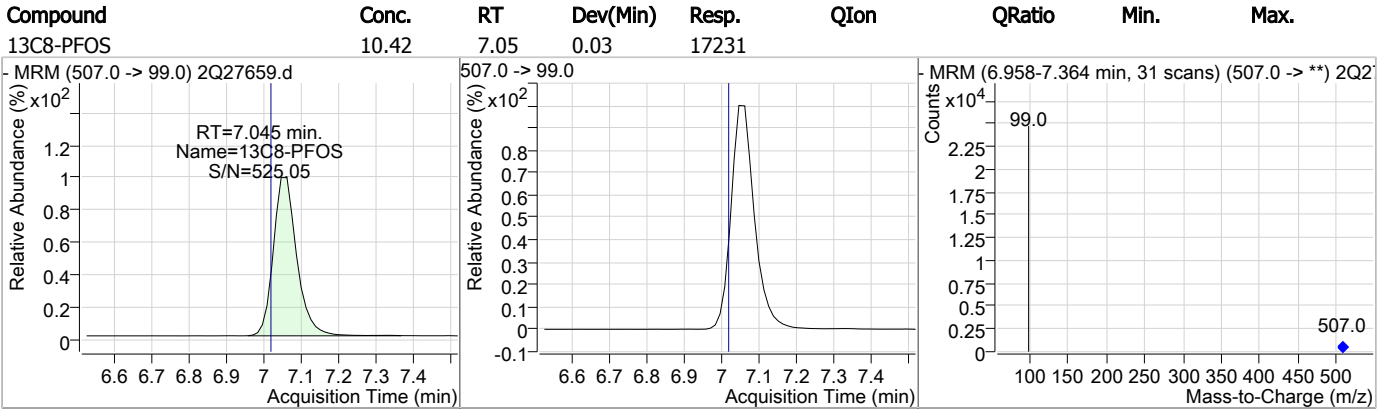
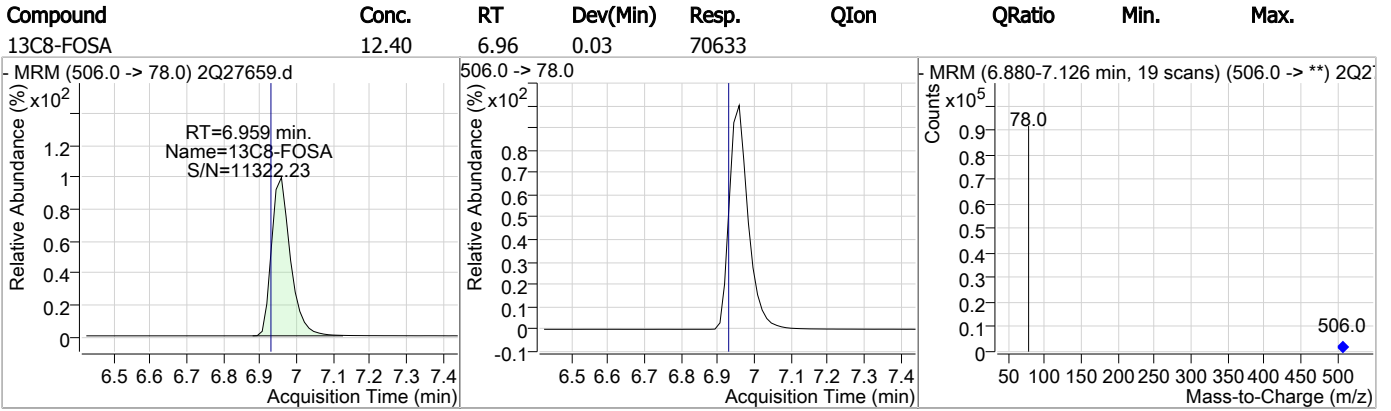
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

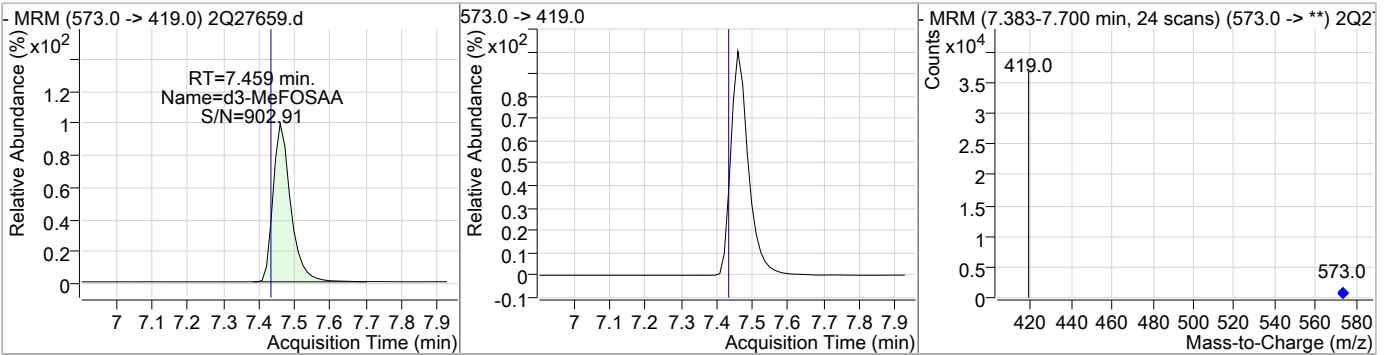


7.1.23  
7

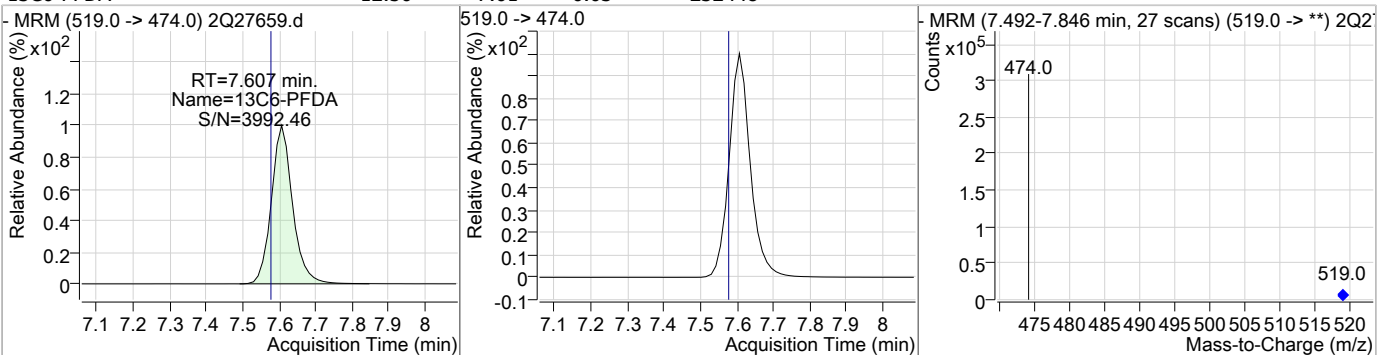


### Perfluorinated Compounds by LC/MS/MS

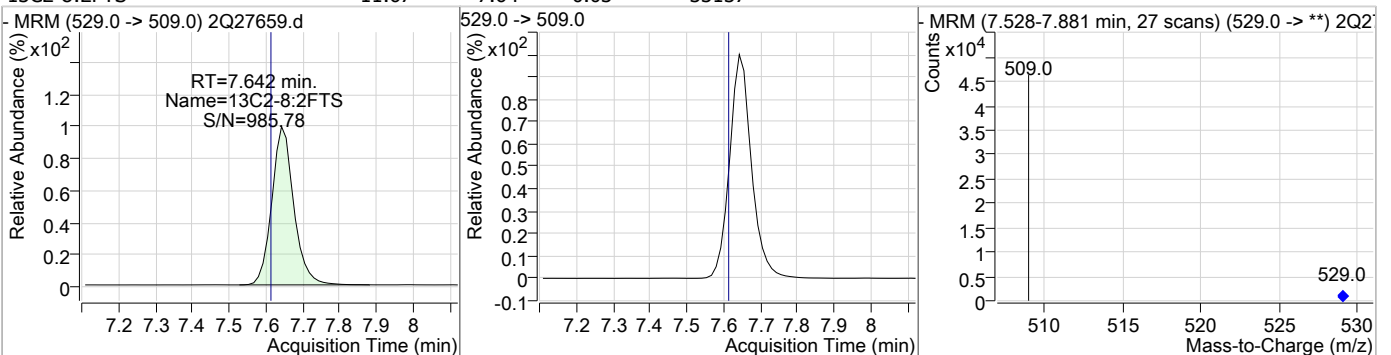
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



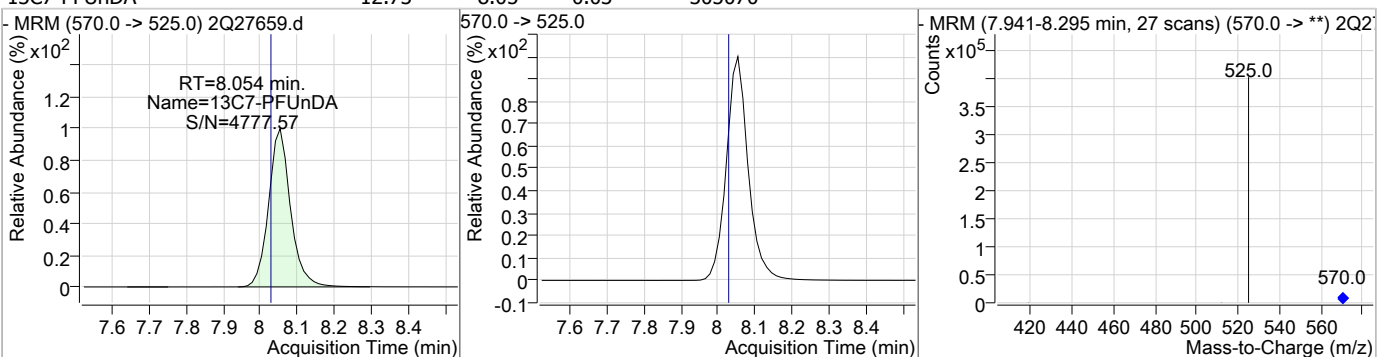
| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|



| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

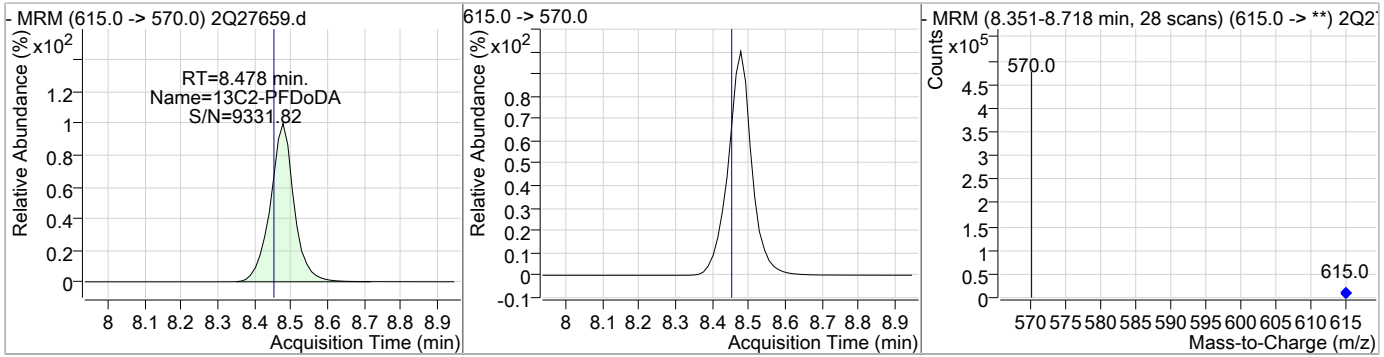


| Compound | Conc. | RT | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|----|----------|-------|------|--------|------|------|
|----------|-------|----|----------|-------|------|--------|------|------|

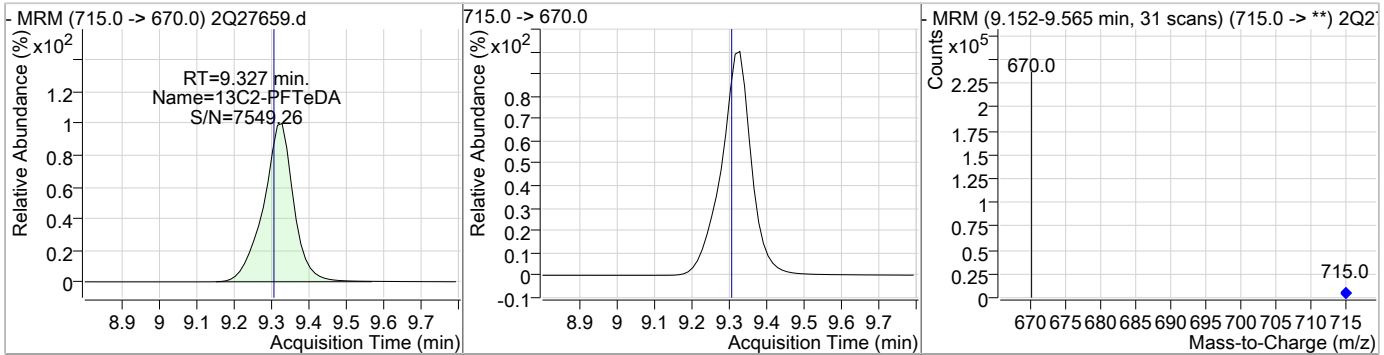


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 12.91 | 8.48 | 0.03     | 360396 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 9.06  | 9.33 | 0.02     | 175196 |      |        |      |      |



7.1.23  
7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27656.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 4:53:43 PM  
 Sample Name : OP74164-MB  
 Vial : Vial 55  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op74164,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 310144 | 20.00 µg/L       | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 42666  | 20.00 µg/L       | 0.031    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 126348 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.536                | 268.0 -> 223.0 | 107180 | 20.00 µg/L       | 0.045    |
| M5-PFHxA                           | 4.801                | 318.0 -> 273.0 | 154820 | 20.00 µg/L       | 0.038    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 216646 | 20.00 µg/L       | 0.029    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 237832 | 20.00 µg/L       | 0.031    |
| M9-PFNA                            | 7.078                | 472.0 -> 427.0 | 240259 | 20.00 µg/L       | 0.033    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 318447 | 20.00 µg/L       | 0.033    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 425602 | 20.00 µg/L       | 0.028    |
| M2-PFDoDA                          | 8.478                | 615.0 -> 570.0 | 486415 | 20.00 µg/L       | 0.028    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 240687 | 20.00 µg/L       | 0.025    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 88792  | 20.00 µg/L       | 0.032    |
| M3-PFBS                            | 3.792                | 302.0 -> 99.0  | 18077  | 20.00 µg/L       | 0.038    |
| M3-PFHxS                           | 5.761                | 402.0 -> 99.0  | 19258  | 20.00 µg/L       | 0.038    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 24640  | 20.00 µg/L       | 0.030    |
| M2-4:2FTS                          | 4.709                | 329.0 -> 309.0 | 60220  | 20.00 µg/L       | 0.040    |
| M2-6:2FTS                          | 6.443                | 429.0 -> 409.0 | 67731  | 20.00 µg/L       | 0.042    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 45495  | 20.00 µg/L       | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 37269  | 20.00 µg/L       | 0.029    |
| M3-HFPO-DA                         | 5.093                | 287.0 -> 169.0 | 0      | 100.00 µg/L m    | 0.039    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.709                | 329.0 -> 309.0 | 60035  | 14.46 µg/L       | 0.040    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 72.3% |          |
| 13C2-6:2FTS                        | 6.443                | 429.0 -> 409.0 | 67686  | 15.53 µg/L       | 0.042    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.6% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 45496  | 16.02 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.1% |          |
| 13C2-PFDoDA                        | 8.478                | 615.0 -> 570.0 | 485874 | 17.41 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.0% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 239877 | 12.41 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 62.0% |          |
| 13C3-PFBS                          | 3.792                | 302.0 -> 99.0  | 18024  | 14.89 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.4% |          |
| 13C3-PFHxS                         | 5.761                | 402.0 -> 99.0  | 19336  | 14.20 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 71.0% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 126048 | 14.54 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 72.7% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 216401 | 15.03 µg/L       | 0.029    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.2% |          |
| 13C5-PFHxA                         | 4.801                | 318.0 -> 273.0 | 154683 | 15.08 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.4% |          |
| 13C5-PFPeA                         | 3.536                | 268.0 -> 223.0 | 106933 | 14.91 µg/L       | 0.045    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.6% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 318345 | 17.20 µg/L       | 0.033    |

7.2.1  
7



### Perfluorinated Compounds by LC/MS/MS

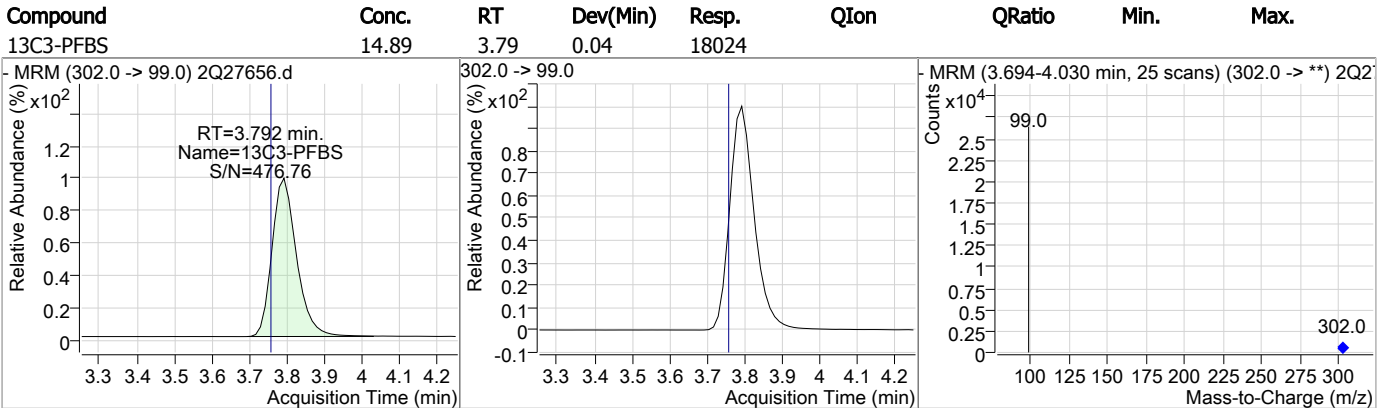
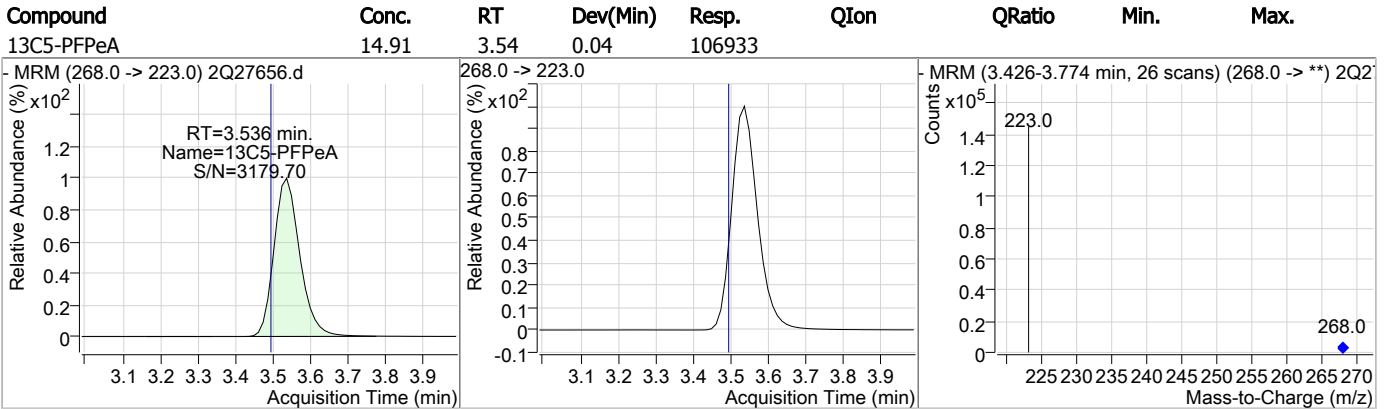
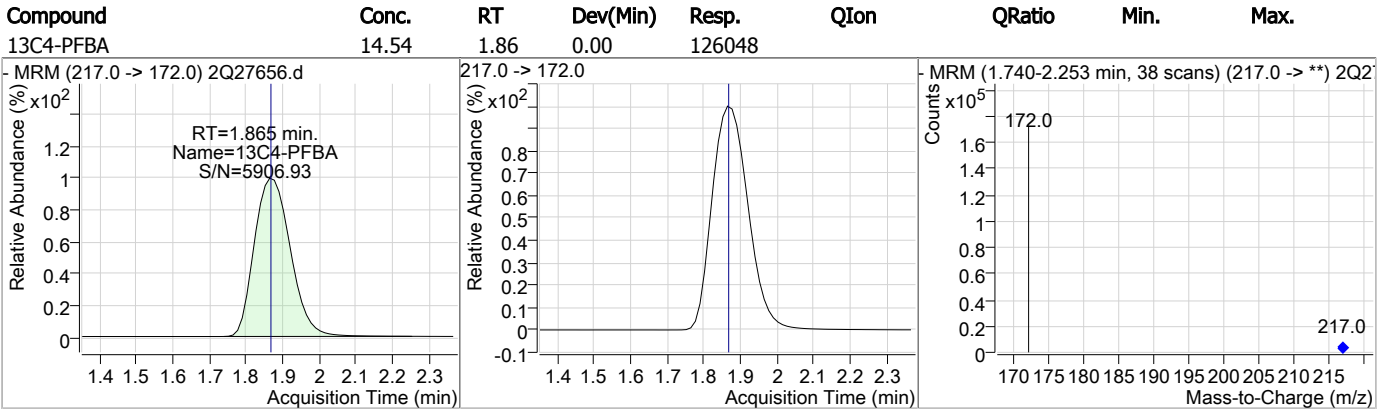
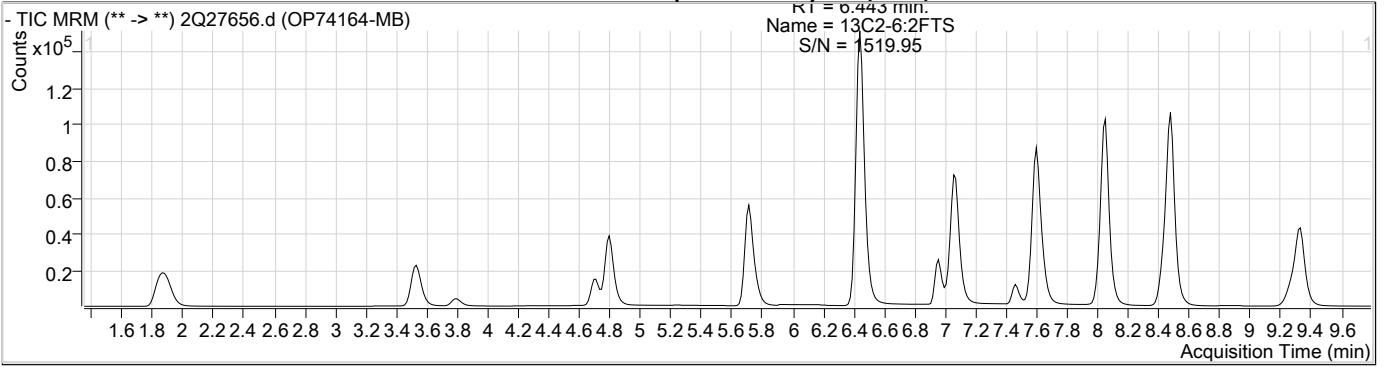
| Compound              | RT                   | QIon           | Resp.  | Conc.             | Units | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|-------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 86.0%  |       |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 425567 | 17.76             | µg/L  | 0.028    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.8%  |       |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 88742  | 15.58             | µg/L  | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 77.9%  |       |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 237584 | 15.95             | µg/L  | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.8%  |       |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 24657  | 14.91             | µg/L  | 0.030    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.5%  |       |          |
| 13C9-PFNA             | 7.078                | 472.0 -> 427.0 | 240038 | 16.75             | µg/L  | 0.033    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.7%  |       |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 37280  | 15.59             | µg/L  | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 78.0%  |       |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 310219 | 19.99             | µg/L  | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |       |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 42675  | 20.00             | µg/L  | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |       |          |
| 13C3-HFPO-DA          | 5.093                | 287.0 -> 169.0 | 0      | 0.00              | µg/L  | m 0.039  |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |       |          |

**Target Compounds**

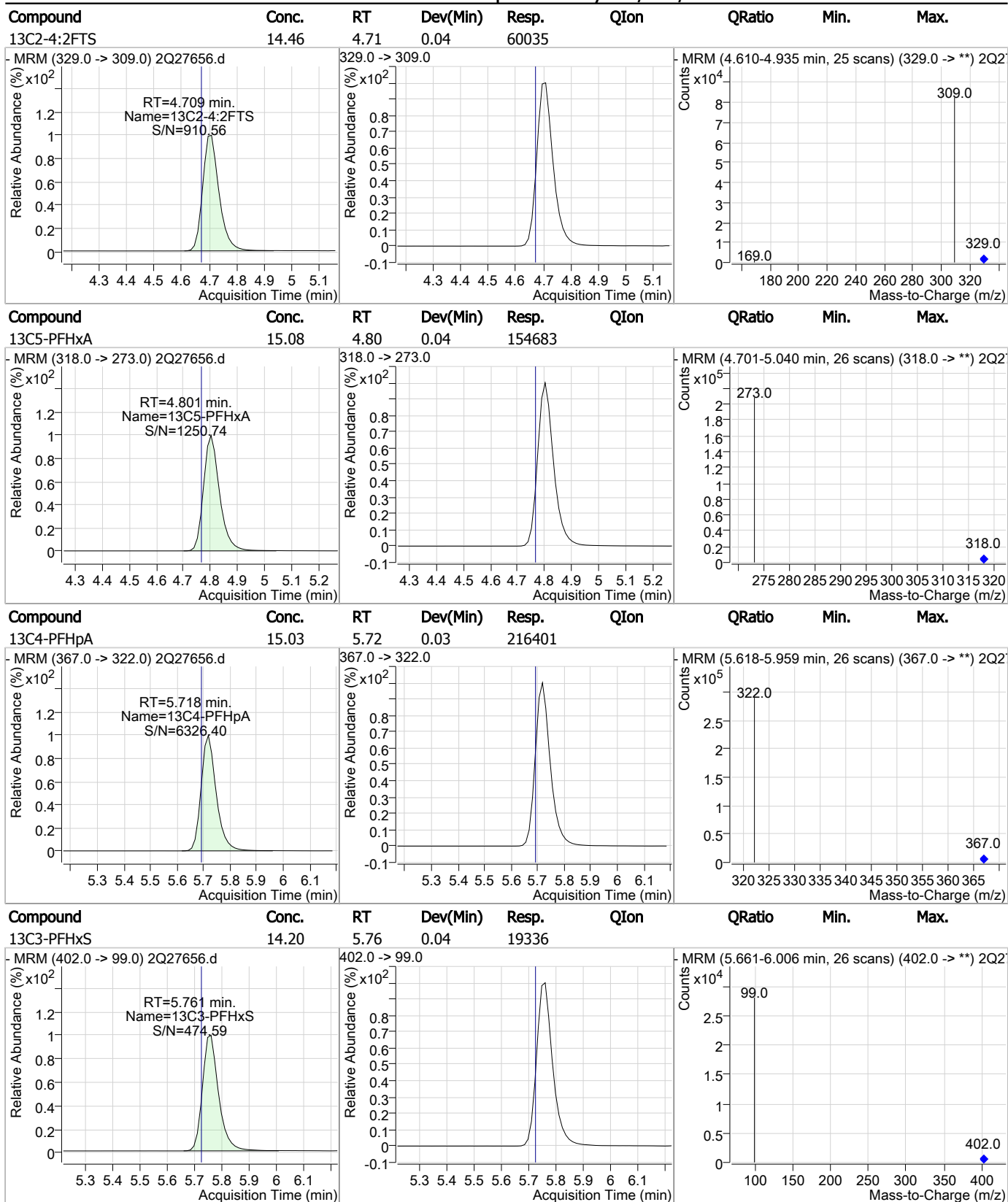
| Compound     | RT | QIon           | Resp. | Conc. | Units | QValue |
|--------------|----|----------------|-------|-------|-------|--------|
| 4:2FTS       | -  | 327.0 -> 307.0 | -     | N.D.  |       |        |
| 6:2FTS       | -  | 427.0 -> 407.0 | -     | N.D.  |       |        |
| 8:2FTS       | -  | 527.0 -> 507.0 | -     | N.D.  |       |        |
| EtFOSAA      | -  | 584.0 -> 419.0 | -     | N.D.  |       |        |
| FOSA         | -  | 498.0 -> 78.0  | -     | N.D.  |       |        |
| MeFOSAA      | -  | 570.0 -> 419.0 | -     | N.D.  |       |        |
| PFBA         | -  | 213.0 -> 169.0 | -     | N.D.  |       |        |
| PFBS         | -  | 299.0 -> 80.0  | -     | N.D.  |       |        |
| PFDA         | -  | 513.0 -> 469.0 | -     | N.D.  |       |        |
| PFDoDA       | -  | 613.0 -> 569.0 | -     | N.D.  |       |        |
| PFDS         | -  | 599.0 -> 80.0  | -     | N.D.  |       |        |
| PFHpA        | -  | 363.0 -> 319.0 | -     | N.D.  |       |        |
| PFHpS        | -  | 449.0 -> 80.0  | -     | N.D.  |       |        |
| PFHxA        | -  | 313.0 -> 269.0 | -     | N.D.  |       |        |
| PFHxS        | -  | 399.0 -> 80.0  | -     | N.D.  |       |        |
| PFNA         | -  | 463.0 -> 419.0 | -     | N.D.  |       |        |
| PFNS         | -  | 549.0 -> 80.0  | -     | N.D.  |       |        |
| PFOA         | -  | 413.0 -> 369.0 | -     | N.D.  |       |        |
| PFOS         | -  | 499.0 -> 80.0  | -     | N.D.  |       |        |
| PFPeA        | -  | 263.0 -> 219.0 | -     | N.D.  |       |        |
| PFPeS        | -  | 349.0 -> 80.0  | -     | N.D.  |       |        |
| PFTeDA       | -  | 713.0 -> 669.0 | -     | N.D.  |       |        |
| PFTrDA       | -  | 663.0 -> 619.0 | -     | N.D.  |       |        |
| PFUnDA       | -  | 563.0 -> 519.0 | -     | N.D.  |       |        |
| 11Cl-PF3OUdS | -  | 631.0 -> 451.0 | -     | N.D.  |       |        |
| 9Cl-PF3ONS   | -  | 531.0 -> 351.0 | -     | N.D.  |       |        |
| ADONA        | -  | 377.0 -> 251.0 | -     | N.D.  |       |        |
| HFPO-DA      | -  | 329.0 -> 169.0 | -     | N.D.  |       |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



7.2.1

7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-6:2FTS | 15.53 | 6.44 | 0.04     | 67686  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 15.95 | 6.45 | 0.03     | 237584 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 19.99 | 6.45 | 0.03     | 310219 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-FOSA   | 15.58 | 6.96 | 0.03     | 88742  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.2.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOS  | 14.91 | 7.05 | 0.03     | 24657  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| M4-PFOS    | 20.00 | 7.05 | 0.03     | 42675  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| 13C9-PFNA  | 16.75 | 7.08 | 0.03     | 240038 |      |        |      |      |
|            |       |      |          |        |      |        |      |      |
| d3-MeFOSAA | 15.59 | 7.46 | 0.03     | 37280  |      |        |      |      |
|            |       |      |          |        |      |        |      |      |

7.2.1  
7

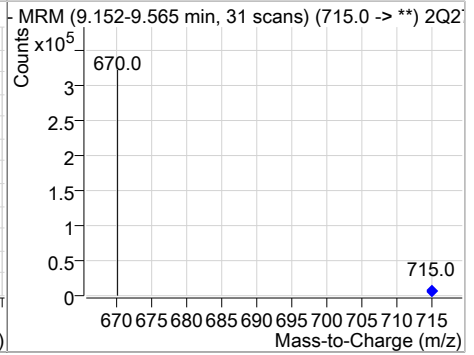
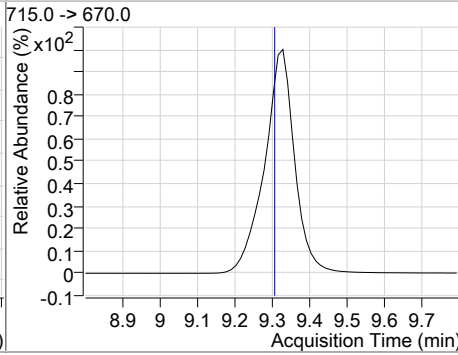
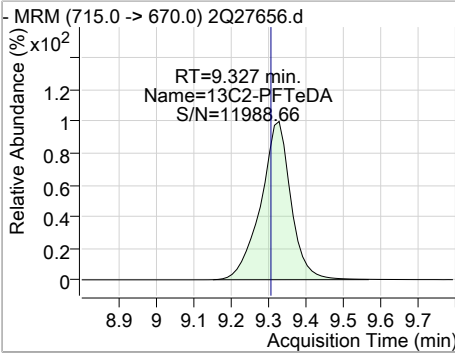
### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min)                 | Resp.  | QIon | QRatio  | Min. | Max. |
|---|-------|------|--------------------------|--------|------|---|------|------|
| 13C6-PFDA   | 17.20 | 7.61 | 0.03                     | 318345 |      |   |      |      |
| <p>MRM (519.0 -&gt; 474.0) 2Q27656.d<br/>                     RT=7.607 min.<br/>                     Name=13C6-PFDA<br/>                     S/N=13451.13</p>   |       |      | <p>519.0 -&gt; 474.0</p> |        |      | <p>MRM (7.490-7.846 min, 27 scans) (519.0 -&gt; **) 2Q2</p> |      |      |
| 13C2-8:2FTS   | 16.02 | 7.64 | 0.03                     | 45496  |      |   |      |      |
| <p>MRM (529.0 -&gt; 509.0) 2Q27656.d<br/>                     RT=7.642 min.<br/>                     Name=13C2-8:2FTS<br/>                     S/N=1851.56</p>  |       |      | <p>529.0 -&gt; 509.0</p> |        |      | <p>MRM (7.528-7.881 min, 27 scans) (529.0 -&gt; **) 2Q2</p> |      |      |
| 13C7-PFUnDA   | 17.76 | 8.05 | 0.03                     | 425567 |      |   |      |      |
| <p>MRM (570.0 -&gt; 525.0) 2Q27656.d<br/>                     RT=8.054 min.<br/>                     Name=13C7-PFUnDA<br/>                     S/N=13376.40</p> |       |      | <p>570.0 -&gt; 525.0</p> |        |      | <p>MRM (7.941-8.295 min, 27 scans) (570.0 -&gt; **) 2Q2</p> |      |      |
| 13C2-PFDoDA   | 17.41 | 8.48 | 0.03                     | 485874 |      |   |      |      |
| <p>MRM (615.0 -&gt; 570.0) 2Q27656.d<br/>                     RT=8.478 min.<br/>                     Name=13C2-PFDoDA<br/>                     S/N=23765.71</p> |       |      | <p>615.0 -&gt; 570.0</p> |        |      | <p>MRM (8.339-8.718 min, 29 scans) (615.0 -&gt; **) 2Q2</p> |      |      |

7.2.1  
7

Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 12.41 | 9.33 | 0.02     | 239877 |      |        |      |      |



7.2.1  
7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27692.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 4:01:12 PM  
 Sample Name : op74180-mb  
 Vial : Vial 14  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 252927 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 36813  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 105190 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 89105  | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 127370 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 182174 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 194635 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 192070 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 247178 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 311776 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 381929 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 203824 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 71163  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 15320  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16629  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 20709  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 49104  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 57103  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 36490  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 31787  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 49122  | 16.52 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.6%  |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 57083  | 17.79 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.9%  |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 36482  | 16.45 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.3%  |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 381855 | 20.30 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 203156 | 15.82 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.1%  |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 15318  | 16.80 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.0%  |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16642  | 16.32 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.6%  |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 104906 | 17.49 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.5%  |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 181961 | 17.59 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.0%  |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 127219 | 17.51 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.5%  |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 89113  | 17.53 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.7%  |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 247135 | 18.11 µg/L        | 0.000    |

7.22  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.6%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 311558 | 18.41 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.0%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 71138  | 17.54 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.7%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 194586 | 18.65 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.3%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 20720  | 15.90 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.5%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 191966 | 18.13 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.7%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 31853  | 16.62 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.1%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 253060 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 36809  | 19.99 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

Target Compounds

| Target Compounds | RT | QIon           | Resp. | Conc. Units | QValue |
|------------------|----|----------------|-------|-------------|--------|
| 4:2FTS           | -  | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -  | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -  | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -  | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -  | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -  | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -  | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -  | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -  | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -  | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -  | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -  | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -  | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -  | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -  | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -  | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -  | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -  | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -  | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | -  | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS            | -  | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -  | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTrDA           | -  | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -  | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -  | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -  | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -  | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -  | 329.0 -> 169.0 | -     | N.D.        |        |

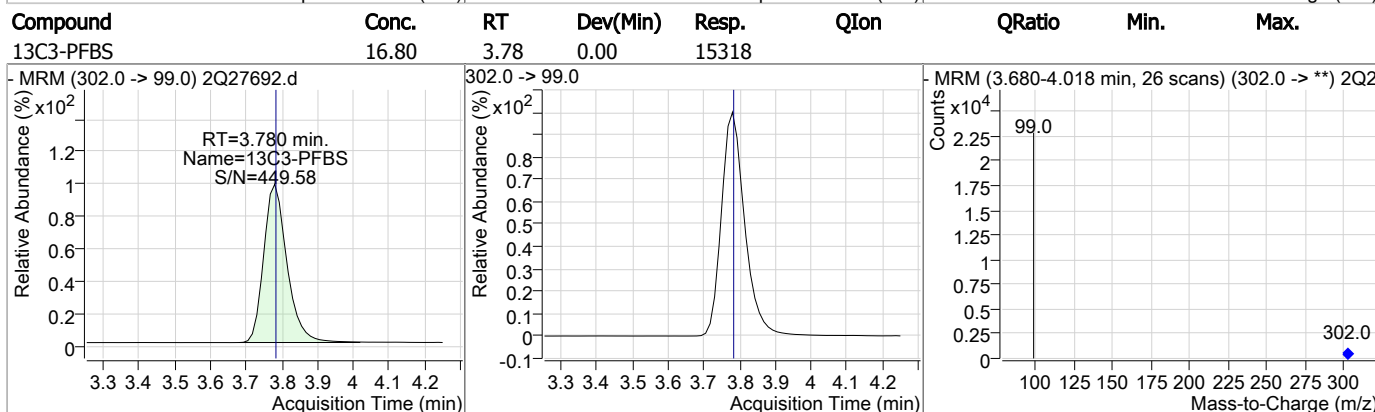
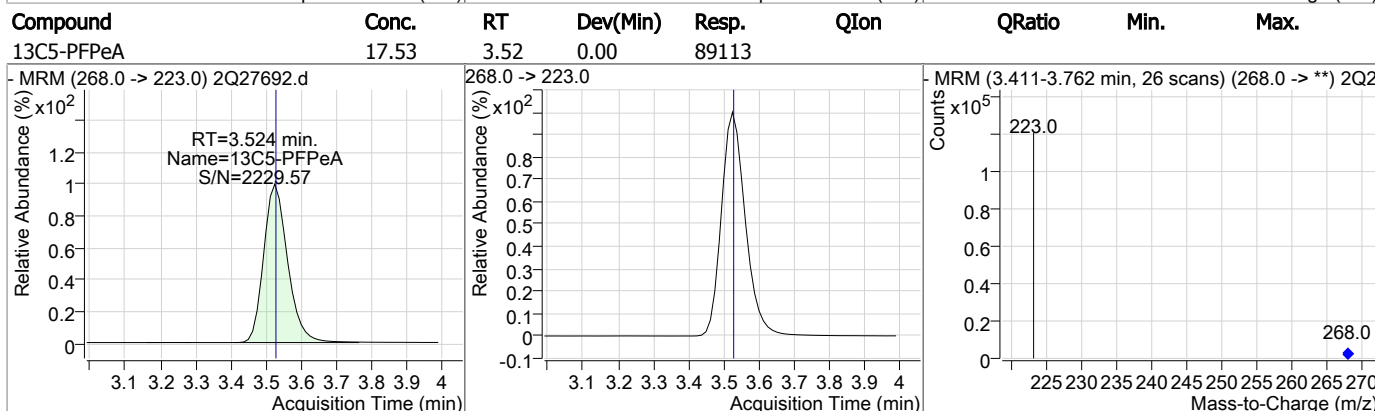
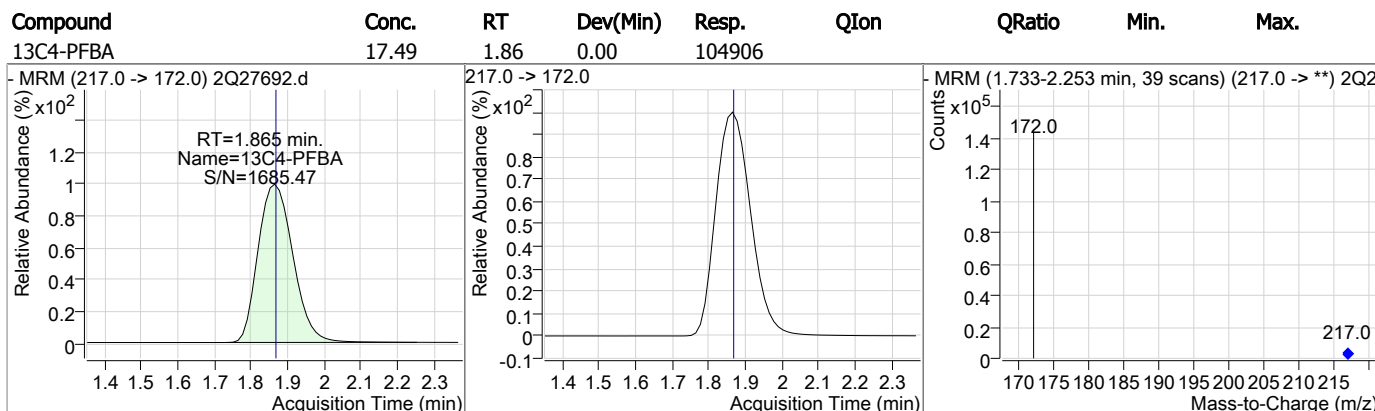
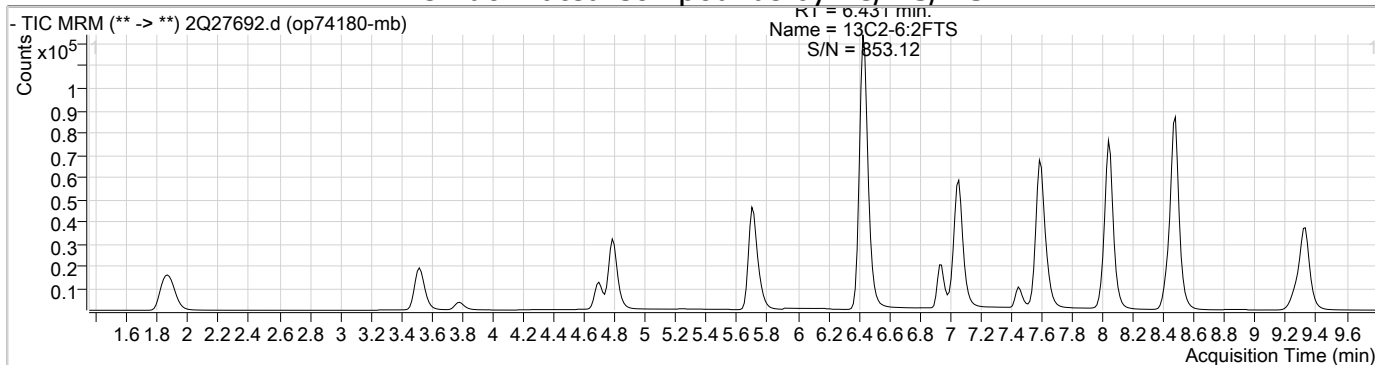
# = Qualifier out of range, m = manually integrated, + = Area summed

7.2.2

7

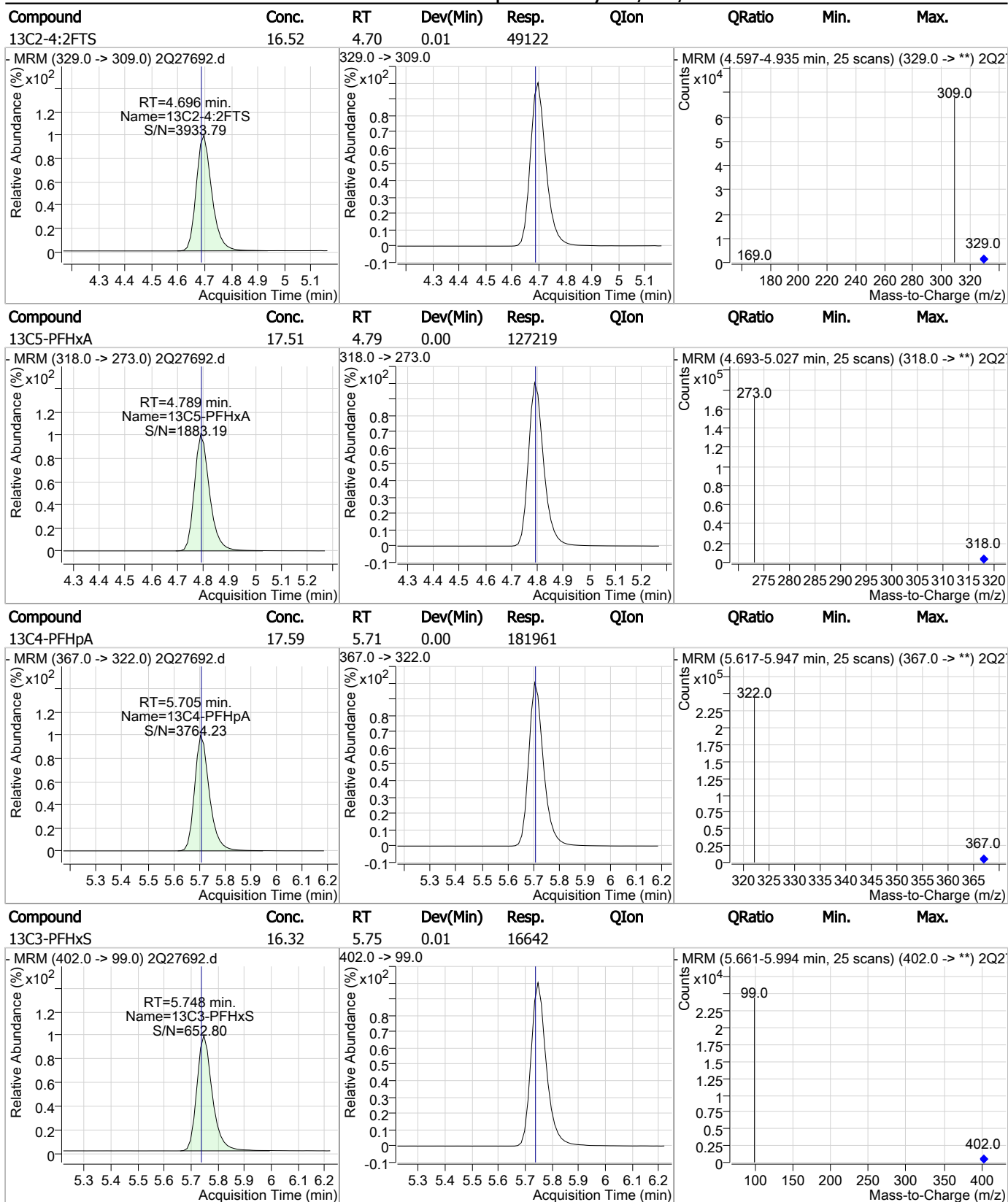


### Perfluorinated Compounds by LC/MS/MS



7.2.2  
7

### Perfluorinated Compounds by LC/MS/MS



7.22  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-6:2FTS | 17.79 | 6.43 | 0.02     | 57083  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 18.65 | 6.43 | 0.00     | 194586 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 19.99 | 6.44 | 0.00     | 253060 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-FOSA   | 17.54 | 6.93 | -0.01    | 71138  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.2.2  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound                        | Conc. | RT   | Dev(Min)       | Resp.  | QIon | QRatio   | Min. | Max. |
|---------------------------------|-------|------|----------------|--------|------|--|------|------|
| M4-PFOS                         | 19.99 | 7.05 | 0.01           | 36809  |      |  |      |      |
| -MRM (503.0 -> 80.0) 2Q27692.d  |       |      | 503.0 -> 80.0  |        |      | -MRM (6.933-7.278 min, 26 scans) (503.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |
| 13C8-PFOS                       | 15.90 | 7.05 | 0.00           | 20720  |      |  |      |      |
| -MRM (507.0 -> 99.0) 2Q27692.d  |       |      | 507.0 -> 99.0  |        |      | -MRM (6.943-7.289 min, 26 scans) (507.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |
| 13C9-PFNA                       | 18.13 | 7.07 | 0.00           | 191966 |      |  |      |      |
| -MRM (472.0 -> 427.0) 2Q27692.d |       |      | 472.0 -> 427.0 |        |      | -MRM (6.948-7.305 min, 27 scans) (472.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |
| d3-MeFOSAA                      | 16.62 | 7.45 | 0.00           | 31853  |      |  |      |      |
| -MRM (573.0 -> 419.0) 2Q27692.d |       |      | 573.0 -> 419.0 |        |      | -MRM (7.384-7.662 min, 21 scans) (573.0 -> **) 2Q2 |      |      |
|                                 |       |      |                |        |      |  |      |      |

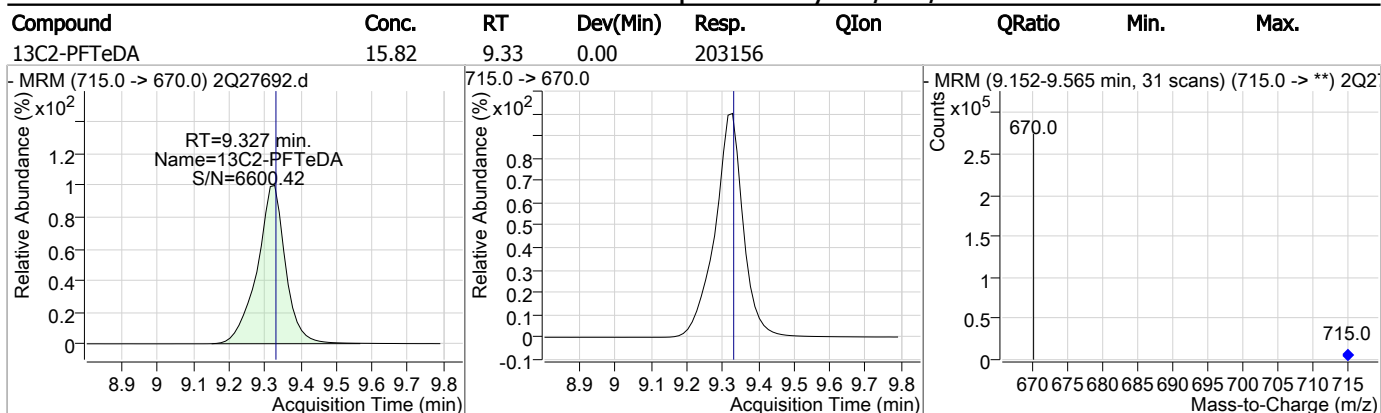
7.2.2  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA   | 18.11 | 7.59 | 0.00     | 247135 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-8:2FTS | 16.45 | 7.63 | 0.00     | 36482  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C7-PFUnDA | 18.41 | 8.04 | 0.00     | 311558 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-PFDoDA | 20.30 | 8.48 | 0.01     | 381855 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.22  
7

### Perfluorinated Compounds by LC/MS/MS



7.22  
7

## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1985.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 1:21:10 PM  
 Sample Name : op74233-mb  
 Vial : P3-B5  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74233,S3Q54,130,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| M4-PFBA                            | 1.714                | 217.0 -> 172.0 | 318068 | 20.00 µg/L       | 0.013    |
| M5-PFPeA                           | 3.573                | 268.0 -> 223.0 | 208032 | 20.00 µg/L       | 0.013    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 283249 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.904                | 367.0 -> 322.0 | 325368 | 20.00 µg/L       | 0.013    |
| M8-PFOA                            | 6.621                | 421.0 -> 376.0 | 314246 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.213                | 472.0 -> 427.0 | 303068 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 330741 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 294209 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 264597 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 278907 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 203258 | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.892                | 302.0 -> 99.0  | 48383  | 20.00 µg/L       | 0.013    |
| M3-PFHxS                           | 5.947                | 402.0 -> 99.0  | 49194  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 68600  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 85498  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.606                | 429.0 -> 409.0 | 84397  | 20.00 µg/L       | 0.013    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 49243  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.735                | 573.0 -> 419.0 | 38764  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| 13C2-PFOA                          | 6.622                | 415.0 -> 370.0 | 405989 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.198                | 503.0 -> 80.0  | 118878 | 20.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 85186  | 17.95 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 89.8% |          |
| 13C2-6:2FTS                        | 6.606                | 429.0 -> 409.0 | 84391  | 18.47 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.3% |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 49099  | 17.56 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.8% |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 264659 | 13.53 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 67.7% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 278923 | 15.25 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.2% |          |
| 13C3-PFBS                          | 3.892                | 302.0 -> 99.0  | 48255  | 19.13 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.7% |          |
| 13C3-PFHxS                         | 5.947                | 402.0 -> 99.0  | 49128  | 19.44 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.2% |          |
| 13C4-PFBA                          | 1.714                | 217.0 -> 172.0 | 313390 | 19.22 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.1% |          |
| 13C4-PFHpA                         | 5.904                | 367.0 -> 322.0 | 324833 | 19.46 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.3% |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 282400 | 19.19 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.9% |          |
| 13C5-PFPeA                         | 3.573                | 268.0 -> 223.0 | 207871 | 18.77 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.9% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 331410 | 19.90 µg/L       | 0.000    |

7.2.3  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.5%  |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 294222 | 15.87 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.4%  |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 203210 | 19.31 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.5%  |          |
| 13C8-PFOA             | 6.621                | 421.0 -> 376.0 | 314176 | 19.86 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.3%  |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 69121  | 17.94 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 89.7%  |          |
| 13C9-PFNA             | 7.213                | 472.0 -> 427.0 | 302515 | 20.24 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.2% |          |
| d3-MeFOSAA            | 7.735                | 573.0 -> 419.0 | 38806  | 16.35 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.7%  |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |
| M2-PFOA               | 6.622                | 415.0 -> 370.0 | 405989 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.198                | 503.0 -> 80.0  | 118878 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

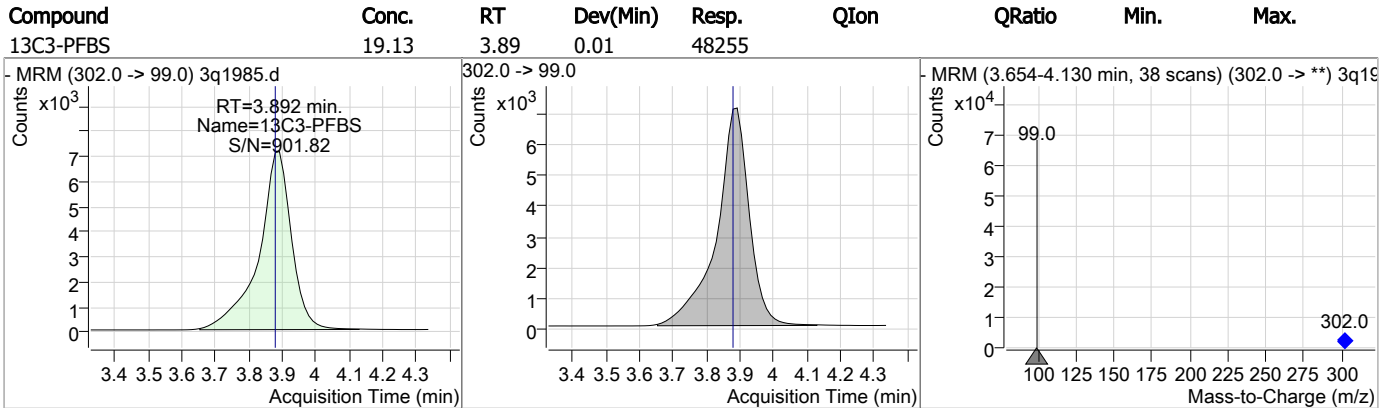
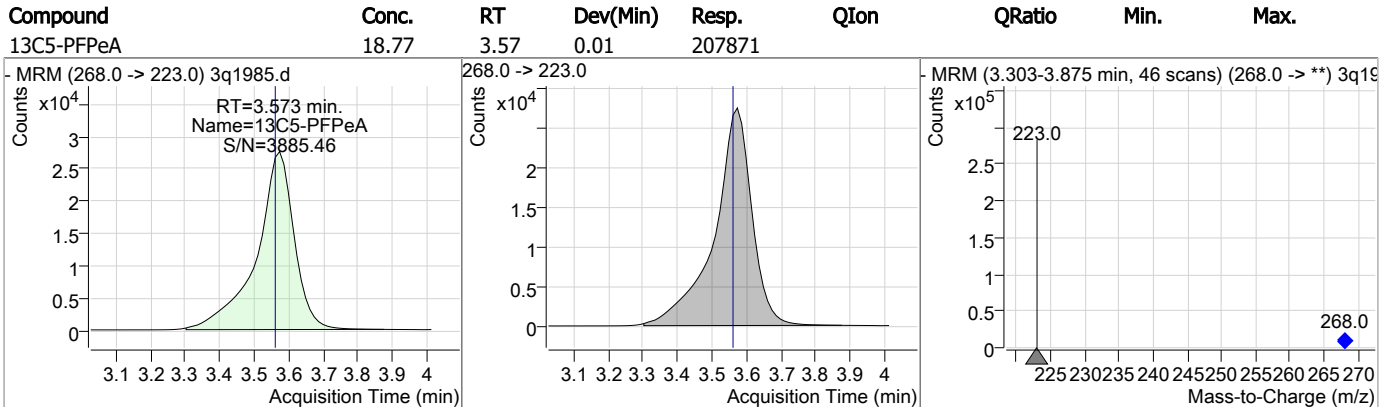
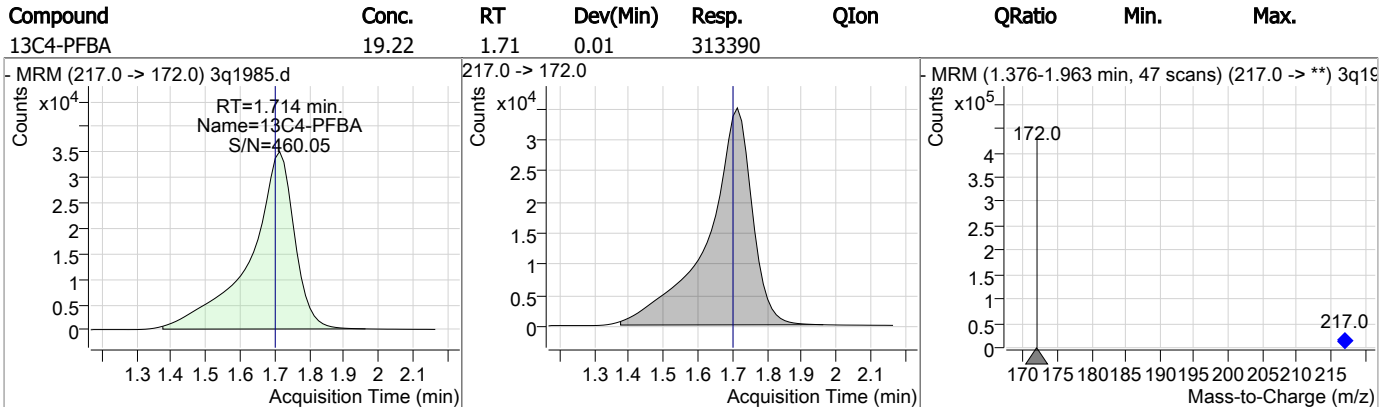
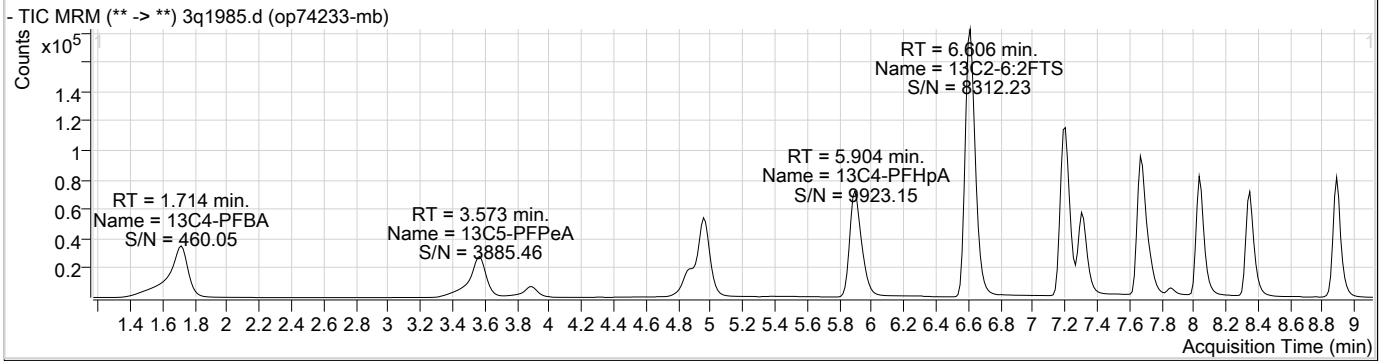
**Target Compounds**

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS       | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS       | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA      | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA         | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA      | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA         | -     | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS         | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA         | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA       | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS         | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA        | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS        | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA        | -     | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS        | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA         | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS         | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA         | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS         | 7.048 | 499.0 -> 80.0  | 1101  | 0.35 µg/L m | 91     |
| PFPeA        | -     | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS        | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA       | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA      | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA       | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

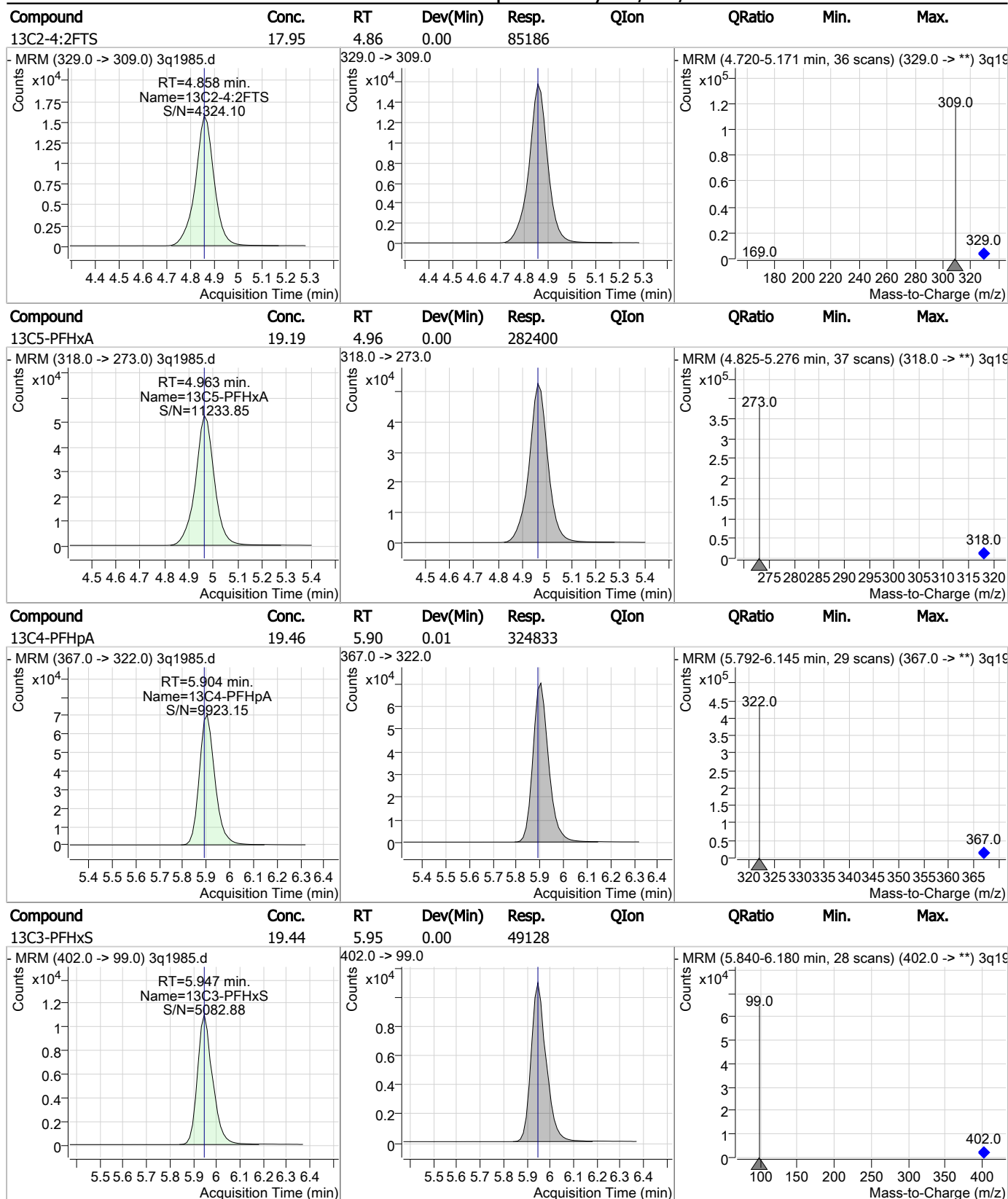
7.2.3  
7

### Perfluorinated Compounds by LC/MS/MS



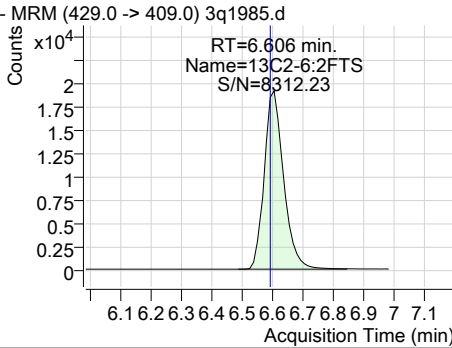
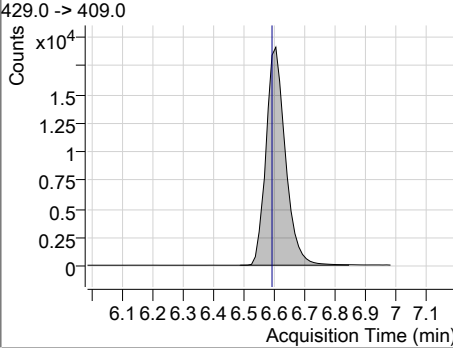
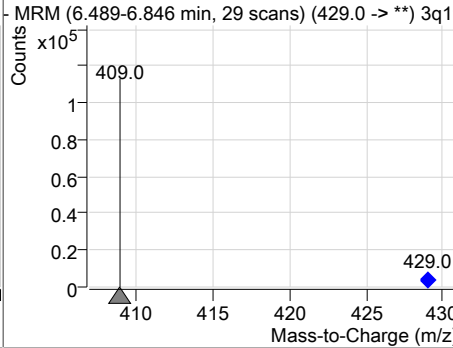
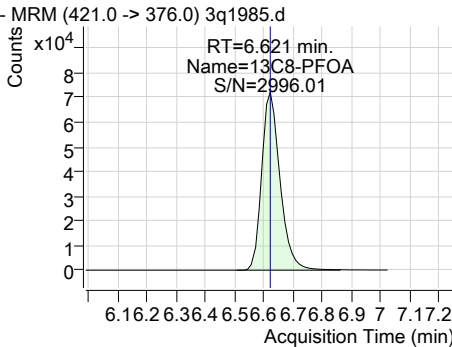
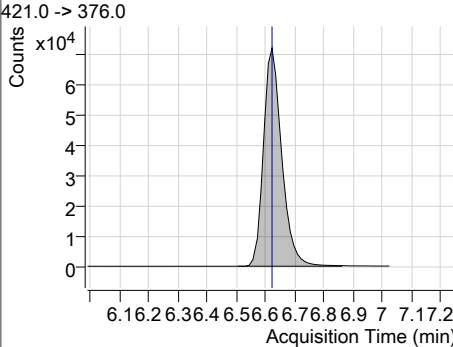
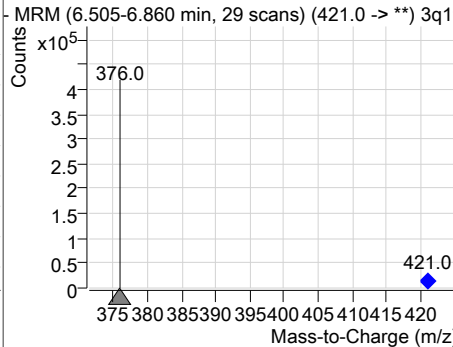
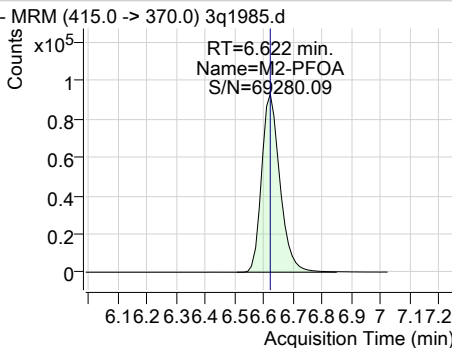
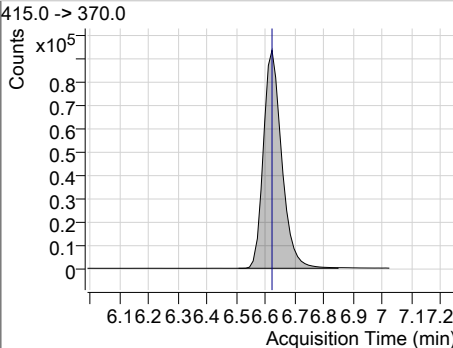
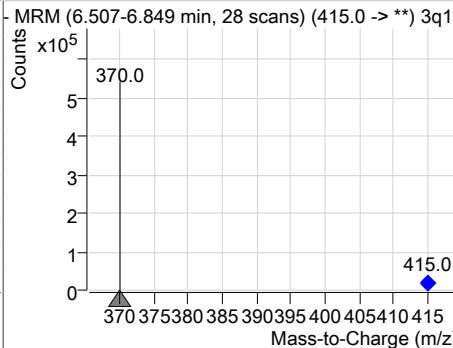
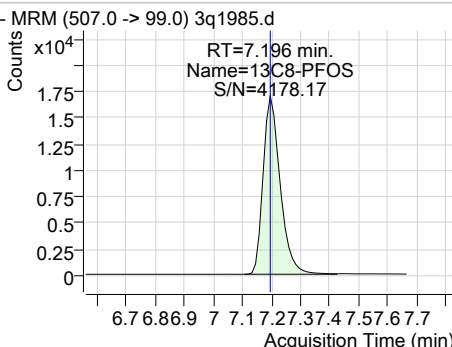
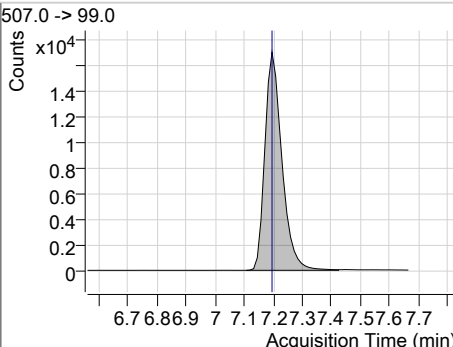
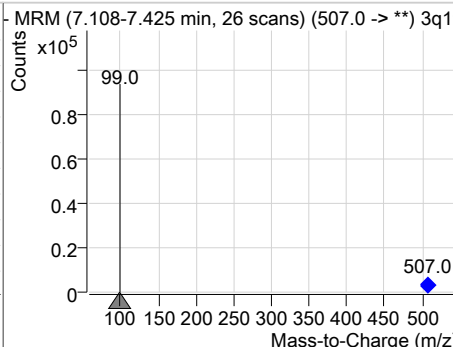
7.2.3  
7

### Perfluorinated Compounds by LC/MS/MS



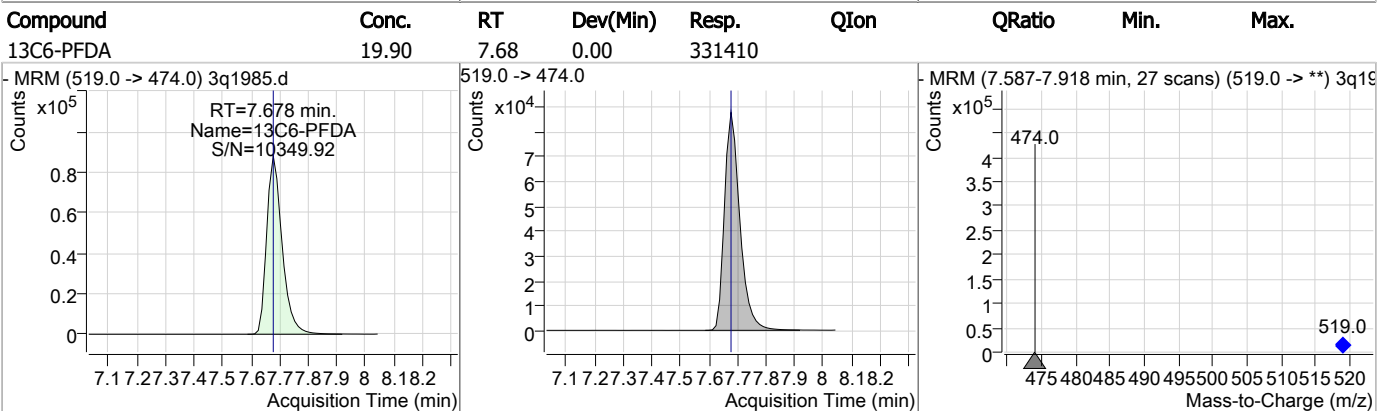
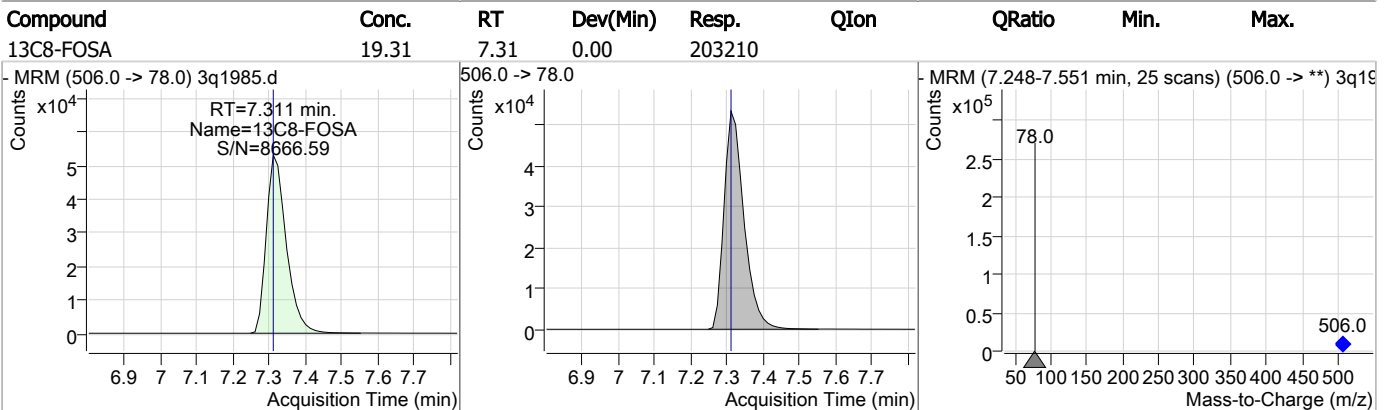
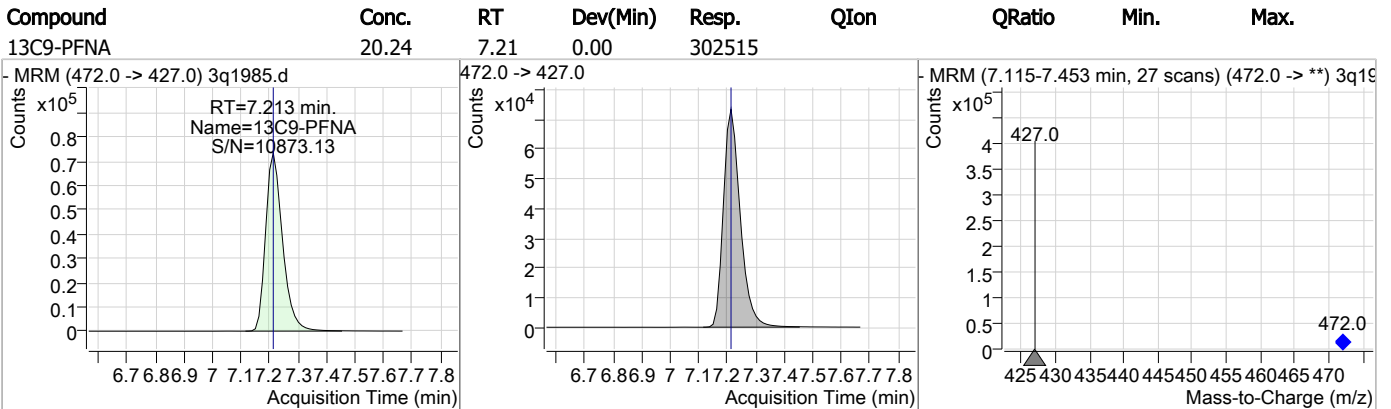
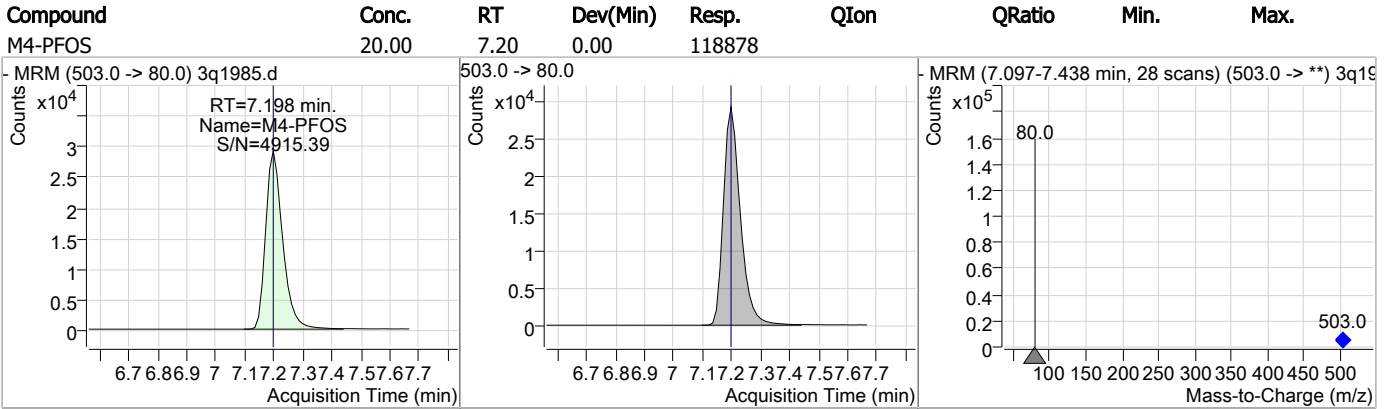
7.2.3  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon | QRatio   | Min. | Max. |
|--|-------|------|---|--------|------|--|------|------|
| 13C2-6:2FTS  | 18.47 | 6.61 | 0.01  | 84391  |      |  |      |      |
|    |       |      |    |        |      |    |      |      |
| 13C8-PFOA  | 19.86 | 6.62 | 0.00  | 314176 |      |  |      |      |
|    |       |      |    |        |      |    |      |      |
| M2-PFOA  | 20.00 | 6.62 | 0.00  | 405989 |      |  |      |      |
|  |       |      |  |        |      |  |      |      |
| 13C8-PFOS  | 17.94 | 7.20 | 0.00  | 69121  |      |  |      |      |
|  |       |      |  |        |      |  |      |      |

7.2.3  
7

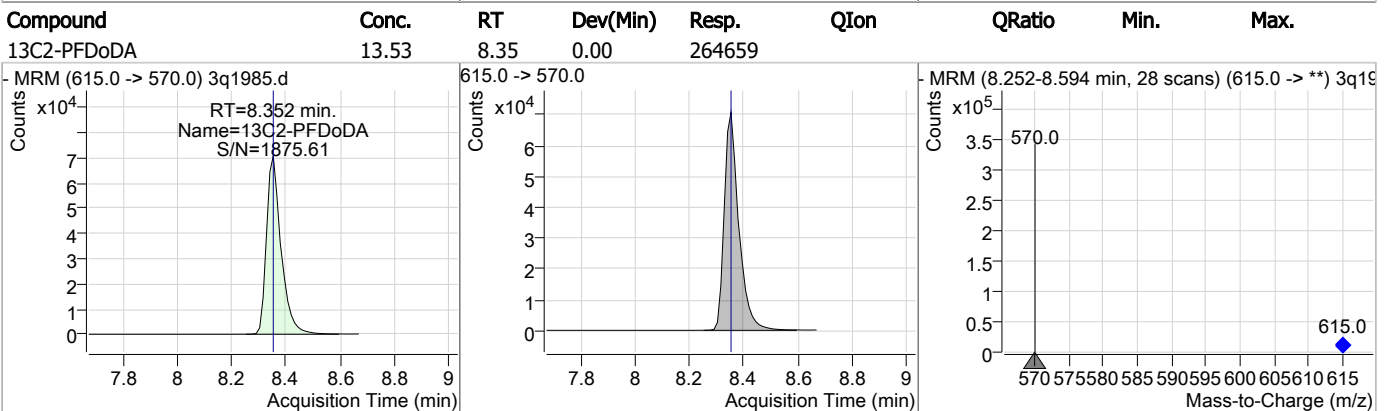
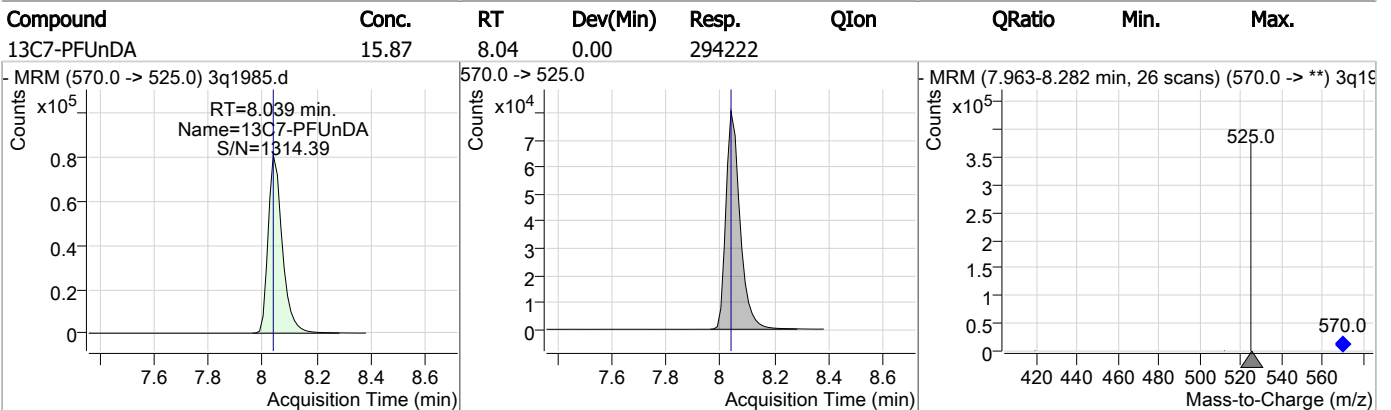
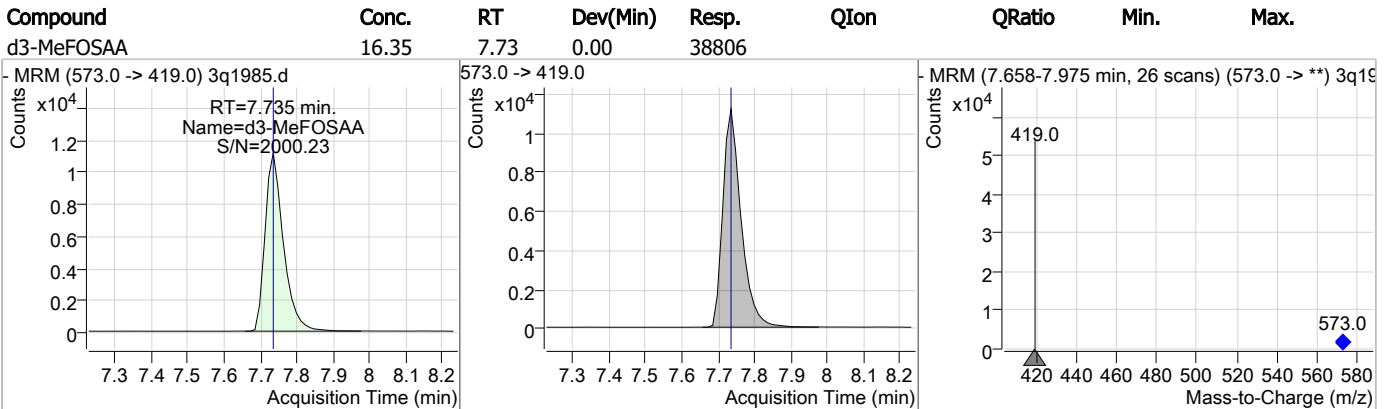
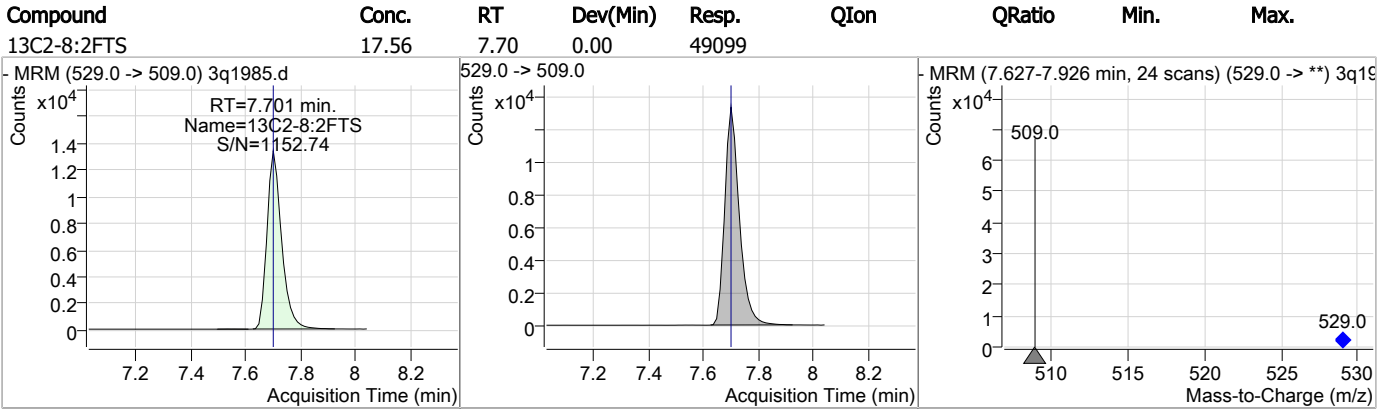
Perfluorinated Compounds by LC/MS/MS



7.2.3

7

### Perfluorinated Compounds by LC/MS/MS

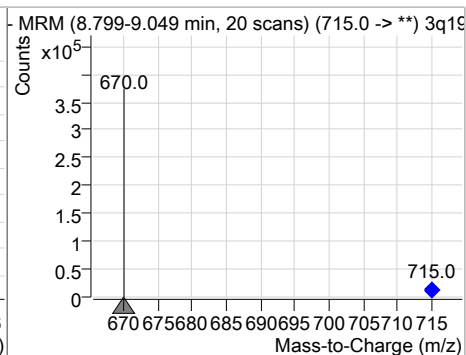
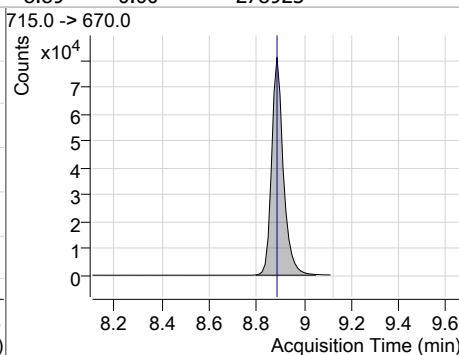
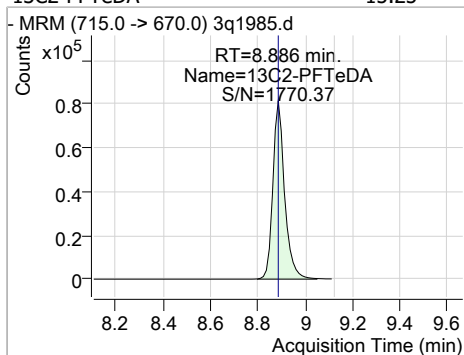


7.2.3

7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.25 | 8.89 | 0.00     | 278923 |      |        |      |      |



7.2.3

7

# Manual Integration Approval Summary

**Sample Number:** OP74233-MB      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1985.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 13:21      **Supervisor approved:** 03/24/19 19:15 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.2.3.1

7



### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27626.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 8:48:48 AM  
 Sample Name : iblk  
 Vial : Vial 1  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op73501,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.            | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                  |             |          |
| 13C2-PFOA                          | 6.409                | 415.0 -> 370.0 | 320292           | 20.00 µg/L  | -0.008   |
| 13C4-PFOS                          | 7.023                | 503.0 -> 80.0  | 50457            | 20.00 µg/L  | 0.006    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 135558           | 20.00 µg/L  | -0.013   |
| M5-PFPeA                           | 3.499                | 268.0 -> 223.0 | 112991           | 20.00 µg/L  | 0.007    |
| M5-PFHxA                           | 4.764                | 318.0 -> 273.0 | 159956           | 20.00 µg/L  | 0.001    |
| M4-PFHpA                           | 5.680                | 367.0 -> 322.0 | 227025           | 20.00 µg/L  | -0.008   |
| M8-PFOA                            | 6.407                | 421.0 -> 376.0 | 230985           | 20.00 µg/L  | -0.009   |
| M9-PFNA                            | 7.039                | 472.0 -> 427.0 | 237848           | 20.00 µg/L  | -0.006   |
| M6-PFDA                            | 7.582                | 519.0 -> 474.0 | 315609           | 20.00 µg/L  | 0.007    |
| M7-PFUnDA                          | 8.029                | 570.0 -> 525.0 | 385589           | 20.00 µg/L  | 0.003    |
| M2-PFDoDA                          | 8.453                | 615.0 -> 570.0 | 408919           | 20.00 µg/L  | 0.003    |
| M2-PFTeDA                          | 9.302                | 715.0 -> 670.0 | 253839           | 20.00 µg/L  | 0.000    |
| M8-FOSA                            | 6.919                | 506.0 -> 78.0  | 99176            | 20.00 µg/L  | -0.008   |
| M3-PFBS                            | 3.755                | 302.0 -> 99.0  | 19536            | 20.00 µg/L  | 0.000    |
| M3-PFHxS                           | 5.723                | 402.0 -> 99.0  | 21693            | 20.00 µg/L  | 0.001    |
| M8-PFOS                            | 7.020                | 507.0 -> 99.0  | 28239            | 20.00 µg/L  | 0.005    |
| M2-4:2FTS                          | 4.671                | 329.0 -> 309.0 | 60992            | 20.00 µg/L  | 0.003    |
| M2-6:2FTS                          | 6.403                | 429.0 -> 409.0 | 64583            | 20.00 µg/L  | 0.002    |
| M2-8:2FTS                          | 7.617                | 529.0 -> 509.0 | 42726            | 20.00 µg/L  | 0.007    |
| M3-MeFOSAA                         | 7.434                | 573.0 -> 419.0 | 38545            | 20.00 µg/L  | 0.004    |
| M3-HFPO-DA                         | 5.056                | 287.0 -> 169.0 | 184062           | 100.00 µg/L | 0.001    |
| <b>System Monitoring Compounds</b> |                      |                |                  |             |          |
| 13C2-4:2FTS                        | 4.671                | 329.0 -> 309.0 | 60986            | 14.69 µg/L  | 0.003    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 73.5% |             |          |
| 13C2-6:2FTS                        | 6.403                | 429.0 -> 409.0 | 64744            | 14.85 µg/L  | 0.002    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 74.3% |             |          |
| 13C2-8:2FTS                        | 7.617                | 529.0 -> 509.0 | 42704            | 15.04 µg/L  | 0.007    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 75.2% |             |          |
| 13C2-PFDoDA                        | 8.453                | 615.0 -> 570.0 | 408652           | 14.64 µg/L  | 0.003    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 73.2% |             |          |
| 13C2-PFTeDA                        | 9.302                | 715.0 -> 670.0 | 253831           | 13.13 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 65.7% |             |          |
| 13C3-PFBS                          | 3.755                | 302.0 -> 99.0  | 19551            | 16.15 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 80.7% |             |          |
| 13C3-PFHxS                         | 5.723                | 402.0 -> 99.0  | 21658            | 15.90 µg/L  | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 79.5% |             |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 135085           | 15.58 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 77.9% |             |          |
| 13C4-PFHpA                         | 5.680                | 367.0 -> 322.0 | 226777           | 15.75 µg/L  | -0.008   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 78.8% |             |          |
| 13C5-PFHxA                         | 4.764                | 318.0 -> 273.0 | 159916           | 15.59 µg/L  | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 78.0% |             |          |
| 13C5-PFPeA                         | 3.499                | 268.0 -> 223.0 | 112813           | 15.73 µg/L  | 0.007    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 78.7% |             |          |
| 13C6-PFDA                          | 7.582                | 519.0 -> 474.0 | 315765           | 17.06 µg/L  | 0.007    |

7.24  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|-----------------------|----------------------|----------------|--------|------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 85.3% |          |
| 13C7-PFUnDA           | 8.029                | 570.0 -> 525.0 | 385271 | 16.08 µg/L       | 0.003    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 80.4% |          |
| 13C8-FOSA             | 6.919                | 506.0 -> 78.0  | 99162  | 17.41 µg/L       | -0.008   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.1% |          |
| 13C8-PFOA             | 6.407                | 421.0 -> 376.0 | 230931 | 15.51 µg/L       | -0.009   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 77.5% |          |
| 13C8-PFOS             | 7.020                | 507.0 -> 99.0  | 28220  | 17.06 µg/L       | 0.005    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 85.3% |          |
| 13C9-PFNA             | 7.039                | 472.0 -> 427.0 | 237743 | 16.59 µg/L       | -0.006   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.9% |          |
| d3-MeFOSAA            | 7.434                | 573.0 -> 419.0 | 38559  | 16.13 µg/L       | 0.004    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 80.6% |          |
| M2-PFOA               | 6.409                | 415.0 -> 370.0 | 320354 | 19.99 µg/L       | -0.008   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| M4-PFOS               | 7.023                | 503.0 -> 80.0  | 49918  | 19.78 µg/L       | 0.006    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.9% |          |
| 13C3-HFPO-DA          | 5.056                | 287.0 -> 169.0 | 184062 | 90.61 µg/L       | 0.001    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 90.6% |          |

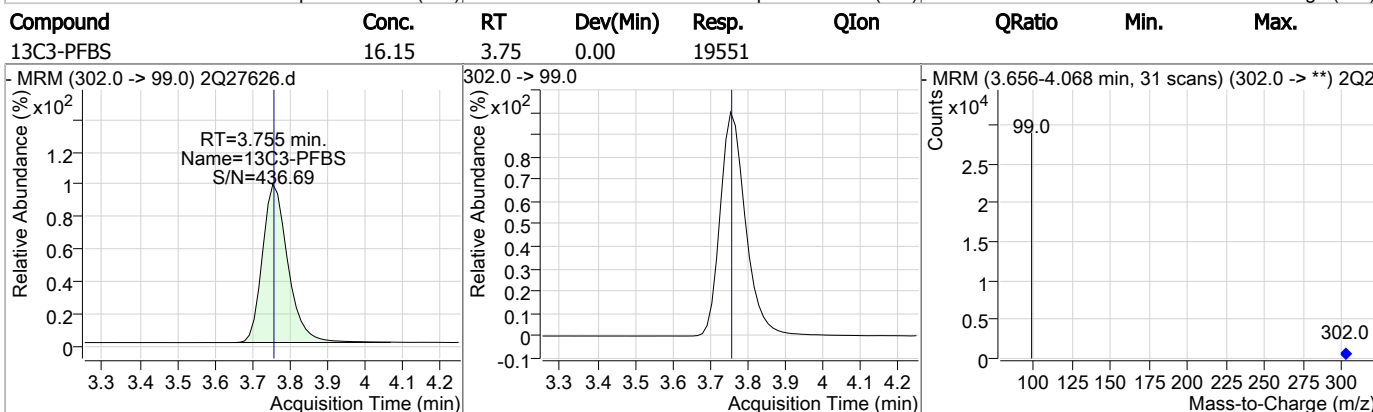
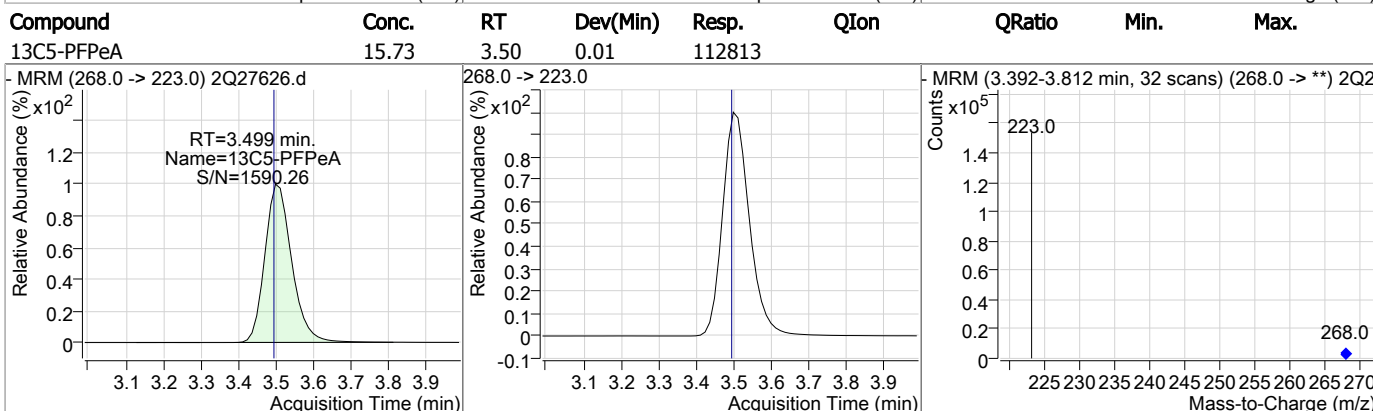
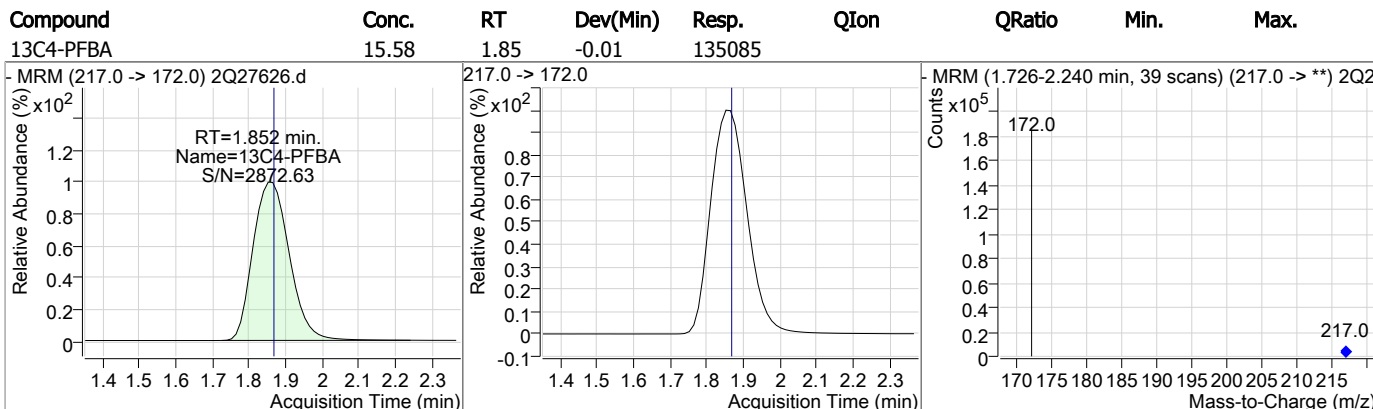
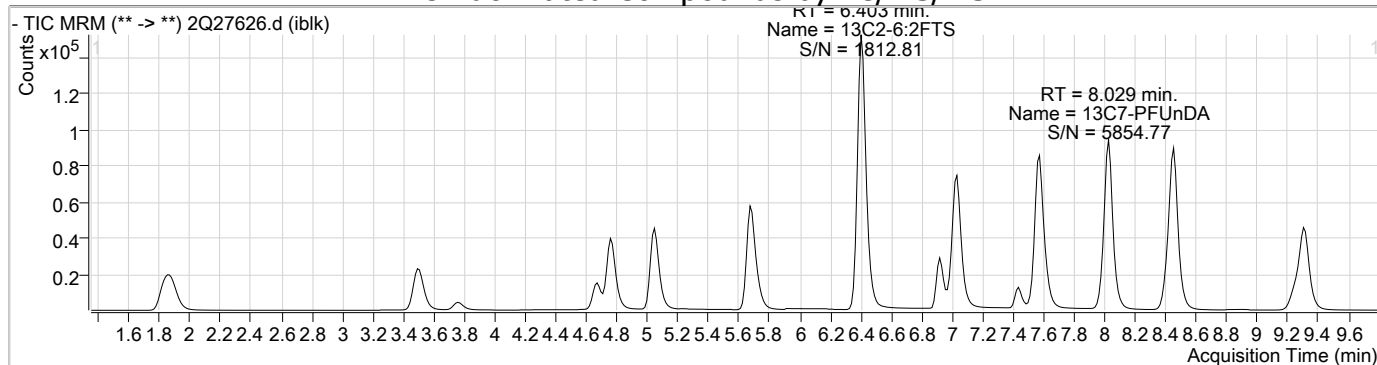
**Target Compounds**

| Target Compounds | RT | QIon           | Resp. | Conc. Units | QValue |
|------------------|----|----------------|-------|-------------|--------|
| 4:2FTS           | -  | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -  | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -  | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -  | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -  | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -  | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -  | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -  | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -  | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -  | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -  | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -  | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -  | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -  | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -  | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -  | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -  | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -  | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -  | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | -  | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS            | -  | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | -  | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTrDA           | -  | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -  | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -  | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -  | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -  | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -  | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

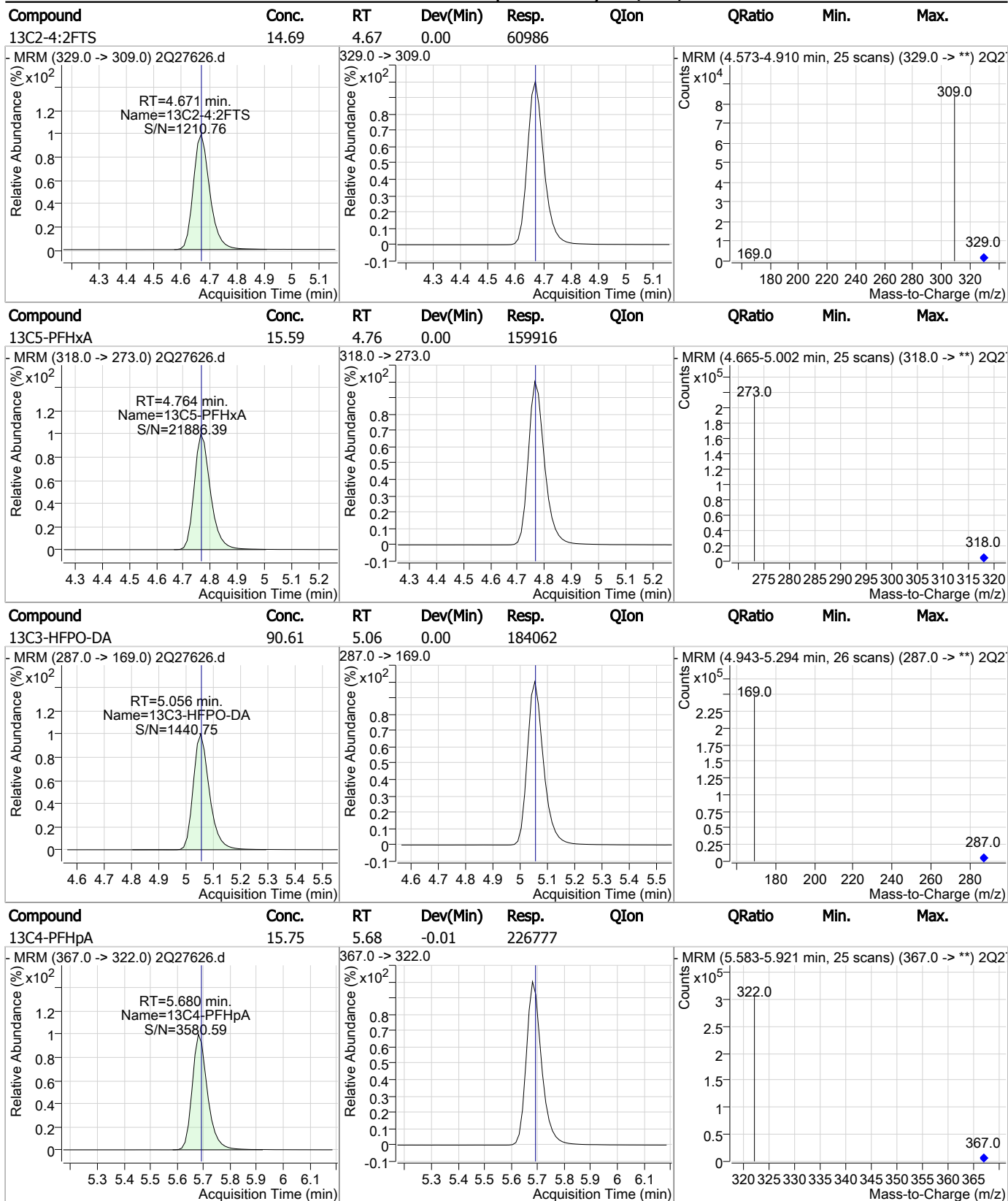
7.2.4  
7

### Perfluorinated Compounds by LC/MS/MS



7.2.4  
7

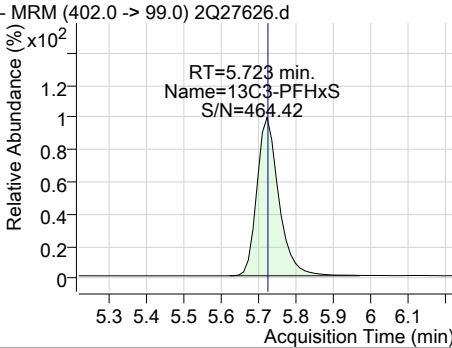
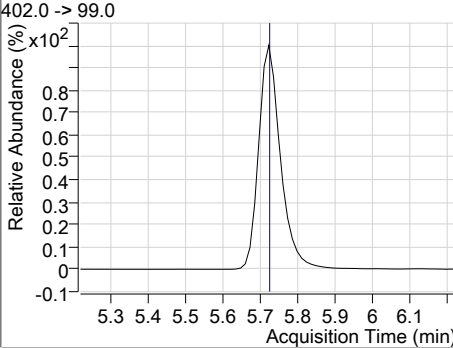
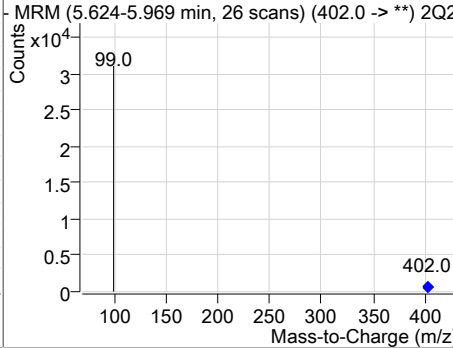
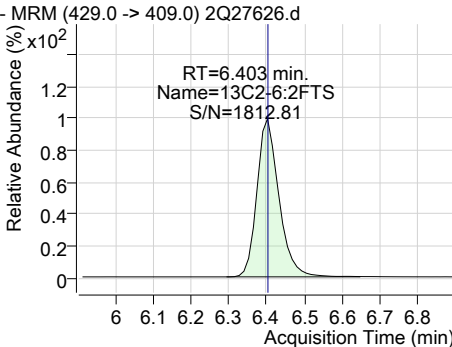
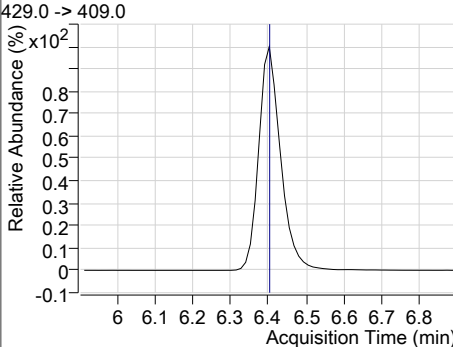
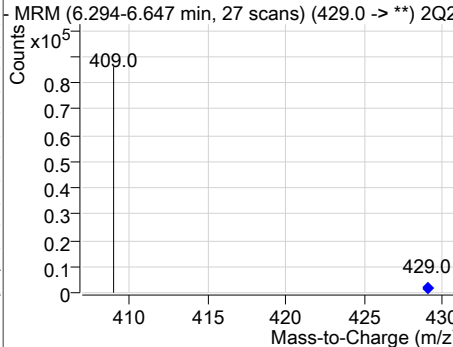
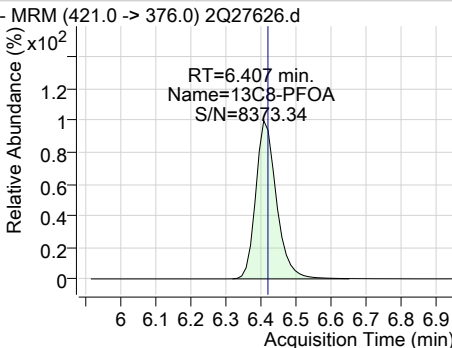
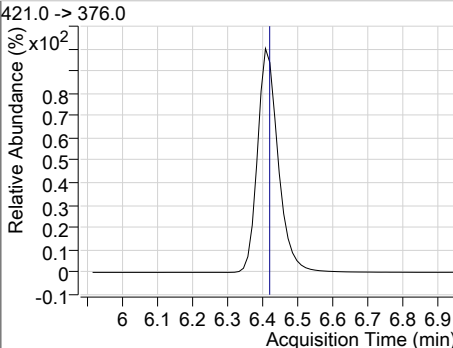
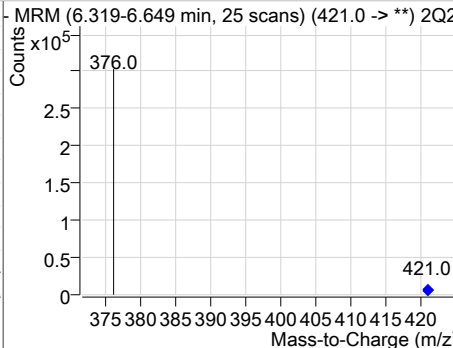
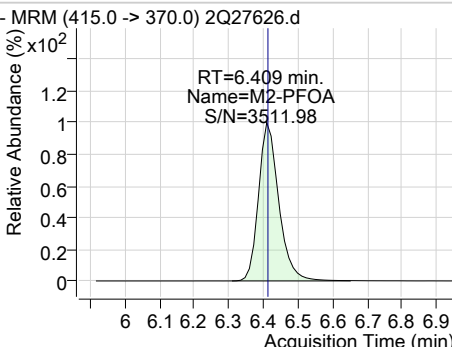
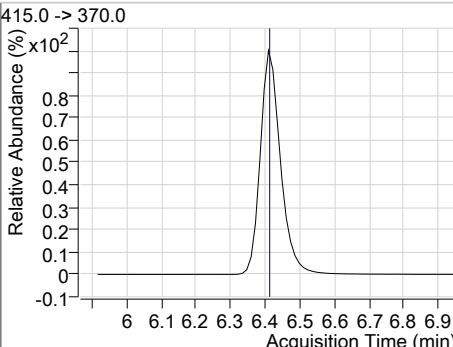
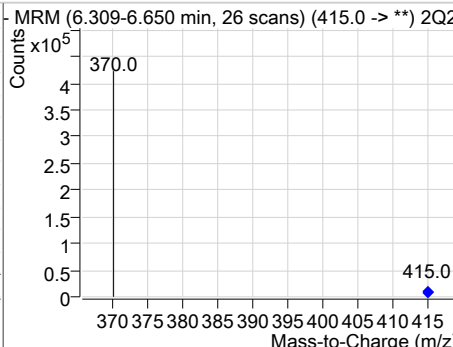
### Perfluorinated Compounds by LC/MS/MS



7.2.4

7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon | QRatio   | Min. | Max. |
|--|-------|------|---|--------|------|--|------|------|
| 13C3-PFHxS   | 15.90 | 5.72 | 0.00  | 21658  |      |  |      |      |
|    |       |      |    |        |      |    |      |      |
| 13C2-6:2FTS  | 14.85 | 6.40 | 0.00  | 64744  |      |  |      |      |
|    |       |      |    |        |      |    |      |      |
| 13C8-PFOA  | 15.51 | 6.41 | -0.01   | 230931 |      |  |      |      |
|  |       |      |  |        |      |  |      |      |
| M2-PFOA  | 19.99 | 6.41 | -0.01   | 320354 |      |  |      |      |
|  |       |      |  |        |      |  |      |      |

7.2.4  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 17.41 | 6.92 | -0.01    | 99162  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| 13C8-PFOS | 17.06 | 7.02 | 0.01     | 28220  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| M4-PFOS   | 19.78 | 7.02 | 0.01     | 49918  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| 13C9-PFNA | 16.59 | 7.04 | -0.01    | 237743 |      |        |      |      |
|           |       |      |          |        |      |        |      |      |

7.2.4  
7

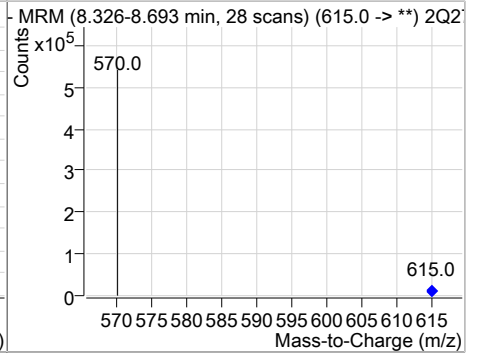
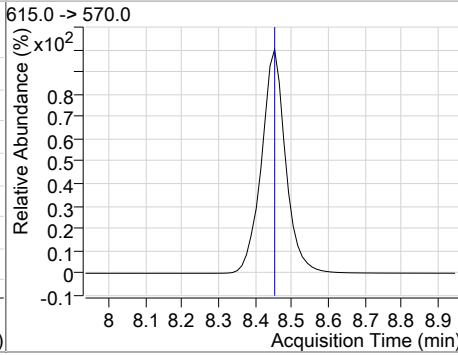
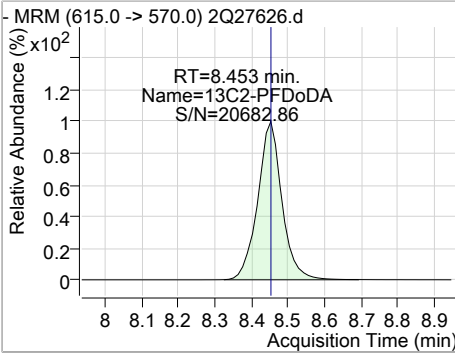
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| d3-MeFOSAA  | 16.13 | 7.43 | 0.00     | 38559  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C6-PFDA   | 17.06 | 7.58 | 0.01     | 315765 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-8:2FTS | 15.04 | 7.62 | 0.01     | 42704  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C7-PFUnDA | 16.08 | 8.03 | 0.00     | 385271 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

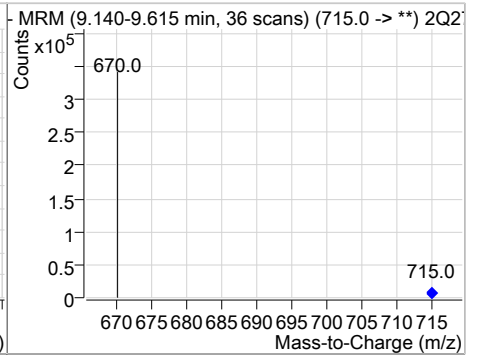
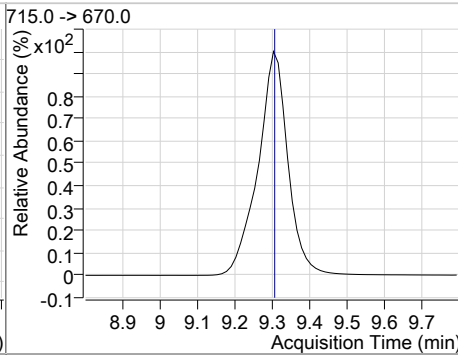
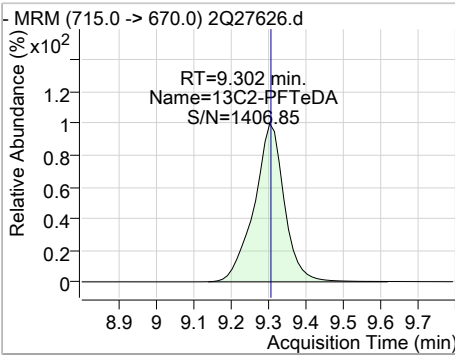
7.2.4  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 14.64 | 8.45 | 0.00     | 408652 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 13.13 | 9.30 | 0.00     | 253831 |      |        |      |      |



7.2.4  
7



### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27675.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 10:26:34 AM  
 Sample Name : IBLK  
 Vial : Vial 1  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 302327 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 46604  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 122039 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 105367 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 150318 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 217289 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 222731 | 20.00 µg/L        | 0.013    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 225305 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 293475 | 20.00 µg/L        | 0.013    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 365096 | 20.00 µg/L        | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 408241 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 279499 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 86329  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 18683  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 20803  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 26772  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 58008  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 64471  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 43928  | 20.00 µg/L        | 0.013    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 40036  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 166781 | 100.00 µg/L       | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 57820  | 19.44 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.2%  |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 64448  | 20.08 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.4% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 43894  | 19.80 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.0%  |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 408201 | 21.70 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.5% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 278273 | 21.67 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.4% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 18546  | 20.34 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.7% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 20761  | 20.37 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.8% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 121505 | 20.26 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 217100 | 20.99 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.0% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 150006 | 20.64 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 105367 | 20.73 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.6% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 293330 | 21.50 µg/L        | 0.013    |

7.2.5  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.5% |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 364660 | 21.55 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.7% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 86381  | 21.30 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.5% |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 222520 | 21.33 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.7% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 26750  | 20.52 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.6% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 225103 | 21.26 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.3% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 40063  | 20.90 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.5% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 302497 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 46672  | 20.02 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 166781 | 104.30 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 104.3% |          |

Target Compounds

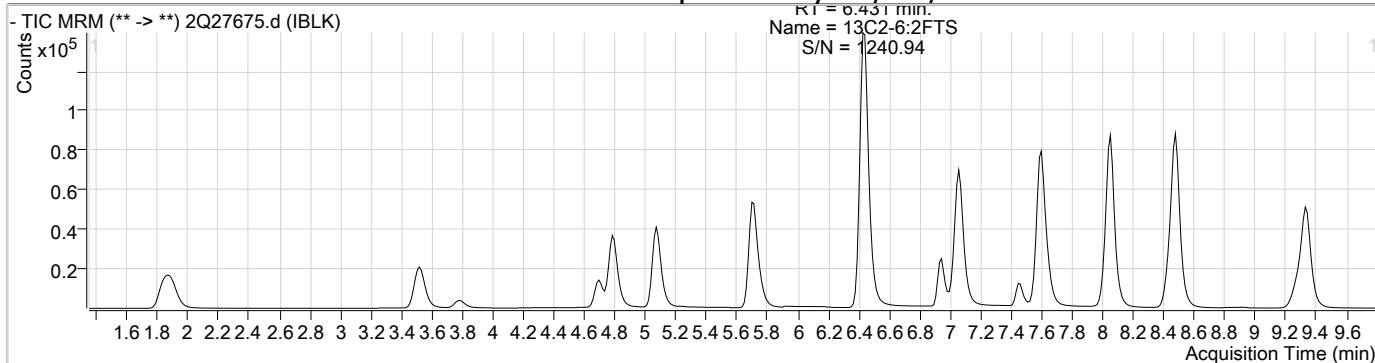
| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA          | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA             | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA          | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA             | -     | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS             | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA             | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS             | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA            | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS            | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA            | -     | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS            | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA             | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS             | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA             | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS             | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA            | -     | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS            | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA           | 9.332 | 713.0 -> 669.0 | 1063  | 0.11 µg/L   | 98     |
| PFTrDA           | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

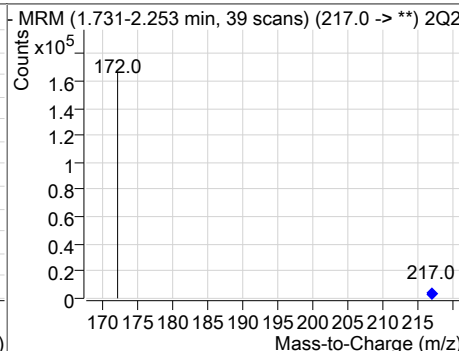
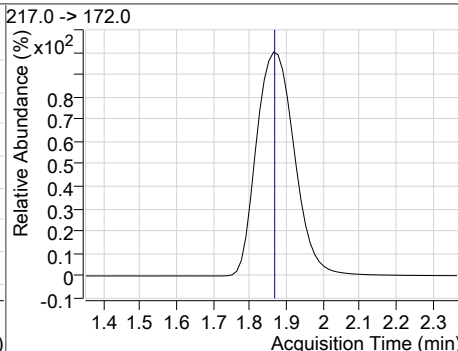
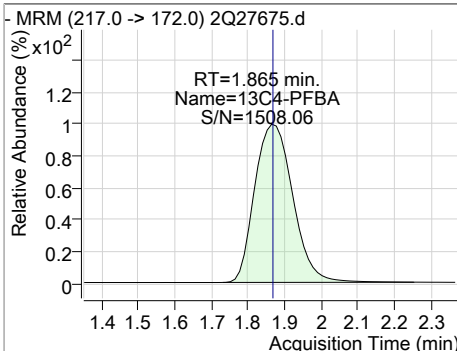
7.2.5  
7



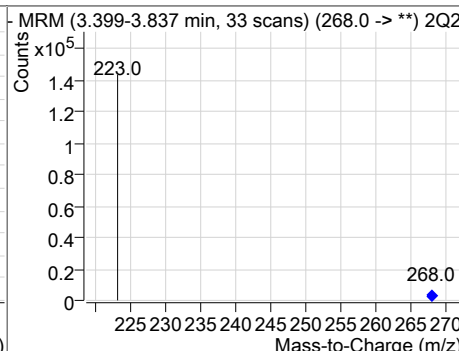
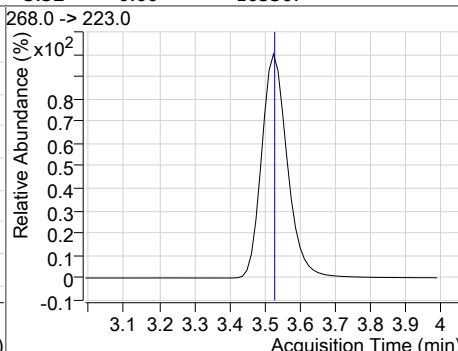
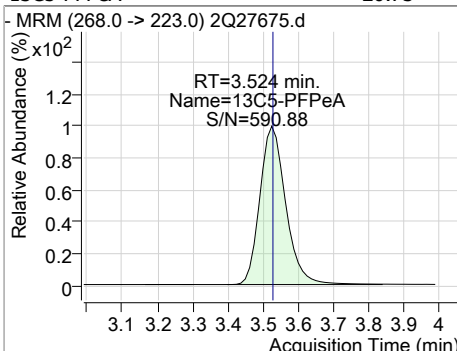
### Perfluorinated Compounds by LC/MS/MS



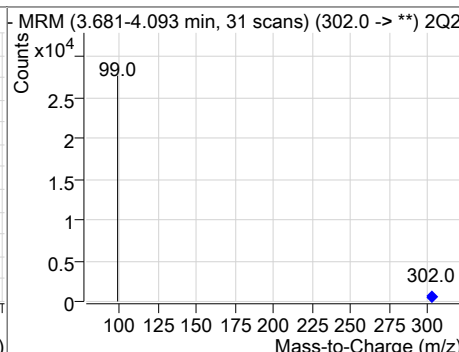
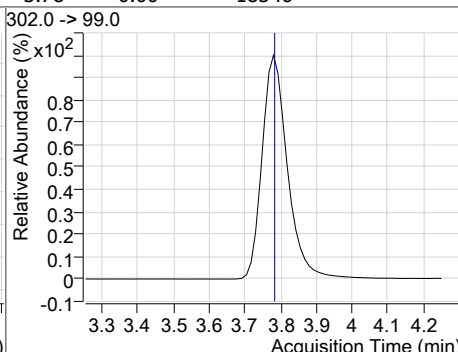
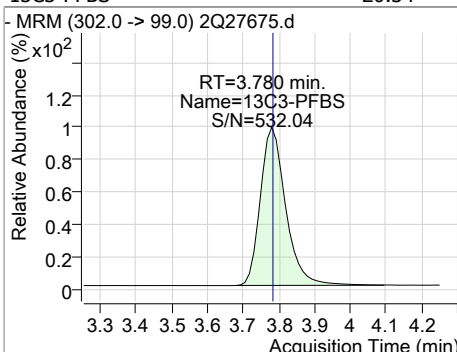
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 20.26 | 1.86 | 0.00     | 121505 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 20.73 | 3.52 | 0.00     | 105367 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFBS | 20.34 | 3.78 | 0.00     | 18546 |      |        |      |      |



7.25  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C2-4:2FTS  | 19.44  | 4.70 | 0.01     | 57820  |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C5-PFHxA   | 20.64  | 4.79 | 0.00     | 150006 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C3-HFPO-DA | 104.30 | 5.08 | 0.01     | 166781 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C4-PFHpA   | 20.99  | 5.71 | 0.00     | 217100 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |

7.25  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-PFHxS  | 20.37 | 5.75 | 0.01     | 20761  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-6:2FTS | 20.08 | 6.43 | 0.02     | 64448  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 21.33 | 6.45 | 0.01     | 222520 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 19.99 | 6.44 | 0.00     | 302497 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.2.5  
7

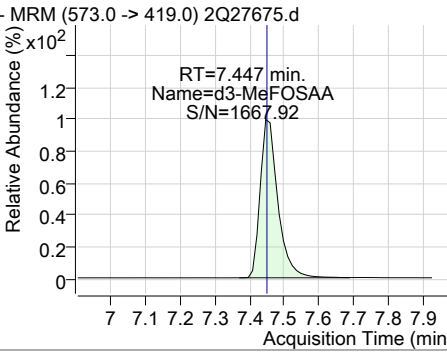
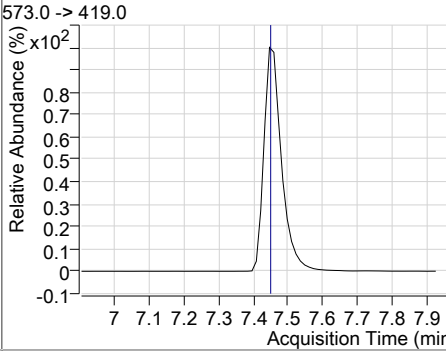
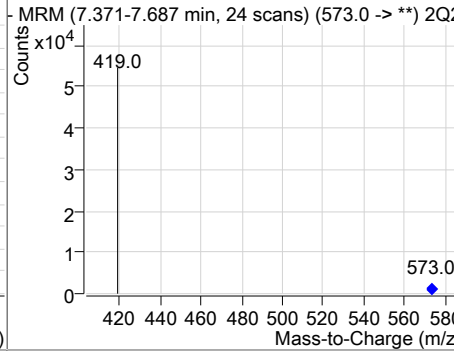
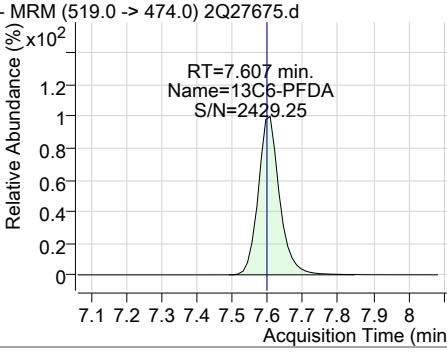
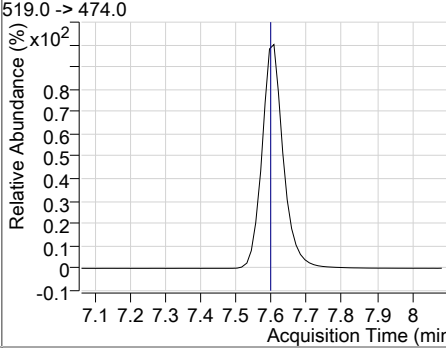
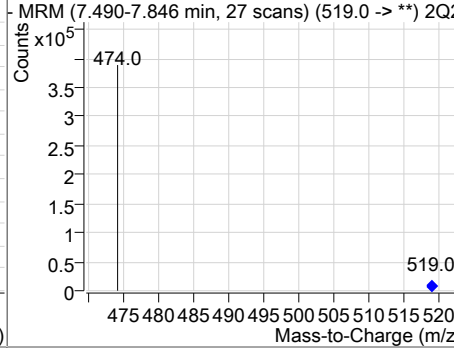
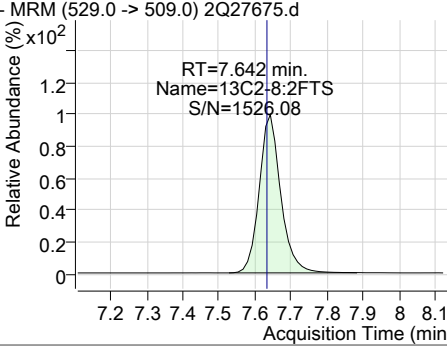
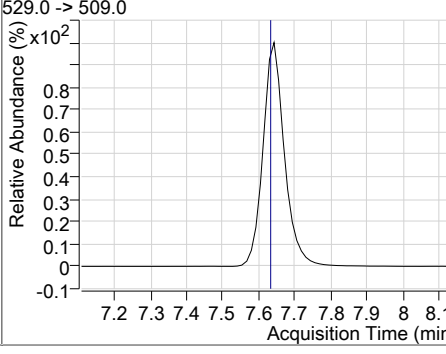
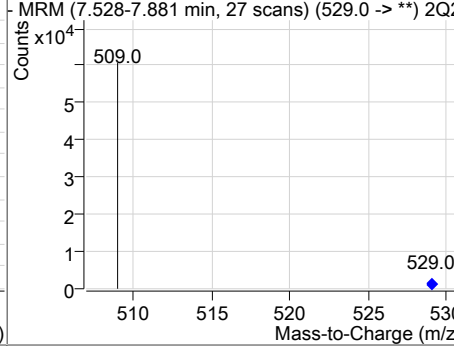
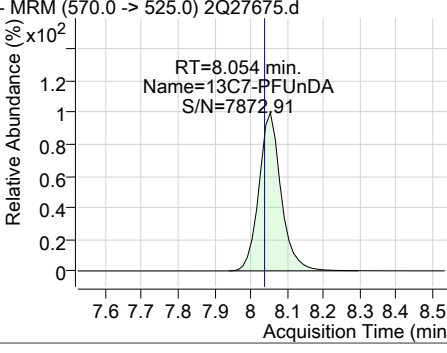
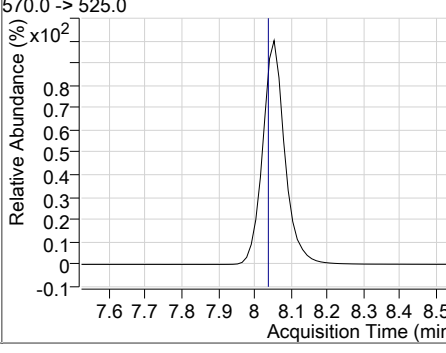
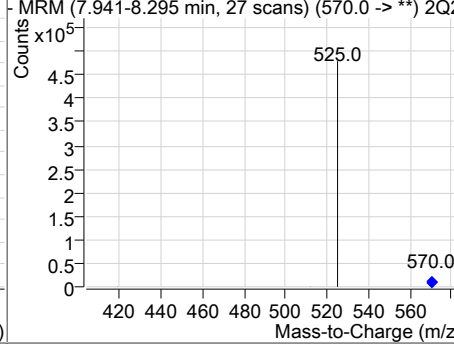
### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 21.30 | 6.94 | 0.00     | 86381  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| M4-PFOS   | 20.02 | 7.05 | 0.01     | 46672  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| 13C8-PFOS | 20.52 | 7.05 | 0.00     | 26750  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| 13C9-PFNA | 21.26 | 7.07 | 0.00     | 225103 |      |        |      |      |
|           |       |      |          |        |      |        |      |      |

7.25  
7



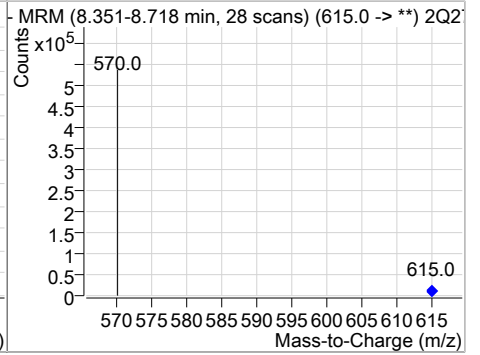
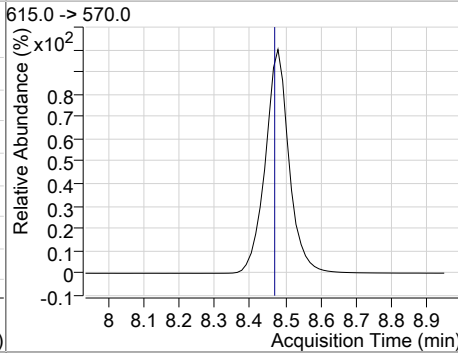
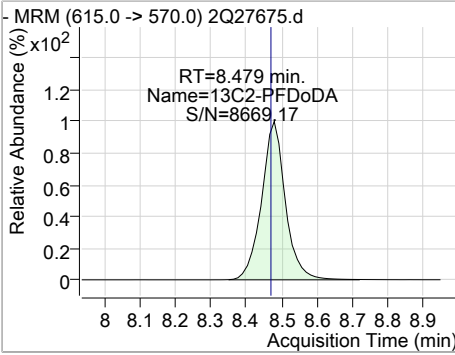
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon | QRatio   | Min. | Max. |
|--|-------|------|---|--------|------|--|------|------|
| d3-MeFOSAA   | 20.90 | 7.45 | 0.00  | 40063  |      |  |      |      |
|    |       |      |    |        |      |    |      |      |
| 13C6-PFDA  | 21.50 | 7.61 | 0.01  | 293330 |      |  |      |      |
|    |       |      |    |        |      |    |      |      |
| 13C2-8:2FTS  | 19.80 | 7.64 | 0.01  | 43894  |      |  |      |      |
|  |       |      |  |        |      |  |      |      |
| 13C7-PFUnDA  | 21.55 | 8.05 | 0.01  | 364660 |      |  |      |      |
|  |       |      |  |        |      |  |      |      |

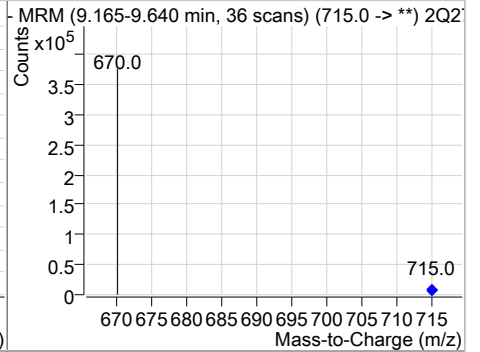
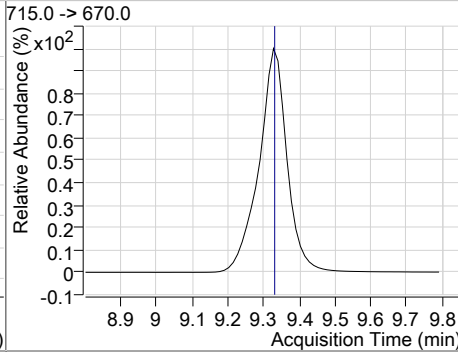
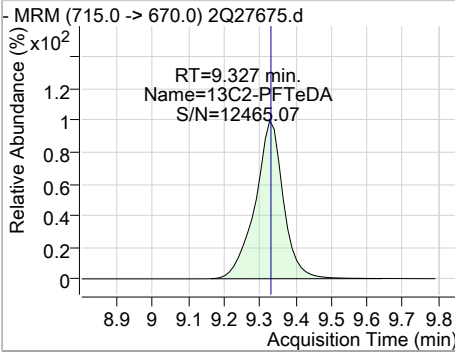
7.25  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 21.70 | 8.48 | 0.01     | 408201 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 21.67 | 9.33 | 0.00     | 278273 |      |        |      |      |



7.2.5

7



## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27725.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/19/2019 10:45:34 AM  
 Sample Name : IBLK  
 Vial : Vial 1  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q443.batch.bin  
 Sample Information : op74164,S2Q443,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.422                | 415.0 -> 370.0 | 310480 | 20.00 µg/L        | -0.014   |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 50956  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 131171 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 108971 | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.776                | 318.0 -> 273.0 | 155183 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.693                | 367.0 -> 322.0 | 221682 | 20.00 µg/L        | -0.013   |
| M8-PFOA                            | 6.420                | 421.0 -> 376.0 | 227144 | 20.00 µg/L        | -0.014   |
| M9-PFNA                            | 7.052                | 472.0 -> 427.0 | 229737 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.582                | 519.0 -> 474.0 | 306033 | 20.00 µg/L        | -0.013   |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 379636 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 414986 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 292724 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 93116  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 19704  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 21875  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 29276  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 59430  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 65845  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 45901  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 41836  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 189815 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 59386  | 19.97 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 65757  | 20.49 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.4% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 45892  | 20.70 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.5% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 414383 | 22.03 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 110.2% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 291754 | 22.72 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 113.6% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 19728  | 21.64 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.2% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 21932  | 21.51 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.6% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 130544 | 21.77 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.8% |          |
| 13C4-PFHpA                         | 5.693                | 367.0 -> 322.0 | 221405 | 21.41 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.0% |          |
| 13C5-PFHxA                         | 4.776                | 318.0 -> 273.0 | 154924 | 21.32 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.6% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 109260 | 21.49 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.5% |          |
| 13C6-PFDA                          | 7.582                | 519.0 -> 474.0 | 305745 | 22.41 µg/L        | -0.013   |

7.2.6  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 112.0% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 379635 | 22.43 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 112.2% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 93124  | 22.97 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 114.8% |          |
| 13C8-PFOA             | 6.420                | 421.0 -> 376.0 | 227093 | 21.77 µg/L        | -0.014   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.8% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 29263  | 22.45 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 112.2% |          |
| 13C9-PFNA             | 7.052                | 472.0 -> 427.0 | 229621 | 21.69 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.4% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 41889  | 21.85 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.3% |          |
| M2-PFOA               | 6.422                | 415.0 -> 370.0 | 310632 | 19.99 µg/L        | -0.014   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 50971  | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 189815 | 118.71 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 118.7% |          |

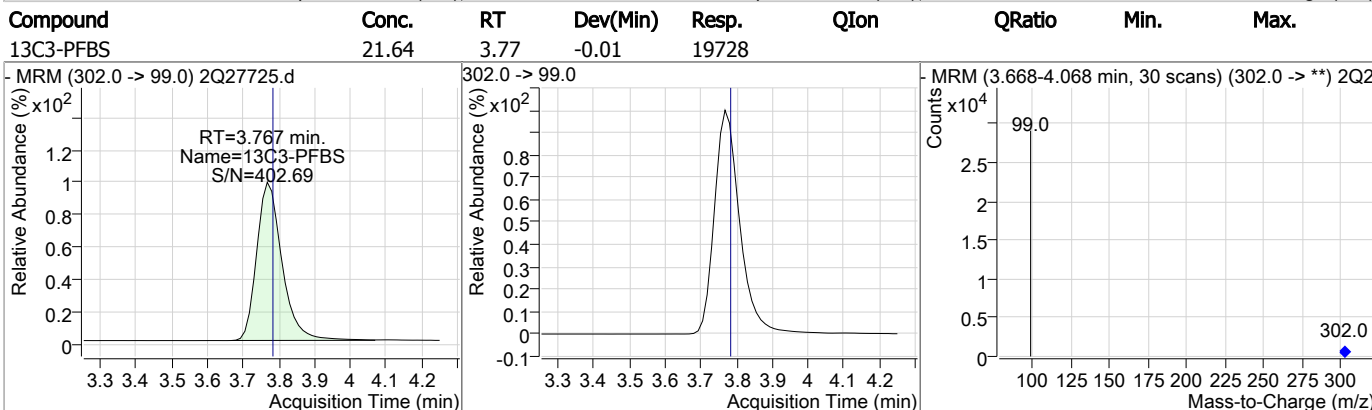
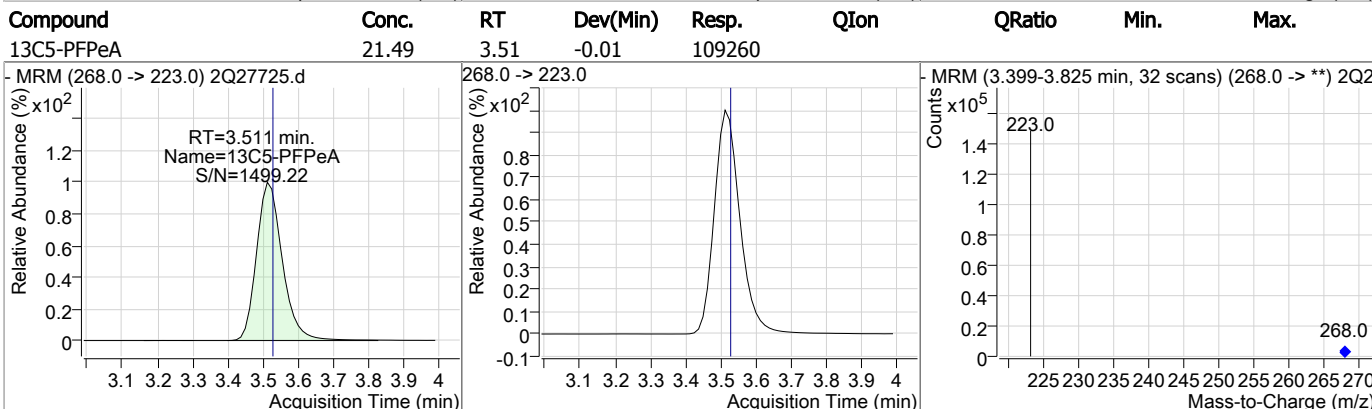
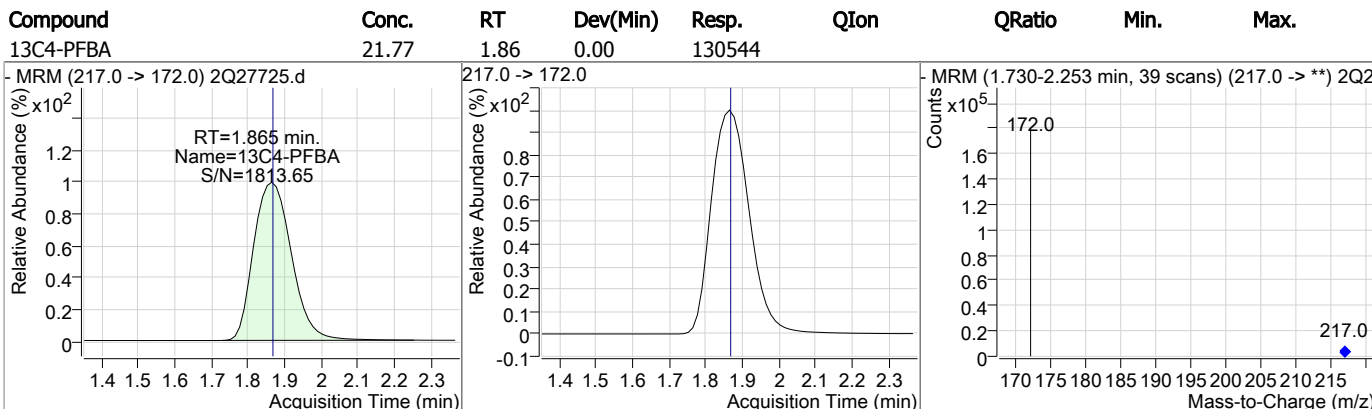
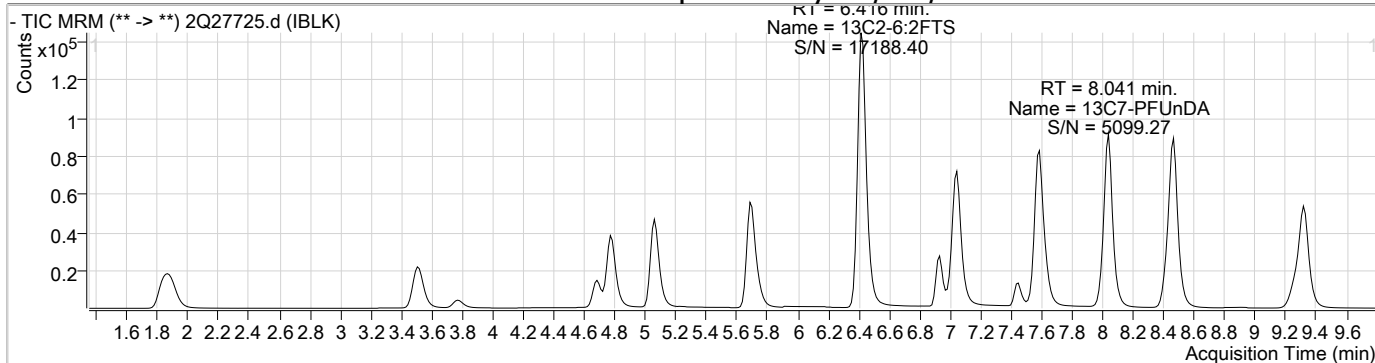
**Target Compounds**

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS       | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS       | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA      | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA         | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA      | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA         | -     | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS         | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA         | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA       | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS         | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA        | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS        | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA        | -     | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS        | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA         | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS         | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA         | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS         | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA        | -     | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS        | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 1033  | 0.10 µg/L   | 100    |
| PFTrDA       | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA       | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.2.6  
7

### Perfluorinated Compounds by LC/MS/MS



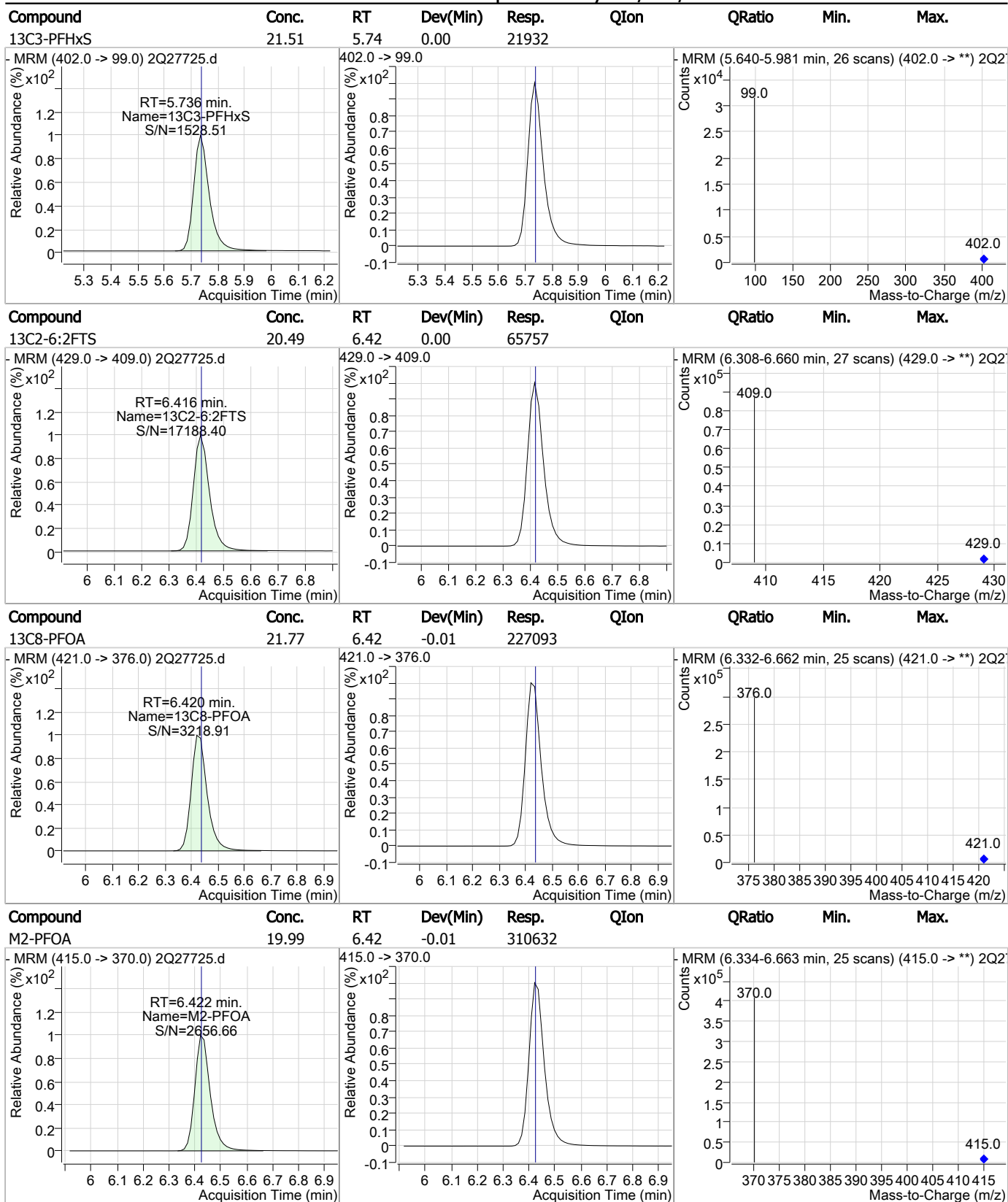
7.2.6  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C2-4:2FTS  | 19.97  | 4.68 | 0.00     | 59386  |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C5-PFHxA   | 21.32  | 4.78 | -0.01    | 154924 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C3-HFPO-DA | 118.71 | 5.07 | 0.00     | 189815 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C4-PFHpA   | 21.41  | 5.69 | -0.01    | 221405 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |

7.2.6  
7

### Perfluorinated Compounds by LC/MS/MS



7.2.6  
7

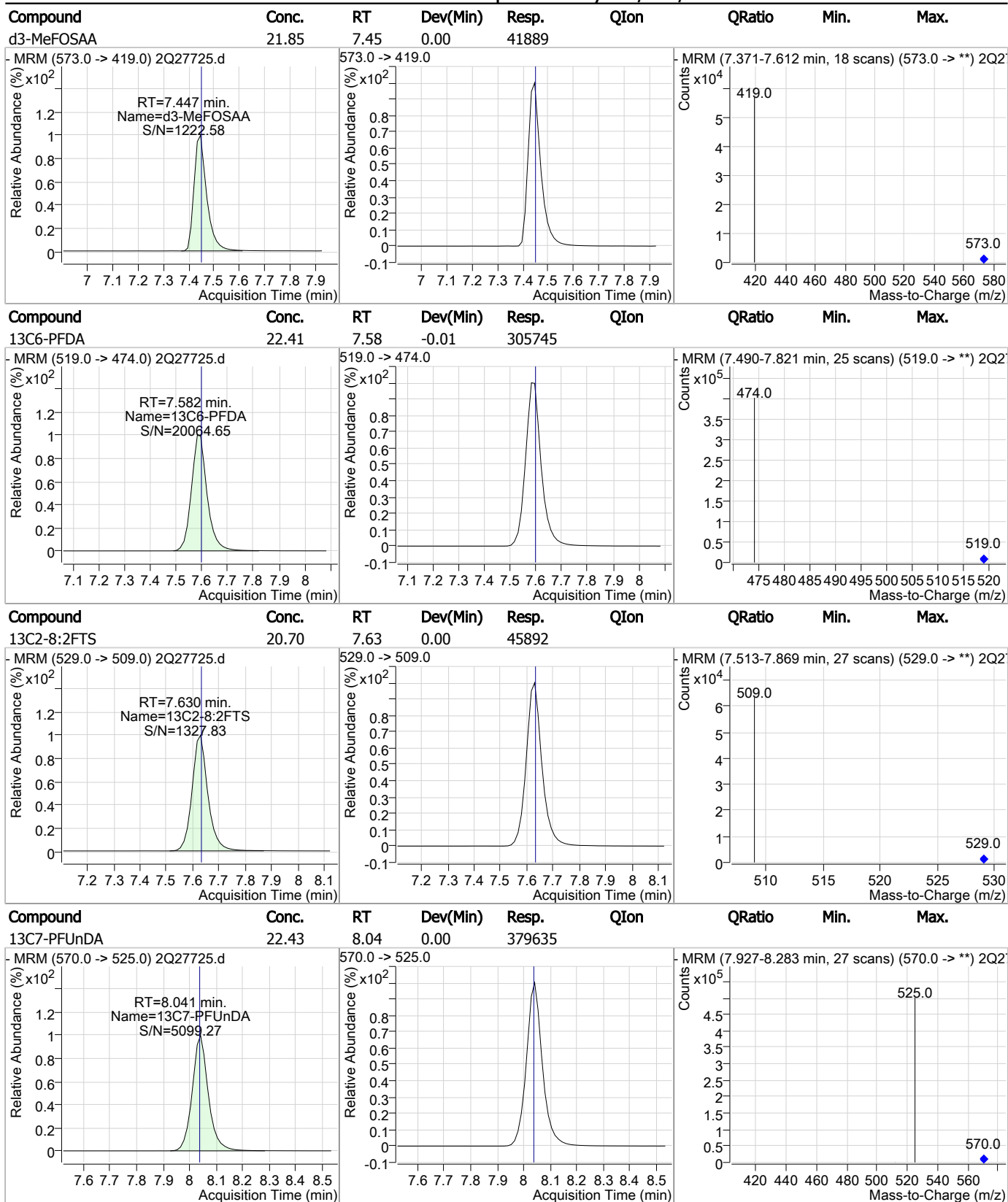
### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 22.97 | 6.93 | -0.01    | 93124  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| M4-PFOS   | 20.00 | 7.04 | 0.00     | 50971  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| 13C8-PFOS | 22.45 | 7.03 | -0.01    | 29263  |      |        |      |      |
|           |       |      |          |        |      |        |      |      |
| 13C9-PFNA | 21.69 | 7.05 | -0.01    | 229621 |      |        |      |      |
|           |       |      |          |        |      |        |      |      |

7.2.6

7

### Perfluorinated Compounds by LC/MS/MS



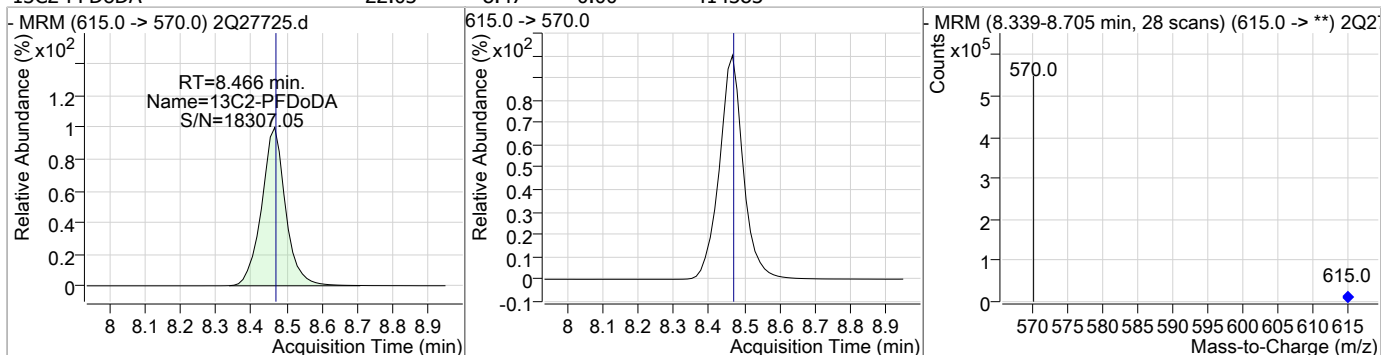
7.2.6

7

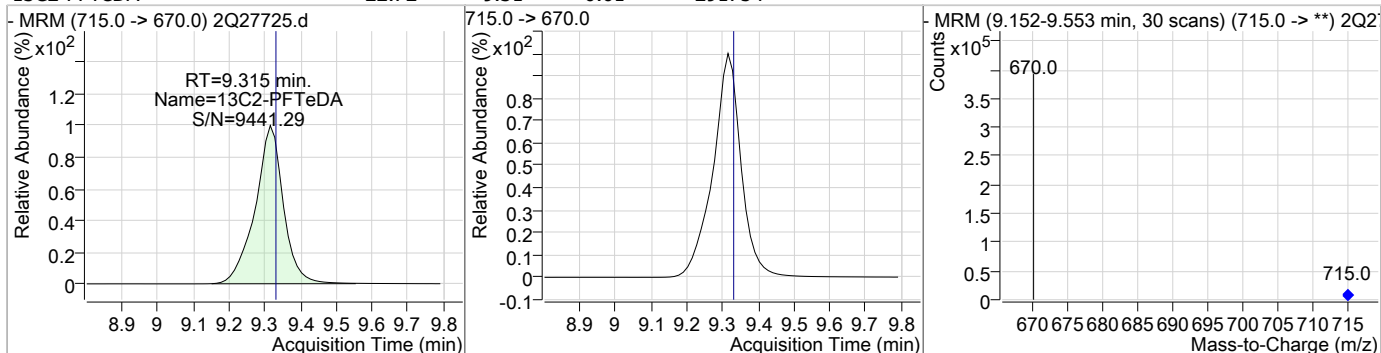


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 22.03 | 8.47 | 0.00     | 414383 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 22.72 | 9.31 | -0.01    | 291754 |      |        |      |      |



7.2.6  
7



### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1980.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 11:56:26 AM  
 Sample Name : iblk  
 Vial : P3-A1  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.714                | 217.0 -> 172.0 | 331595 | 20.00 µg/L        | 0.013    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 224335 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 298062 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.904                | 367.0 -> 322.0 | 340208 | 20.00 µg/L        | 0.013    |
| M8-PFOA                            | 6.621                | 421.0 -> 376.0 | 326946 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.213                | 472.0 -> 427.0 | 314136 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 357234 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 391498 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 411252 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 390025 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 222866 | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 50867  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.947                | 402.0 -> 99.0  | 51644  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 78751  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 89846  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 89325  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 53606  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.735                | 573.0 -> 419.0 | 49900  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 173168 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.622                | 415.0 -> 370.0 | 435894 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.198                | 503.0 -> 80.0  | 129273 | 20.00 µg/L        | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 89274  | 18.81 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.1%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 89317  | 19.55 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.7%  |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 53662  | 19.20 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.0%  |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 411301 | 21.03 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.2% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 390086 | 21.32 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.6% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 50667  | 20.09 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.4% |          |
| 13C3-PFHxS                         | 5.947                | 402.0 -> 99.0  | 51421  | 20.34 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.7% |          |
| 13C4-PFBA                          | 1.714                | 217.0 -> 172.0 | 329122 | 20.18 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.9% |          |
| 13C4-PFHpA                         | 5.904                | 367.0 -> 322.0 | 339271 | 20.32 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.6% |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 296733 | 20.16 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.8% |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 224325 | 20.26 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 357132 | 21.44 µg/L        | 0.000    |

7.27  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.2% |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 391539 | 21.12 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.6% |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 222795 | 21.17 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.8% |          |
| 13C8-PFOA             | 6.621                | 421.0 -> 376.0 | 327117 | 20.68 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.4% |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 78837  | 20.46 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.3% |          |
| 13C9-PFNA             | 7.213                | 472.0 -> 427.0 | 313654 | 20.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |          |
| d3-MeFOSAA            | 7.735                | 573.0 -> 419.0 | 49888  | 21.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.1% |          |
| 13C3-HFPO-DA          | 5.255                | 287.0 -> 169.0 | 173168 | 103.70 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 103.7% |          |
| M2-PFOA               | 6.622                | 415.0 -> 370.0 | 435894 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.198                | 503.0 -> 80.0  | 129273 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

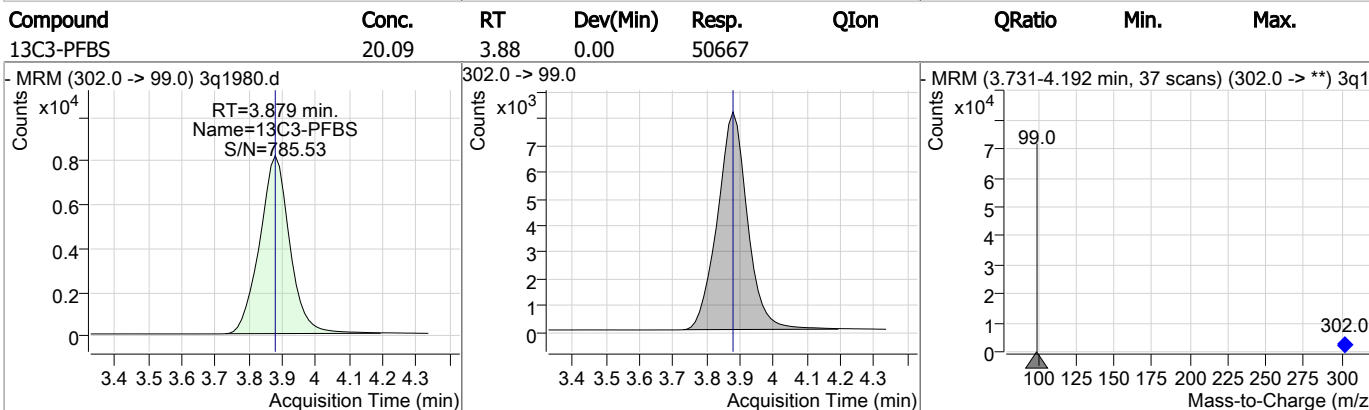
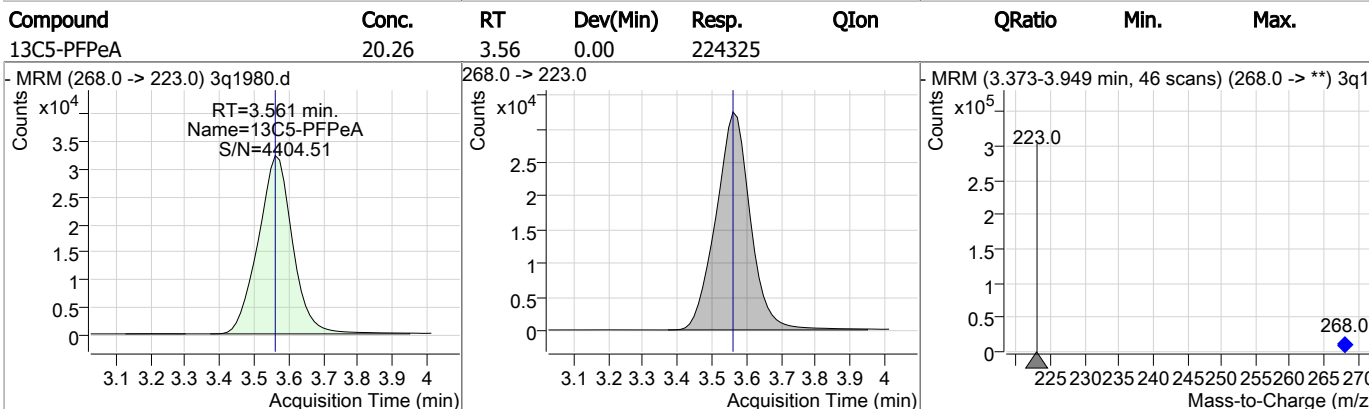
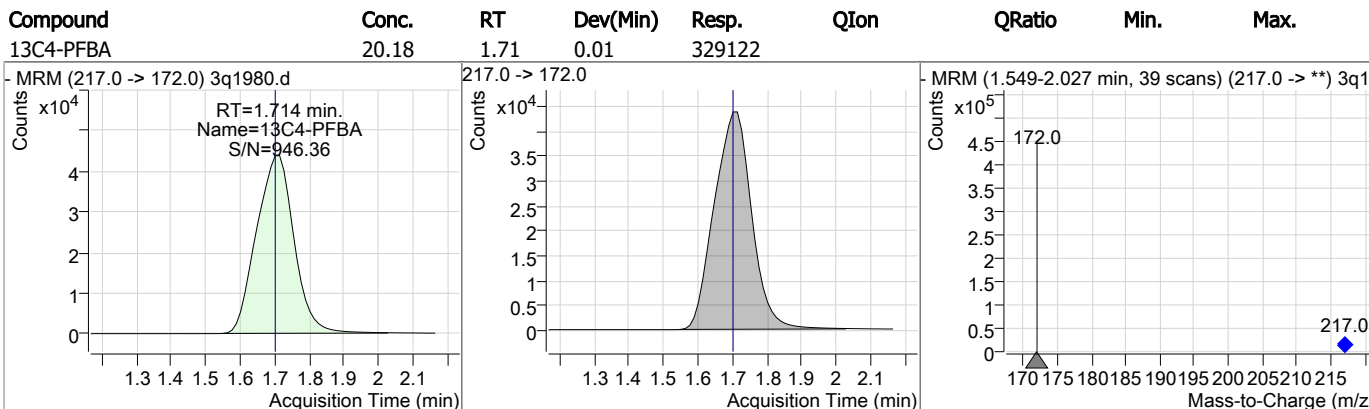
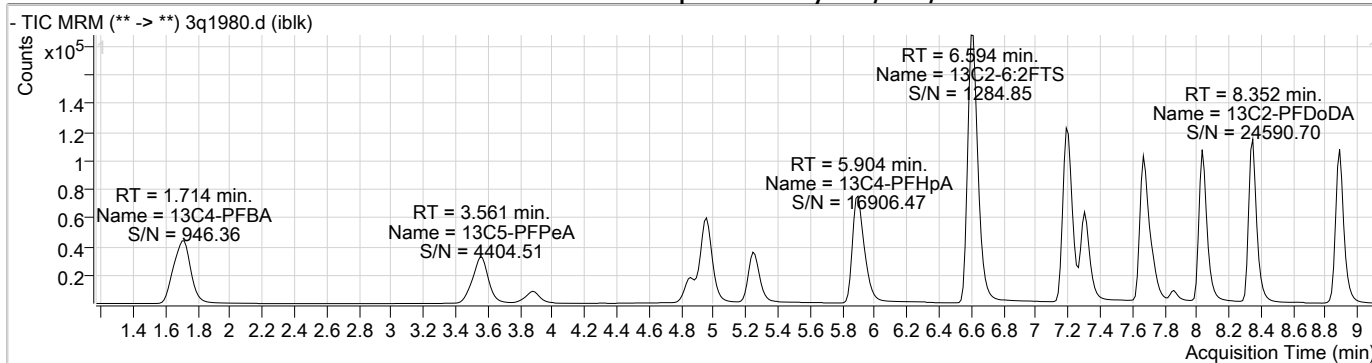
**Target Compounds**

| Compound     | RT | QIon           | Resp. | Conc. Units | QValue |
|--------------|----|----------------|-------|-------------|--------|
| 4:2FTS       | -  | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS       | -  | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS       | -  | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA      | -  | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA         | -  | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA      | -  | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA         | -  | 213.0 -> 169.0 | -     | N.D.        |        |
| PFBS         | -  | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA         | -  | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA       | -  | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS         | -  | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA        | -  | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS        | -  | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA        | -  | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS        | -  | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA         | -  | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS         | -  | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA         | -  | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS         | -  | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA        | -  | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS        | -  | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA       | -  | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA      | -  | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA       | -  | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS | -  | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS   | -  | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA        | -  | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA      | -  | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

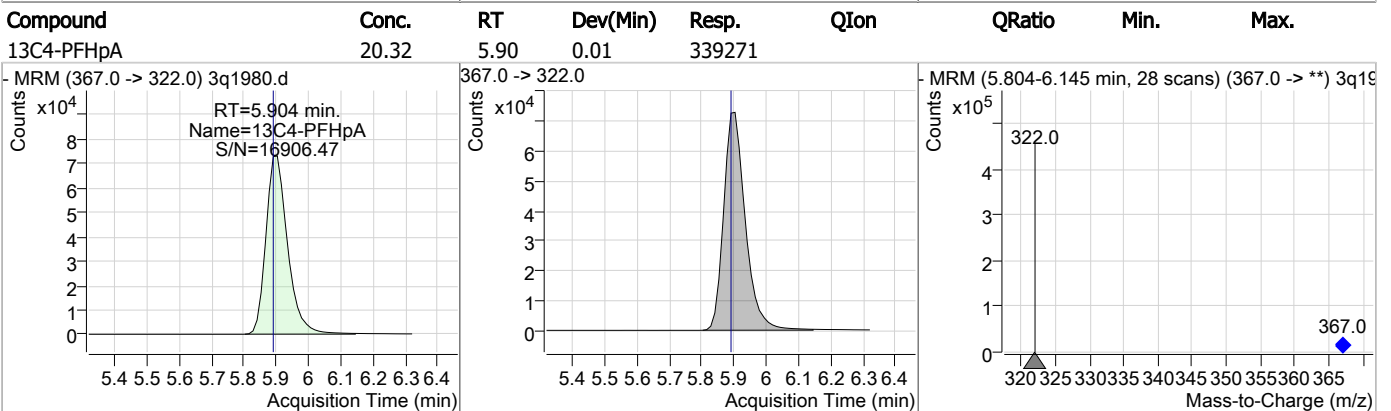
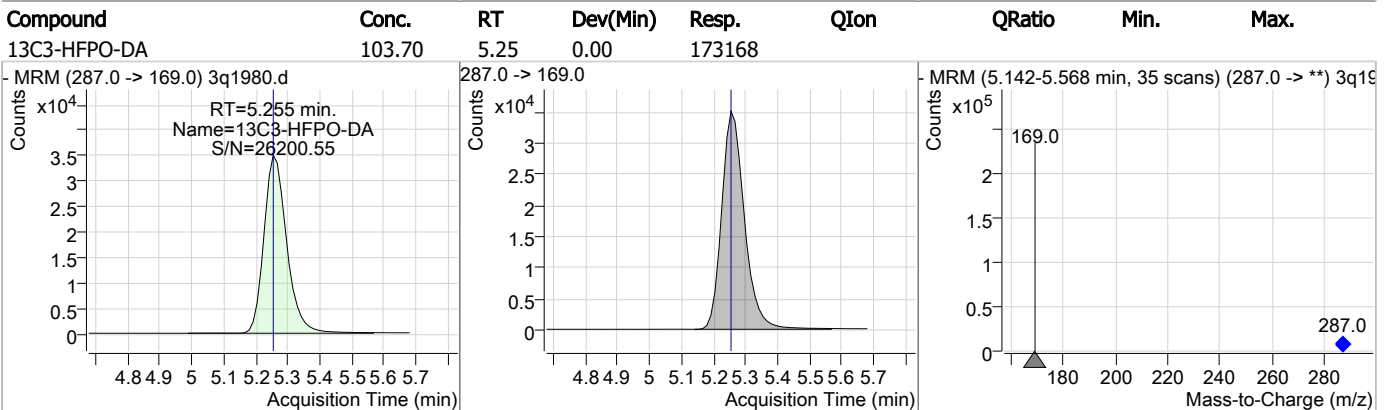
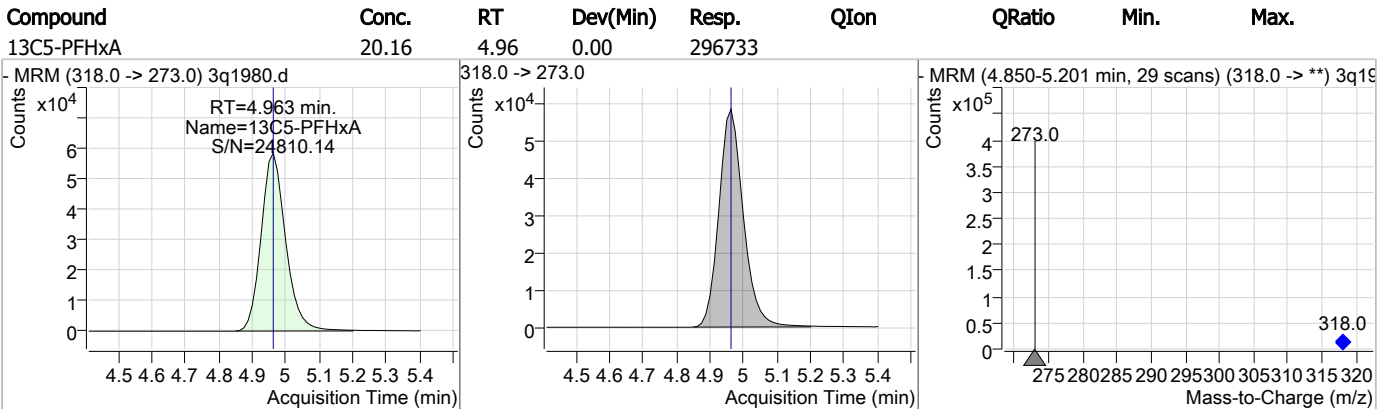
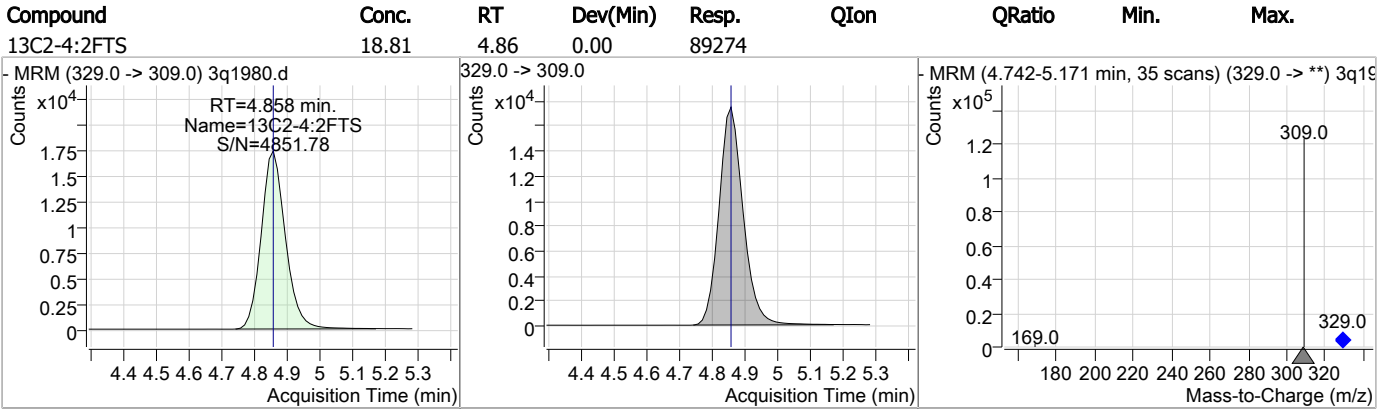
7.27  
7

### Perfluorinated Compounds by LC/MS/MS



7.27  
7

### Perfluorinated Compounds by LC/MS/MS

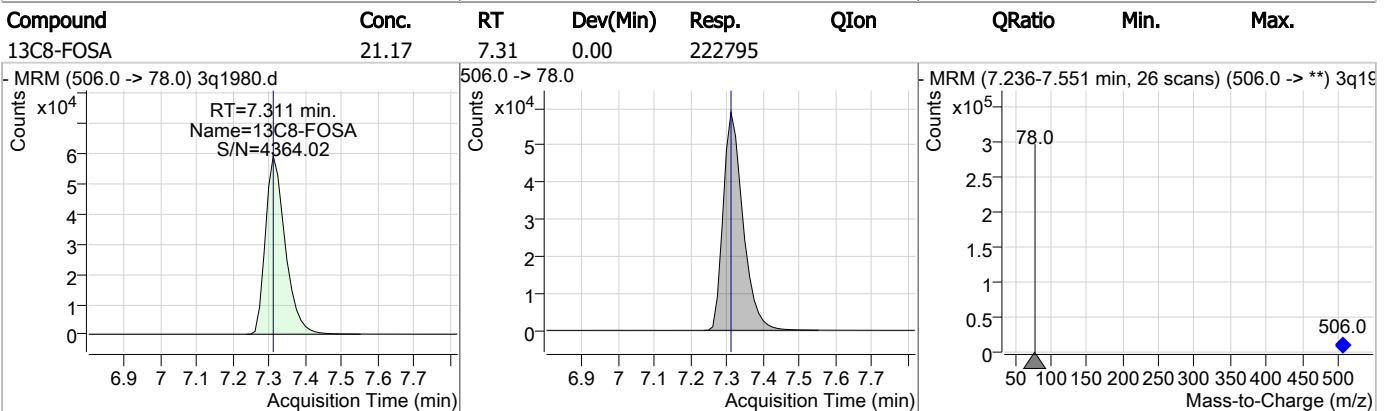
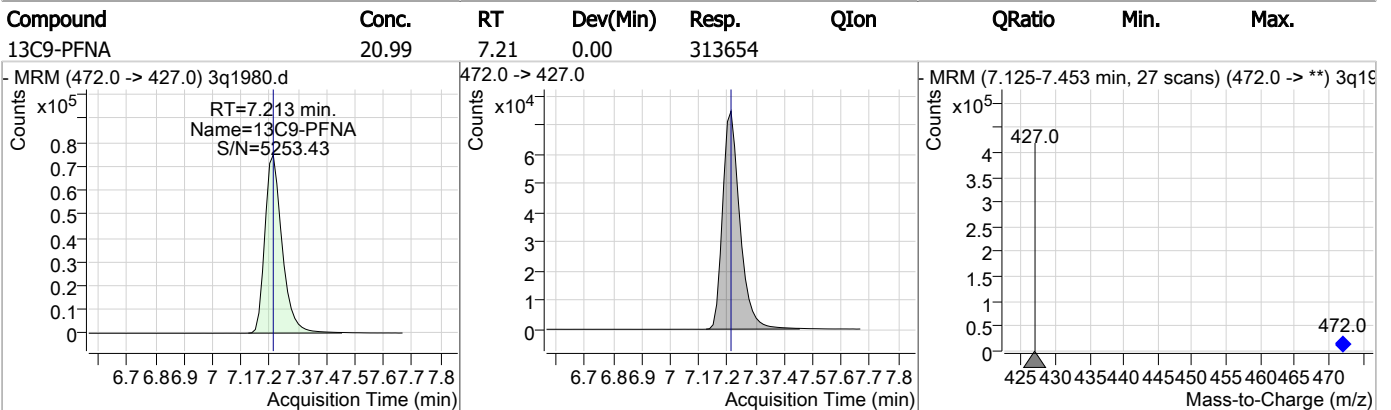
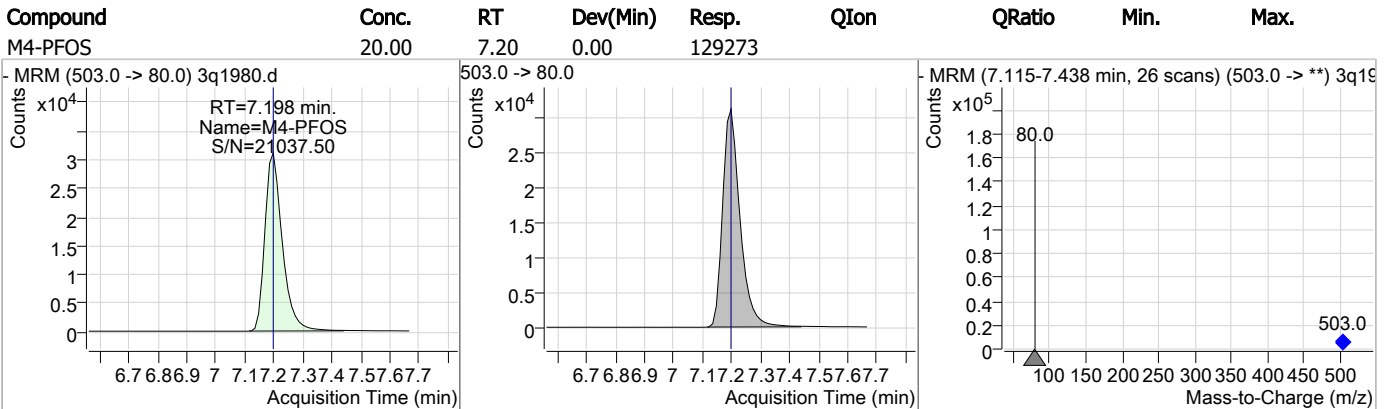
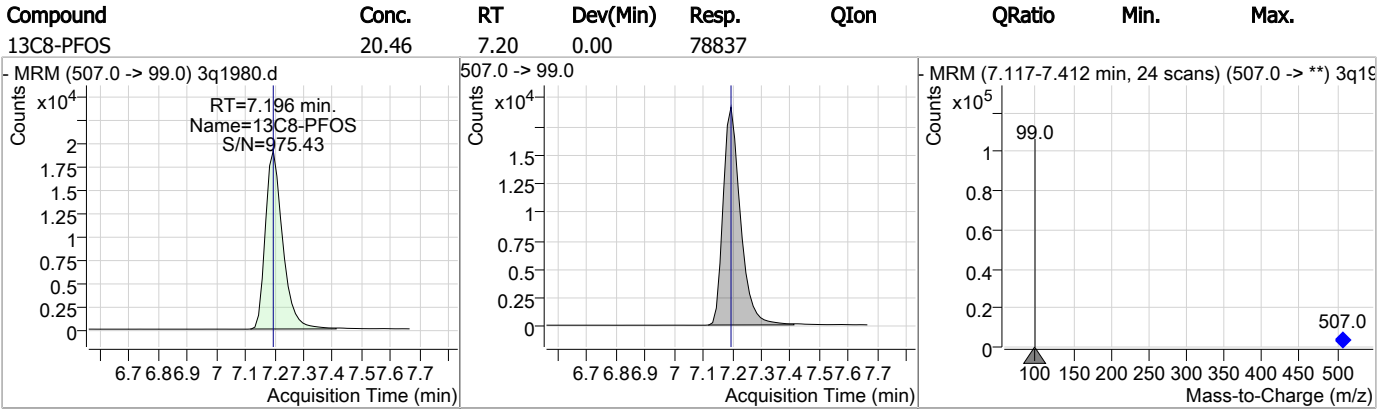


### Perfluorinated Compounds by LC/MS/MS

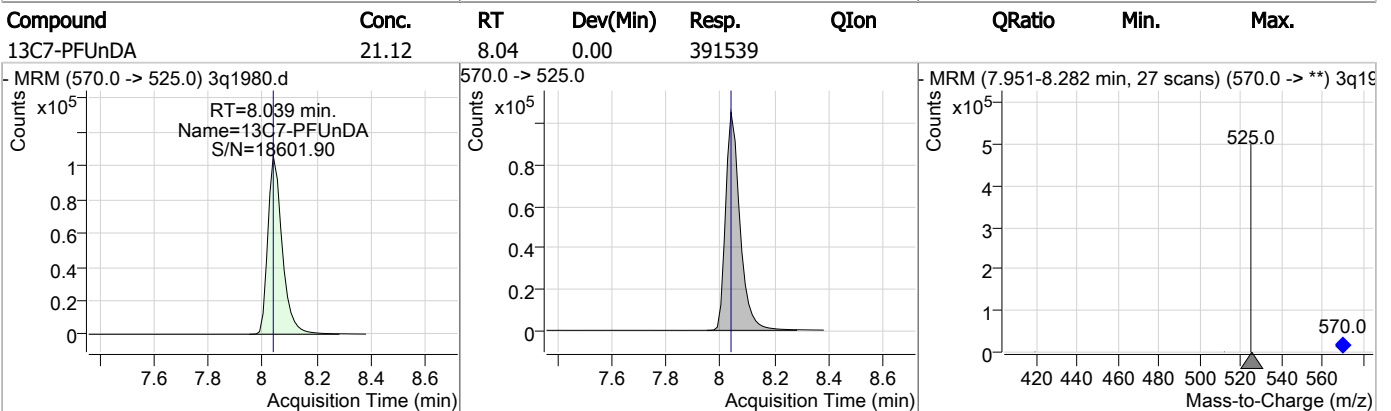
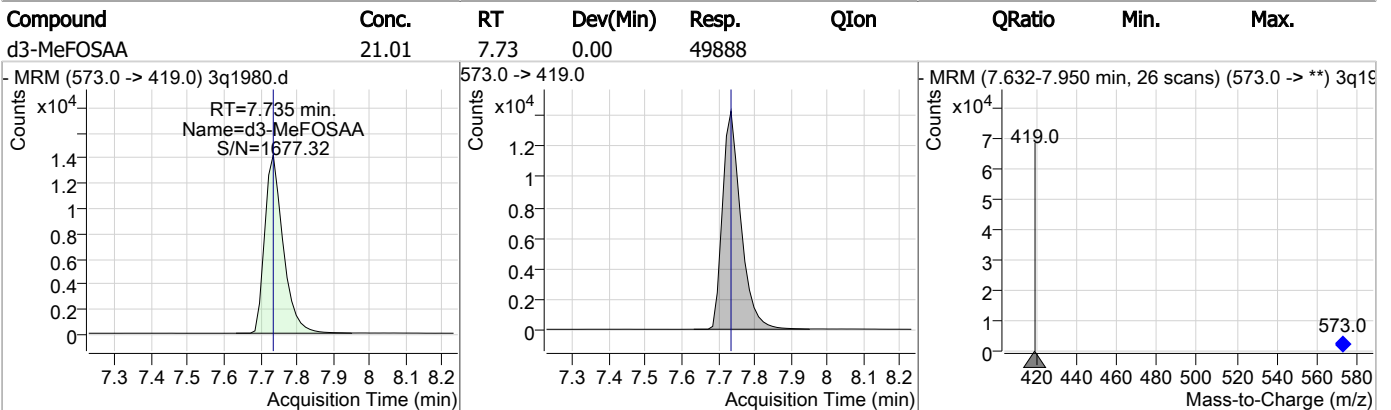
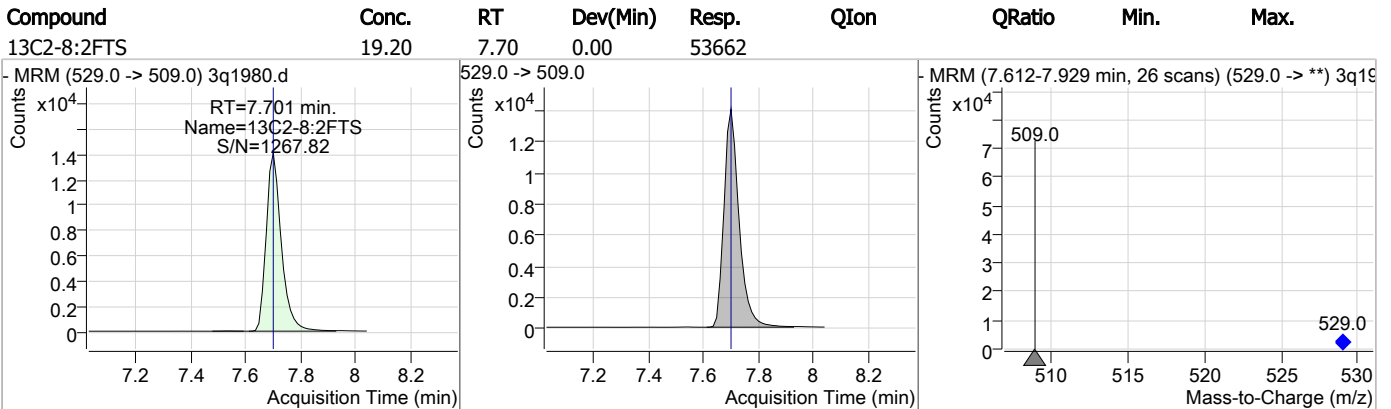
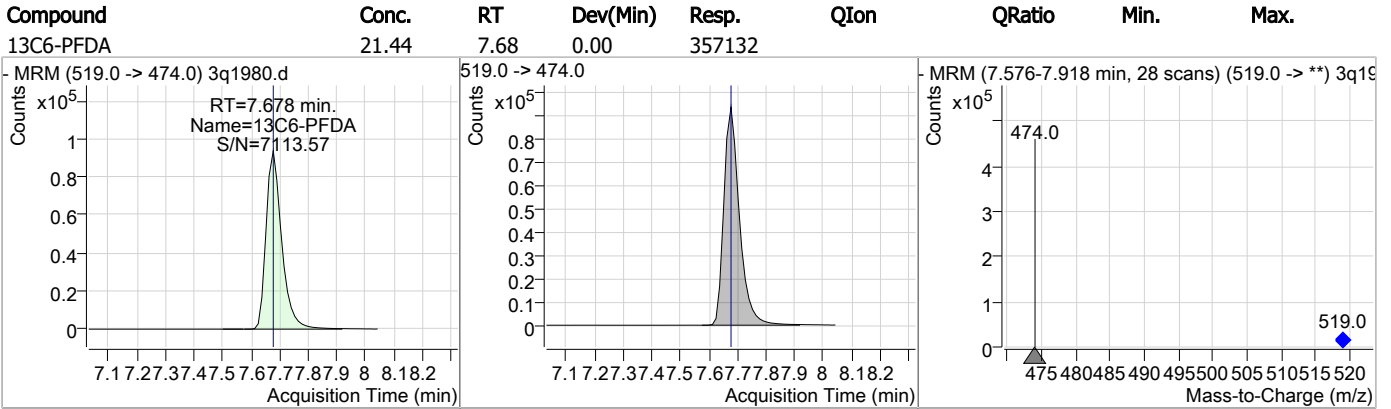
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-PFHxS  | 20.34 | 5.95 | 0.00     | 51421  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-6:2FTS | 19.55 | 6.59 | 0.00     | 89317  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 20.68 | 6.62 | 0.00     | 327117 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 20.00 | 6.62 | 0.00     | 435894 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.27  
7

### Perfluorinated Compounds by LC/MS/MS

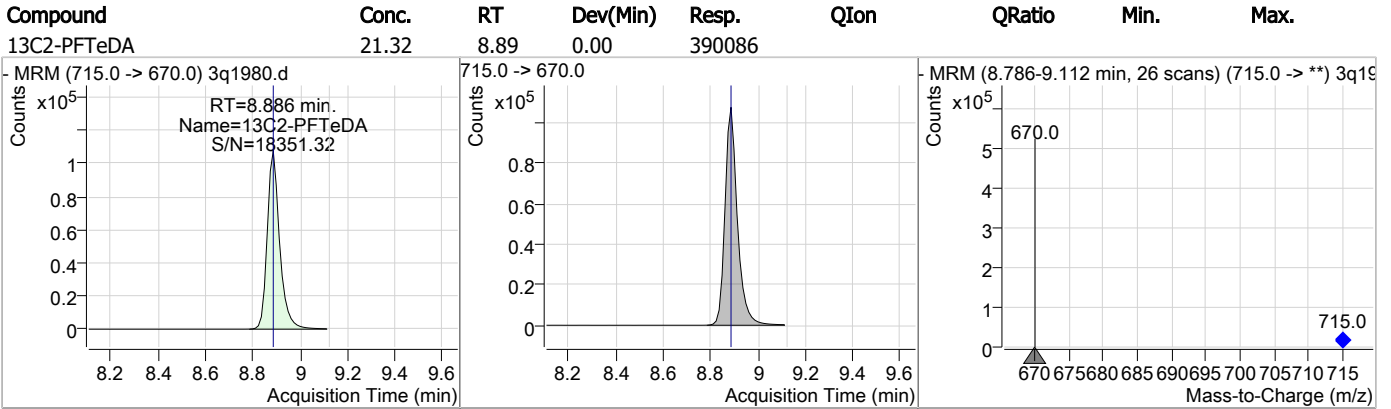
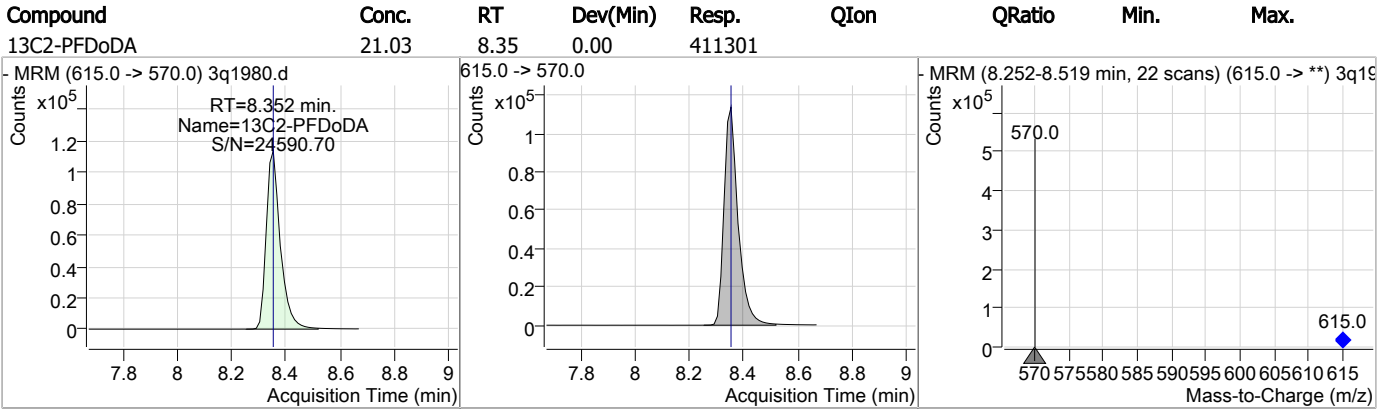


### Perfluorinated Compounds by LC/MS/MS



7.27

### Perfluorinated Compounds by LC/MS/MS



7.2.7  
7





## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27655.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 4:37:59 PM  
 Sample Name : OP74164-BS  
 Vial : Vial 54  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op74164,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.            | Conc.  | Units  | Dev(Min) |
|------------------------------------|----------------------|----------------|------------------|--------|--------|----------|
| <b>Internal Standards</b>          |                      |                |                  |        |        |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 295452           | 20.00  | µg/L   | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 41803            | 20.00  | µg/L   | 0.031    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 119663           | 20.00  | µg/L   | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 101650           | 20.00  | µg/L   | 0.032    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 146013           | 20.00  | µg/L   | 0.026    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 203255           | 20.00  | µg/L   | 0.017    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 217941           | 20.00  | µg/L   | 0.031    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 216767           | 20.00  | µg/L   | 0.020    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 278971           | 20.00  | µg/L   | 0.033    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 354962           | 20.00  | µg/L   | 0.015    |
| M2-PFDoDA                          | 8.478                | 615.0 -> 570.0 | 408923           | 20.00  | µg/L   | 0.028    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 210145           | 20.00  | µg/L   | 0.012    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 81411            | 20.00  | µg/L   | 0.032    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 17425            | 20.00  | µg/L   | 0.025    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 18289            | 20.00  | µg/L   | 0.026    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 23227            | 20.00  | µg/L   | 0.030    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 60560            | 20.00  | µg/L   | 0.028    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 65851            | 20.00  | µg/L   | 0.030    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 42477            | 20.00  | µg/L   | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 32359            | 20.00  | µg/L   | 0.029    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 0                | 100.00 | µg/L m | 0.026    |
| <b>System Monitoring Compounds</b> |                      |                |                  |        |        |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 60372            | 14.54  | µg/L   | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 72.7% |        |        |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 65828            | 15.10  | µg/L   | 0.030    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 75.5% |        |        |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 42476            | 14.96  | µg/L   | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 74.8% |        |        |          |
| 13C2-PFDoDA                        | 8.478                | 615.0 -> 570.0 | 408877           | 14.65  | µg/L   | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 73.2% |        |        |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 209484           | 10.84  | µg/L   | 0.012    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 54.2% |        |        |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 17369            | 14.34  | µg/L   | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 71.7% |        |        |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 18326            | 13.45  | µg/L   | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 67.3% |        |        |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 119349           | 13.77  | µg/L   | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 68.8% |        |        |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 203169           | 14.11  | µg/L   | 0.017    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 70.6% |        |        |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 145828           | 14.22  | µg/L   | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 71.1% |        |        |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 101324           | 14.13  | µg/L   | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 70.6% |        |        |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 278315           | 15.03  | µg/L   | 0.033    |

7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 75.2%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 354843 | 14.81 µg/L        | 0.015    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.1%  |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 81416  | 14.30 µg/L        | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.5%  |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 217895 | 14.63 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 73.2%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 23209  | 14.03 µg/L        | 0.030    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 70.2%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 216790 | 15.13 µg/L        | 0.020    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 75.6%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 32321  | 13.52 µg/L        | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 67.6%  |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 295588 | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 41782  | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 0      | 0.00 µg/L         | m 0.026  |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

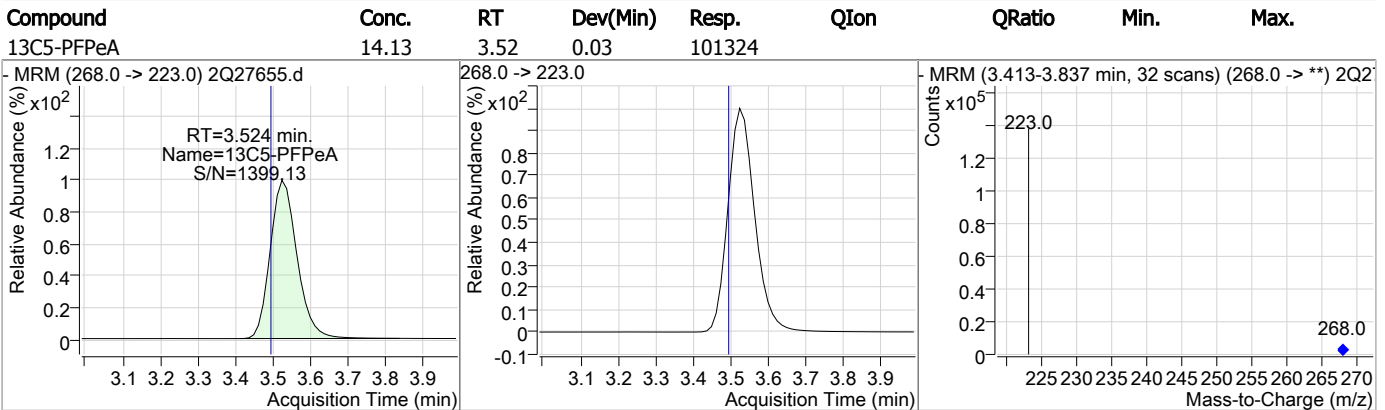
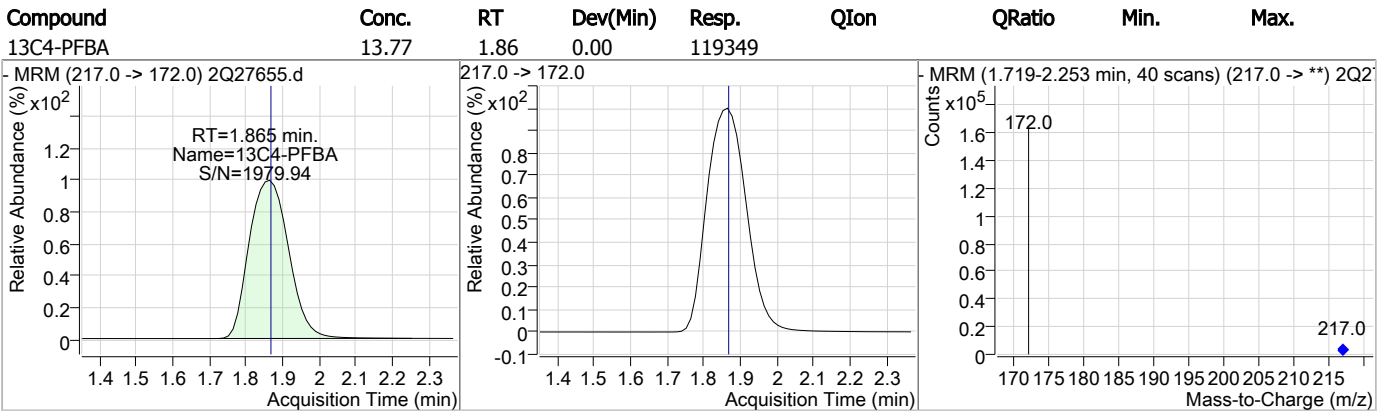
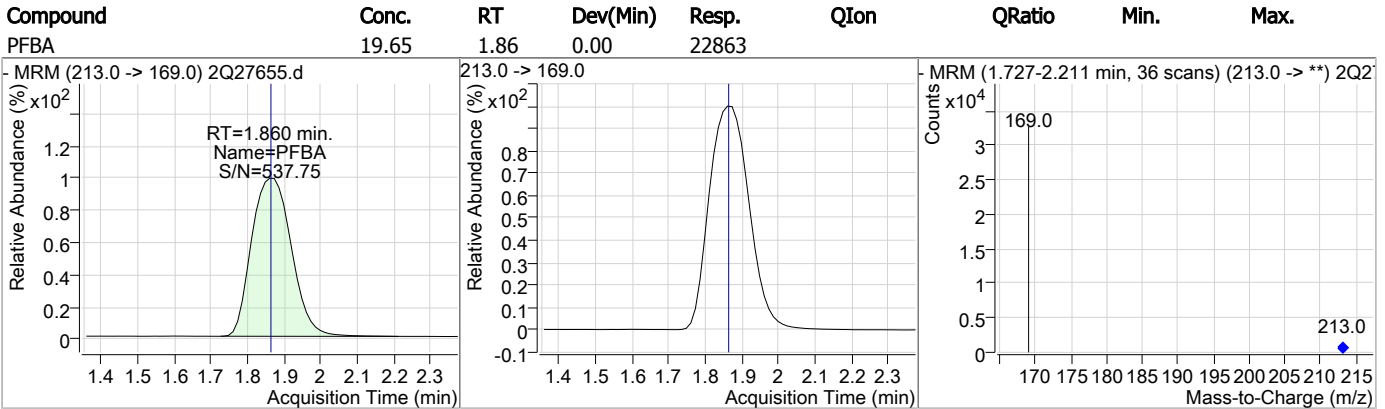
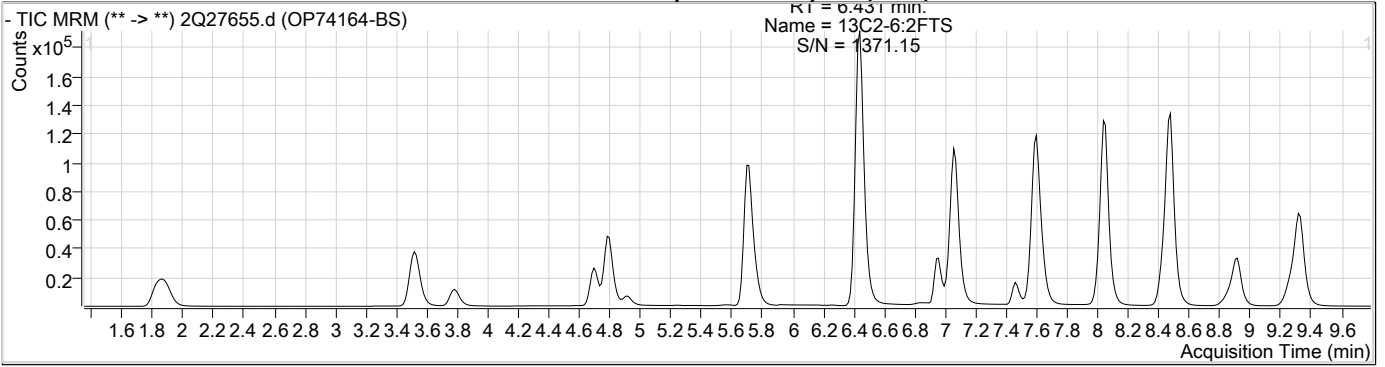
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units | Dev(Min) | QValue |
|--------------|-------|----------------|--------|-------------|----------|--------|
| 4:2FTS       | 4.699 | 327.0 -> 307.0 | 34121  | 19.37 µg/L  |          | 99     |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 32137  | 19.09 µg/L  |          | 98     |
| 8:2FTS       | 7.643 | 527.0 -> 507.0 | 22155  | 19.75 µg/L  |          | 99     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 13235  | 18.57 µg/L  |          | 98     |
| FOSA         | 6.947 | 498.0 -> 78.0  | 37526  | 20.22 µg/L  |          | 99     |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 16953  | 19.72 µg/L  |          | 100    |
| PFBA         | 1.860 | 213.0 -> 169.0 | 22863  | 19.65 µg/L  |          | 100    |
| PFBS         | 3.783 | 299.0 -> 80.0  | 26779  | 18.60 µg/L  |          | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 114774 | 19.49 µg/L  |          | 99     |
| PFDoDA       | 8.480 | 613.0 -> 569.0 | 185675 | 19.37 µg/L  |          | 99     |
| PFDS         | 8.014 | 599.0 -> 80.0  | 6911   | 15.06 µg/L  |          | 99     |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 178768 | 18.75 µg/L  |          | 100    |
| PFHpS        | 6.454 | 449.0 -> 80.0  | 18981  | 20.49 µg/L  |          | 100    |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 47273  | 18.71 µg/L  |          | 99     |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 20903  | 19.19 µg/L  | m        | 96     |
| PFNA         | 7.066 | 463.0 -> 419.0 | 132813 | 18.92 µg/L  |          | 100    |
| PFNS         | 7.565 | 549.0 -> 80.0  | 14548  | 16.73 µg/L  |          | 99     |
| PFOA         | 6.450 | 413.0 -> 369.0 | 115467 | 19.37 µg/L  |          | 97     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 21951  | 18.44 µg/L  | m        | 79     |
| PFPeA        | 3.528 | 263.0 -> 219.0 | 85897  | 18.60 µg/L  |          | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 18028  | 18.30 µg/L  |          | 99     |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 143090 | 19.95 µg/L  |          | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 167474 | 21.22 µg/L  |          | 100    |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 150704 | 20.05 µg/L  |          | 100    |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |          |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |          |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |          |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |          |        |

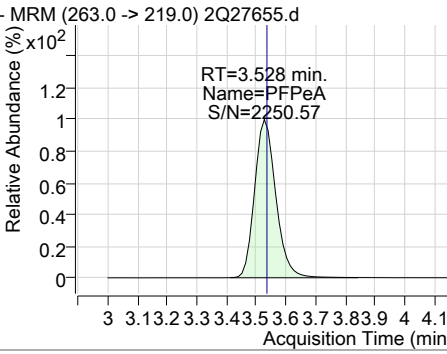
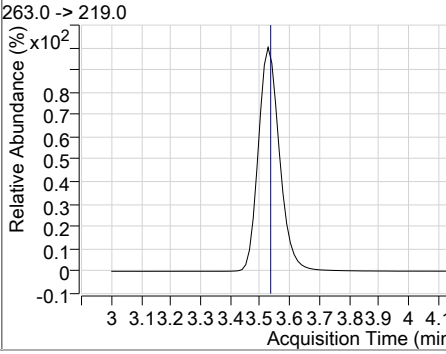
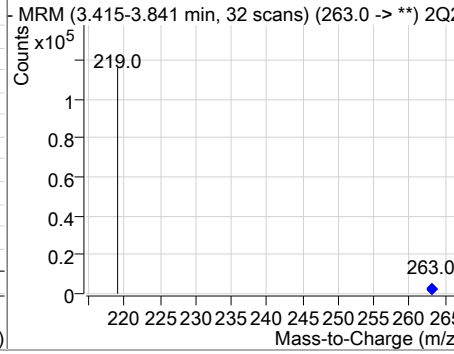
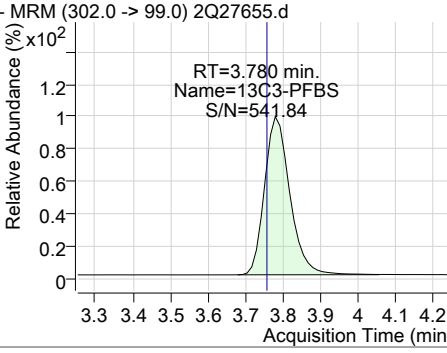
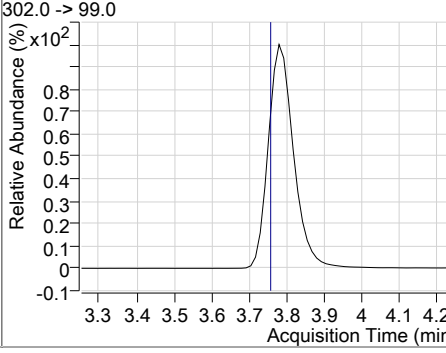
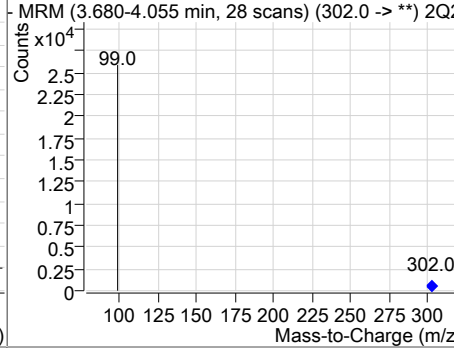
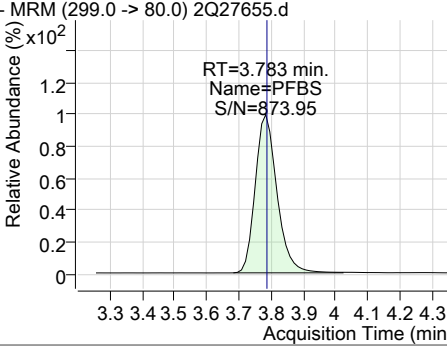
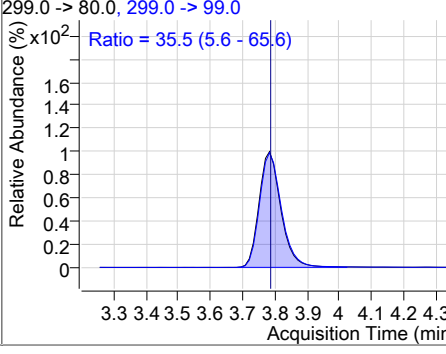
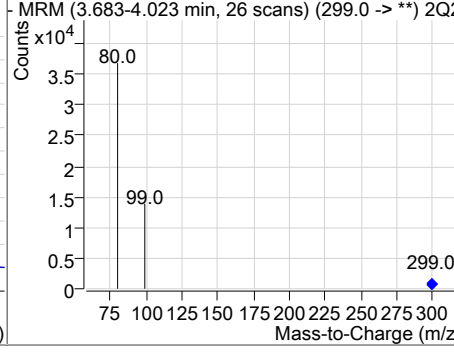
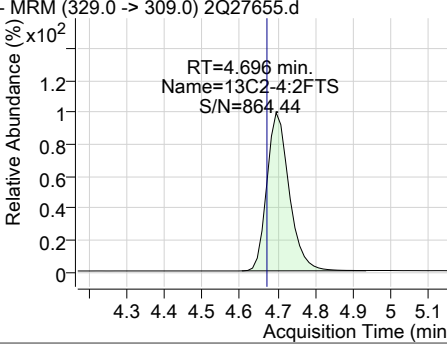
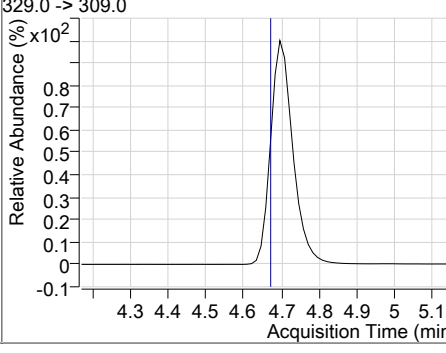
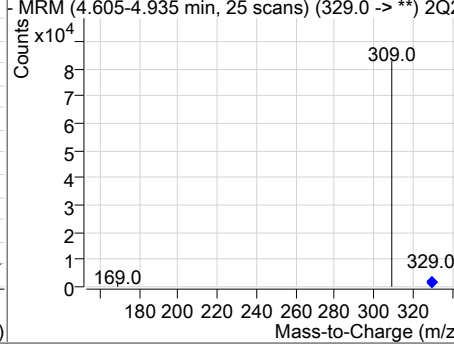
# = Qualifier out of range, m = manually integrated, + = Area summed

7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)  | Resp. | QIon          | QRatio   | Min. | Max. |
|--|-------|------|---|-------|---------------|--|------|------|
| PFPeA  | 18.60 | 3.53 | 0.03  | 85897 |               |  |      |      |
|    |       |      |    |       |               |    |      |      |
| 13C3-PFBS  | 14.34 | 3.78 | 0.03  | 17369 |               |  |      |      |
|    |       |      |    |       |               |    |      |      |
| PFBS   | 18.60 | 3.78 | 0.03  | 26779 | 299.0 -> 99.0 | 35.5   | 5.6  | 65.6 |
|  |       |      |  |       |               |  |      |      |
| 13C2-4:2FTS  | 14.54 | 4.70 | 0.03  | 60372 |               |  |      |      |
|  |       |      |  |       |               |  |      |      |

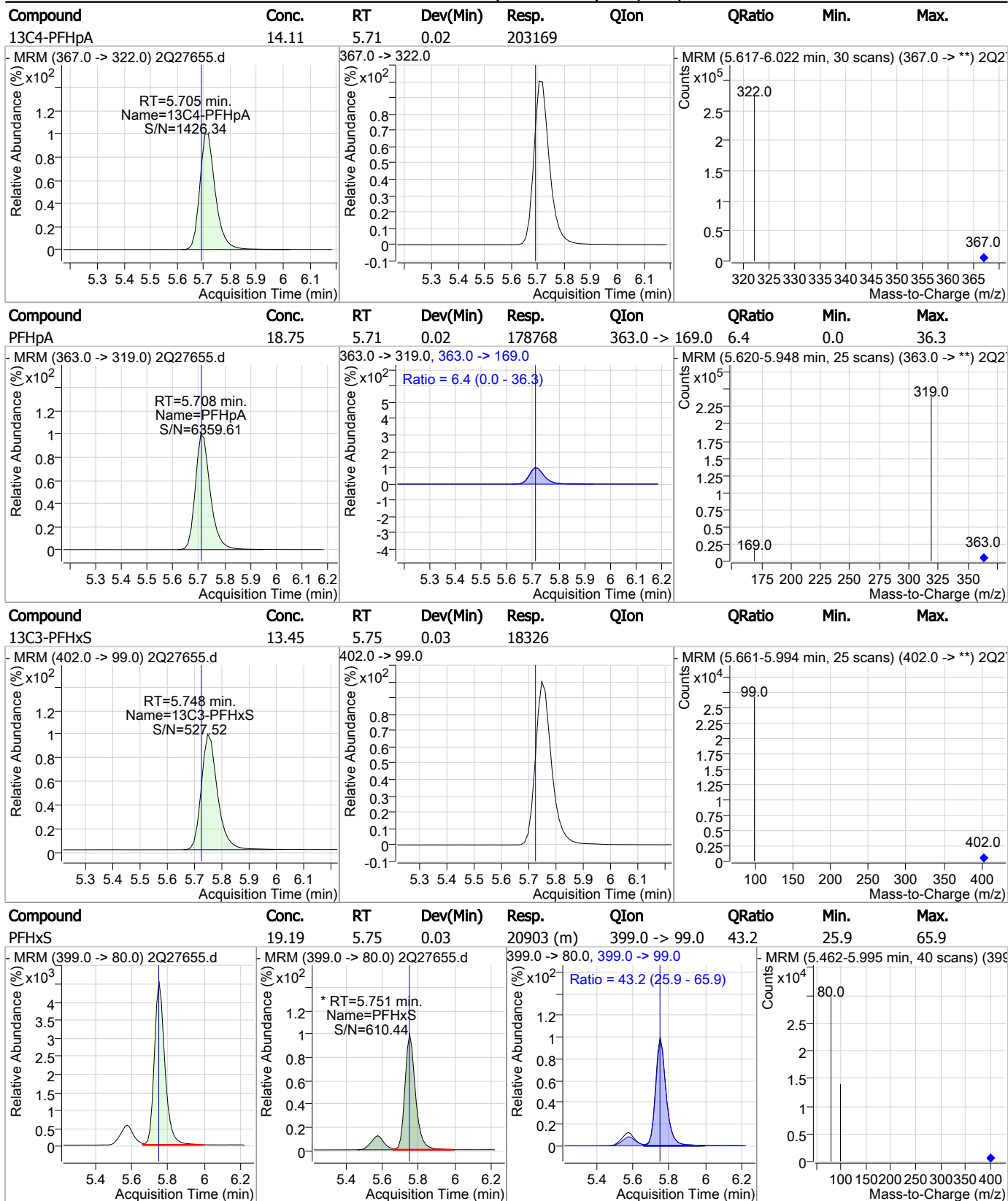
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 4:2FTS     | 19.37 | 4.70 | 0.03     | 34121  | 327.0 -> 81.0  | 38.0   | 18.6 | 58.6 |
|            |       |      |          |        |                |        |      |      |
| 13C5-PFHxA | 14.22 | 4.79 | 0.03     | 145828 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFHxA      | 18.71 | 4.79 | 0.02     | 47273  | 313.0 -> 119.0 | 11.2   | 0.0  | 31.5 |
|            |       |      |          |        |                |        |      |      |
| PFPeS      | 18.30 | 4.91 | 0.03     | 18028  | 349.0 -> 99.0  | 34.8   | 5.1  | 65.1 |
|            |       |      |          |        |                |        |      |      |

7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS



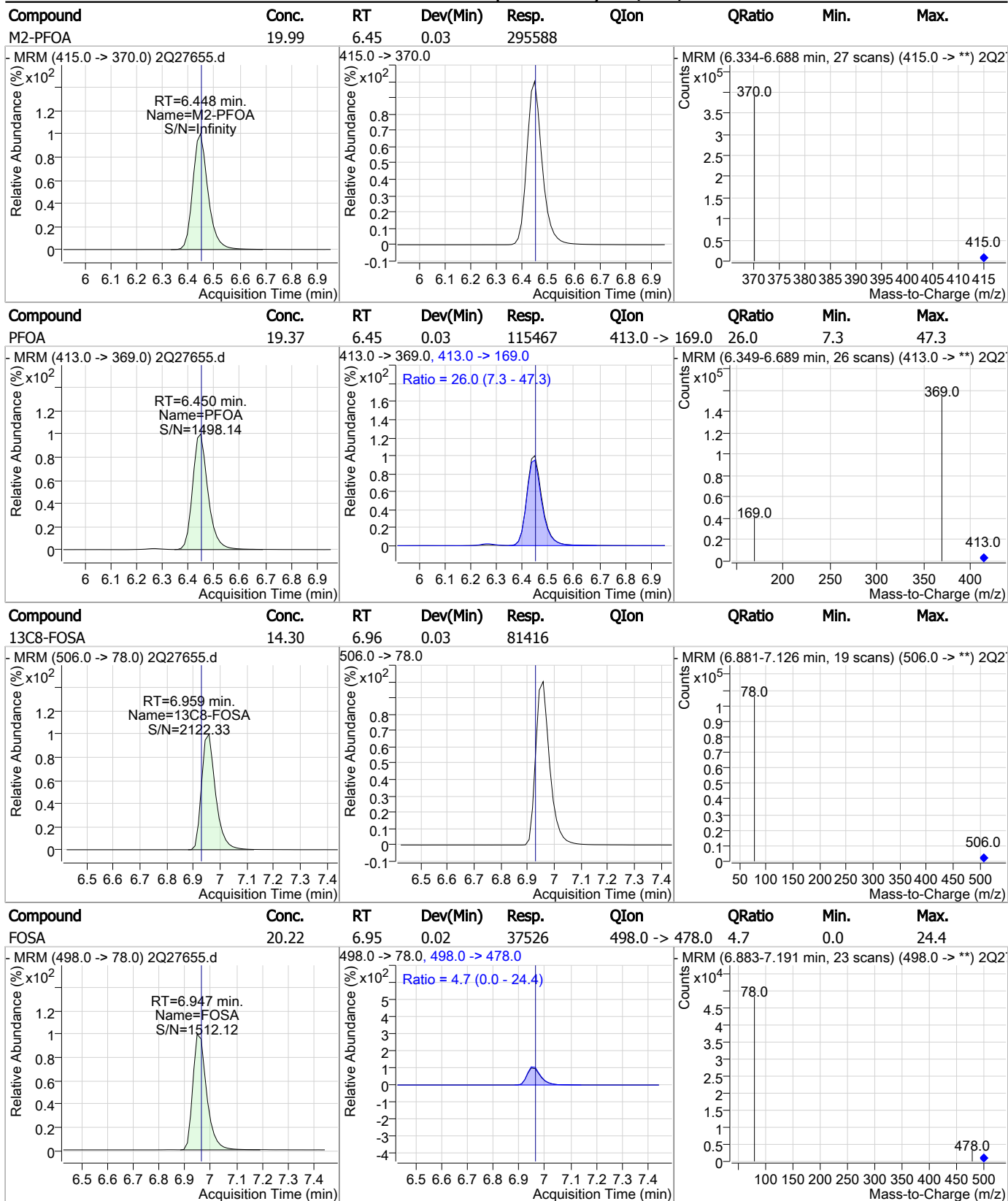
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C2-6:2FTS | 15.10 | 6.43 | 0.03     | 65828  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 6:2FTS      | 19.09 | 6.43 | 0.03     | 32137  | 427.0 -> 81.0 | 32.1   | 0.9  | 60.9 |
|             |       |      |          |        |               |        |      |      |
| PFHpS       | 20.49 | 6.45 | 0.04     | 18981  | 449.0 -> 99.0 | 45.5   | 15.3 | 75.3 |
|             |       |      |          |        |               |        |      |      |
| 13C8-PFOA   | 14.63 | 6.45 | 0.03     | 217895 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.3.1  
7

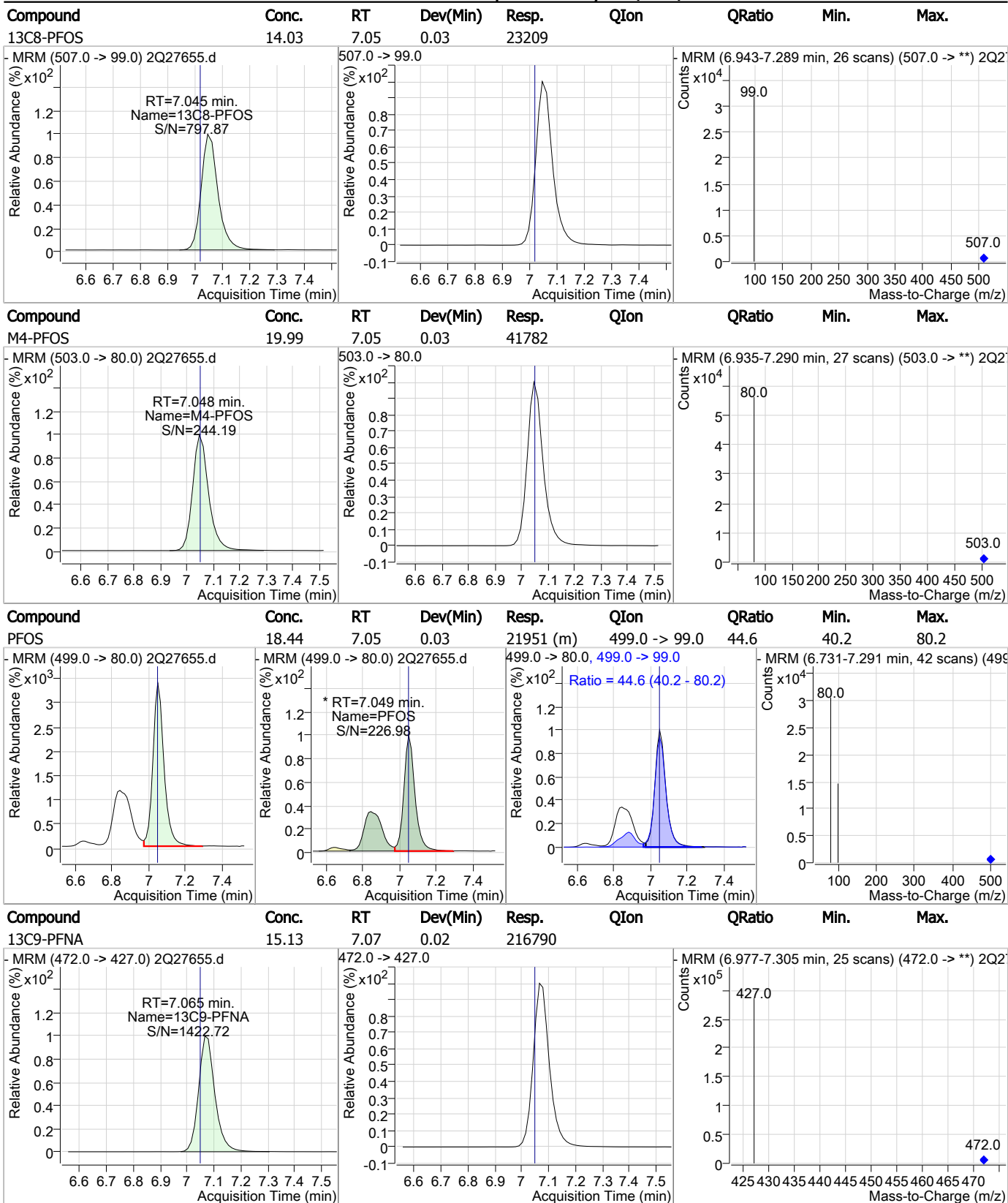
### Perfluorinated Compounds by LC/MS/MS



7.3.1  
7



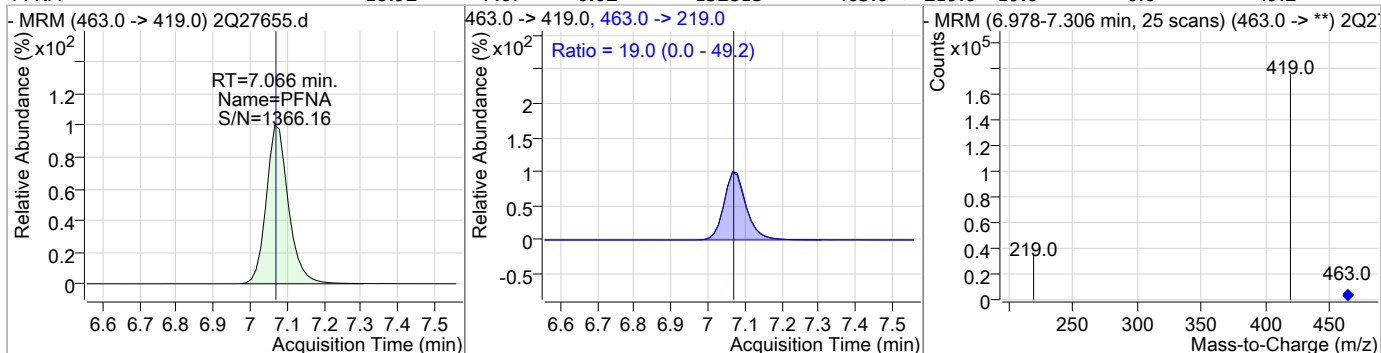
### Perfluorinated Compounds by LC/MS/MS



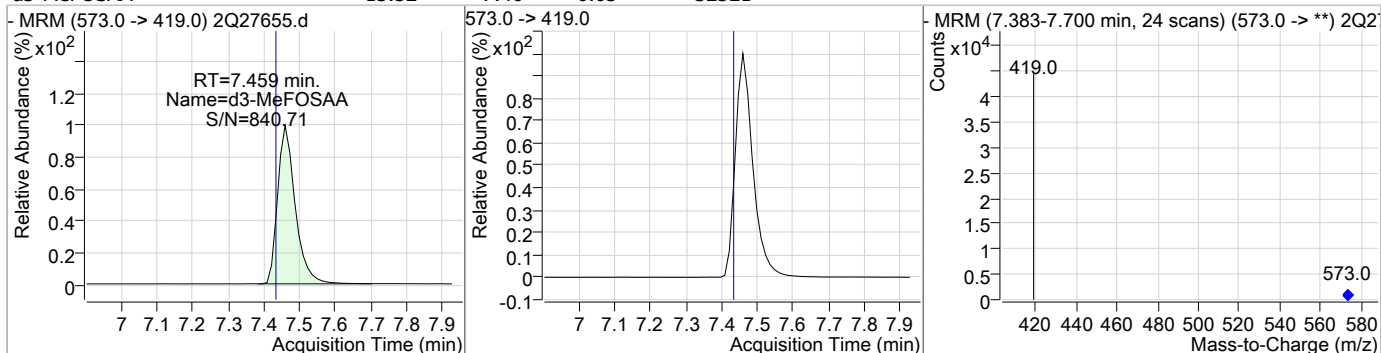
7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS

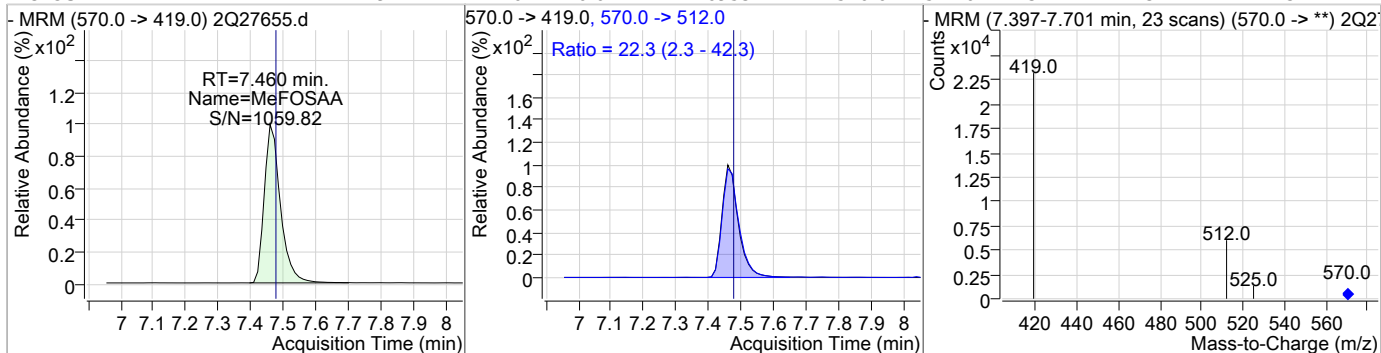
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 18.92 | 7.07 | 0.02     | 132813 | 463.0 -> 219.0 | 19.0   | 0.0  | 49.2 |



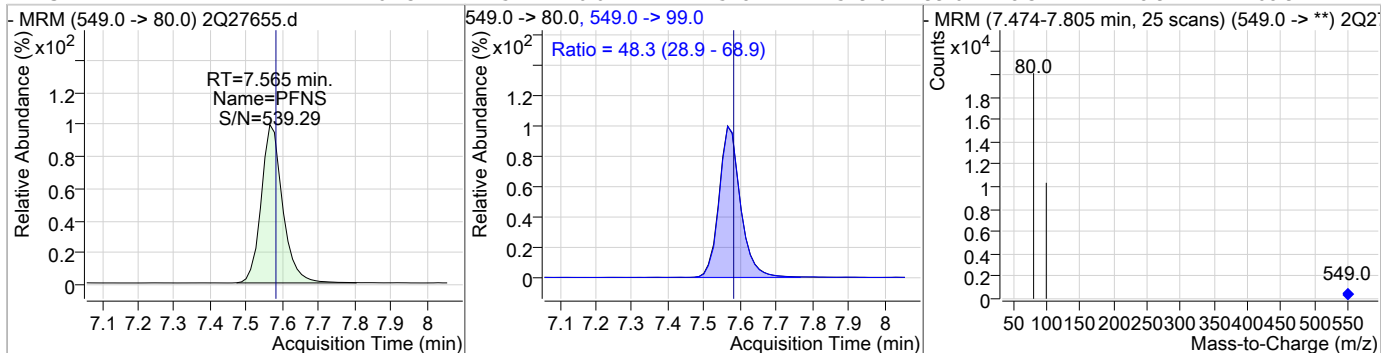
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 13.52 | 7.46 | 0.03     | 32321 |      |        |      |      |



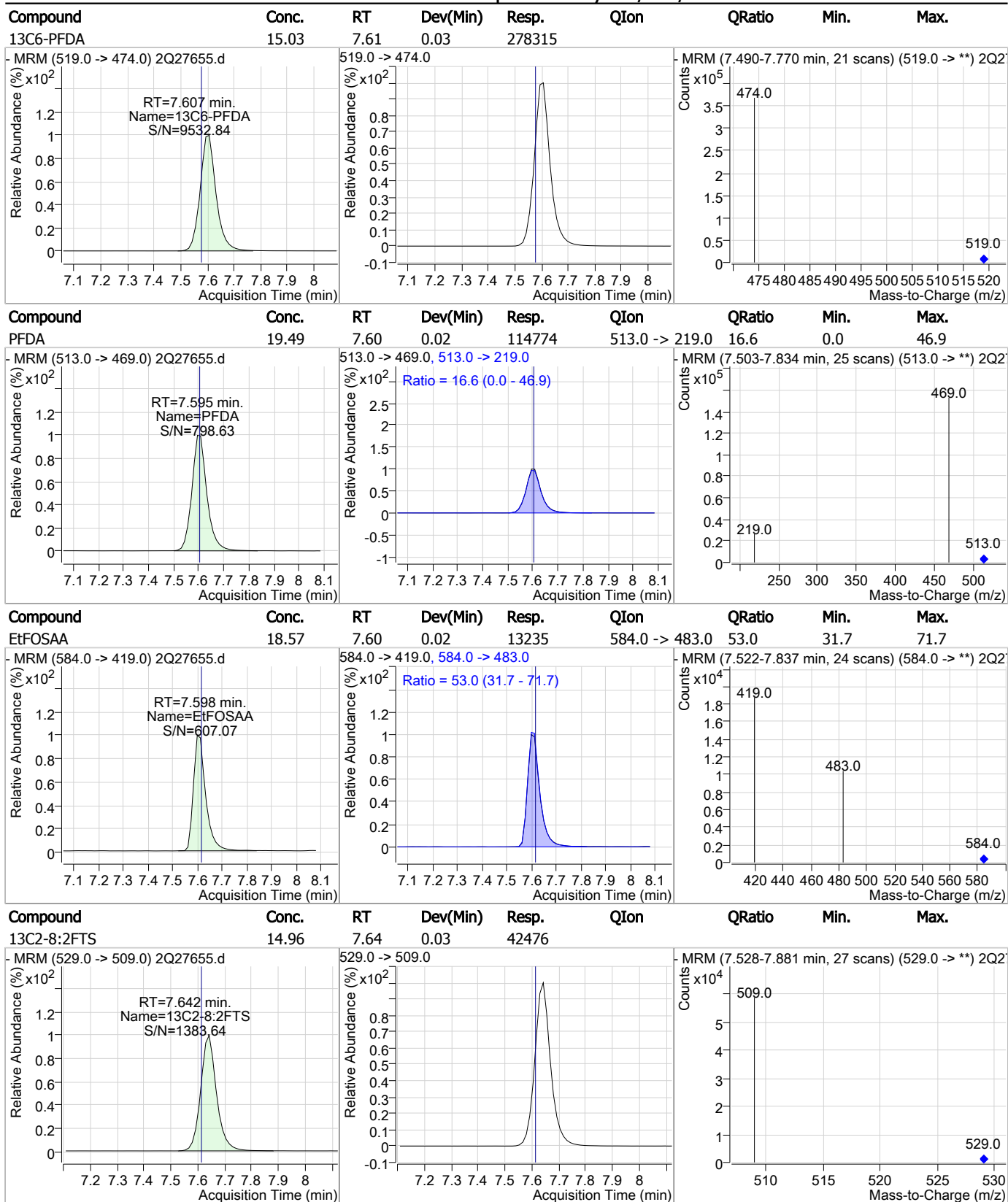
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| MeFOSAA  | 19.72 | 7.46 | 0.01     | 16953 | 570.0 -> 512.0 | 22.3   | 2.3  | 42.3 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 16.73 | 7.57 | 0.02     | 14548 | 549.0 -> 99.0 | 48.3   | 28.9 | 68.9 |



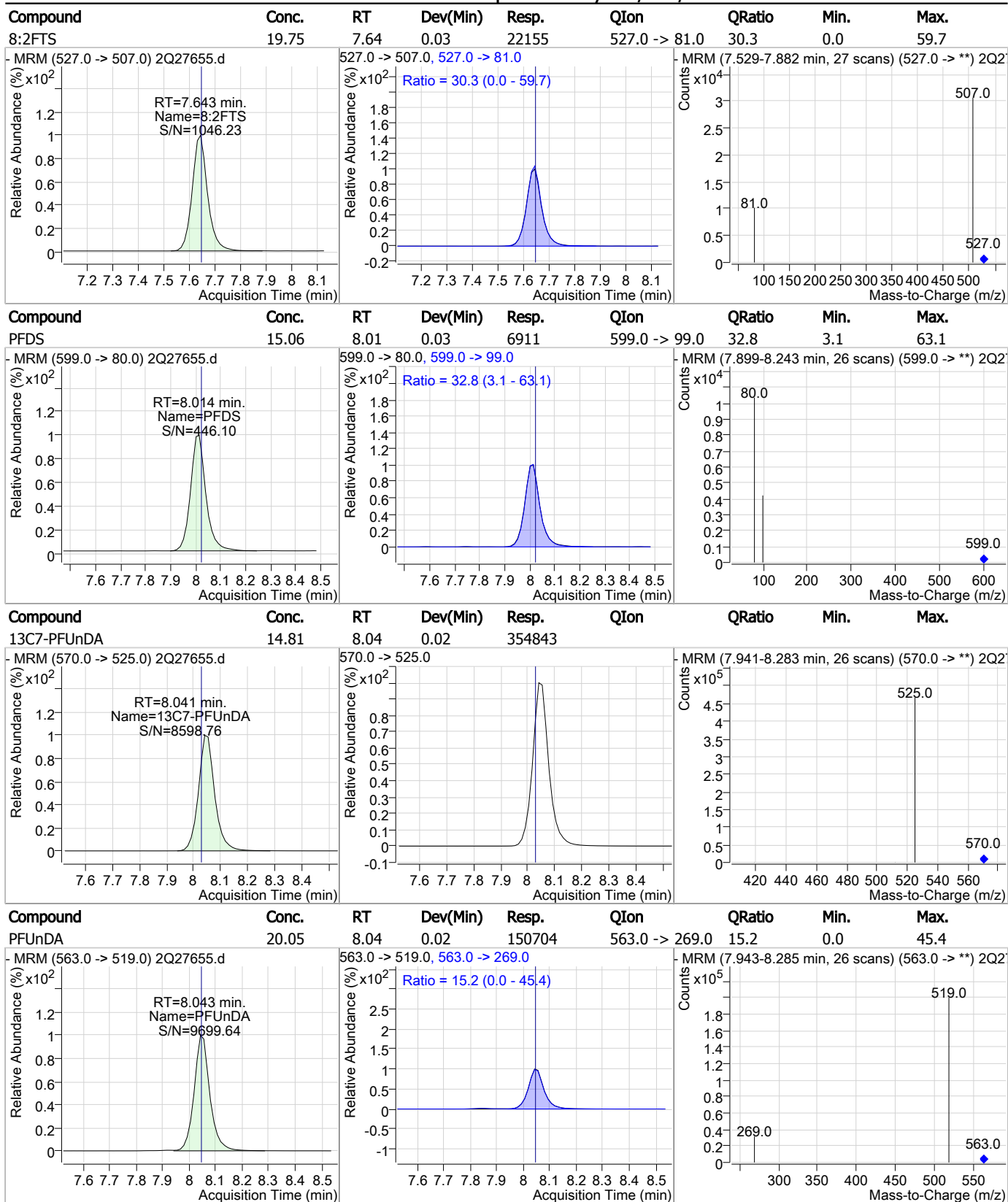
### Perfluorinated Compounds by LC/MS/MS



7.31  
7

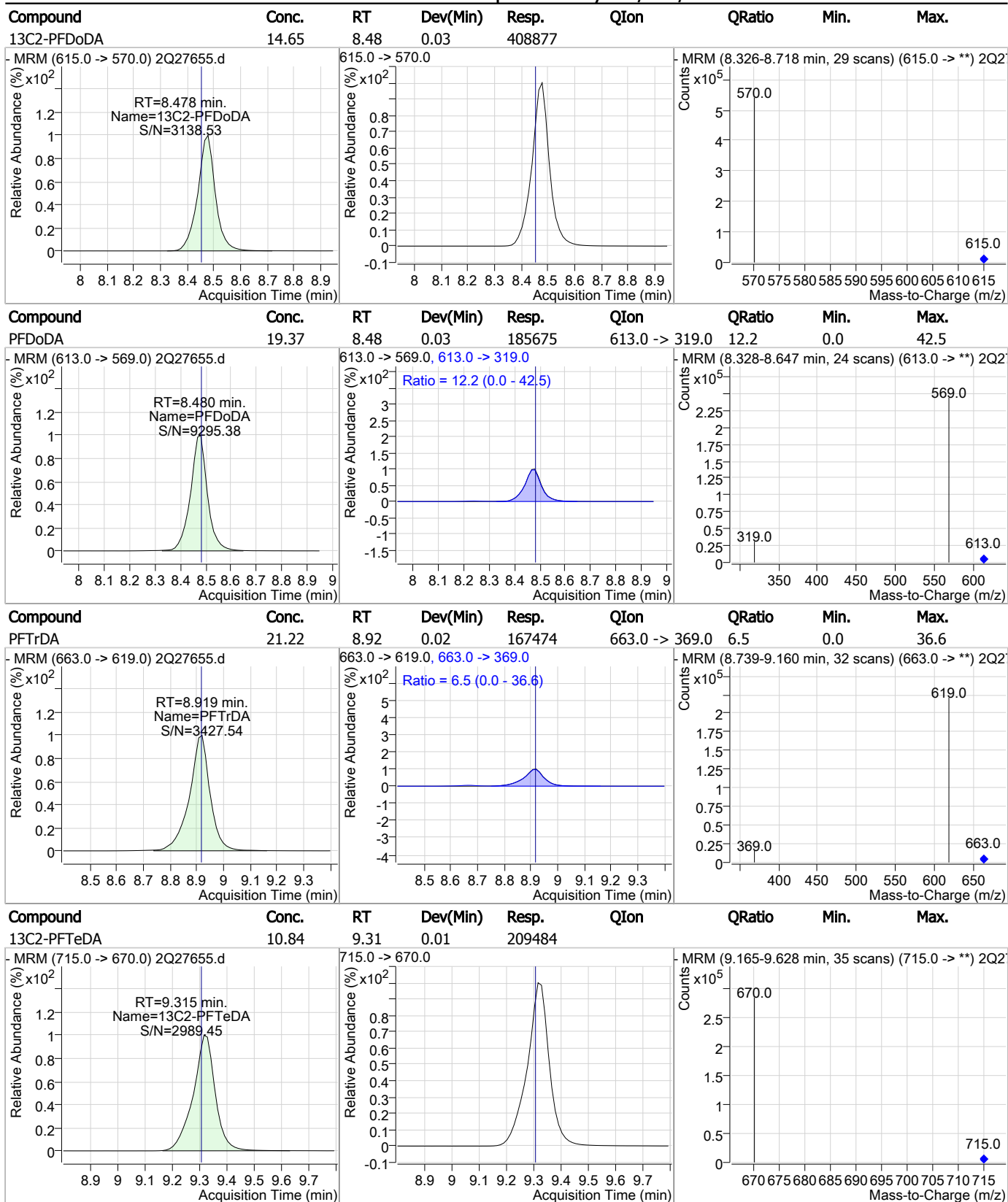


### Perfluorinated Compounds by LC/MS/MS



7.3.1  
7

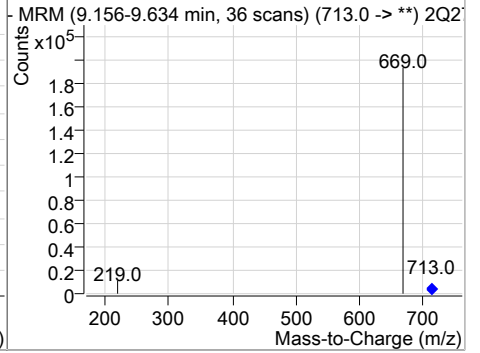
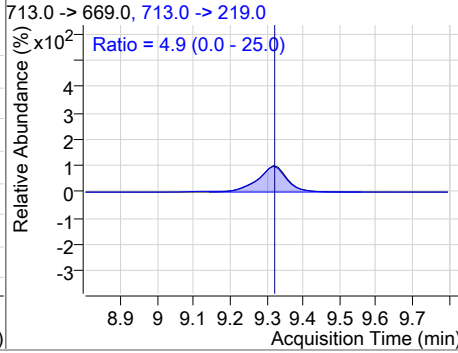
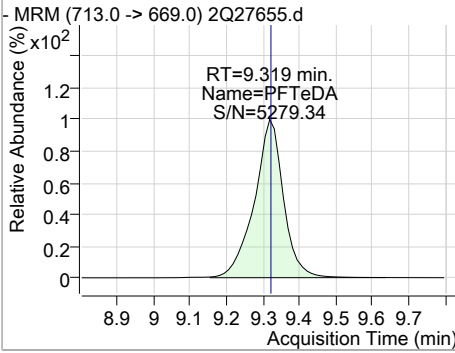
### Perfluorinated Compounds by LC/MS/MS



7.31  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.95 | 9.32 | 0.01     | 143090 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



7.3.1  
7

# Manual Integration Approval Summary

**Sample Number:** OP74164-BS      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27655.D      **Analyst approved:** 03/18/19 09:05 Nancy Saunders  
**Injection Time:** 03/15/19 16:37      **Supervisor approved:** 03/18/19 13:59 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T. (min.) | Reason     |
|------------------------------|-----------|------|-------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75        | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05        | Split peak |

7.3.1.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27691.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 3:45:29 PM  
 Sample Name : op74180-bs  
 Vial : Vial 13  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 250146 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 37068  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 96083  | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 82272  | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 118261 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 172793 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 181596 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 185776 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 240132 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 298796 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 378526 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.328                | 715.0 -> 670.0 | 201236 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 66476  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 15321  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 16507  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 21478  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 51928  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 58544  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 39503  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 30151  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 51890  | 17.45 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.3%  |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 58490  | 18.22 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.1%  |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 39524  | 17.83 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 89.1%  |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 378486 | 20.12 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.6% |          |
| 13C2-PFTeDA                        | 9.328                | 715.0 -> 670.0 | 201067 | 15.66 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.3%  |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 15324  | 16.81 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.0%  |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 16507  | 16.19 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.0%  |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 95967  | 16.00 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.0%  |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 172674 | 16.70 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.5%  |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 118097 | 16.25 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.3%  |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 82064  | 16.14 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.7%  |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 240089 | 17.59 µg/L        | 0.000    |

7.32  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|-----------------------|----------------------|----------------|--------|------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.0% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 298691 | 17.65 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.2% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 66469  | 16.39 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.0% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 181510 | 17.40 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.0% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 21439  | 16.45 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.2% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 185689 | 17.54 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.7% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 30164  | 15.74 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 78.7% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 250124 | 19.98 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 37057  | 19.98 µg/L       | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%   |          |

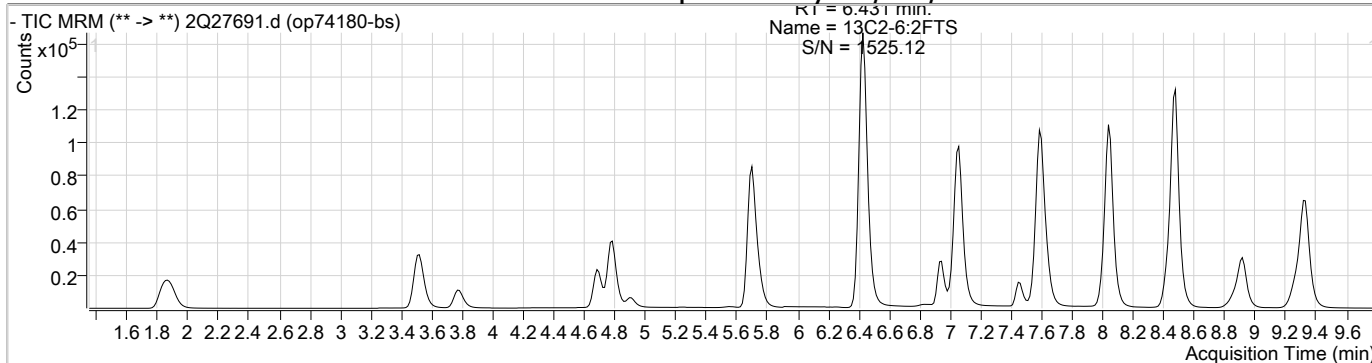
7.3.2  
7

**Target Compounds**

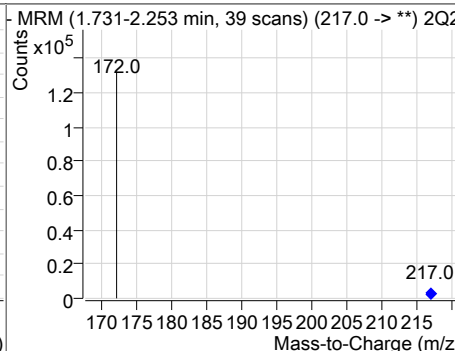
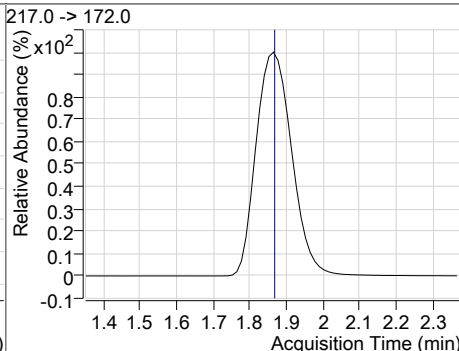
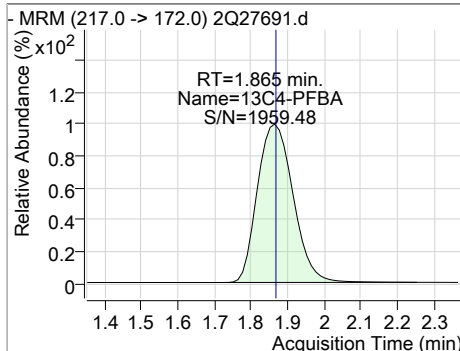
| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.687 | 327.0 -> 307.0 | 30363  | 21.22 µg/L  | 99     |
| 6:2FTS       | 6.418 | 427.0 -> 407.0 | 30537  | 21.20 µg/L  | 100    |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 21128  | 21.39 µg/L  | 98     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 12604  | 19.66 µg/L  | 99     |
| FOSA         | 6.935 | 498.0 -> 78.0  | 32229  | 21.05 µg/L  | 100    |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 16890  | 21.95 µg/L  | 99     |
| PFBA         | 1.860 | 213.0 -> 169.0 | 19691  | 20.75 µg/L  | 100    |
| PFBS         | 3.771 | 299.0 -> 80.0  | 25239  | 20.75 µg/L  | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 110480 | 21.14 µg/L  | 100    |
| PFDoDA       | 8.480 | 613.0 -> 569.0 | 176597 | 20.96 µg/L  | 100    |
| PFDS         | 8.001 | 599.0 -> 80.0  | 6269   | 15.85 µg/L  | 97     |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 153785 | 20.65 µg/L  | 100    |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 17532  | 21.89 µg/L  | 98     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 41388  | 20.32 µg/L  | 100    |
| PFHxS        | 5.739 | 399.0 -> 80.0  | 19141  | 20.98 µg/L  | m 97   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 127621 | 20.71 µg/L  | 100    |
| PFNS         | 7.565 | 549.0 -> 80.0  | 14156  | 19.23 µg/L  | 98     |
| PFOA         | 6.437 | 413.0 -> 369.0 | 101315 | 20.65 µg/L  | 98     |
| PFOS         | 7.037 | 499.0 -> 80.0  | 21131  | 20.26 µg/L  | m 80   |
| PFPeA        | 3.515 | 263.0 -> 219.0 | 73107  | 20.53 µg/L  | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 16220  | 20.83 µg/L  | 98     |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 149145 | 21.19 µg/L  | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 149560 | 20.40 µg/L  | 100    |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 129856 | 21.07 µg/L  | 99     |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

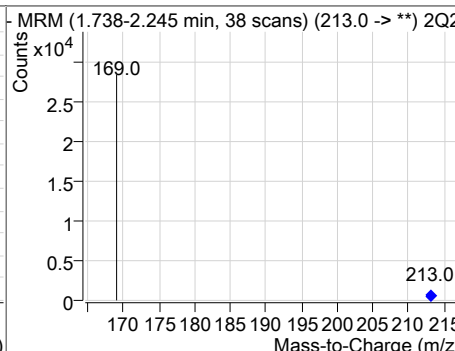
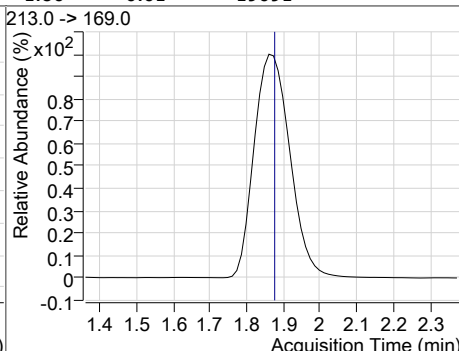
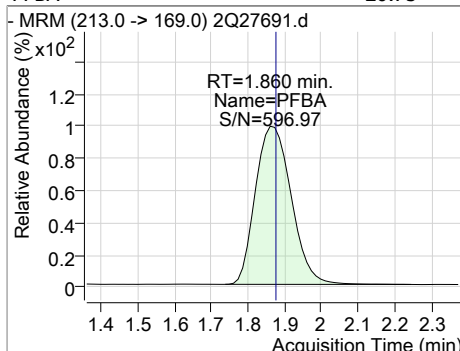
### Perfluorinated Compounds by LC/MS/MS



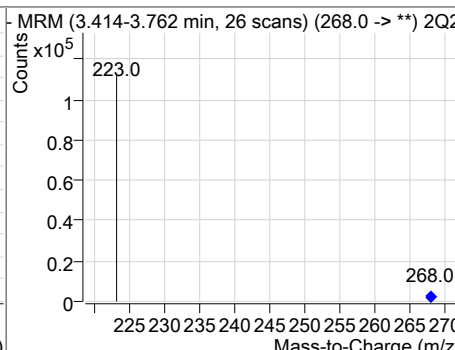
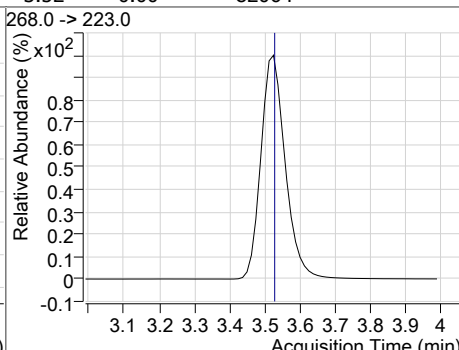
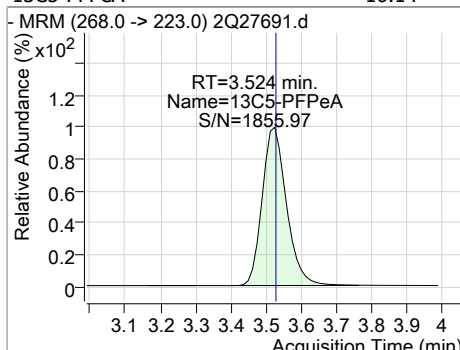
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C4-PFBA | 16.00 | 1.86 | 0.00     | 95967 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 20.75 | 1.86 | -0.01    | 19691 |      |        |      |      |

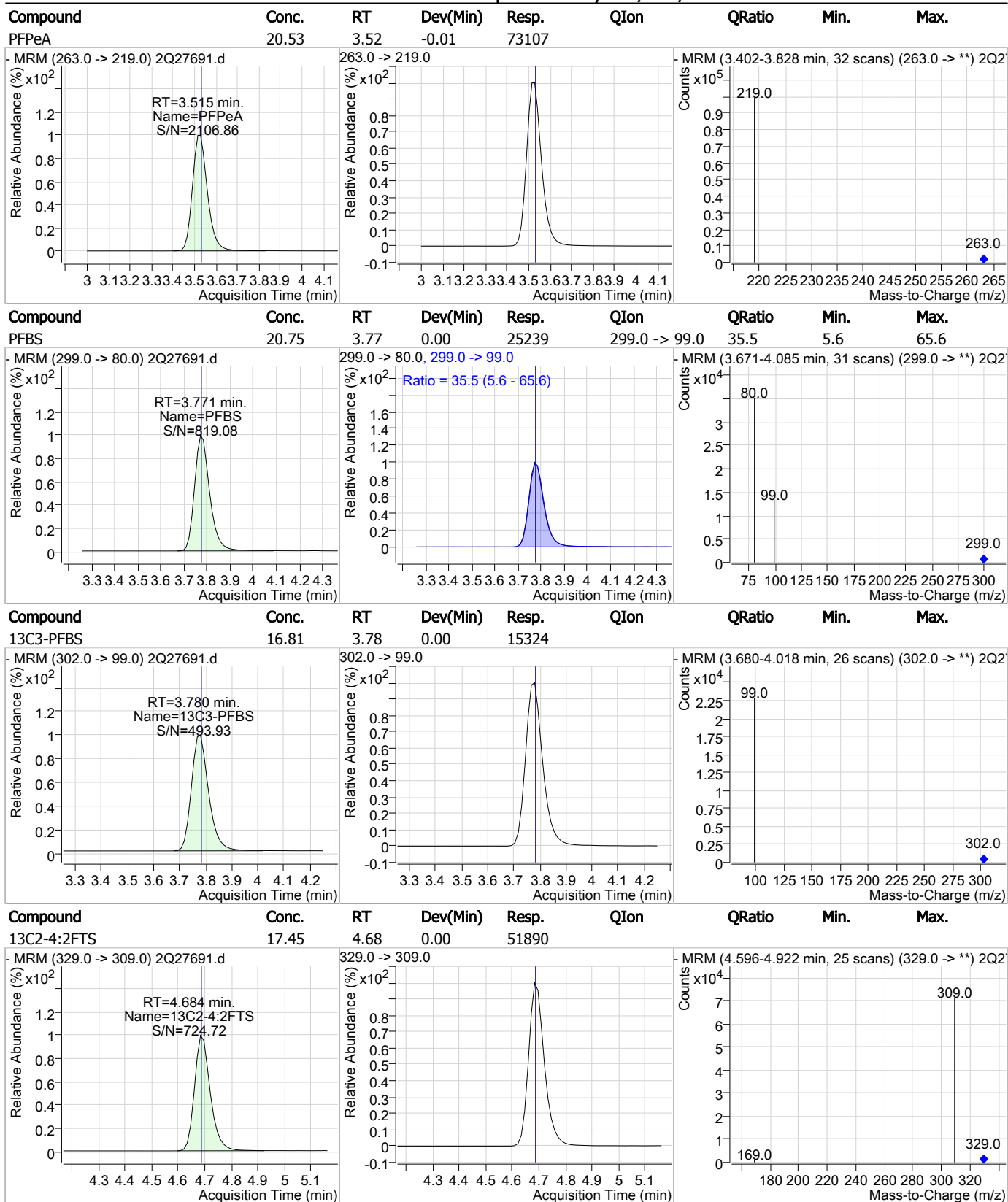


| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C5-PFPeA | 16.14 | 3.52 | 0.00     | 82064 |      |        |      |      |



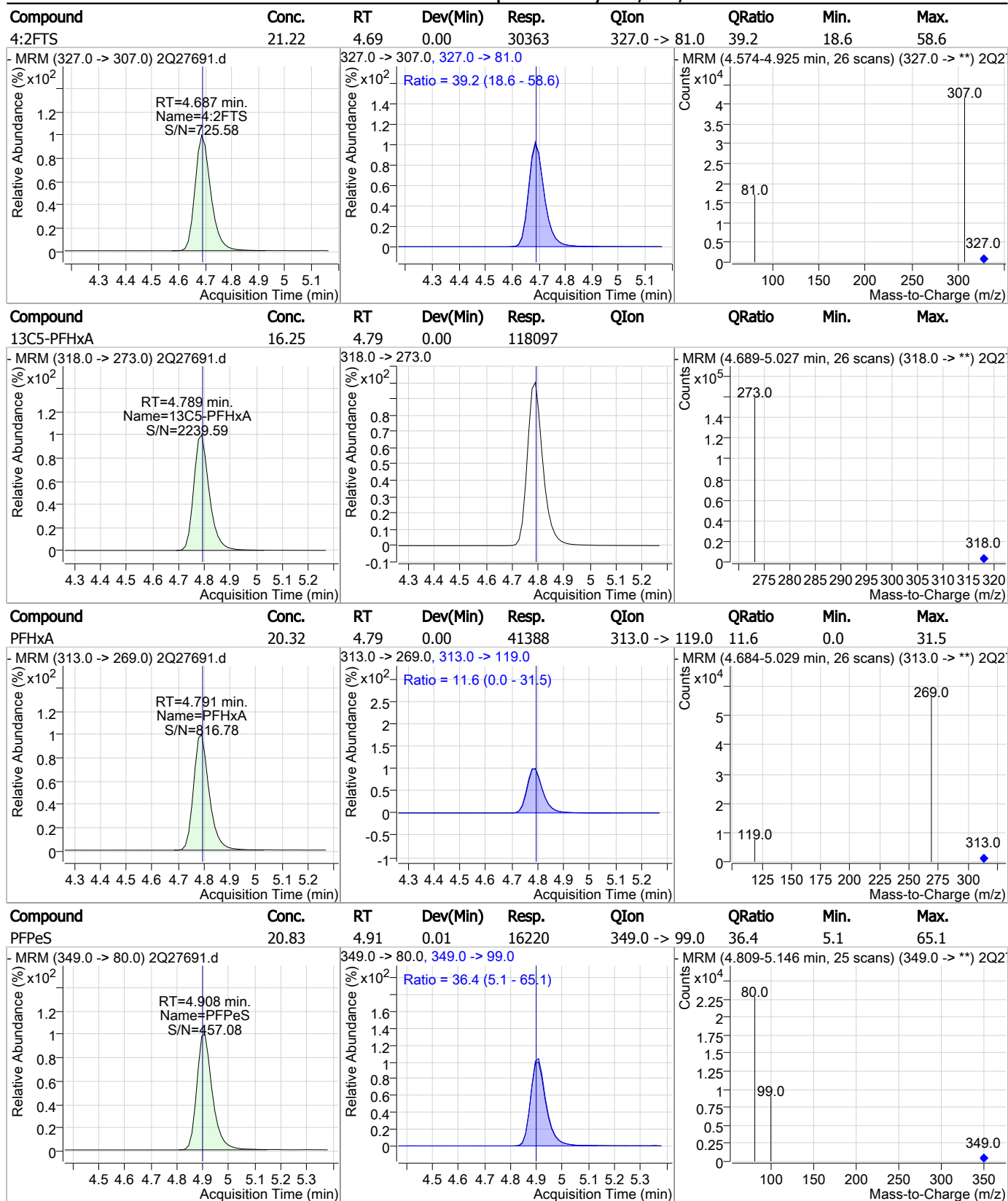
7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7

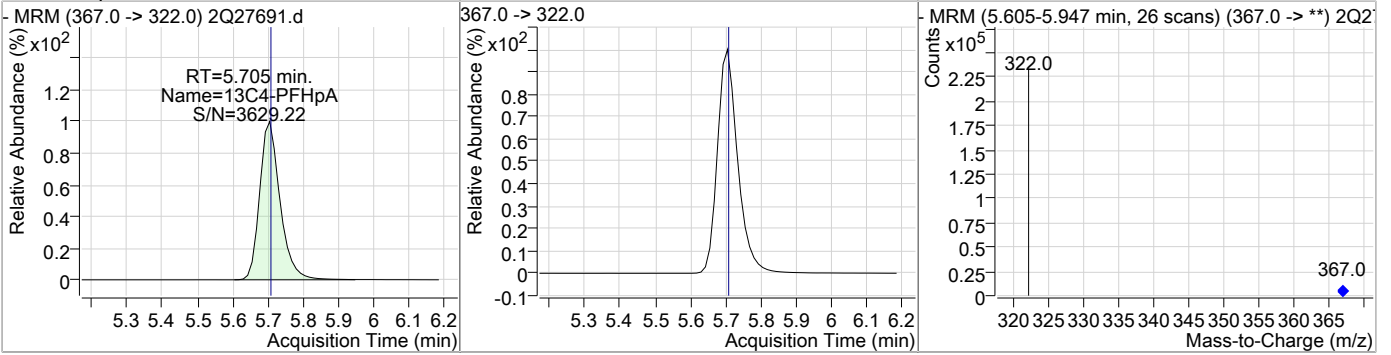
### Perfluorinated Compounds by LC/MS/MS



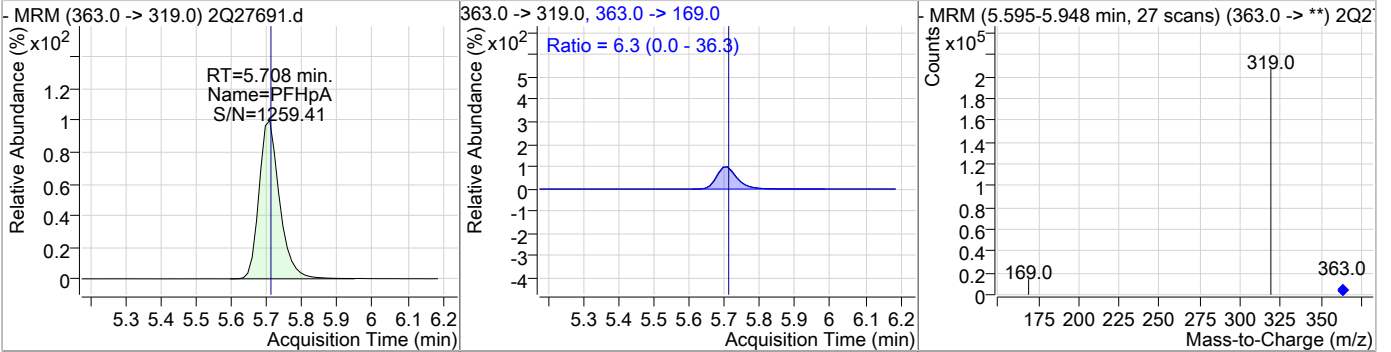
7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS

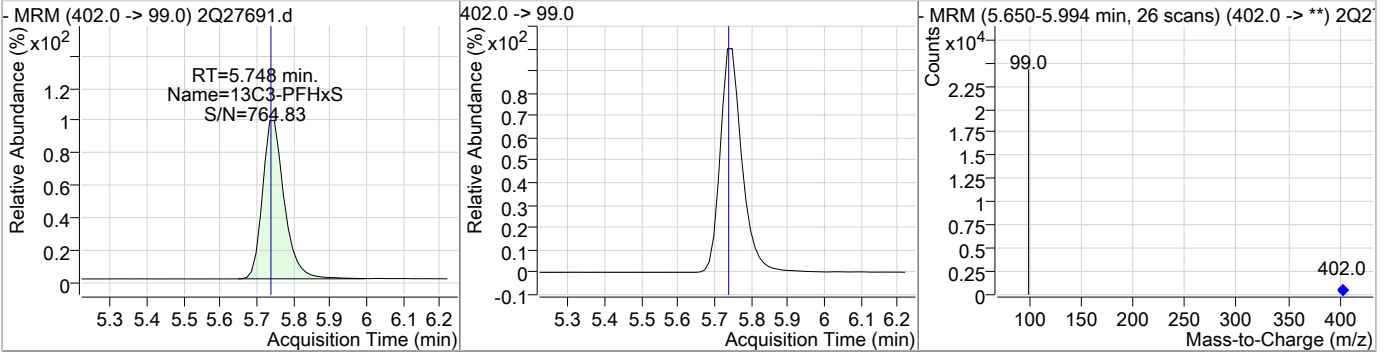
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 16.70 | 5.71 | 0.00     | 172674 |      |        |      |      |



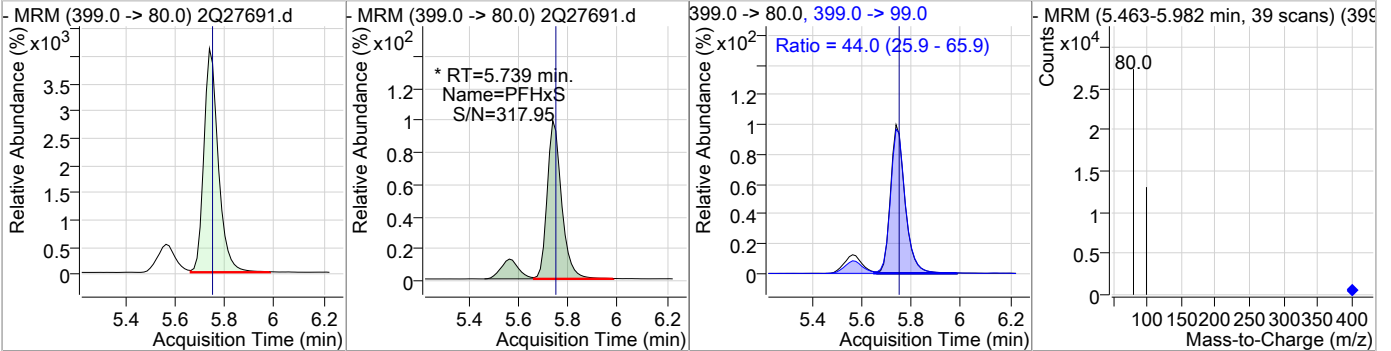
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 20.65 | 5.71 | 0.00     | 153785 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



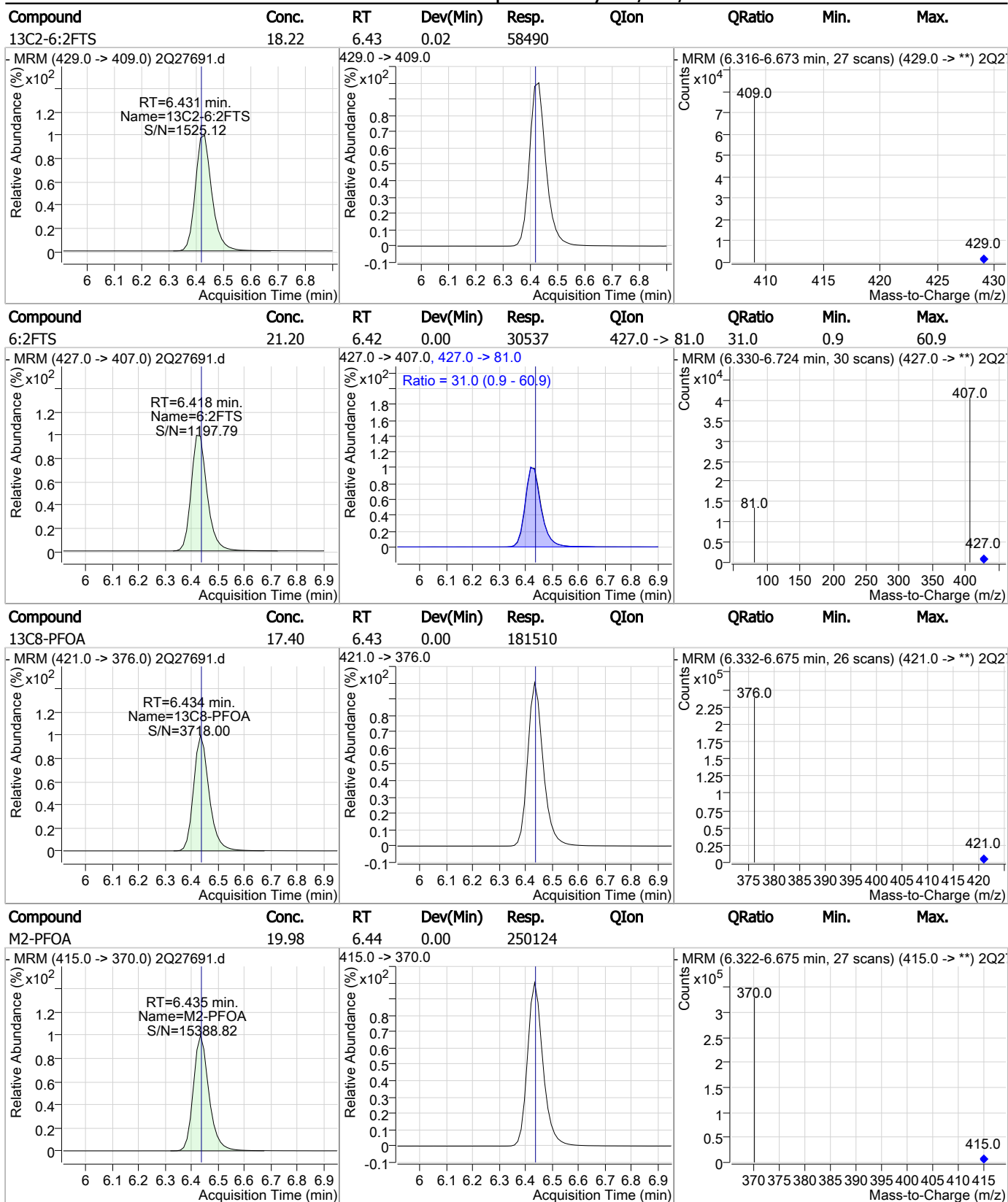
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 16.19 | 5.75 | 0.01     | 16507 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFHxS    | 20.98 | 5.74 | 0.00     | 19141 (m) | 399.0 -> 99.0 | 44.0   | 25.9 | 65.9 |

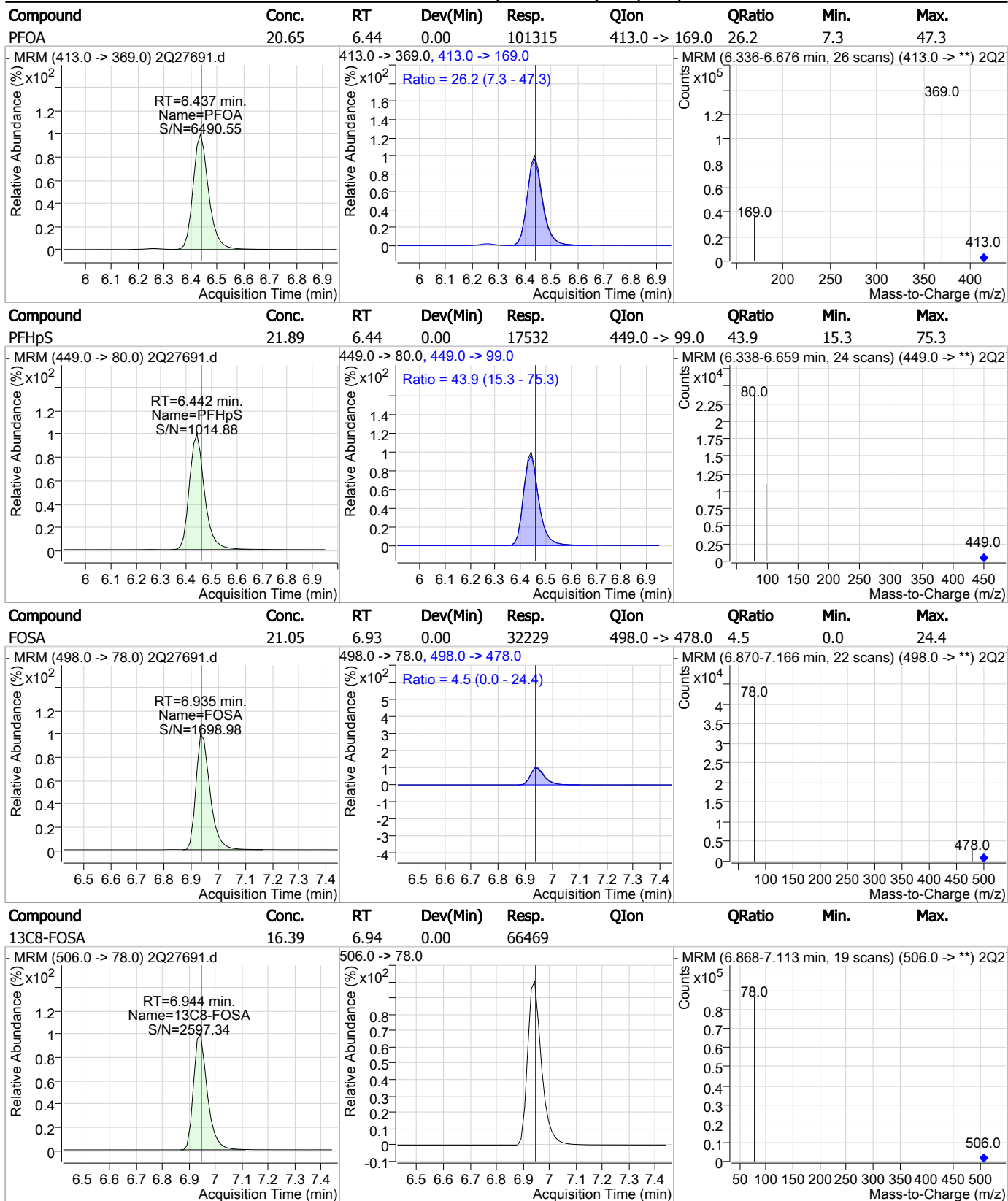


### Perfluorinated Compounds by LC/MS/MS



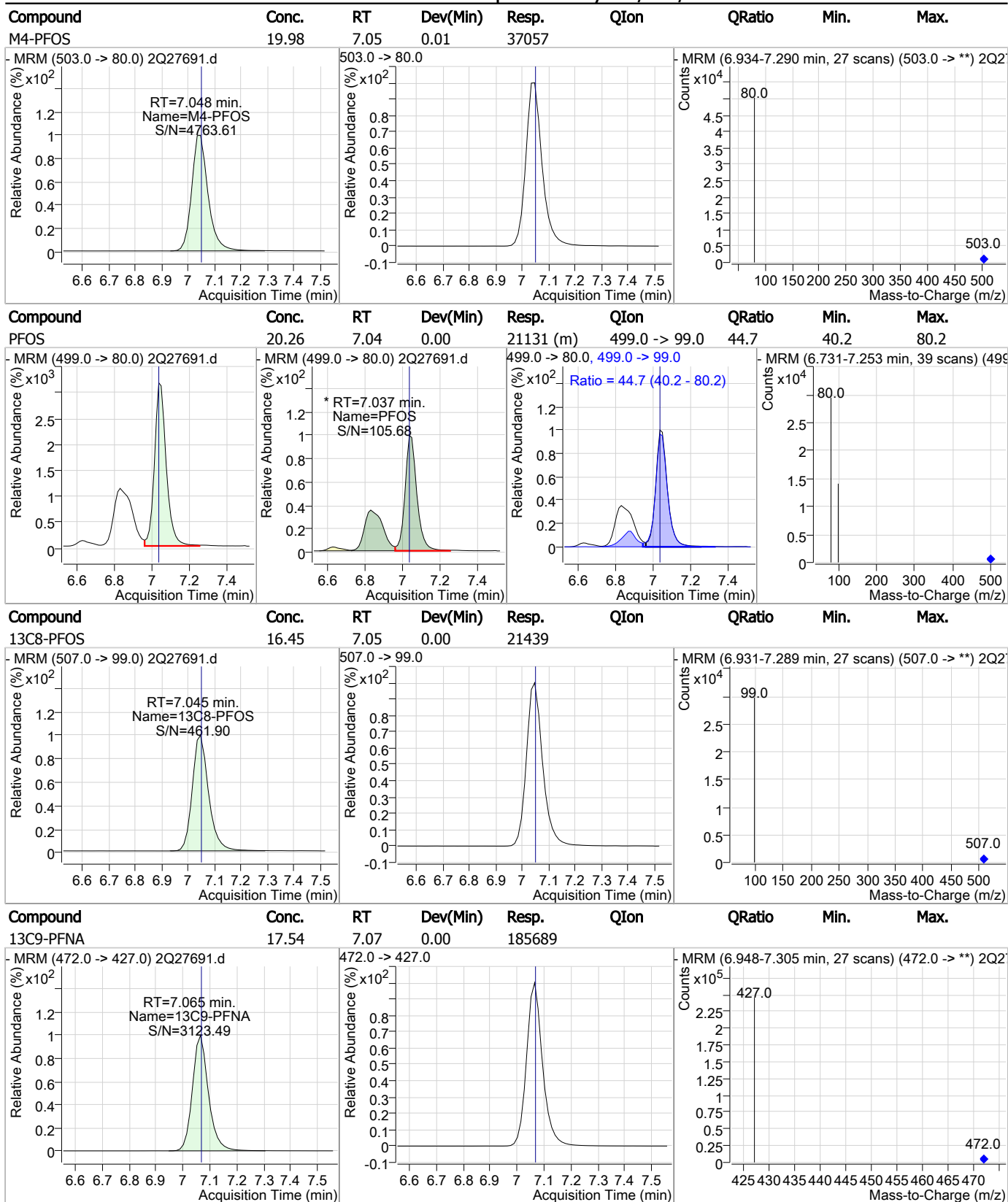
7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS

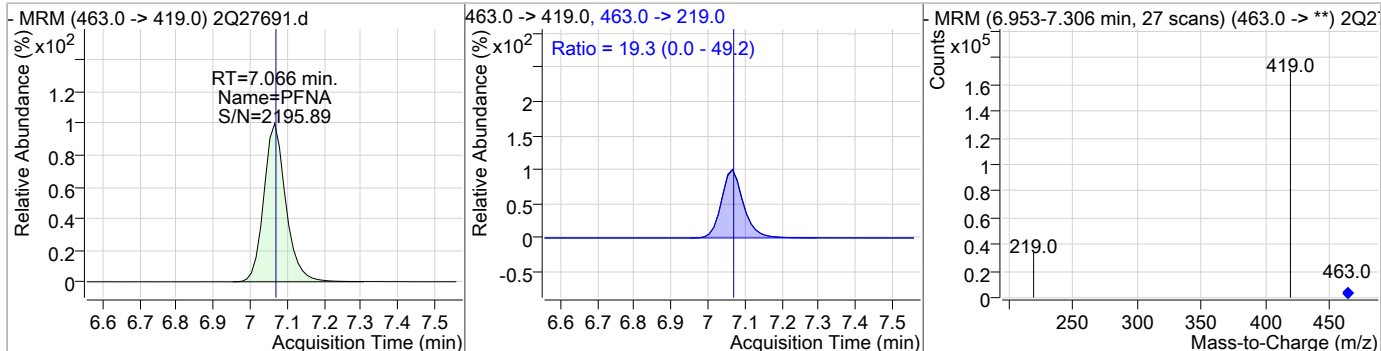


7.3.2  
7

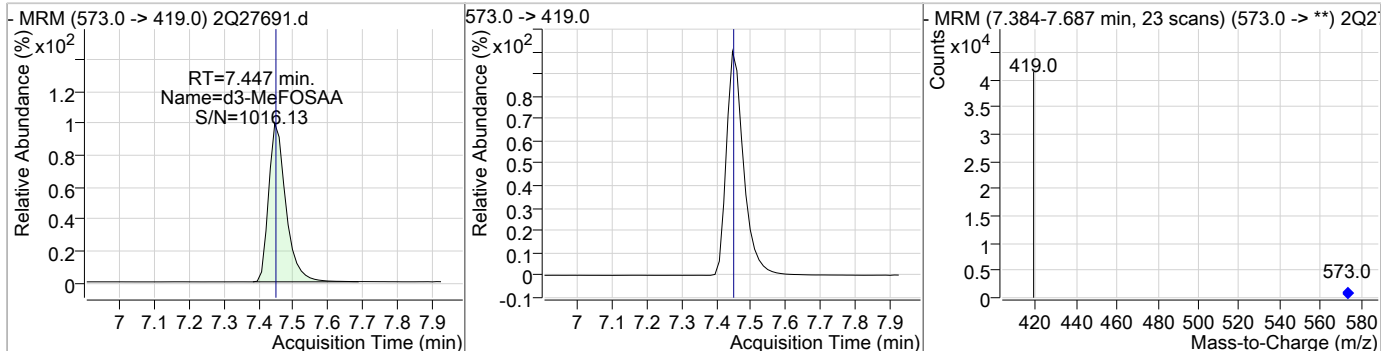


### Perfluorinated Compounds by LC/MS/MS

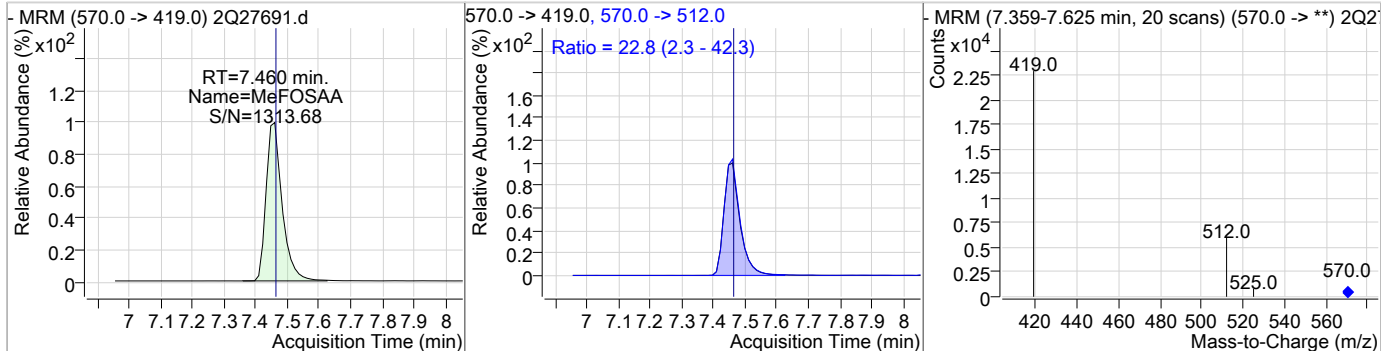
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 20.71 | 7.07 | 0.00     | 127621 | 463.0 -> 219.0 | 19.3   | 0.0  | 49.2 |



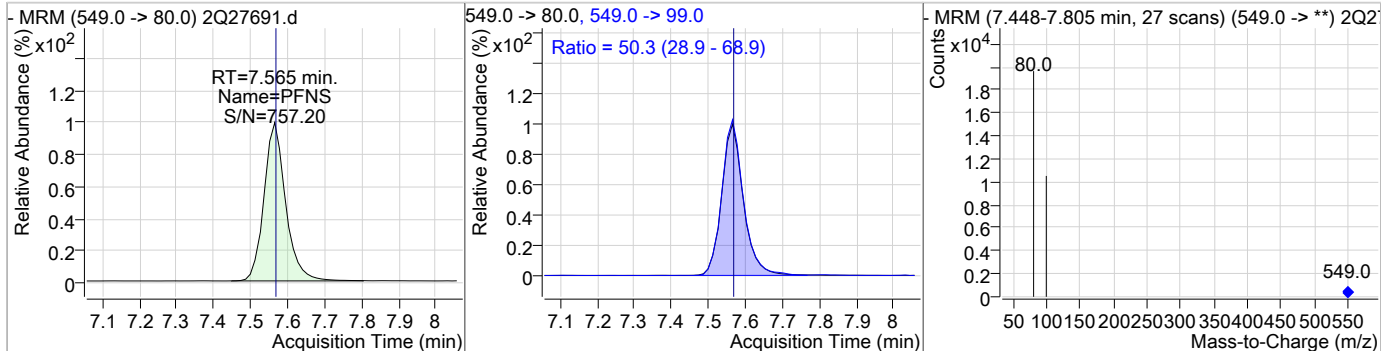
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| d3-MeFOSAA | 15.74 | 7.45 | 0.00     | 30164 | 573.0 -> 419.0 | 22.8   | 2.3  | 42.3 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| MeFOSAA  | 21.95 | 7.46 | 0.00     | 16890 | 570.0 -> 512.0 | 50.3   | 28.9 | 68.9 |

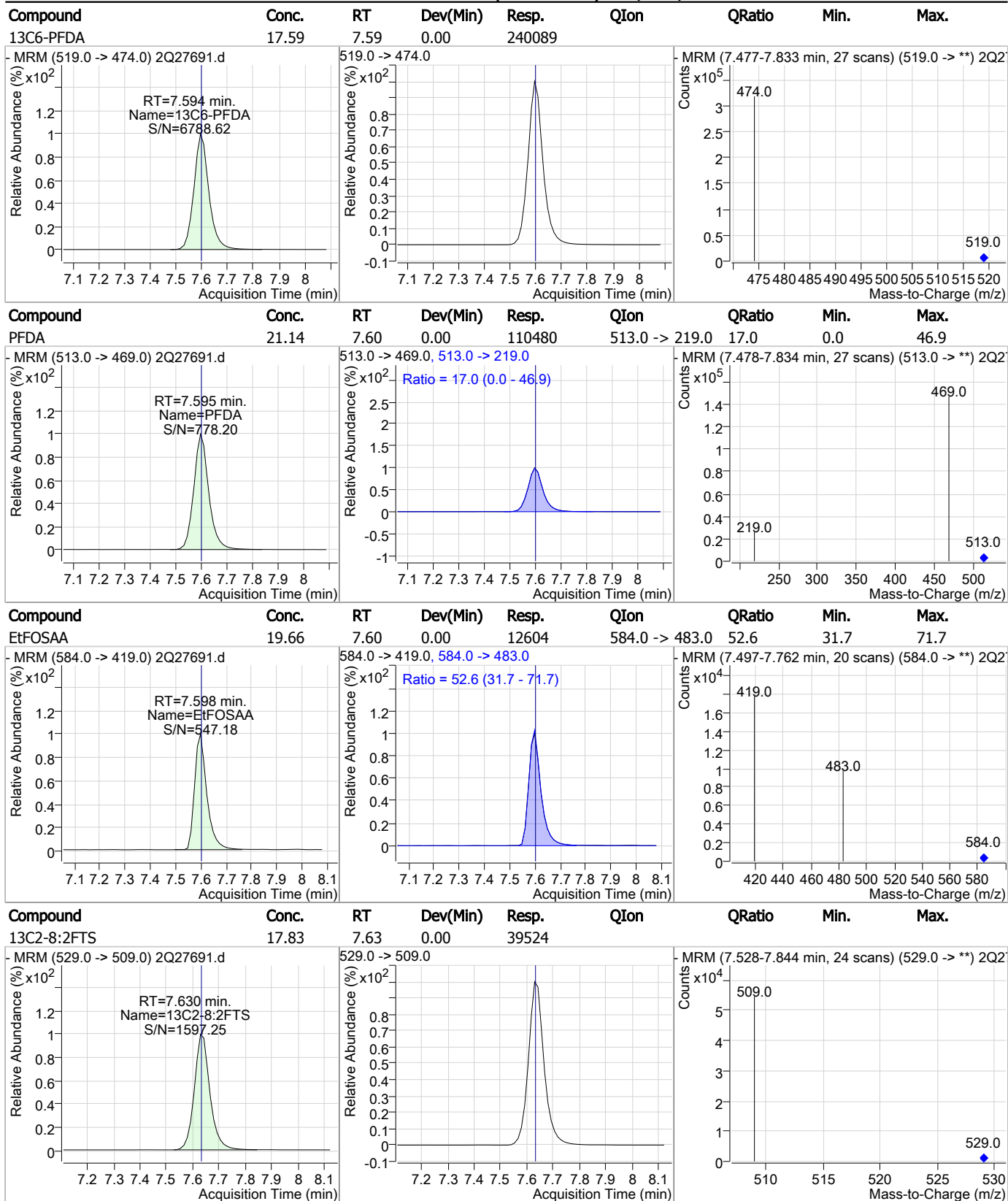


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 19.23 | 7.57 | 0.00     | 14156 | 549.0 -> 99.0 | 50.3   | 28.9 | 68.9 |



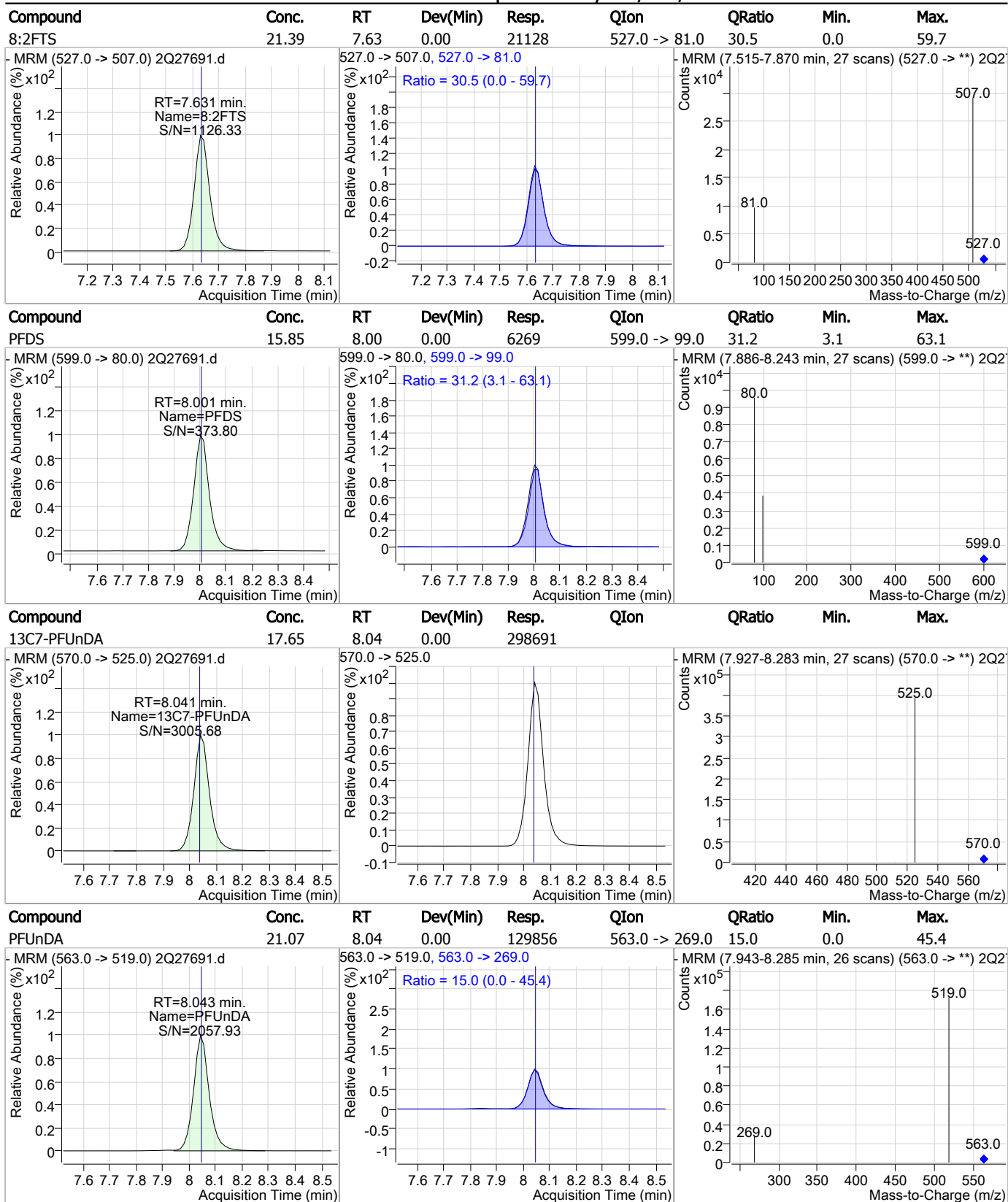
7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS



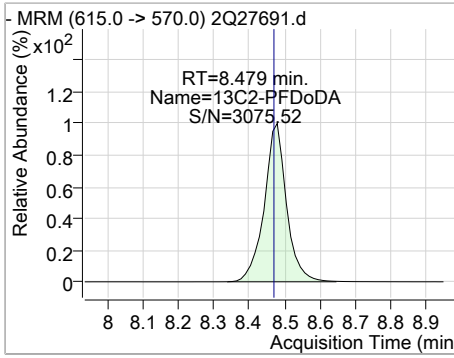
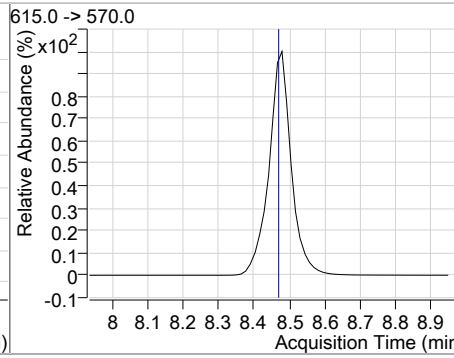
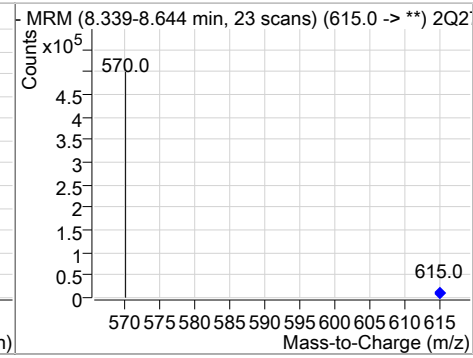
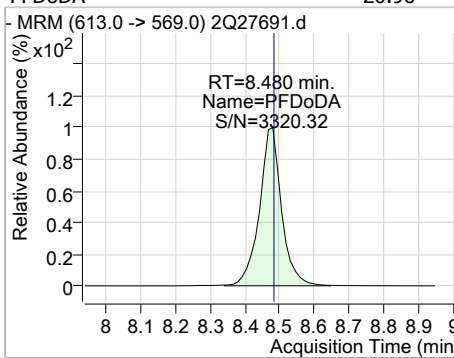
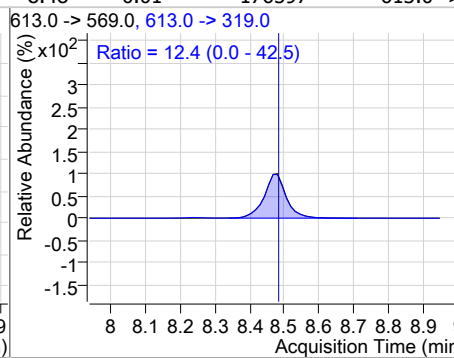
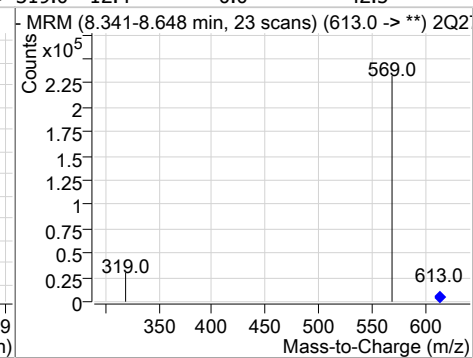
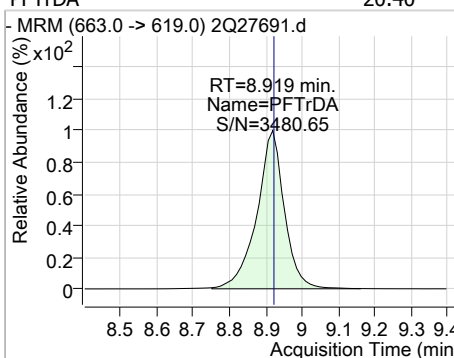
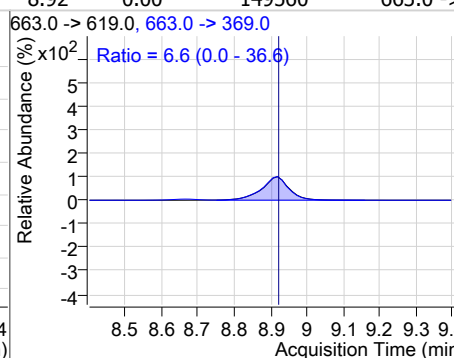
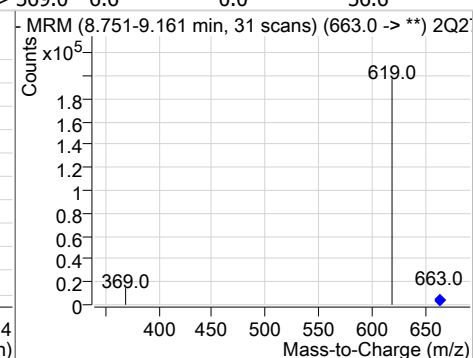
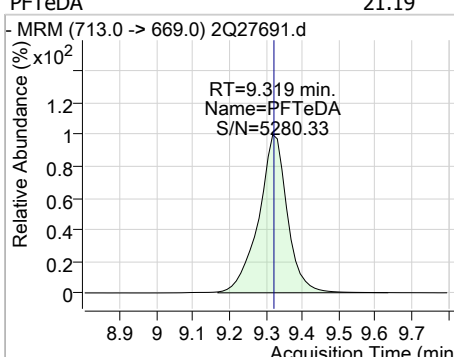
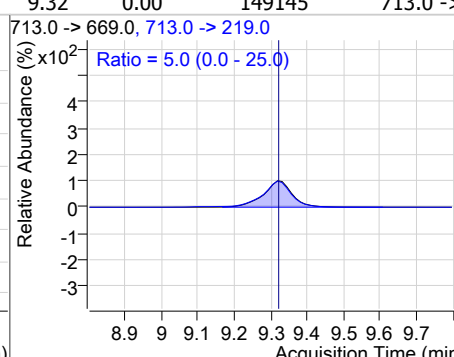
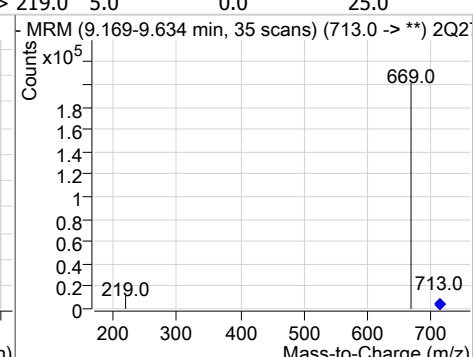
7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7

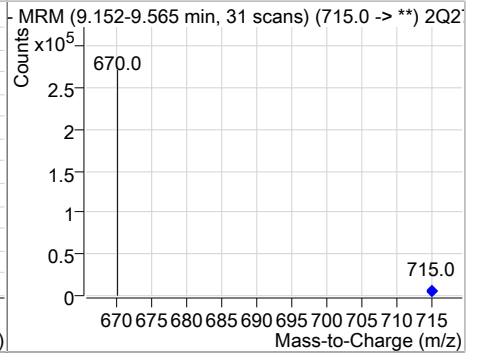
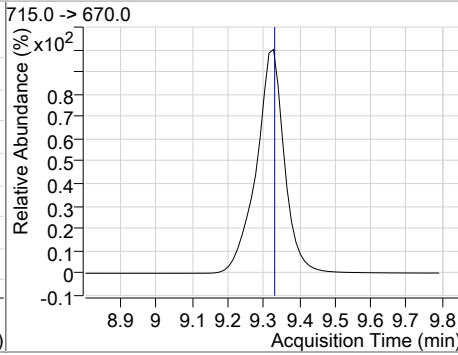
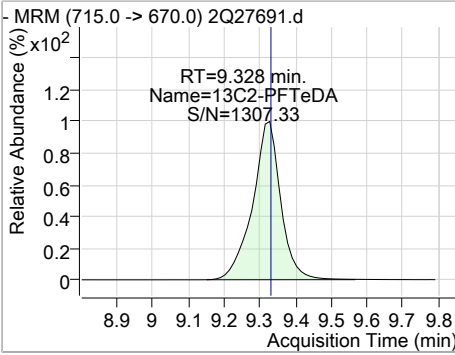
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon           | QRatio   | Min. | Max. |
|--|-------|------|---|--------|----------------|--|------|------|
| 13C2-PFDoDA  | 20.12 | 8.48 | 0.01  | 378486 |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| PFDoDA   | 20.96 | 8.48 | 0.01  | 176597 | 613.0 -> 319.0 | 12.4   | 0.0  | 42.5 |
|    |       |      |    |        |                |    |      |      |
| PFTrDA   | 20.40 | 8.92 | 0.00  | 149560 | 663.0 -> 369.0 | 6.6  | 0.0  | 36.6 |
|  |       |      |  |        |                |  |      |      |
| PFTeDA   | 21.19 | 9.32 | 0.00  | 149145 | 713.0 -> 219.0 | 5.0  | 0.0  | 25.0 |
|  |       |      |  |        |                |  |      |      |

7.3.2  
7

Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.66 | 9.33 | 0.00     | 201067 |      |        |      |      |



7.3.2

7

# Manual Integration Approval Summary

**Sample Number:** OP74180-BS      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27691.D      **Analyst approved:** 03/19/19 09:49 Nancy Saunders  
**Injection Time:** 03/18/19 15:45      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.3.2.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1984.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 1:06:04 PM  
 Sample Name : op74233-bs  
 Vial : P3-B4  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74233,S3Q54,130,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 311159 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.548                | 268.0 -> 223.0 | 209854 | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 284058 | 20.00 µg/L       | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 323722 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.621                | 421.0 -> 376.0 | 309883 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.213                | 472.0 -> 427.0 | 293717 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 316946 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 305360 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 304485 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 304258 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 201976 | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.867                | 302.0 -> 99.0  | 49168  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 49413  | 20.00 µg/L       | -0.013   |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 71092  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 90975  | 20.00 µg/L       | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 88390  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 51514  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.735                | 573.0 -> 419.0 | 37742  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| 13C2-PFOA                          | 6.622                | 415.0 -> 370.0 | 387619 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.198                | 503.0 -> 80.0  | 117123 | 20.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 90843  | 19.14 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.7% |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 88877  | 19.45 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.2% |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 51554  | 18.44 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.2% |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 306411 | 15.67 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.3% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 304316 | 16.64 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.2% |          |
| 13C3-PFBS                          | 3.867                | 302.0 -> 99.0  | 48801  | 19.35 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.7% |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 49306  | 19.51 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.5% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 305619 | 18.74 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.7% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 323814 | 19.40 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.0% |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 283117 | 19.24 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.2% |          |
| 13C5-PFPeA                         | 3.548                | 268.0 -> 223.0 | 207633 | 18.75 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.8% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 317038 | 19.03 µg/L       | 0.000    |

7.3.3  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.2%  |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 305311 | 16.47 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.3%  |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 202086 | 19.20 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.0%  |          |
| 13C8-PFOA             | 6.621                | 421.0 -> 376.0 | 309891 | 19.59 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.9%  |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 71266  | 18.50 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.5%  |          |
| 13C9-PFNA             | 7.213                | 472.0 -> 427.0 | 293280 | 19.63 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| d3-MeFOSAA            | 7.735                | 573.0 -> 419.0 | 37739  | 15.90 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.5%  |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |
| M2-PFOA               | 6.622                | 415.0 -> 370.0 | 387619 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.198                | 503.0 -> 80.0  | 117123 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.848 | 327.0 -> 307.0 | 53595  | 21.55 µg/L  | 99     |
| 6:2FTS       | 6.595 | 427.0 -> 407.0 | 45574  | 20.90 µg/L  | 100    |
| 8:2FTS       | 7.702 | 527.0 -> 507.0 | 27192  | 21.32 µg/L  | 99     |
| EtFOSAA      | 7.861 | 584.0 -> 419.0 | 15961  | 18.83 µg/L  | 96     |
| FOSA         | 7.313 | 498.0 -> 78.0  | 95276  | 21.02 µg/L  | 99     |
| MeFOSAA      | 7.735 | 570.0 -> 419.0 | 20613  | 20.41 µg/L  | 98     |
| PFBA         | 1.698 | 213.0 -> 169.0 | 59918  | 20.33 µg/L  | 100    |
| PFBS         | 3.870 | 299.0 -> 80.0  | 70251  | 20.54 µg/L  | 100    |
| PFDA         | 7.678 | 513.0 -> 469.0 | 154694 | 20.61 µg/L  | 98     |
| PFDoDA       | 8.354 | 613.0 -> 569.0 | 147212 | 21.21 µg/L  | 100    |
| PFDS         | 8.011 | 599.0 -> 80.0  | 13641  | 14.51 µg/L  | 100    |
| PFHpA        | 5.894 | 363.0 -> 319.0 | 295486 | 20.62 µg/L  | 100    |
| PFHpS        | 6.630 | 449.0 -> 80.0  | 48741  | 20.72 µg/L  | 99     |
| PFHxA        | 4.952 | 313.0 -> 269.0 | 103895 | 20.54 µg/L  | 100    |
| PFHxS        | 5.937 | 399.0 -> 80.0  | 55698  | 20.50 µg/L  | m 99   |
| PFNA         | 7.214 | 463.0 -> 419.0 | 188997 | 20.71 µg/L  | 100    |
| PFNS         | 7.648 | 549.0 -> 80.0  | 32614  | 16.97 µg/L  | 98     |
| PFOA         | 6.611 | 413.0 -> 369.0 | 175329 | 21.13 µg/L  | 100    |
| PFOS         | 7.199 | 499.0 -> 80.0  | 66130  | 20.09 µg/L  | m 99   |
| PFPeA        | 3.552 | 263.0 -> 219.0 | 217003 | 20.41 µg/L  | 100    |
| PFPeS        | 5.094 | 349.0 -> 80.0  | 42101  | 19.79 µg/L  | 100    |
| PFTeDA       | 8.890 | 713.0 -> 669.0 | 208511 | 22.03 µg/L  | 100    |
| PFTTrDA      | 8.628 | 663.0 -> 619.0 | 192970 | 23.82 µg/L  | 100    |
| PFUnDA       | 8.041 | 563.0 -> 519.0 | 138084 | 20.85 µg/L  | 100    |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |        |

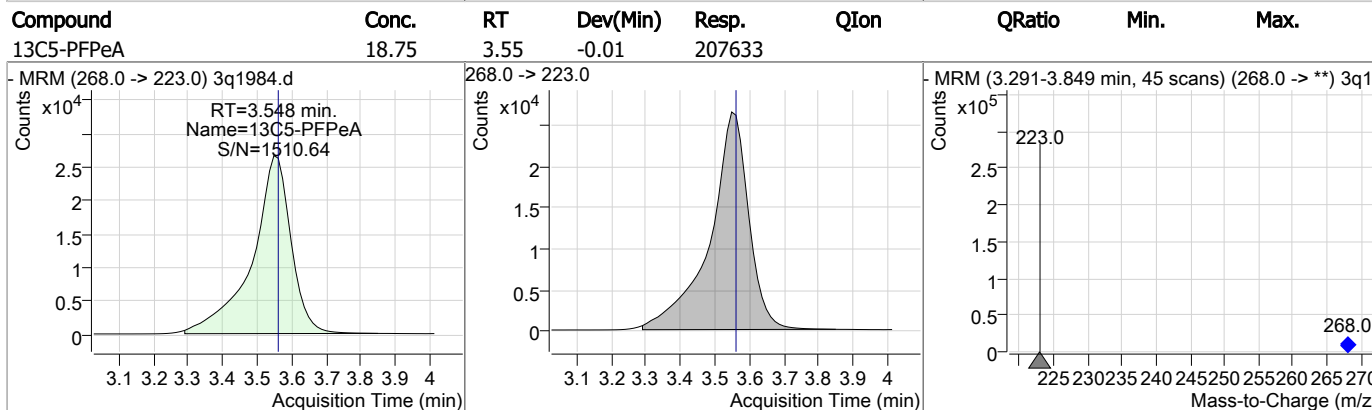
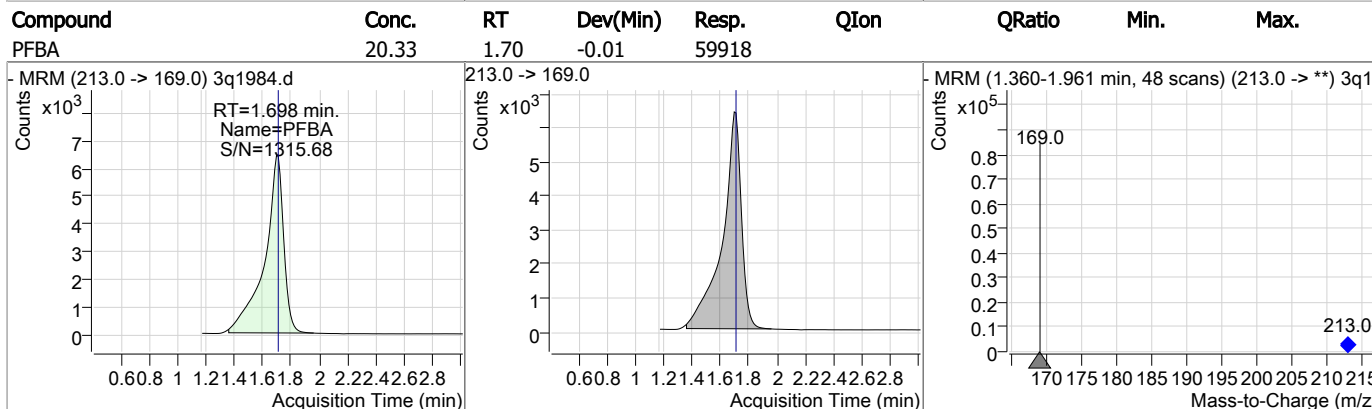
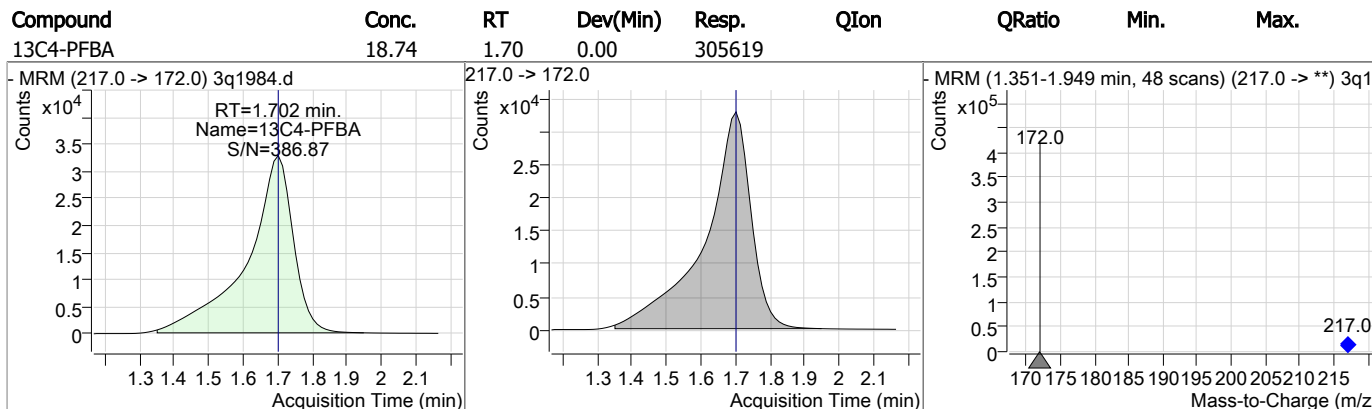
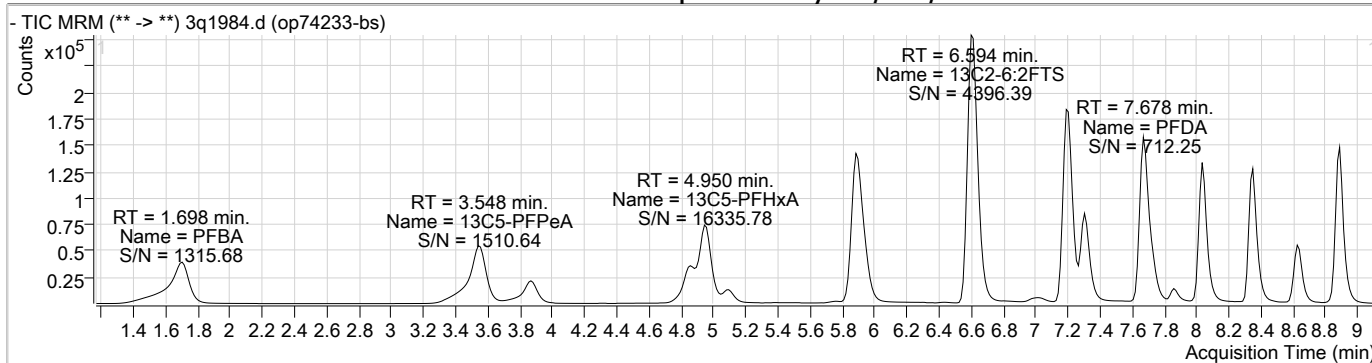
# = Qualifier out of range, m = manually integrated, + = Area summed

7.3.3  
7



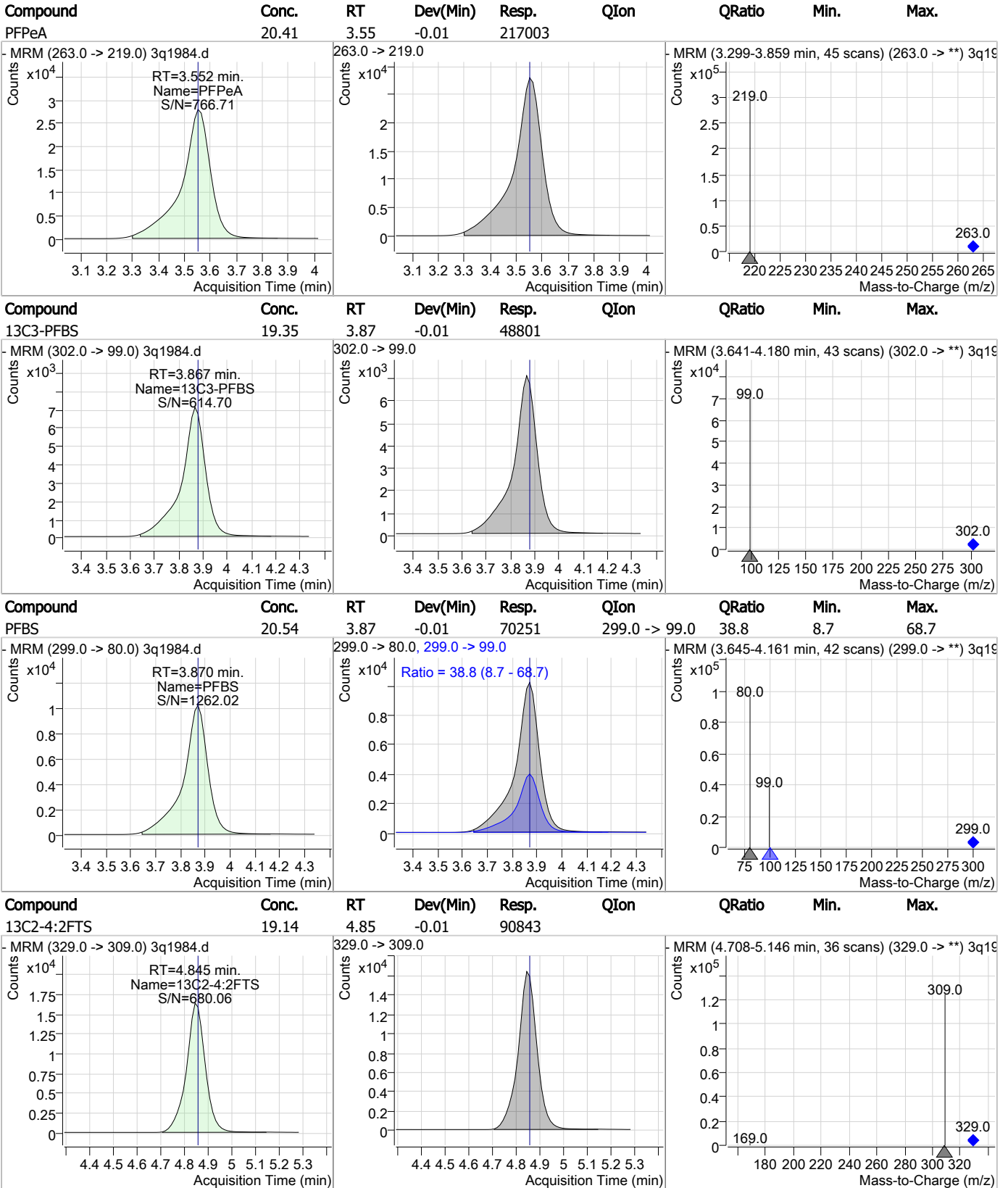


### Perfluorinated Compounds by LC/MS/MS



7.3.3  
7

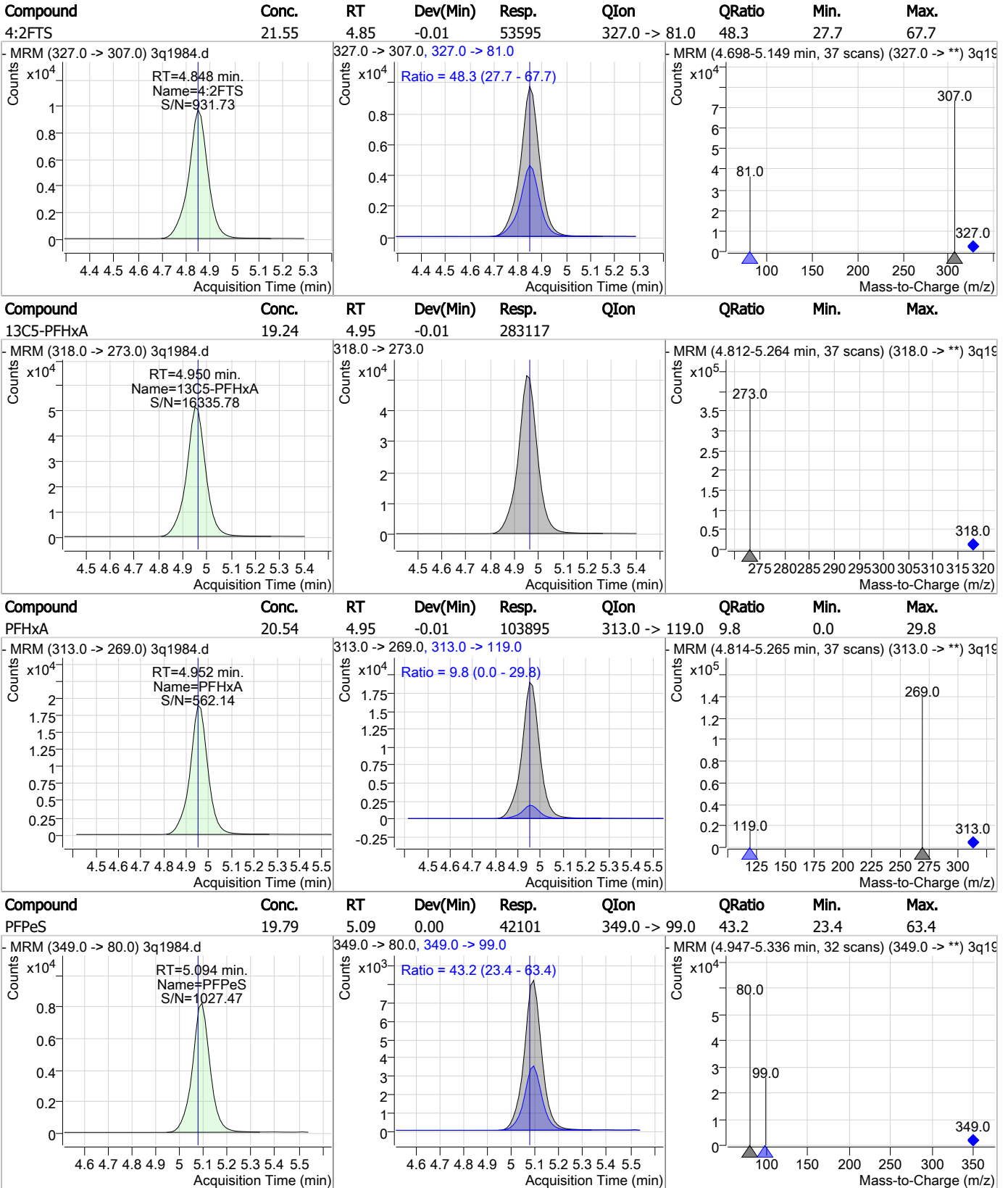
### Perfluorinated Compounds by LC/MS/MS



7.3.3

7

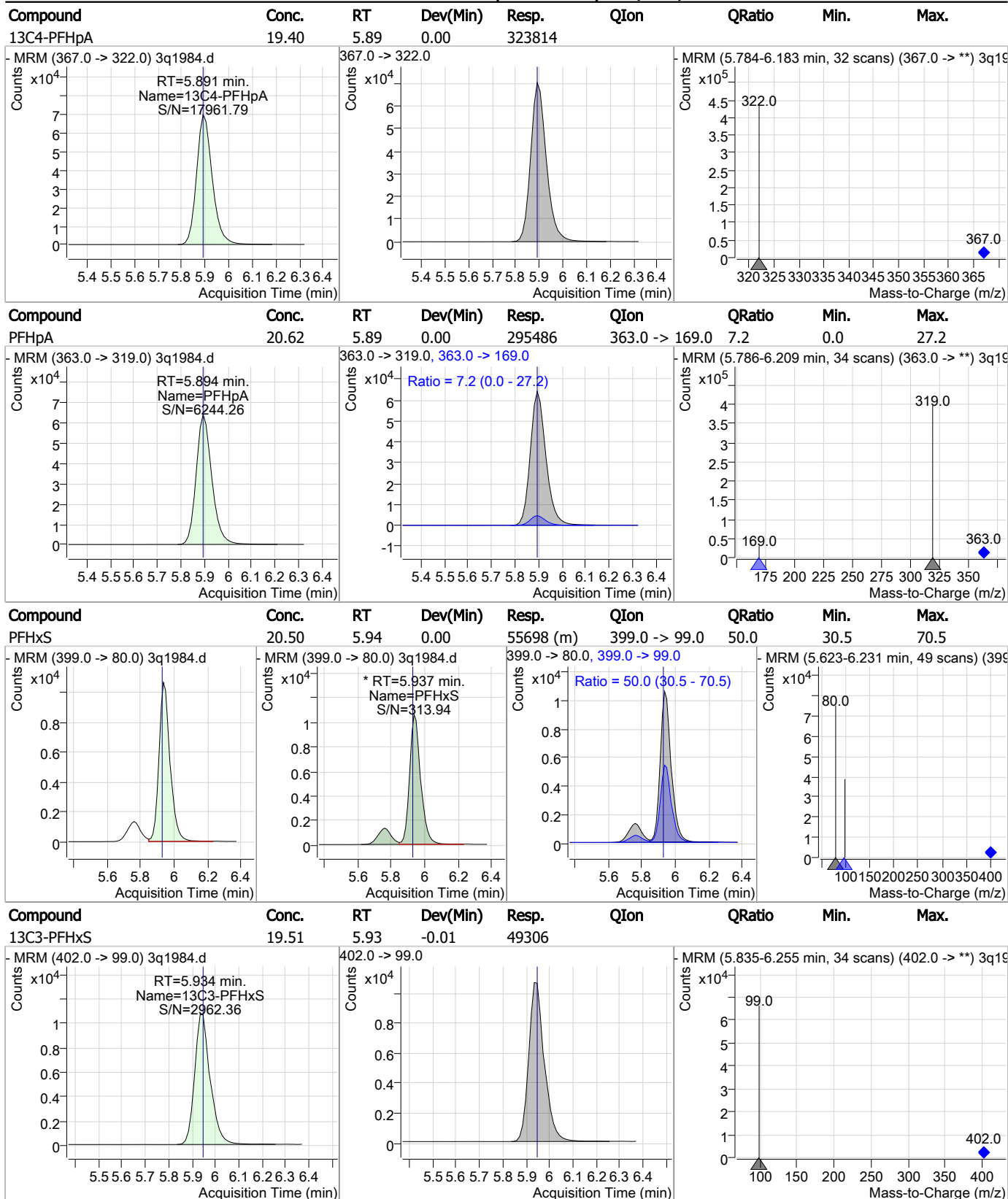
### Perfluorinated Compounds by LC/MS/MS



7.3.3

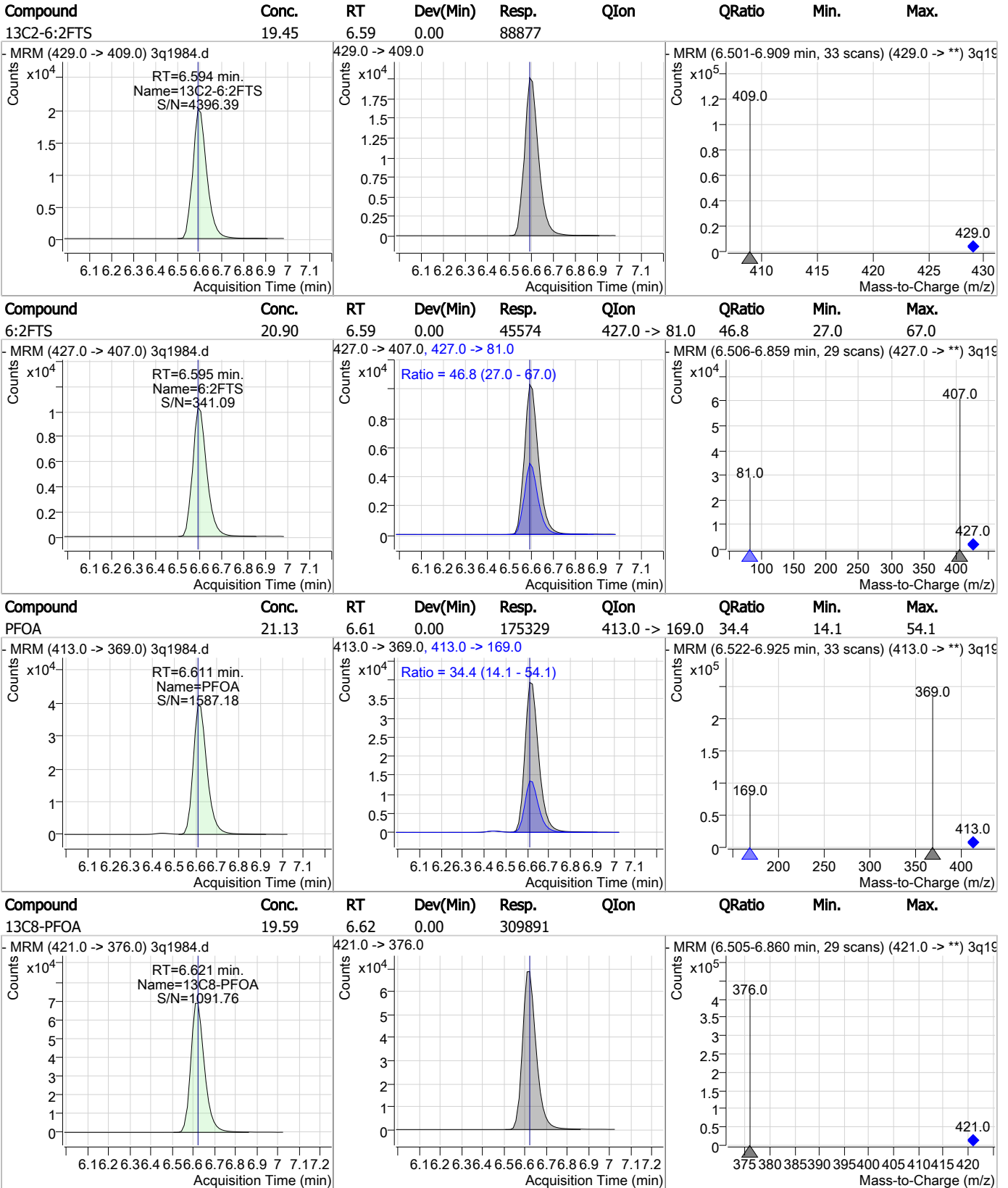
7

### Perfluorinated Compounds by LC/MS/MS



7.3.3  
7

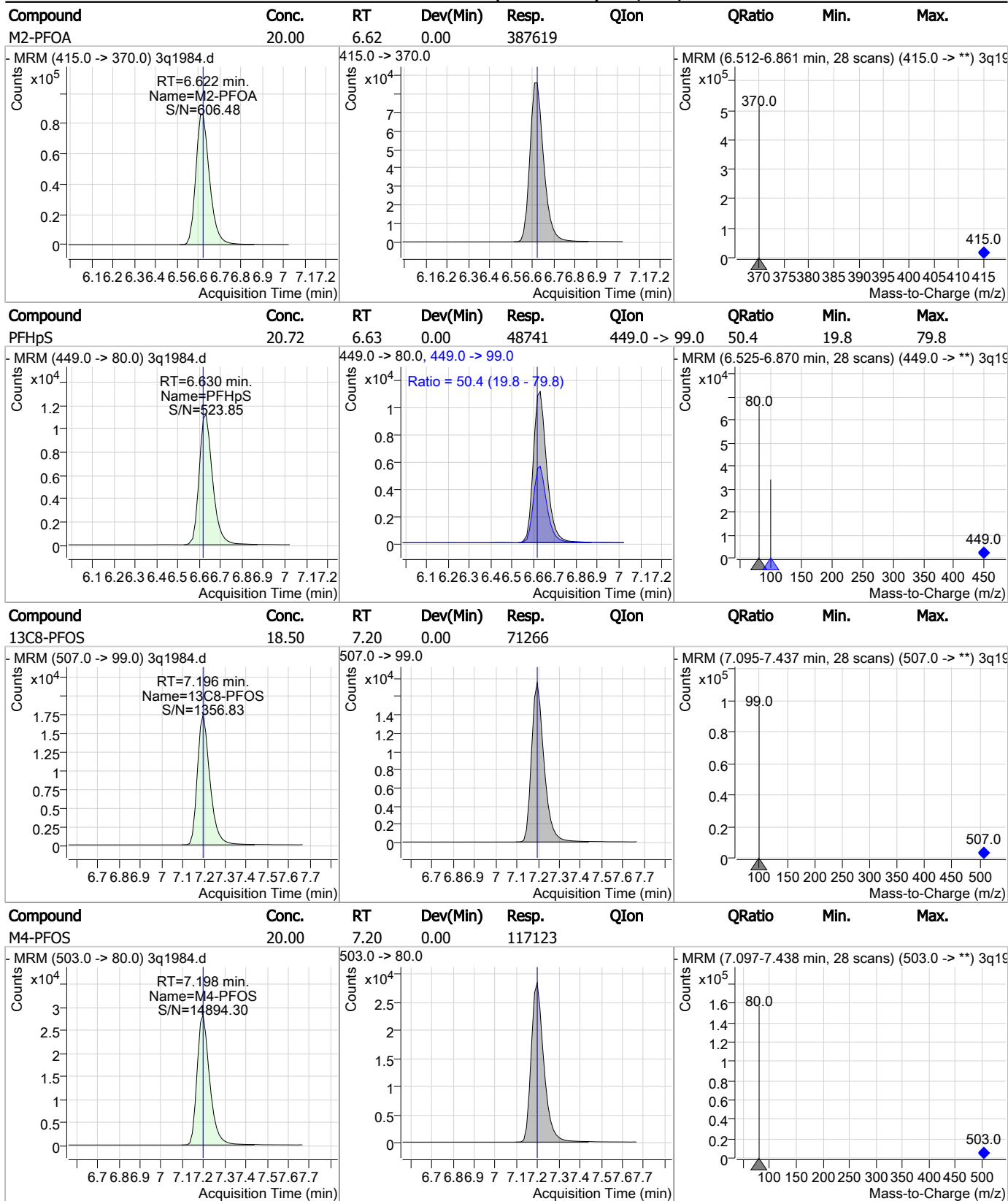
### Perfluorinated Compounds by LC/MS/MS



7.3.3

7

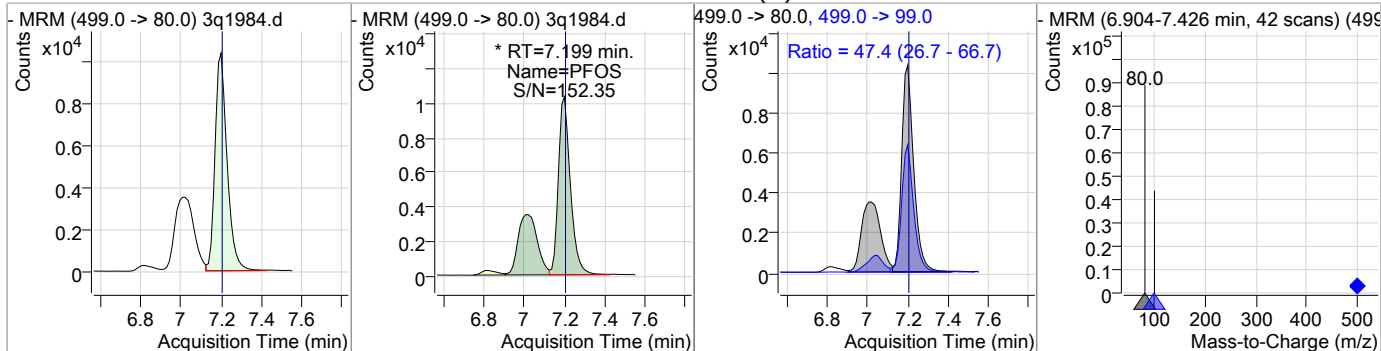
### Perfluorinated Compounds by LC/MS/MS



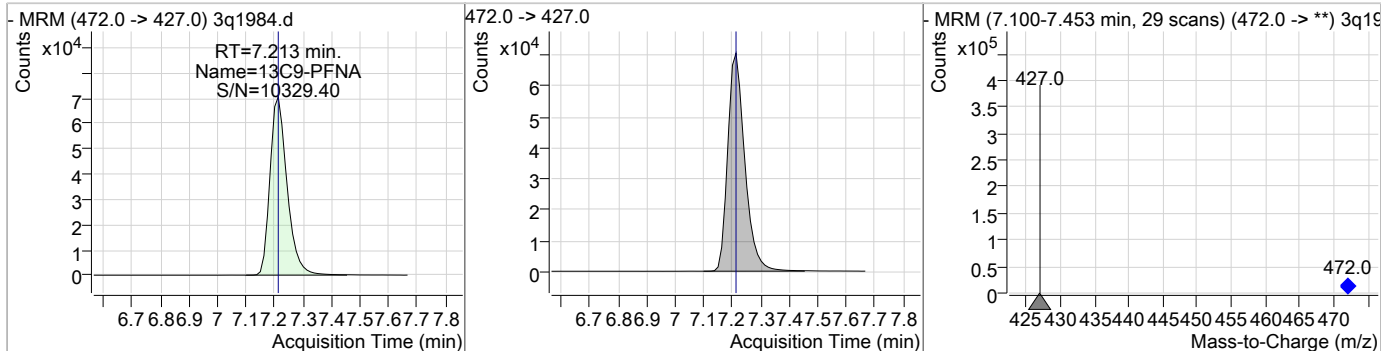
7.3.3  
7

### Perfluorinated Compounds by LC/MS/MS

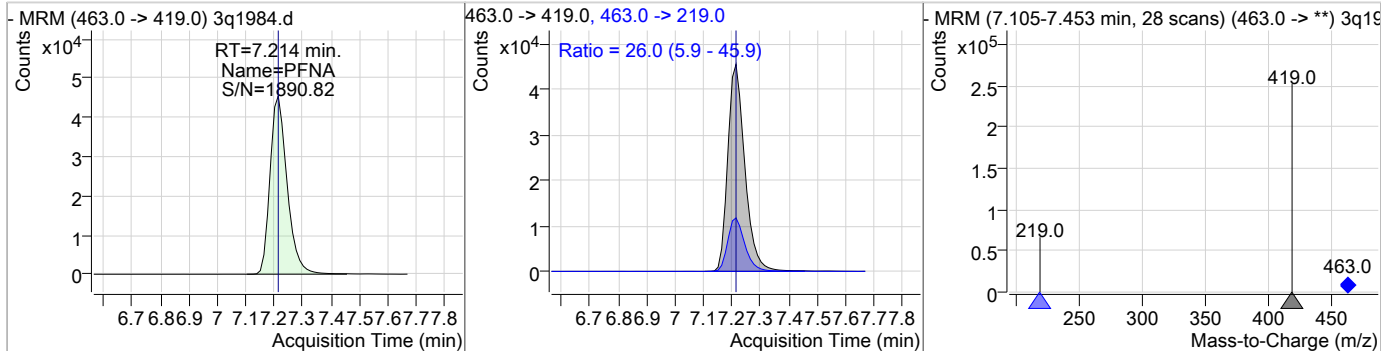
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 20.09 | 7.20 | 0.00     | 66130 (m) | 499.0 -> 99.0 | 47.4   | 26.7 | 66.7 |



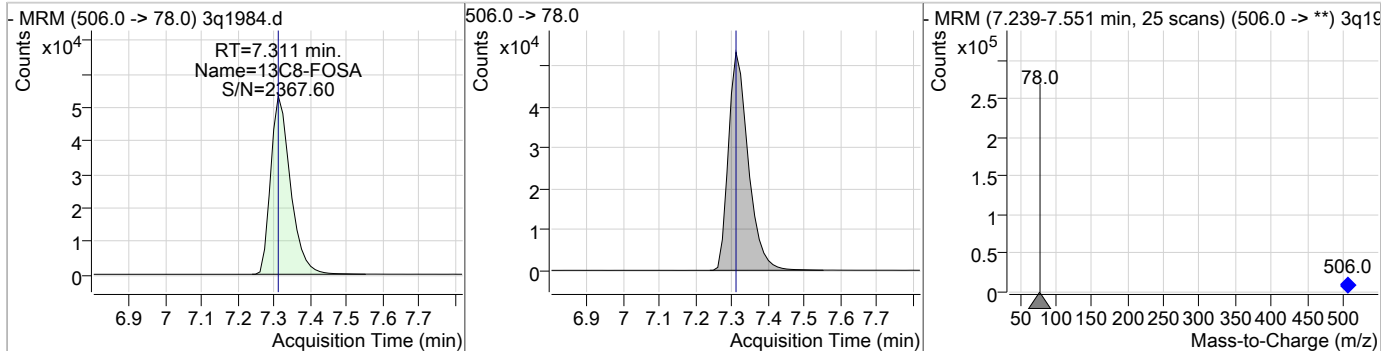
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 19.63 | 7.21 | 0.00     | 293280 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 20.71 | 7.21 | 0.00     | 188997 | 463.0 -> 219.0 | 26.0   | 5.9  | 45.9 |

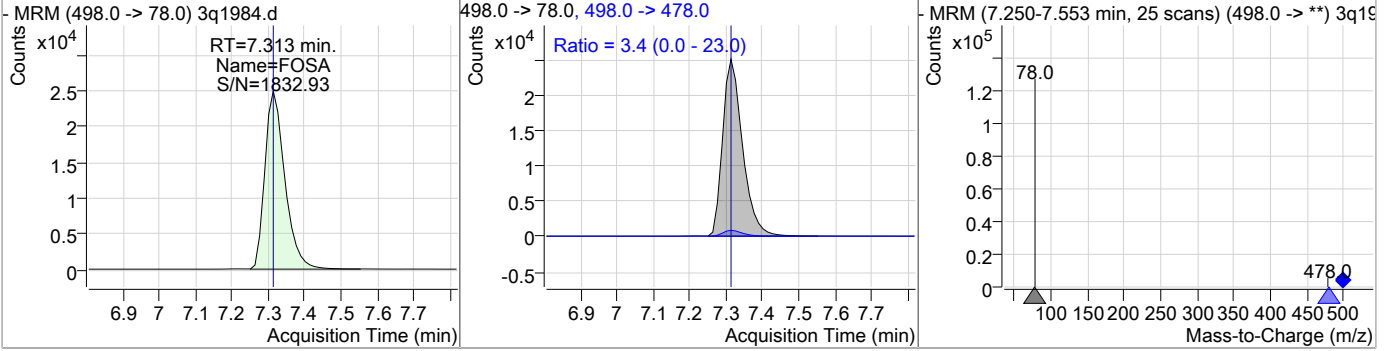


| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 19.20 | 7.31 | 0.00     | 202086 |      |        |      |      |

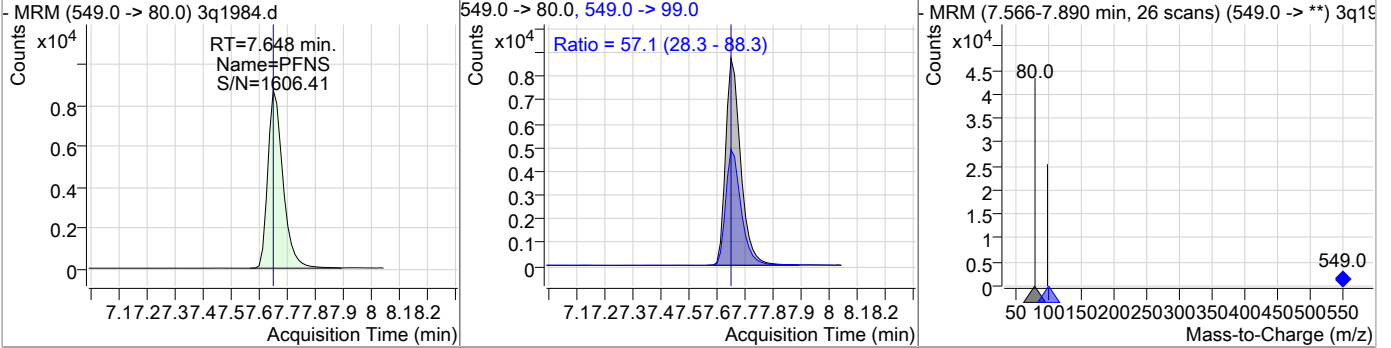


### Perfluorinated Compounds by LC/MS/MS

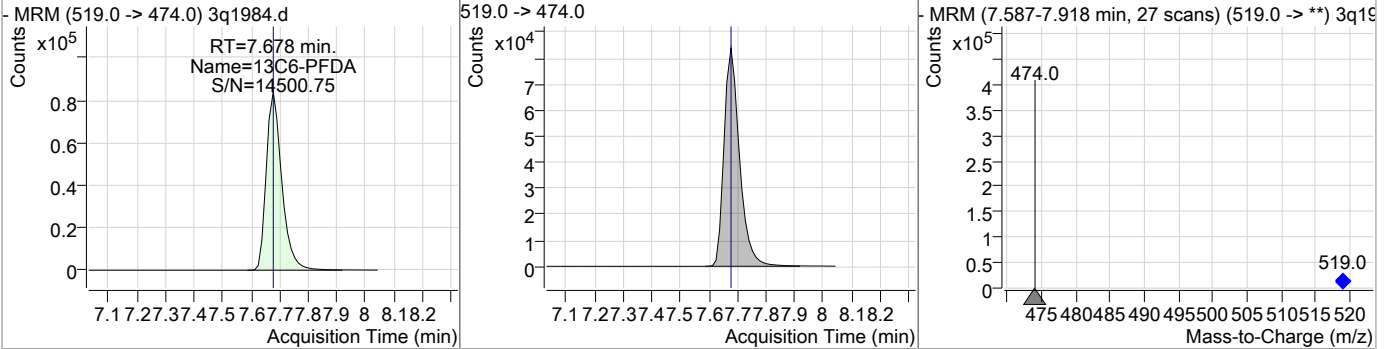
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 21.02 | 7.31 | 0.00     | 95276 | 498.0 -> 478.0 | 3.4    | 0.0  | 23.0 |



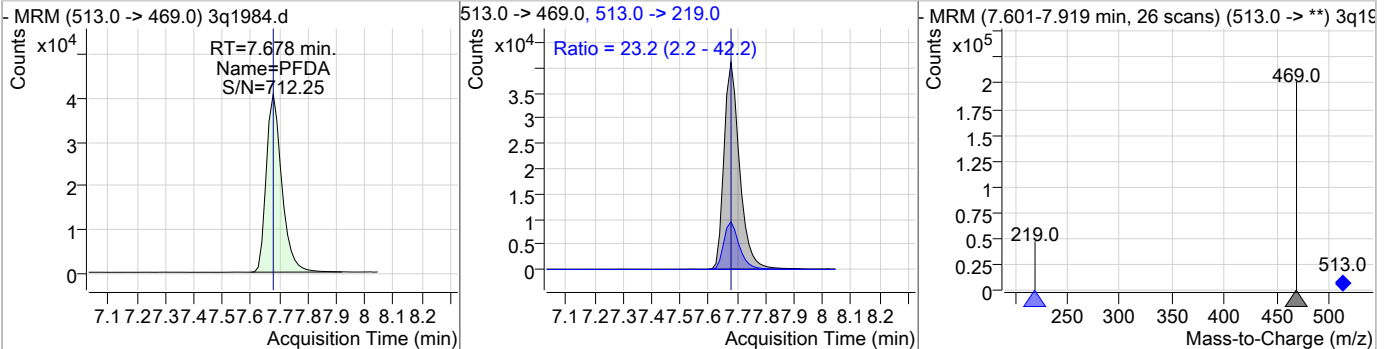
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 16.97 | 7.65 | 0.00     | 32614 | 549.0 -> 99.0 | 57.1   | 28.3 | 88.3 |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA | 19.03 | 7.68 | 0.00     | 317038 | 519.0 -> 474.0 | 23.2   | 2.2  | 42.2 |

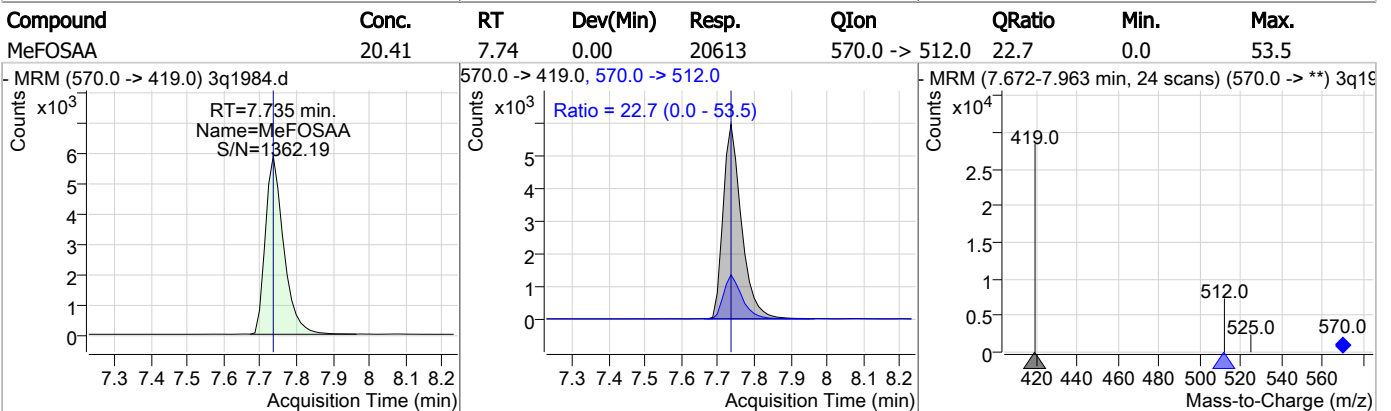
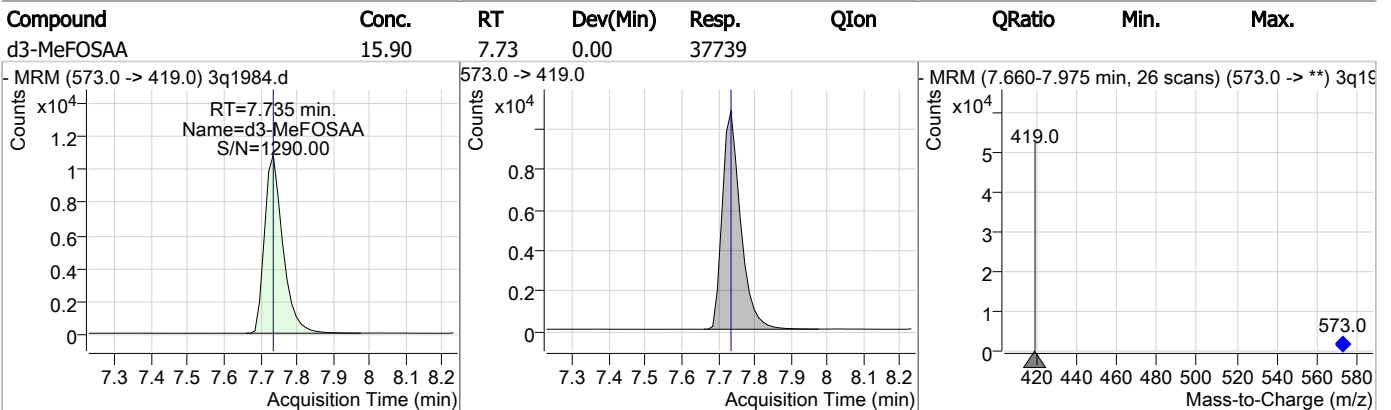
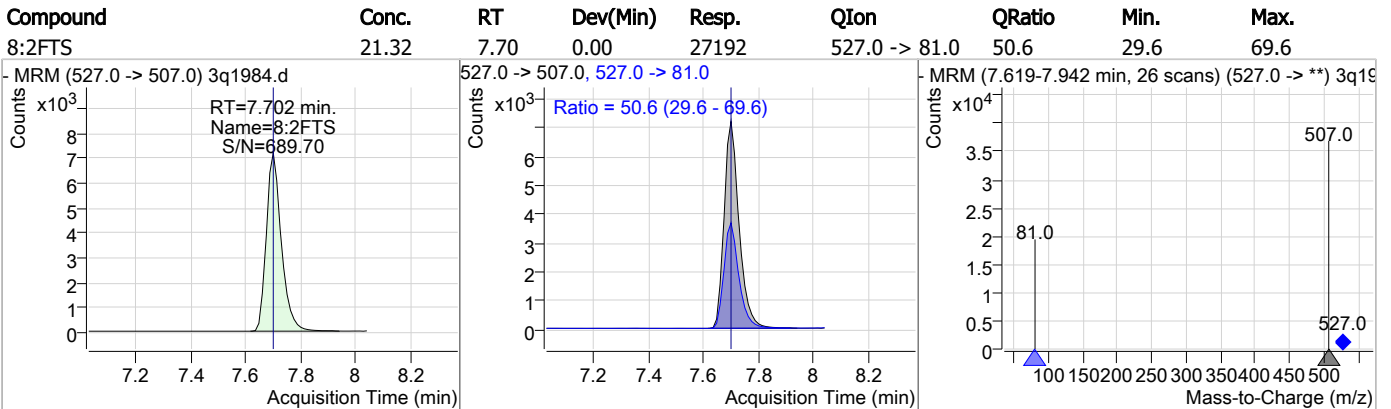
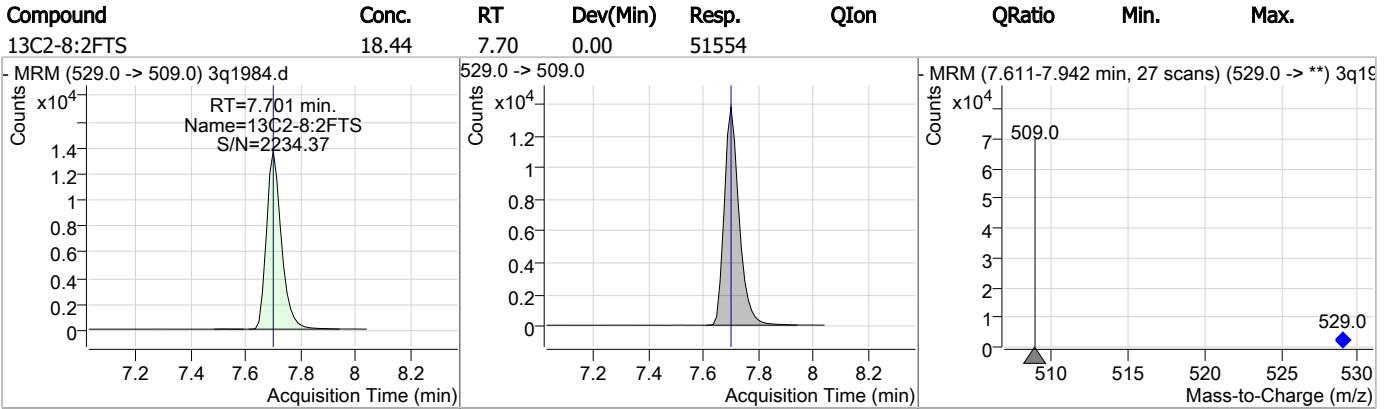


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFDA     | 20.61 | 7.68 | 0.00     | 154694 | 513.0 -> 219.0 | 23.2   | 2.2  | 42.2 |



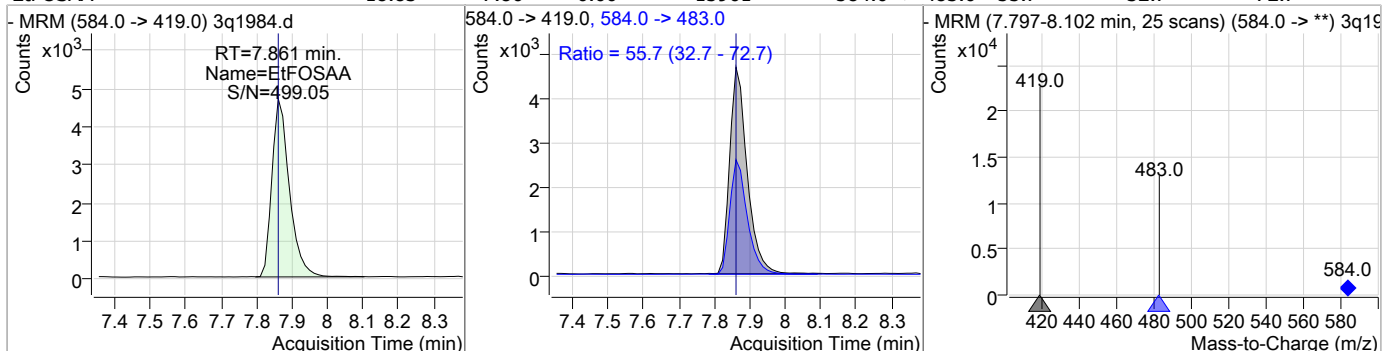


### Perfluorinated Compounds by LC/MS/MS

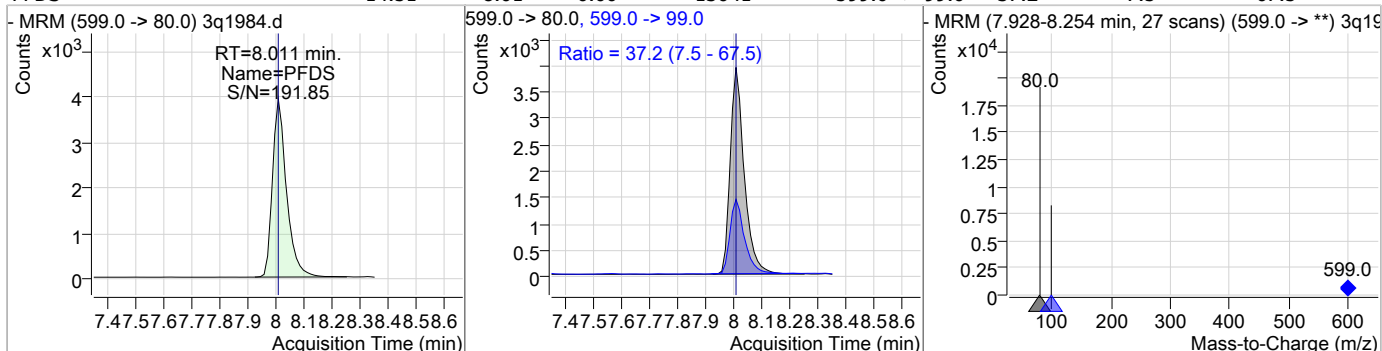


### Perfluorinated Compounds by LC/MS/MS

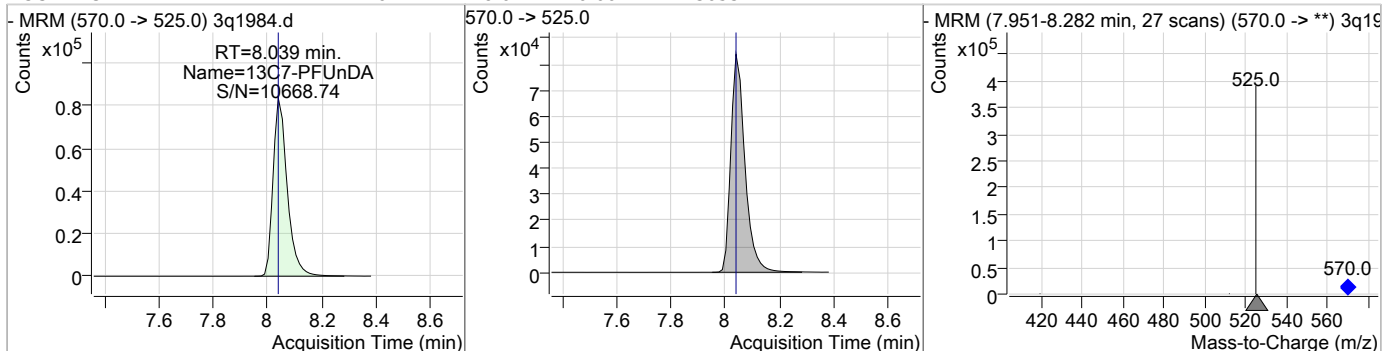
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 18.83 | 7.86 | 0.00     | 15961 | 584.0 -> 483.0 | 55.7   | 32.7 | 72.7 |



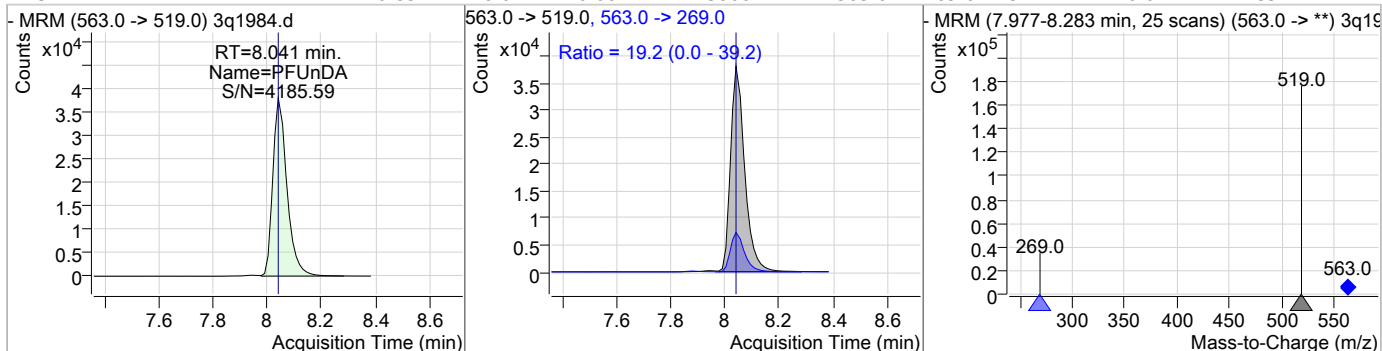
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 14.51 | 8.01 | 0.00     | 13641 | 599.0 -> 99.0 | 37.2   | 7.5  | 67.5 |



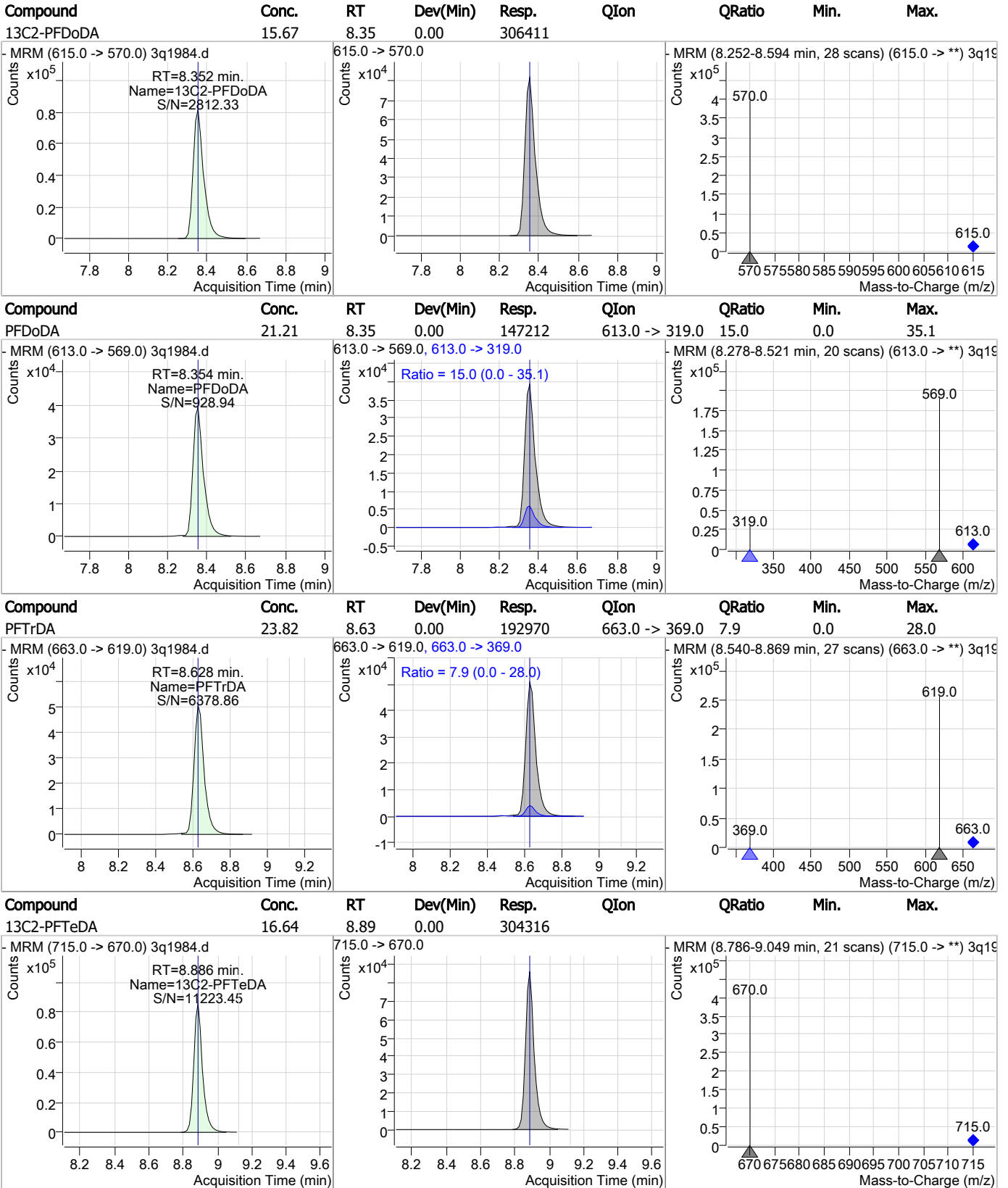
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 16.47 | 8.04 | 0.00     | 305311 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 20.85 | 8.04 | 0.00     | 138084 | 563.0 -> 269.0 | 19.2   | 0.0  | 39.2 |



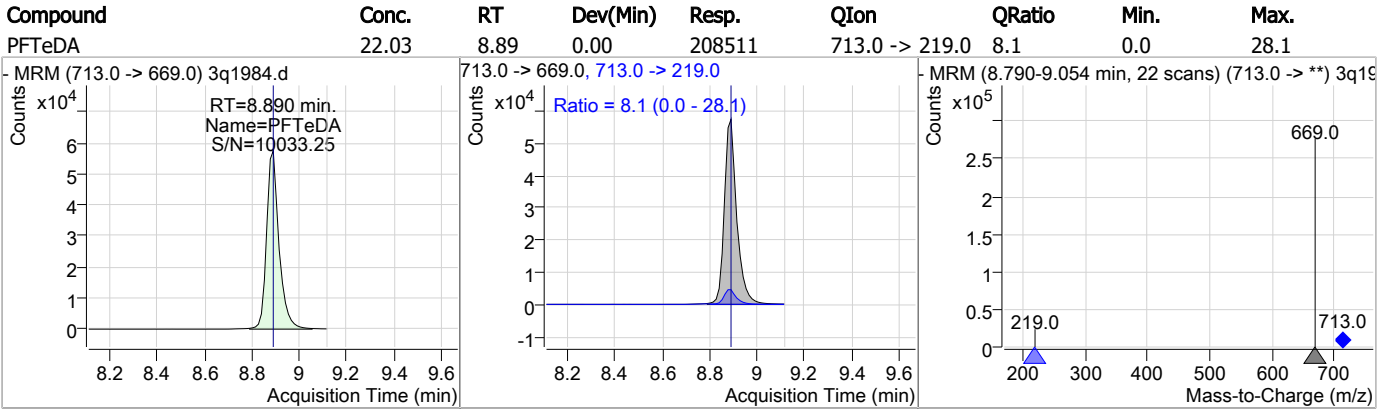
### Perfluorinated Compounds by LC/MS/MS



7.3.3

7

### Perfluorinated Compounds by LC/MS/MS



7.3.3  
7



# Manual Integration Approval Summary

**Sample Number:** OP74233-BS      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1984.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 13:06      **Supervisor approved:** 03/24/19 19:15 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.20           | Split peak |

7.3.3.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27658.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 5:25:11 PM  
 Sample Name : OP74164-MS  
 Vial : Vial 57  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op74164,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 326757 | 20.00 µg/L       | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 43017  | 20.00 µg/L       | 0.031    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 130795 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 110057 | 20.00 µg/L       | 0.032    |
| M5-PFHxA                           | 4.801                | 318.0 -> 273.0 | 155749 | 20.00 µg/L       | 0.038    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 223604 | 20.00 µg/L       | 0.029    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 244319 | 20.00 µg/L       | 0.031    |
| M9-PFNA                            | 7.078                | 472.0 -> 427.0 | 224669 | 20.00 µg/L       | 0.033    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 274931 | 20.00 µg/L       | 0.033    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 377595 | 20.00 µg/L       | 0.028    |
| M2-PFDoDA                          | 8.478                | 615.0 -> 570.0 | 435475 | 20.00 µg/L       | 0.028    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 231275 | 20.00 µg/L       | 0.012    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 81791  | 20.00 µg/L       | 0.032    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 18267  | 20.00 µg/L       | 0.025    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 19537  | 20.00 µg/L       | 0.026    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 21300  | 20.00 µg/L       | 0.030    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 66232  | 20.00 µg/L       | 0.028    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 78974  | 20.00 µg/L       | 0.030    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 42474  | 20.00 µg/L       | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 32623  | 20.00 µg/L       | 0.029    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 66292  | 15.97 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.8% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 78972  | 18.12 µg/L       | 0.030    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.6% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 42474  | 14.96 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.8% |          |
| 13C2-PFDoDA                        | 8.478                | 615.0 -> 570.0 | 435108 | 15.59 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.9% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 230721 | 11.94 µg/L       | 0.012    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 59.7% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 18248  | 15.07 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.3% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 19537  | 14.34 µg/L       | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 71.7% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 130486 | 15.05 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.3% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 223392 | 15.52 µg/L       | 0.029    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.6% |          |
| 13C5-PFHxA                         | 4.801                | 318.0 -> 273.0 | 155744 | 15.18 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 75.9% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 109633 | 15.29 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.4% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 274762 | 14.84 µg/L       | 0.033    |

7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS

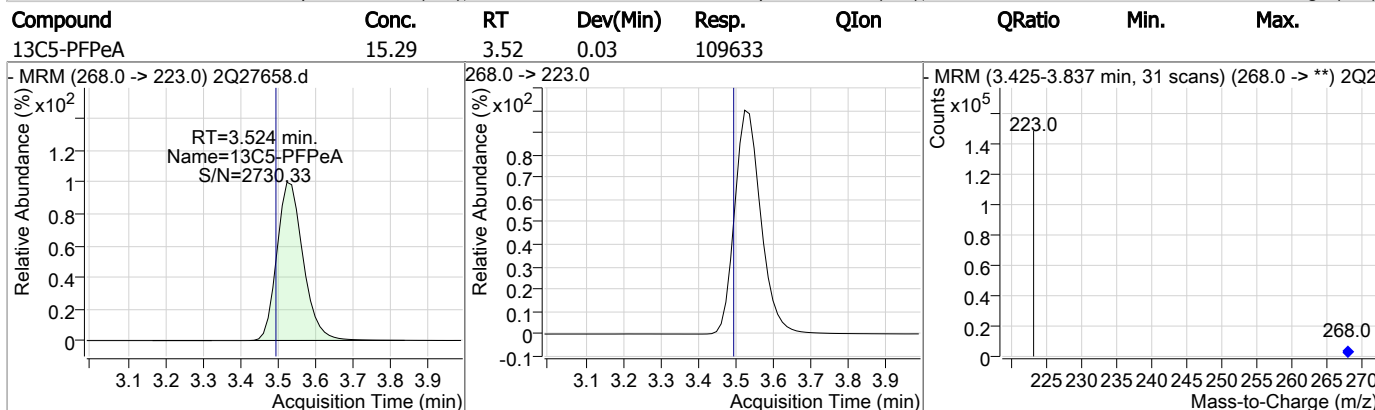
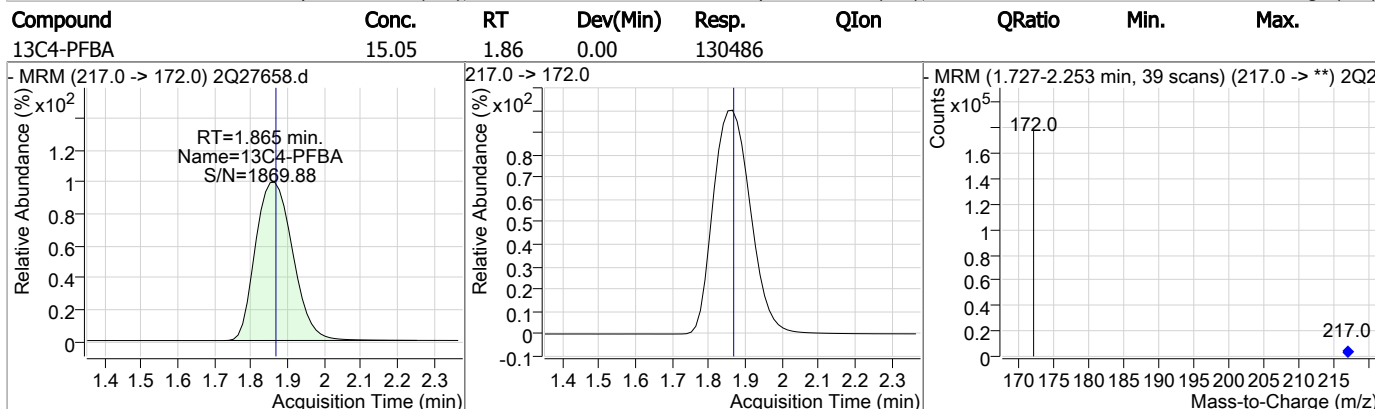
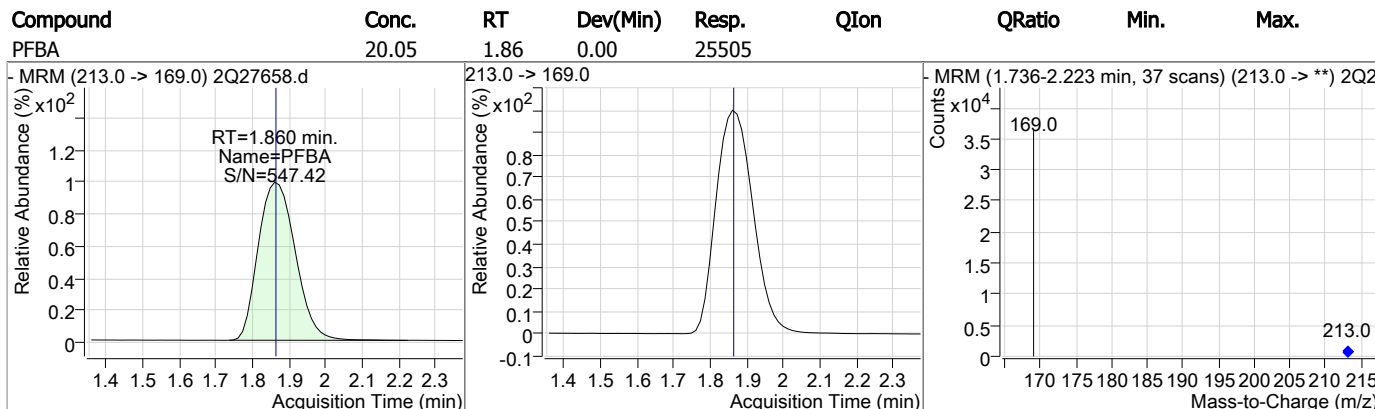
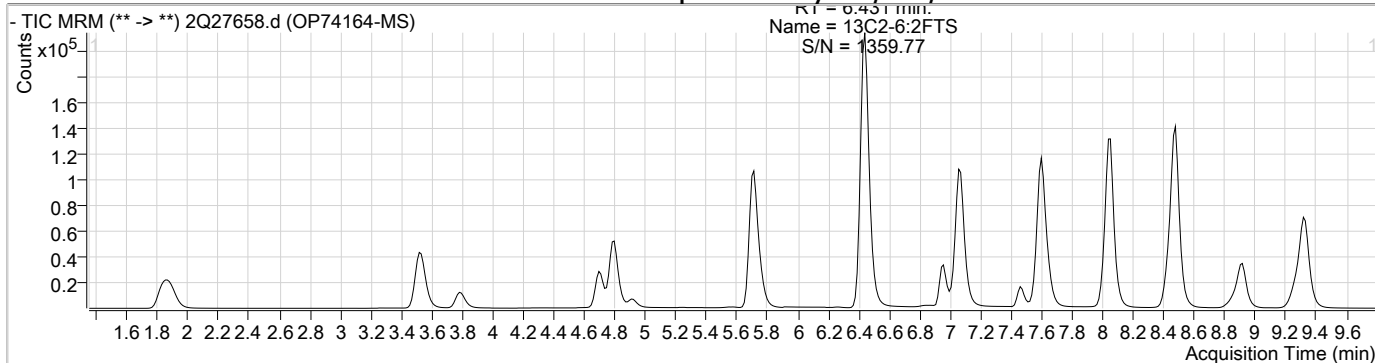
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 74.2%  |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 377460 | 15.76 µg/L        | 0.028    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 78.8%  |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 81952  | 14.39 µg/L        | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.9%  |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 244173 | 16.40 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.0%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 21291  | 12.87 µg/L        | 0.030    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 64.4%  |          |
| 13C9-PFNA             | 7.078                | 472.0 -> 427.0 | 224510 | 15.67 µg/L        | 0.033    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 78.3%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 32624  | 13.64 µg/L        | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 68.2%  |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 326816 | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 43037  | 20.00 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

7.4.1  
7

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.699 | 327.0 -> 307.0 | 35292  | 18.32 µg/L  | 100    |
| 6:2FTS           | 6.432 | 427.0 -> 407.0 | 37054  | 18.35 µg/L  | 99     |
| 8:2FTS           | 7.643 | 527.0 -> 507.0 | 20854  | 18.59 µg/L  | 99     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 13143  | 18.29 µg/L  | 99     |
| FOSAA            | 6.963 | 498.0 -> 78.0  | 35836  | 19.24 µg/L  | 99     |
| MeFOSAA          | 7.460 | 570.0 -> 419.0 | 16866  | 19.46 µg/L  | 98     |
| PFBA             | 1.860 | 213.0 -> 169.0 | 25505  | 20.05 µg/L  | 100    |
| PFBS             | 3.783 | 299.0 -> 80.0  | 27433  | 18.18 µg/L  | 100    |
| PFDA             | 7.608 | 513.0 -> 469.0 | 106735 | 18.39 µg/L  | 100    |
| PFDoDA           | 8.480 | 613.0 -> 569.0 | 186750 | 18.30 µg/L  | 100    |
| PFDS             | 8.014 | 599.0 -> 80.0  | 7080   | 16.82 µg/L  | 99     |
| PFHpA            | 5.720 | 363.0 -> 319.0 | 188046 | 17.93 µg/L  | 100    |
| PFHpS            | 6.454 | 449.0 -> 80.0  | 18416  | 18.61 µg/L  | 99     |
| PFHxA            | 4.803 | 313.0 -> 269.0 | 50566  | 18.76 µg/L  | 99     |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 21582  | 18.55 µg/L  | m 95   |
| PFNA             | 7.079 | 463.0 -> 419.0 | 128434 | 17.66 µg/L  | 99     |
| PFNS             | 7.578 | 549.0 -> 80.0  | 12899  | 16.18 µg/L  | 98     |
| PFOA             | 6.450 | 413.0 -> 369.0 | 123560 | 18.49 µg/L  | 98     |
| PFOS             | 7.049 | 499.0 -> 80.0  | 19008  | 17.41 µg/L  | m 82   |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 99699  | 19.94 µg/L  | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 17930  | 17.36 µg/L  | 99     |
| PFTeDA           | 9.319 | 713.0 -> 669.0 | 150868 | 19.11 µg/L  | 100    |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 171682 | 19.77 µg/L  | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 150008 | 18.76 µg/L  | 100    |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.4.1  
7



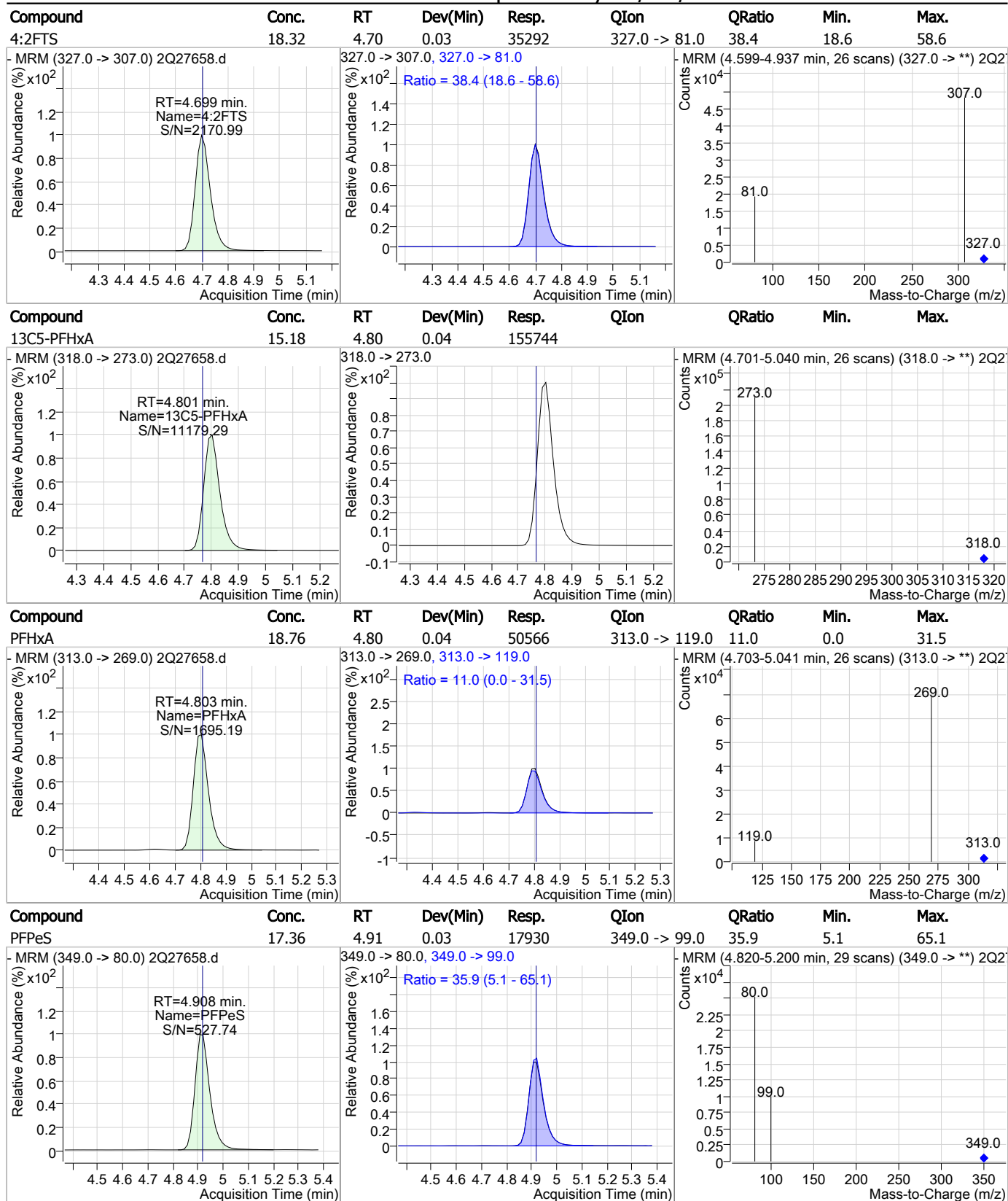
### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min)                         | Resp. | QIon          | QRatio  | Min. | Max. |
|---|-------|------|----------------------------------|-------|---------------|---|------|------|
| PFPeA   | 19.94 | 3.53 | 0.03                             | 99699 |               |   |      |      |
| <p>RT=3.528 min.<br/>Name=PFPeA<br/>S/N=2853.10</p>       |       |      |                                  |       |               | <p>MRM (3.415-3.841 min, 32 scans) (263.0 -&gt; **) 2Q2</p> |      |      |
| 13C3-PFBS   | 15.07 | 3.78 | 0.03                             | 18248 |               |   |      |      |
| <p>RT=3.780 min.<br/>Name=13C3-PFBS<br/>S/N=515.07</p>    |       |      |                                  |       |               | <p>MRM (3.680-4.068 min, 29 scans) (302.0 -&gt; **) 2Q2</p> |      |      |
| PFBS  | 18.18 | 3.78 | 0.03                             | 27433 | 299.0 -> 99.0 | 35.4  | 5.6  | 65.6 |
| <p>RT=3.783 min.<br/>Name=PFBS<br/>S/N=966.14</p>         |       |      | <p>Ratio = 35.4 (5.6 - 65.6)</p> |       |               | <p>MRM (3.684-4.098 min, 31 scans) (299.0 -&gt; **) 2Q2</p> |      |      |
| 13C2-4:2FTS   | 15.97 | 4.70 | 0.03                             | 66292 |               |   |      |      |
| <p>RT=4.696 min.<br/>Name=13C2-4:2FTS<br/>S/N=2288.14</p> |       |      |                                  |       |               | <p>MRM (4.609-4.935 min, 25 scans) (329.0 -&gt; **) 2Q2</p> |      |      |

7.4.1  
7

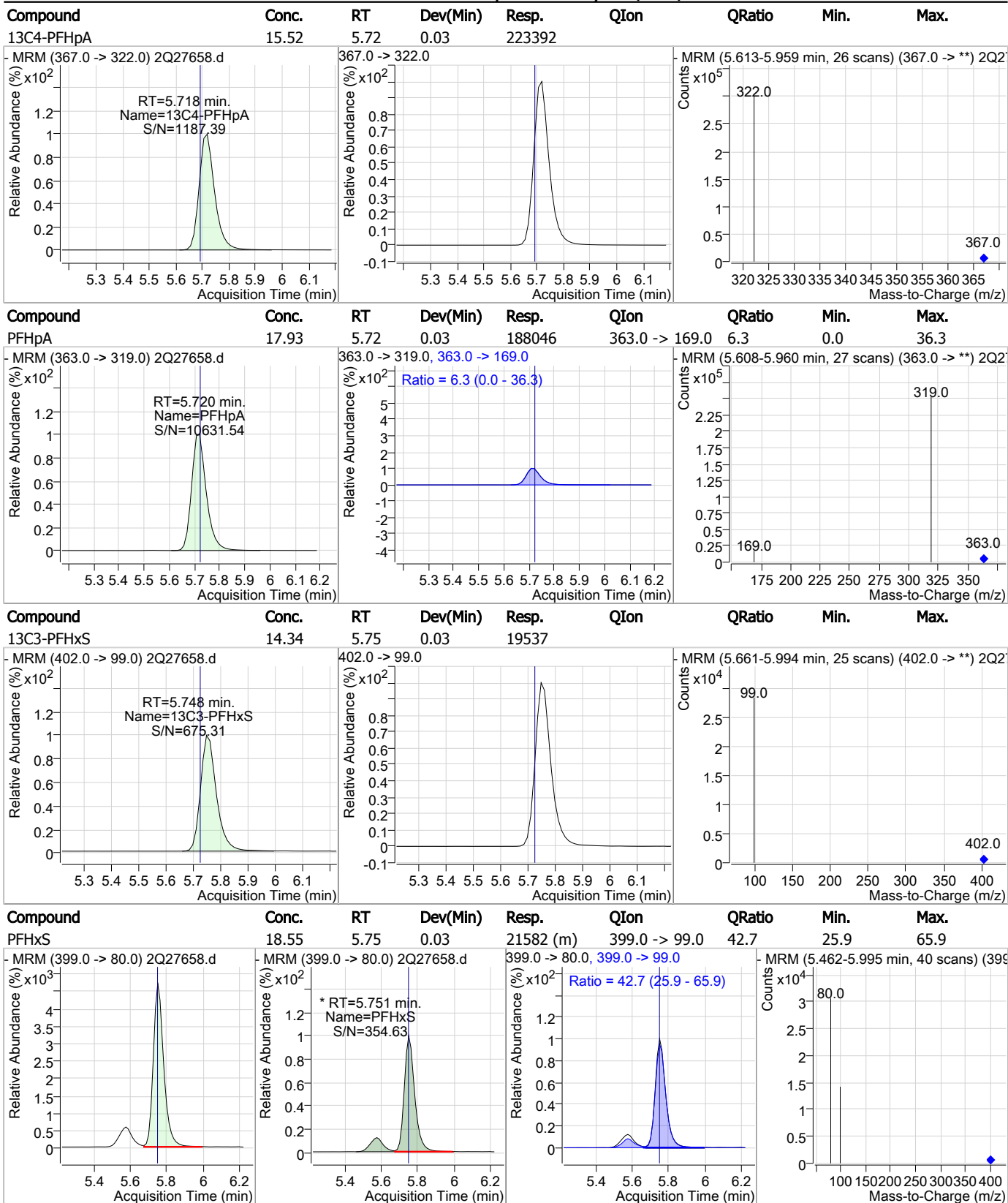


### Perfluorinated Compounds by LC/MS/MS



7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS



7.4.1  
7

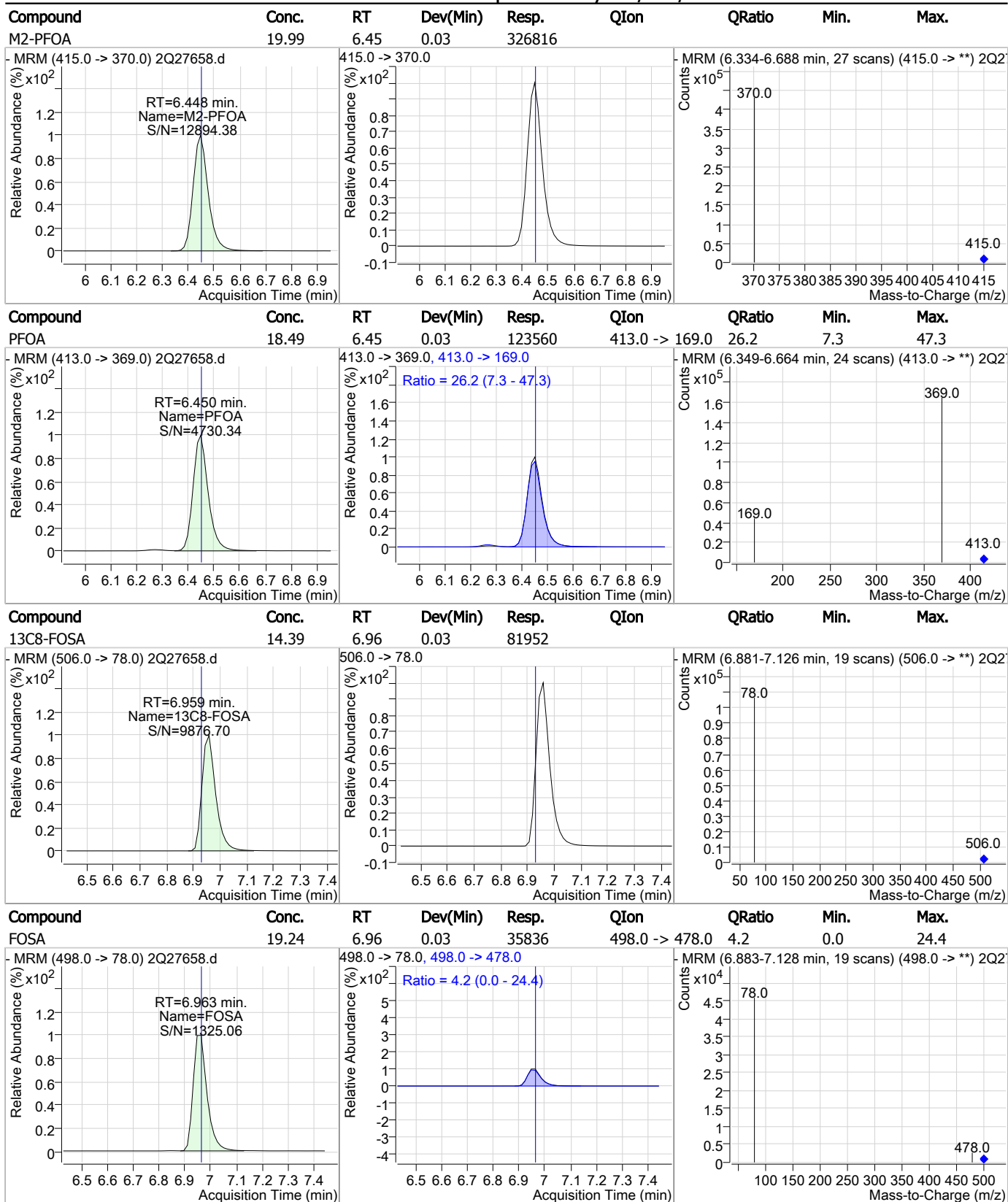
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C2-6:2FTS | 18.12 | 6.43 | 0.03     | 78972  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 6:2FTS      | 18.35 | 6.43 | 0.03     | 37054  | 427.0 -> 81.0 | 31.3   | 0.9  | 60.9 |
|             |       |      |          |        |               |        |      |      |
| PFHpS       | 18.61 | 6.45 | 0.04     | 18416  | 449.0 -> 99.0 | 44.9   | 15.3 | 75.3 |
|             |       |      |          |        |               |        |      |      |
| 13C8-PFOA   | 16.40 | 6.45 | 0.03     | 244173 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.4.1  
7

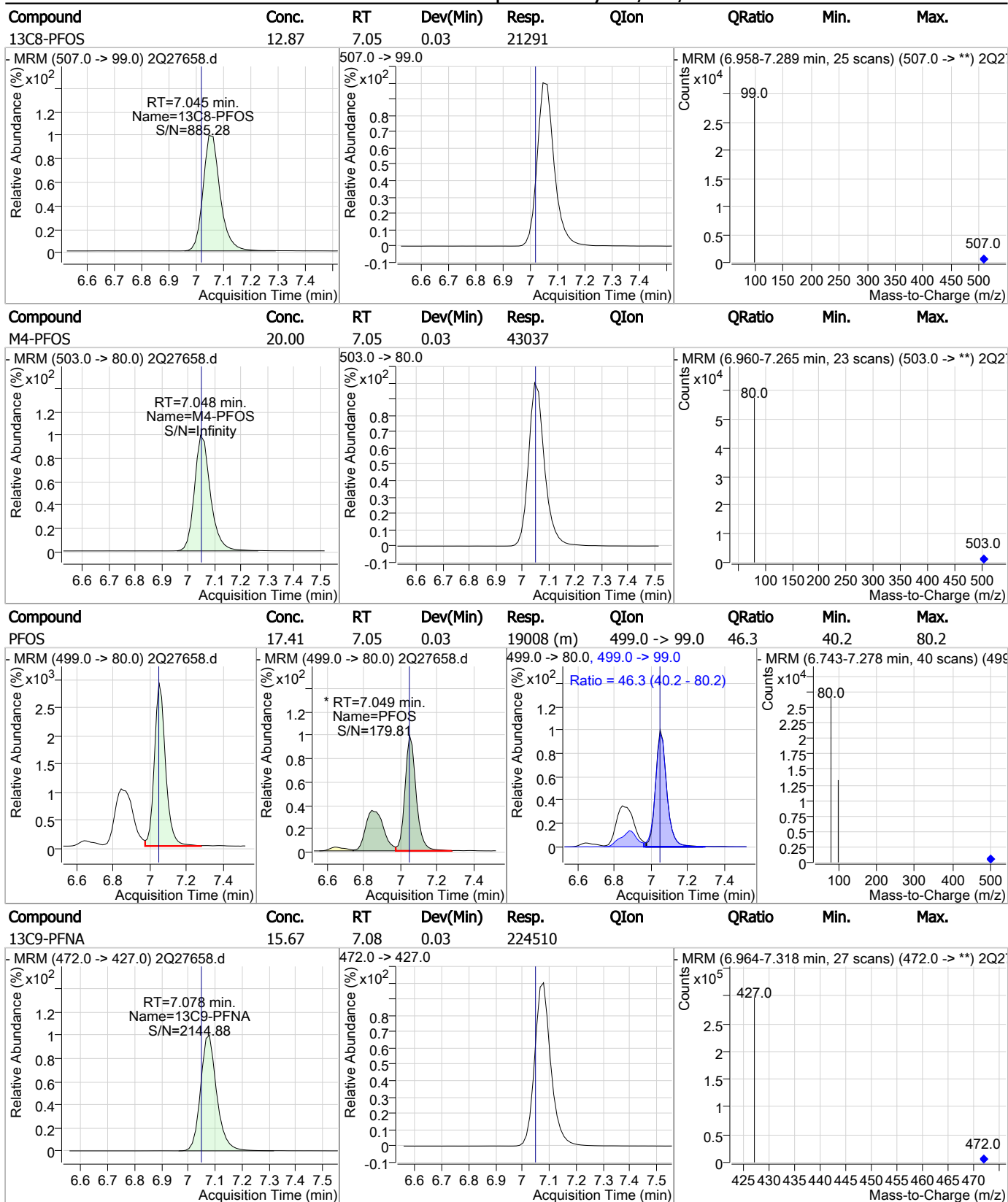


### Perfluorinated Compounds by LC/MS/MS



7.4.1  
7

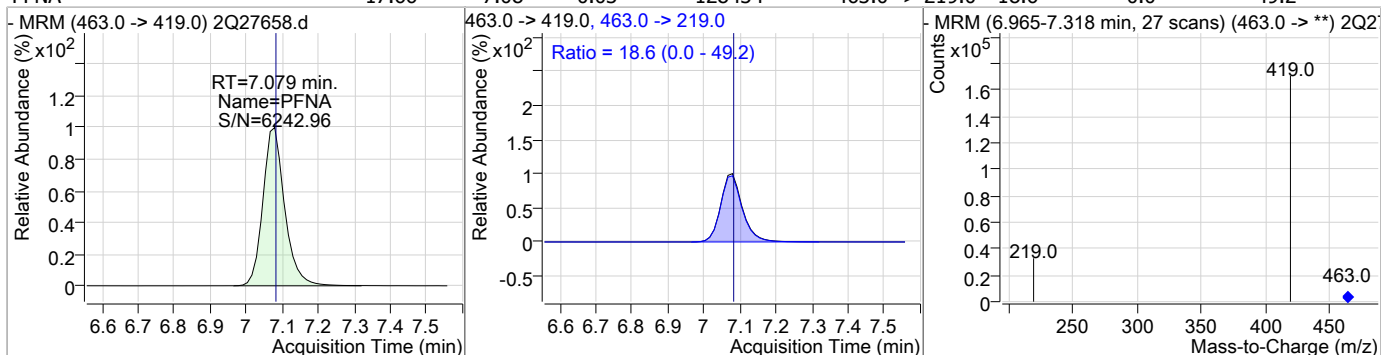
### Perfluorinated Compounds by LC/MS/MS



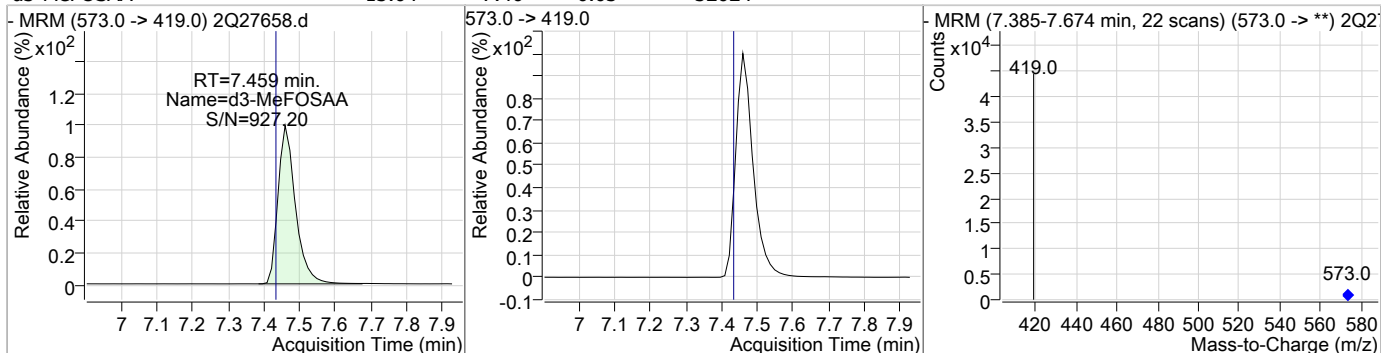
7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS

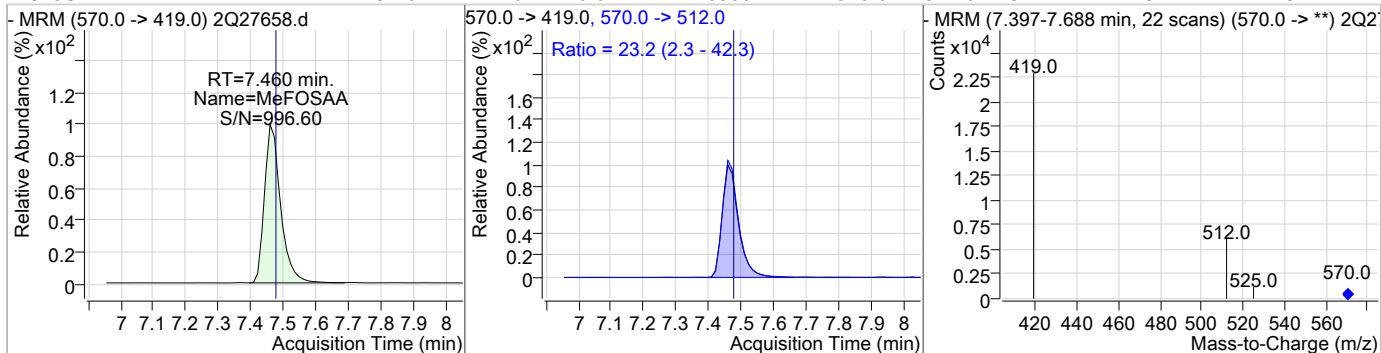
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 17.66 | 7.08 | 0.03     | 128434 | 463.0 -> 219.0 | 18.6   | 0.0  | 49.2 |



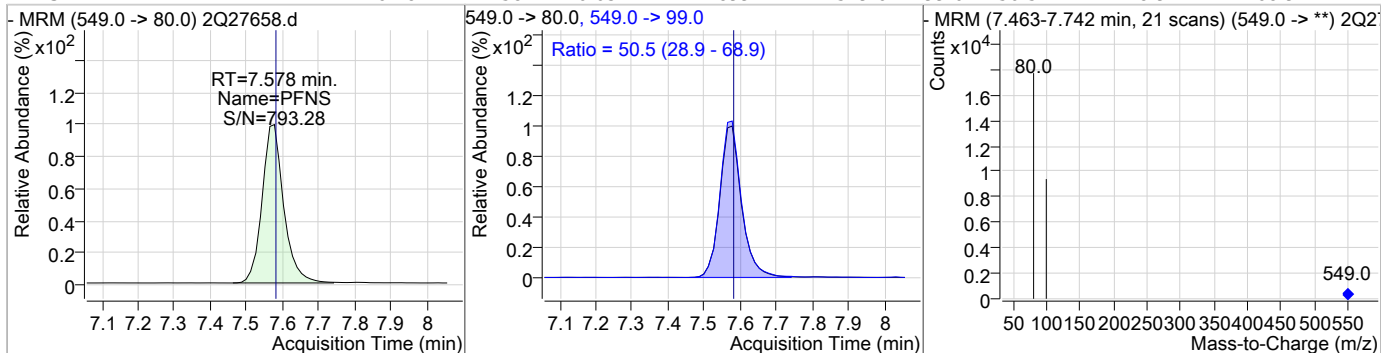
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 13.64 | 7.46 | 0.03     | 32624 |      |        |      |      |



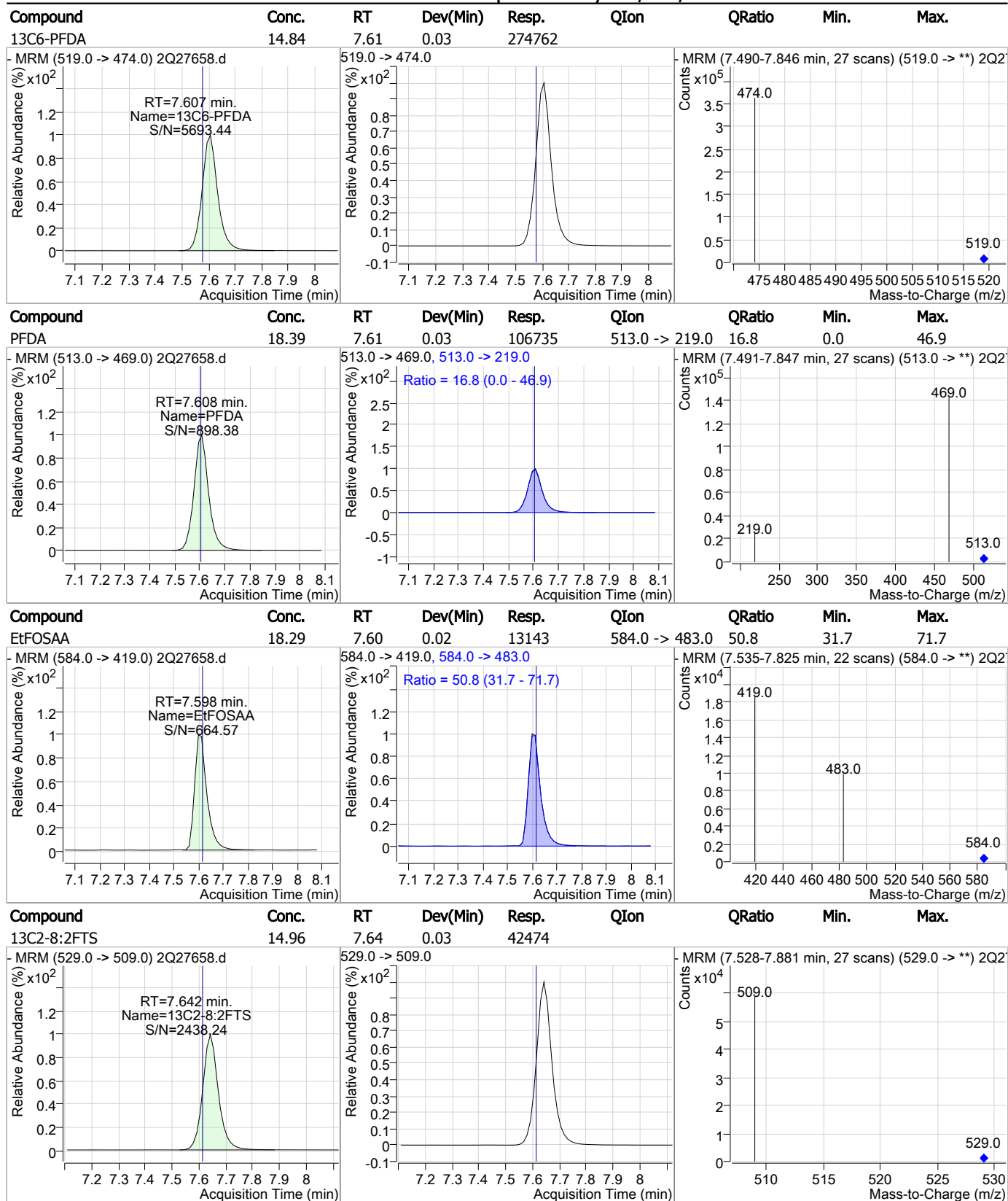
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| MeFOSAA  | 19.46 | 7.46 | 0.01     | 16866 | 570.0 -> 512.0 | 23.2   | 2.3  | 42.3 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 16.18 | 7.58 | 0.03     | 12899 | 549.0 -> 99.0 | 50.5   | 28.9 | 68.9 |



### Perfluorinated Compounds by LC/MS/MS

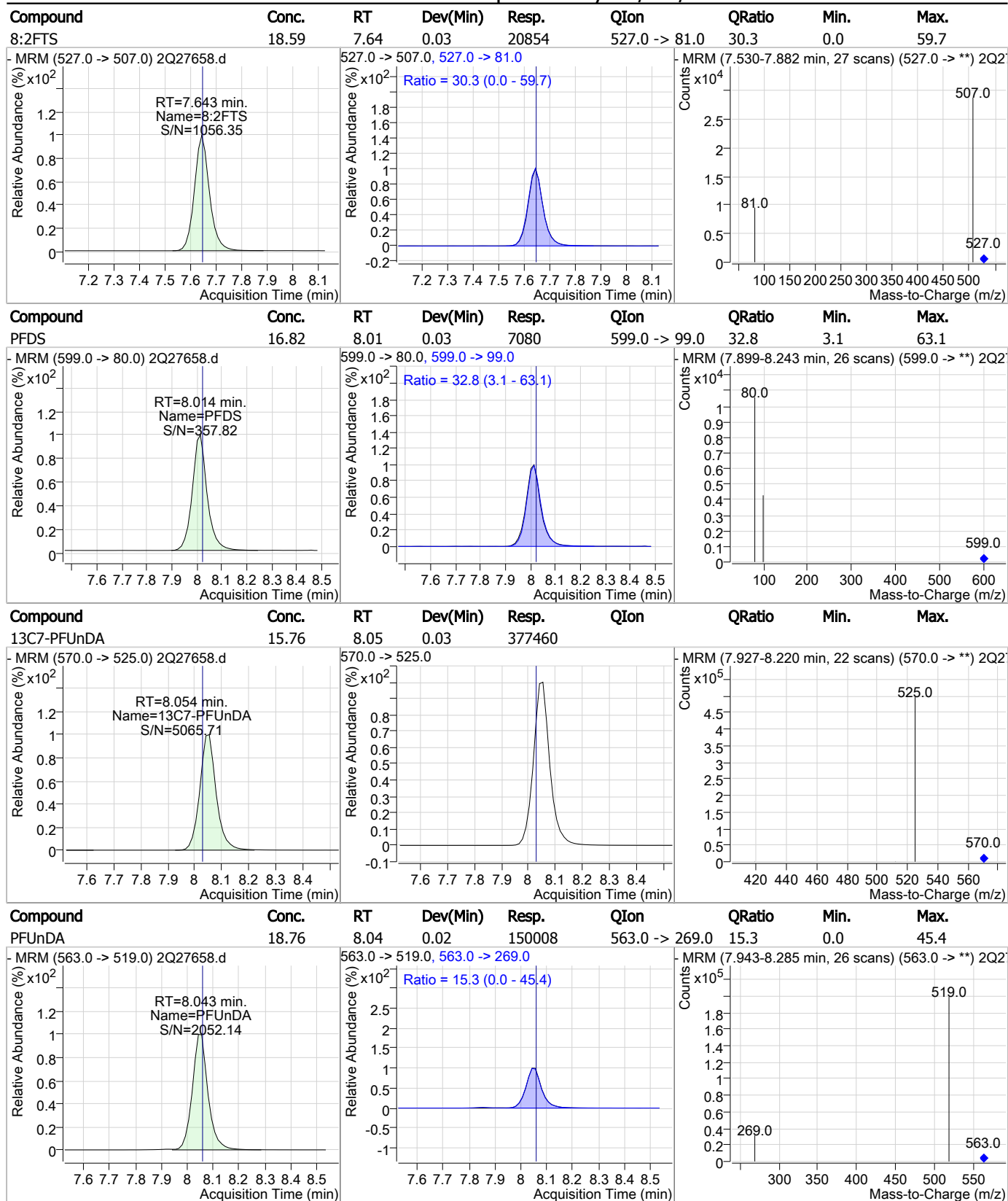


7.4.1  
7





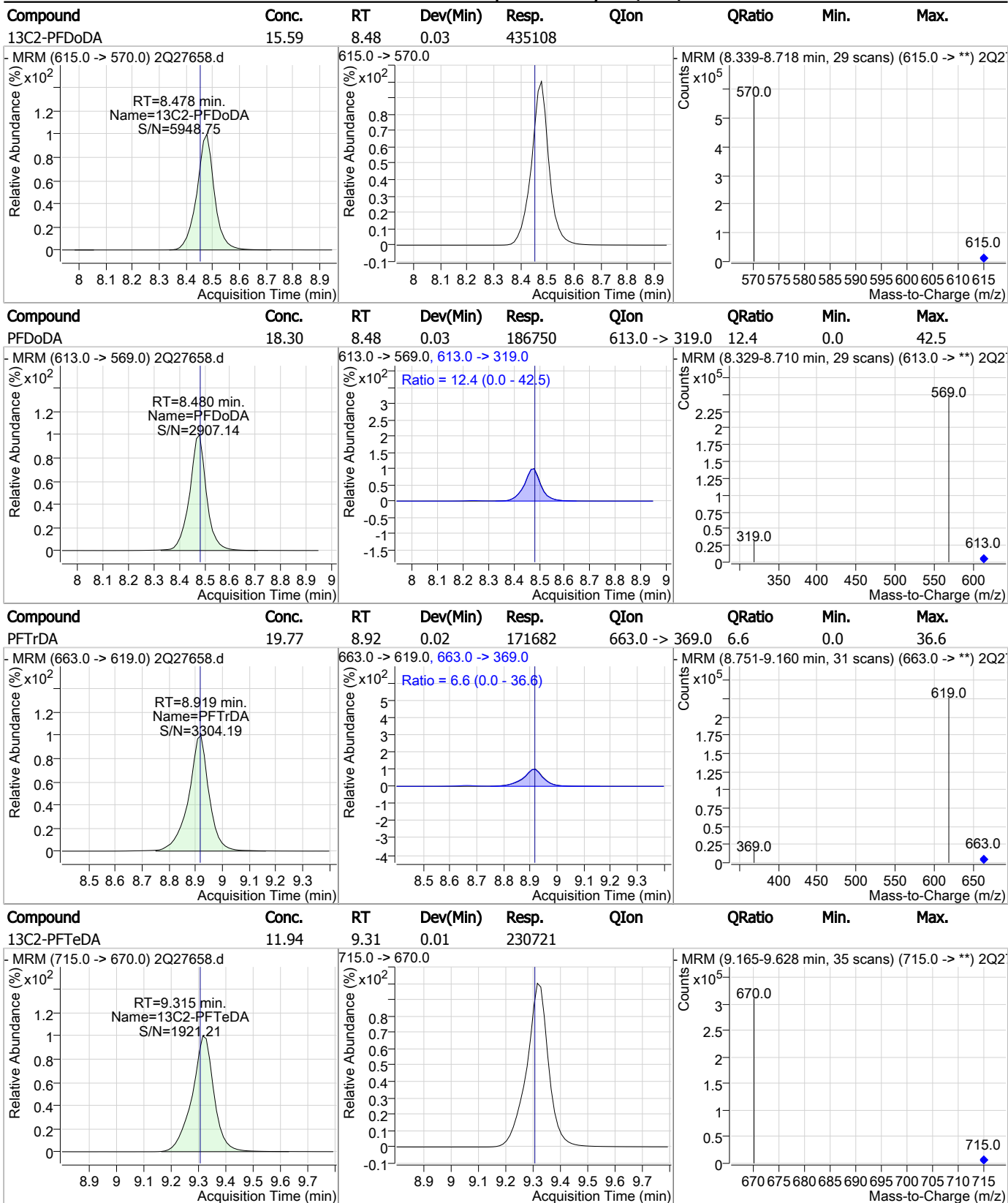
### Perfluorinated Compounds by LC/MS/MS



7.4.1

7

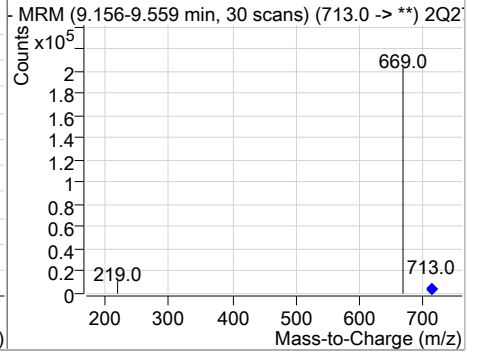
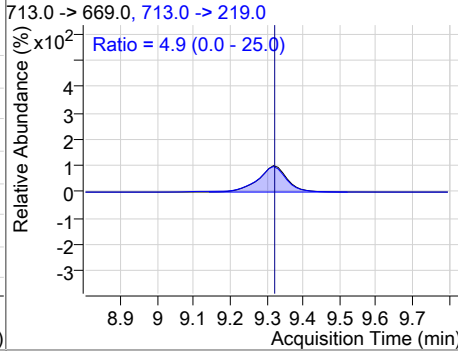
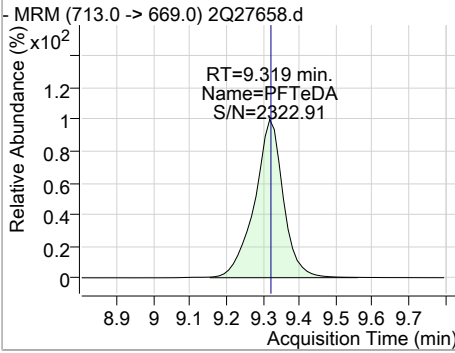
### Perfluorinated Compounds by LC/MS/MS



7.4.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.11 | 9.32 | 0.01     | 150868 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



7.4.1  
7



# Manual Integration Approval Summary

**Sample Number:** OP74164-MS      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27658.D      **Analyst approved:** 03/18/19 09:09 Nancy Saunders  
**Injection Time:** 03/15/19 17:25      **Supervisor approved:** 03/18/19 13:59 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.4.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27694.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 4:32:39 PM  
 Sample Name : op74180-ms  
 Vial : Vial 16  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT    | QIon                 | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|-------|----------------------|--------|------------------|----------|
| <b>Internal Standards</b>          |       |                      |        |                  |          |
| 13C2-PFOA                          | 6.435 | 415.0 -> 370.0       | 249290 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036 | 503.0 -> 80.0        | 36670  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.840 | 217.0 -> 172.0       | 93784  | 20.00 µg/L       | -0.025   |
| M5-PFPeA                           | 3.511 | 268.0 -> 223.0       | 79745  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.776 | 318.0 -> 273.0       | 113238 | 20.00 µg/L       | -0.013   |
| M4-PFHpA                           | 5.705 | 367.0 -> 322.0       | 167549 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434 | 421.0 -> 376.0       | 174830 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.066 | 472.0 -> 427.0       | 172269 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594 | 519.0 -> 474.0       | 213588 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041 | 570.0 -> 525.0       | 270048 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479 | 615.0 -> 570.0       | 321279 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.327 | 715.0 -> 670.0       | 182491 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 6.932 | 506.0 -> 78.0        | 51949  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.767 | 302.0 -> 99.0        | 14163  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.736 | 402.0 -> 99.0        | 15889  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033 | 507.0 -> 99.0        | 18214  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684 | 329.0 -> 309.0       | 48850  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416 | 429.0 -> 409.0       | 58887  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630 | 529.0 -> 509.0       | 35169  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447 | 573.0 -> 419.0       | 25959  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -     | 287.0 -> 169.0       | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |       |                      |        |                  |          |
| 13C2-4:2FTS                        | 4.684 | 329.0 -> 309.0       | 48797  | 16.41 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 82.1% |          |
| 13C2-6:2FTS                        | 6.416 | 429.0 -> 409.0       | 58947  | 18.37 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 91.8% |          |
| 13C2-8:2FTS                        | 7.630 | 529.0 -> 509.0       | 35186  | 15.87 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 79.3% |          |
| 13C2-PFDoDA                        | 8.479 | 615.0 -> 570.0       | 321137 | 17.07 µg/L       | 0.013    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 85.4% |          |
| 13C2-PFTeDA                        | 9.327 | 715.0 -> 670.0       | 181950 | 14.17 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 70.9% |          |
| 13C3-PFBS                          | 3.767 | 302.0 -> 99.0        | 14159  | 15.53 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 77.6% |          |
| 13C3-PFHxS                         | 5.736 | 402.0 -> 99.0        | 15887  | 15.58 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 77.9% |          |
| 13C4-PFBA                          | 1.840 | 217.0 -> 172.0       | 93679  | 15.62 µg/L       | -0.025   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 78.1% |          |
| 13C4-PFHpA                         | 5.705 | 367.0 -> 322.0       | 167518 | 16.20 µg/L       | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 81.0% |          |
| 13C5-PFHxA                         | 4.776 | 318.0 -> 273.0       | 113129 | 15.57 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 77.8% |          |
| 13C5-PFPeA                         | 3.511 | 268.0 -> 223.0       | 79589  | 15.66 µg/L       | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 78.3% |          |
| 13C6-PFDA                          | 7.594 | 519.0 -> 474.0       | 213528 | 15.65 µg/L       | 0.000    |

7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS

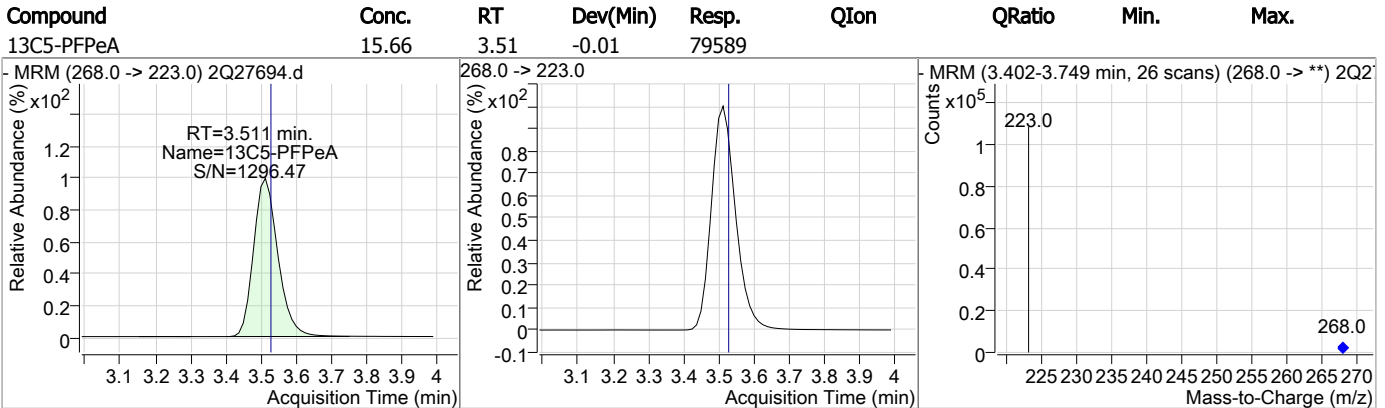
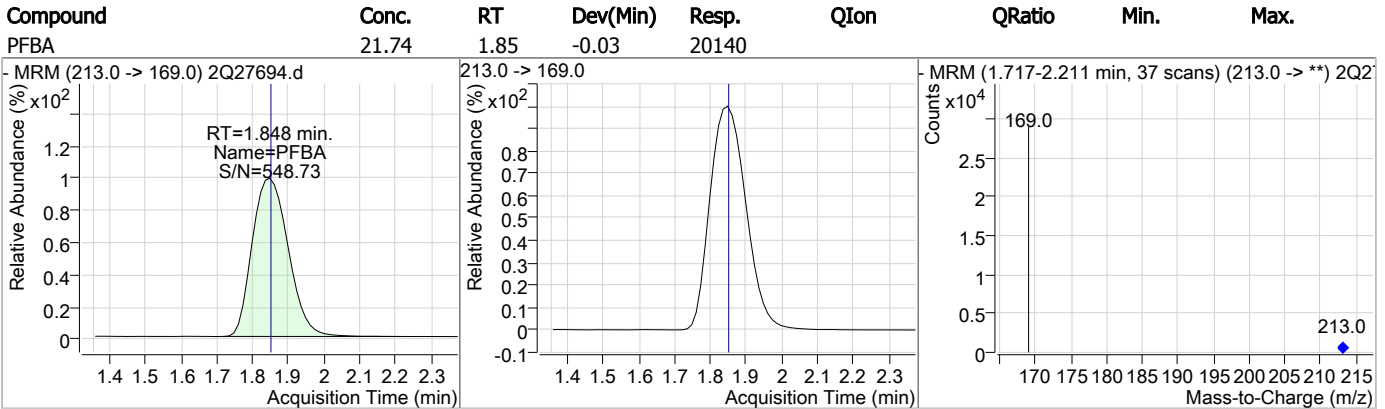
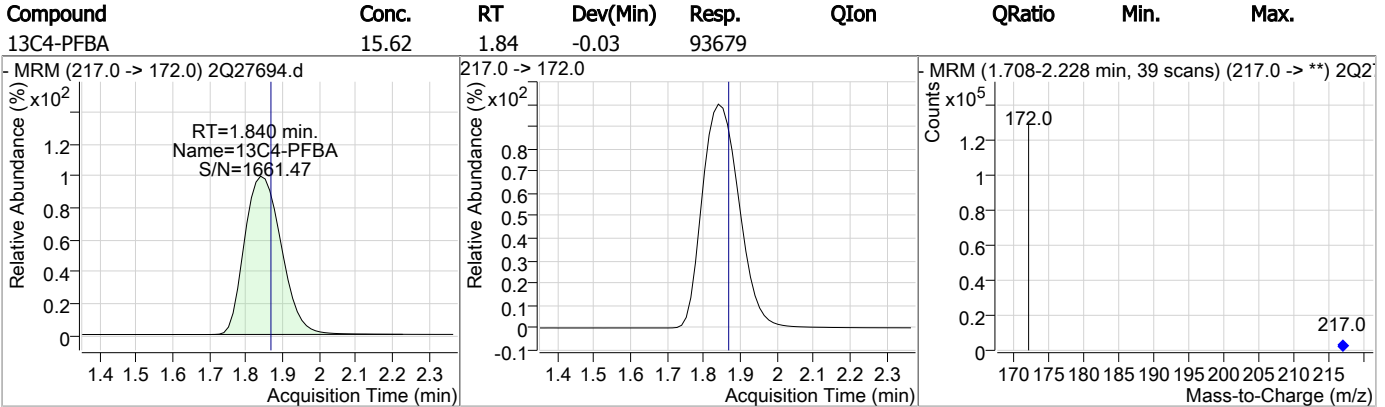
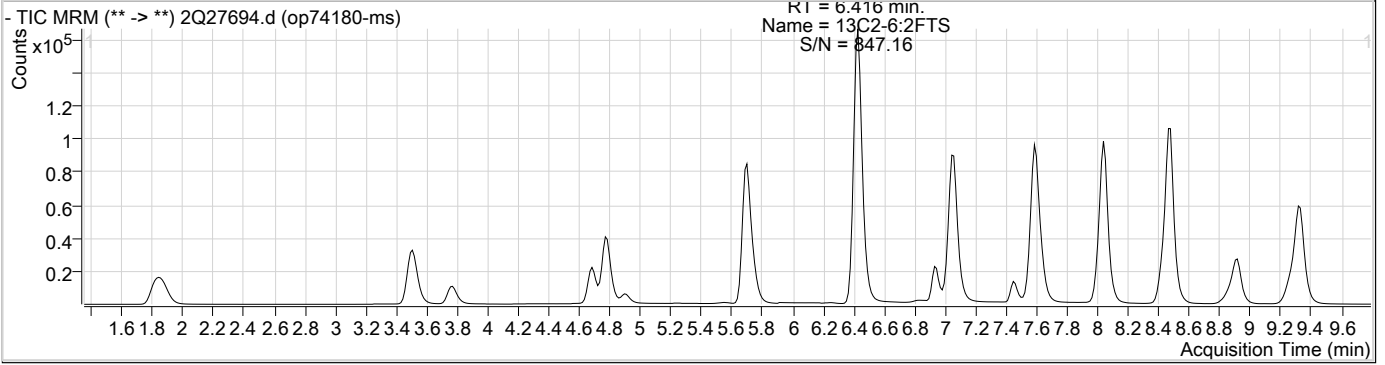
| Compound              | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|-----------------------|----------------------|----------------|--------|------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 78.2% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 269877 | 15.95 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.7% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 51945  | 12.81 µg/L       | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 64.1% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 174811 | 16.76 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.8% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 18188  | 13.95 µg/L       | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 69.8% |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 172268 | 16.27 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.4% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 25931  | 13.53 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 67.6% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 249294 | 19.98 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 36653  | 19.98 µg/L       | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%   |          |

7.4.2  
7

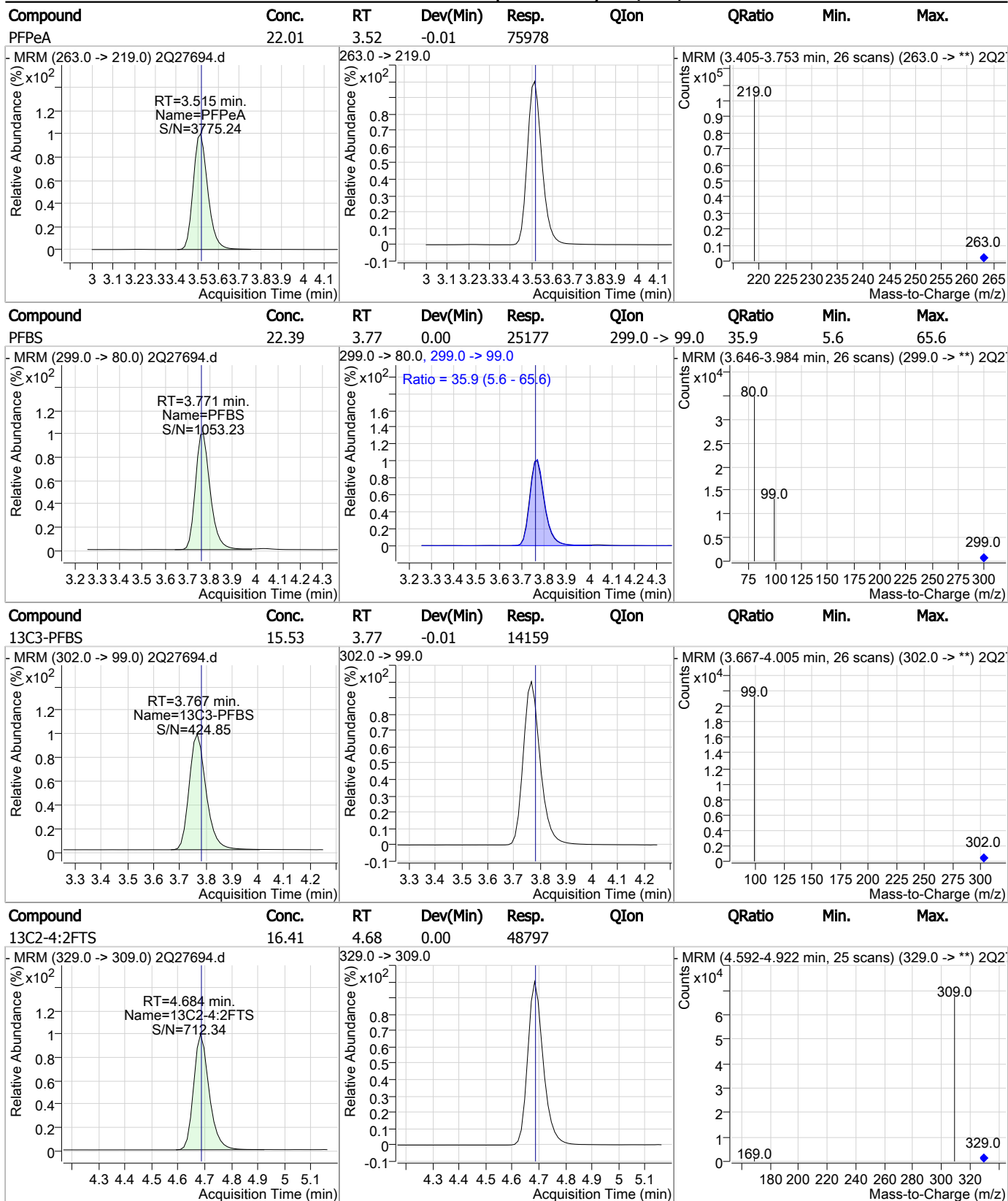
| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 28888  | 21.47 µg/L  | 100    |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 30794  | 21.26 µg/L  | 100    |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 19107  | 21.73 µg/L  | 100    |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 10860  | 19.68 µg/L  | 99     |
| FOSA             | 6.935 | 498.0 -> 78.0  | 24905  | 20.81 µg/L  | 100    |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 13849  | 20.91 µg/L  | 96     |
| PFBA             | 1.848 | 213.0 -> 169.0 | 20140  | 21.74 µg/L  | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 25177  | 22.39 µg/L  | 100    |
| PFDA             | 7.595 | 513.0 -> 469.0 | 99265  | 21.35 µg/L  | 100    |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 147558 | 20.64 µg/L  | 99     |
| PFDS             | 8.001 | 599.0 -> 80.0  | 5672   | 16.91 µg/L  | 98     |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 156389 | 21.65 µg/L  | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 16399  | 21.27 µg/L  | 98     |
| PFHxA            | 4.778 | 313.0 -> 269.0 | 43943  | 22.53 µg/L  | 99     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 19270  | 21.94 µg/L  | m 98   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 121469 | 21.26 µg/L  | 98     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 11615  | 18.61 µg/L  | 100    |
| PFOA             | 6.437 | 413.0 -> 369.0 | 107316 | 22.72 µg/L  | 99     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 20348  | 23.00 µg/L  | m 79   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 75978  | 22.01 µg/L  | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 15659  | 21.76 µg/L  | 98     |
| PFTeDA           | 9.319 | 713.0 -> 669.0 | 135866 | 21.29 µg/L  | 100    |
| PFTrDA           | 8.919 | 663.0 -> 619.0 | 135381 | 20.37 µg/L  | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 117627 | 21.11 µg/L  | 99     |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

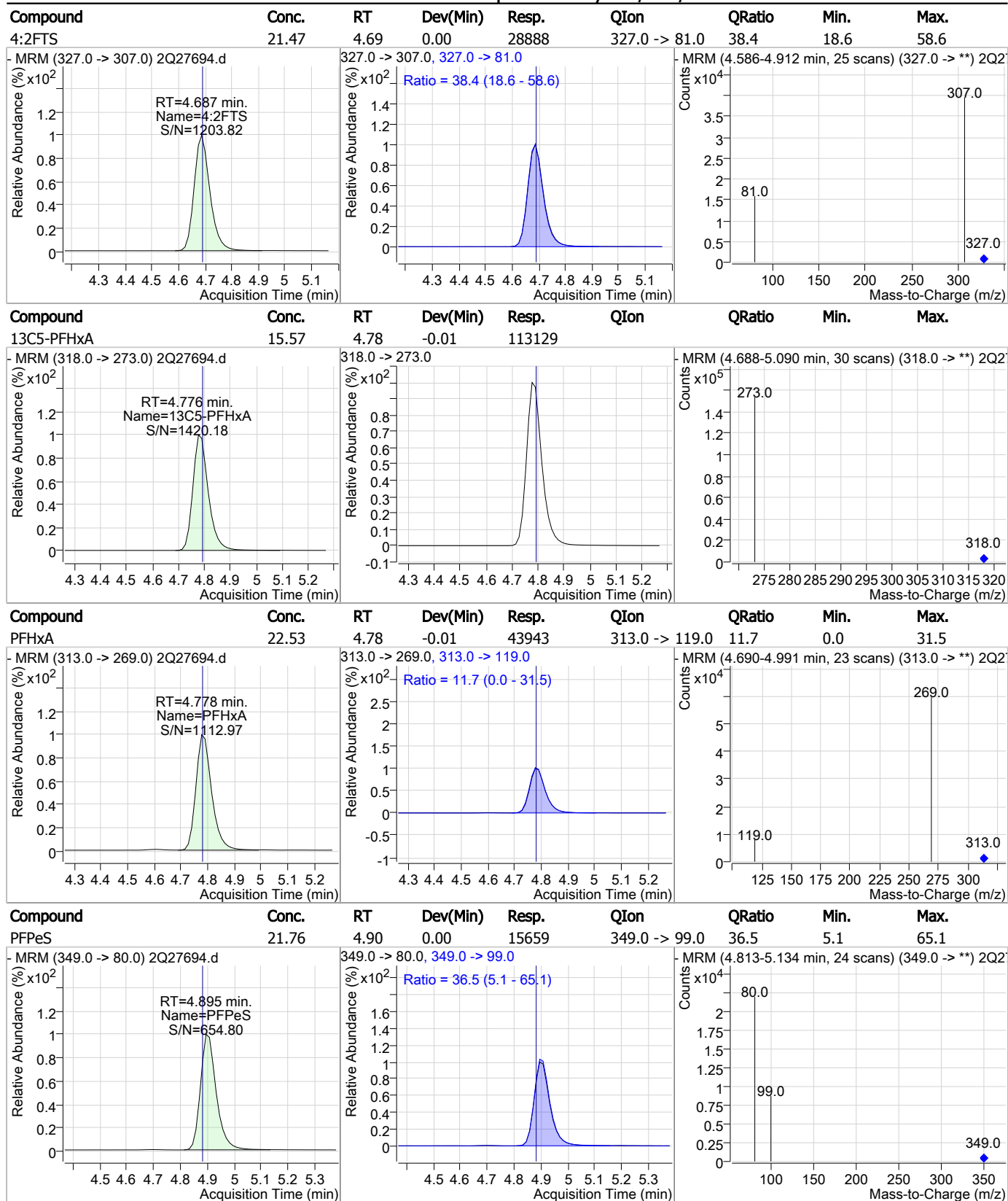


7.4.2  
7



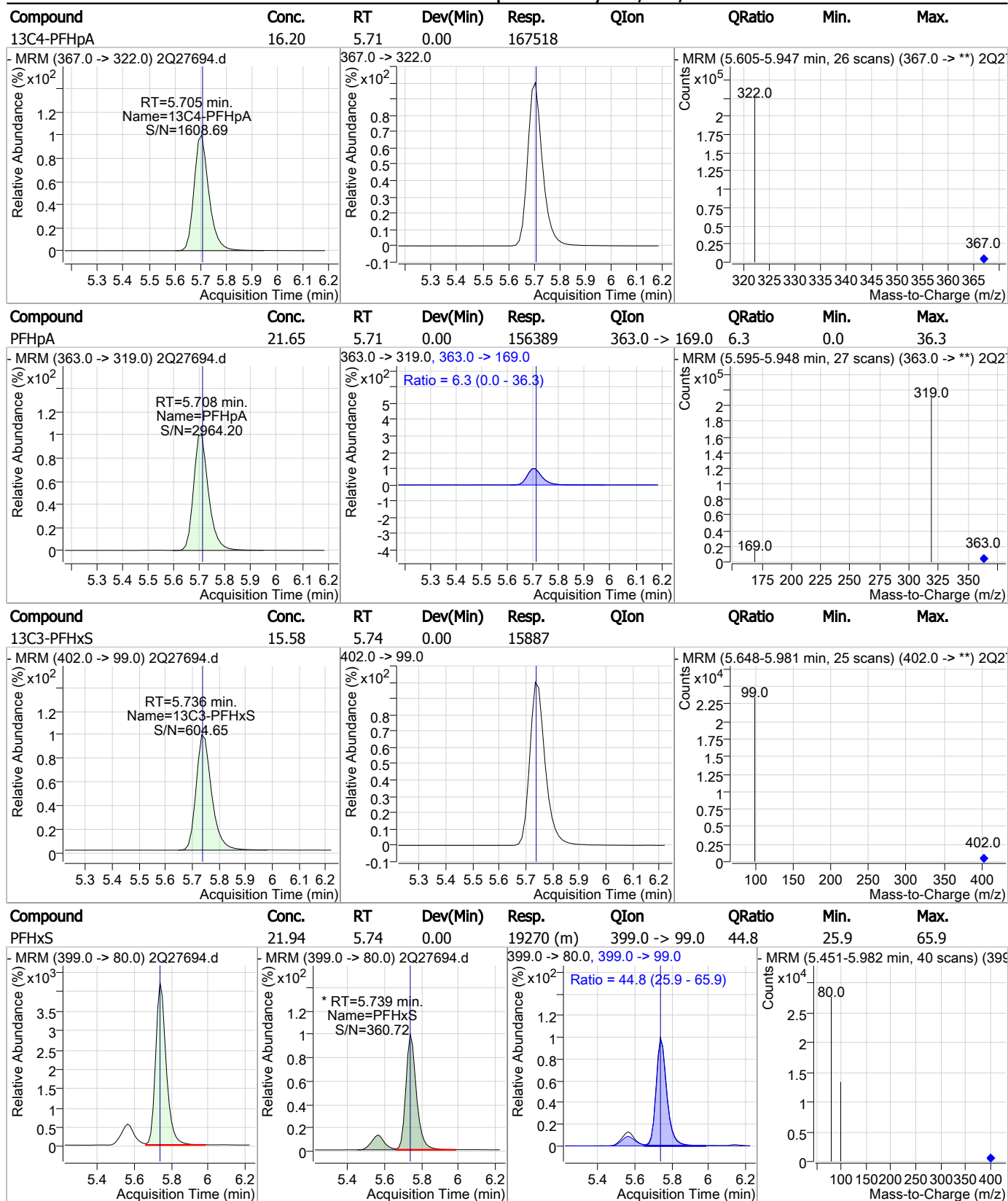


### Perfluorinated Compounds by LC/MS/MS



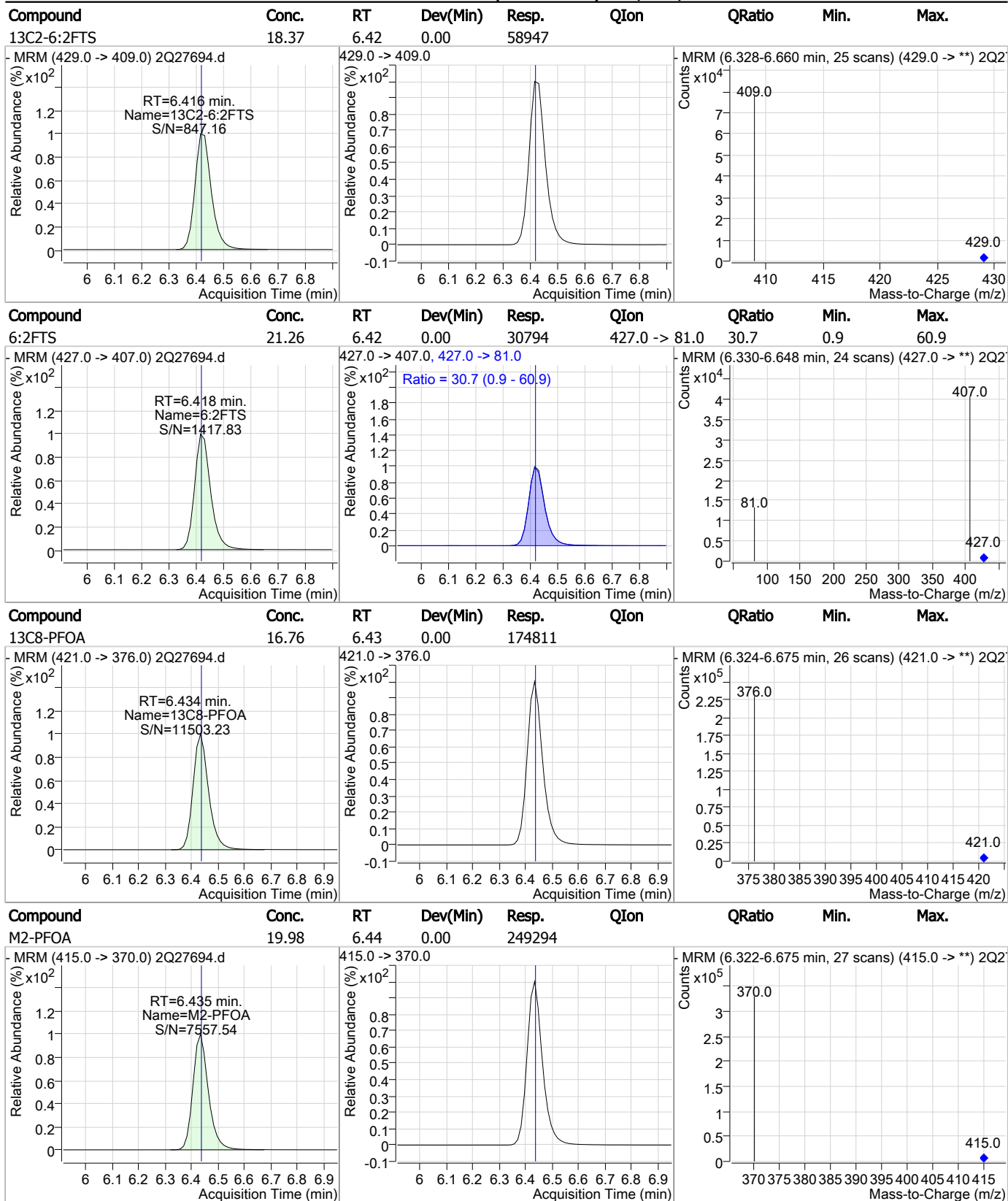
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS



7.4.2  
7

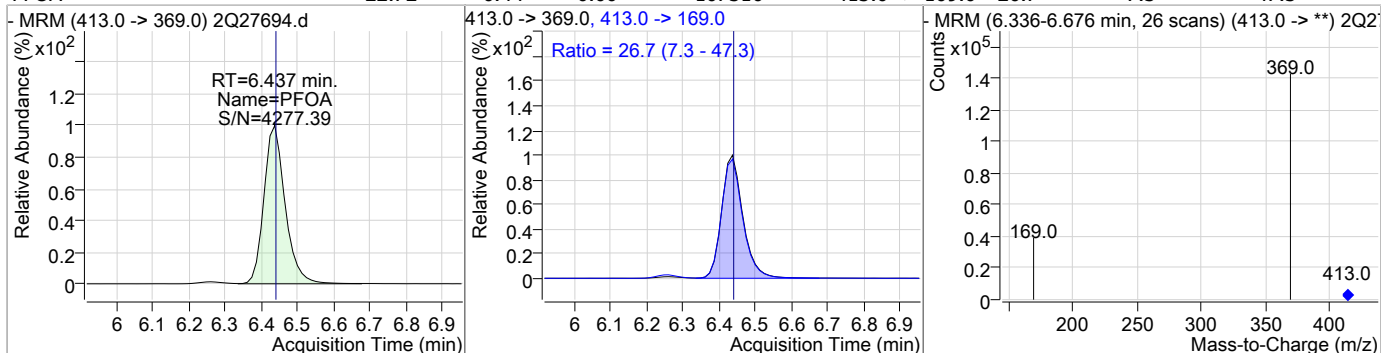
### Perfluorinated Compounds by LC/MS/MS



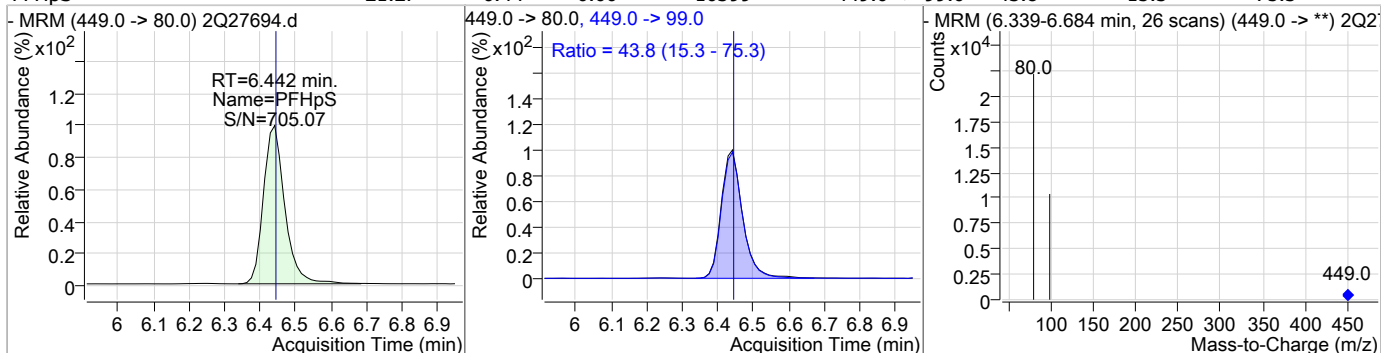
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS

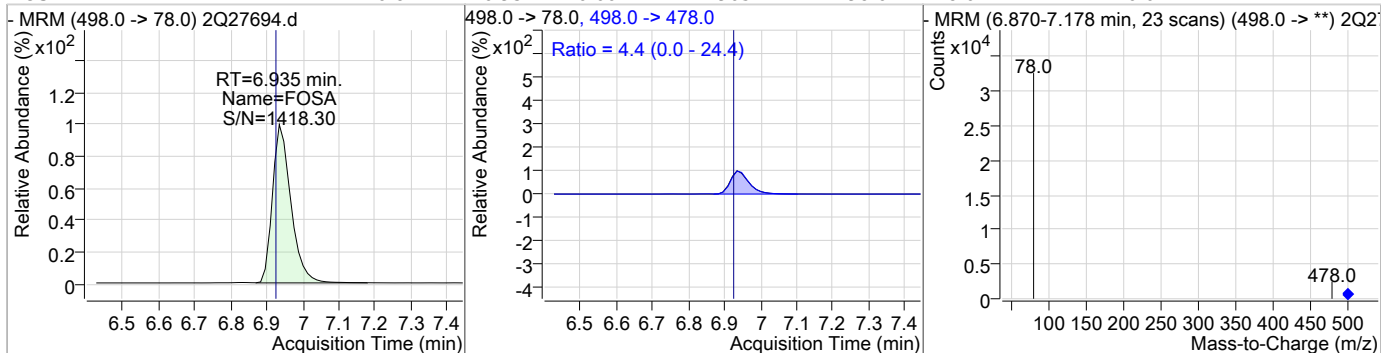
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 22.72 | 6.44 | 0.00     | 107316 | 413.0 -> 169.0 | 26.7   | 7.3  | 47.3 |



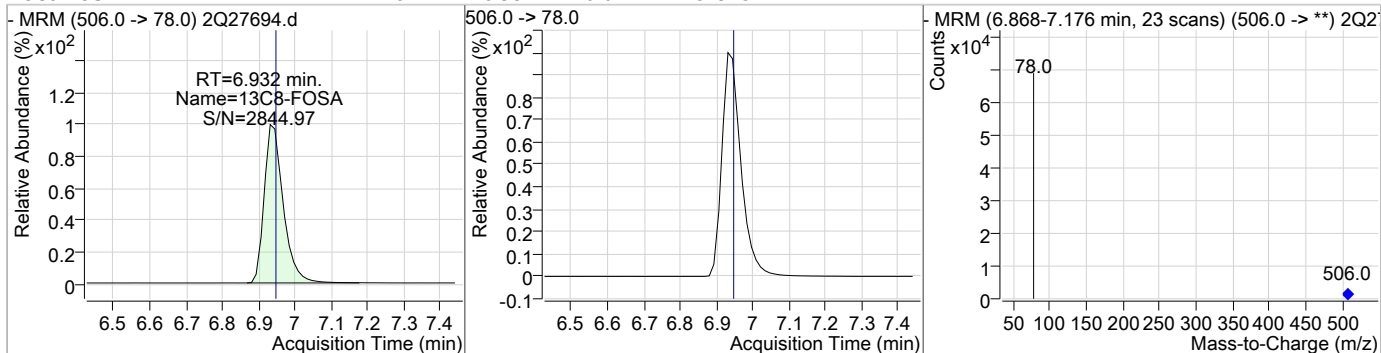
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 21.27 | 6.44 | 0.00     | 16399 | 449.0 -> 99.0 | 43.8   | 15.3 | 75.3 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 20.81 | 6.93 | 0.00     | 24905 | 498.0 -> 478.0 | 4.4    | 0.0  | 24.4 |

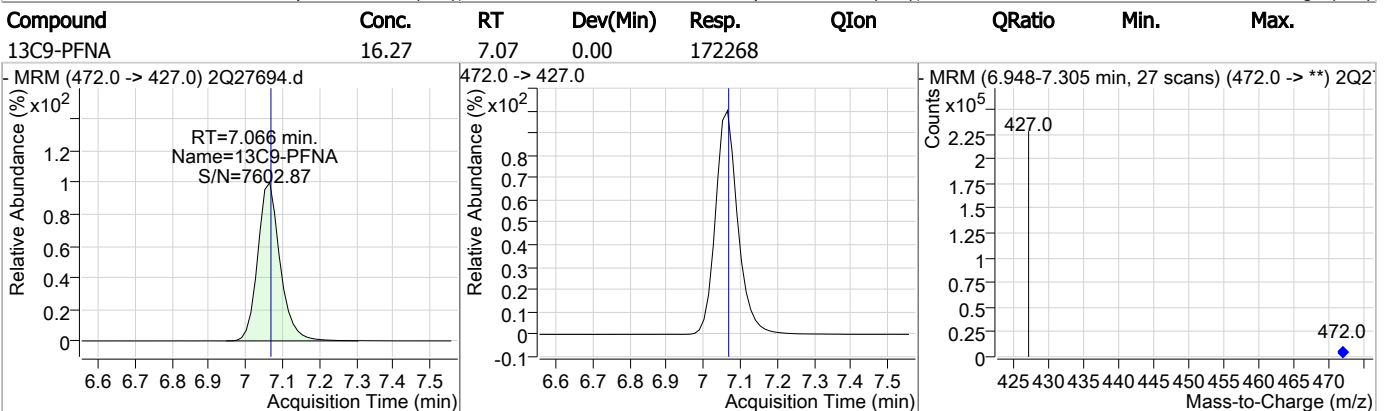
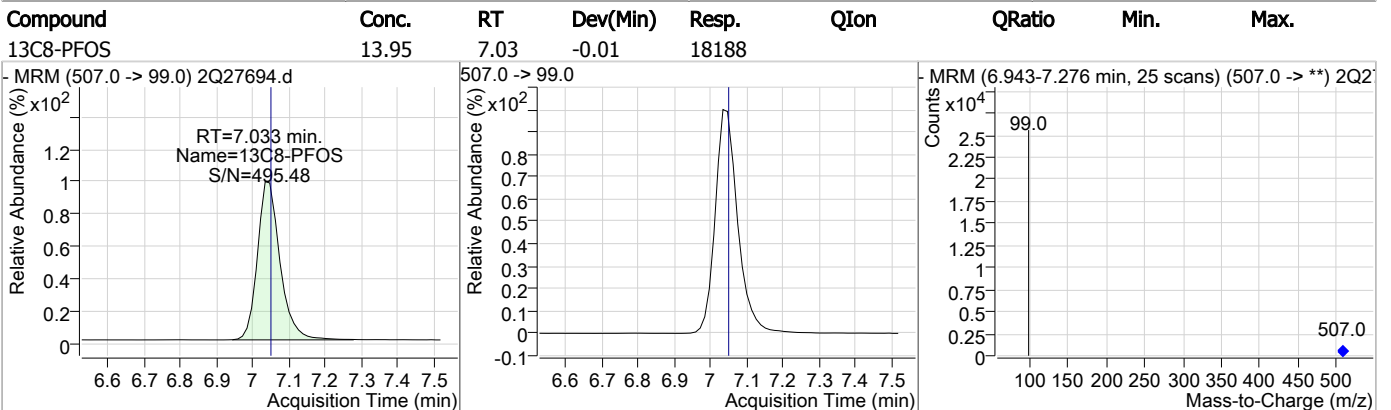
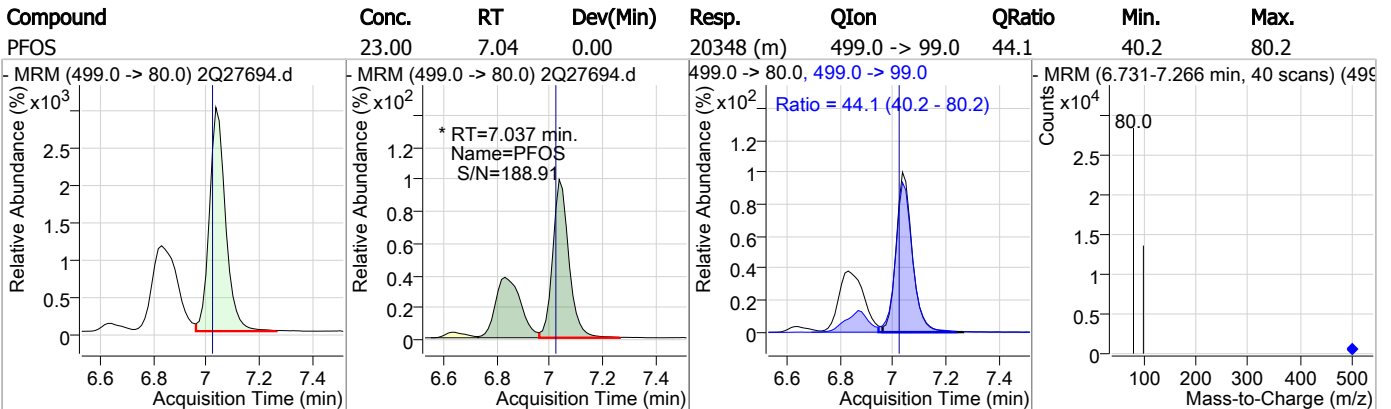
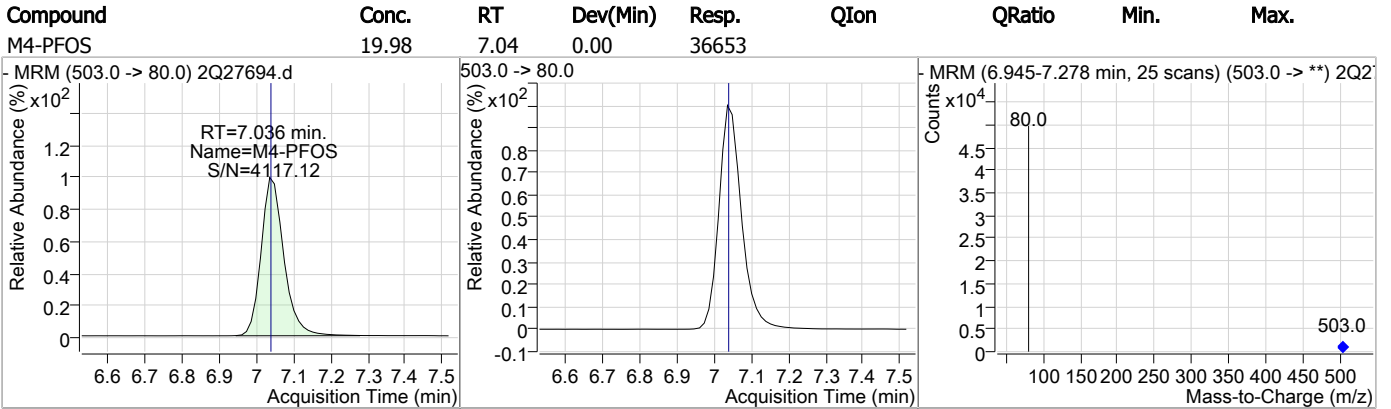


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-FOSA | 12.81 | 6.93 | -0.01    | 51945 | 506.0 -> 78.0 |        |      |      |



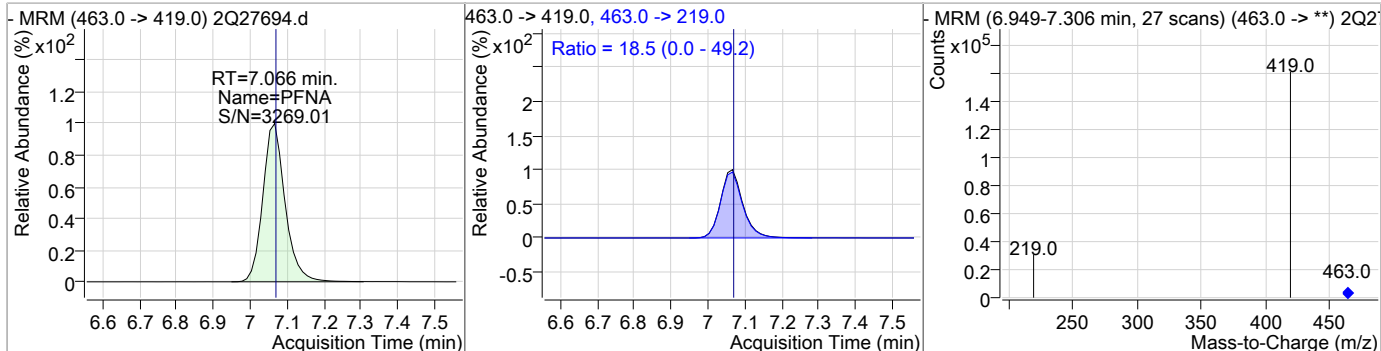
7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS

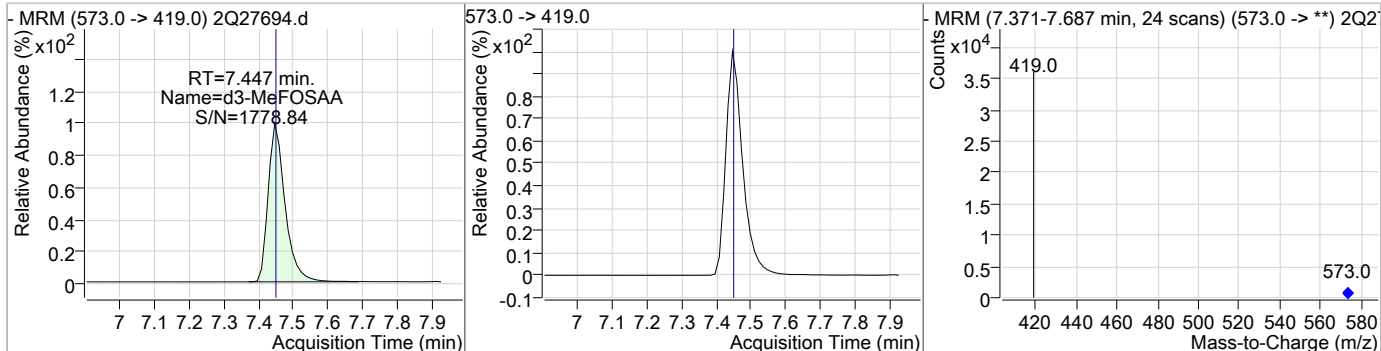


### Perfluorinated Compounds by LC/MS/MS

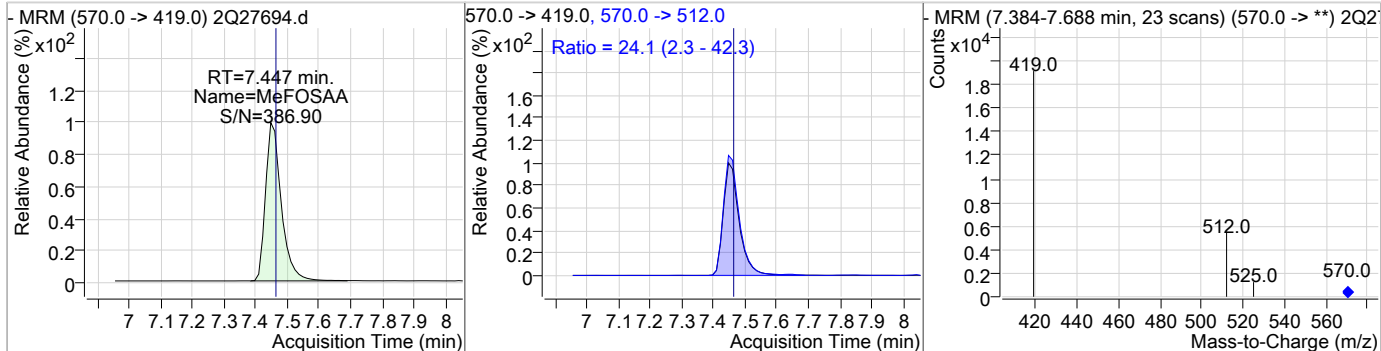
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 21.26 | 7.07 | 0.00     | 121469 | 463.0 -> 219.0 | 18.5   | 0.0  | 49.2 |



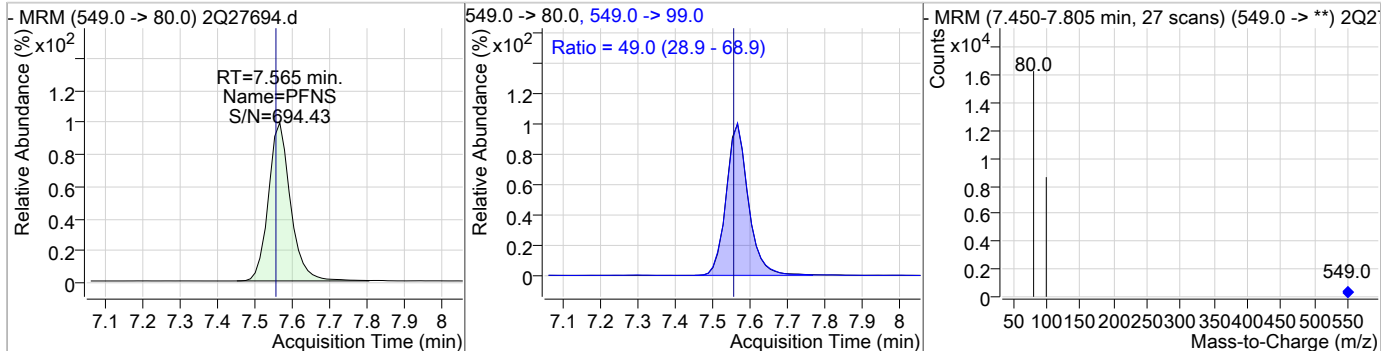
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 13.53 | 7.45 | 0.00     | 25931 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| MeFOSAA  | 20.91 | 7.45 | -0.01    | 13849 | 570.0 -> 512.0 | 24.1   | 2.3  | 42.3 |

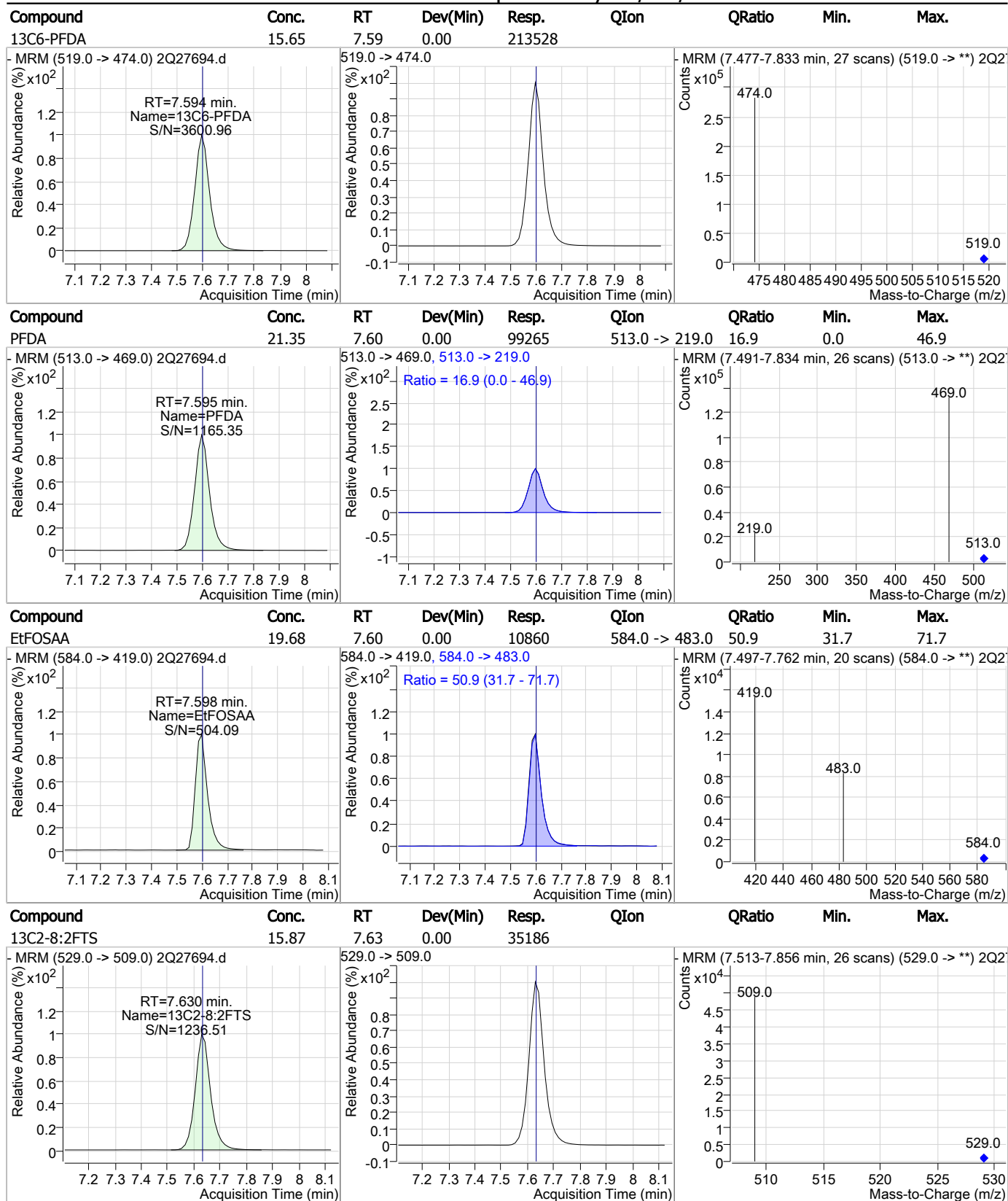


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 18.61 | 7.57 | 0.00     | 11615 | 549.0 -> 99.0 | 49.0   | 28.9 | 68.9 |



7.4.2  
7

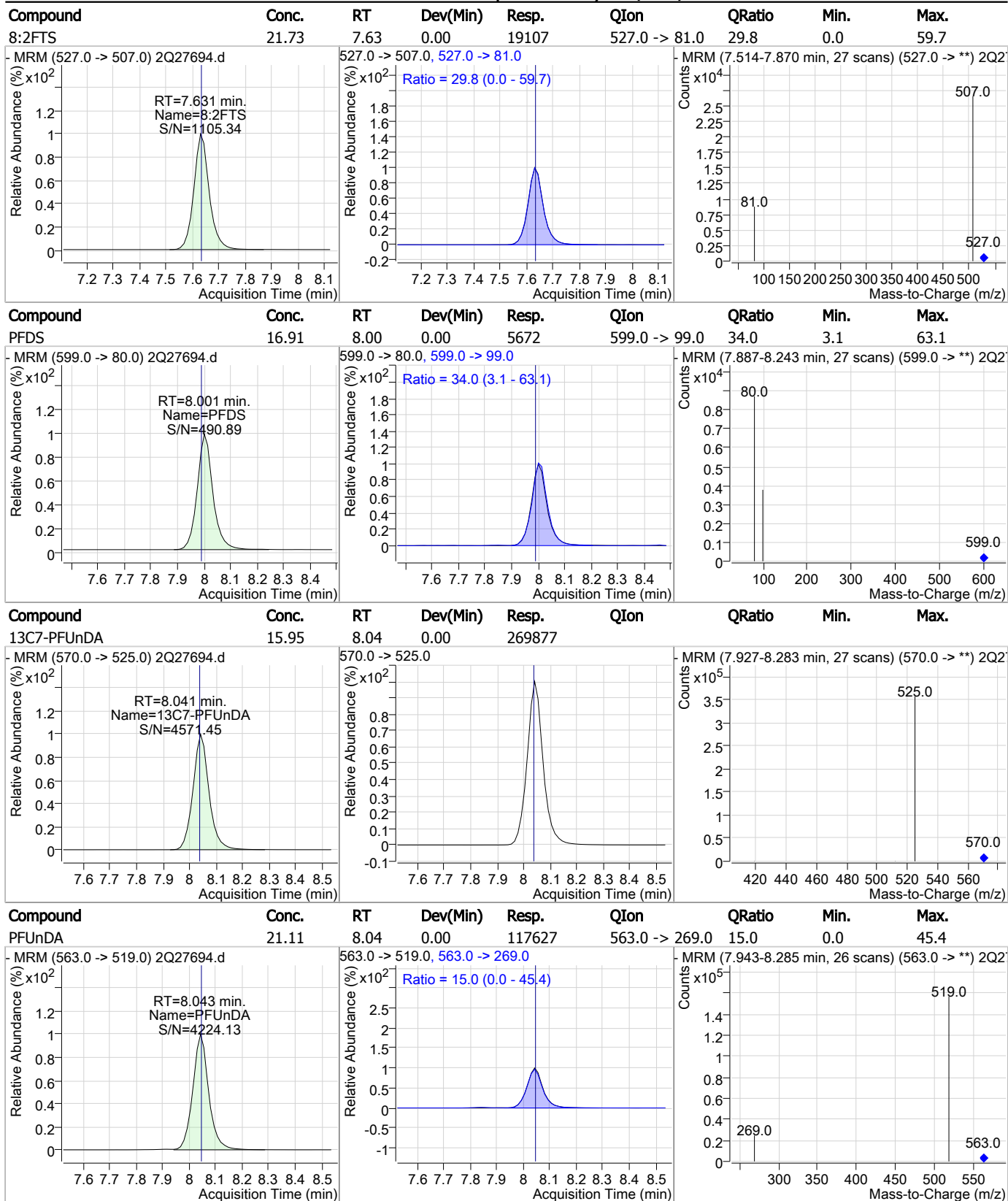
### Perfluorinated Compounds by LC/MS/MS



7.4.2  
7



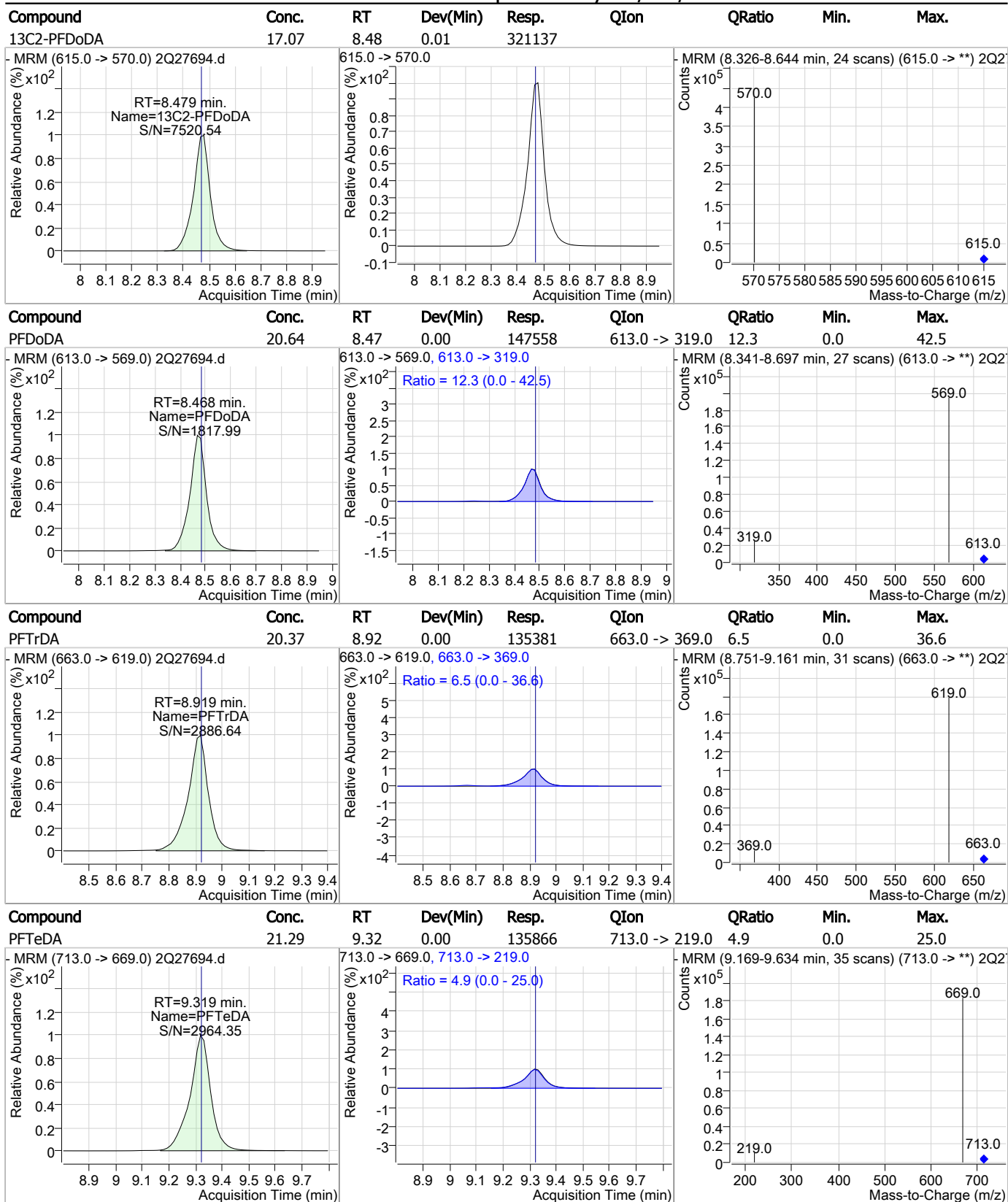
### Perfluorinated Compounds by LC/MS/MS



7.4.2  
7



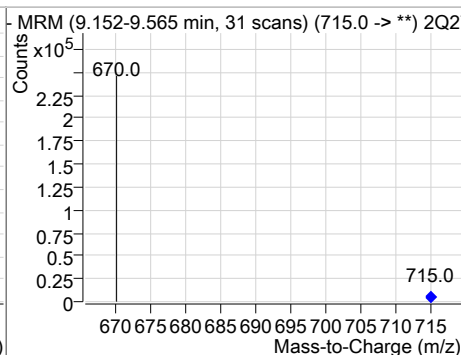
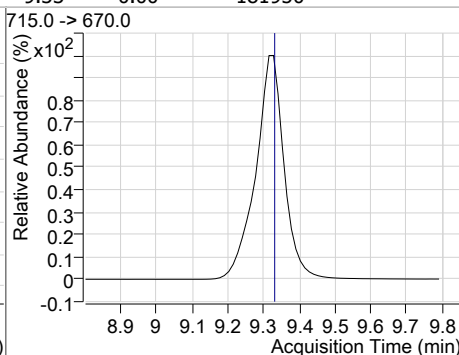
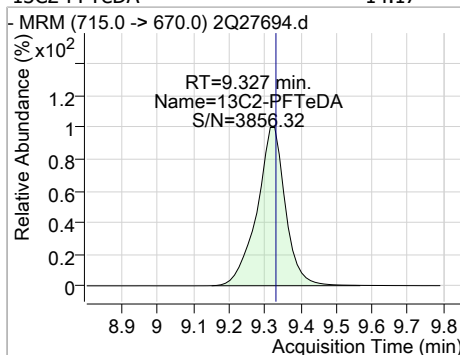
### Perfluorinated Compounds by LC/MS/MS



7.4.2  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 14.17 | 9.33 | 0.00     | 181950 |      |        |      |      |



7.4.2

7

# Manual Integration Approval Summary

**Sample Number:** OP74180-MS      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27694.D      **Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Injection Time:** 03/18/19 16:32      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.4.2.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27695.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 4:48:23 PM  
 Sample Name : op74180-msd  
 Vial : Vial 17  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74180,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 240011 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 34143  | 20.00 µg/L       | 0.000    |
| M4-PFBA                            | 1.852                | 217.0 -> 172.0 | 98439  | 20.00 µg/L       | -0.013   |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 82766  | 20.00 µg/L       | -0.013   |
| M5-PFHxA                           | 4.776                | 318.0 -> 273.0 | 117732 | 20.00 µg/L       | -0.013   |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 173514 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 182619 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 178775 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 219012 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 268564 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 340109 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 187325 | 20.00 µg/L       | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 57995  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 14302  | 20.00 µg/L       | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 15760  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 18139  | 20.00 µg/L       | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 49356  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 60453  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 35514  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 27019  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 49381  | 16.61 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.0% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 60440  | 18.83 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.2% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 35505  | 16.01 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 80.1% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 340090 | 18.08 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.4% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 186637 | 14.54 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 72.7% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 14347  | 15.74 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.7% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 15730  | 15.43 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 77.2% |          |
| 13C4-PFBA                          | 1.852                | 217.0 -> 172.0 | 98323  | 16.40 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.0% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 173358 | 16.76 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.8% |          |
| 13C5-PFHxA                         | 4.776                | 318.0 -> 273.0 | 117705 | 16.20 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.0% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 82689  | 16.27 µg/L       | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.3% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 218937 | 16.04 µg/L       | 0.000    |

## Perfluorinated Compounds by LC/MS/MS

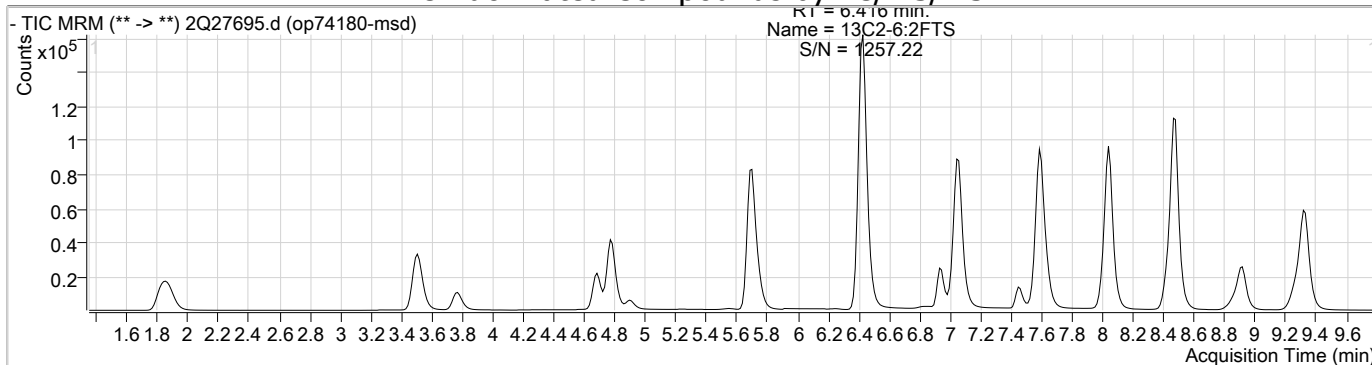
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 80.2%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 268374 | 15.86 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 79.3%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 58031  | 14.31 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 71.6%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 182590 | 17.50 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.5%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 18126  | 13.91 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 69.5%  |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 178637 | 16.87 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 84.4%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 27059  | 14.12 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 70.6%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 240062 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 34164  | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

## Target Compounds

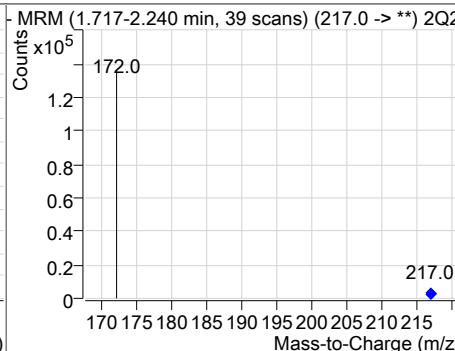
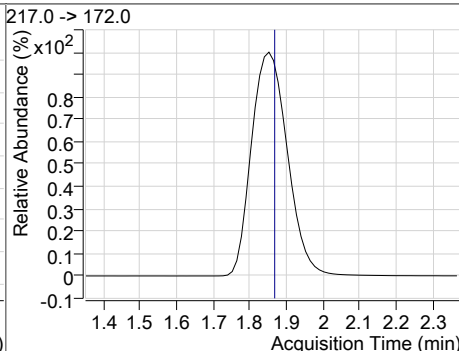
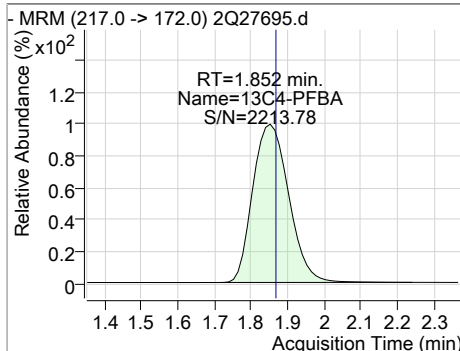
| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 26926  | 19.80 µg/L  | 99     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 28638  | 19.26 µg/L  | 99     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 17438  | 19.64 µg/L  | 98     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 10480  | 18.23 µg/L  | 95     |
| FOSAA            | 6.935 | 498.0 -> 78.0  | 25947  | 19.43 µg/L  | 99     |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 13394  | 19.44 µg/L  | 98     |
| PFBA             | 1.848 | 213.0 -> 169.0 | 19306  | 19.86 µg/L  | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 23811  | 20.97 µg/L  | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 90813  | 19.05 µg/L  | 100    |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 146597 | 19.37 µg/L  | 99     |
| PFDS             | 8.001 | 599.0 -> 80.0  | 5310   | 15.89 µg/L  | 99     |
| PFHpA            | 5.695 | 363.0 -> 319.0 | 148394 | 19.84 µg/L  | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 15306  | 20.02 µg/L  | 99     |
| PFHxA            | 4.778 | 313.0 -> 269.0 | 42333  | 20.88 µg/L  | 100    |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 17925  | 20.58 µg/L  | m 97   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 113404 | 19.13 µg/L  | 100    |
| PFNS             | 7.565 | 549.0 -> 80.0  | 10468  | 16.84 µg/L  | 100    |
| PFOA             | 6.437 | 413.0 -> 369.0 | 103112 | 20.90 µg/L  | 98     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 18430  | 20.92 µg/L  | m 79   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 73291  | 20.46 µg/L  | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 14624  | 20.12 µg/L  | 98     |
| PFTeDA           | 9.319 | 713.0 -> 669.0 | 127557 | 19.47 µg/L  | 100    |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 127026 | 18.62 µg/L  | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 107587 | 19.42 µg/L  | 100    |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA            | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

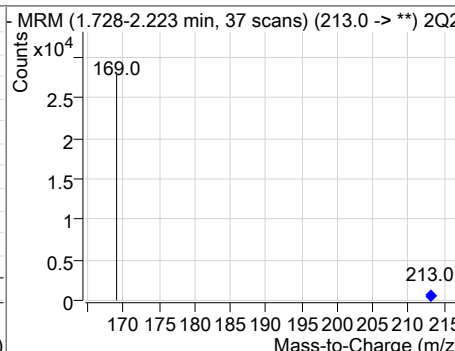
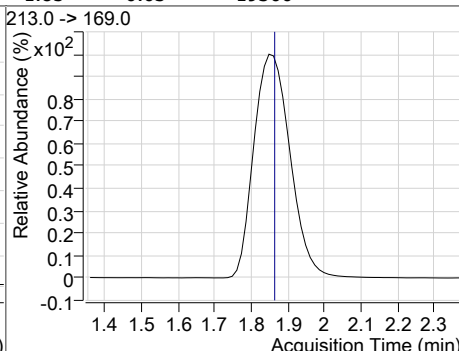
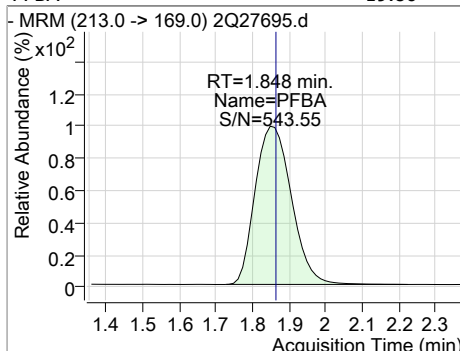
### Perfluorinated Compounds by LC/MS/MS



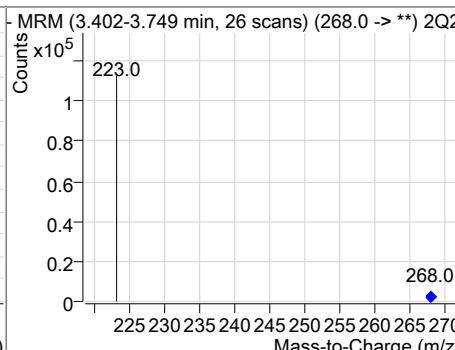
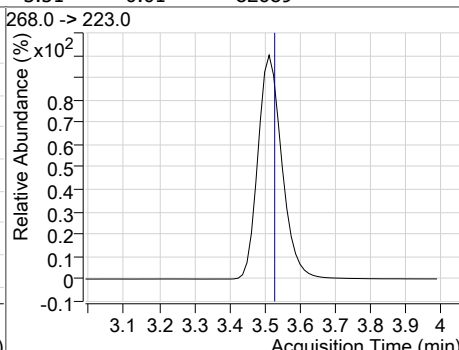
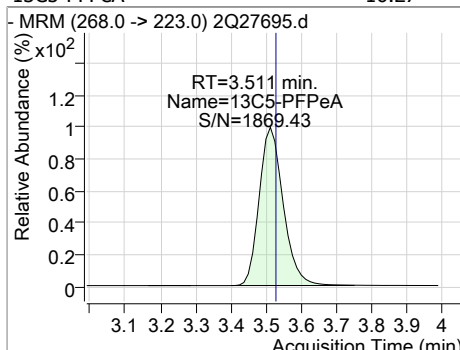
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C4-PFBA | 16.40 | 1.85 | -0.01    | 98323 |      |        |      |      |



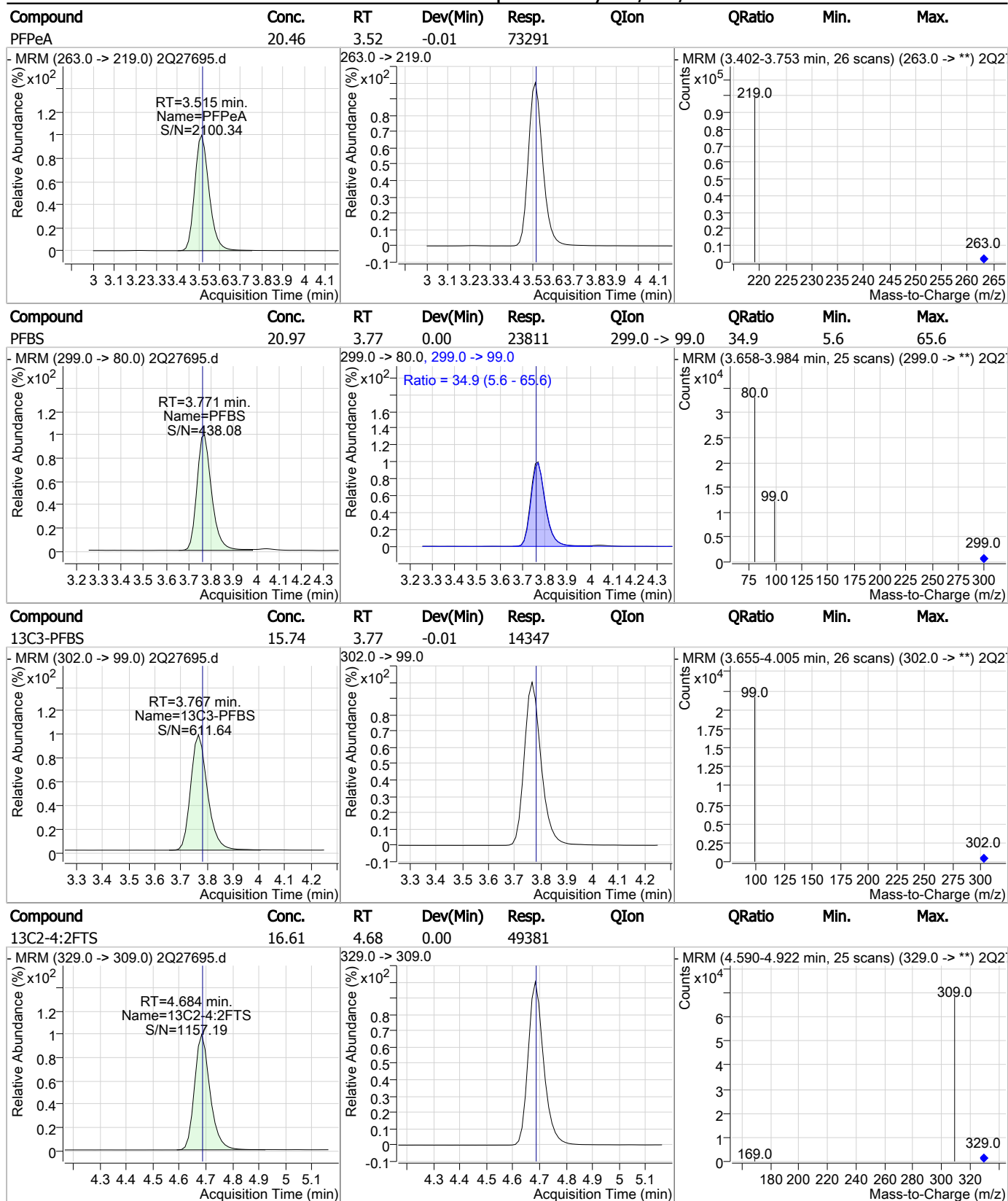
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 19.86 | 1.85 | -0.03    | 19306 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C5-PFPeA | 16.27 | 3.51 | -0.01    | 82689 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS

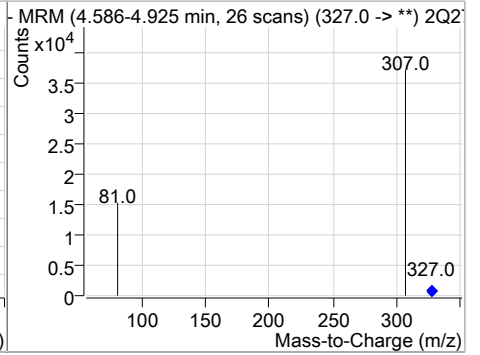
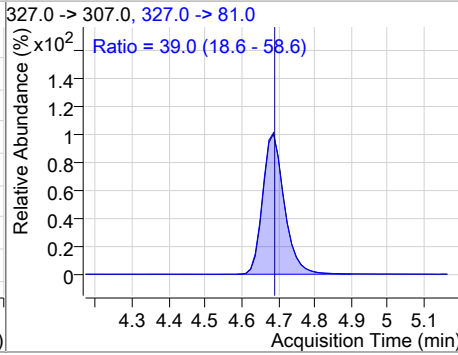
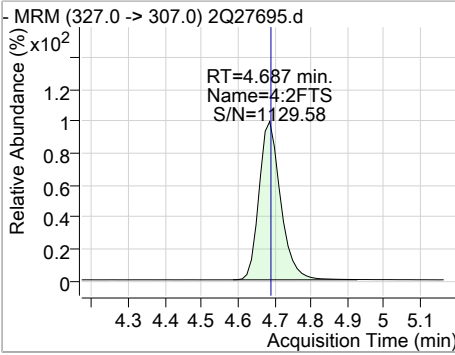


7.4.3  
7

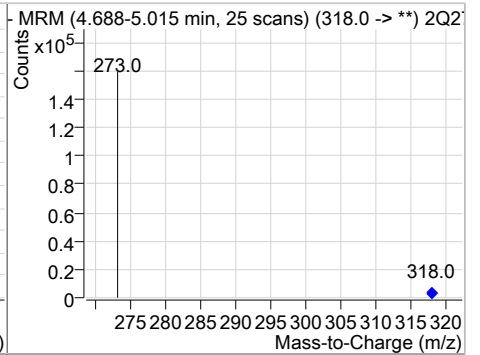
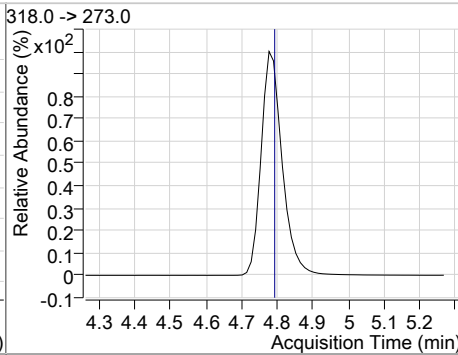
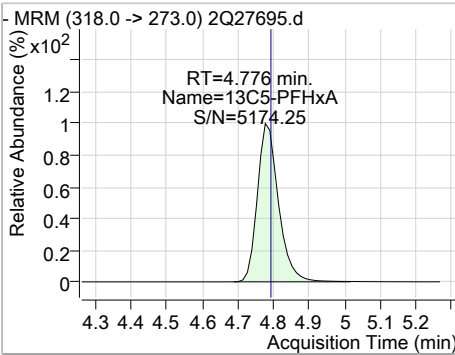


### Perfluorinated Compounds by LC/MS/MS

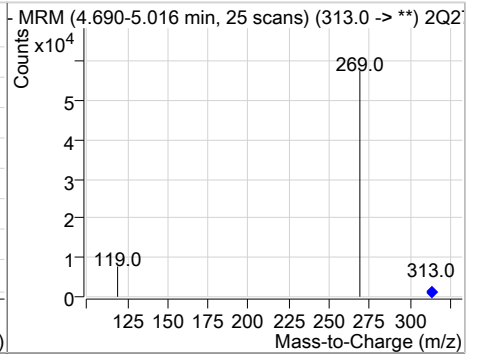
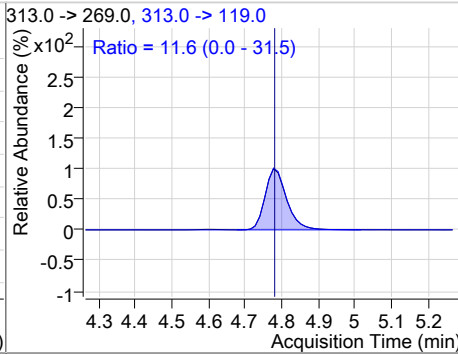
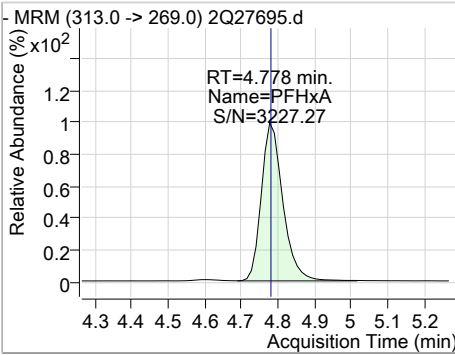
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 19.80 | 4.69 | 0.00     | 26926 | 327.0 -> 81.0 | 39.0   | 18.6 | 58.6 |



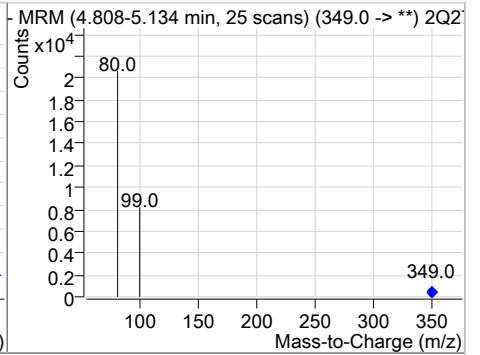
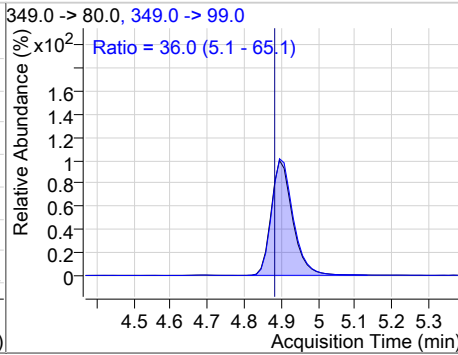
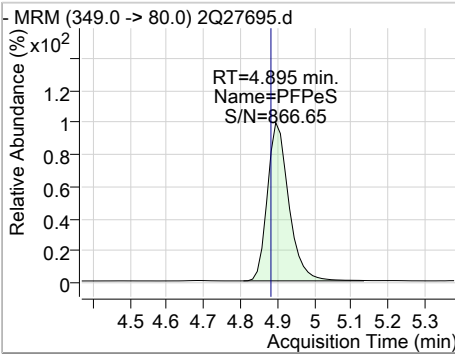
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 16.20 | 4.78 | -0.01    | 117705 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 20.88 | 4.78 | -0.01    | 42333 | 313.0 -> 119.0 | 11.6   | 0.0  | 31.5 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 20.12 | 4.90 | 0.00     | 14624 | 349.0 -> 99.0 | 36.0   | 5.1  | 65.1 |



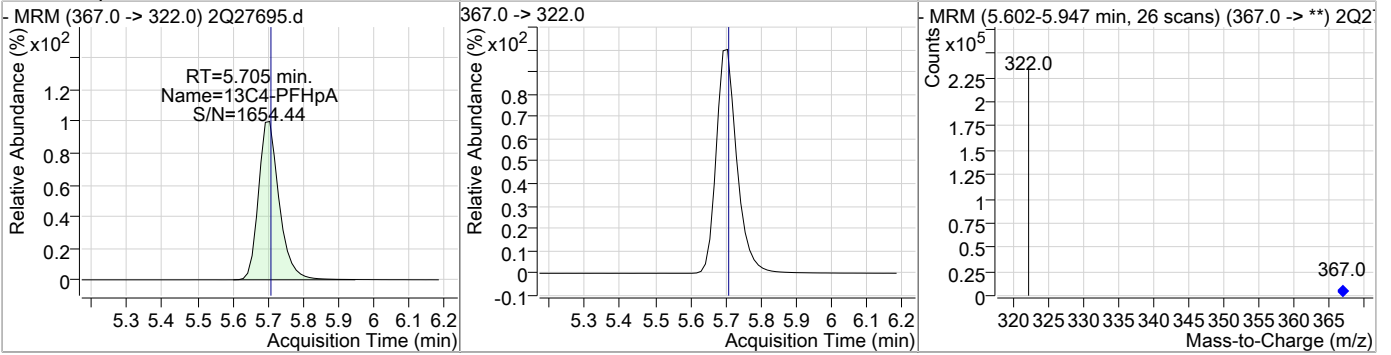
7.4.3

7

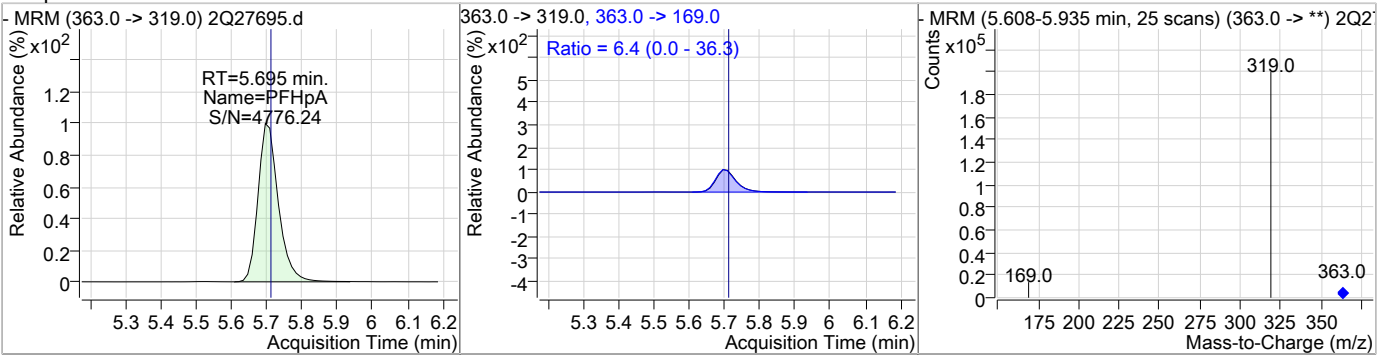


### Perfluorinated Compounds by LC/MS/MS

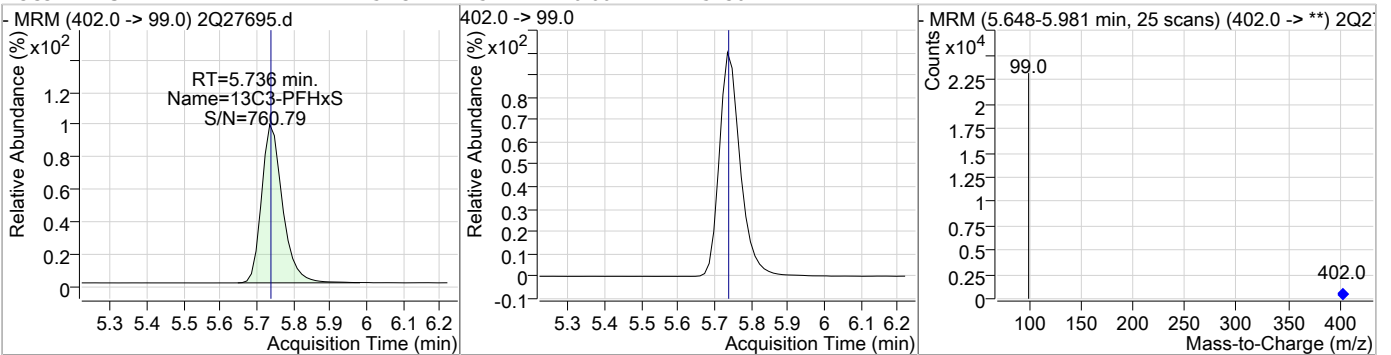
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 16.76 | 5.71 | 0.00     | 173358 |      |        |      |      |



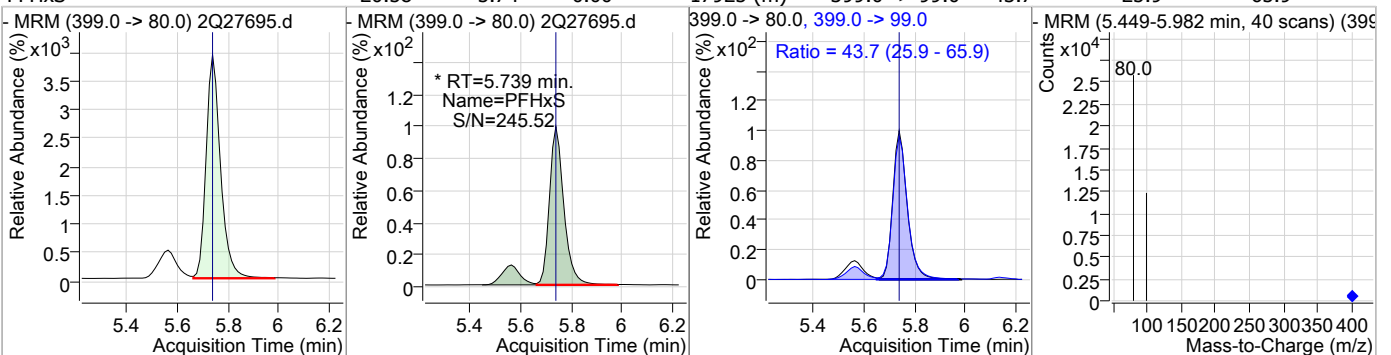
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon     | QRatio | Min. | Max. |      |
|----------|-------|------|----------|--------|----------|--------|------|------|------|
| PFHpA    | 19.84 | 5.70 | -0.01    | 148394 | 363.0 -> | 169.0  | 6.4  | 0.0  | 36.3 |



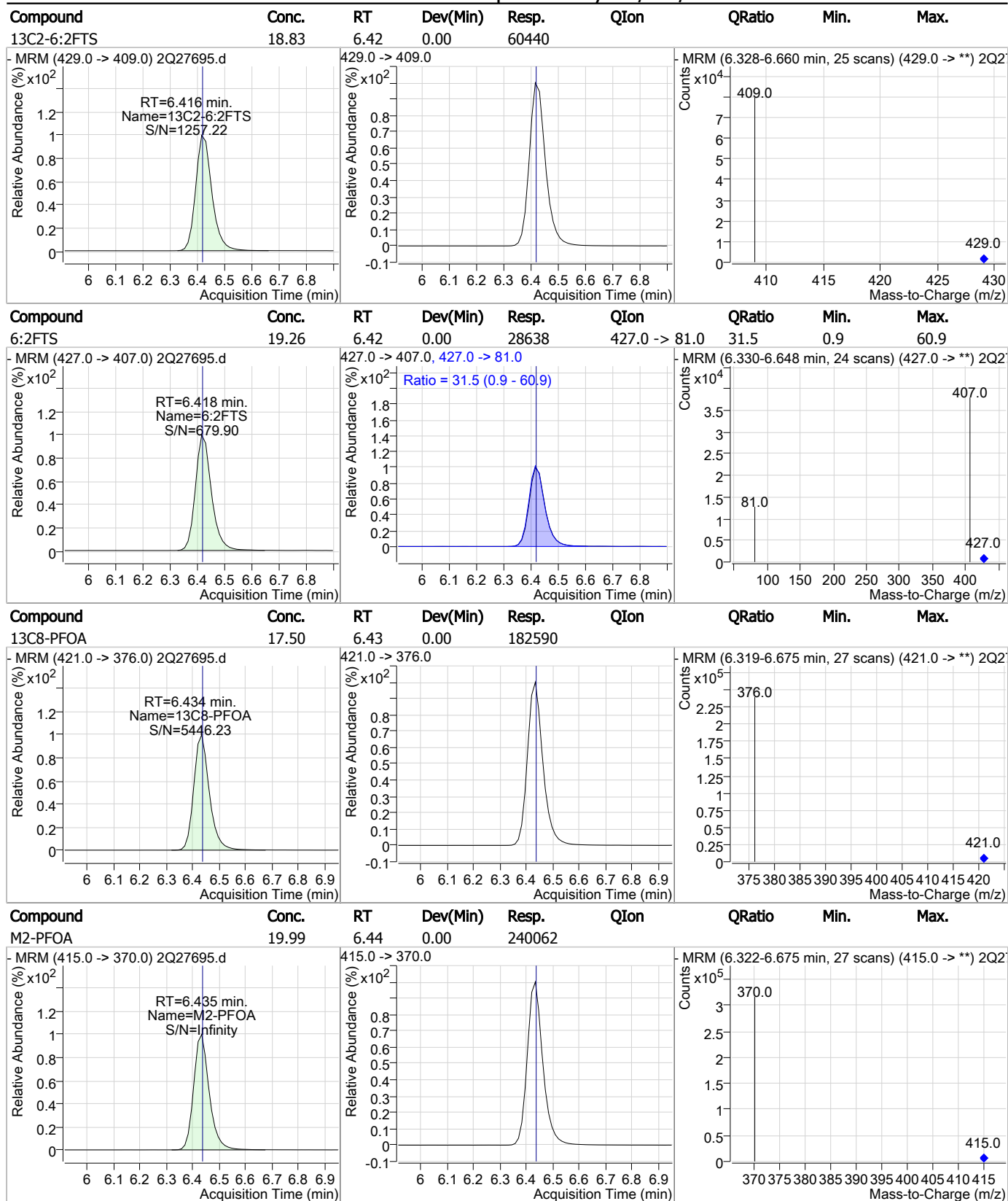
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 15.43 | 5.74 | 0.00     | 15730 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon     | QRatio | Min. | Max. |      |
|----------|-------|------|----------|-----------|----------|--------|------|------|------|
| PFHxS    | 20.58 | 5.74 | 0.00     | 17925 (m) | 399.0 -> | 99.0   | 43.7 | 25.9 | 65.9 |



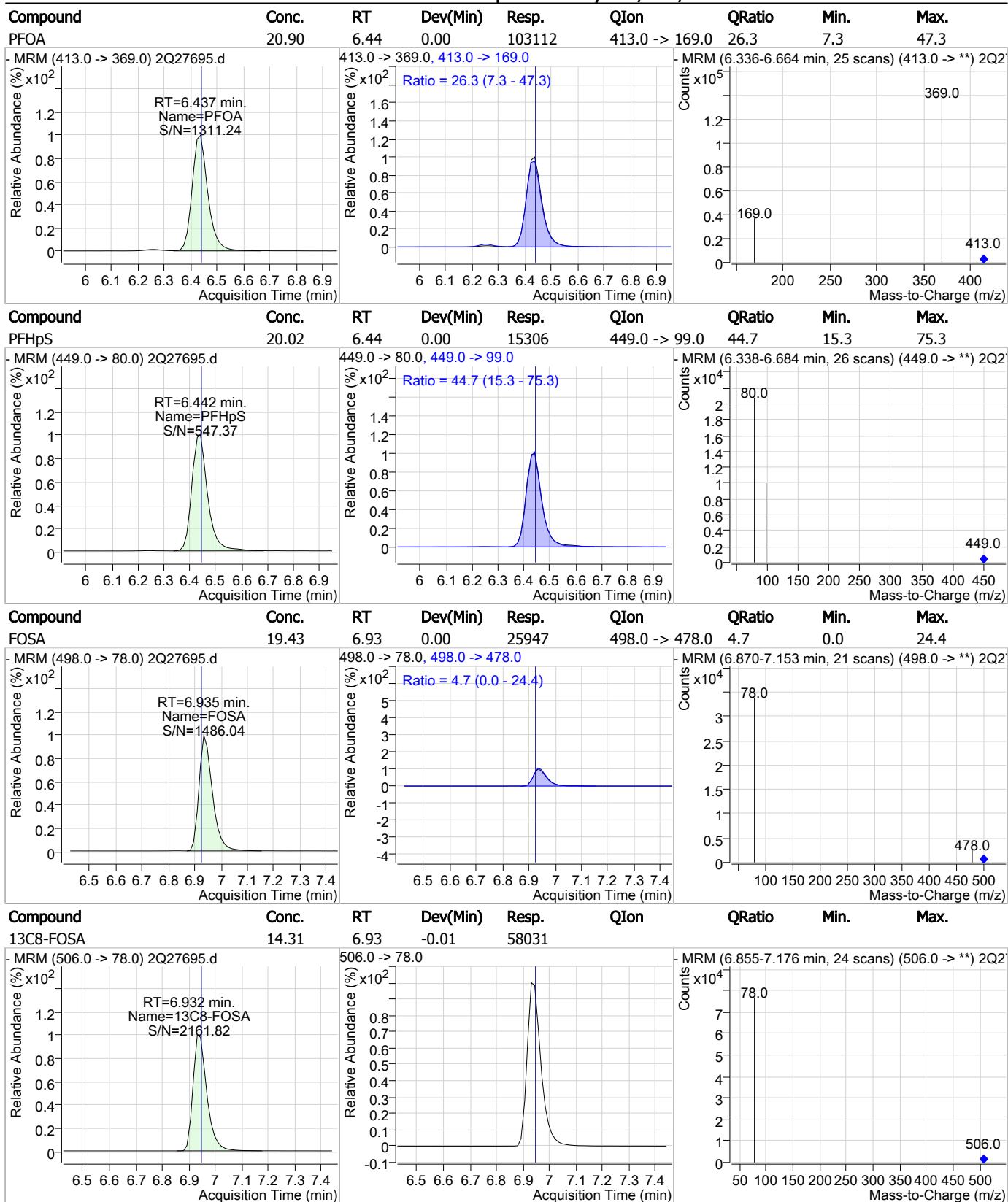
### Perfluorinated Compounds by LC/MS/MS



7.4.3

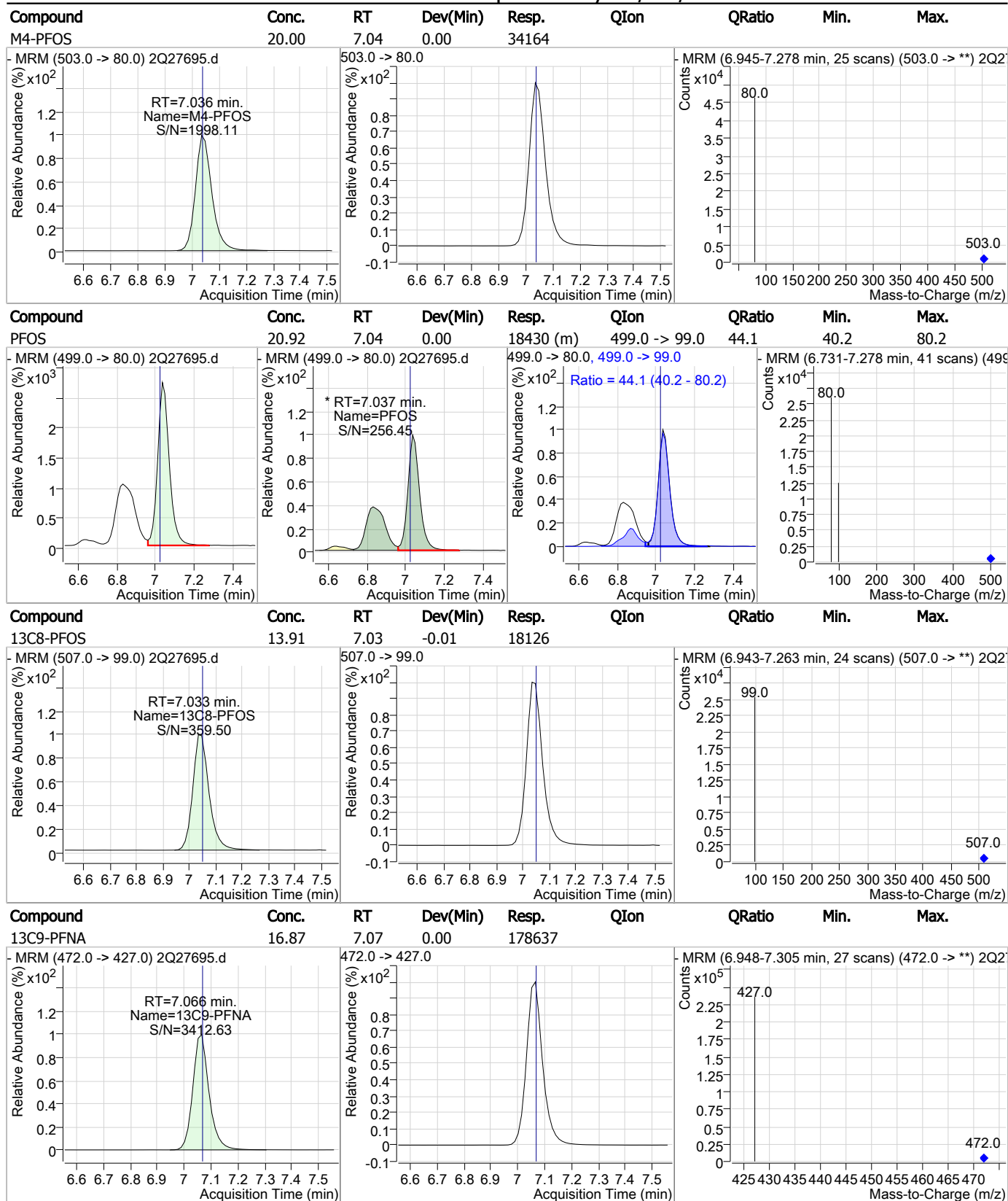
7

### Perfluorinated Compounds by LC/MS/MS



7.4.3  
7

### Perfluorinated Compounds by LC/MS/MS



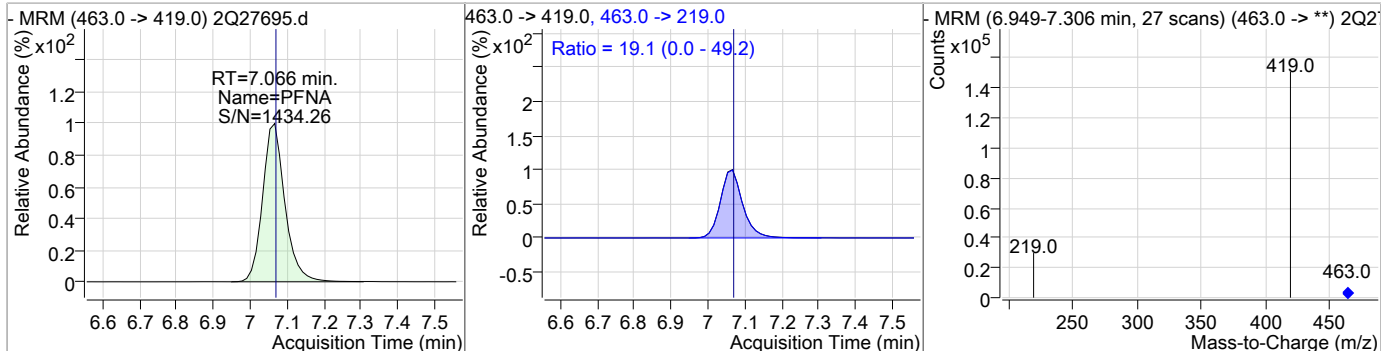
7.4.3

7

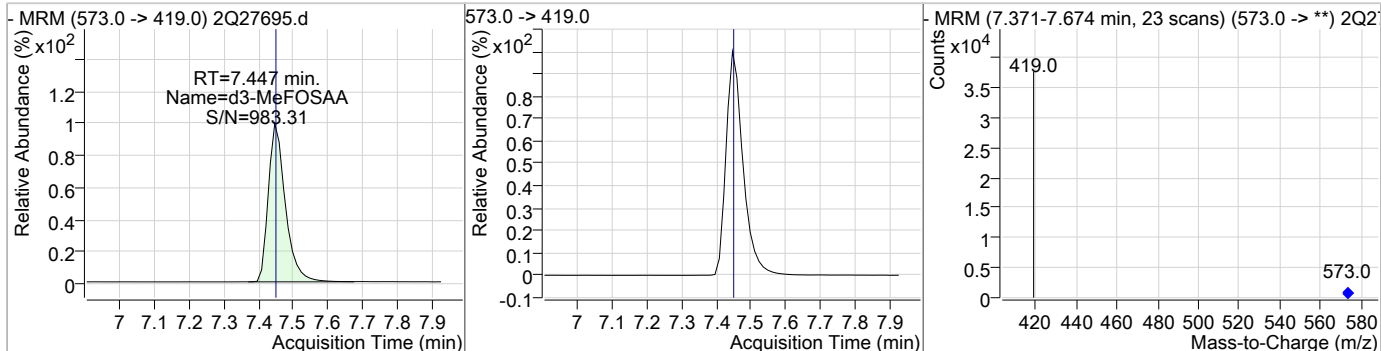


### Perfluorinated Compounds by LC/MS/MS

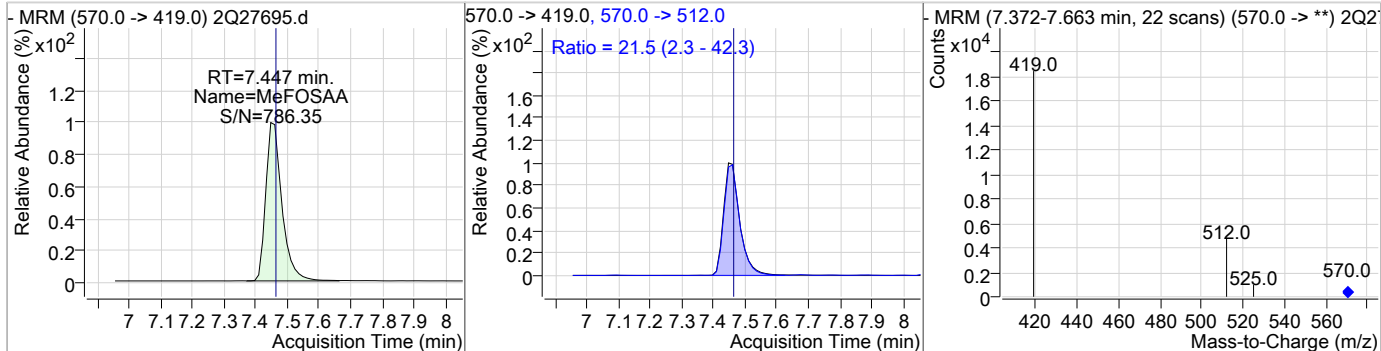
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 19.13 | 7.07 | 0.00     | 113404 | 463.0 -> 219.0 | 19.1   | 0.0  | 49.2 |



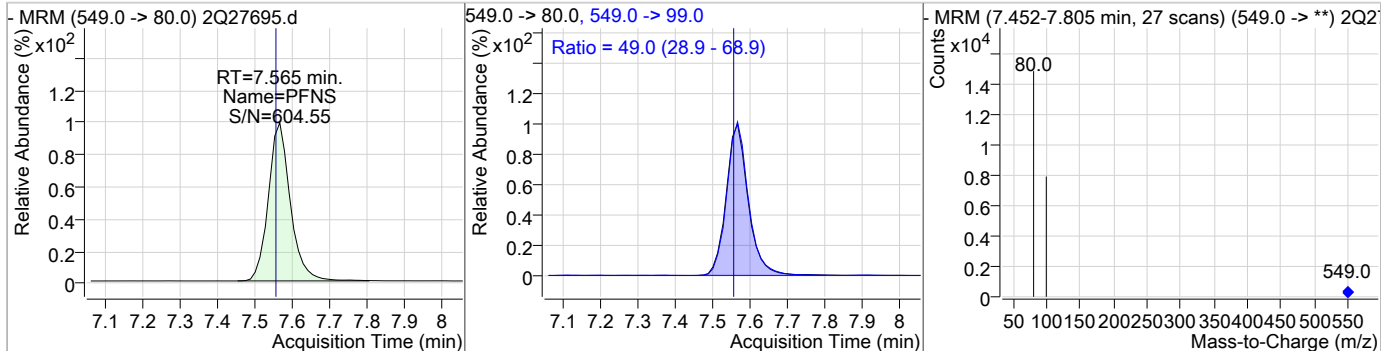
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 14.12 | 7.45 | 0.00     | 27059 |      |        |      |      |



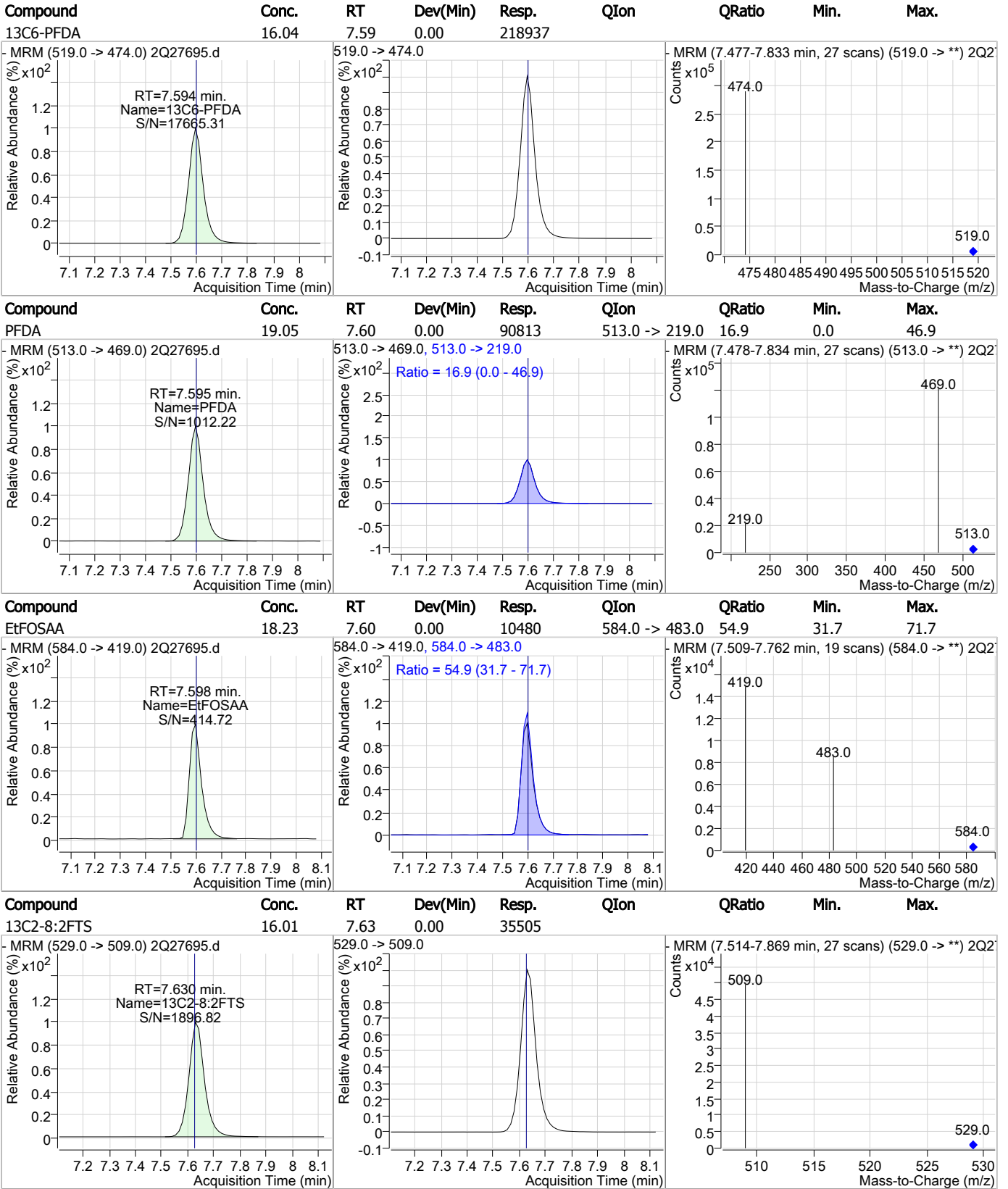
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| MeFOSAA  | 19.44 | 7.45 | -0.01    | 13394 | 570.0 -> 512.0 | 21.5   | 2.3  | 42.3 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 16.84 | 7.57 | 0.00     | 10468 | 549.0 -> 99.0 | 49.0   | 28.9 | 68.9 |



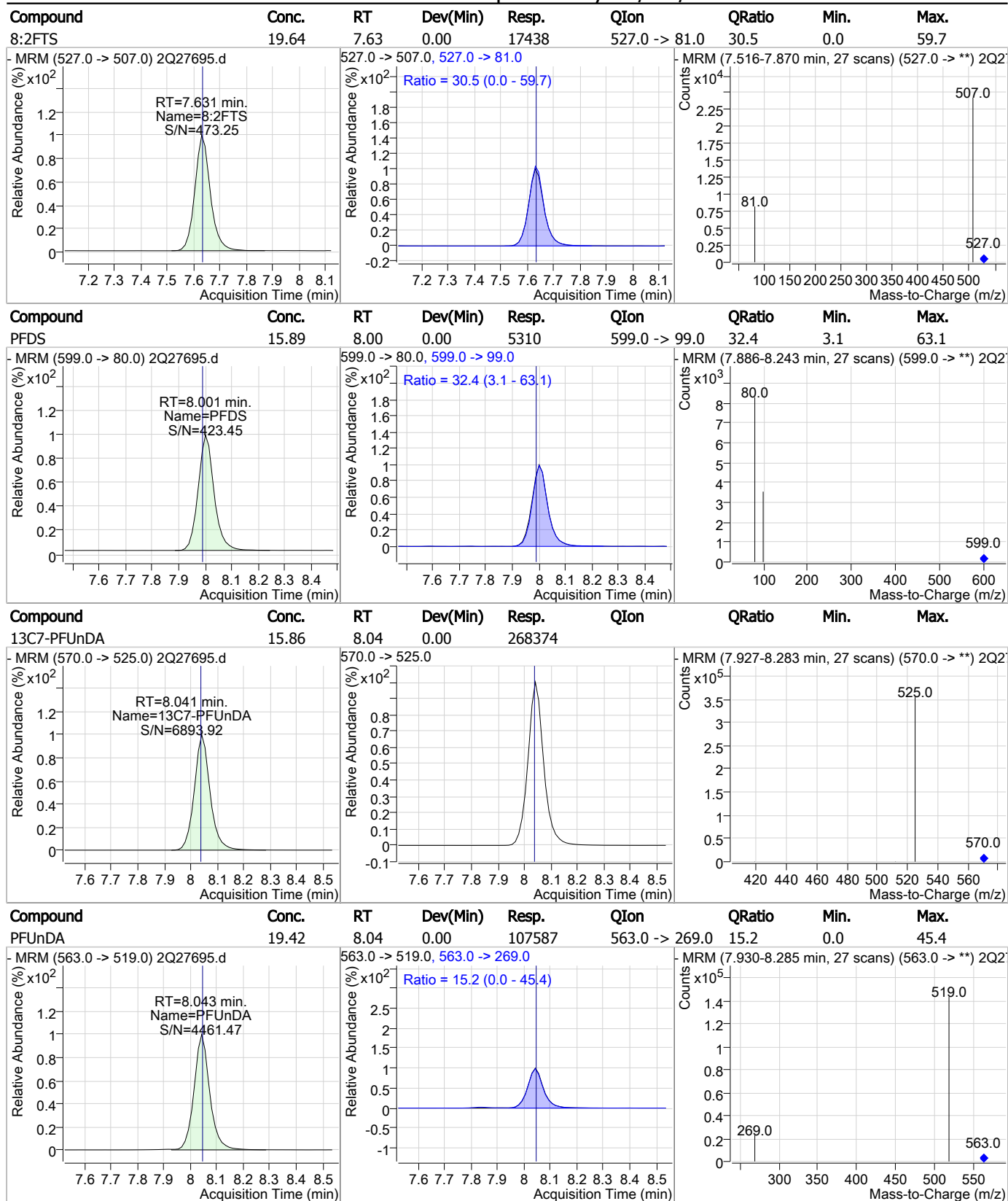
### Perfluorinated Compounds by LC/MS/MS



7.4.3

7

### Perfluorinated Compounds by LC/MS/MS



7.4.3  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFDoDA | 18.08 | 8.48 | 0.01     | 340090 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDoDA      | 19.37 | 8.47 | 0.00     | 146597 | 613.0 -> 319.0 | 12.2   | 0.0  | 42.5 |
|             |       |      |          |        |                |        |      |      |
| PFTrDA      | 18.62 | 8.92 | 0.00     | 127026 | 663.0 -> 369.0 | 6.5    | 0.0  | 36.6 |
|             |       |      |          |        |                |        |      |      |
| PFTeDA      | 19.47 | 9.32 | 0.00     | 127557 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |
|             |       |      |          |        |                |        |      |      |

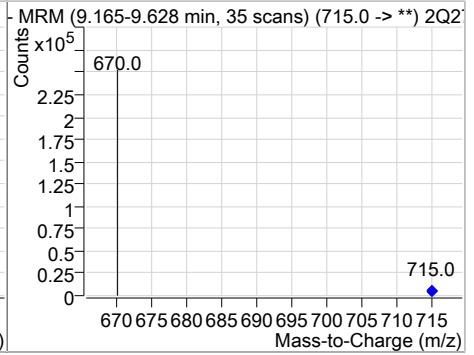
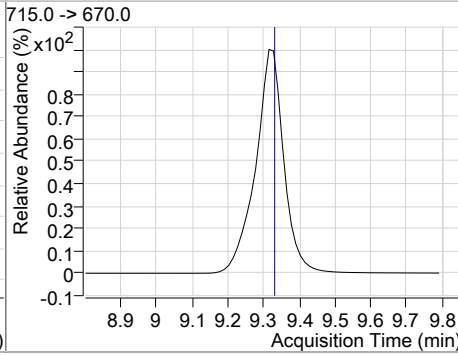
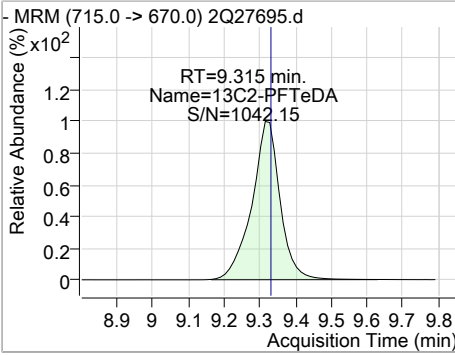
7.4.3

7



Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 14.54 | 9.31 | -0.01    | 186637 |      |        |      |      |



7.4.3

7

# Manual Integration Approval Summary

**Sample Number:** OP74180-MSD      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27695.D      **Analyst approved:** 03/19/19 09:52 Nancy Saunders  
**Injection Time:** 03/18/19 16:48      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.4.3.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1991.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 2:52:04 PM  
 Sample Name : op74233-ms  
 Vial : P3-C2  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74233,S3Q54,130,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.689                | 217.0 -> 172.0 | 278432 | 20.00 µg/L        | -0.013   |
| M5-PFPeA                           | 3.548                | 268.0 -> 223.0 | 201117 | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 268551 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.879                | 367.0 -> 322.0 | 310695 | 20.00 µg/L        | -0.013   |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 310420 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 289616 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 333336 | 20.00 µg/L        | -0.015   |
| M7-PFUnDA                          | 8.026                | 570.0 -> 525.0 | 340982 | 20.00 µg/L        | -0.013   |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 322772 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.874                | 715.0 -> 670.0 | 280688 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 192858 | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.867                | 302.0 -> 99.0  | 45007  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 45673  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 68232  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 90974  | 20.00 µg/L        | -0.013   |
| M2-6:2FTS                          | 6.581                | 429.0 -> 409.0 | 96089  | 20.00 µg/L        | -0.013   |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 58058  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 41407  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 399248 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 114135 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 90907  | 19.16 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.8%  |          |
| 13C2-6:2FTS                        | 6.581                | 429.0 -> 409.0 | 96120  | 21.03 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.2% |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 58818  | 21.04 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.2% |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 321633 | 16.45 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.2%  |          |
| 13C2-PFTeDA                        | 8.874                | 715.0 -> 670.0 | 280650 | 15.34 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 76.7%  |          |
| 13C3-PFBS                          | 3.867                | 302.0 -> 99.0  | 44859  | 17.78 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.9%  |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 45560  | 18.03 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.1%  |          |
| 13C4-PFBA                          | 1.689                | 217.0 -> 172.0 | 276747 | 16.97 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.8%  |          |
| 13C4-PFHpA                         | 5.879                | 367.0 -> 322.0 | 310695 | 18.61 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.1%  |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 269253 | 18.30 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.5%  |          |
| 13C5-PFPeA                         | 3.548                | 268.0 -> 223.0 | 200044 | 18.07 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.3%  |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 333856 | 20.04 µg/L        | -0.015   |

7.4.4  
7

## Perfluorinated Compounds by LC/MS/MS

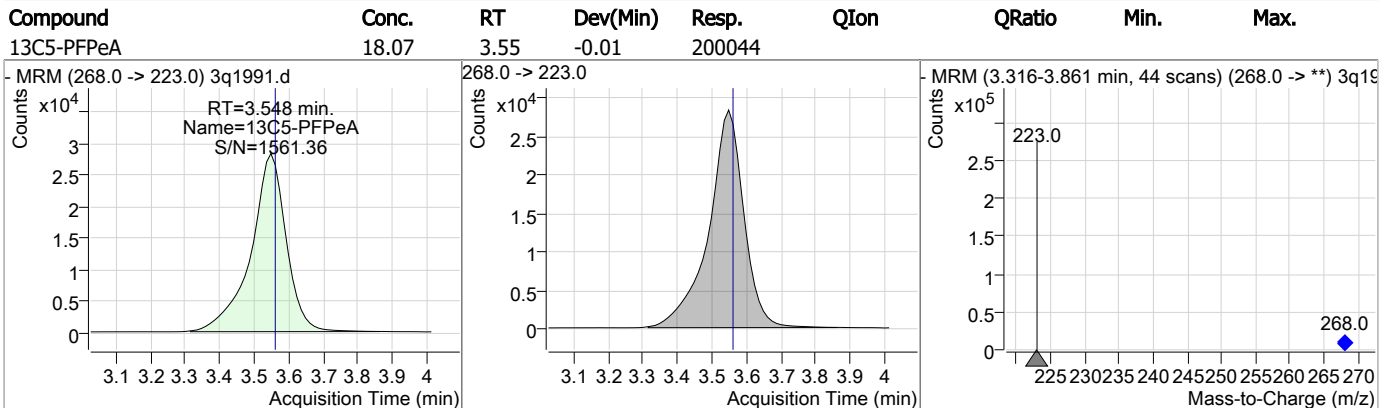
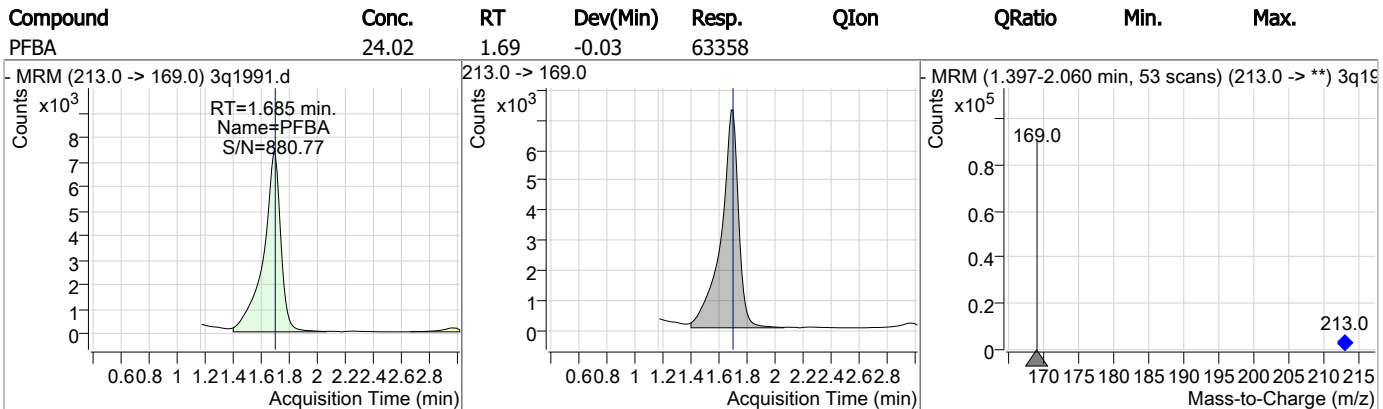
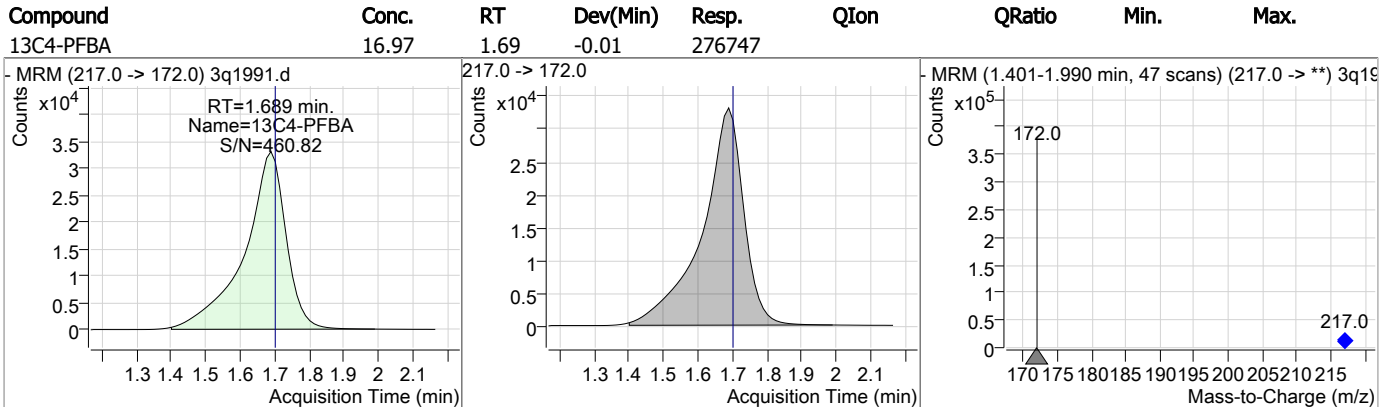
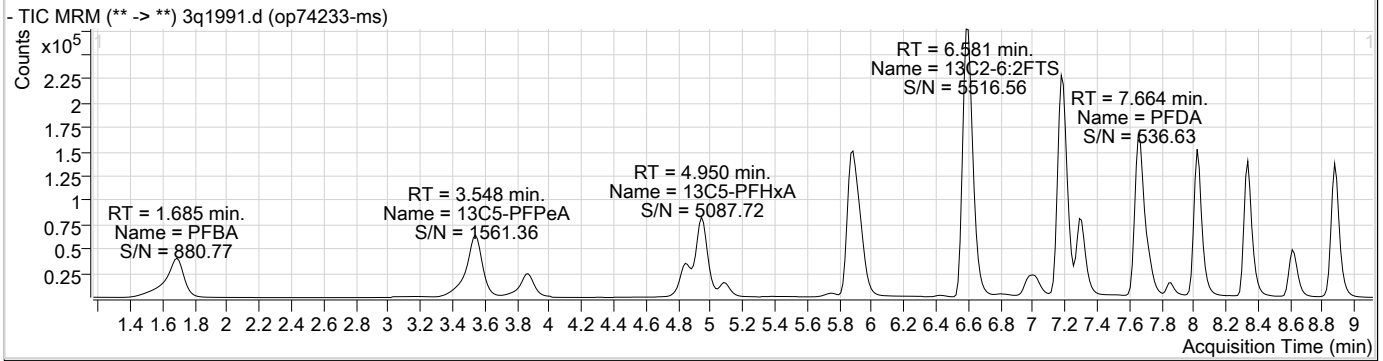
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.2% |          |
| 13C7-PFUnDA           | 8.026                | 570.0 -> 525.0 | 341242 | 18.41 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.0%  |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 192702 | 18.31 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 91.5%  |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 310922 | 19.65 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.3%  |          |
| 13C8-PFOS             | 7.183                | 507.0 -> 99.0  | 68271  | 17.72 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.6%  |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 289967 | 19.40 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.0%  |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 41411  | 17.44 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.2%  |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 399248 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 114135 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

## Target Compounds

| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.848 | 327.0 -> 307.0 | 55360  | 22.26 µg/L  | 98     |
| 6:2FTS       | 6.582 | 427.0 -> 407.0 | 56096  | 23.67 µg/L  | 99     |
| 8:2FTS       | 7.689 | 527.0 -> 507.0 | 33283  | 23.16 µg/L  | 98     |
| EtFOSAA      | 7.861 | 584.0 -> 419.0 | 18348  | 19.72 µg/L  | 100    |
| FOSA         | 7.301 | 498.0 -> 78.0  | 95479  | 22.06 µg/L  | 99     |
| MeFOSAA      | 7.723 | 570.0 -> 419.0 | 23941  | 21.61 µg/L  | 99     |
| PFBA         | 1.685 | 213.0 -> 169.0 | 63358  | 24.02 µg/L  | 100    |
| PFBS         | 3.870 | 299.0 -> 80.0  | 73853  | 23.59 µg/L  | 100    |
| PFDA         | 7.664 | 513.0 -> 469.0 | 170132 | 21.55 µg/L  | 99     |
| PFDoDA       | 8.341 | 613.0 -> 569.0 | 161287 | 21.92 µg/L  | 100    |
| PFDS         | 7.999 | 599.0 -> 80.0  | 15523  | 14.78 µg/L  | 93     |
| PFHpA        | 5.881 | 363.0 -> 319.0 | 319466 | 23.23 µg/L  | 100    |
| PFHpS        | 6.618 | 449.0 -> 80.0  | 52116  | 23.97 µg/L  | 98     |
| PFHxA        | 4.952 | 313.0 -> 269.0 | 125592 | 26.26 µg/L  | 100    |
| PFHxS        | 5.925 | 399.0 -> 80.0  | 121865 | 48.52 µg/L  | m 100  |
| PFNA         | 7.201 | 463.0 -> 419.0 | 198370 | 22.04 µg/L  | 99     |
| PFNS         | 7.635 | 549.0 -> 80.0  | 36443  | 19.75 µg/L  | 97     |
| PFOA         | 6.611 | 413.0 -> 369.0 | 217816 | 26.21 µg/L  | m 98   |
| PFOS         | 7.186 | 499.0 -> 80.0  | 277876 | 87.94 µg/L  | m 98   |
| PFPeA        | 3.552 | 263.0 -> 219.0 | 250434 | 24.58 µg/L  | 100    |
| PFPeS        | 5.082 | 349.0 -> 80.0  | 46300  | 23.78 µg/L  | 99     |
| PFTeDA       | 8.877 | 713.0 -> 669.0 | 209405 | 23.99 µg/L  | 100    |
| PFTrDA       | 8.615 | 663.0 -> 619.0 | 176464 | 23.62 µg/L  | 100    |
| PFUnDA       | 8.028 | 563.0 -> 519.0 | 160416 | 21.69 µg/L  | 99     |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

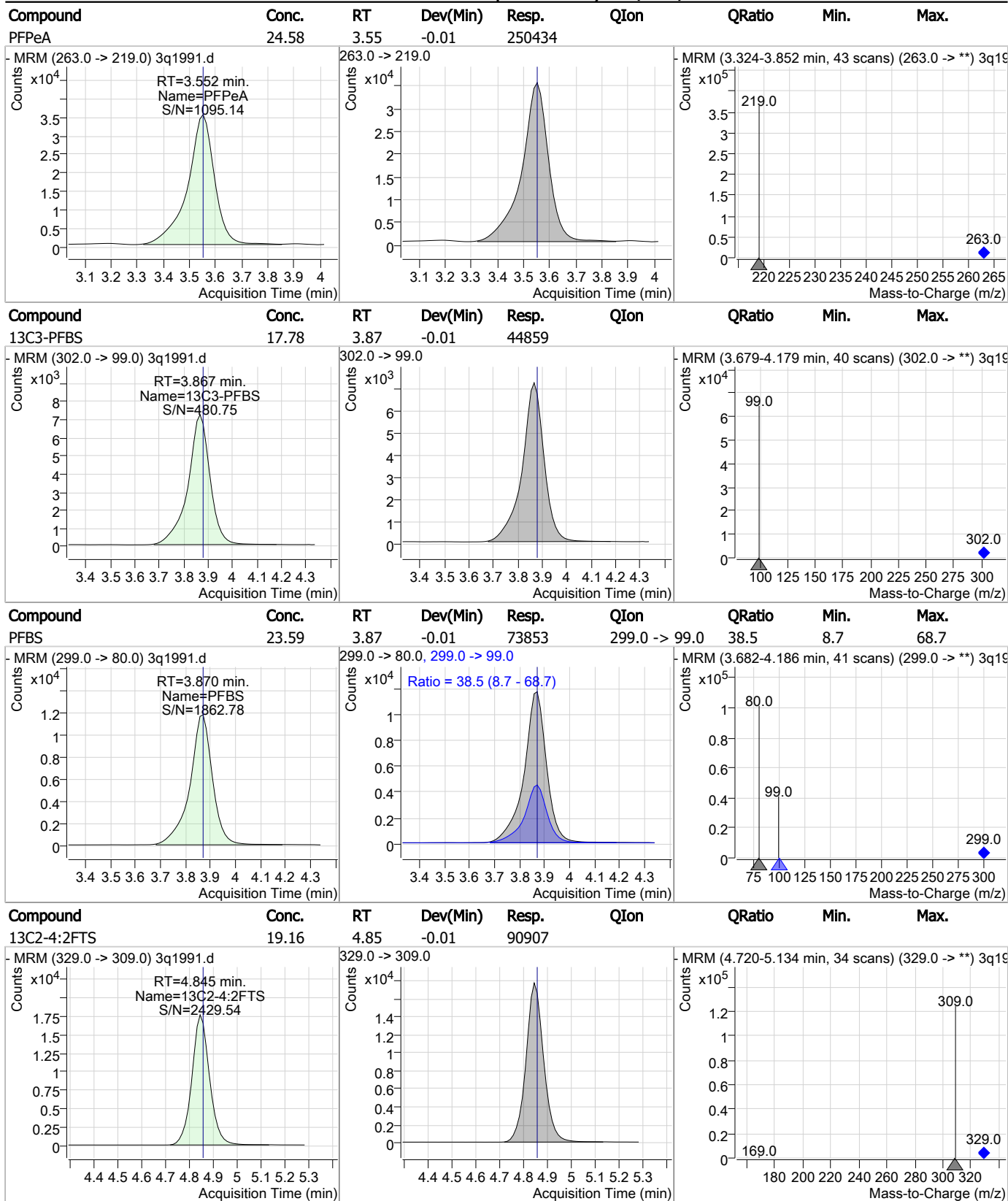
### Perfluorinated Compounds by LC/MS/MS



7.4.4

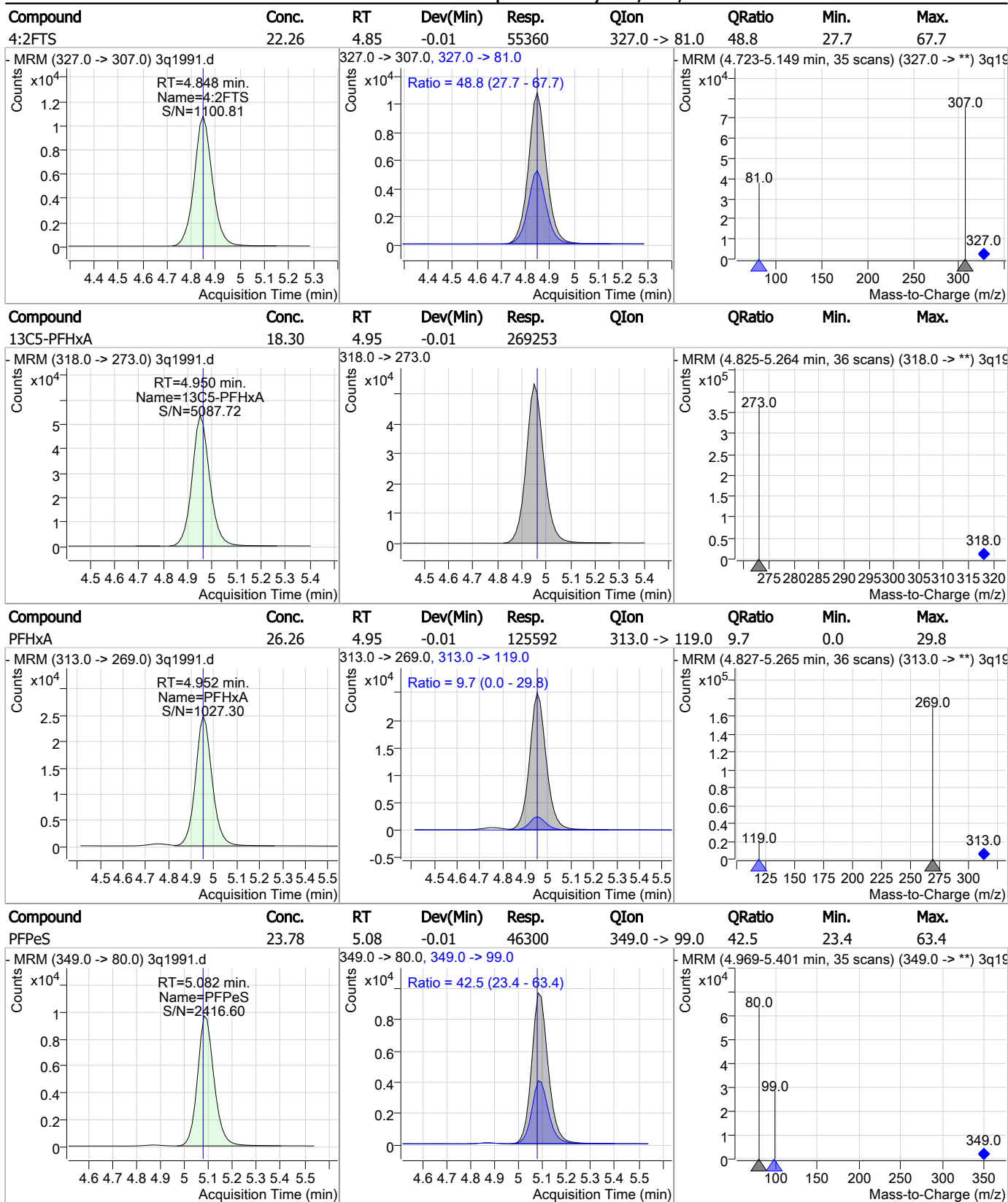
7

### Perfluorinated Compounds by LC/MS/MS



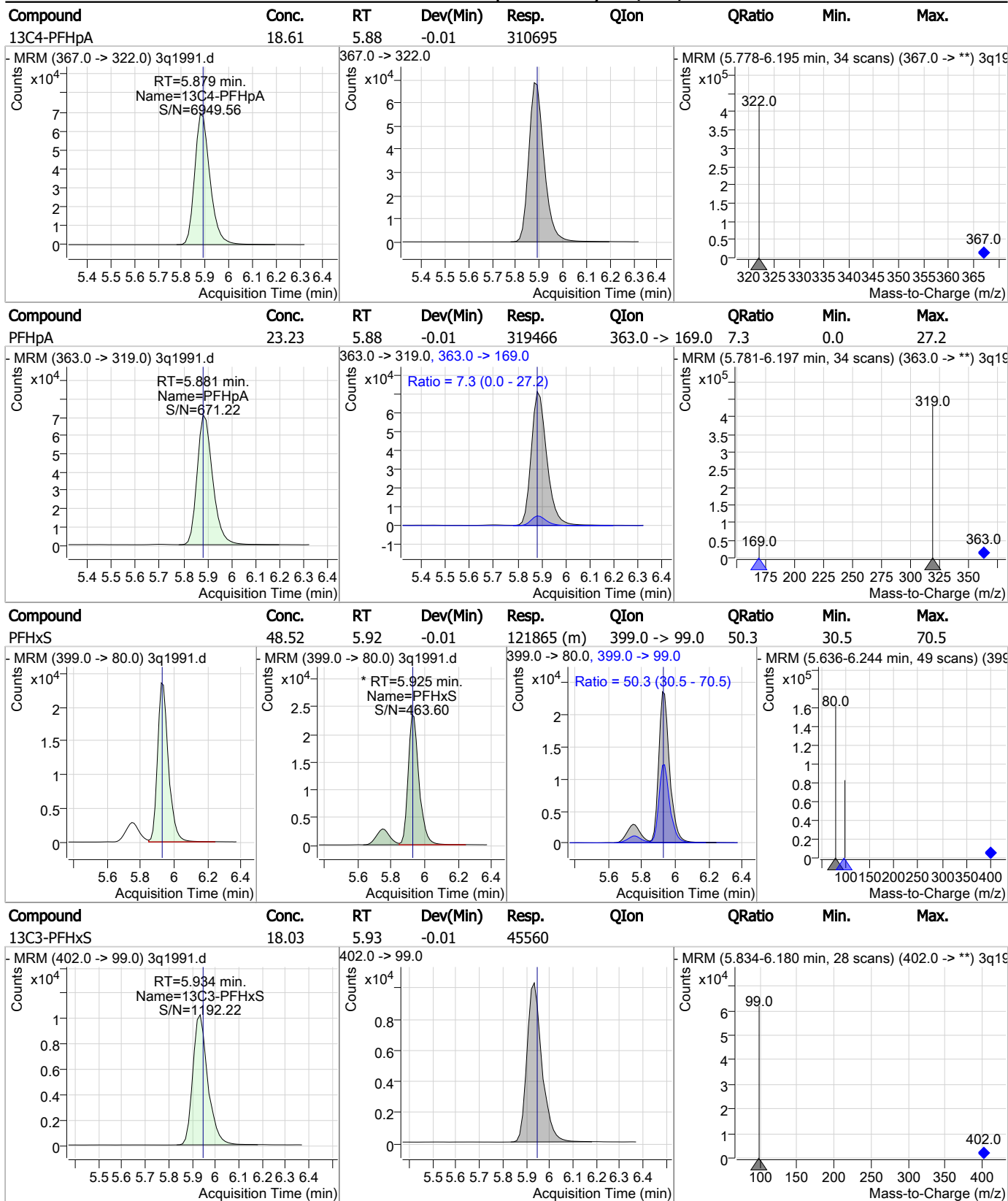
7.4.4  
7

### Perfluorinated Compounds by LC/MS/MS



7.4.4  
7

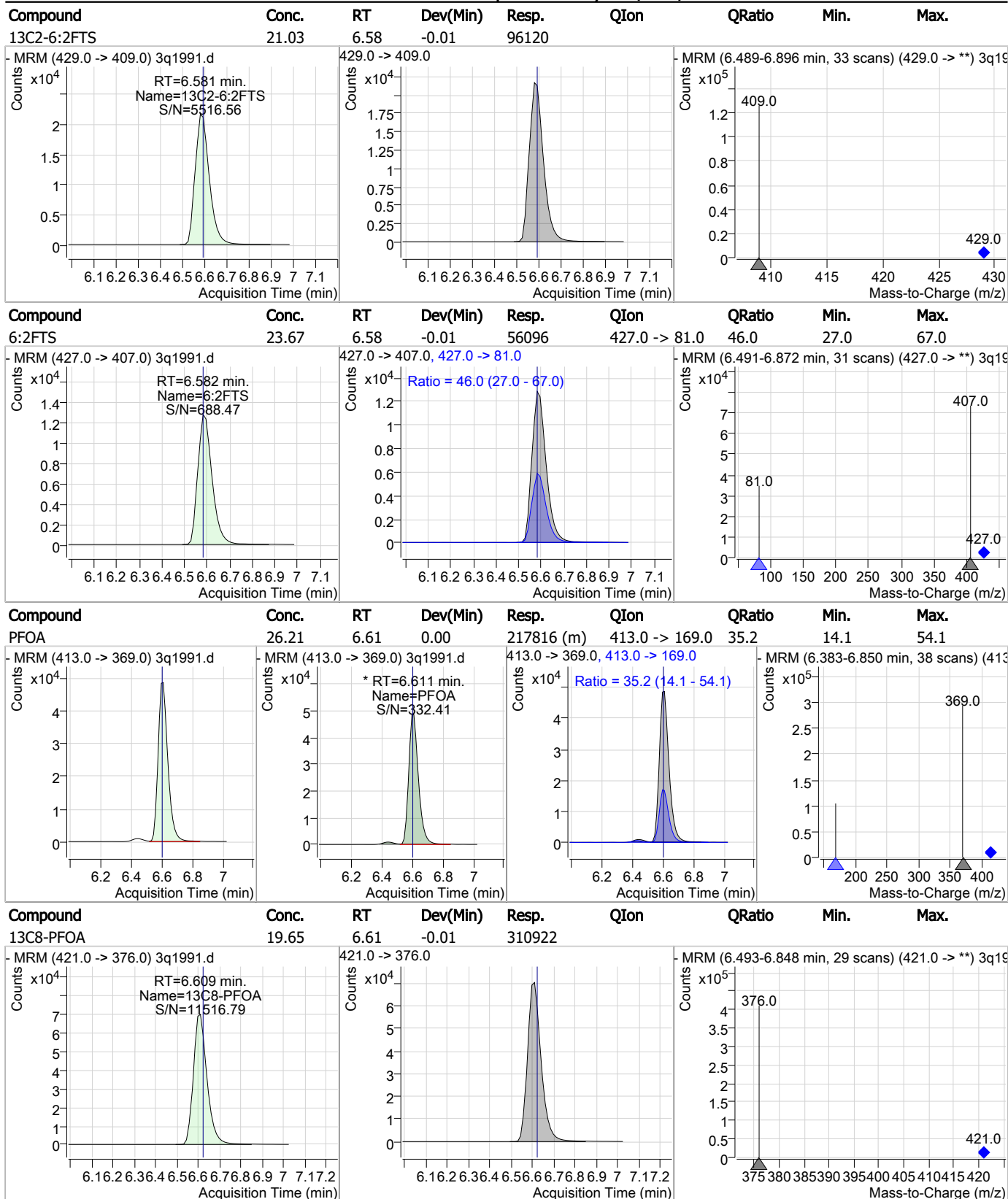
### Perfluorinated Compounds by LC/MS/MS



7.4.4  
7

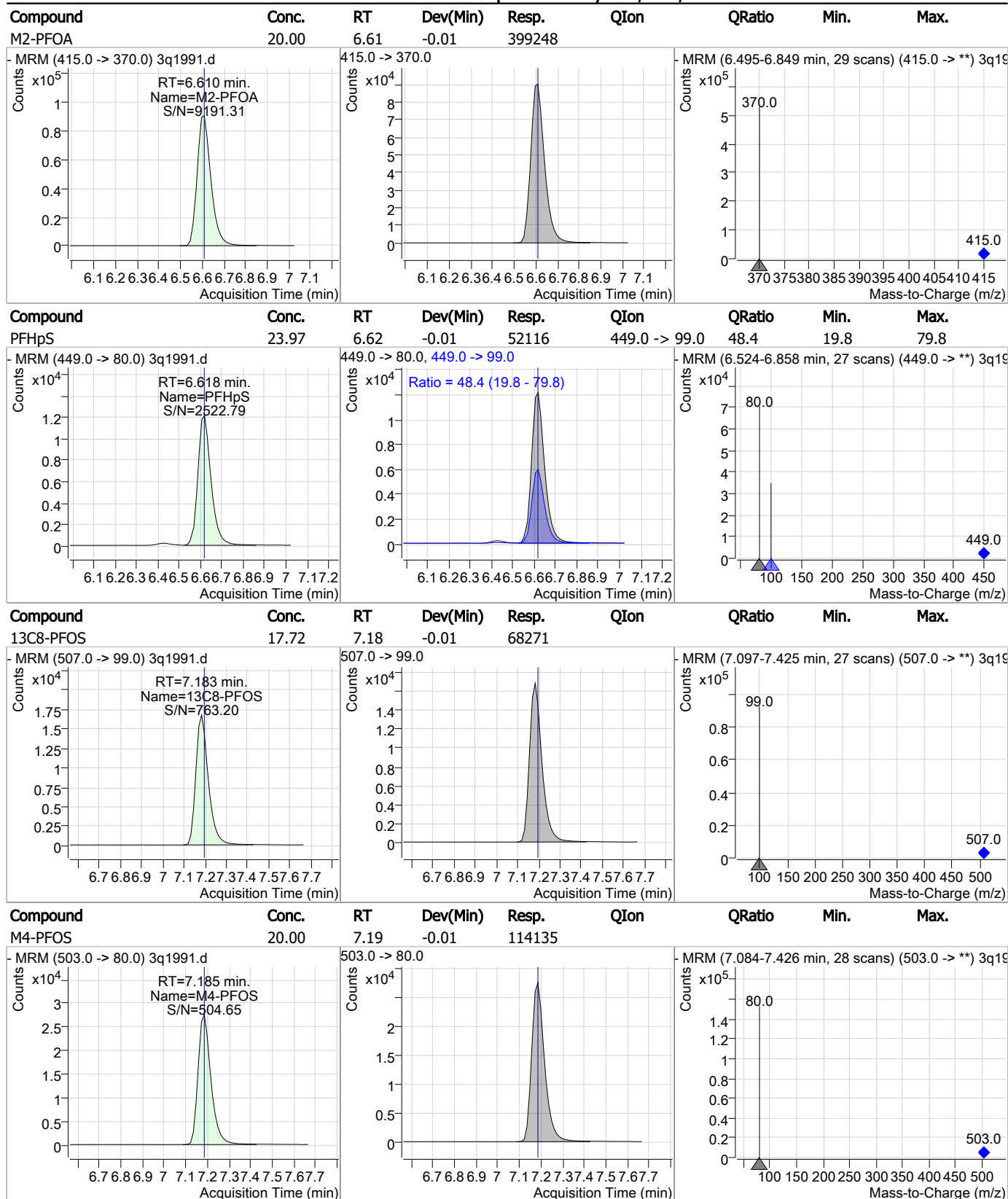


### Perfluorinated Compounds by LC/MS/MS



7.4.4  
7

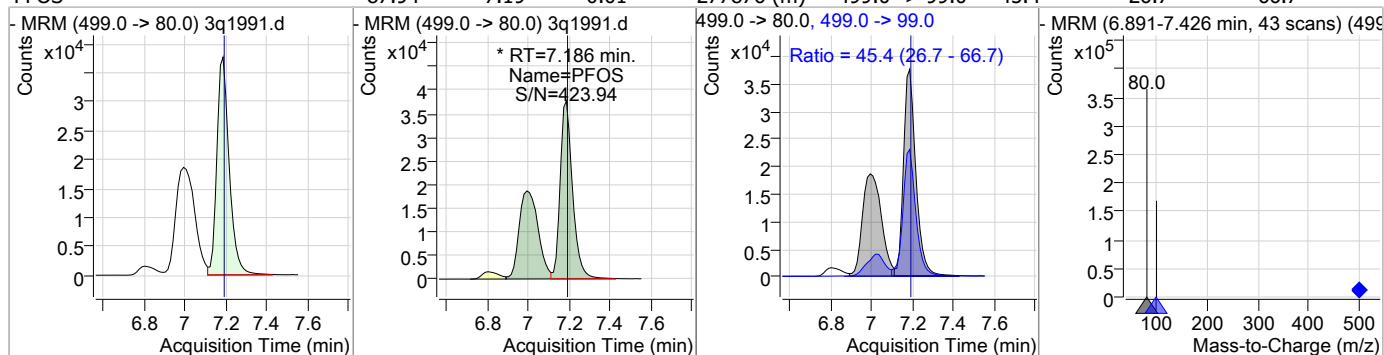
### Perfluorinated Compounds by LC/MS/MS



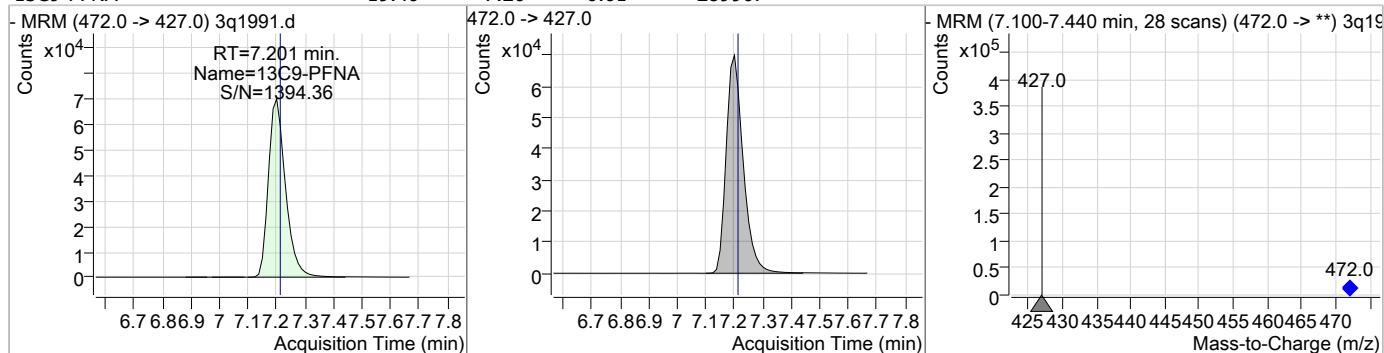
7.4.4  
7

### Perfluorinated Compounds by LC/MS/MS

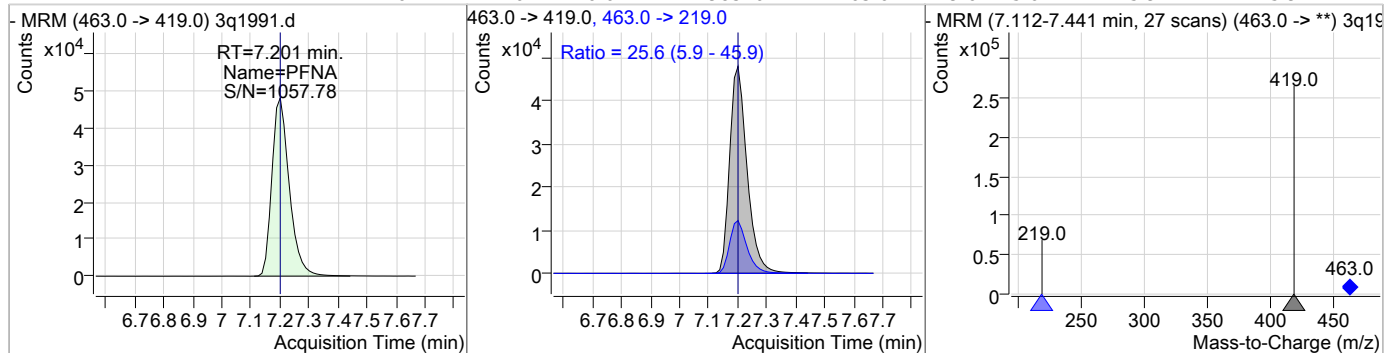
| Compound | Conc. | RT   | Dev(Min) | Resp.      | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|------------|---------------|--------|------|------|
| PFOS     | 87.94 | 7.19 | -0.01    | 277876 (m) | 499.0 -> 99.0 | 45.4   | 26.7 | 66.7 |



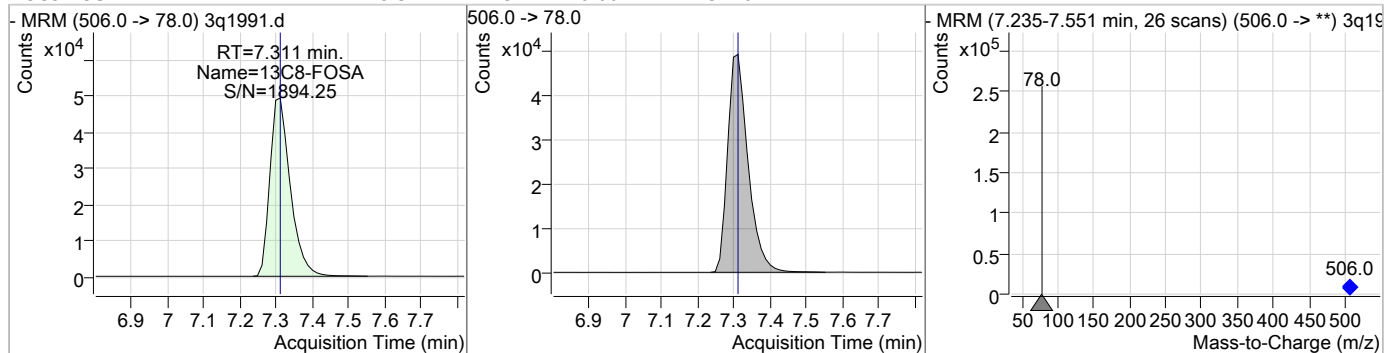
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 19.40 | 7.20 | -0.01    | 289967 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 22.04 | 7.20 | -0.01    | 198370 | 463.0 -> 219.0 | 25.6   | 5.9  | 45.9 |

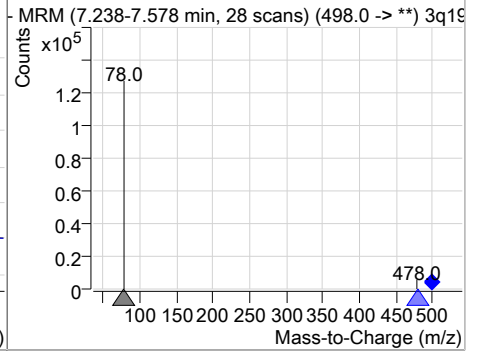
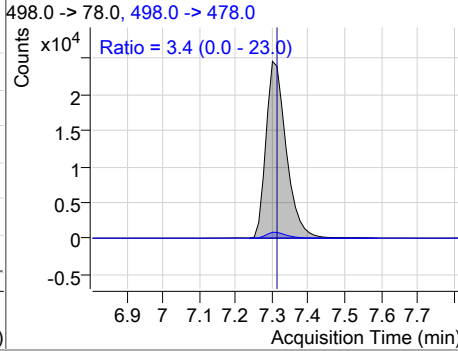
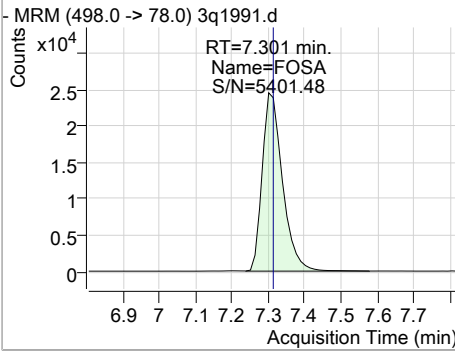


| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 18.31 | 7.31 | 0.00     | 192702 |      |        |      |      |

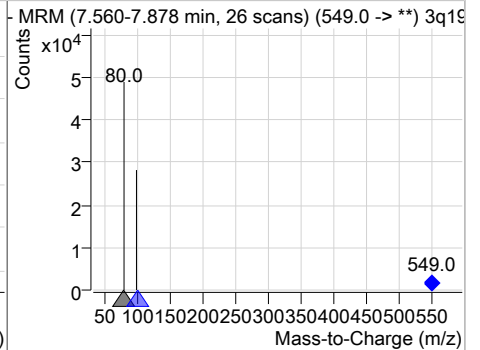
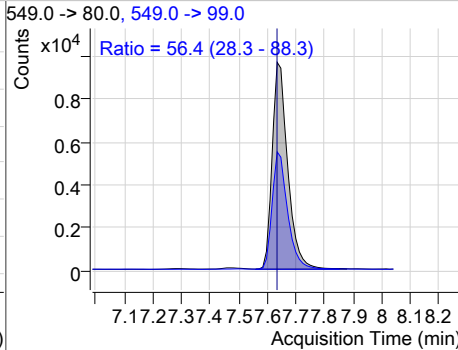
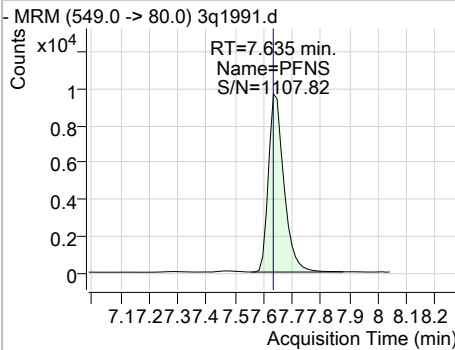


### Perfluorinated Compounds by LC/MS/MS

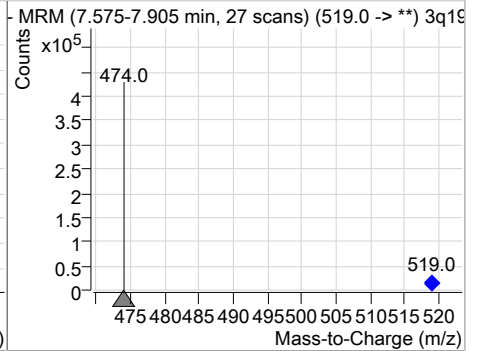
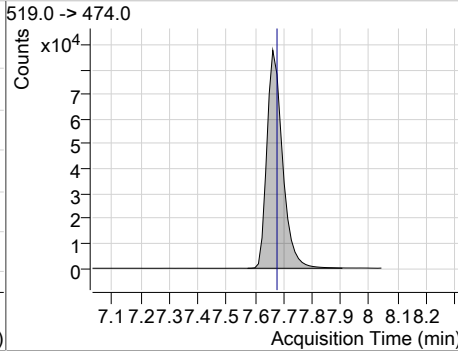
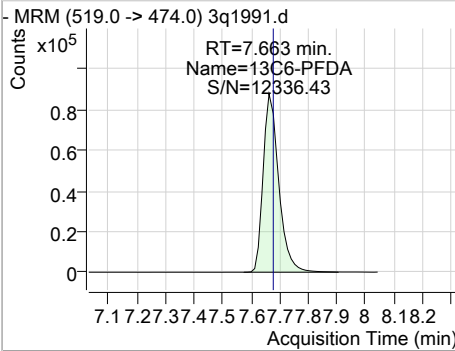
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 22.06 | 7.30 | -0.01    | 95479 | 498.0 -> 478.0 | 3.4    | 0.0  | 23.0 |



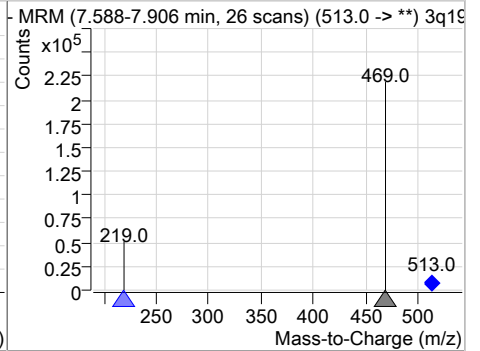
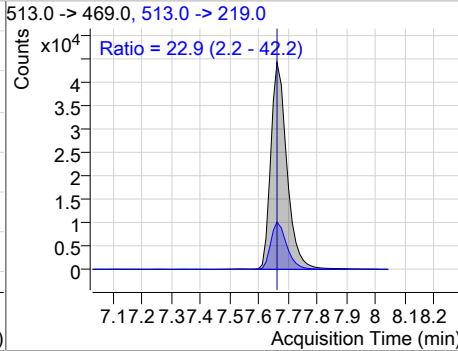
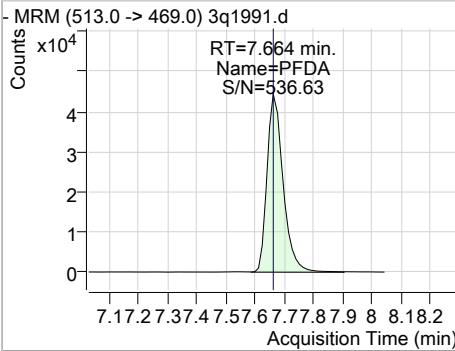
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 19.75 | 7.64 | -0.01    | 36443 | 549.0 -> 99.0 | 56.4   | 28.3 | 88.3 |



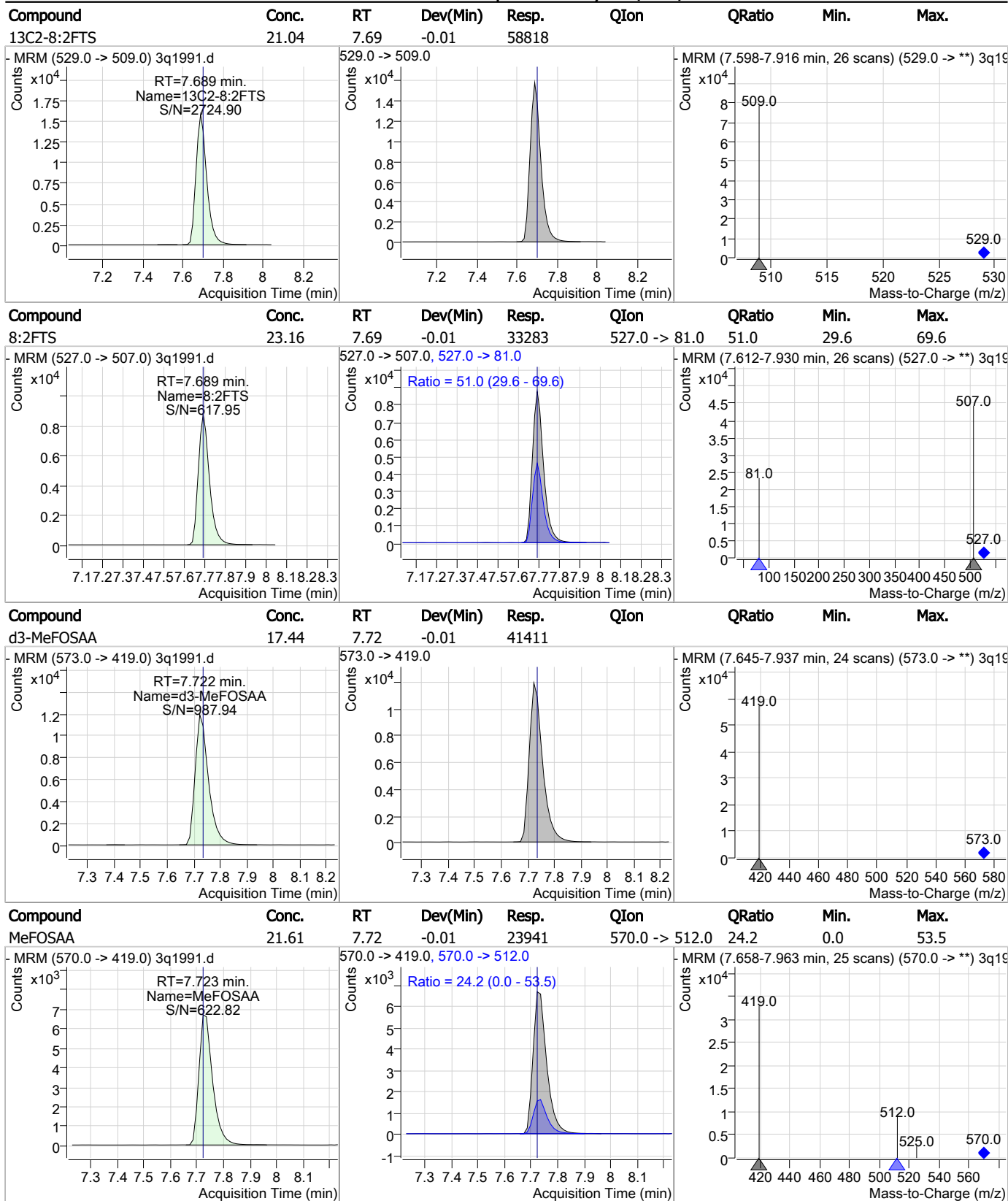
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA | 20.04 | 7.66 | -0.01    | 333856 | 519.0 -> 474.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFDA     | 21.55 | 7.66 | -0.01    | 170132 | 513.0 -> 219.0 | 22.9   | 2.2  | 42.2 |



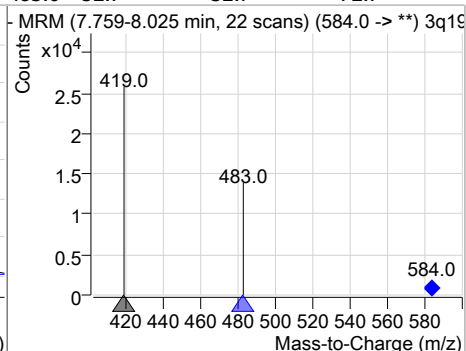
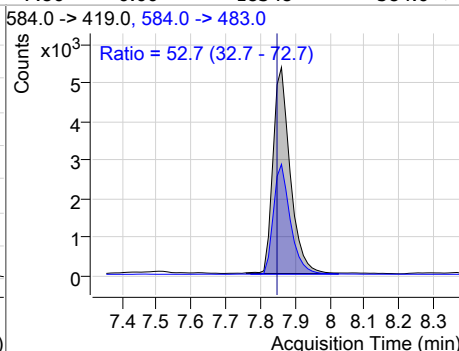
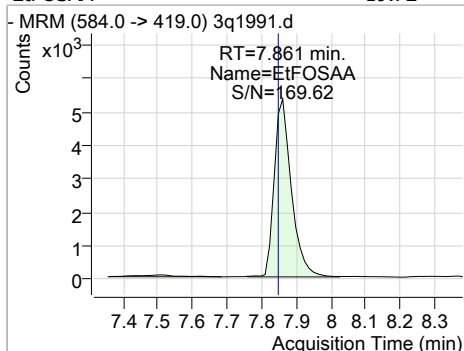
### Perfluorinated Compounds by LC/MS/MS



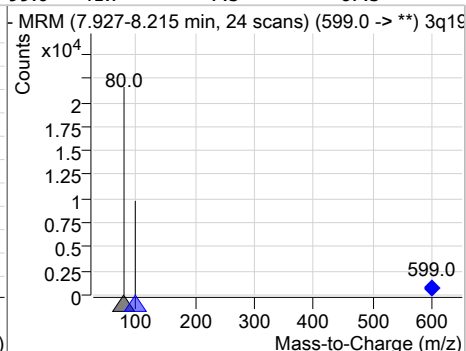
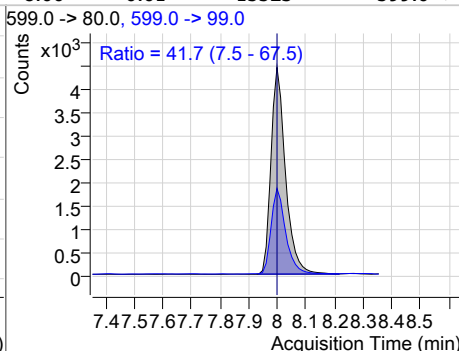
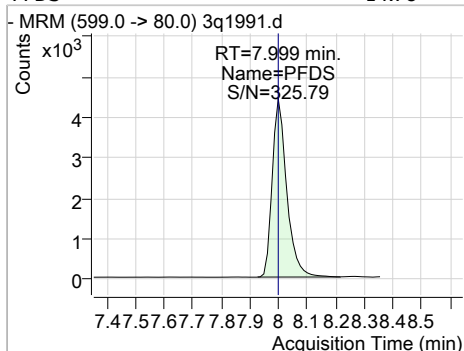
7.4.4  
7

### Perfluorinated Compounds by LC/MS/MS

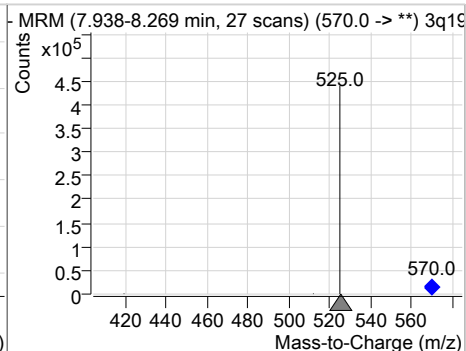
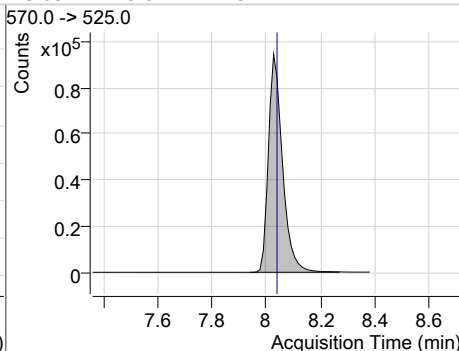
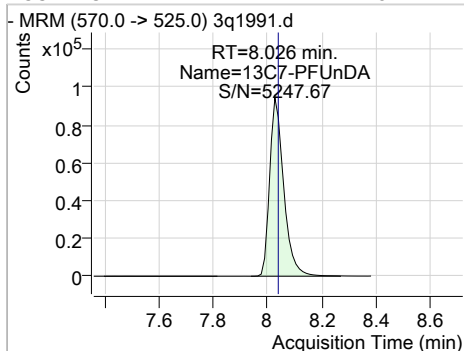
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 19.72 | 7.86 | 0.00     | 18348 | 584.0 -> 483.0 | 52.7   | 32.7 | 72.7 |



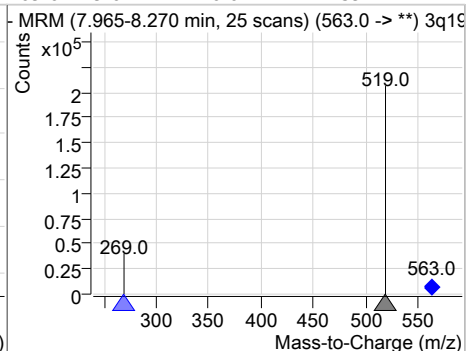
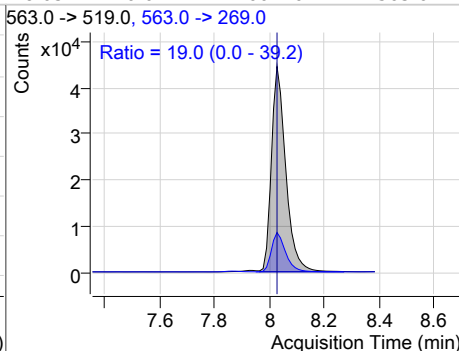
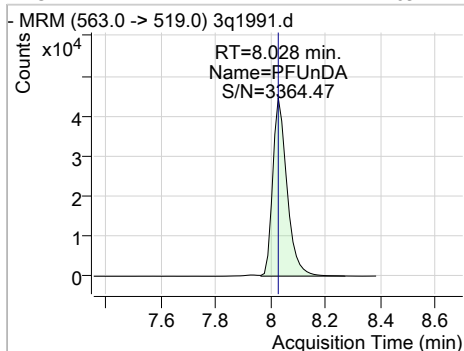
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 14.78 | 8.00 | -0.01    | 15523 | 599.0 -> 99.0 | 41.7   | 7.5  | 67.5 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 18.41 | 8.03 | -0.01    | 341242 | 570.0 -> 525.0 | 19.0   | 0.0  | 39.2 |

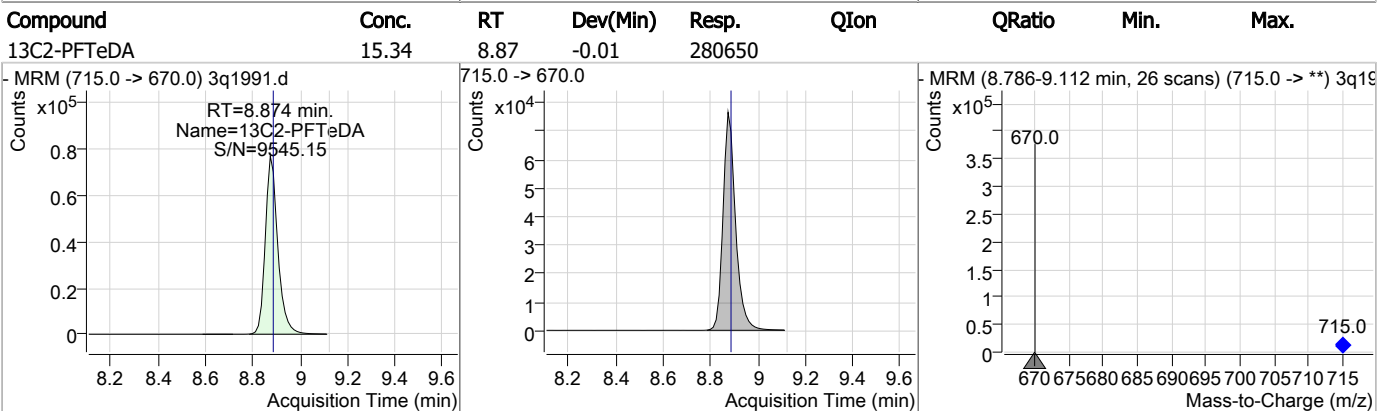
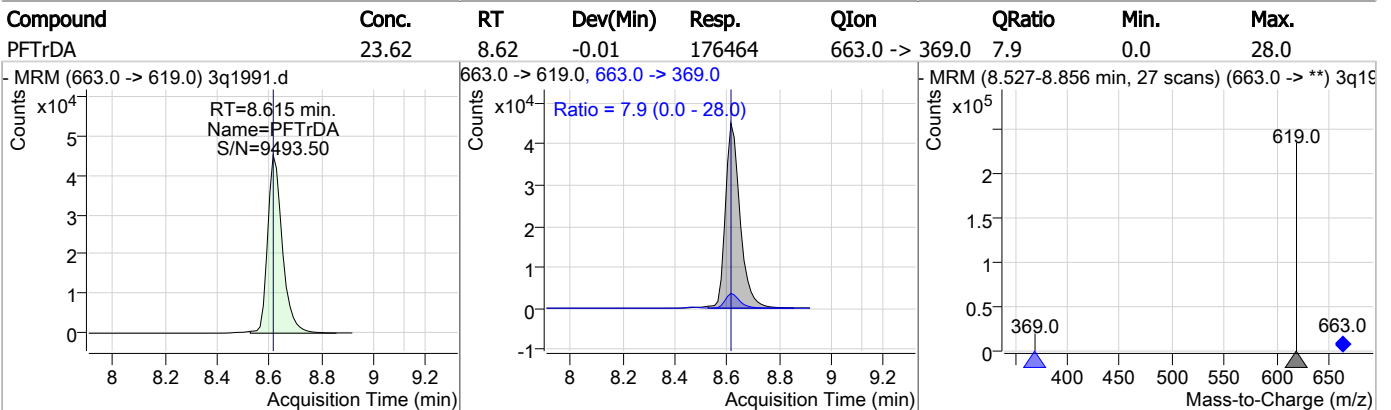
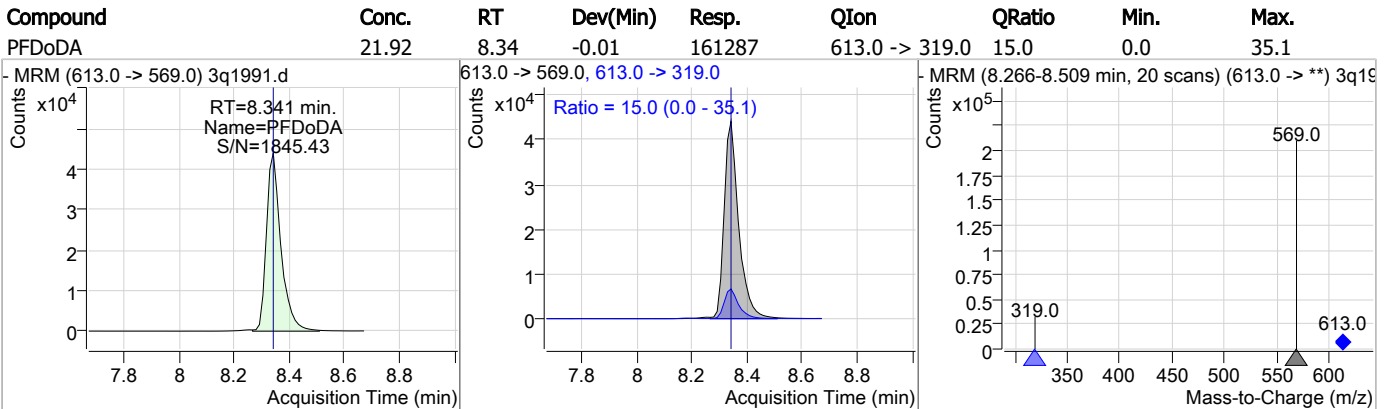
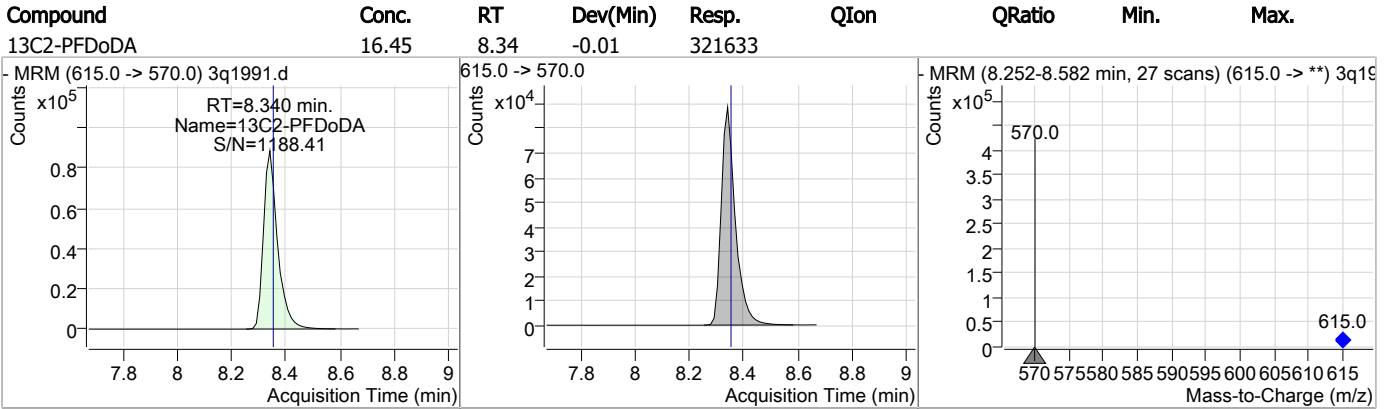


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 21.69 | 8.03 | -0.01    | 160416 | 563.0 -> 269.0 | 19.0   | 0.0  | 39.2 |



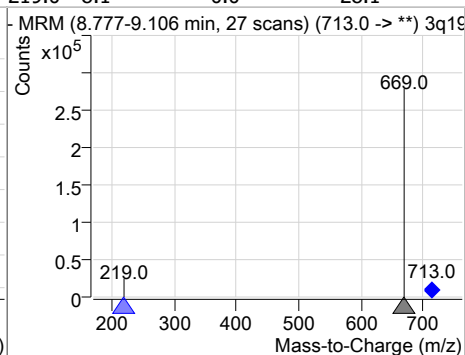
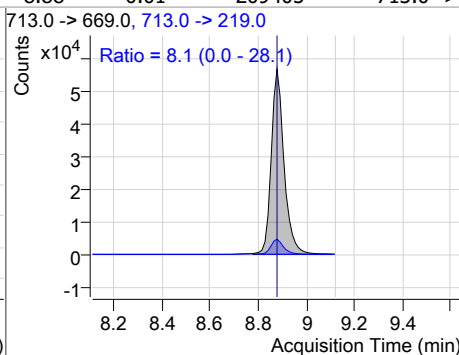
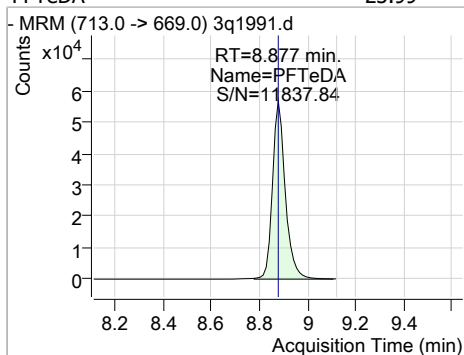
7.4.4  
7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 23.99 | 8.88 | -0.01    | 209405 | 713.0 -> 219.0 | 8.1    | 0.0  | 28.1 |



7.4.4

7



# Manual Integration Approval Summary

**Sample Number:** OP74233-MS      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1991.D      **Analyst approved:** 03/22/19 11:49 Nancy Saunders  
**Injection Time:** 03/21/19 14:52      **Supervisor approved:** 03/24/19 19:15 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.92           | Split peak |
| Perfluorooctanoic acid       | 335-67-1  |      | 6.61           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.4.4.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27660.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 5:56:40 PM  
 Sample Name : OP74164-DUP  
 Vial : Vial 59  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op74164,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 310735 | 20.00 µg/L       | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 40520  | 20.00 µg/L       | 0.031    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 102698 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 86272  | 20.00 µg/L       | 0.032    |
| M5-PFHxA                           | 4.801                | 318.0 -> 273.0 | 123486 | 20.00 µg/L       | 0.038    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 178634 | 20.00 µg/L       | 0.029    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 203016 | 20.00 µg/L       | 0.031    |
| M9-PFNA                            | 7.078                | 472.0 -> 427.0 | 184857 | 20.00 µg/L       | 0.033    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 231324 | 20.00 µg/L       | 0.033    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 310391 | 20.00 µg/L       | 0.028    |
| M2-PFDoDA                          | 8.478                | 615.0 -> 570.0 | 365327 | 20.00 µg/L       | 0.028    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 177916 | 20.00 µg/L       | 0.025    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 66907  | 20.00 µg/L       | 0.032    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 15664  | 20.00 µg/L       | 0.025    |
| M3-PFHxS                           | 5.761                | 402.0 -> 99.0  | 16719  | 20.00 µg/L       | 0.038    |
| M8-PFOS                            | 7.061                | 507.0 -> 99.0  | 17537  | 20.00 µg/L       | 0.046    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 51940  | 20.00 µg/L       | 0.028    |
| M2-6:2FTS                          | 6.443                | 429.0 -> 409.0 | 64509  | 20.00 µg/L       | 0.042    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 33092  | 20.00 µg/L       | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 26132  | 20.00 µg/L       | 0.029    |
| M3-HFPO-DA                         | -                    | 287.0 -> 169.0 | -      | N.D.             |          |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 51965  | 12.52 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 62.6% |          |
| 13C2-6:2FTS                        | 6.443                | 429.0 -> 409.0 | 64501  | 14.80 µg/L       | 0.042    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 74.0% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 33089  | 11.65 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 58.3% |          |
| 13C2-PFDoDA                        | 8.478                | 615.0 -> 570.0 | 365356 | 13.09 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 65.5% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 177306 | 9.17 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 45.9% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 15665  | 12.94 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 64.7% |          |
| 13C3-PFHxS                         | 5.761                | 402.0 -> 99.0  | 16695  | 12.26 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 61.3% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 102468 | 11.82 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 59.1% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 178504 | 12.40 µg/L       | 0.029    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 62.0% |          |
| 13C5-PFHxA                         | 4.801                | 318.0 -> 273.0 | 123374 | 12.03 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 60.1% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 86268  | 12.03 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 60.1% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 231410 | 12.50 µg/L       | 0.033    |

7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 62.5%  |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 310307 | 12.95 µg/L        | 0.028    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 64.8%  |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 66912  | 11.75 µg/L        | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 58.7%  |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 202959 | 13.63 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 68.1%  |          |
| 13C8-PFOS             | 7.061                | 507.0 -> 99.0  | 17559  | 10.62 µg/L        | 0.046    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 53.1%  |          |
| 13C9-PFNA             | 7.078                | 472.0 -> 427.0 | 184854 | 12.90 µg/L        | 0.033    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 64.5%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 26130  | 10.93 µg/L        | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 54.6%  |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 310922 | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 40518  | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | -                    | 287.0 -> 169.0 | -      | N.D.              |          |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |

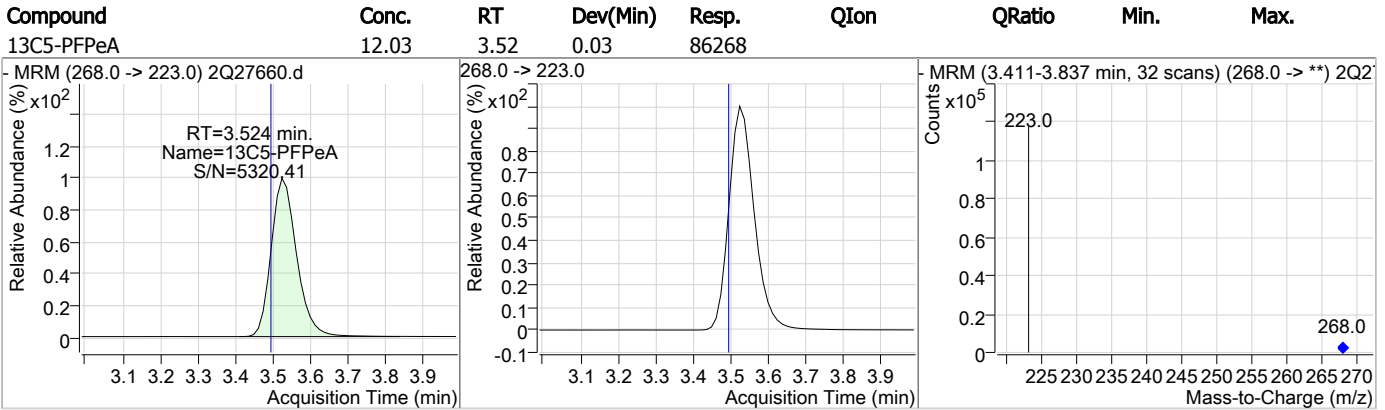
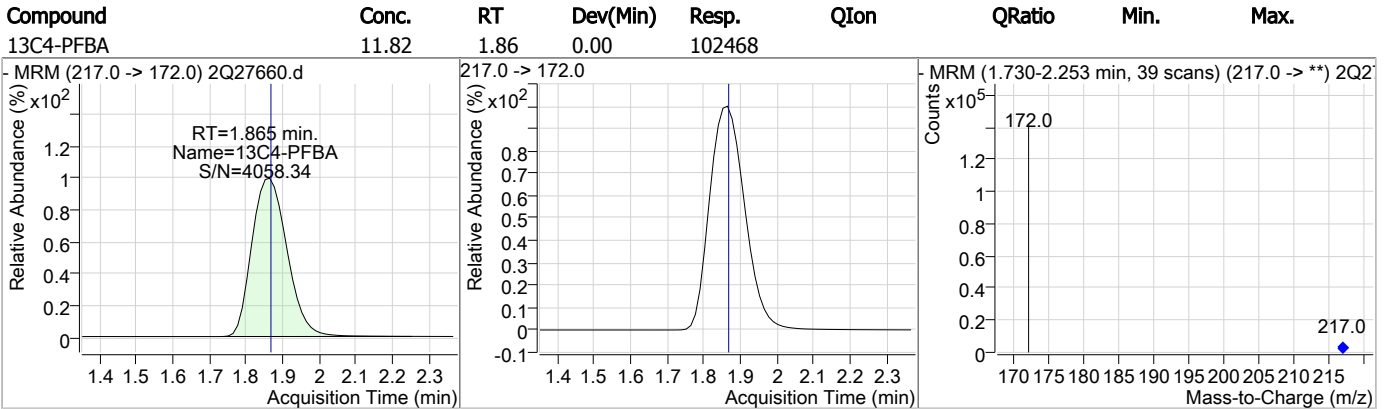
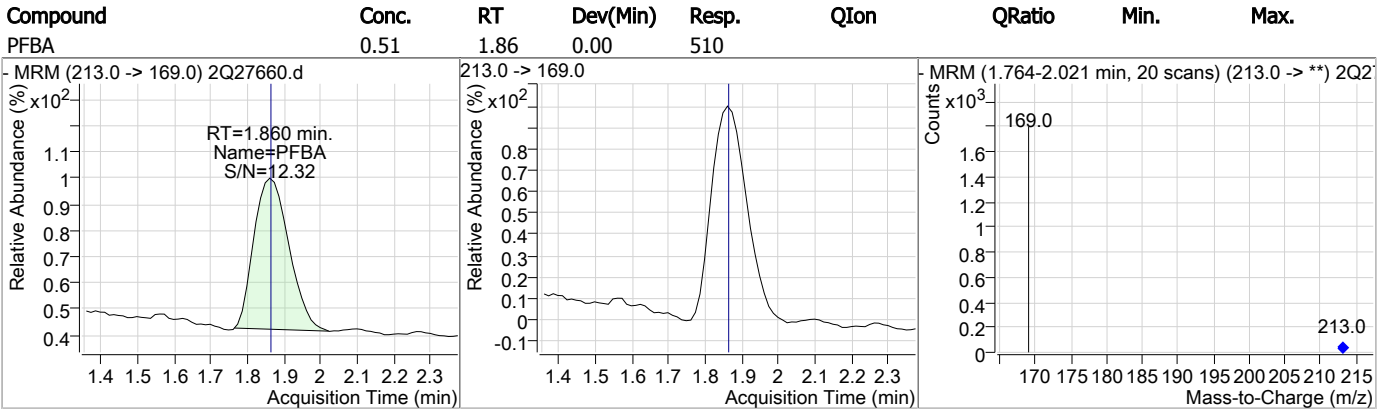
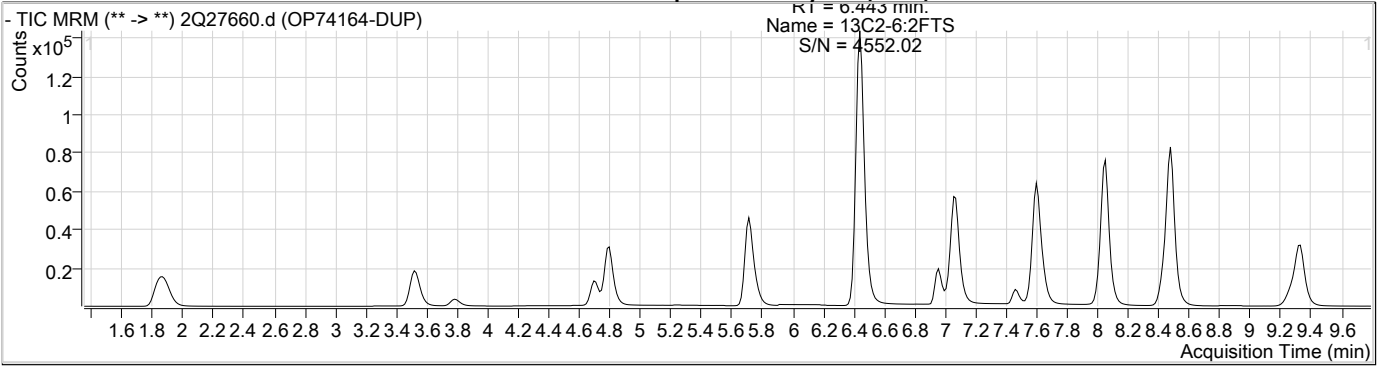
**Target Compounds**

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -     | N.D.        |        |
| 6:2FTS       | -     | 427.0 -> 407.0 | -     | N.D.        |        |
| 8:2FTS       | -     | 527.0 -> 507.0 | -     | N.D.        |        |
| EtFOSAA      | -     | 584.0 -> 419.0 | -     | N.D.        |        |
| FOSA         | -     | 498.0 -> 78.0  | -     | N.D.        |        |
| MeFOSAA      | -     | 570.0 -> 419.0 | -     | N.D.        |        |
| PFBA         | 1.860 | 213.0 -> 169.0 | 510   | 0.51 µg/L   | 100    |
| PFBS         | -     | 299.0 -> 80.0  | -     | N.D.        |        |
| PFDA         | -     | 513.0 -> 469.0 | -     | N.D.        |        |
| PFDoDA       | -     | 613.0 -> 569.0 | -     | N.D.        |        |
| PFDS         | -     | 599.0 -> 80.0  | -     | N.D.        |        |
| PFHpA        | -     | 363.0 -> 319.0 | -     | N.D.        |        |
| PFHpS        | -     | 449.0 -> 80.0  | -     | N.D.        |        |
| PFHxA        | -     | 313.0 -> 269.0 | -     | N.D.        |        |
| PFHxS        | -     | 399.0 -> 80.0  | -     | N.D.        |        |
| PFNA         | -     | 463.0 -> 419.0 | -     | N.D.        |        |
| PFNS         | -     | 549.0 -> 80.0  | -     | N.D.        |        |
| PFOA         | -     | 413.0 -> 369.0 | -     | N.D.        |        |
| PFOS         | -     | 499.0 -> 80.0  | -     | N.D.        |        |
| PFPeA        | -     | 263.0 -> 219.0 | -     | N.D.        |        |
| PFPeS        | -     | 349.0 -> 80.0  | -     | N.D.        |        |
| PFTeDA       | -     | 713.0 -> 669.0 | -     | N.D.        |        |
| PFTTrDA      | -     | 663.0 -> 619.0 | -     | N.D.        |        |
| PFUnDA       | -     | 563.0 -> 519.0 | -     | N.D.        |        |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -     | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -     | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -     | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -     | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-PFBS   | 12.94 | 3.78 | 0.03     | 15665  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-4:2FTS | 12.52 | 4.70 | 0.03     | 51965  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C5-PFHxA  | 12.03 | 4.80 | 0.04     | 123374 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C4-PFHpA  | 12.40 | 5.72 | 0.03     | 178504 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-PFHxS  | 12.26 | 5.76 | 0.04     | 16695  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-6:2FTS | 14.80 | 6.44 | 0.04     | 64501  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 13.63 | 6.45 | 0.03     | 202959 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 19.99 | 6.45 | 0.03     | 310922 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.51  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)                 | Resp.  | QIon | QRatio  | Min. | Max. |
|--|-------|------|--------------------------|--------|------|---|------|------|
| 13C8-FOSA  | 11.75 | 6.96 | 0.03                     | 66912  |      |   |      |      |
| <p>MRM (506.0 -&gt; 78.0) 2Q27660.d<br/>                     RT=6.959 min.<br/>                     Name=13C8-FOSA<br/>                     S/N=1707.25</p>  |       |      | <p>506.0 -&gt; 78.0</p>  |        |      | <p>MRM (6.880-7.201 min, 24 scans) (506.0 -&gt; **) 2Q27660.d</p> |      |      |
| 13C8-PFOS  | 10.62 | 7.06 | 0.05                     | 17559  |      |   |      |      |
| <p>MRM (507.0 -&gt; 99.0) 2Q27660.d<br/>                     RT=7.061 min.<br/>                     Name=13C8-PFOS<br/>                     S/N=258.76</p>   |       |      | <p>507.0 -&gt; 99.0</p>  |        |      | <p>MRM (6.943-7.301 min, 27 scans) (507.0 -&gt; **) 2Q27660.d</p> |      |      |
| M4-PFOS  | 19.99 | 7.05 | 0.03                     | 40518  |      |   |      |      |
| <p>MRM (503.0 -&gt; 80.0) 2Q27660.d<br/>                     RT=7.048 min.<br/>                     Name=M4-PFOS<br/>                     S/N=28180.51</p>   |       |      | <p>503.0 -&gt; 80.0</p>  |        |      | <p>MRM (6.960-7.290 min, 25 scans) (503.0 -&gt; **) 2Q27660.d</p> |      |      |
| 13C9-PFNA  | 12.90 | 7.08 | 0.03                     | 184854 |      |   |      |      |
| <p>MRM (472.0 -&gt; 427.0) 2Q27660.d<br/>                     RT=7.078 min.<br/>                     Name=13C9-PFNA<br/>                     S/N=2370.92</p> |       |      | <p>472.0 -&gt; 427.0</p> |        |      | <p>MRM (6.964-7.318 min, 27 scans) (472.0 -&gt; **) 2Q27660.d</p> |      |      |

7.51  
7

### Perfluorinated Compounds by LC/MS/MS

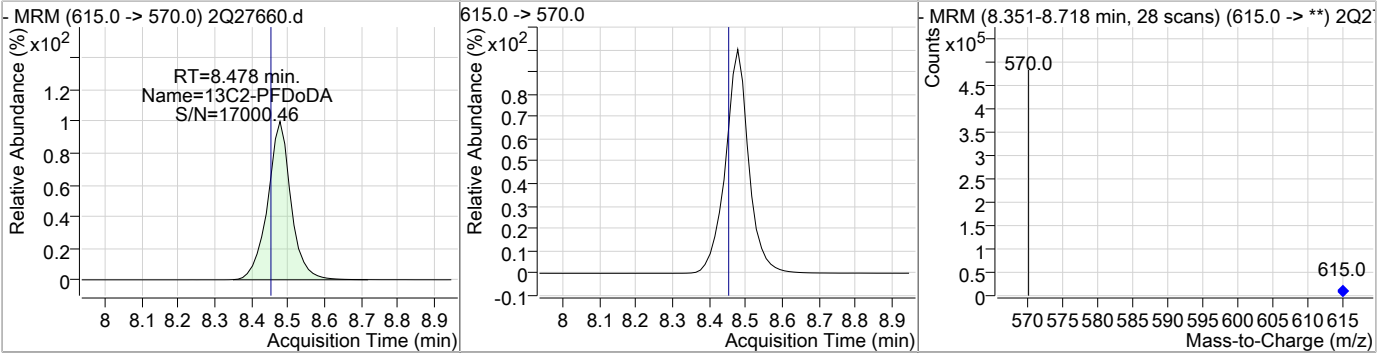
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| d3-MeFOSAA  | 10.93 | 7.46 | 0.03     | 26130  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C6-PFDA   | 12.50 | 7.61 | 0.03     | 231410 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-8:2FTS | 11.65 | 7.64 | 0.03     | 33089  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C7-PFUnDA | 12.95 | 8.05 | 0.03     | 310307 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.5.1  
7

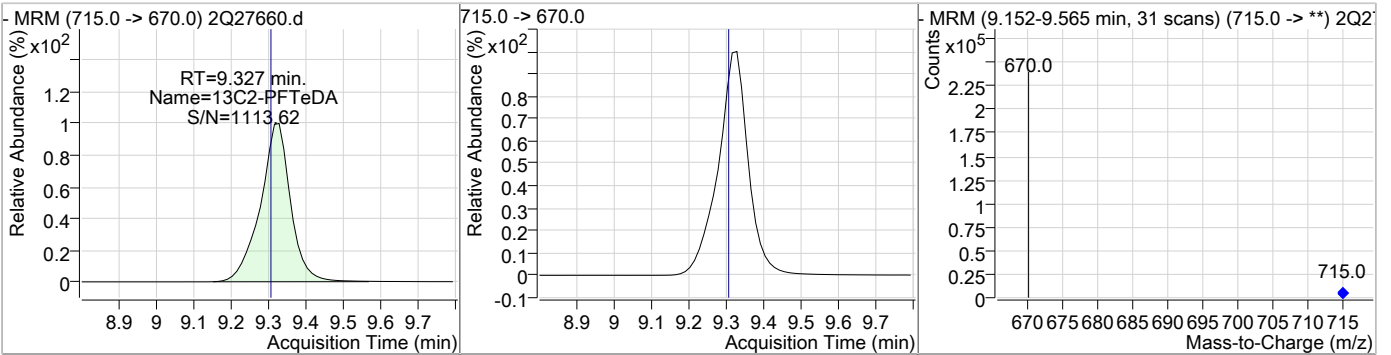


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 13.09 | 8.48 | 0.03     | 365356 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 9.17  | 9.33 | 0.02     | 177306 |      |        |      |      |



7.5.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1989.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 2:21:37 PM  
 Sample Name : op74233-dup  
 Vial : P3-B9  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74233,S3Q54,130,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc.            | Units  | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|--------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |        |          |
| M4-PFBA                            | 1.689                | 217.0 -> 172.0 | 262213 | 20.00            | µg/L   | -0.013   |
| M5-PFPeA                           | 3.548                | 268.0 -> 223.0 | 188142 | 20.00            | µg/L   | -0.013   |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 255249 | 20.00            | µg/L   | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 292186 | 20.00            | µg/L   | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 300021 | 20.00            | µg/L   | -0.013   |
| M9-PFNA                            | 7.213                | 472.0 -> 427.0 | 274477 | 20.00            | µg/L   | 0.000    |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 321149 | 20.00            | µg/L   | -0.015   |
| M7-PFUnDA                          | 8.026                | 570.0 -> 525.0 | 334690 | 20.00            | µg/L   | -0.013   |
| M2-PFDoDA                          | 8.327                | 615.0 -> 570.0 | 323297 | 20.00            | µg/L   | -0.025   |
| M2-PFTeDA                          | 8.874                | 715.0 -> 670.0 | 297856 | 20.00            | µg/L   | -0.013   |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 184844 | 20.00            | µg/L   | 0.000    |
| M3-PFBS                            | 3.867                | 302.0 -> 99.0  | 42495  | 20.00            | µg/L   | -0.013   |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 43456  | 20.00            | µg/L   | -0.013   |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 64082  | 20.00            | µg/L   | 0.000    |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 80282  | 20.00            | µg/L   | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 85382  | 20.00            | µg/L   | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 52695  | 20.00            | µg/L   | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 40272  | 20.00            | µg/L   | -0.013   |
| M3-HFPO-DA                         | 5.217                | 287.0 -> 169.0 | 0      | 100.00           | µg/L m | -0.038   |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 405278 | 20.00            | µg/L   | -0.013   |
| 13C4-PFOS                          | 7.198                | 503.0 -> 80.0  | 113003 | 20.00            | µg/L   | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |        |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 80231  | 16.91            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.5% |        |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 85115  | 18.63            | µg/L   | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.1% |        |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 52645  | 18.83            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.2% |        |          |
| 13C2-PFDoDA                        | 8.327                | 615.0 -> 570.0 | 323431 | 16.54            | µg/L   | -0.025   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.7% |        |          |
| 13C2-PFTeDA                        | 8.874                | 715.0 -> 670.0 | 297869 | 16.28            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.4% |        |          |
| 13C3-PFBS                          | 3.867                | 302.0 -> 99.0  | 42210  | 16.73            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 83.7% |        |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 43398  | 17.17            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.9% |        |          |
| 13C4-PFBA                          | 1.689                | 217.0 -> 172.0 | 258684 | 15.86            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.3% |        |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 292751 | 17.54            | µg/L   | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.7% |        |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 255790 | 17.38            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.9% |        |          |
| 13C5-PFPeA                         | 3.548                | 268.0 -> 223.0 | 187094 | 16.90            | µg/L   | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.5% |        |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 321243 | 19.28            | µg/L   | -0.015   |

7.52  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.4%  |          |
| 13C7-PFUnDA           | 8.026                | 570.0 -> 525.0 | 334725 | 18.05 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.3%  |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 184919 | 17.57 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.8%  |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 300061 | 18.97 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 94.8%  |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 64301  | 16.69 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.5%  |          |
| 13C9-PFNA             | 7.213                | 472.0 -> 427.0 | 274492 | 18.37 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 91.8%  |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 40289  | 16.97 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 84.9%  |          |
| 13C3-HFPO-DA          | 5.217                | 287.0 -> 169.0 | 0      | 0.00 µg/L         | m -0.038 |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = NA%    |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 405278 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.198                | 503.0 -> 80.0  | 113003 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

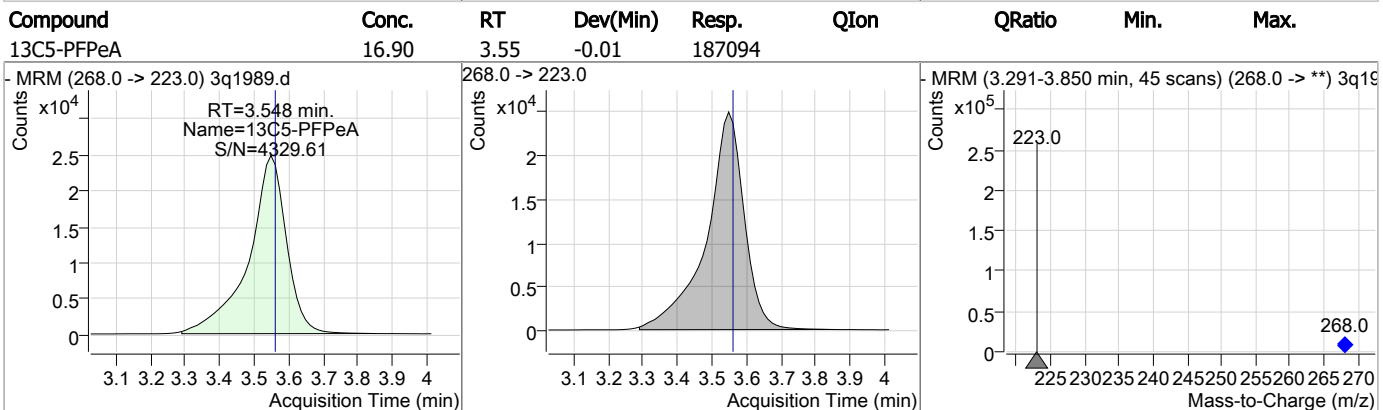
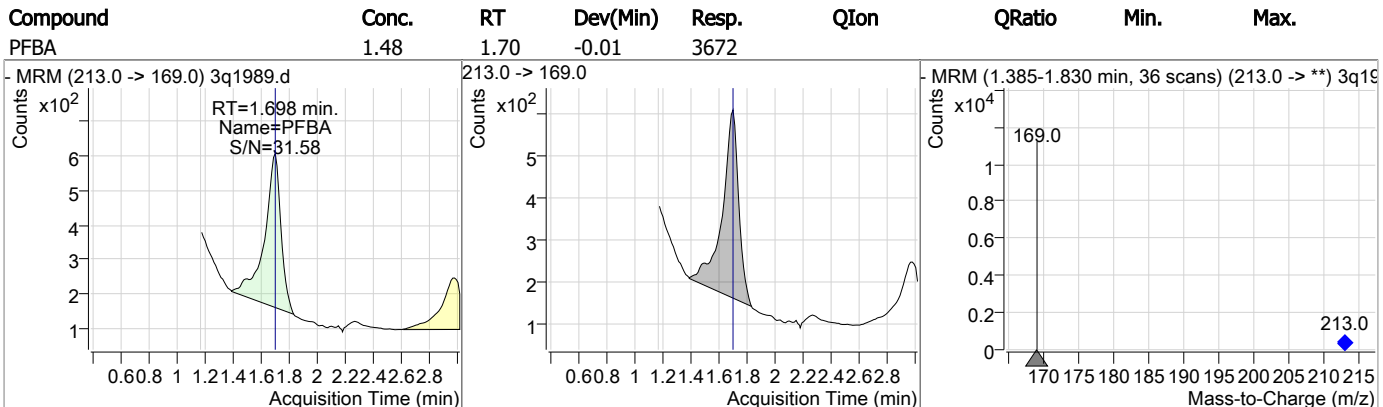
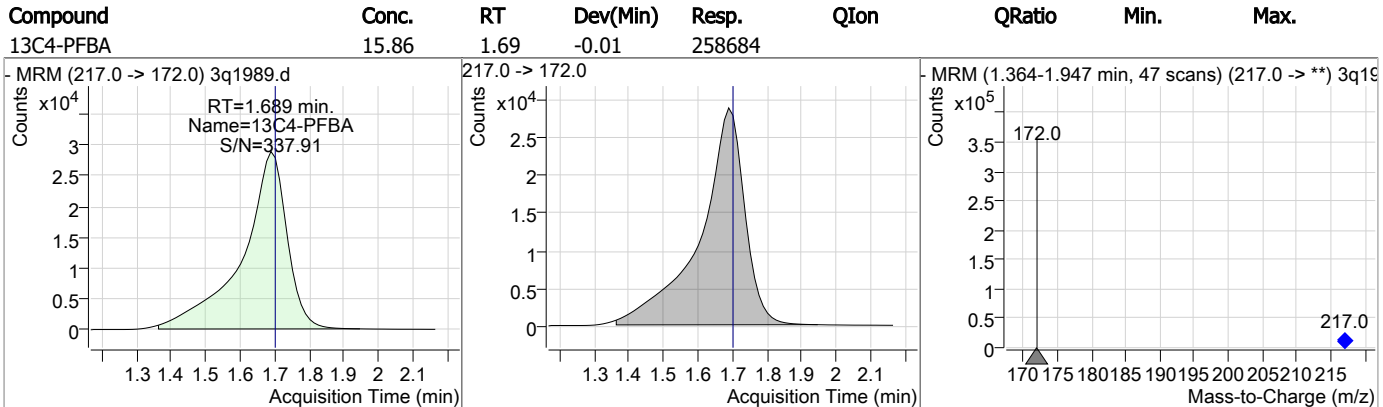
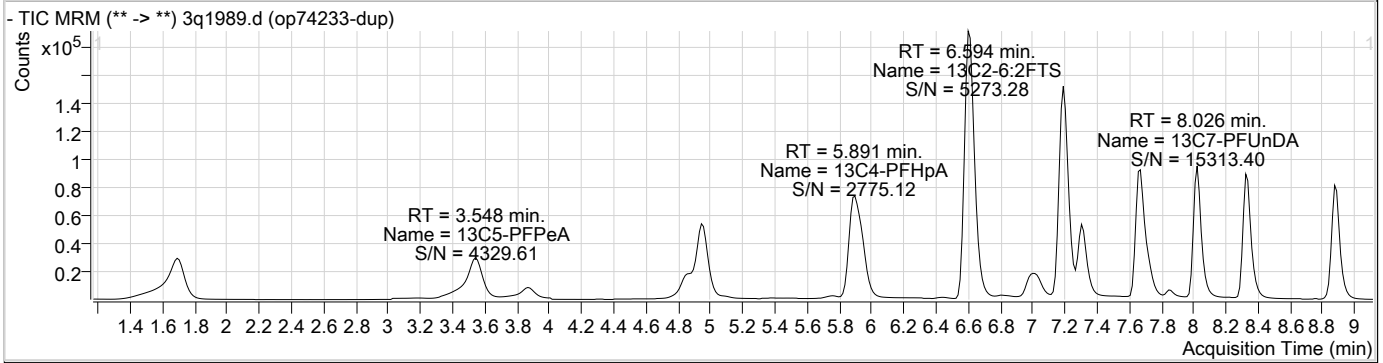
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -      | N.D.        |        |
| 6:2FTS       | 6.595 | 427.0 -> 407.0 | 6042   | 2.87 µg/L   | 98     |
| 8:2FTS       | -     | 527.0 -> 507.0 | -      | N.D.        |        |
| EtFOSAA      | -     | 584.0 -> 419.0 | -      | N.D.        |        |
| FOSA         | -     | 498.0 -> 78.0  | -      | N.D.        |        |
| MeFOSAA      | -     | 570.0 -> 419.0 | -      | N.D.        |        |
| PFBA         | 1.698 | 213.0 -> 169.0 | 3672   | 1.48 µg/L   | 100    |
| PFBS         | 3.870 | 299.0 -> 80.0  | 5663   | 1.92 µg/L   | 94     |
| PFDA         | -     | 513.0 -> 469.0 | -      | N.D.        |        |
| PFDoDA       | -     | 613.0 -> 569.0 | -      | N.D.        |        |
| PFDS         | -     | 599.0 -> 80.0  | -      | N.D.        |        |
| PFHpA        | 5.894 | 363.0 -> 319.0 | 23424  | 1.81 µg/L   | m 100  |
| PFHpS        | 6.630 | 449.0 -> 80.0  | 3616   | 1.75 µg/L   | m 98   |
| PFHxA        | 4.952 | 313.0 -> 269.0 | 22602  | 4.97 µg/L   | 99     |
| PFHxS        | 5.937 | 399.0 -> 80.0  | 67098  | 28.08 µg/L  | m 99   |
| PFNA         | -     | 463.0 -> 419.0 | -      | N.D.        |        |
| PFNS         | -     | 549.0 -> 80.0  | -      | N.D.        |        |
| PFOA         | 6.611 | 413.0 -> 369.0 | 33420  | 4.16 µg/L   | m 94   |
| PFOS         | 7.186 | 499.0 -> 80.0  | 206330 | 69.53 µg/L  | m 97   |
| PFPeA        | 3.552 | 263.0 -> 219.0 | 30044  | 3.15 µg/L   | 100    |
| PFPeS        | 5.094 | 349.0 -> 80.0  | 4602   | 2.50 µg/L   | m 91   |
| PFTeDA       | -     | 713.0 -> 669.0 | -      | N.D.        |        |
| PFTTrDA      | -     | 663.0 -> 619.0 | -      | N.D.        |        |
| PFUnDA       | -     | 563.0 -> 519.0 | -      | N.D.        |        |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |        |

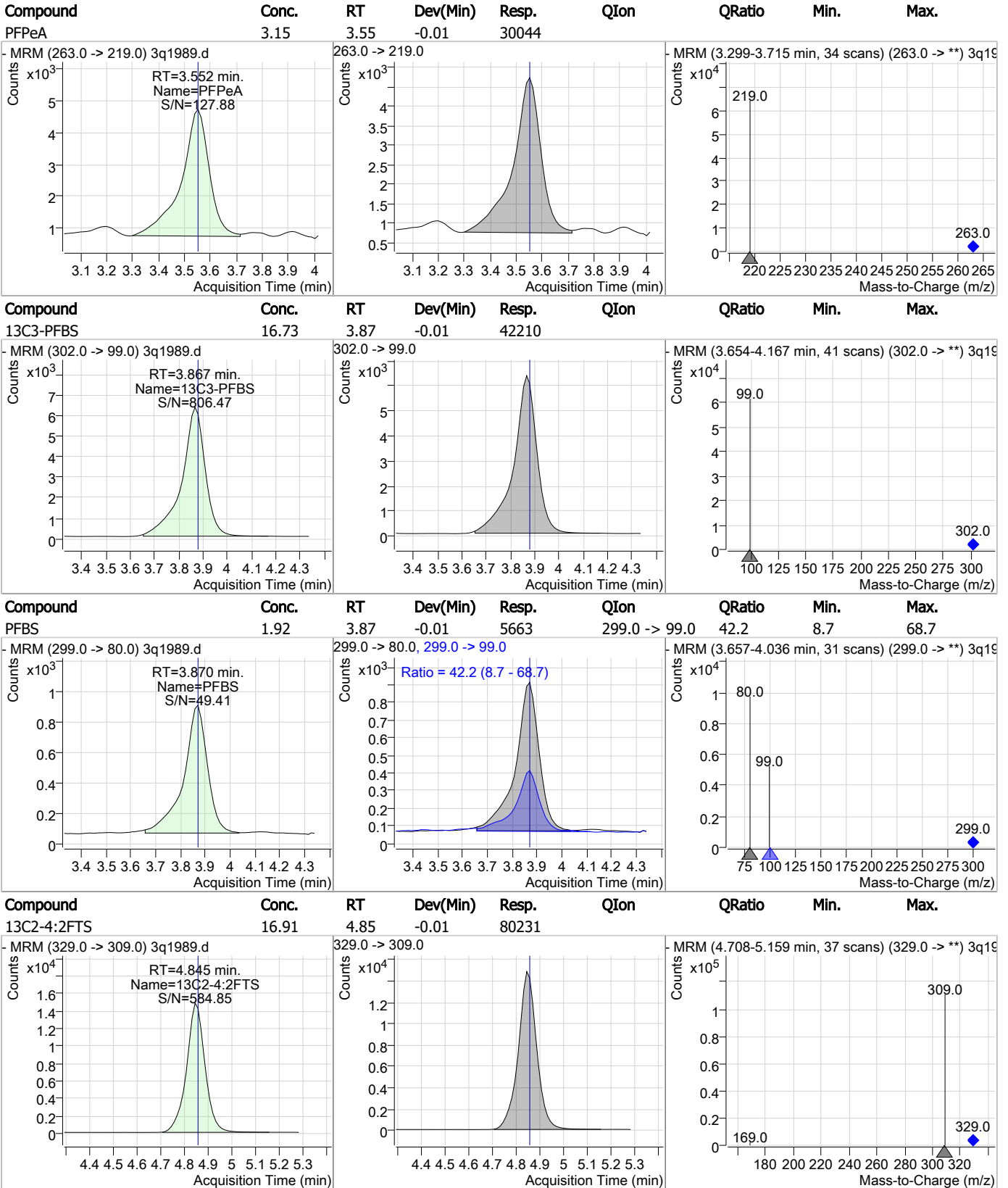
# = Qualifier out of range, m = manually integrated, + = Area summed

7.5.2  
7

### Perfluorinated Compounds by LC/MS/MS



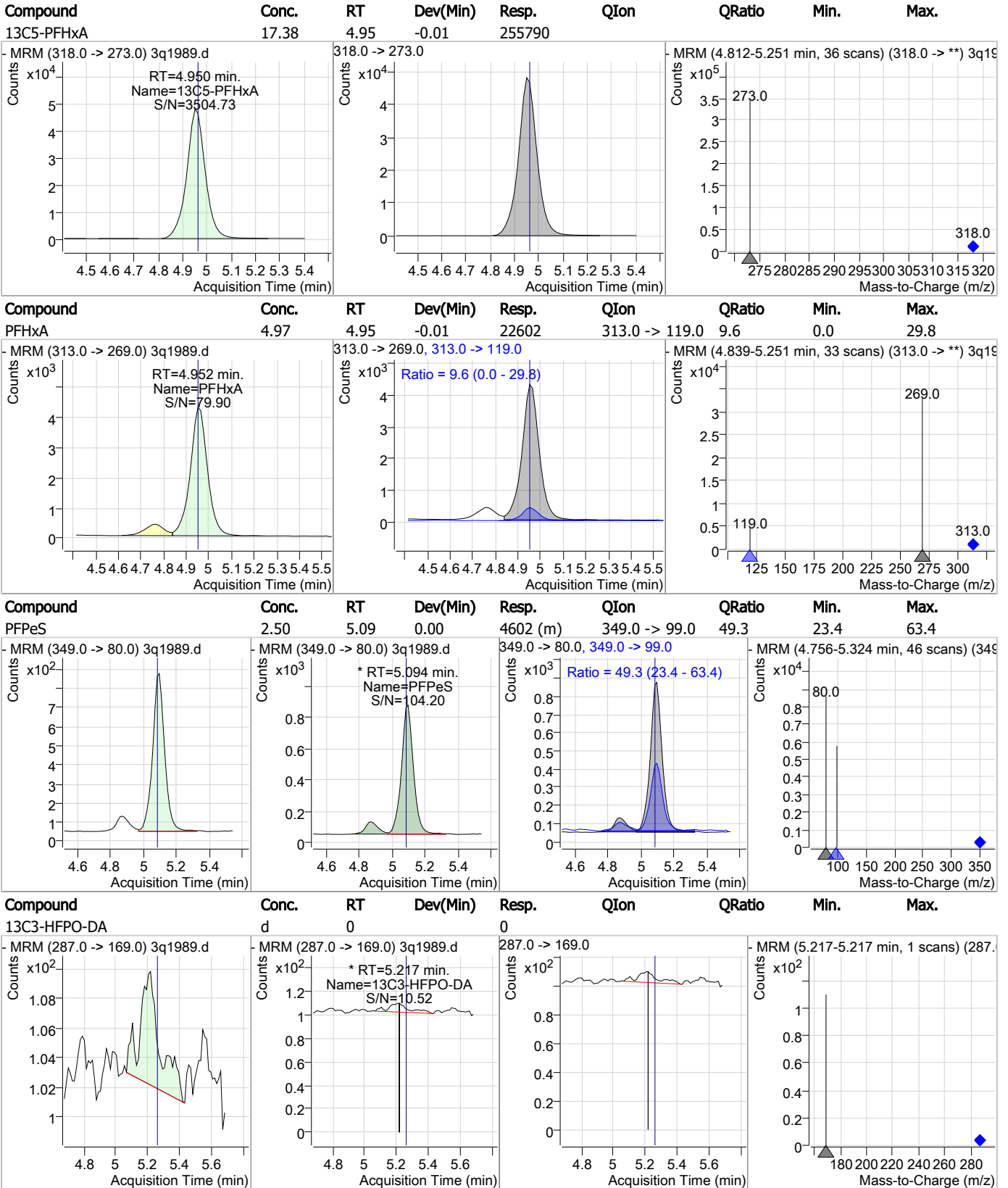
### Perfluorinated Compounds by LC/MS/MS



7.5.2

7

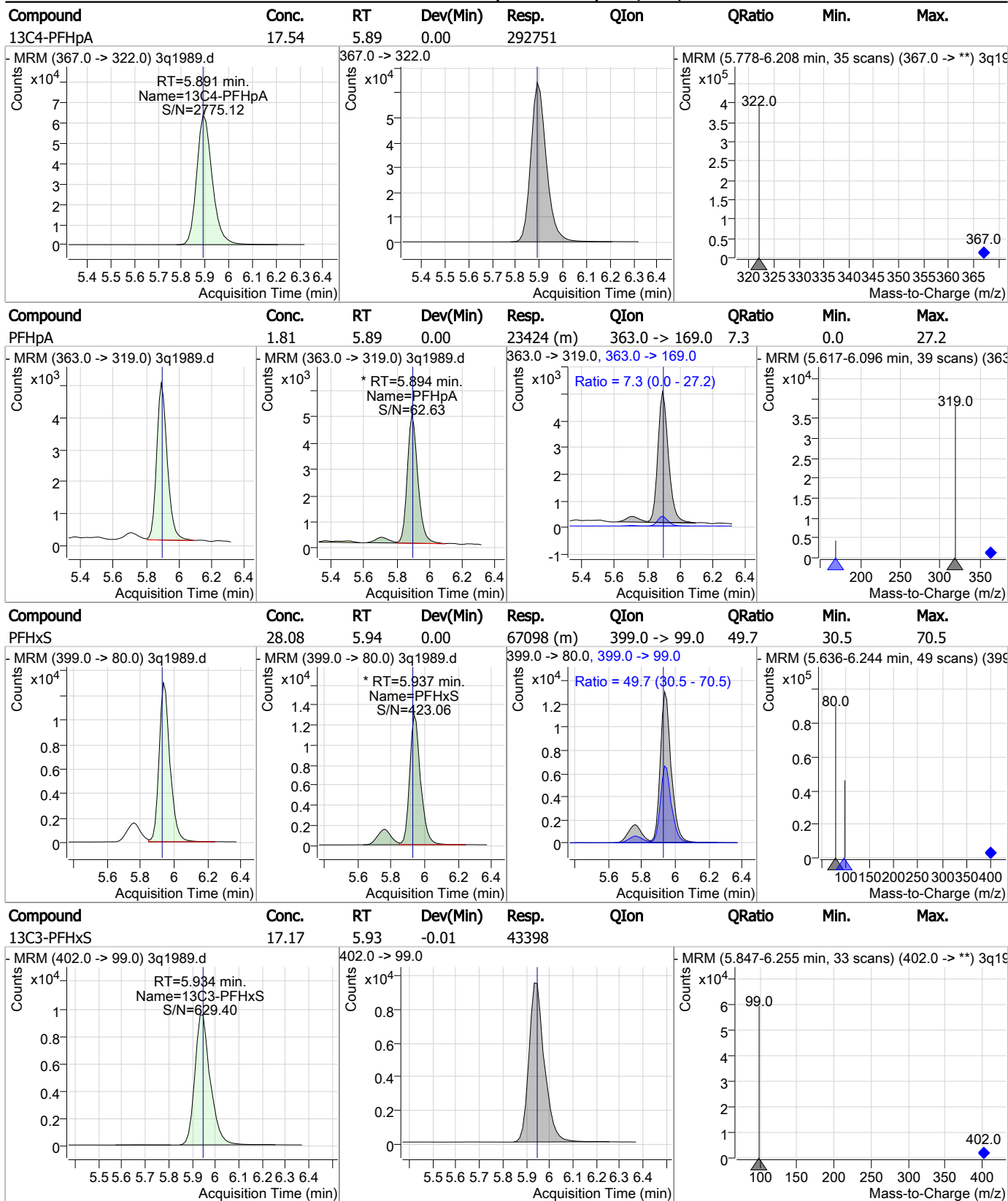
### Perfluorinated Compounds by LC/MS/MS



7.52

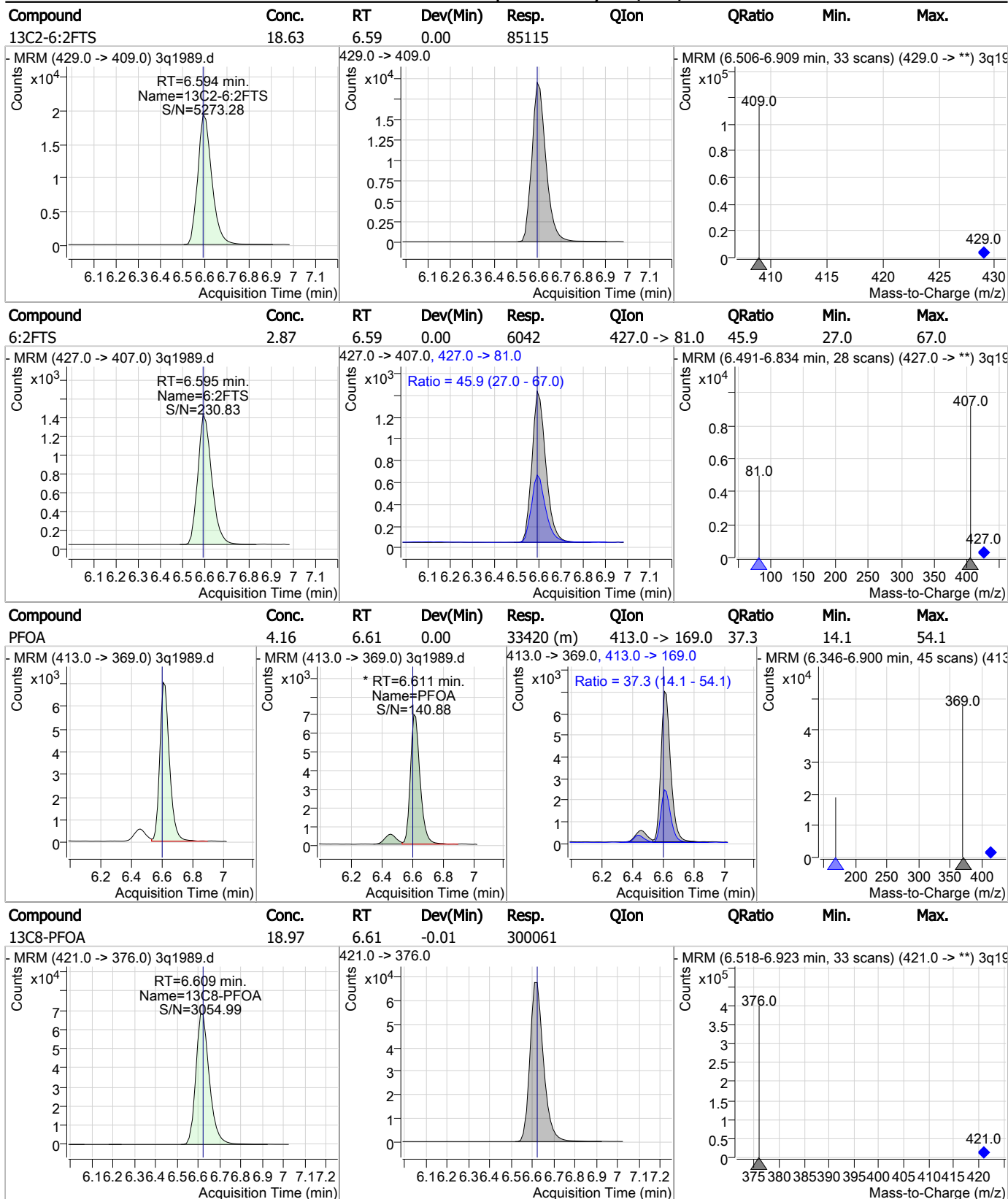
7

### Perfluorinated Compounds by LC/MS/MS



7.52  
7

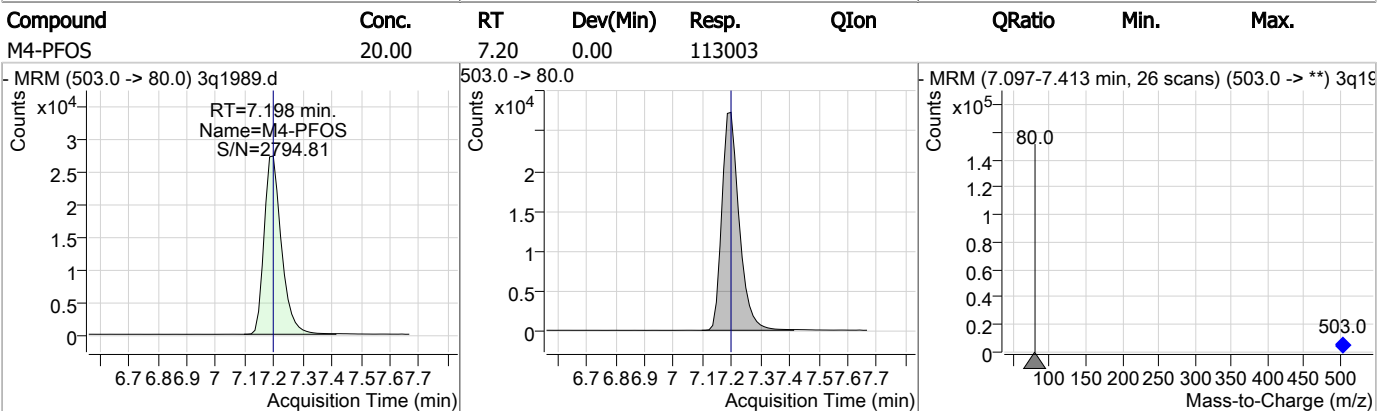
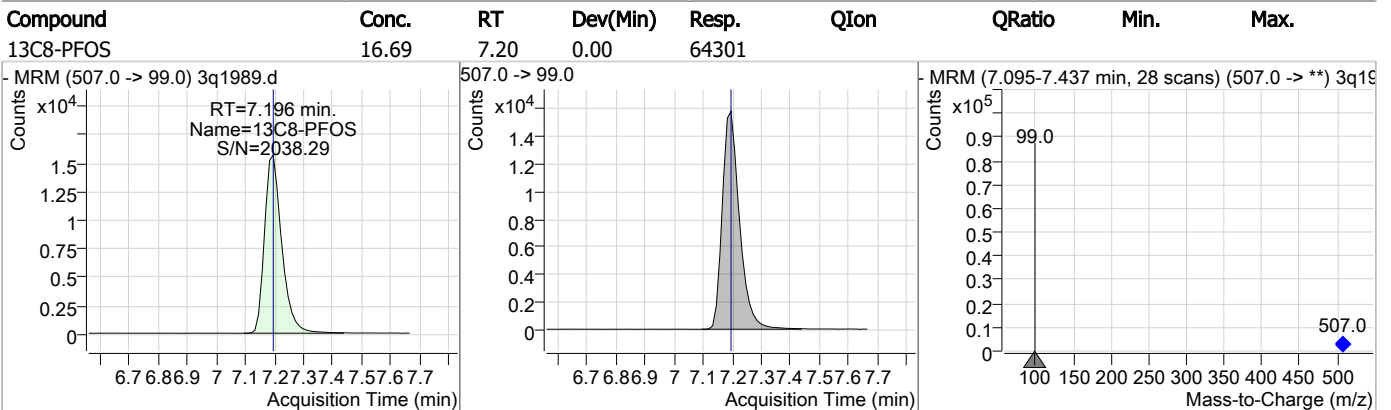
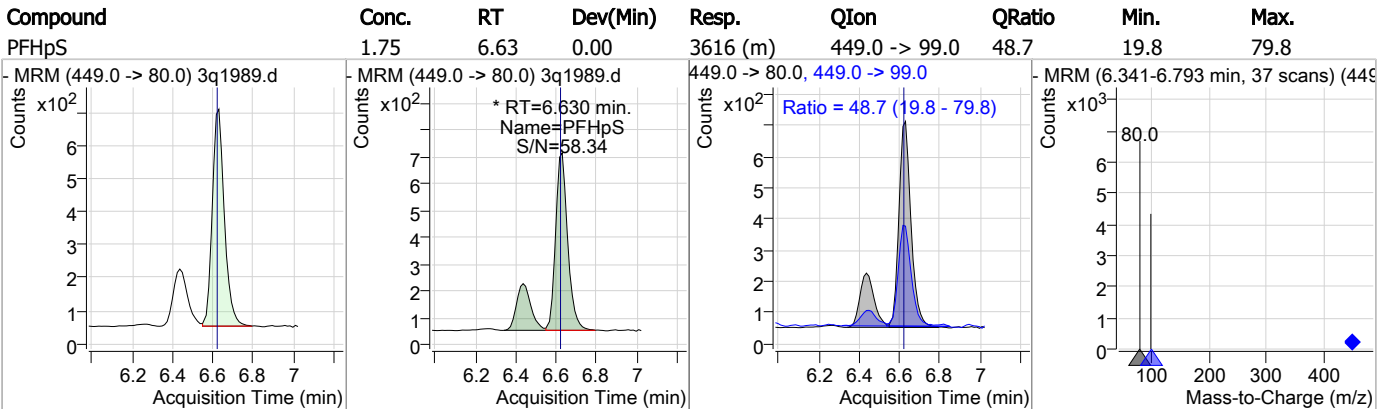
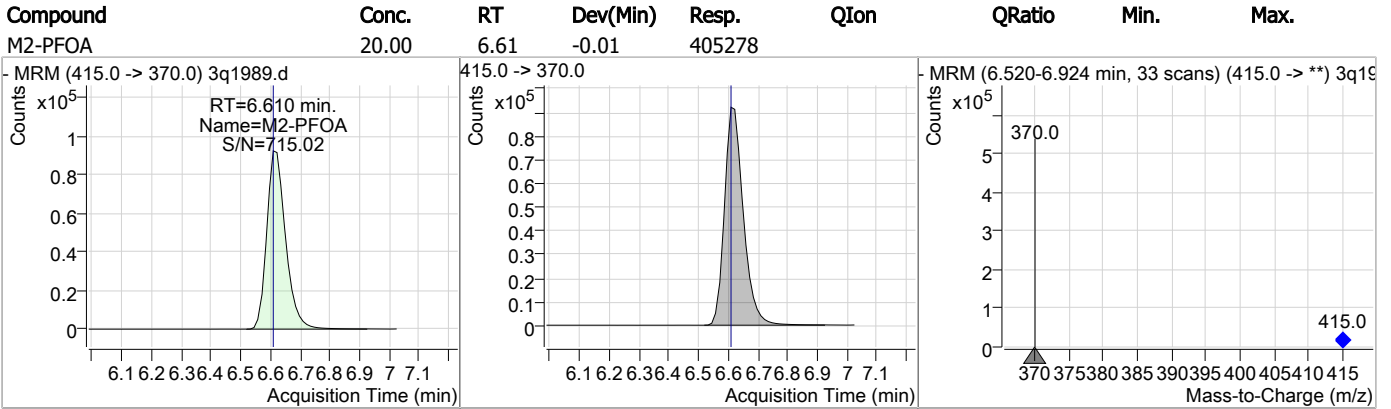
### Perfluorinated Compounds by LC/MS/MS



7.52  
7



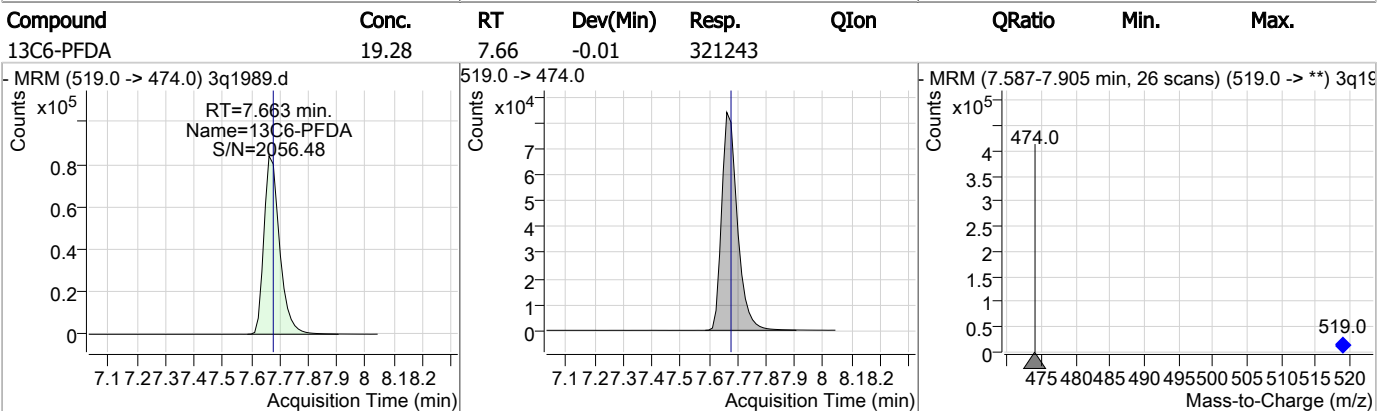
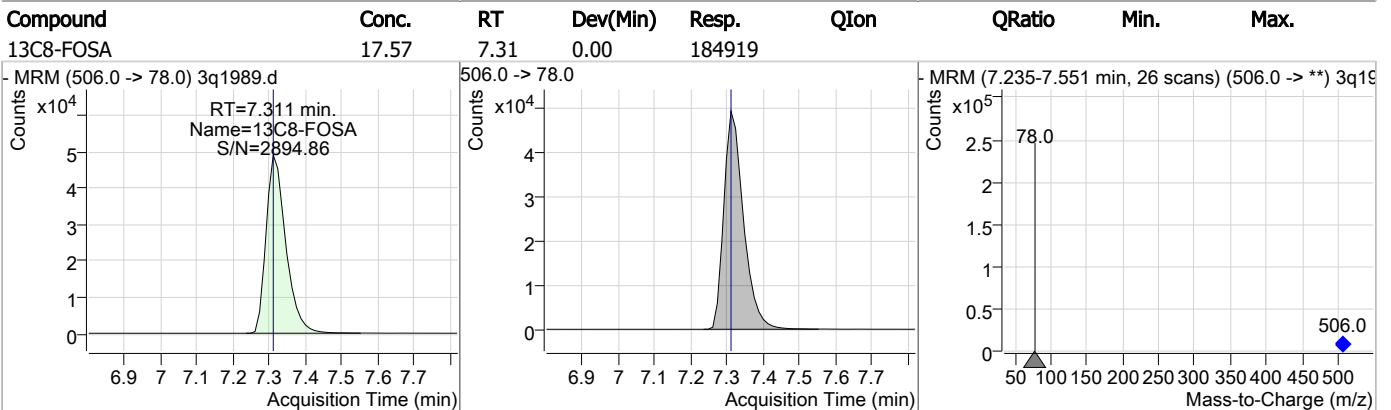
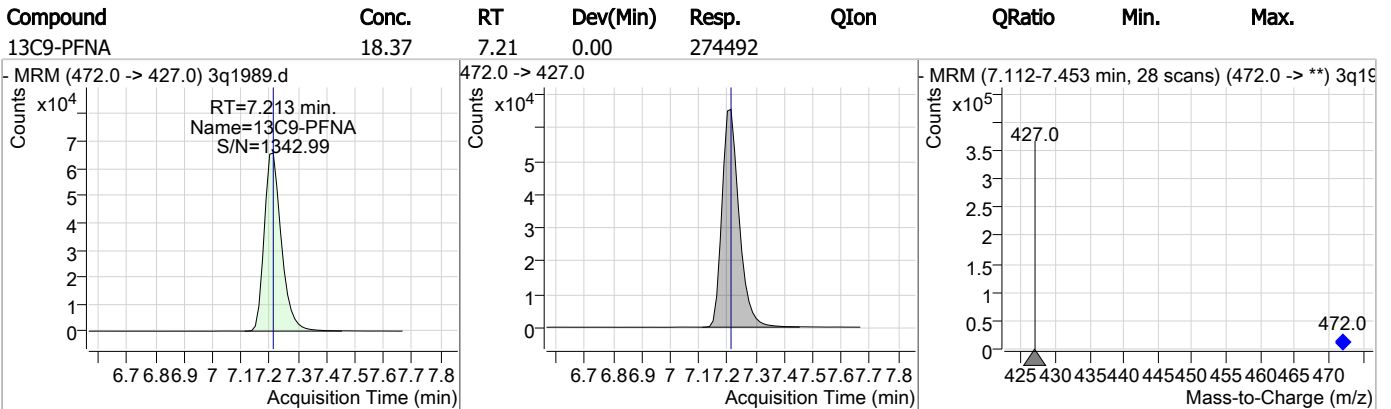
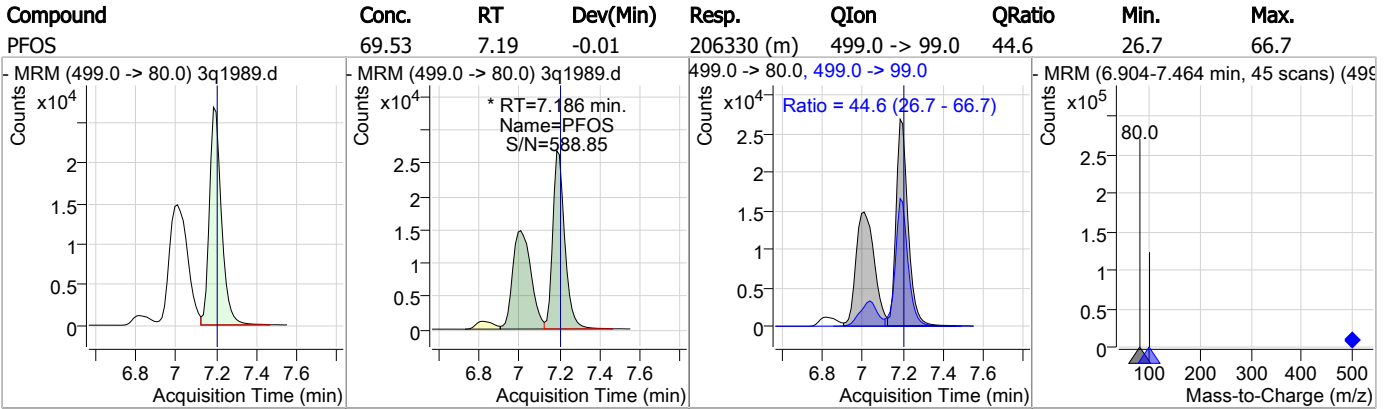
### Perfluorinated Compounds by LC/MS/MS



7.52

7

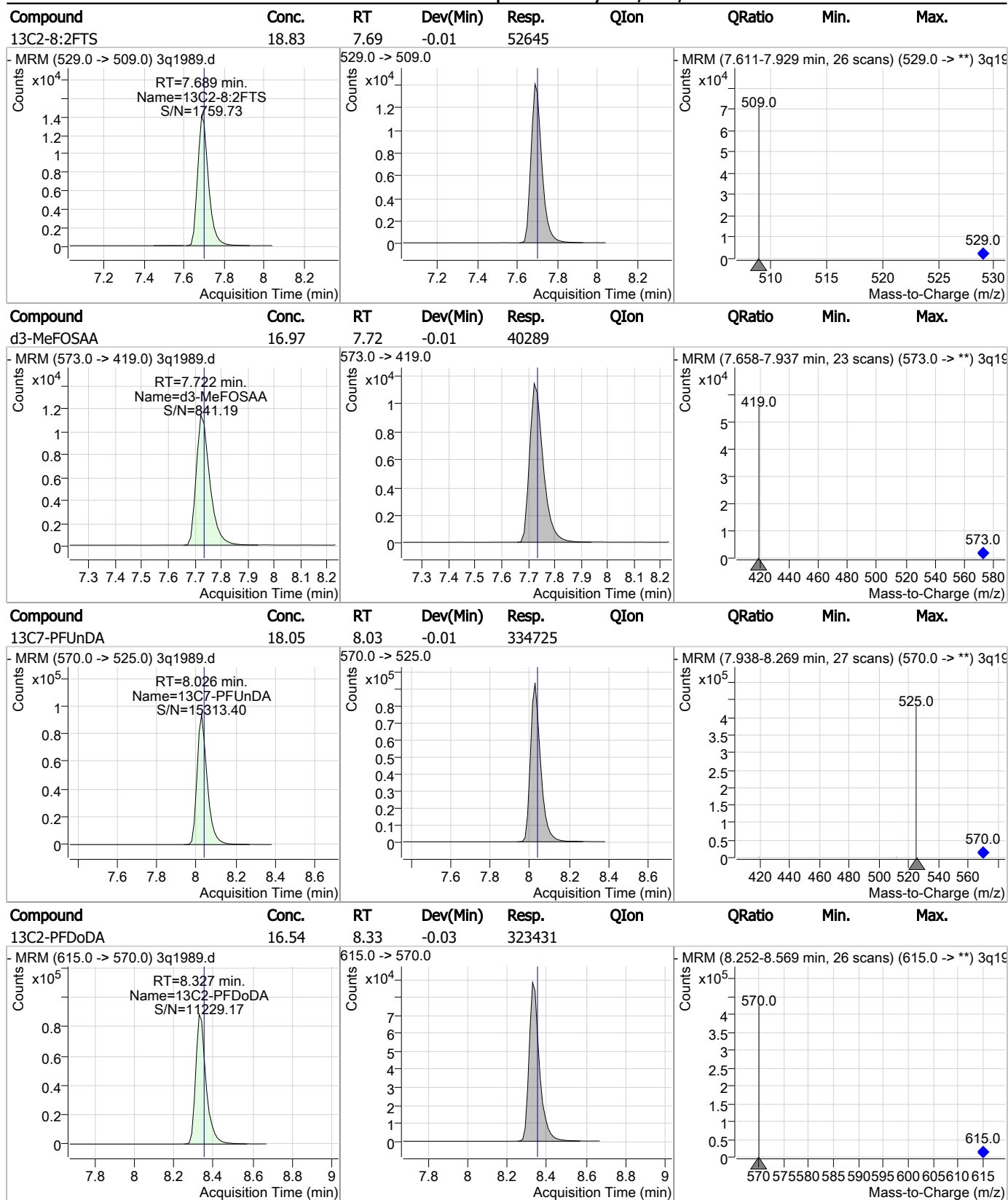
### Perfluorinated Compounds by LC/MS/MS



7.52

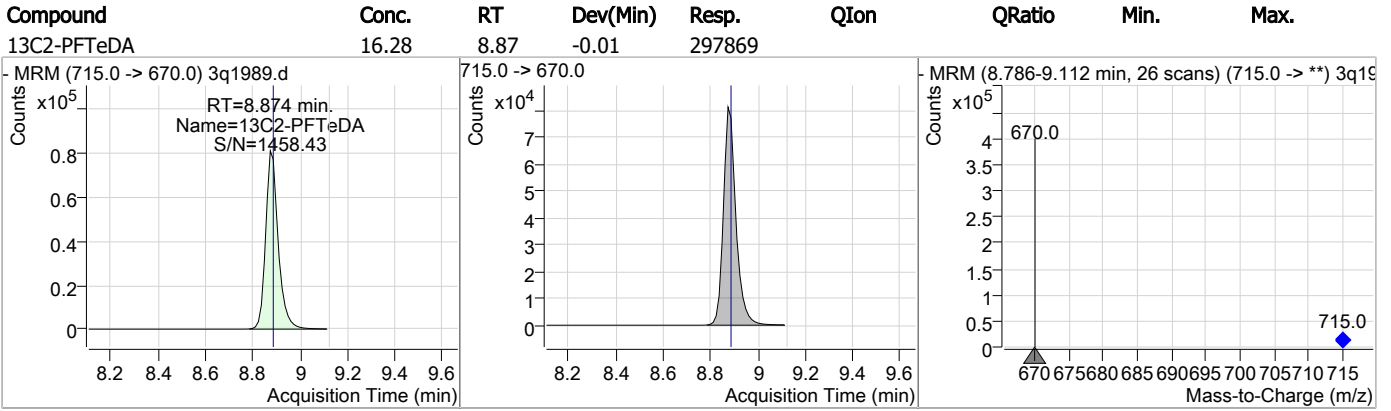
7

### Perfluorinated Compounds by LC/MS/MS



7.52  
7

Perfluorinated Compounds by LC/MS/MS



7.5.2

7

# Manual Integration Approval Summary

**Sample Number:** OP74233-DUP  
**Lab FileID:** 3Q1989.D  
**Injection Time:** 03/21/19 14:21

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/22/19 11:49 Nancy Saunders  
**Supervisor approved:** 03/24/19 19:15 Mike Eger

| Parameter                     | CAS       | Sig# | R.T. (min.) | Reason     |
|-------------------------------|-----------|------|-------------|------------|
| Perfluoropentanesulfonic acid | 2706-91-4 |      | 5.09        | Split peak |
| Perfluoroheptanoic acid       | 375-85-9  |      | 5.89        | Split peak |
| Perfluorohexanesulfonic acid  | 355-46-4  |      | 5.94        | Split peak |
| Perfluorooctanoic acid        | 335-67-1  |      | 6.61        | Split peak |
| Perfluoroheptanesulfonic acid | 375-92-8  |      | 6.63        | Split peak |
| Perfluorooctanesulfonic acid  | 1763-23-1 |      | 7.19        | Split peak |

7.5.2.1  
7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27563.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 10:44:33 AM  
 Sample Name : ic439-0.5  
 Vial : Vial 2  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 409921            | 20.00 µg/L  | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 58557             | 20.00 µg/L  | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 180082            | 20.00 µg/L  | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 148197            | 20.00 µg/L  | 0.025    |
| M5-PFHxA                           | 5.189                | 318.0 -> 273.0 | 212637            | 20.00 µg/L  | 0.013    |
| M4-PFHpA                           | 6.129                | 367.0 -> 322.0 | 299427            | 20.00 µg/L  | 0.011    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 313298            | 20.00 µg/L  | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 298997            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 385138            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 492860            | 20.00 µg/L  | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 562181            | 20.00 µg/L  | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 394327            | 20.00 µg/L  | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 122041            | 20.00 µg/L  | 0.011    |
| M3-PFBS                            | 4.118                | 302.0 -> 99.0  | 25086             | 20.00 µg/L  | 0.025    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 27992             | 20.00 µg/L  | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 34529             | 20.00 µg/L  | 0.012    |
| M2-4:2FTS                          | 5.084                | 329.0 -> 309.0 | 80784             | 20.00 µg/L  | 0.013    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 86698             | 20.00 µg/L  | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 54331             | 20.00 µg/L  | 0.001    |
| M3-MeFOSAA                         | 7.822                | 573.0 -> 419.0 | 49551             | 20.00 µg/L  | -0.001   |
| M3-HFPO-DA                         | 5.494                | 287.0 -> 169.0 | 211369            | 100.00 µg/L | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 5.084                | 329.0 -> 309.0 | 80861             | 19.48 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 97.4%  |             |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 86654             | 19.88 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 99.4%  |             |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 54327             | 19.13 µg/L  | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 95.7%  |             |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 561138            | 20.10 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 100.5% |             |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 387783            | 20.06 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 100.3% |             |          |
| 13C3-PFBS                          | 4.118                | 302.0 -> 99.0  | 24934             | 20.59 µg/L  | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.0% |             |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 27921             | 20.50 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.5% |             |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 179116            | 20.66 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.3% |             |          |
| 13C4-PFHpA                         | 6.129                | 367.0 -> 322.0 | 299225            | 20.78 µg/L  | 0.011    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.9% |             |          |
| 13C5-PFHxA                         | 5.189                | 318.0 -> 273.0 | 212317            | 20.70 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.5% |             |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 147989            | 20.64 µg/L  | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.2% |             |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 385082            | 20.80 µg/L  | 0.000    |

7.6.1  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 492405 | 20.55 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.8% |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 122034 | 21.43 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.1% |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 312923 | 21.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.1% |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 34489  | 20.85 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.3% |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 298901 | 20.86 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.3% |          |
| d3-MeFOSAA            | 7.822                | 573.0 -> 419.0 | 49571  | 20.73 µg/L        | -0.001   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.7% |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 410094 | 19.99 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 58565  | 20.00 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.494                | 287.0 -> 169.0 | 211369 | 104.06 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 104.1% |          |

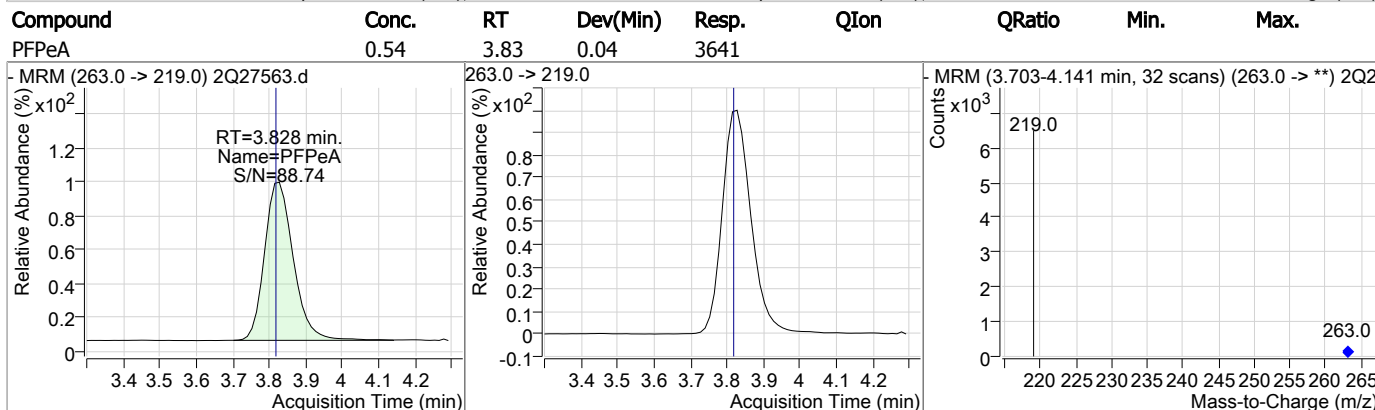
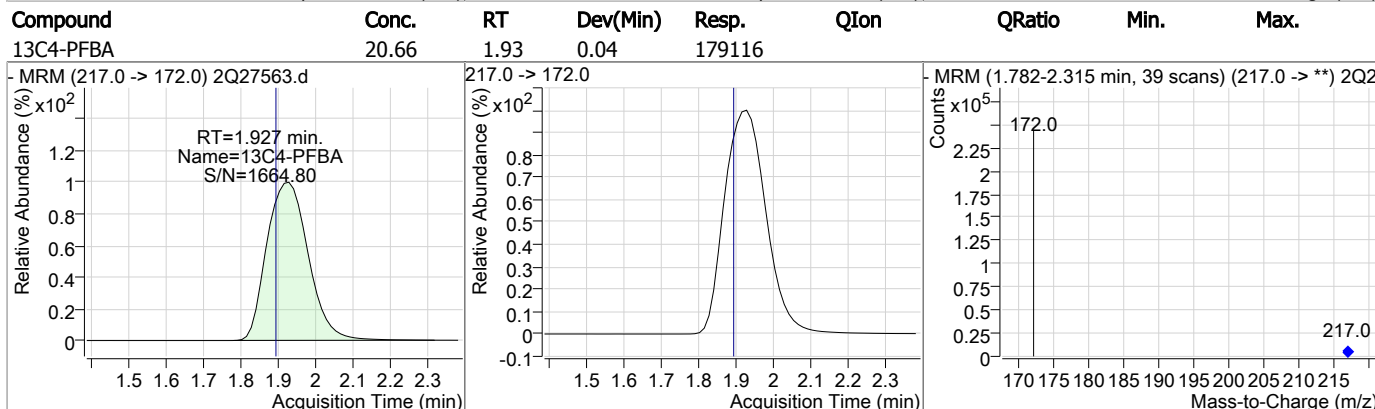
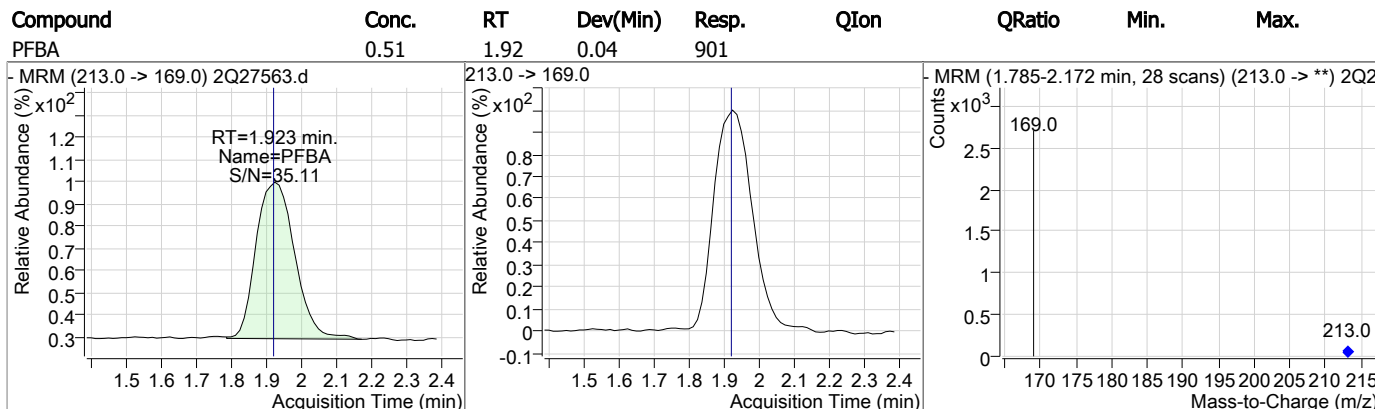
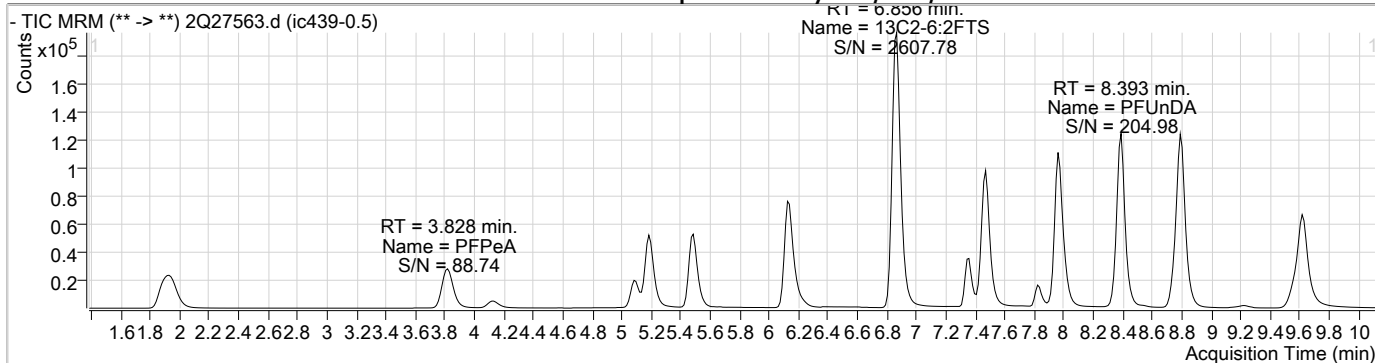
**Target Compounds**

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | 5.087 | 327.0 -> 307.0 | 1277  | 0.54 µg/L   | 95     |
| 6:2FTS       | 6.858 | 427.0 -> 407.0 | 1319  | 0.60 µg/L   | 91     |
| 8:2FTS       | 8.006 | 527.0 -> 507.0 | 848   | 0.59 µg/L   | 95     |
| EtFOSAA      | 7.961 | 584.0 -> 419.0 | 611   | 0.55 µg/L   | 94     |
| FOSA         | 7.347 | 498.0 -> 78.0  | 1613  | 0.59 µg/L   | 99     |
| MeFOSAA      | 7.823 | 570.0 -> 419.0 | 735   | 0.56 µg/L   | 99     |
| PFBA         | 1.923 | 213.0 -> 169.0 | 901   | 0.51 µg/L   | 100    |
| PFBS         | 4.121 | 299.0 -> 80.0  | 1054  | 0.51 µg/L   | 96     |
| PFDA         | 7.969 | 513.0 -> 469.0 | 4404  | 0.54 µg/L   | 97     |
| PFDoDA       | 8.793 | 613.0 -> 569.0 | 6702  | 0.51 µg/L   | 99     |
| PFDS         | 8.352 | 599.0 -> 80.0  | 355   | 0.52 µg/L   | 83     |
| PFHpA        | 6.132 | 363.0 -> 319.0 | 7043  | 0.50 µg/L   | 100    |
| PFHpS        | 6.880 | 449.0 -> 80.0  | 708   | 0.50 µg/L   | 97     |
| PFHxA        | 5.191 | 313.0 -> 269.0 | 2013  | 0.55 µg/L   | 99     |
| PFHxS        | 6.176 | 399.0 -> 80.0  | 928   | 0.56 µg/L   | m 87   |
| PFNA         | 7.480 | 463.0 -> 419.0 | 4929  | 0.51 µg/L   | 94     |
| PFNS         | 7.939 | 549.0 -> 80.0  | 714   | 0.55 µg/L   | 97     |
| PFOA         | 6.875 | 413.0 -> 369.0 | 4645  | 0.54 µg/L   | 98     |
| PFOS         | 7.464 | 499.0 -> 80.0  | 1030  | 0.58 µg/L   | m 84   |
| PFPeA        | 3.828 | 263.0 -> 219.0 | 3641  | 0.54 µg/L   | 100    |
| PFPeS        | 5.321 | 349.0 -> 80.0  | 719   | 0.51 µg/L   | 97     |
| PFTeDA       | 9.620 | 713.0 -> 669.0 | 7261  | 0.54 µg/L   | 100    |
| PFTTrDA      | 9.220 | 663.0 -> 619.0 | 7699  | 0.52 µg/L   | 99     |
| PFUnDA       | 8.393 | 563.0 -> 519.0 | 5113  | 0.49 µg/L   | 98     |
| 11Cl-PF3OUdS | 8.538 | 631.0 -> 451.0 | 3886  | 0.55 µg/L   | 100    |
| 9Cl-PF3ONS   | 7.723 | 531.0 -> 351.0 | 745   | 0.54 µg/L   | 100    |
| ADONA        | 6.241 | 377.0 -> 251.0 | 7823  | 0.50 µg/L   | 100    |
| HFPO-DA      | 5.486 | 329.0 -> 169.0 | 6959  | 2.71 µg/L   | 100    |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.1  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.1  
7

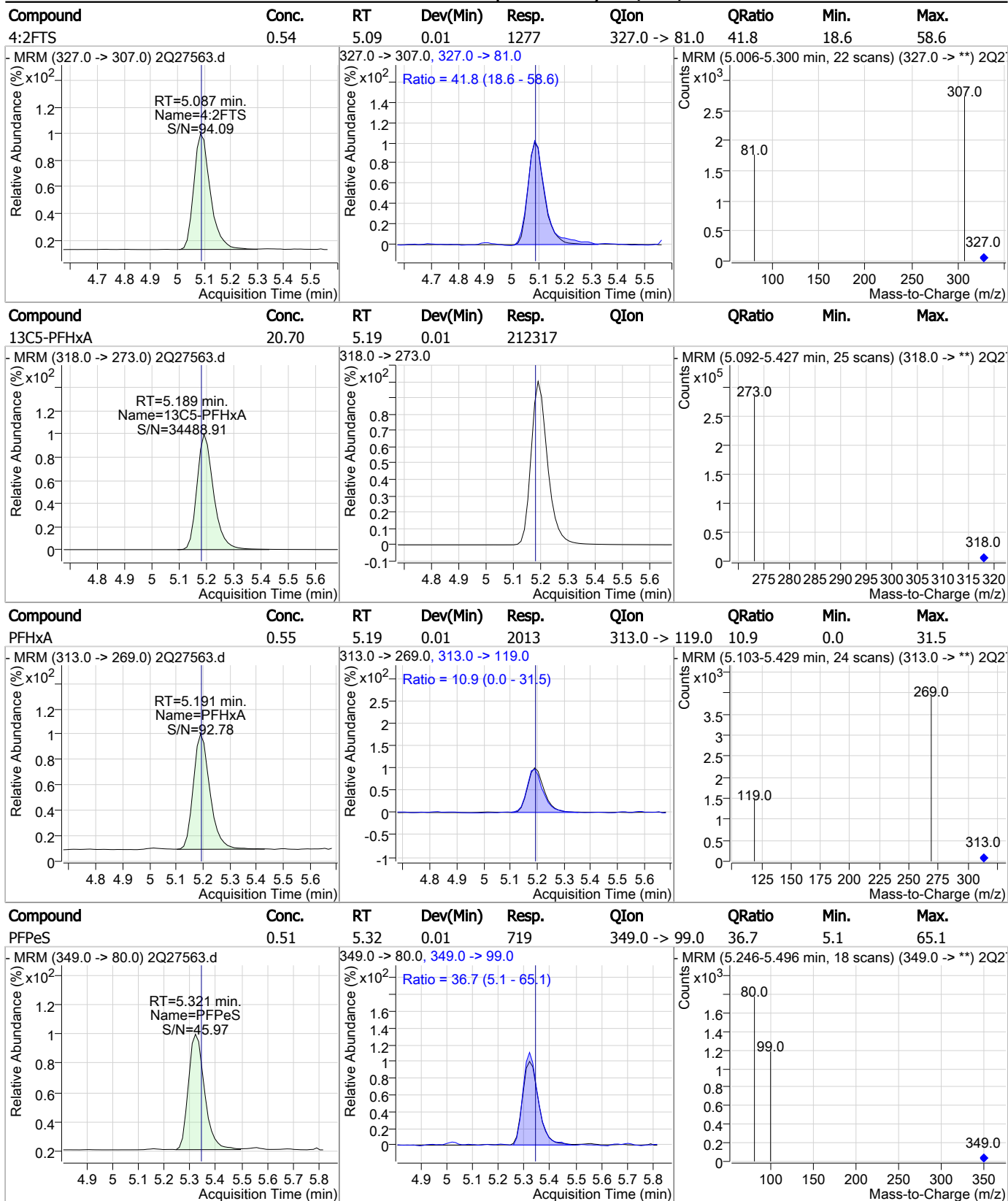


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 20.64 | 3.82 | 0.03     | 147989 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 20.59 | 4.12 | 0.03     | 24934  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 0.51  | 4.12 | 0.03     | 1054   | 299.0 -> 99.0 | 38.1   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 19.48 | 5.08 | 0.01     | 80861  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.1  
7

### Perfluorinated Compounds by LC/MS/MS

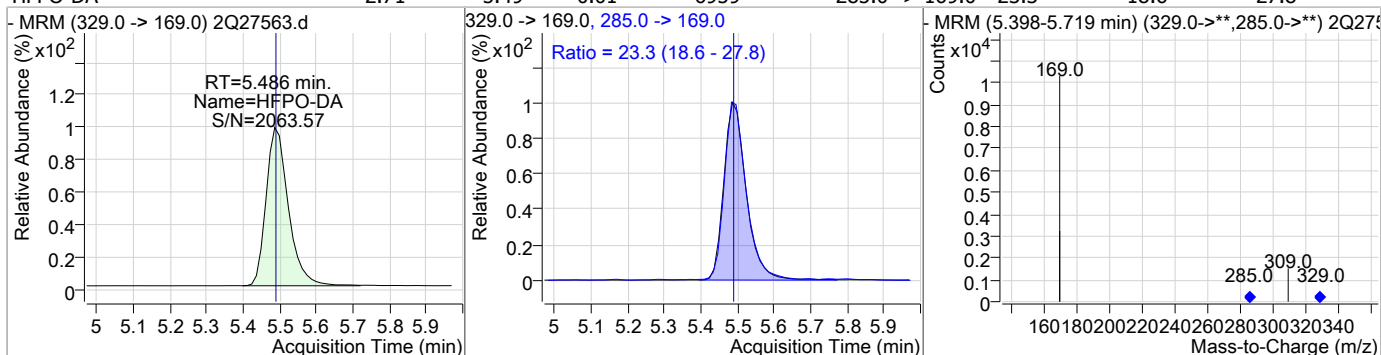


7.6.1

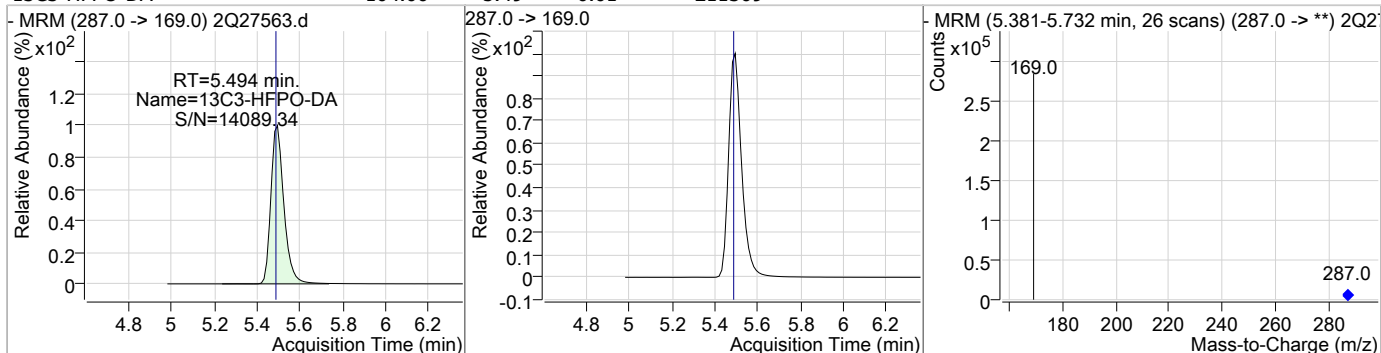
7

### Perfluorinated Compounds by LC/MS/MS

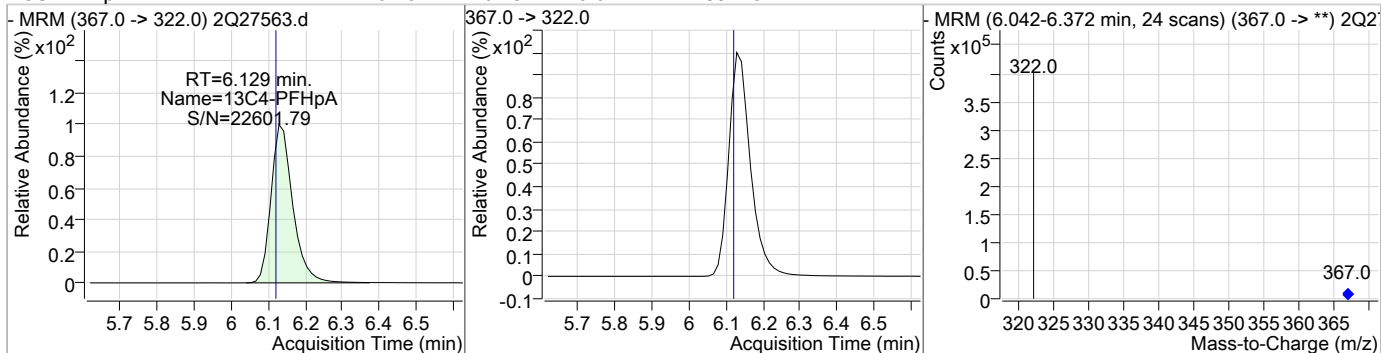
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 2.71  | 5.49 | 0.01     | 6959  | 285.0 -> 169.0 | 23.3   | 18.6 | 27.8 |



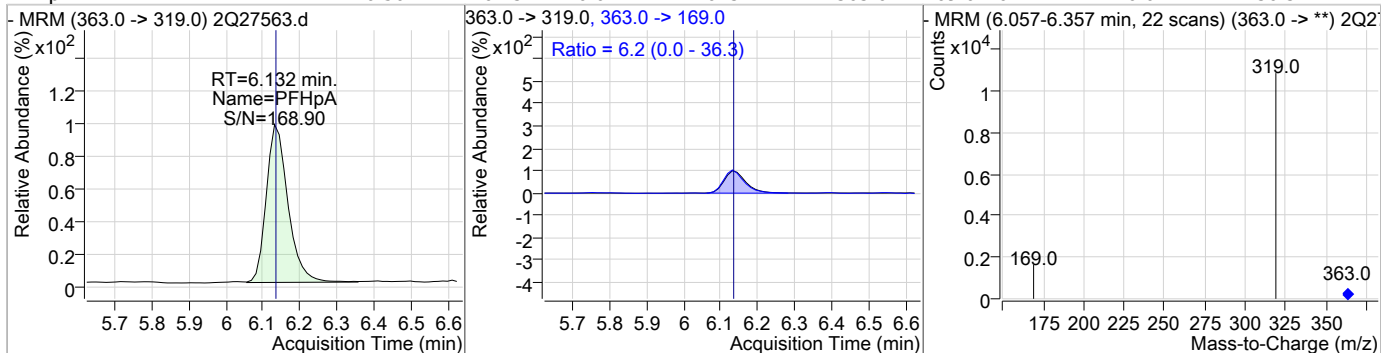
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 104.06 | 5.49 | 0.01     | 211369 |      |        |      |      |



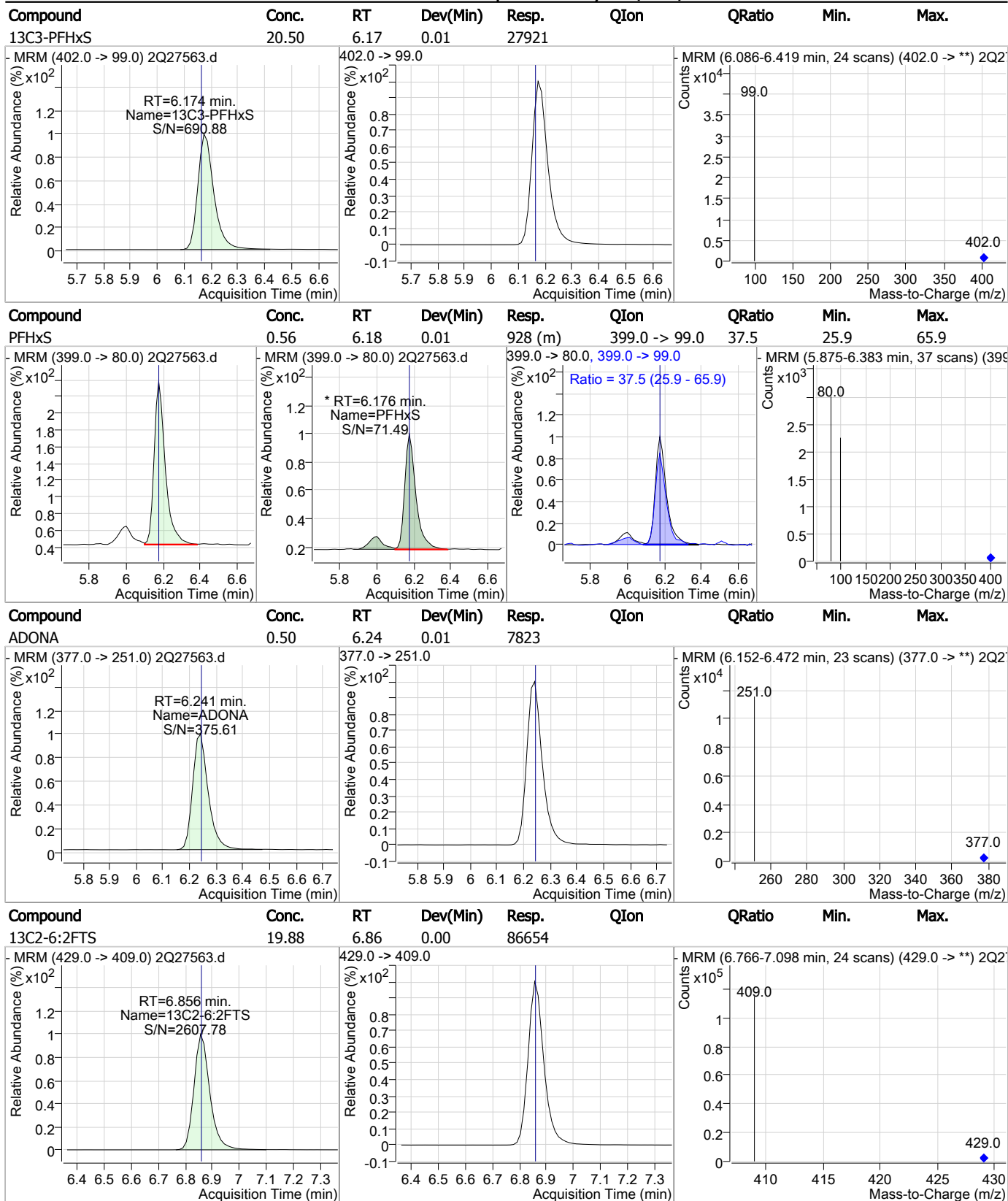
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 20.78 | 6.13 | 0.01     | 299225 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 0.50  | 6.13 | 0.01     | 7043  | 363.0 -> 169.0 | 6.2    | 0.0  | 36.3 |

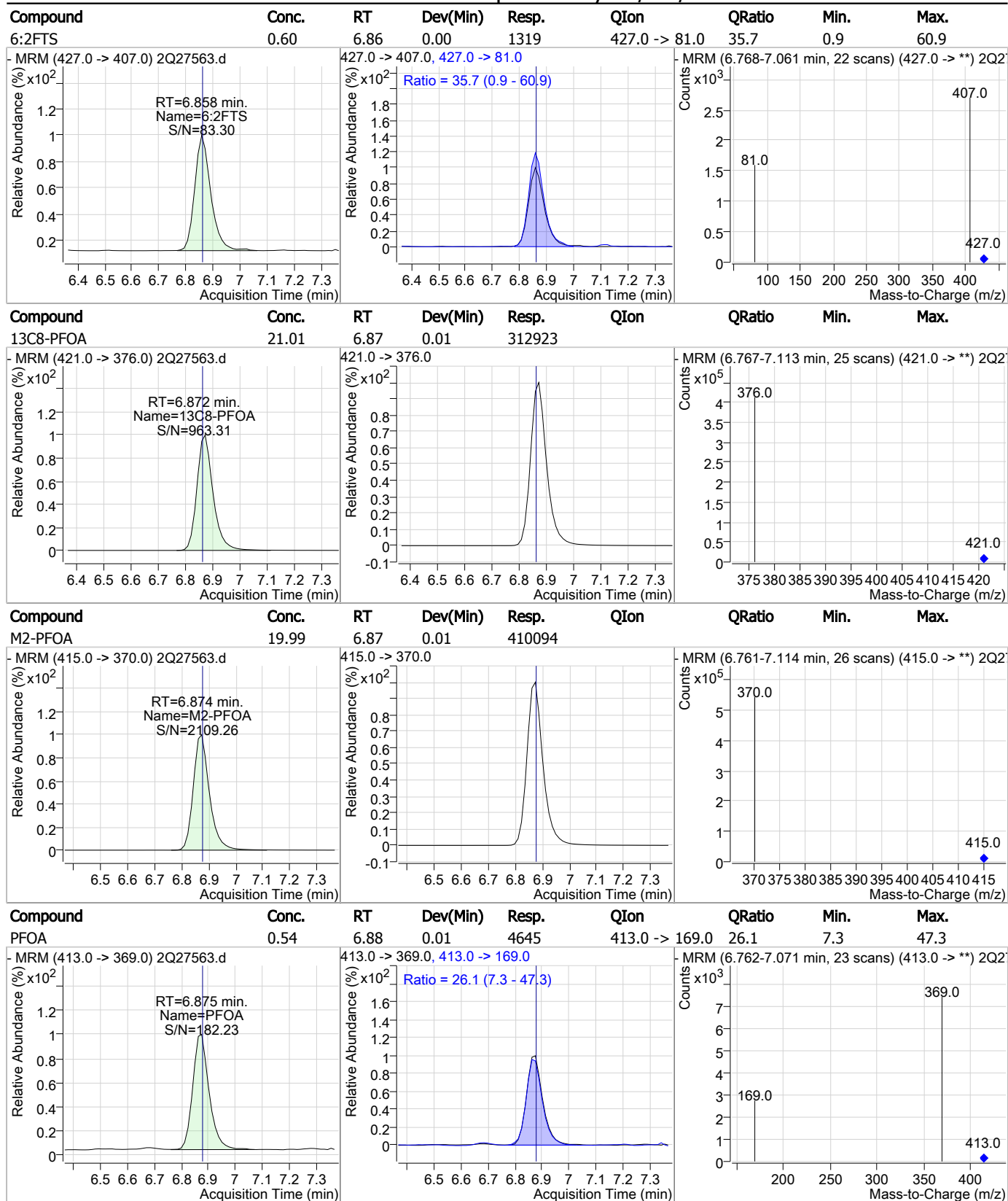


### Perfluorinated Compounds by LC/MS/MS



7.6.1  
7

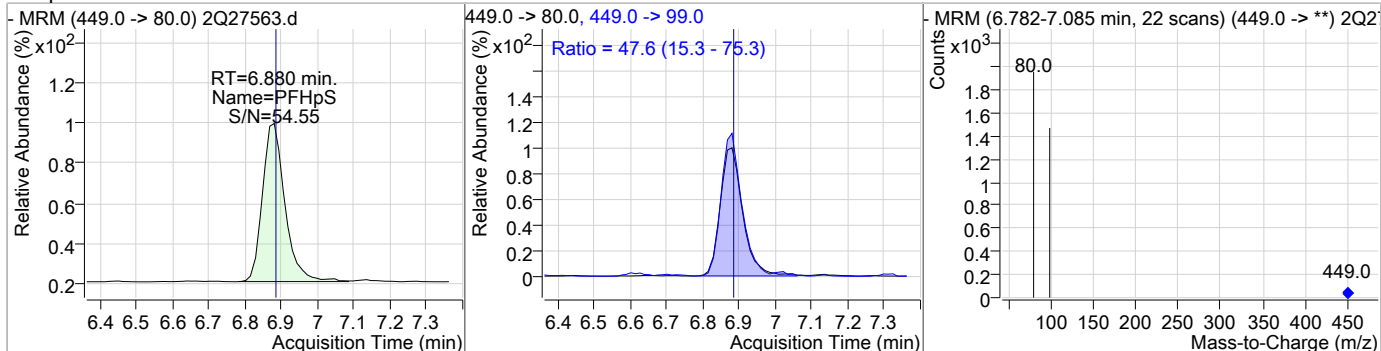
### Perfluorinated Compounds by LC/MS/MS



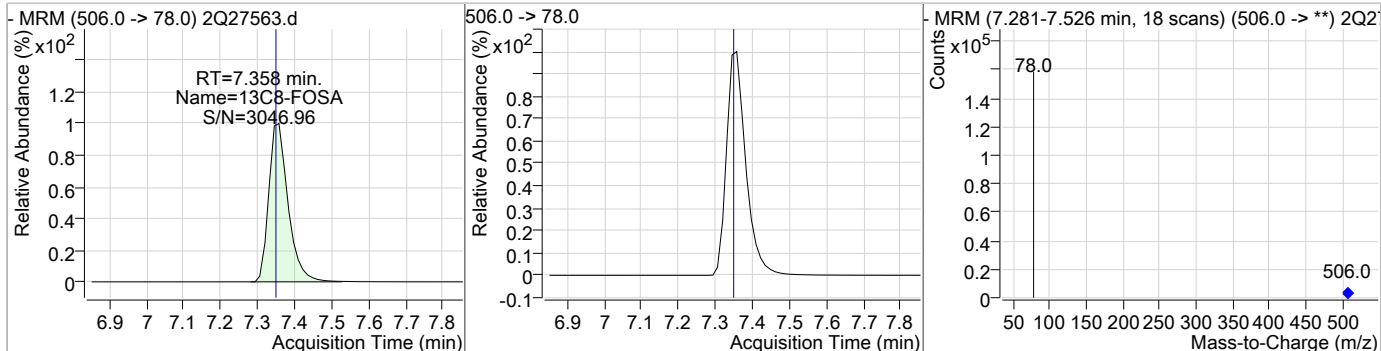
7.6.1  
7

### Perfluorinated Compounds by LC/MS/MS

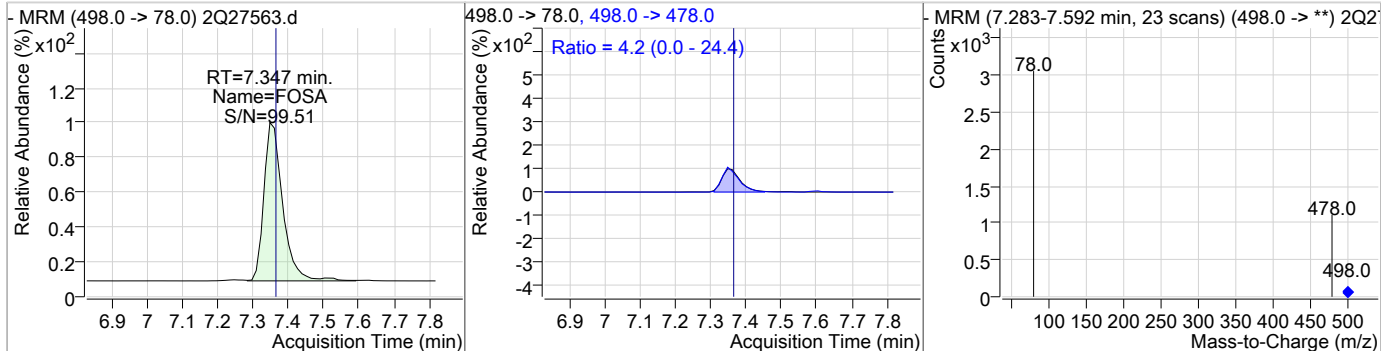
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 0.50  | 6.88 | 0.01     | 708   | 449.0 -> 99.0 | 47.6   | 15.3 | 75.3 |



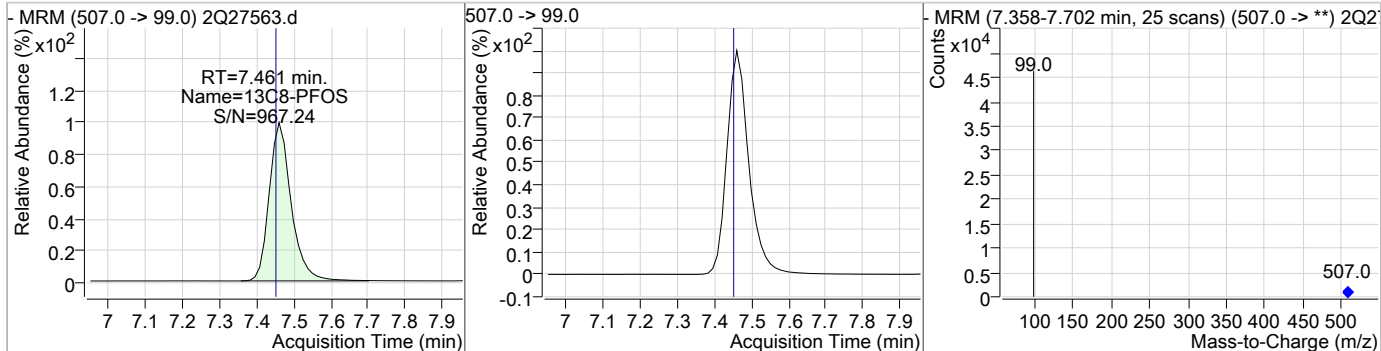
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 21.43 | 7.36 | 0.01     | 122034 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 0.59  | 7.35 | 0.00     | 1613  | 498.0 -> 478.0 | 4.2    | 0.0  | 24.4 |

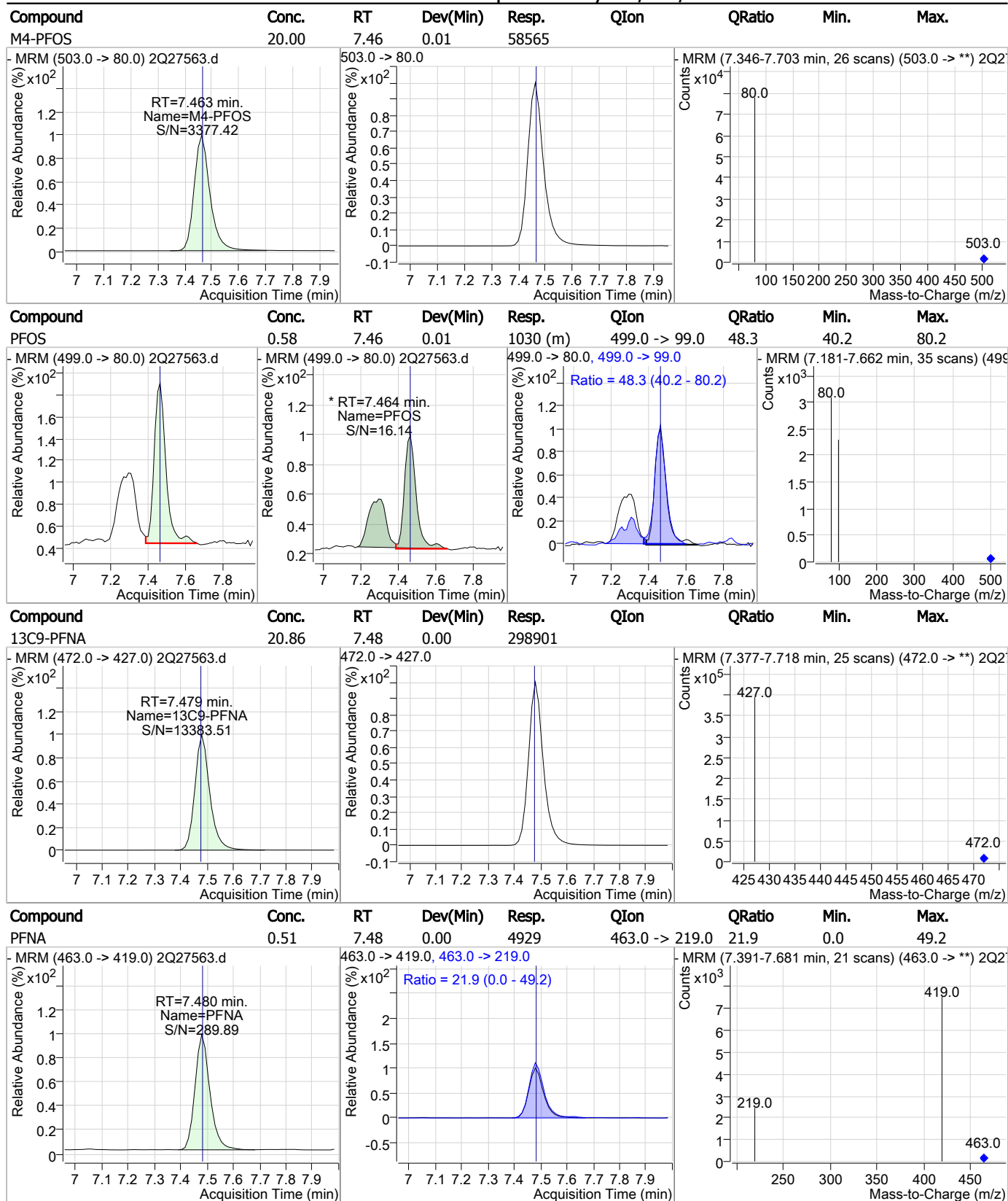


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.85 | 7.46 | 0.01     | 34489 |      |        |      |      |



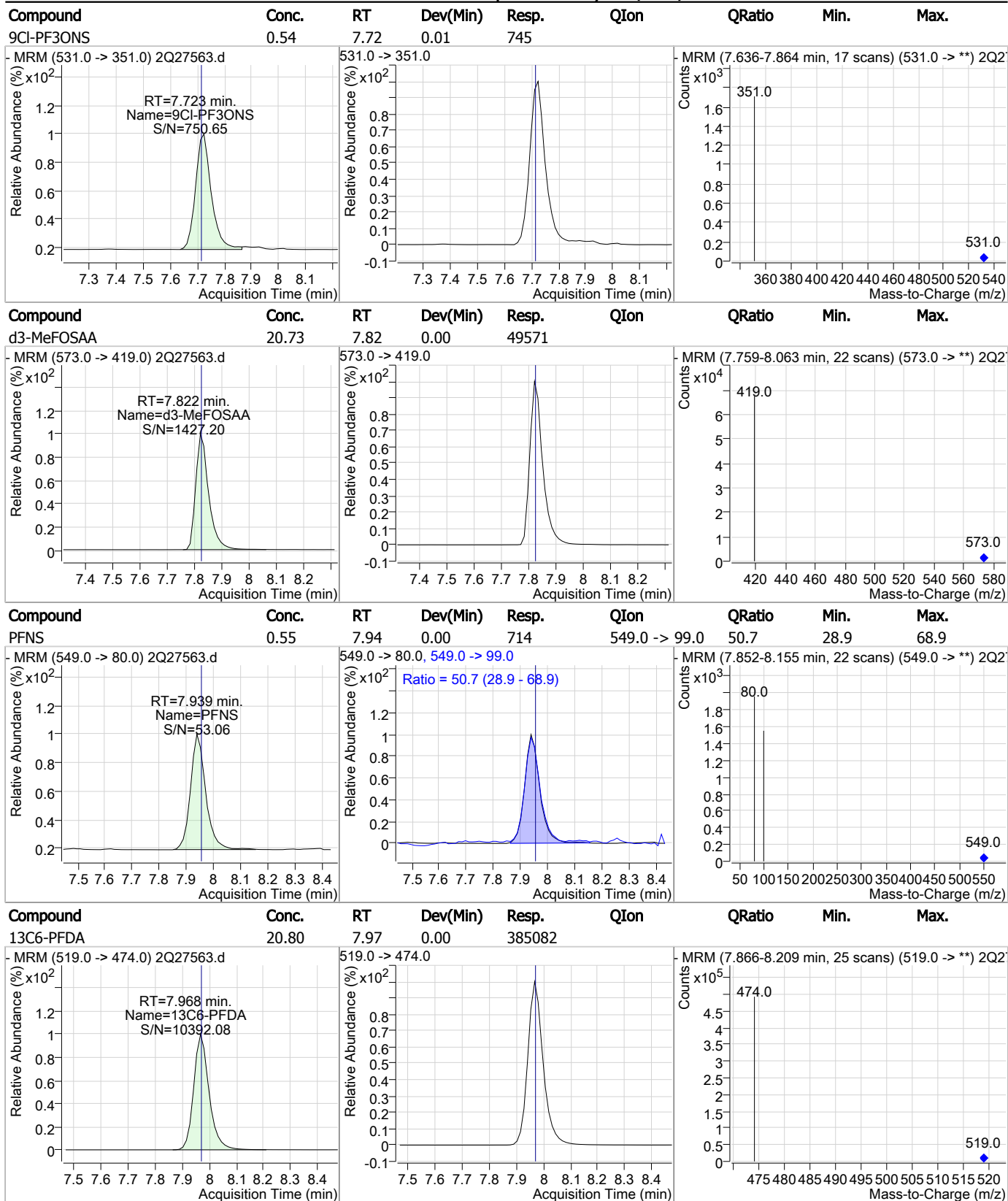
7.6.1  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.1  
7

### Perfluorinated Compounds by LC/MS/MS

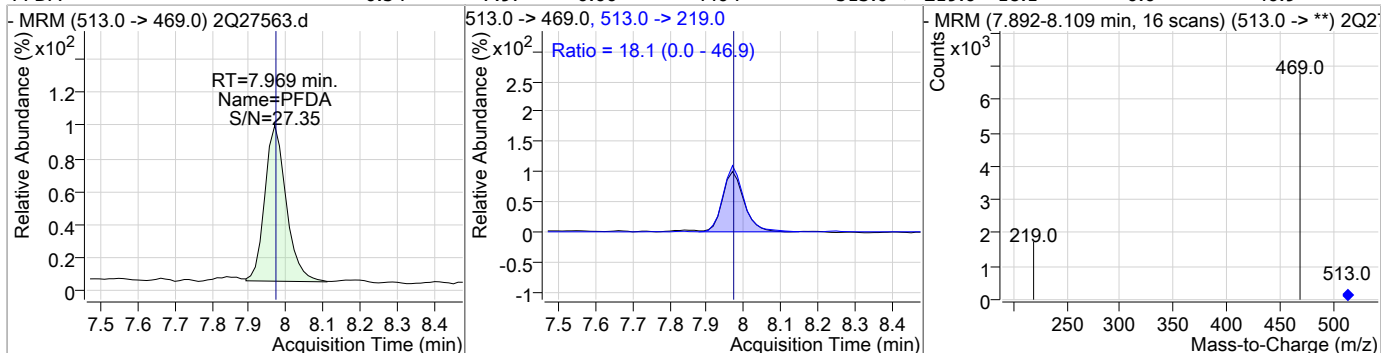


7.6.1  
7

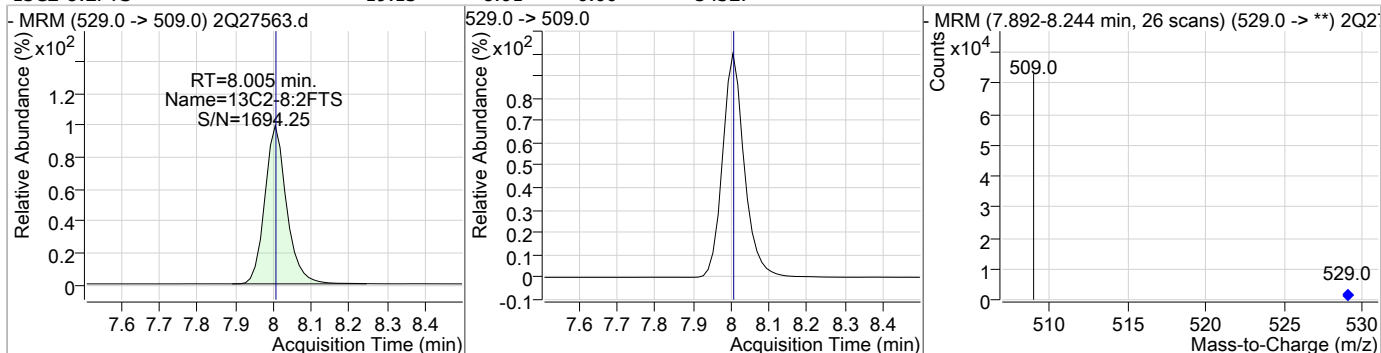


### Perfluorinated Compounds by LC/MS/MS

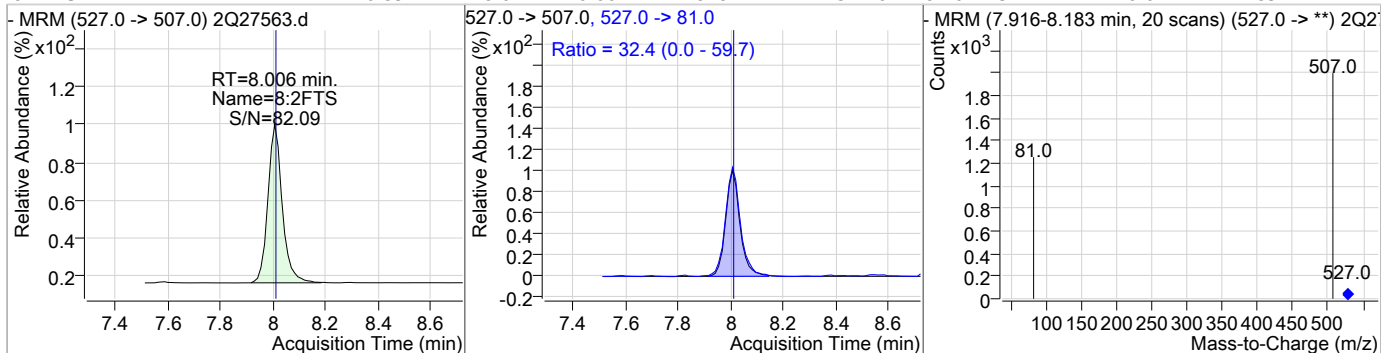
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFDA     | 0.54  | 7.97 | 0.00     | 4404  | 513.0 -> 219.0 | 18.1   | 0.0  | 46.9 |



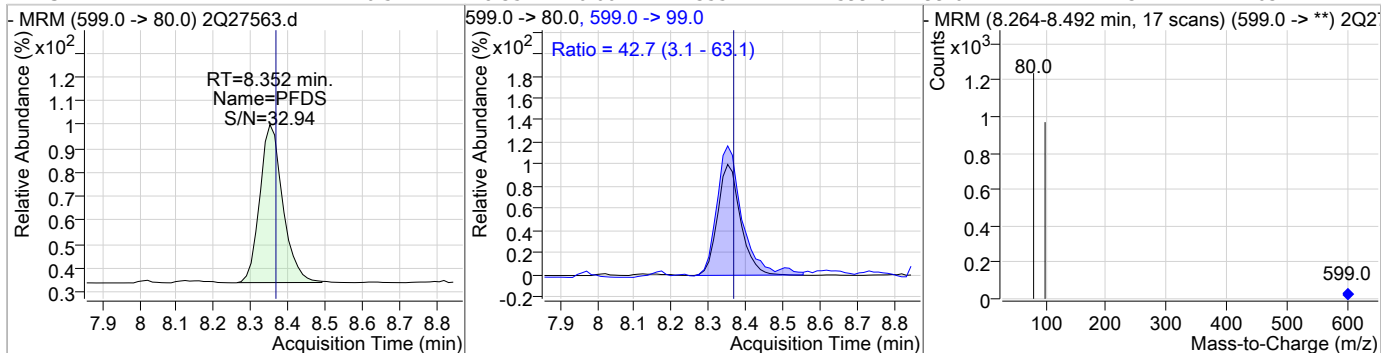
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 19.13 | 8.01 | 0.00     | 54327 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 0.59  | 8.01 | 0.00     | 848   | 527.0 -> 81.0 | 32.4   | 0.0  | 59.7 |

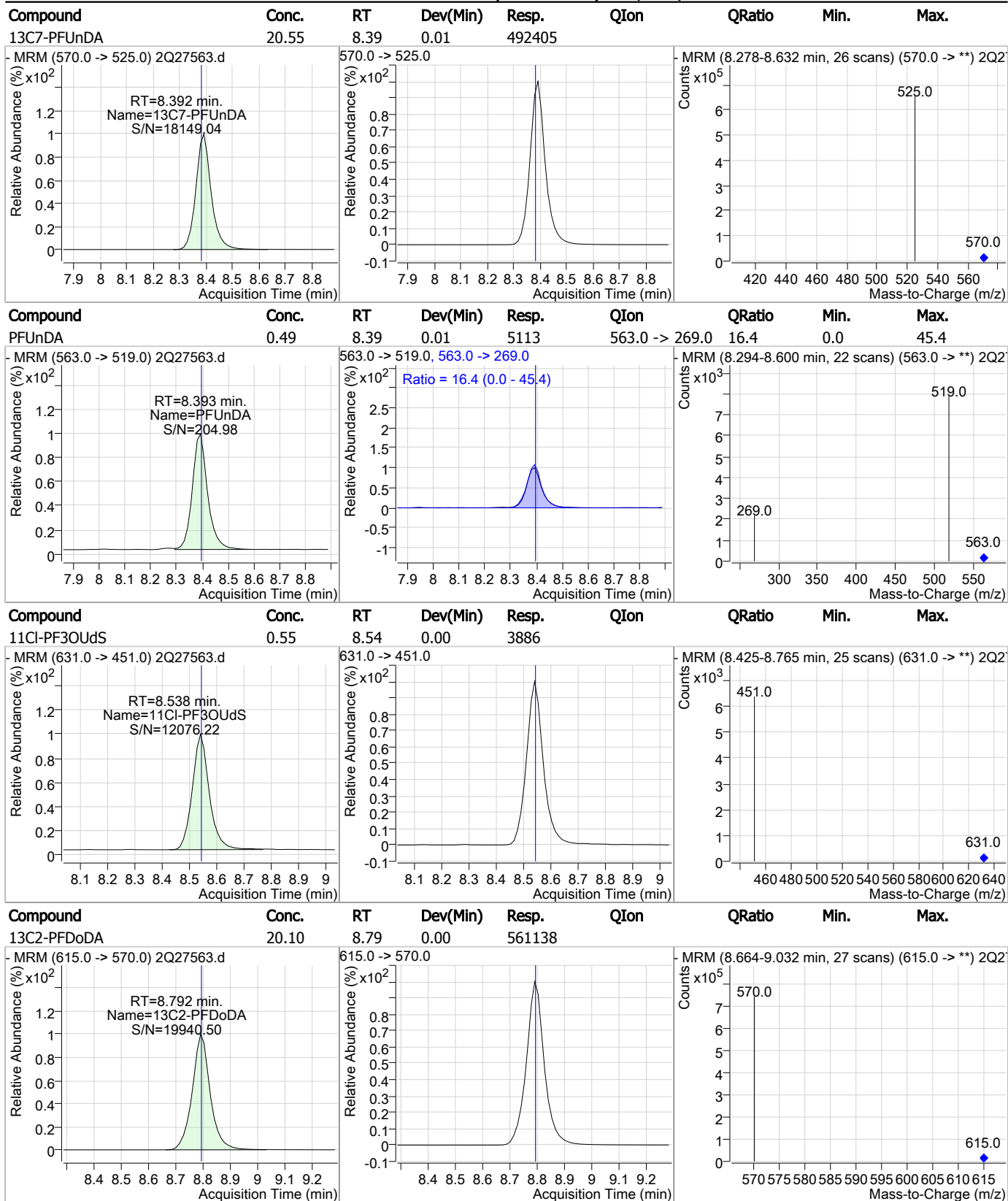


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 0.52  | 8.35 | 0.00     | 355   | 599.0 -> 99.0 | 42.7   | 3.1  | 63.1 |



7.6.1  
7

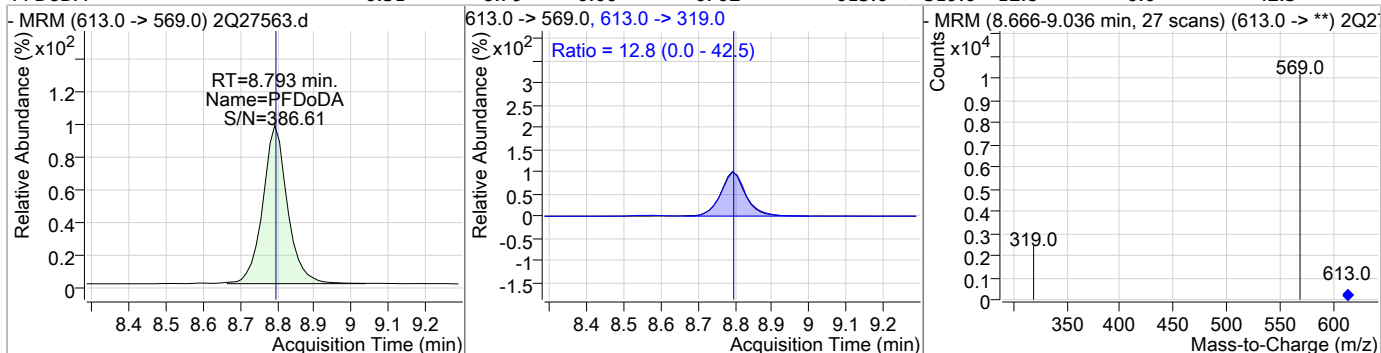
### Perfluorinated Compounds by LC/MS/MS



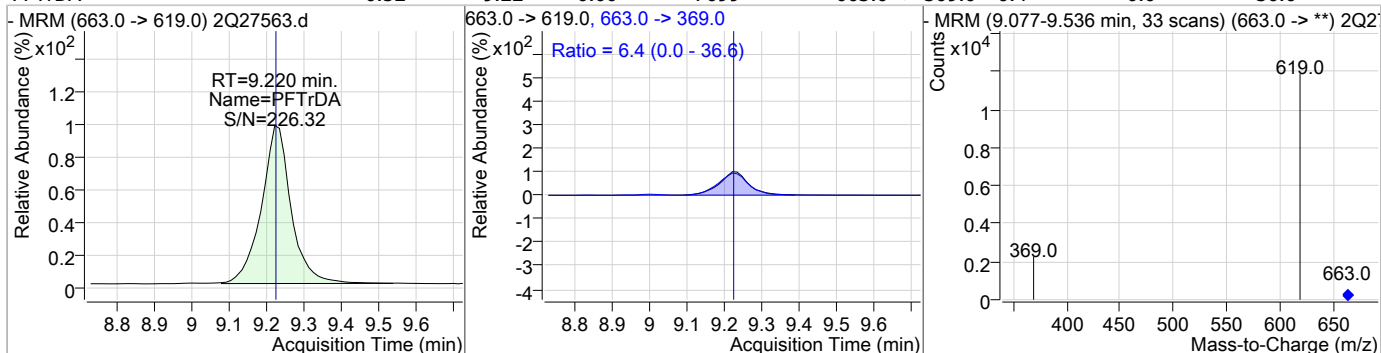
7.6.1  
7

### Perfluorinated Compounds by LC/MS/MS

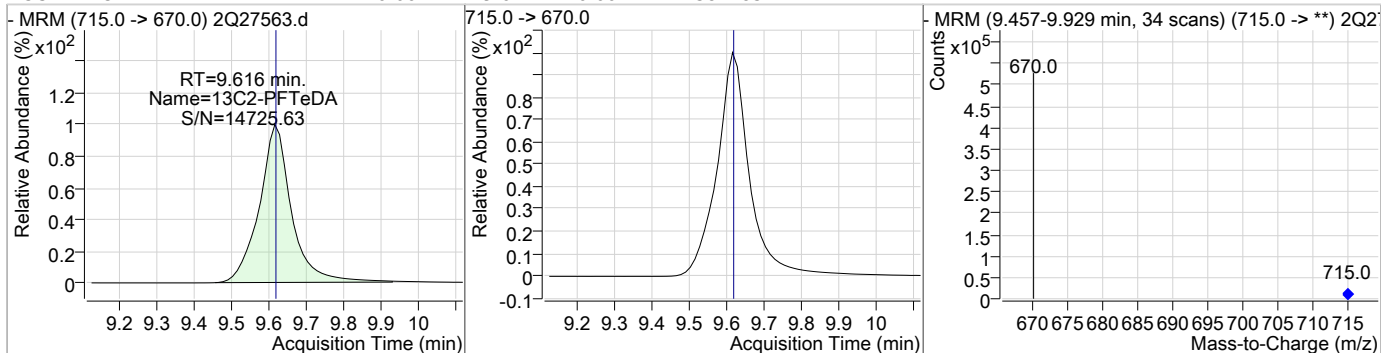
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFDODA   | 0.51  | 8.79 | 0.00     | 6702  | 613.0 -> 319.0 | 12.8   | 0.0  | 42.5 |



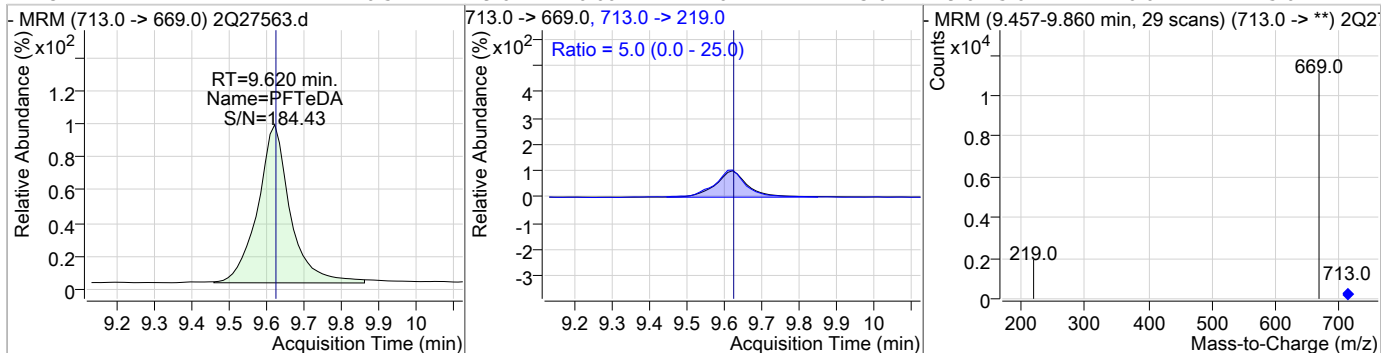
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTTrDA  | 0.52  | 9.22 | 0.00     | 7699  | 663.0 -> 369.0 | 6.4    | 0.0  | 36.6 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFTeDA | 20.06 | 9.62 | 0.00     | 387783 | 715.0 -> 670.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 0.54  | 9.62 | 0.00     | 7261  | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



7.6.1  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q439-IC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27563.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 10:44      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46           | Split peak |

7.6.1.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27564.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 11:00:17 AM  
 Sample Name : ic439-1.0  
 Vial : Vial 3  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 399343            | 20.00 µg/L  | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 57395             | 20.00 µg/L  | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 182263            | 20.00 µg/L  | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 150830            | 20.00 µg/L  | 0.025    |
| M5-PFHxA                           | 5.189                | 318.0 -> 273.0 | 215268            | 20.00 µg/L  | 0.013    |
| M4-PFHpA                           | 6.129                | 367.0 -> 322.0 | 306932            | 20.00 µg/L  | 0.011    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 319880            | 20.00 µg/L  | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 303399            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 393199            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 501659            | 20.00 µg/L  | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 574805            | 20.00 µg/L  | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 403380            | 20.00 µg/L  | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 124891            | 20.00 µg/L  | 0.011    |
| M3-PFBS                            | 4.130                | 302.0 -> 99.0  | 25749             | 20.00 µg/L  | 0.038    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 29051             | 20.00 µg/L  | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 34892             | 20.00 µg/L  | 0.012    |
| M2-4:2FTS                          | 5.097                | 329.0 -> 309.0 | 81749             | 20.00 µg/L  | 0.025    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 87102             | 20.00 µg/L  | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 55022             | 20.00 µg/L  | 0.001    |
| M3-MeFOSAA                         | 7.822                | 573.0 -> 419.0 | 49504             | 20.00 µg/L  | -0.001   |
| M3-HFPO-DA                         | 5.494                | 287.0 -> 169.0 | 216180            | 100.00 µg/L | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 5.097                | 329.0 -> 309.0 | 81678             | 19.67 µg/L  | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 98.4%  |             |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 87183             | 20.00 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 100.0% |             |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 55046             | 19.39 µg/L  | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 96.9%  |             |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 574512            | 20.58 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.9% |             |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 408236            | 21.12 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 105.6% |             |          |
| 13C3-PFBS                          | 4.130                | 302.0 -> 99.0  | 25593             | 21.14 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 105.7% |             |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 28993             | 21.29 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 106.4% |             |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 181265            | 20.91 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 104.6% |             |          |
| 13C4-PFHpA                         | 6.129                | 367.0 -> 322.0 | 306387            | 21.28 µg/L  | 0.011    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 106.4% |             |          |
| 13C5-PFHxA                         | 5.189                | 318.0 -> 273.0 | 215080            | 20.97 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 104.8% |             |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 150926            | 21.05 µg/L  | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 105.2% |             |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 393137            | 21.23 µg/L  | 0.000    |

7.6.2  
7

## Perfluorinated Compounds by LC/MS/MS

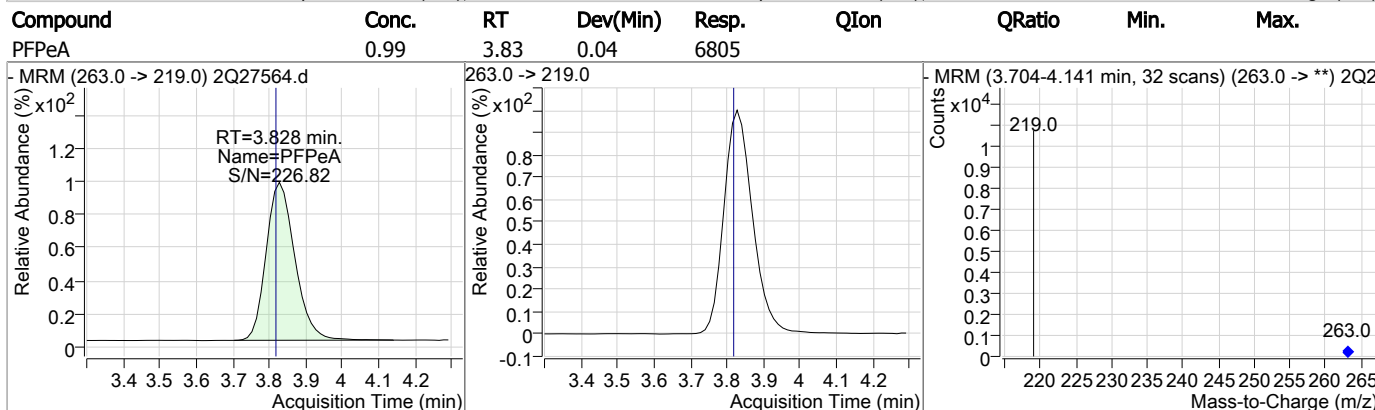
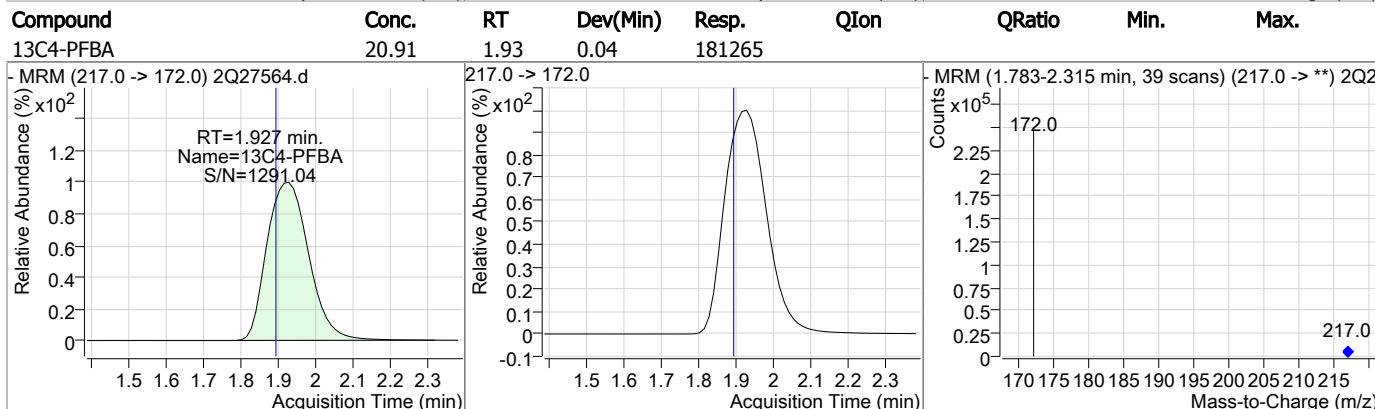
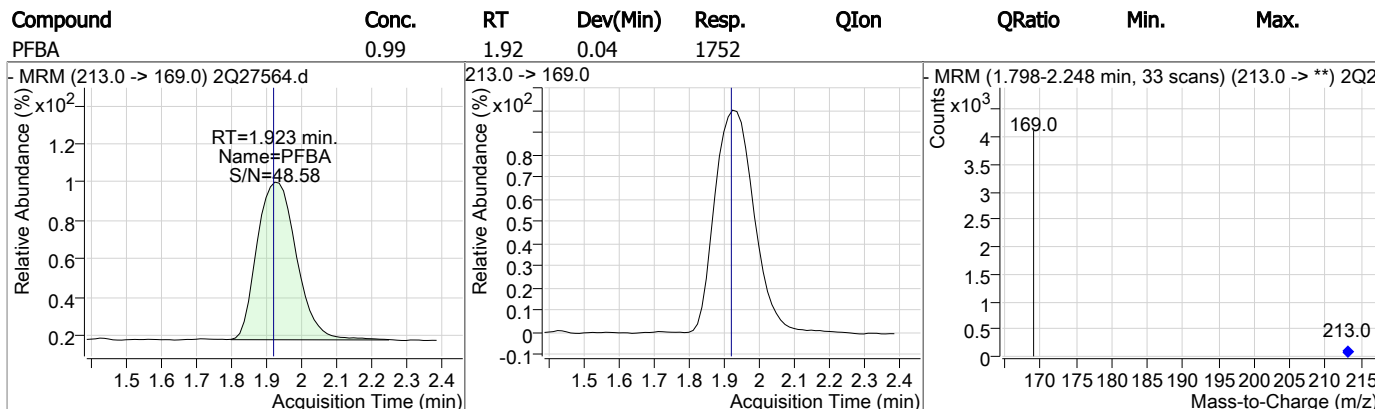
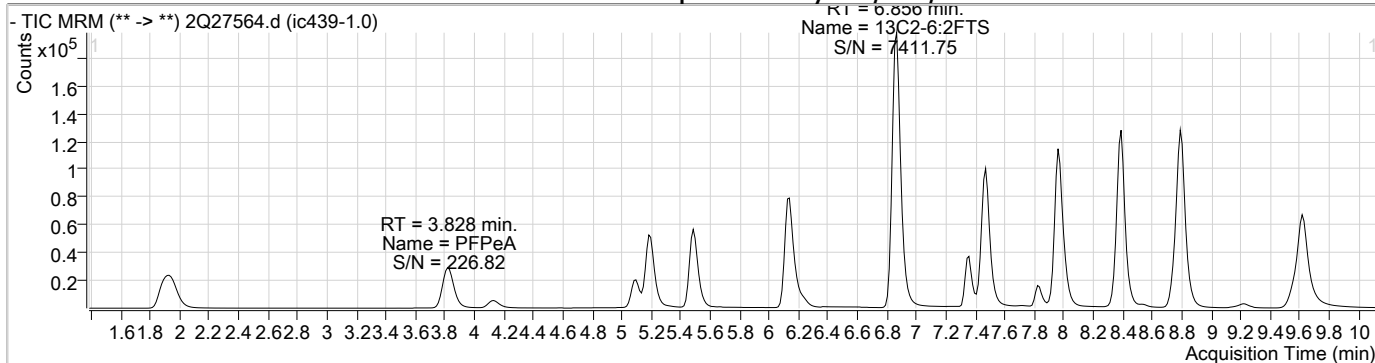
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.2% |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 501171 | 20.92 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.6% |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 124850 | 21.92 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.6% |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 319679 | 21.47 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.3% |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 34877  | 21.09 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.4% |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 303050 | 21.15 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.7% |          |
| d3-MeFOSAA            | 7.822                | 573.0 -> 419.0 | 49479  | 20.69 µg/L        | -0.001   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.5% |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 399779 | 20.00 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 57408  | 20.00 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.494                | 287.0 -> 169.0 | 216180 | 106.42 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 106.4% |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | 5.087 | 327.0 -> 307.0 | 2460  | 1.03 µg/L   | 96     |
| 6:2FTS           | 6.858 | 427.0 -> 407.0 | 2322  | 1.04 µg/L   | 98     |
| 8:2FTS           | 8.006 | 527.0 -> 507.0 | 1424  | 0.98 µg/L   | 92     |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 1122  | 1.02 µg/L   | 94     |
| FOSA             | 7.347 | 498.0 -> 78.0  | 2836  | 1.01 µg/L   | 99     |
| MeFOSAA          | 7.835 | 570.0 -> 419.0 | 1268  | 0.97 µg/L   | 96     |
| PFBA             | 1.923 | 213.0 -> 169.0 | 1752  | 0.99 µg/L   | 100    |
| PFBS             | 4.121 | 299.0 -> 80.0  | 2145  | 1.01 µg/L   | 99     |
| PFDA             | 7.969 | 513.0 -> 469.0 | 8236  | 0.99 µg/L   | 99     |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 12954 | 0.96 µg/L   | 99     |
| PFDS             | 8.352 | 599.0 -> 80.0  | 724   | 1.05 µg/L   | 94     |
| PFHpA            | 6.132 | 363.0 -> 319.0 | 13841 | 0.96 µg/L   | 100    |
| PFHpS            | 6.880 | 449.0 -> 80.0  | 1415  | 0.96 µg/L   | 97     |
| PFHxA            | 5.191 | 313.0 -> 269.0 | 3806  | 1.02 µg/L   | 98     |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 1643  | 0.95 µg/L   | m 99   |
| PFNA             | 7.480 | 463.0 -> 419.0 | 9433  | 0.96 µg/L   | 98     |
| PFNS             | 7.939 | 549.0 -> 80.0  | 1280  | 0.98 µg/L   | 98     |
| PFOA             | 6.875 | 413.0 -> 369.0 | 8447  | 0.97 µg/L   | 99     |
| PFOS             | 7.464 | 499.0 -> 80.0  | 1788  | 1.00 µg/L   | m 87   |
| PFPeA            | 3.828 | 263.0 -> 219.0 | 6805  | 0.99 µg/L   | 100    |
| PFPeS            | 5.321 | 349.0 -> 80.0  | 1433  | 0.98 µg/L   | 99     |
| PFTeDA           | 9.620 | 713.0 -> 669.0 | 13630 | 0.99 µg/L   | 99     |
| PFTTrDA          | 9.220 | 663.0 -> 619.0 | 14514 | 0.96 µg/L   | 100    |
| PFUnDA           | 8.393 | 563.0 -> 519.0 | 9818  | 0.92 µg/L   | 98     |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 7035  | 0.97 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 1485  | 1.05 µg/L   | 100    |
| ADONA            | 6.241 | 377.0 -> 251.0 | 15702 | 0.98 µg/L   | 100    |
| HFPO-DA          | 5.498 | 329.0 -> 169.0 | 13281 | 5.06 µg/L   | 99     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.2  
7

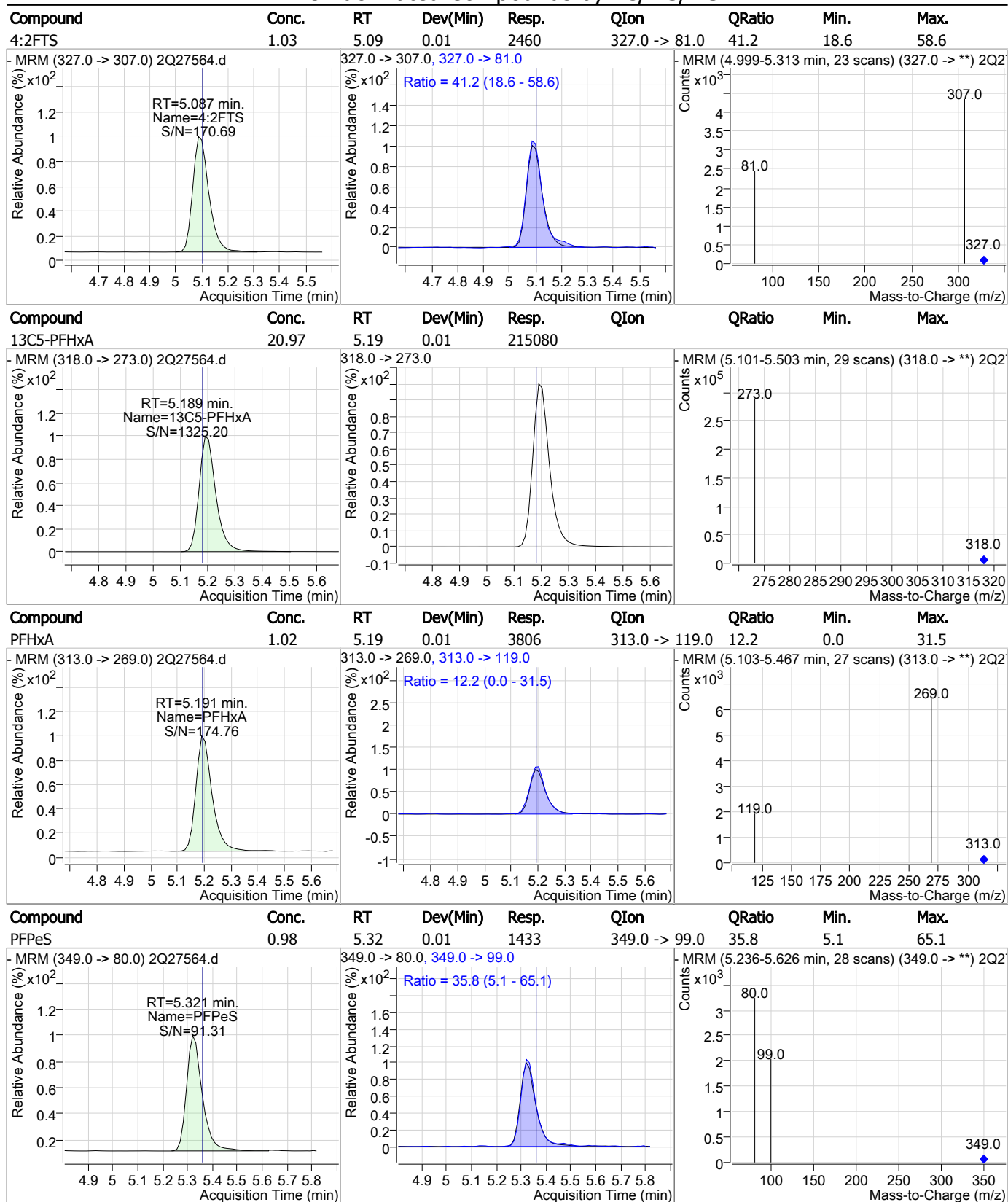
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 21.05 | 3.82 | 0.03     | 150926 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 21.14 | 4.13 | 0.04     | 25593  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 1.01  | 4.12 | 0.03     | 2145   | 299.0 -> 99.0 | 36.0   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 19.67 | 5.10 | 0.03     | 81678  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.2  
7

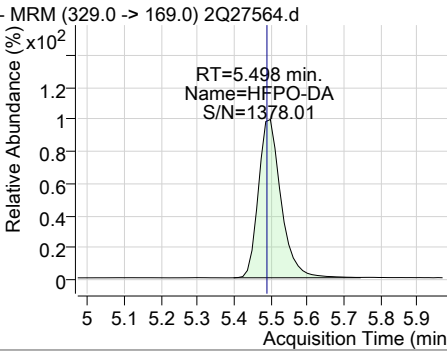
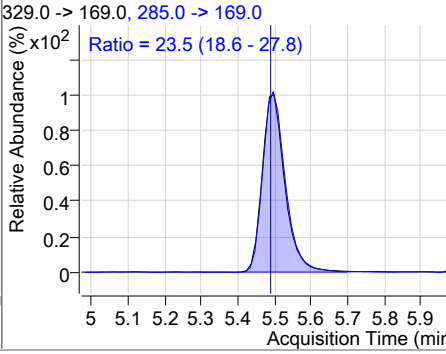
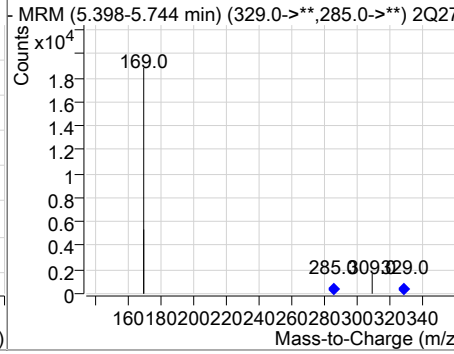
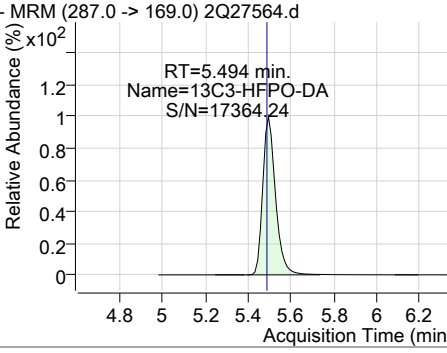
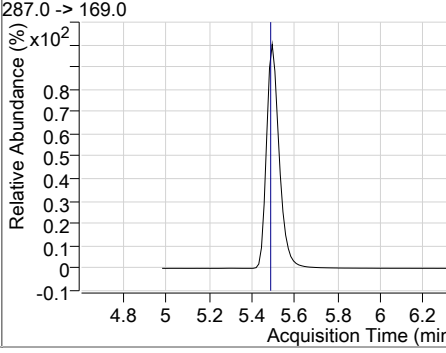
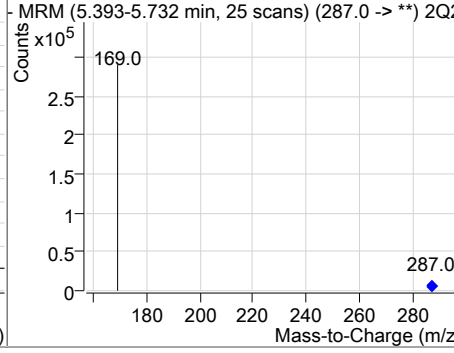
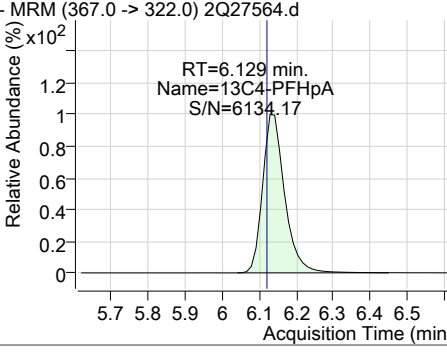
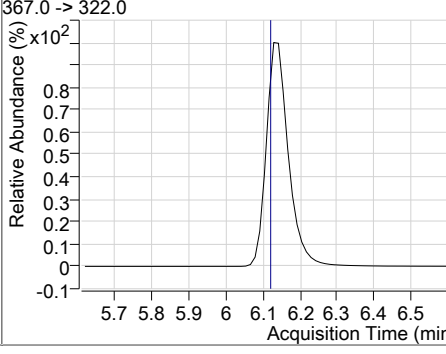
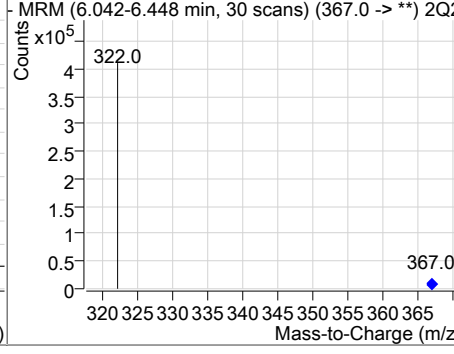
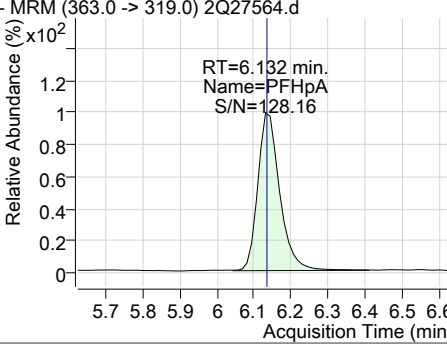
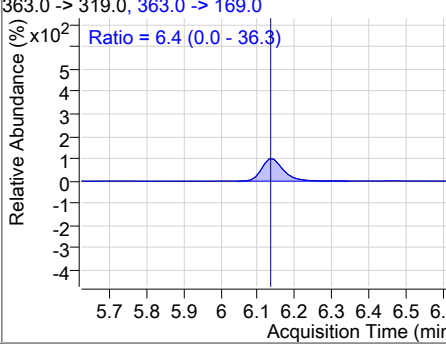
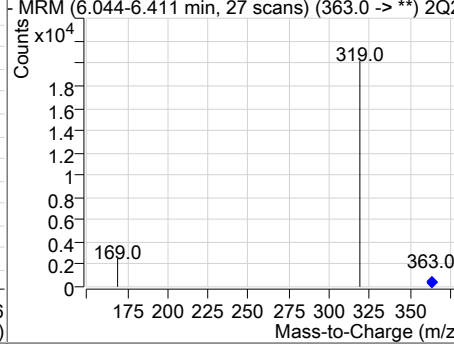


### Perfluorinated Compounds by LC/MS/MS



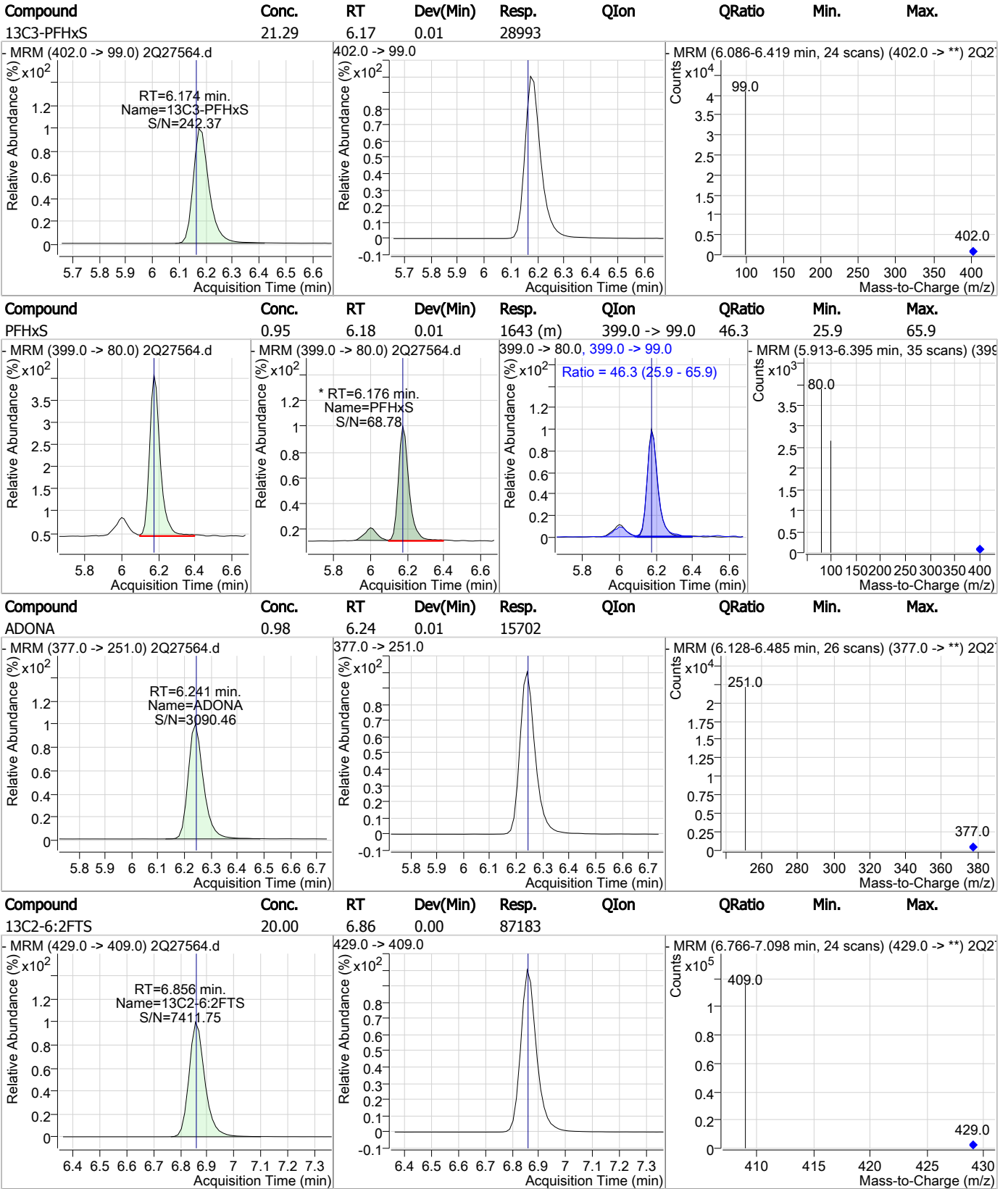
7.6.2  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc.  | RT   | Dev(Min)  | Resp.  | QIon           | QRatio   | Min. | Max. |
|--|--------|------|---|--------|----------------|--|------|------|
| HFPO-DA  | 5.06   | 5.50 | 0.03  | 13281  | 285.0 -> 169.0 | 23.5   | 18.6 | 27.8 |
|    |        |      |    |        |                |    |      |      |
| 13C3-HFPO-DA   | 106.42 | 5.49 | 0.01  | 216180 |                |  |      |      |
|    |        |      |    |        |                |    |      |      |
| 13C4-PFHpA   | 21.28  | 6.13 | 0.01  | 306387 |                |  |      |      |
|  |        |      |  |        |                |  |      |      |
| PFHpA  | 0.96   | 6.13 | 0.01  | 13841  | 363.0 -> 169.0 | 6.4  | 0.0  | 36.3 |
|  |        |      |  |        |                |  |      |      |

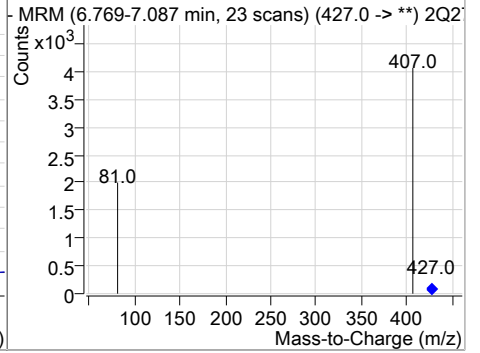
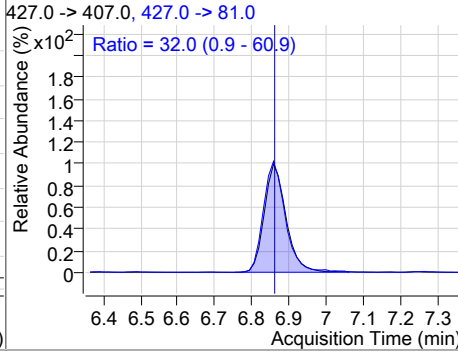
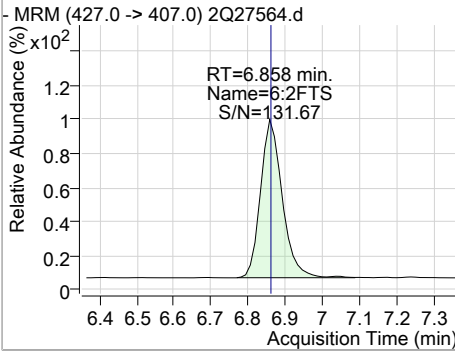
7.6.2  
7

### Perfluorinated Compounds by LC/MS/MS

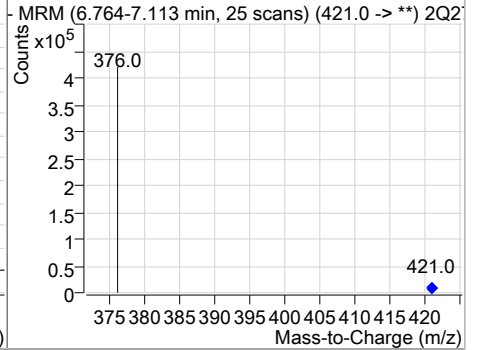
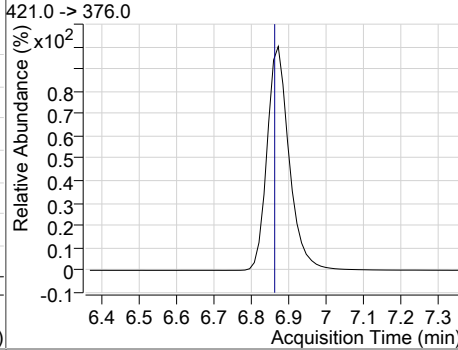
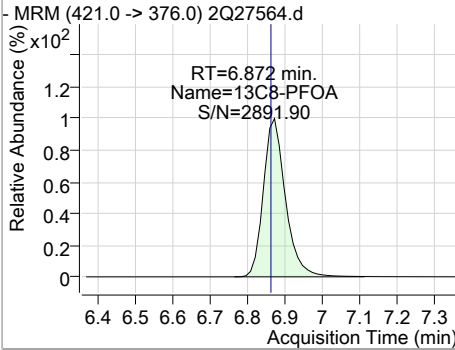


### Perfluorinated Compounds by LC/MS/MS

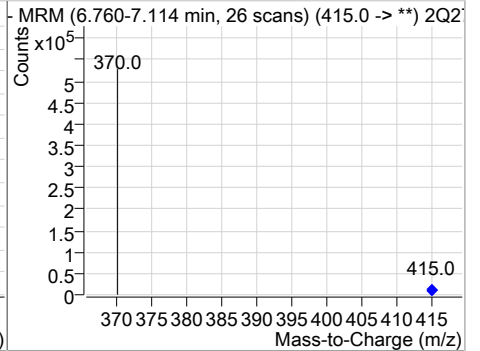
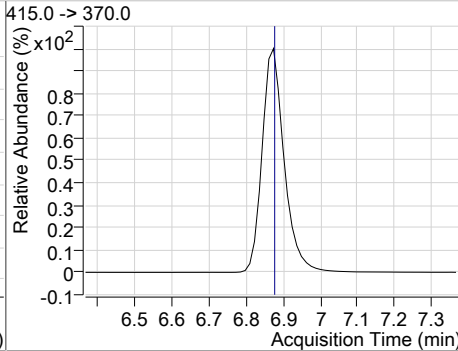
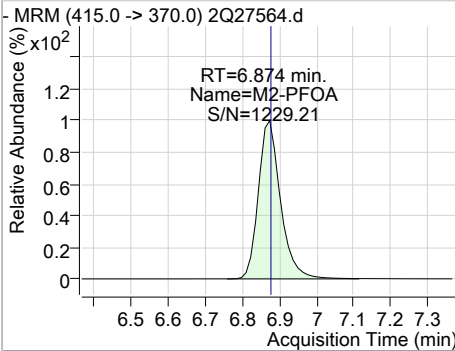
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 1.04  | 6.86 | 0.00     | 2322  | 427.0 -> 81.0 | 32.0   | 0.9  | 60.9 |



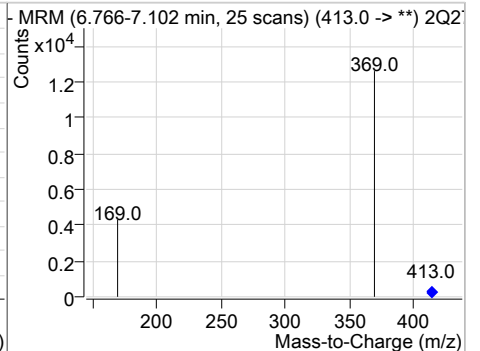
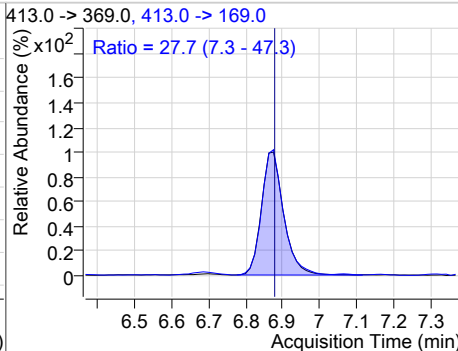
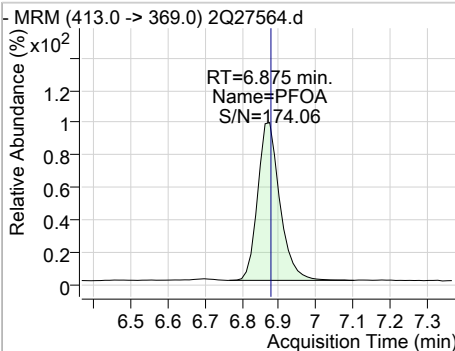
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 21.47 | 6.87 | 0.01     | 319679 |      |        |      |      |



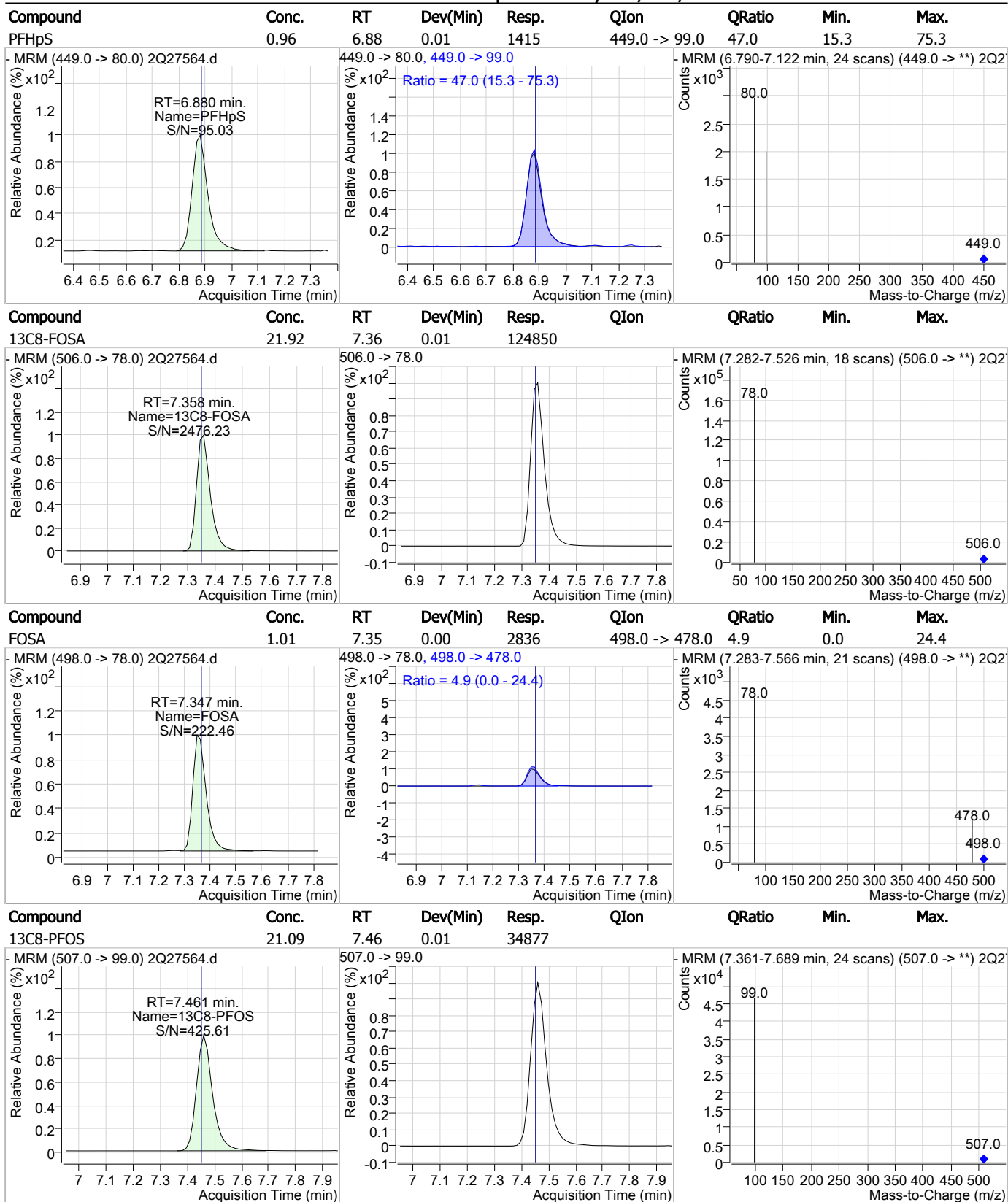
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.87 | 0.01     | 399779 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 0.97  | 6.88 | 0.01     | 8447  | 413.0 -> 169.0 | 27.7   | 7.3  | 47.3 |



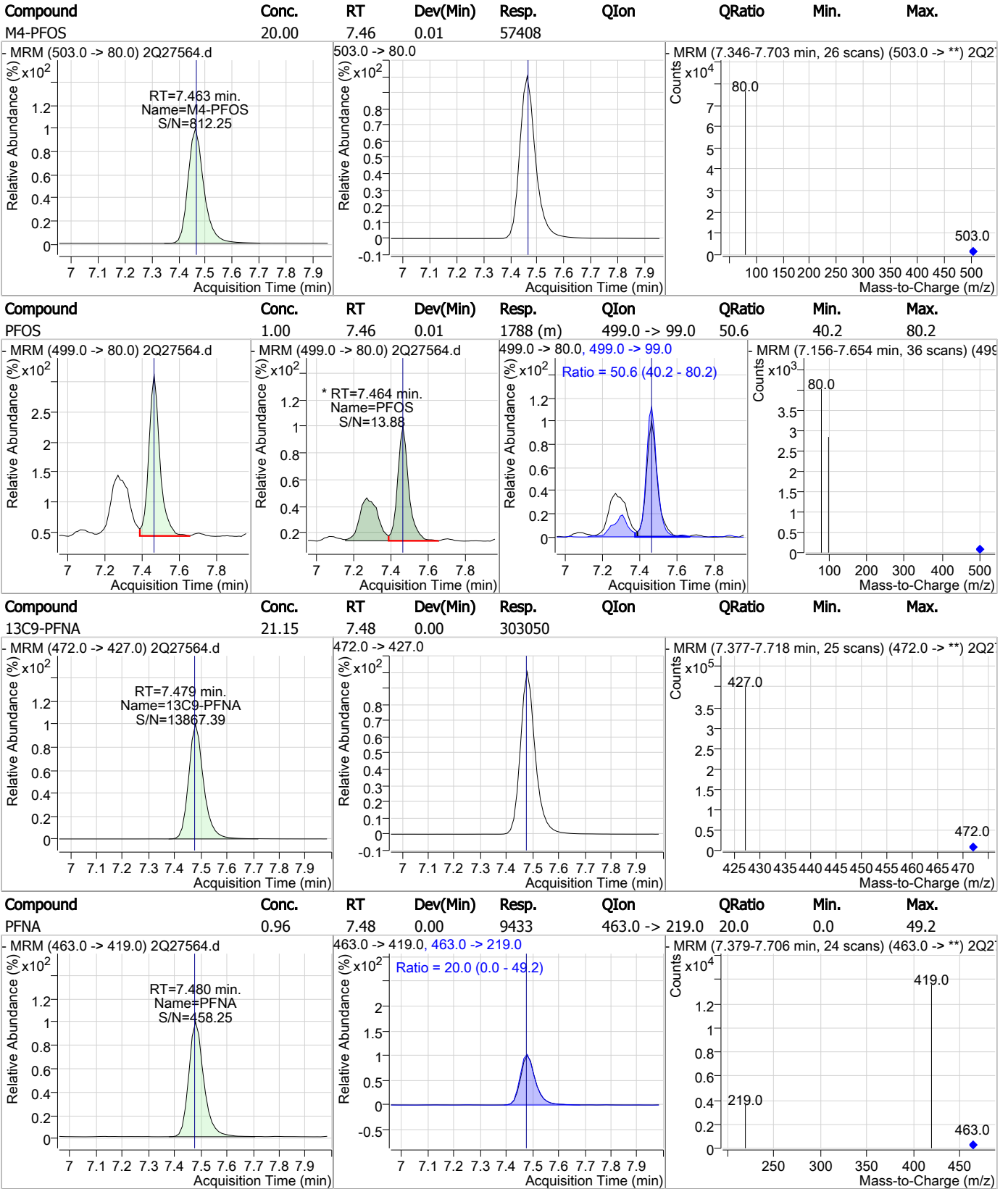
### Perfluorinated Compounds by LC/MS/MS



7.6.2

7

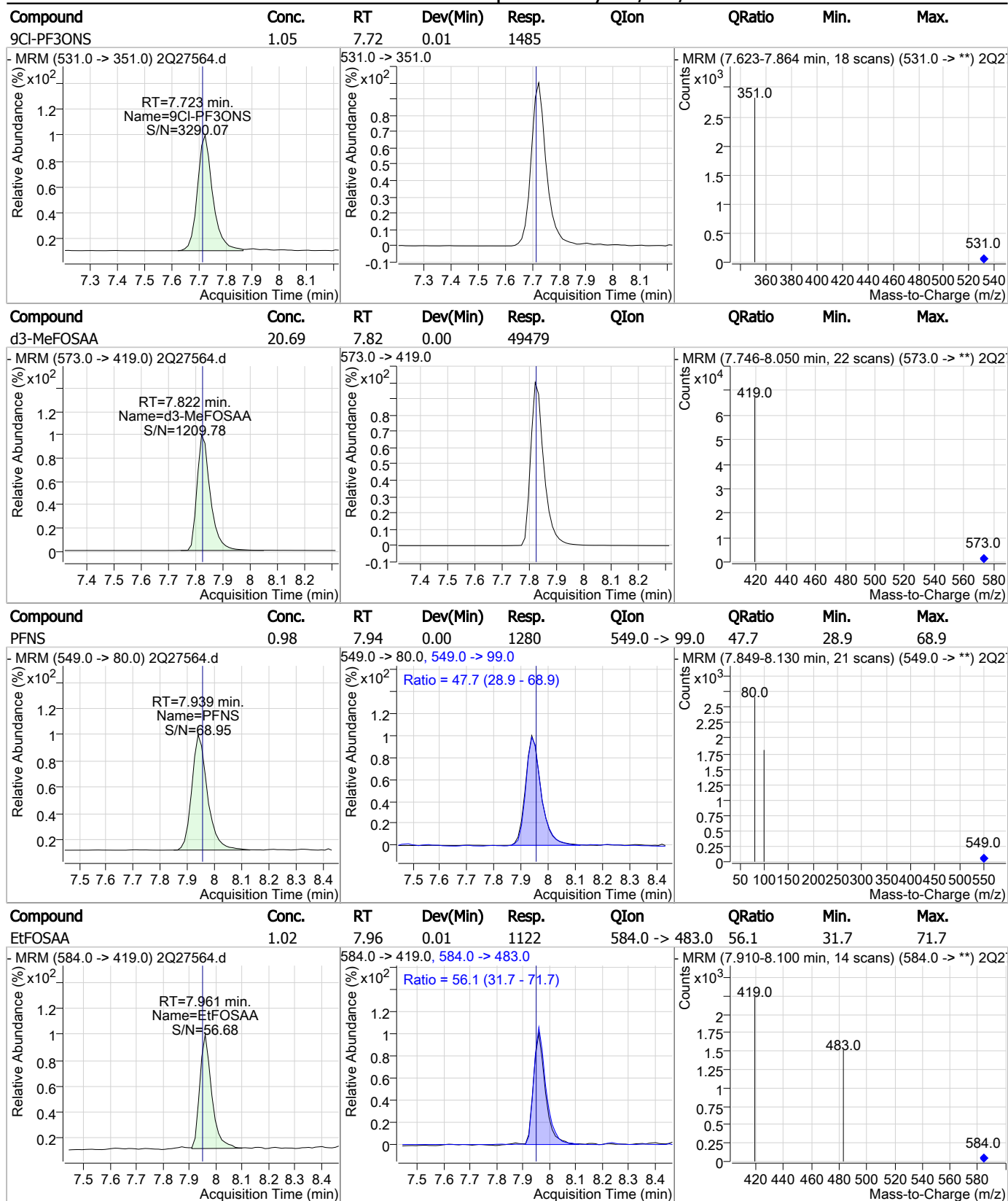
### Perfluorinated Compounds by LC/MS/MS



7.6.2

7

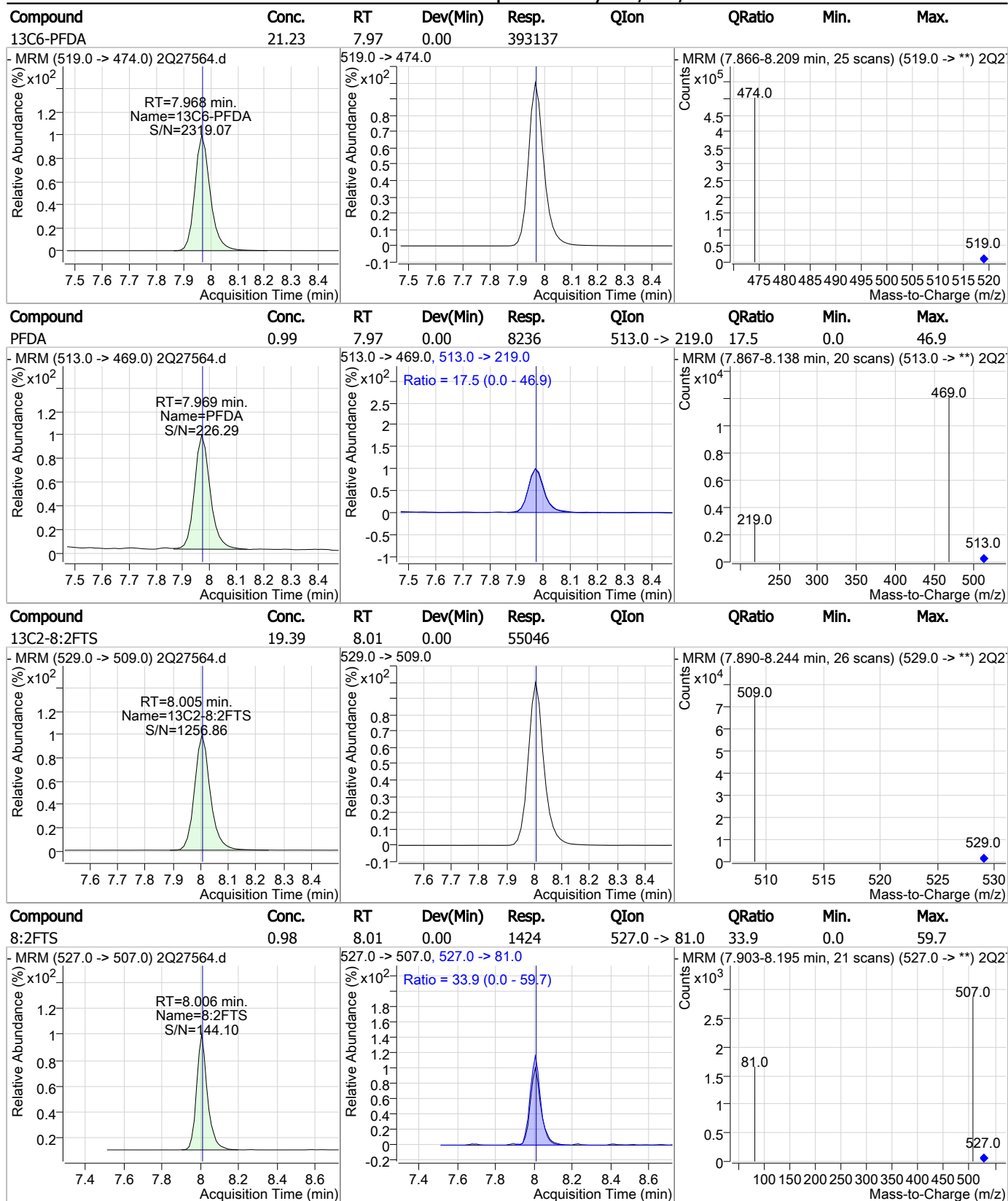
### Perfluorinated Compounds by LC/MS/MS



7.6.2

7

### Perfluorinated Compounds by LC/MS/MS

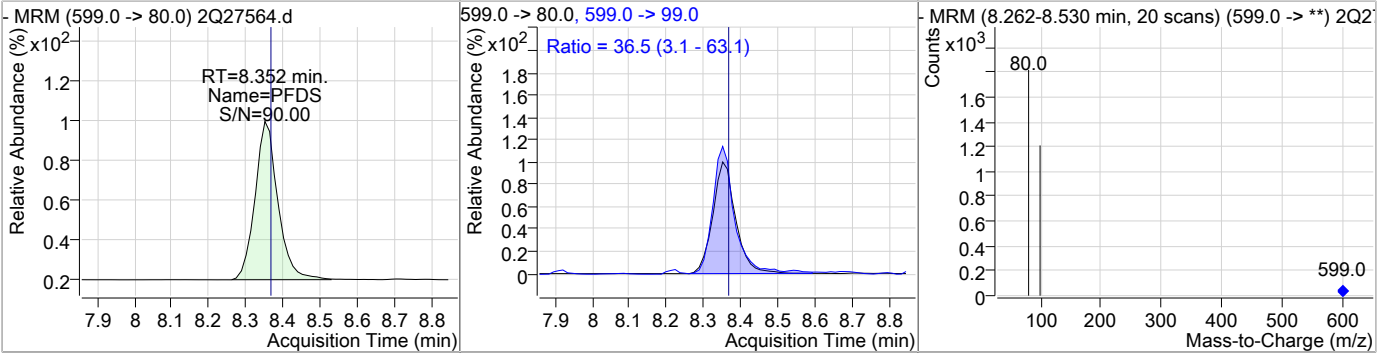


7.6.2  
7

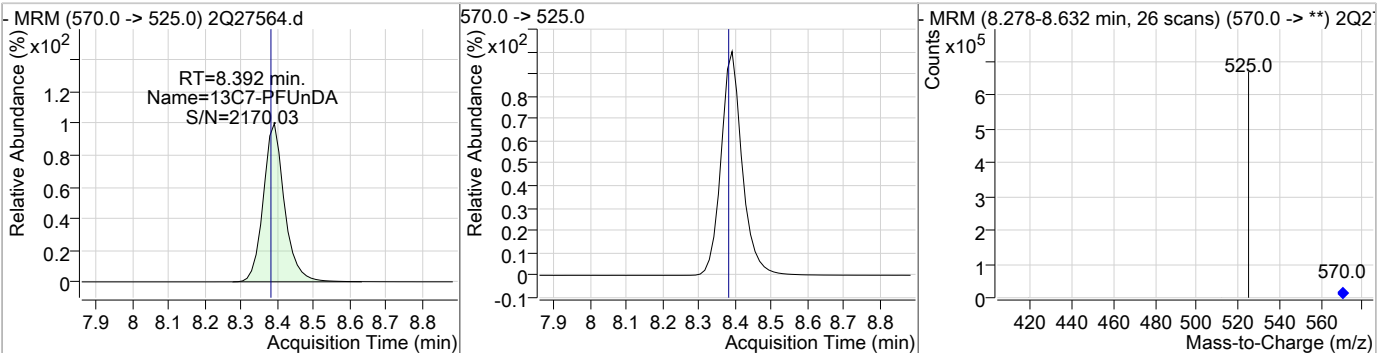


### Perfluorinated Compounds by LC/MS/MS

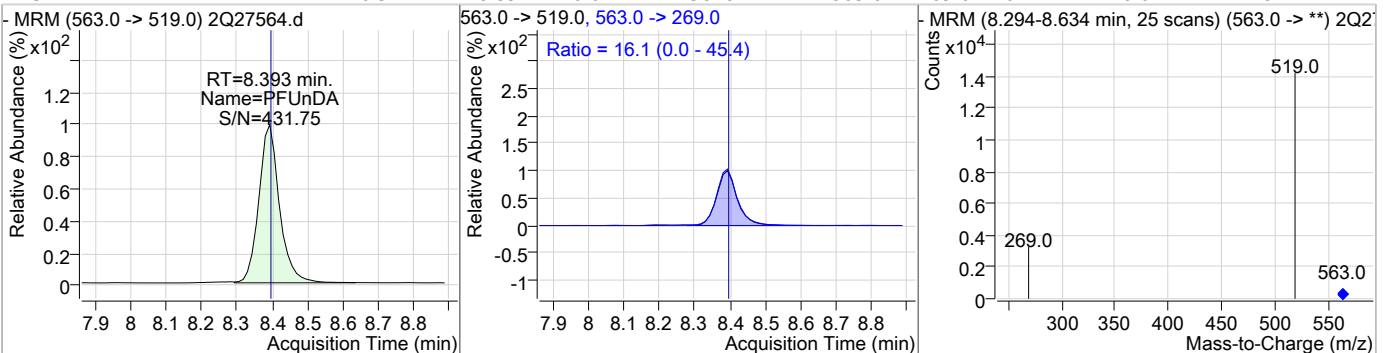
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 1.05  | 8.35 | 0.00     | 724   | 599.0 -> 99.0 | 36.5   | 3.1  | 63.1 |



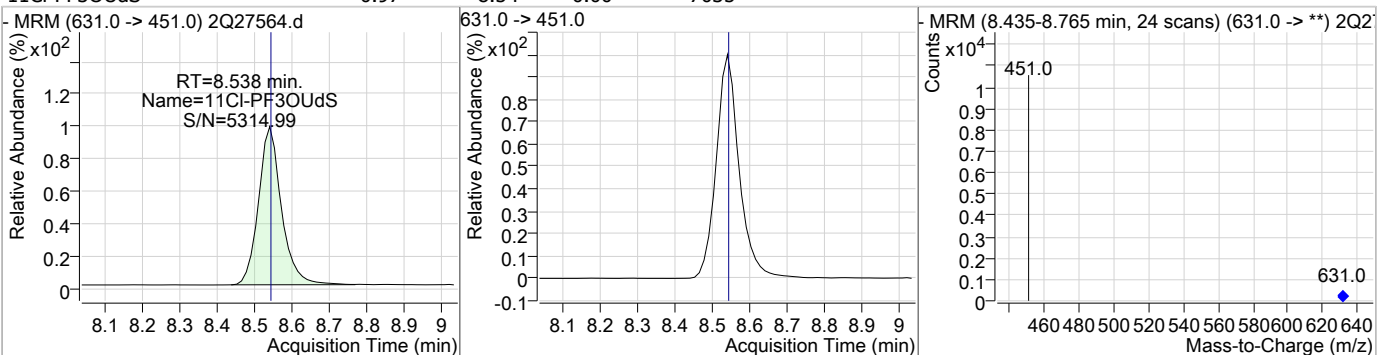
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 20.92 | 8.39 | 0.01     | 501171 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFUnDA   | 0.92  | 8.39 | 0.01     | 9818  | 563.0 -> 269.0 | 16.1   | 0.0  | 45.4 |



| Compound     | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|-------|------|--------|------|------|
| 11Cl-PF3OUdS | 0.97  | 8.54 | 0.00     | 7035  |      |        |      |      |



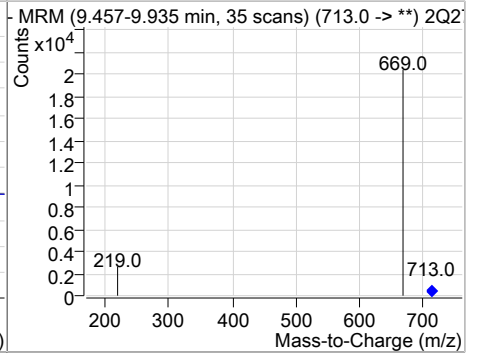
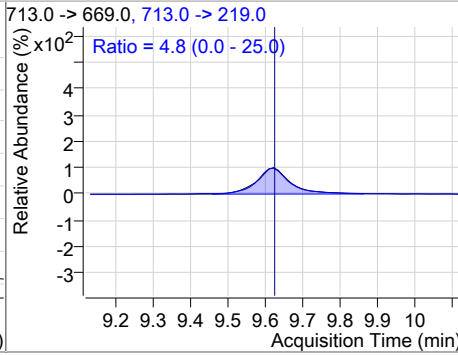
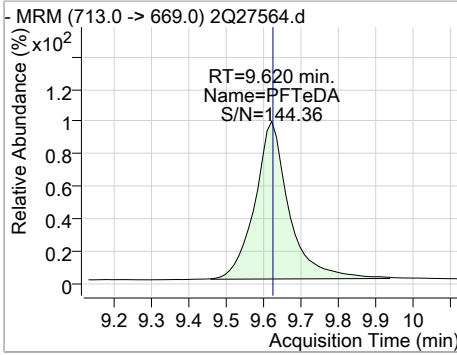
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFDoDA | 20.58 | 8.79 | 0.00     | 574512 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDoDA      | 0.96  | 8.79 | 0.00     | 12954  | 613.0 -> 319.0 | 13.0   | 0.0  | 42.5 |
|             |       |      |          |        |                |        |      |      |
| PFTrDA      | 0.96  | 9.22 | 0.00     | 14514  | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|             |       |      |          |        |                |        |      |      |
| 13C2-PFTeDA | 21.12 | 9.62 | 0.00     | 408236 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |

7.6.2  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 0.99  | 9.62 | 0.00     | 13630 | 713.0 -> 219.0 | 4.8    | 0.0  | 25.0 |



7.6.2

7

# Manual Integration Approval Summary

**Sample Number:** S2Q439-IC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27564.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 11:00      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46           | Split peak |

7.6.2.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27565.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 11:16:00 AM  
 Sample Name : ic439-2.0  
 Vial : Vial 4  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 403289 | 20.00 µg/L        | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 58393  | 20.00 µg/L        | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 180174 | 20.00 µg/L        | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 148432 | 20.00 µg/L        | 0.025    |
| M5-PFHxA                           | 5.189                | 318.0 -> 273.0 | 213643 | 20.00 µg/L        | 0.013    |
| M4-PFHpA                           | 6.129                | 367.0 -> 322.0 | 299358 | 20.00 µg/L        | 0.011    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 314718 | 20.00 µg/L        | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 300843 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 393043 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 503376 | 20.00 µg/L        | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 579382 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 410649 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 122580 | 20.00 µg/L        | 0.011    |
| M3-PFBS                            | 4.118                | 302.0 -> 99.0  | 25061  | 20.00 µg/L        | 0.025    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 28449  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 34315  | 20.00 µg/L        | 0.012    |
| M2-4:2FTS                          | 5.084                | 329.0 -> 309.0 | 82103  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 86828  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 54616  | 20.00 µg/L        | 0.001    |
| M3-MeFOSAA                         | 7.822                | 573.0 -> 419.0 | 49418  | 20.00 µg/L        | -0.001   |
| M3-HFPO-DA                         | 5.494                | 287.0 -> 169.0 | 217111 | 100.00 µg/L       | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 5.084                | 329.0 -> 309.0 | 81766  | 19.70 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.5%  |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 86818  | 19.92 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.6%  |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 54597  | 19.23 µg/L        | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.1%  |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 580103 | 20.78 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.9% |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 402412 | 20.82 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.1% |          |
| 13C3-PFBS                          | 4.118                | 302.0 -> 99.0  | 24985  | 20.63 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 28563  | 20.97 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 179239 | 20.68 µg/L        | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.4% |          |
| 13C4-PFHpA                         | 6.129                | 367.0 -> 322.0 | 300954 | 20.90 µg/L        | 0.011    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.5% |          |
| 13C5-PFHxA                         | 5.189                | 318.0 -> 273.0 | 213553 | 20.82 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.1% |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 148221 | 20.67 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.3% |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 392896 | 21.22 µg/L        | 0.000    |

7.6.3  
7

## Perfluorinated Compounds by LC/MS/MS

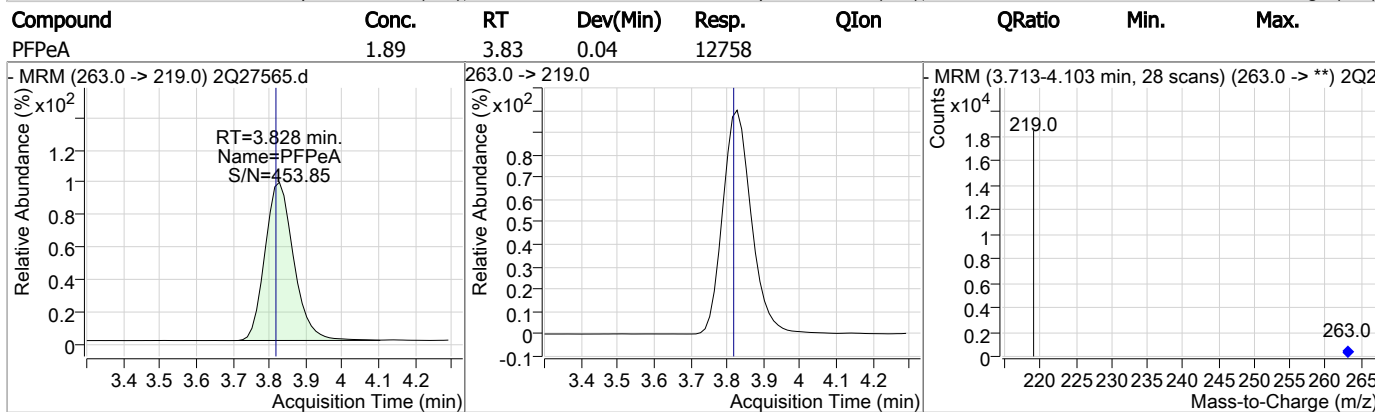
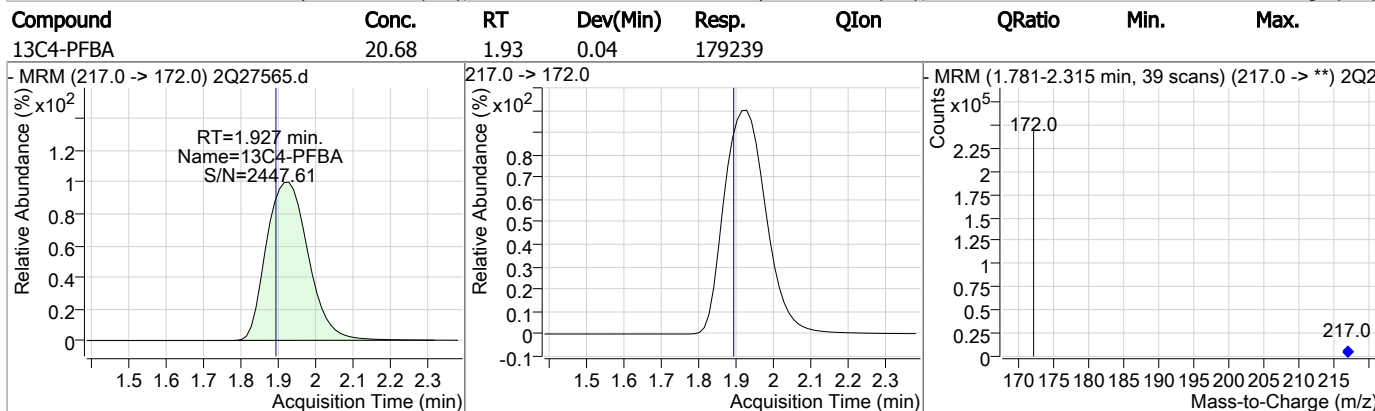
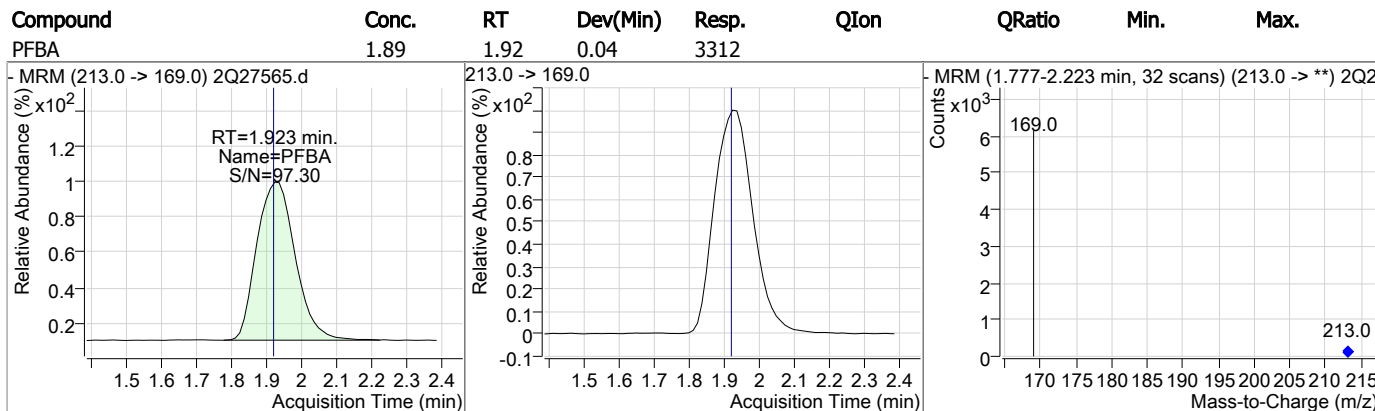
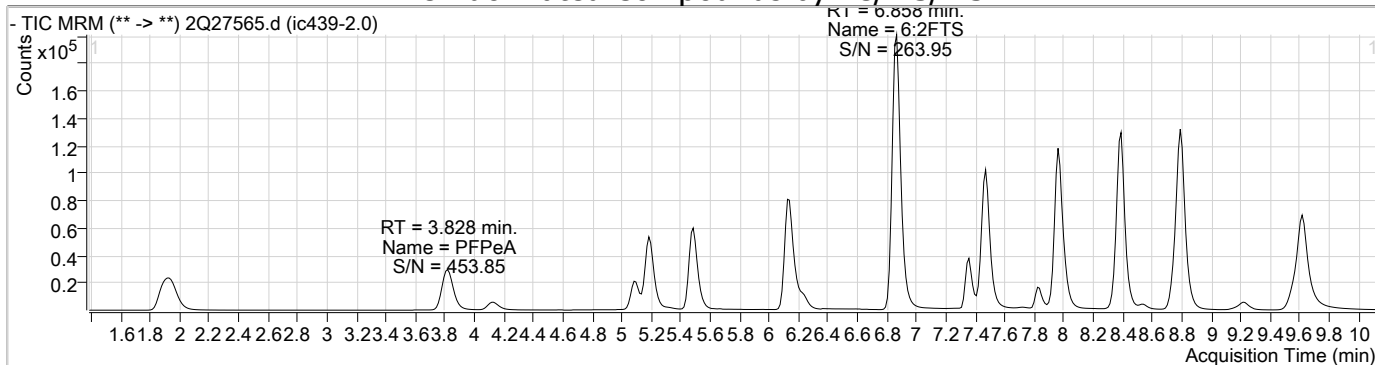
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.1% |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 503256 | 21.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.0% |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 122583 | 21.52 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.6% |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 314285 | 21.10 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.5% |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 34241  | 20.70 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.5% |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 300631 | 20.98 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |          |
| d3-MeFOSAA            | 7.822                | 573.0 -> 419.0 | 49360  | 20.64 µg/L        | -0.001   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 403494 | 19.99 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 58424  | 20.01 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.494                | 287.0 -> 169.0 | 217111 | 106.88 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 106.9% |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | 5.087 | 327.0 -> 307.0 | 4705  | 1.97 µg/L   | 97     |
| 6:2FTS           | 6.858 | 427.0 -> 407.0 | 4413  | 1.99 µg/L   | 99     |
| 8:2FTS           | 8.006 | 527.0 -> 507.0 | 3151  | 2.18 µg/L   | 100    |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 2271  | 2.07 µg/L   | 94     |
| FOSA             | 7.360 | 498.0 -> 78.0  | 5355  | 1.94 µg/L   | 99     |
| MeFOSAA          | 7.835 | 570.0 -> 419.0 | 2710  | 2.08 µg/L   | 96     |
| PFBA             | 1.923 | 213.0 -> 169.0 | 3312  | 1.89 µg/L   | 100    |
| PFBS             | 4.121 | 299.0 -> 80.0  | 4017  | 1.94 µg/L   | 98     |
| PFDA             | 7.969 | 513.0 -> 469.0 | 15456 | 1.86 µg/L   | 100    |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 25274 | 1.86 µg/L   | 99     |
| PFDS             | 8.352 | 599.0 -> 80.0  | 1375  | 2.03 µg/L   | 100    |
| PFHpA            | 6.132 | 363.0 -> 319.0 | 26146 | 1.86 µg/L   | 99     |
| PFHpS            | 6.880 | 449.0 -> 80.0  | 2774  | 1.93 µg/L   | 97     |
| PFHxA            | 5.191 | 313.0 -> 269.0 | 6923  | 1.87 µg/L   | 100    |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 3263  | 1.93 µg/L   | m 95   |
| PFNA             | 7.480 | 463.0 -> 419.0 | 17269 | 1.77 µg/L   | 96     |
| PFNS             | 7.939 | 549.0 -> 80.0  | 2550  | 1.99 µg/L   | 96     |
| PFOA             | 6.875 | 413.0 -> 369.0 | 16196 | 1.88 µg/L   | 98     |
| PFOS             | 7.464 | 499.0 -> 80.0  | 3536  | 2.01 µg/L   | m 78   |
| PFPeA            | 3.828 | 263.0 -> 219.0 | 12758 | 1.89 µg/L   | 100    |
| PFPeS            | 5.321 | 349.0 -> 80.0  | 2753  | 1.94 µg/L   | 99     |
| PFTeDA           | 9.620 | 713.0 -> 669.0 | 25494 | 1.82 µg/L   | 100    |
| PFTrDA           | 9.220 | 663.0 -> 619.0 | 28288 | 1.83 µg/L   | 99     |
| PFUnDA           | 8.393 | 563.0 -> 519.0 | 19710 | 1.85 µg/L   | 99     |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 13951 | 1.90 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 2739  | 1.93 µg/L   | 100    |
| ADONA            | 6.241 | 377.0 -> 251.0 | 30386 | 1.92 µg/L   | 100    |
| HFPO-DA          | 5.486 | 329.0 -> 169.0 | 25619 | 9.73 µg/L   | 98     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.3  
7



### Perfluorinated Compounds by LC/MS/MS

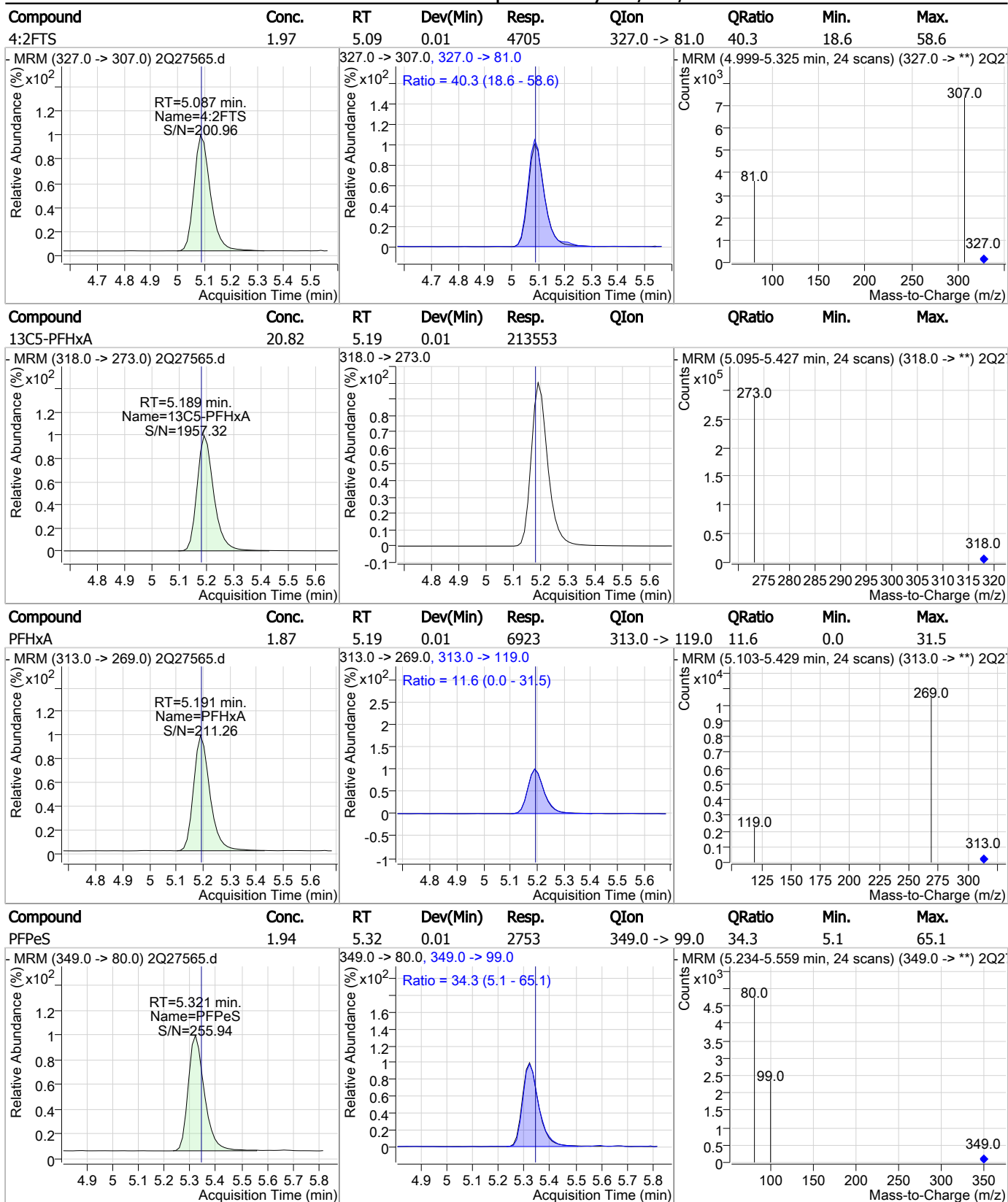
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 20.67 | 3.82 | 0.03     | 148221 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 20.63 | 4.12 | 0.03     | 24985  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 1.94  | 4.12 | 0.03     | 4017   | 299.0 -> 99.0 | 34.7   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 19.70 | 5.08 | 0.01     | 81766  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.3

7



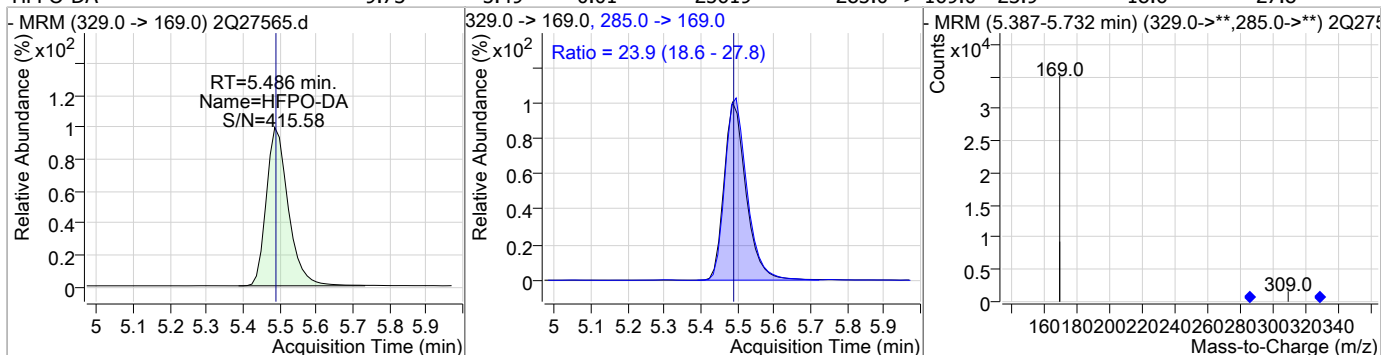
### Perfluorinated Compounds by LC/MS/MS



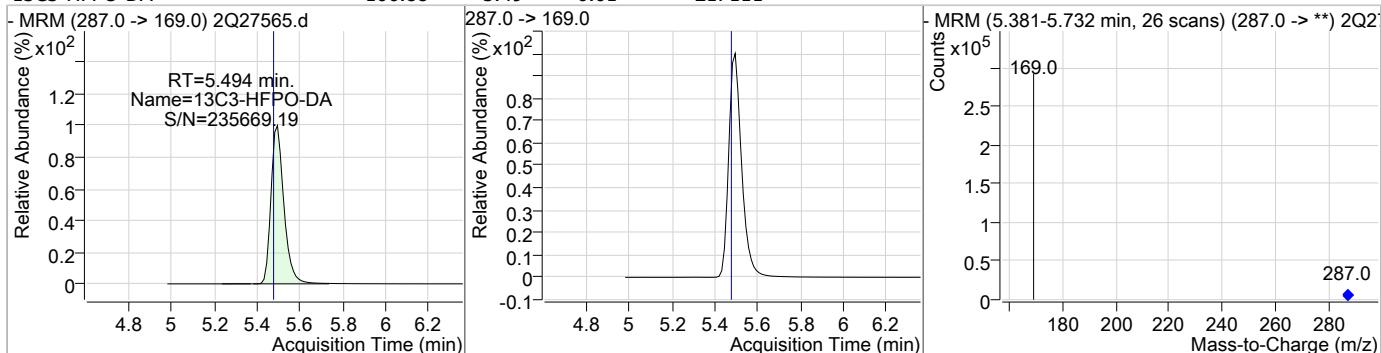
7.6.3  
7

### Perfluorinated Compounds by LC/MS/MS

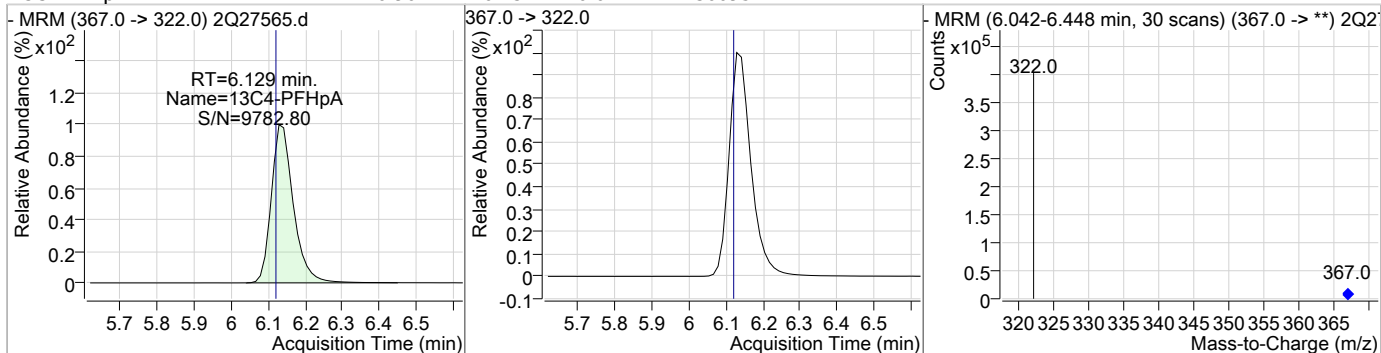
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 9.73  | 5.49 | 0.01     | 25619 | 285.0 -> 169.0 | 23.9   | 18.6 | 27.8 |



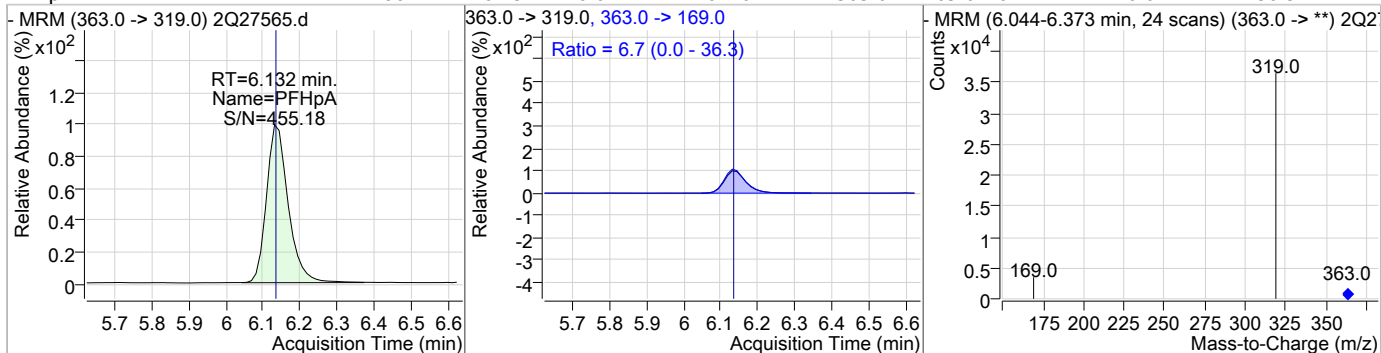
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 106.88 | 5.49 | 0.01     | 217111 |      |        |      |      |



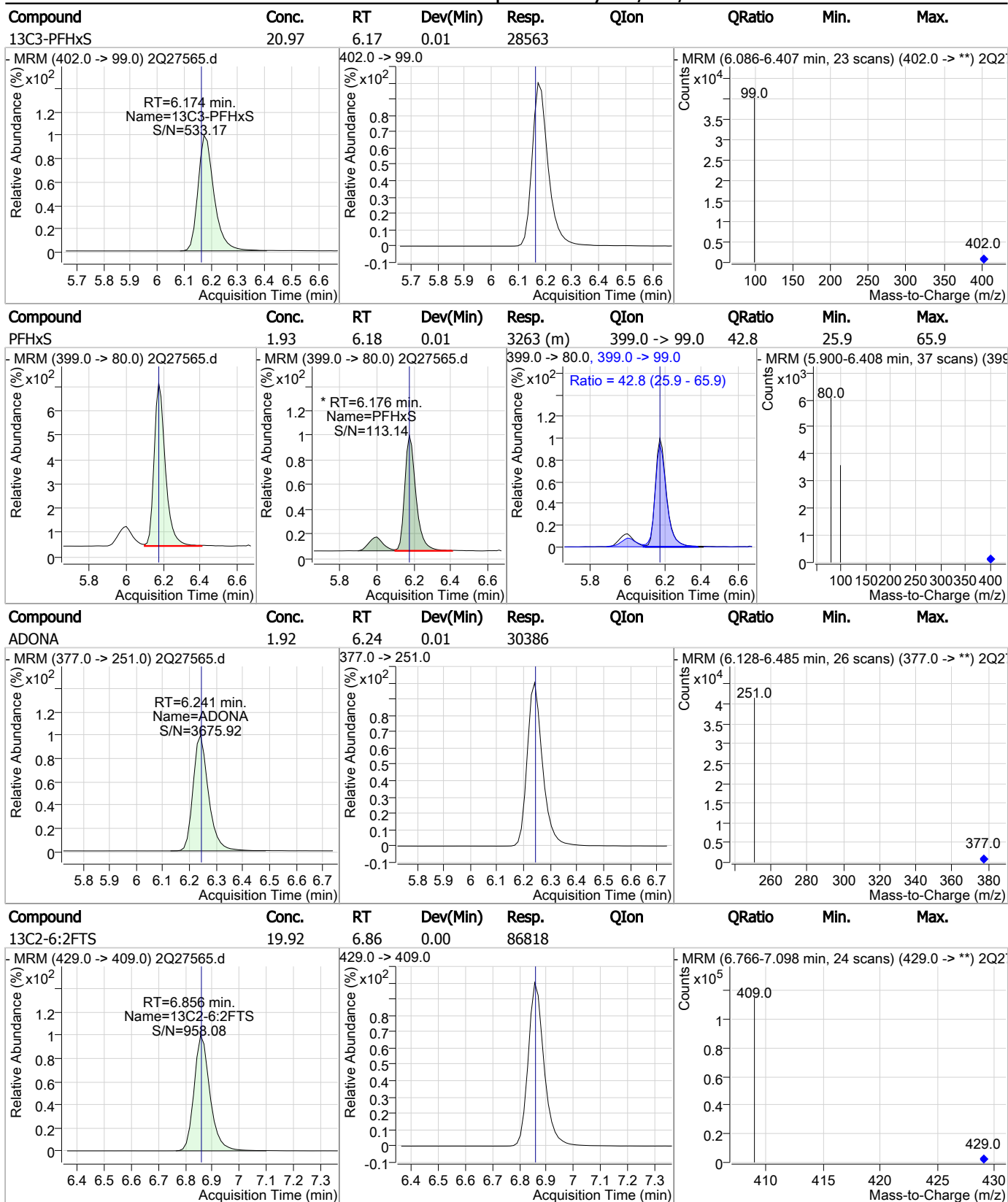
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 20.90 | 6.13 | 0.01     | 300954 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 1.86  | 6.13 | 0.01     | 26146 | 363.0 -> 169.0 | 6.7    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

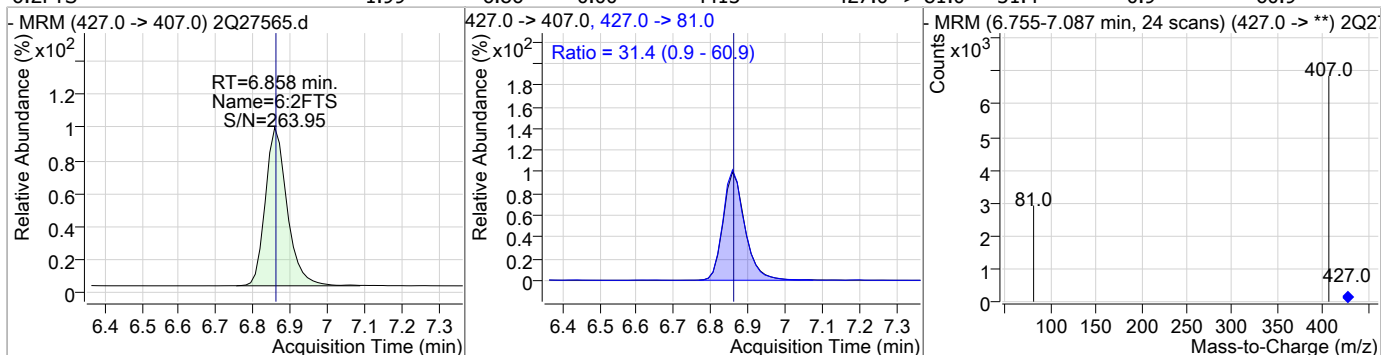


7.6.3

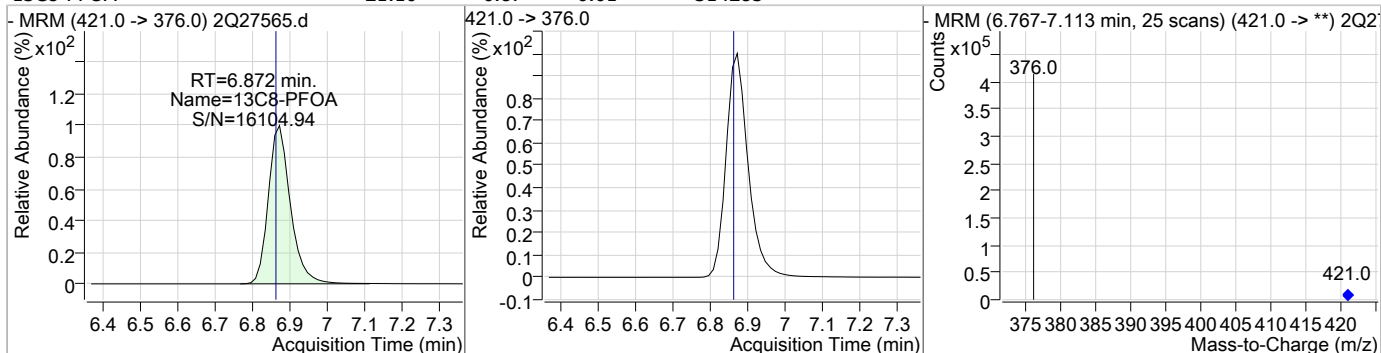
7

### Perfluorinated Compounds by LC/MS/MS

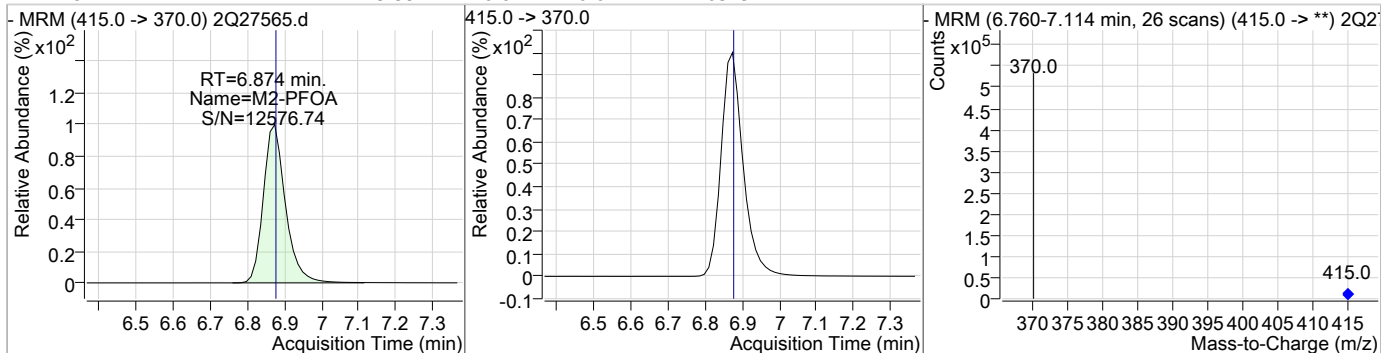
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 1.99  | 6.86 | 0.00     | 4413  | 427.0 -> 81.0 | 31.4   | 0.9  | 60.9 |



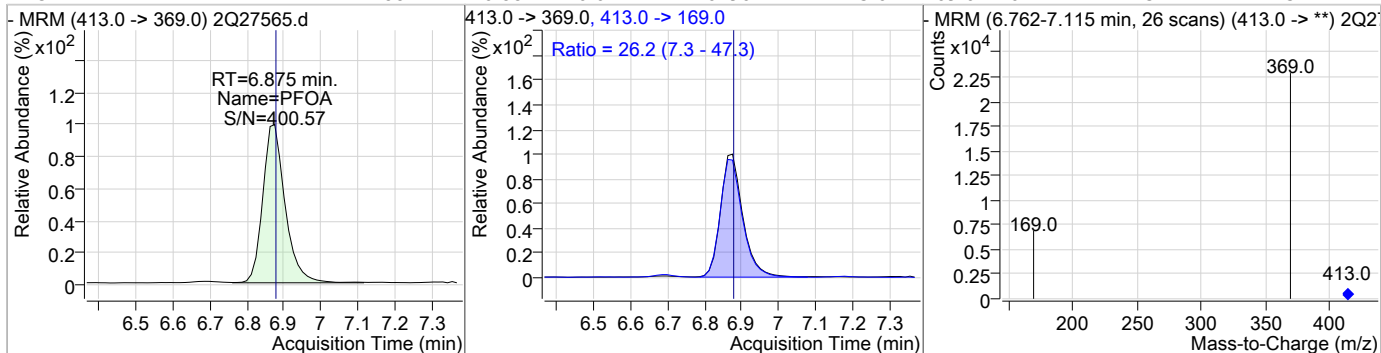
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 21.10 | 6.87 | 0.01     | 314285 |      |        |      |      |



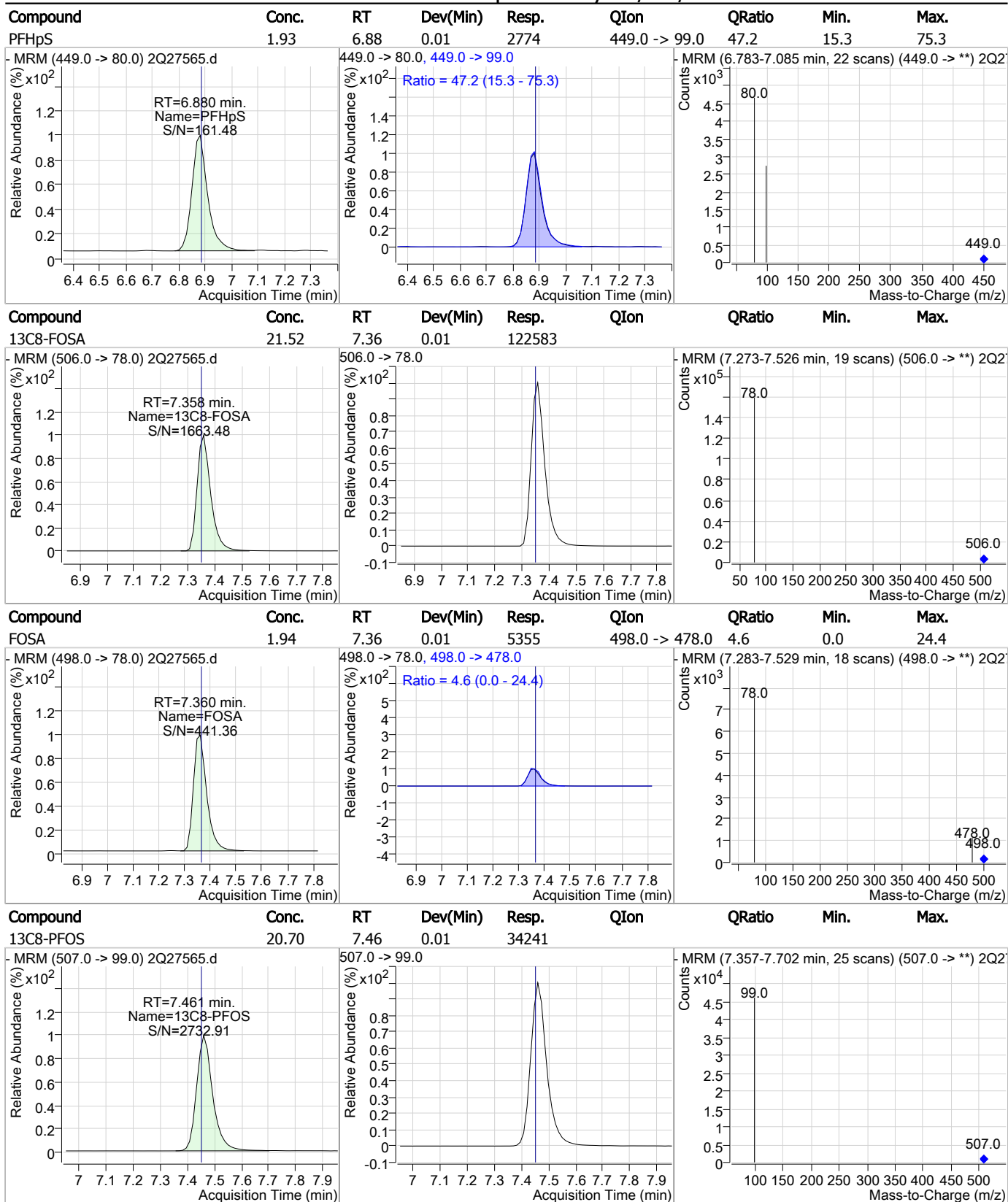
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.99 | 6.87 | 0.01     | 403494 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 1.88  | 6.88 | 0.01     | 16196 | 413.0 -> 169.0 | 26.2   | 7.3  | 47.3 |



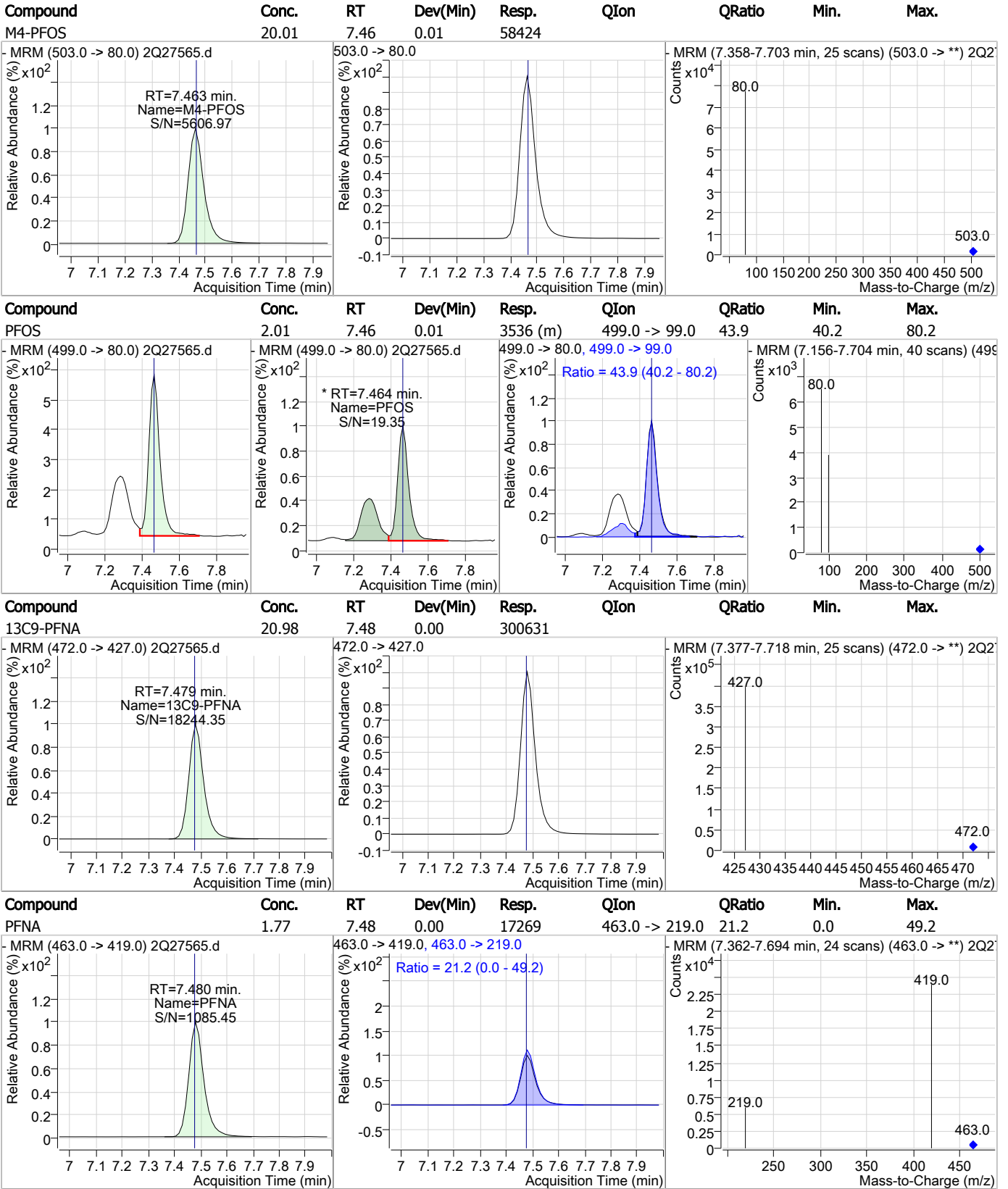
### Perfluorinated Compounds by LC/MS/MS



7.6.3  
7



### Perfluorinated Compounds by LC/MS/MS



7.6.3

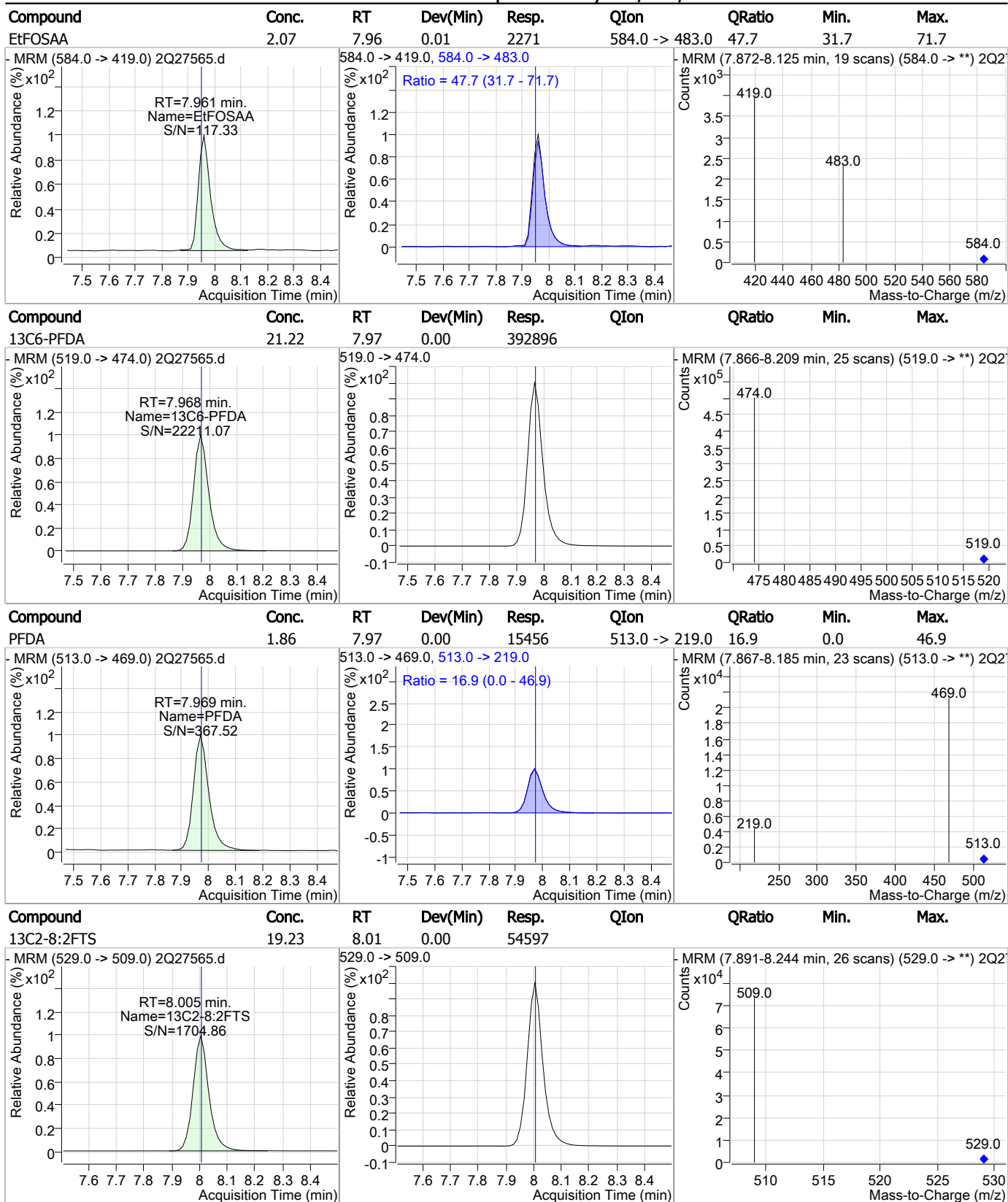
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 1.93  | 7.72 | 0.01     | 2739  |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 20.64 | 7.82 | 0.00     | 49360 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 2.08  | 7.84 | 0.01     | 2710  | 570.0 -> 512.0 | 24.1   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 1.99  | 7.94 | 0.00     | 2550  | 549.0 -> 99.0  | 45.9   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

7.6.3  
7

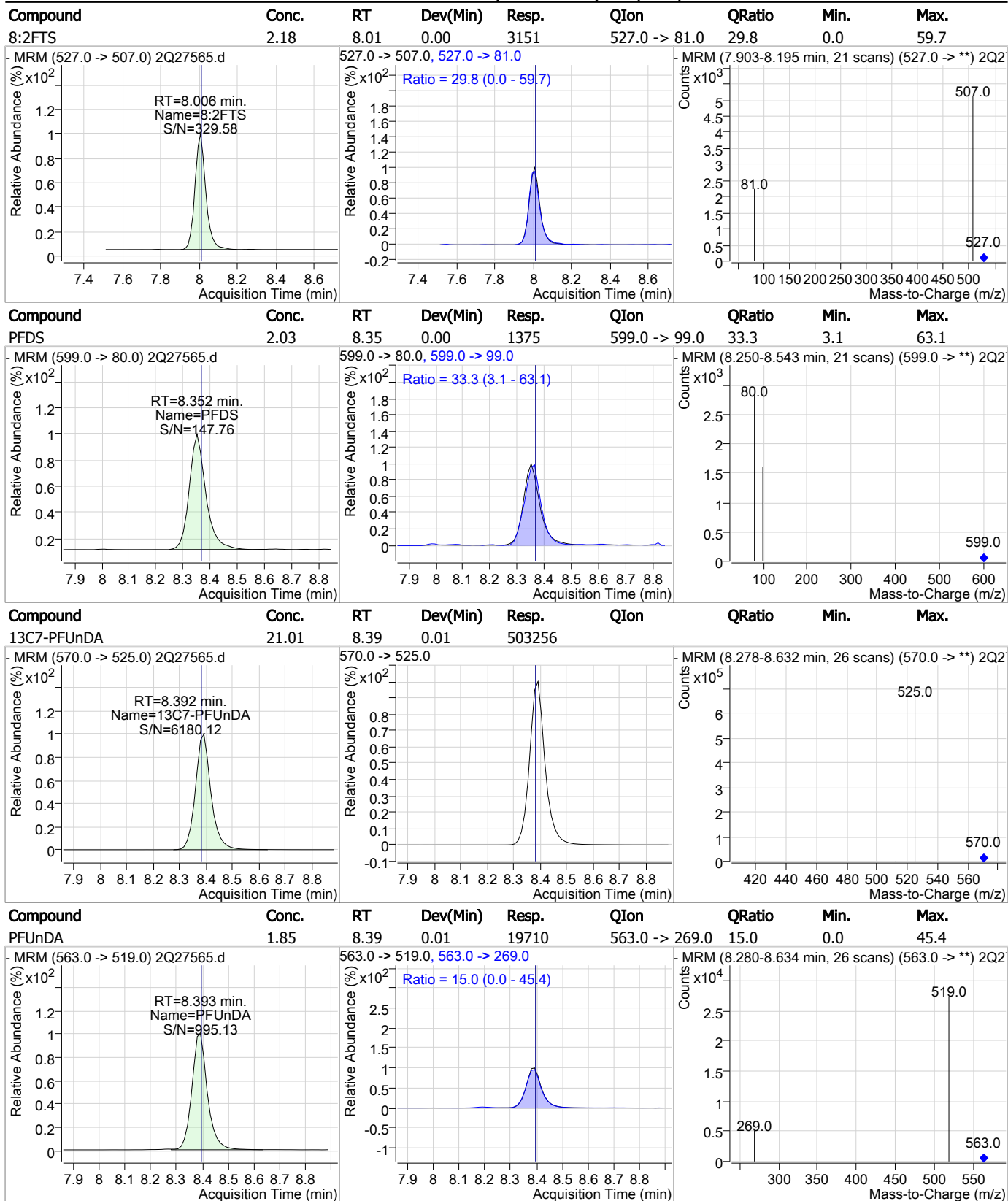
### Perfluorinated Compounds by LC/MS/MS



7.6.3  
7



### Perfluorinated Compounds by LC/MS/MS



7.6.3  
7

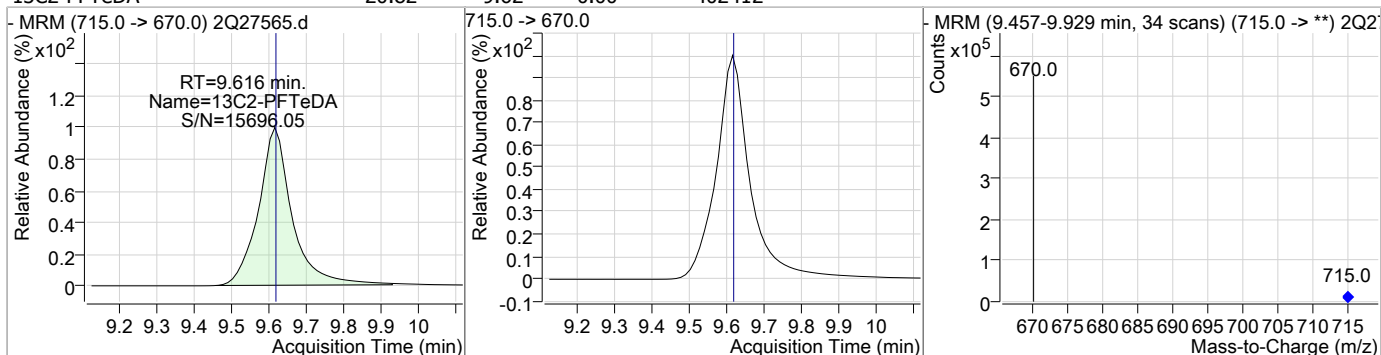
### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 1.90  | 8.54 | 0.00     | 13951  |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 20.78 | 8.79 | 0.00     | 580103 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 1.86  | 8.79 | 0.00     | 25274  | 613.0 -> 319.0 | 12.7   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 1.83  | 9.22 | 0.00     | 28288  | 663.0 -> 369.0 | 7.1    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

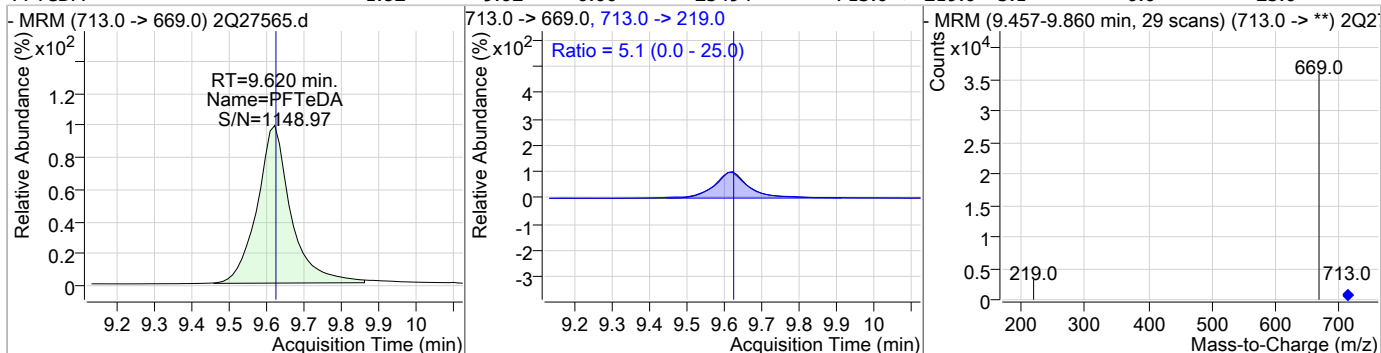
7.6.3  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.82 | 9.62 | 0.00     | 402412 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 1.82  | 9.62 | 0.00     | 25494 | 713.0 -> 219.0 | 5.1    | 0.0  | 25.0 |



7.6.3  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q439-IC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27565.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 11:16      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46           | Split peak |

7.6.3.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27566.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 11:31:44 AM  
 Sample Name : ic439-5.0  
 Vial : Vial 5  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 408176            | 20.00 µg/L  | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 59113             | 20.00 µg/L  | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 177357            | 20.00 µg/L  | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 146501            | 20.00 µg/L  | 0.025    |
| M5-PFHxA                           | 5.189                | 318.0 -> 273.0 | 210257            | 20.00 µg/L  | 0.013    |
| M4-PFHpA                           | 6.142                | 367.0 -> 322.0 | 294802            | 20.00 µg/L  | 0.024    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 310327            | 20.00 µg/L  | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 296127            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 386950            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 496739            | 20.00 µg/L  | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 570603            | 20.00 µg/L  | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 402539            | 20.00 µg/L  | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 119382            | 20.00 µg/L  | 0.011    |
| M3-PFBS                            | 4.130                | 302.0 -> 99.0  | 24709             | 20.00 µg/L  | 0.038    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 28269             | 20.00 µg/L  | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 34129             | 20.00 µg/L  | 0.012    |
| M2-4:2FTS                          | 5.097                | 329.0 -> 309.0 | 80292             | 20.00 µg/L  | 0.025    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 85977             | 20.00 µg/L  | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 55349             | 20.00 µg/L  | 0.001    |
| M3-MeFOSAA                         | 7.822                | 573.0 -> 419.0 | 49096             | 20.00 µg/L  | -0.001   |
| M3-HFPO-DA                         | 5.494                | 287.0 -> 169.0 | 216599            | 100.00 µg/L | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 5.097                | 329.0 -> 309.0 | 79926             | 19.25 µg/L  | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 96.3%  |             |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 85943             | 19.72 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 98.6%  |             |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 55462             | 19.53 µg/L  | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 97.7%  |             |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 570755            | 20.45 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.2% |             |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 402452            | 20.82 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 104.1% |             |          |
| 13C3-PFBS                          | 4.130                | 302.0 -> 99.0  | 24665             | 20.37 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 101.8% |             |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 28268             | 20.75 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.8% |             |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 176423            | 20.35 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 101.8% |             |          |
| 13C4-PFHpA                         | 6.142                | 367.0 -> 322.0 | 294325            | 20.44 µg/L  | 0.024    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.2% |             |          |
| 13C5-PFHxA                         | 5.189                | 318.0 -> 273.0 | 209827            | 20.46 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.3% |             |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 146343            | 20.41 µg/L  | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.0% |             |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 386833            | 20.89 µg/L  | 0.000    |

7.6.4  
7

## Perfluorinated Compounds by LC/MS/MS

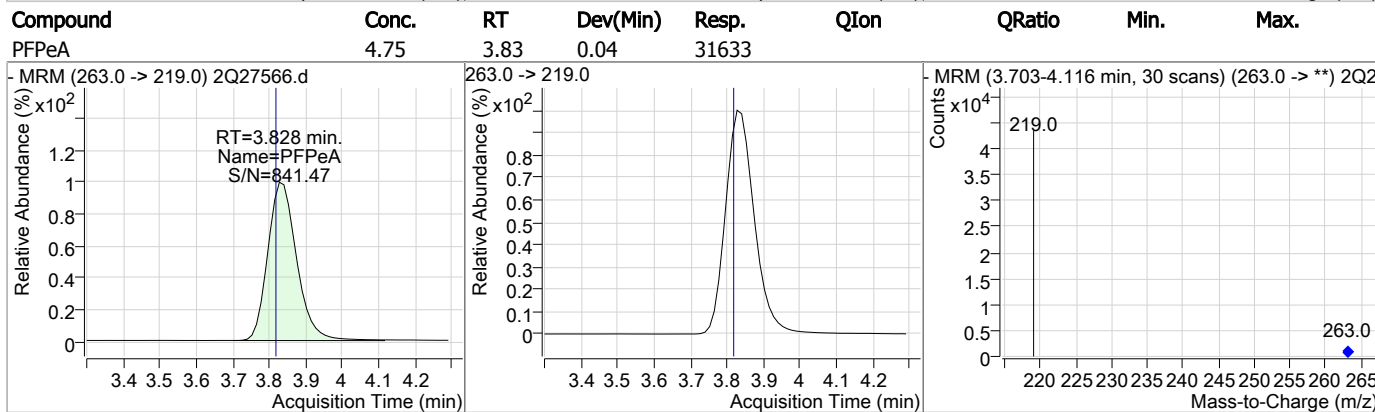
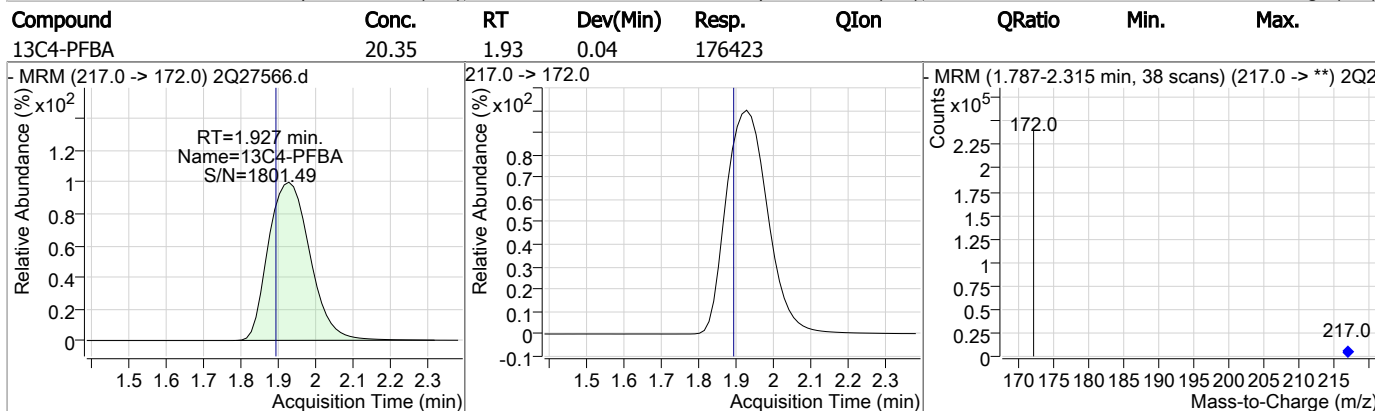
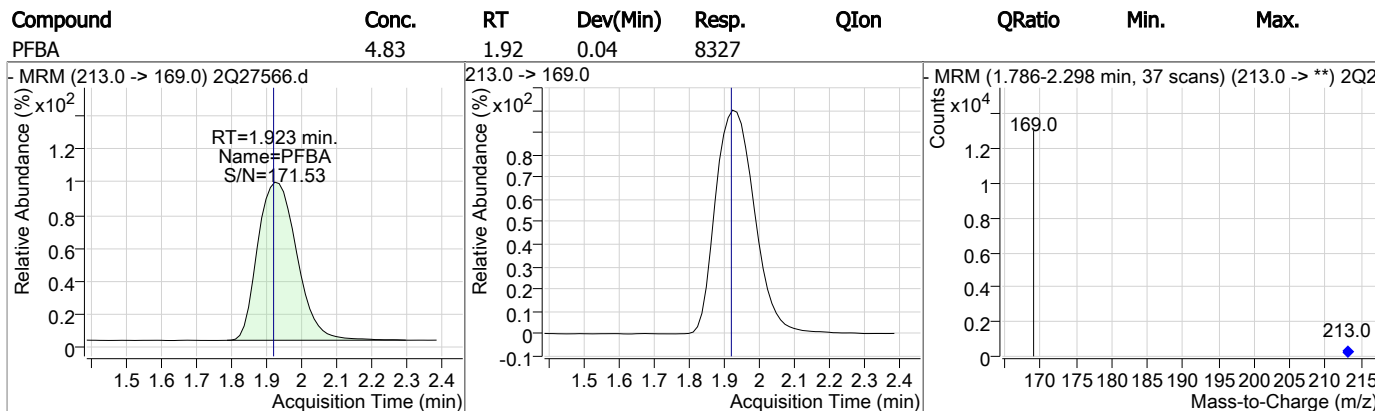
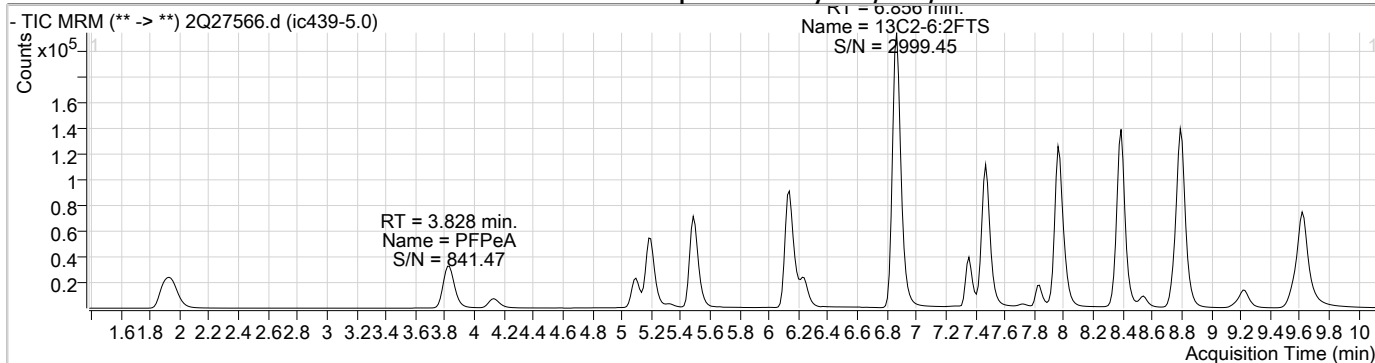
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.5% |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 496867 | 20.74 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.7% |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 119363 | 20.96 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.8% |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 310225 | 20.83 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.2% |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 34066  | 20.60 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.0% |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 296036 | 20.66 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.3% |          |
| d3-MeFOSAA            | 7.822                | 573.0 -> 419.0 | 49146  | 20.55 µg/L        | -0.001   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.8% |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 408656 | 20.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 59089  | 19.99 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C3-HFPO-DA          | 5.494                | 287.0 -> 169.0 | 216599 | 106.63 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 106.6% |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | 5.100 | 327.0 -> 307.0 | 12190 | 5.22 µg/L   | 98     |
| 6:2FTS           | 6.858 | 427.0 -> 407.0 | 11220 | 5.10 µg/L   | 100    |
| 8:2FTS           | 8.006 | 527.0 -> 507.0 | 7188  | 4.92 µg/L   | 97     |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 5416  | 4.97 µg/L   | 100    |
| FOSA             | 7.360 | 498.0 -> 78.0  | 13489 | 5.01 µg/L   | 99     |
| MeFOSAA          | 7.835 | 570.0 -> 419.0 | 6288  | 4.86 µg/L   | 95     |
| PFBA             | 1.923 | 213.0 -> 169.0 | 8327  | 4.83 µg/L   | 100    |
| PFBS             | 4.134 | 299.0 -> 80.0  | 9787  | 4.79 µg/L   | 99     |
| PFDA             | 7.969 | 513.0 -> 469.0 | 38434 | 4.70 µg/L   | 98     |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 63652 | 4.76 µg/L   | 100    |
| PFDS             | 8.352 | 599.0 -> 80.0  | 3217  | 4.77 µg/L   | 96     |
| PFHpA            | 6.132 | 363.0 -> 319.0 | 66273 | 4.79 µg/L   | 100    |
| PFHpS            | 6.880 | 449.0 -> 80.0  | 7014  | 4.90 µg/L   | 100    |
| PFHxA            | 5.191 | 313.0 -> 269.0 | 17421 | 4.79 µg/L   | 99     |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 7889  | 4.69 µg/L   | m 98   |
| PFNA             | 7.480 | 463.0 -> 419.0 | 44413 | 4.63 µg/L   | 99     |
| PFNS             | 7.939 | 549.0 -> 80.0  | 6513  | 5.10 µg/L   | 95     |
| PFOA             | 6.875 | 413.0 -> 369.0 | 40216 | 4.74 µg/L   | 98     |
| PFOS             | 7.464 | 499.0 -> 80.0  | 8314  | 4.75 µg/L   | m 81   |
| PFPeA            | 3.828 | 263.0 -> 219.0 | 31633 | 4.75 µg/L   | 100    |
| PFPeS            | 5.321 | 349.0 -> 80.0  | 6918  | 4.95 µg/L   | 100    |
| PFTeDA           | 9.620 | 713.0 -> 669.0 | 64089 | 4.66 µg/L   | 100    |
| PFTrDA           | 9.220 | 663.0 -> 619.0 | 72138 | 4.77 µg/L   | 100    |
| PFUnDA           | 8.393 | 563.0 -> 519.0 | 49572 | 4.71 µg/L   | 99     |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 34886 | 4.83 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 7001  | 4.98 µg/L   | 100    |
| ADONA            | 6.241 | 377.0 -> 251.0 | 76066 | 4.86 µg/L   | 100    |
| HFPO-DA          | 5.498 | 329.0 -> 169.0 | 63670 | 24.23 µg/L  | 99     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.4  
7

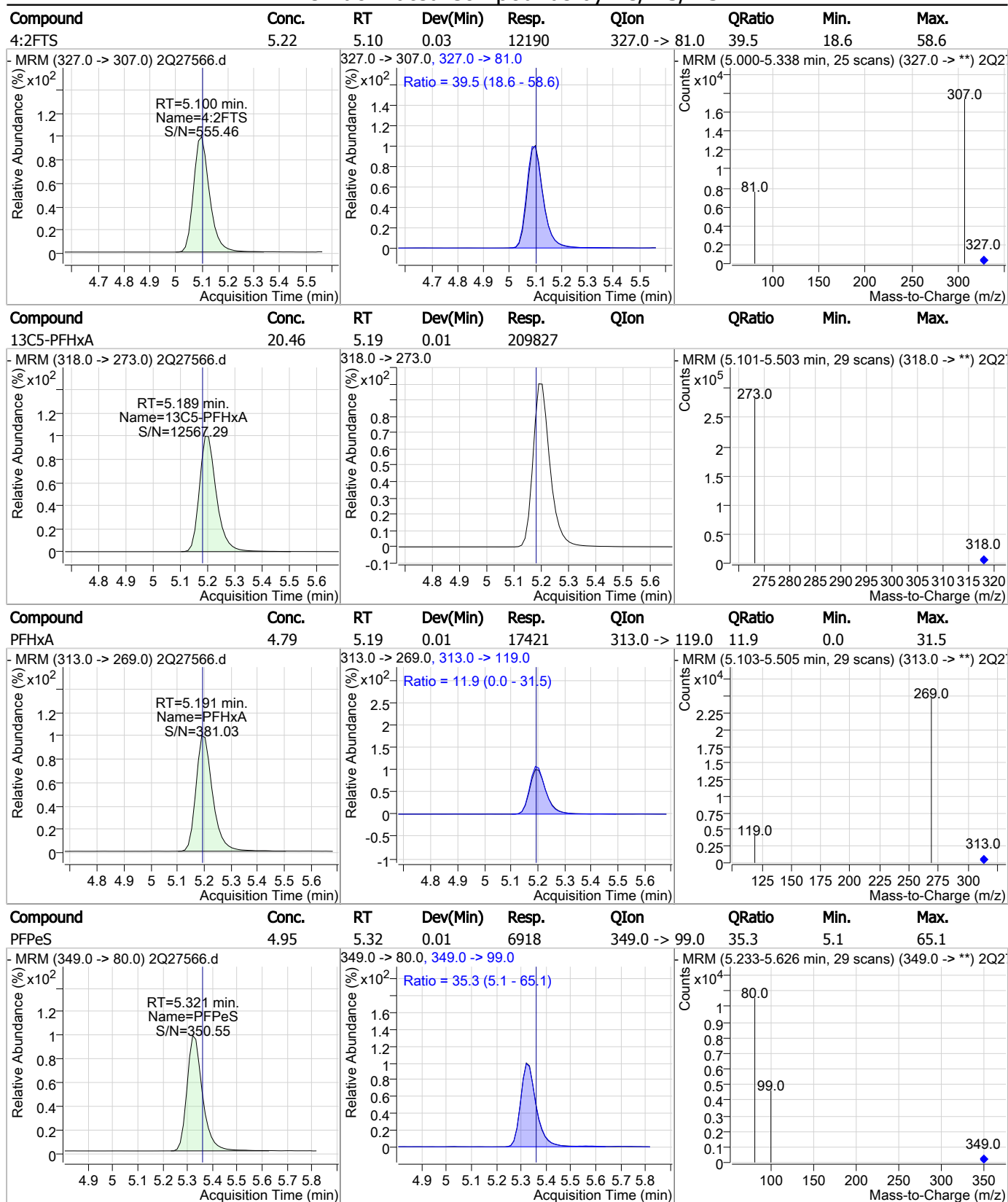
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 20.41 | 3.82 | 0.03     | 146343 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 20.37 | 4.13 | 0.04     | 24665  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 4.79  | 4.13 | 0.04     | 9787   | 299.0 -> 99.0 | 36.3   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 19.25 | 5.10 | 0.03     | 79926  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.4  
7



### Perfluorinated Compounds by LC/MS/MS

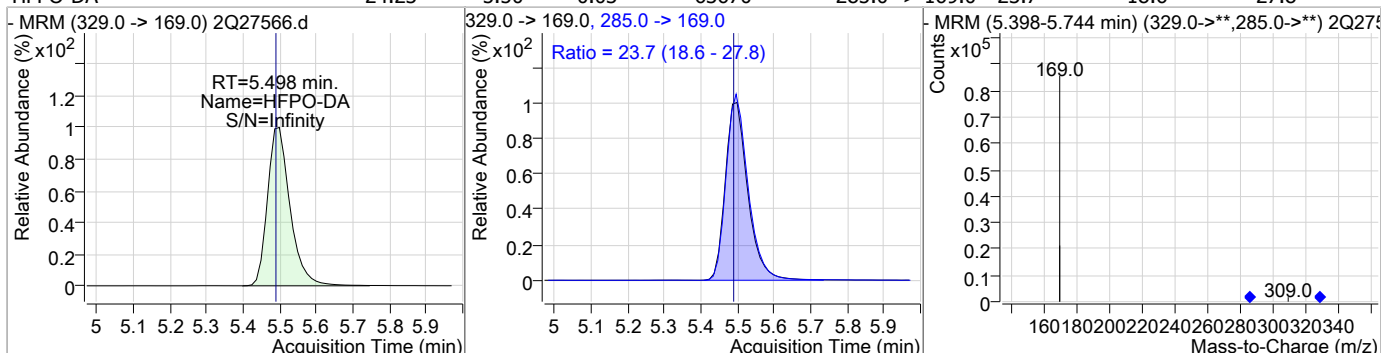


7.6.4

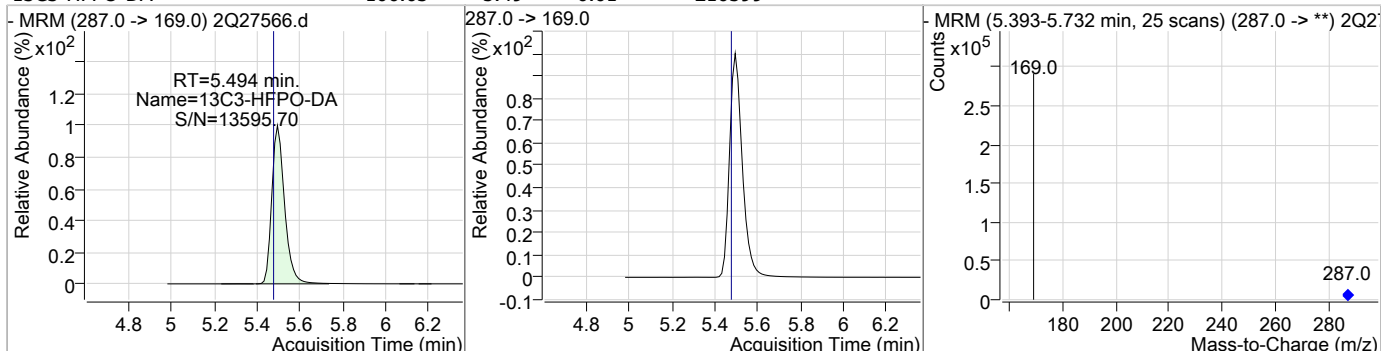
7

### Perfluorinated Compounds by LC/MS/MS

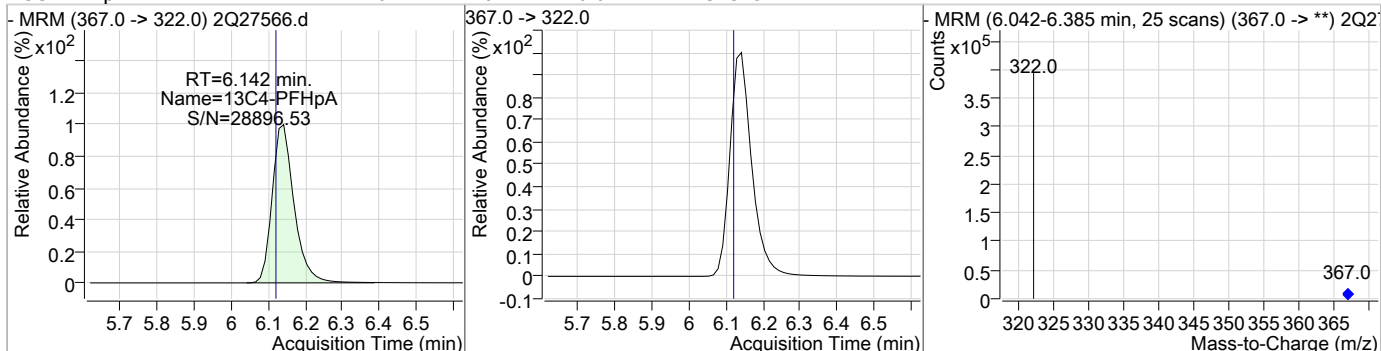
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 24.23 | 5.50 | 0.03     | 63670 | 285.0 -> 169.0 | 23.7   | 18.6 | 27.8 |



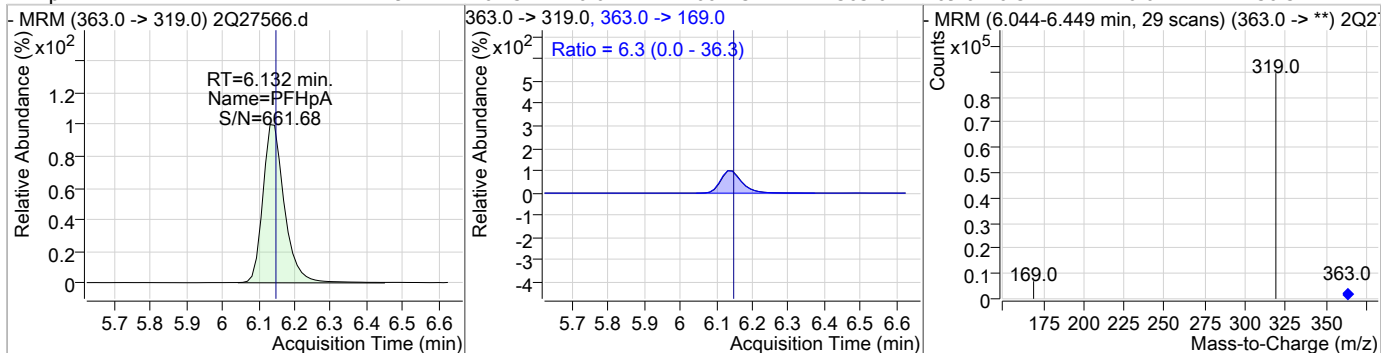
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 106.63 | 5.49 | 0.01     | 216599 |      |        |      |      |



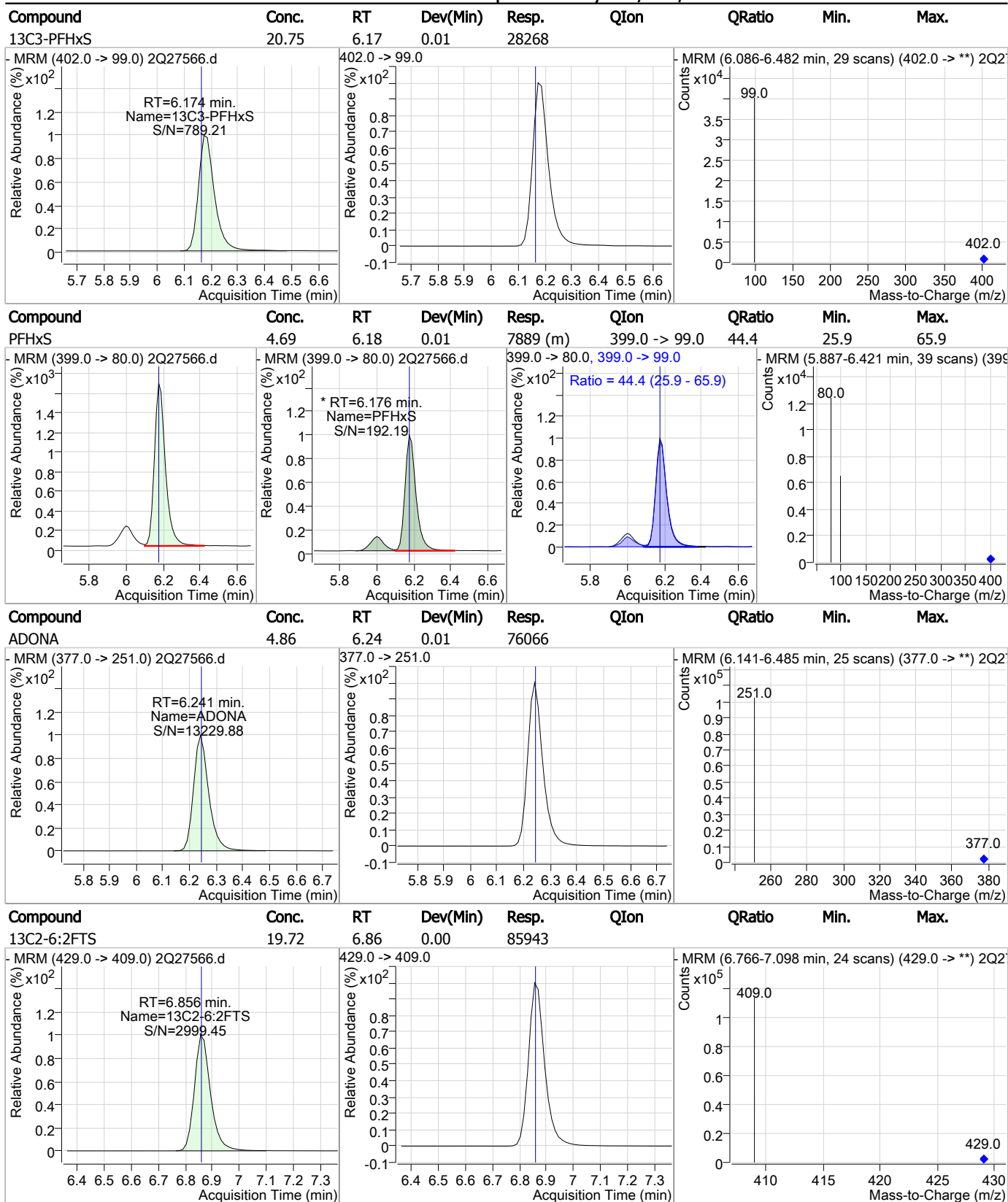
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 20.44 | 6.14 | 0.02     | 294325 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 4.79  | 6.13 | 0.01     | 66273 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

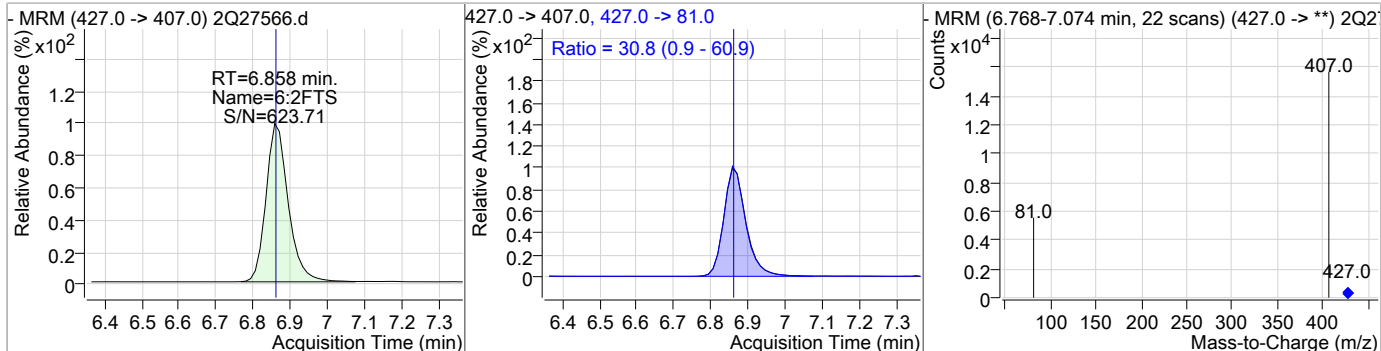


7.6.4

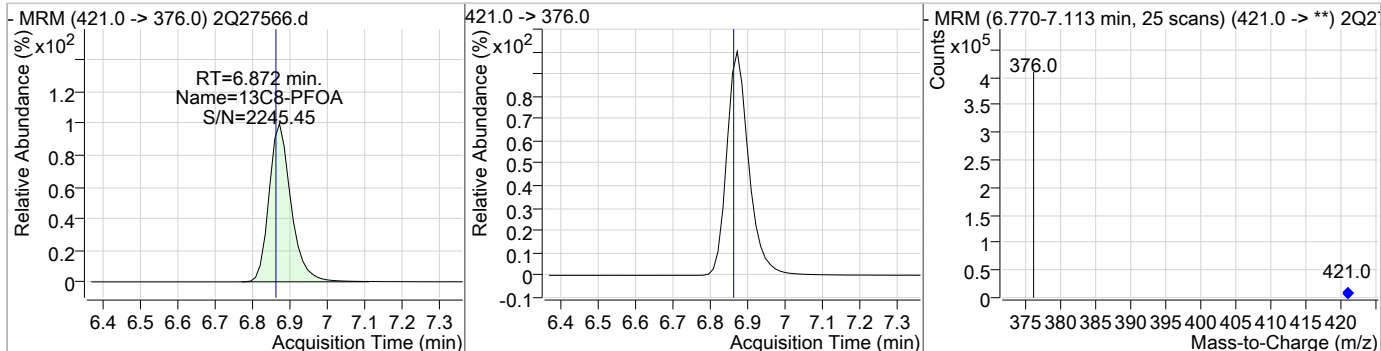
7

### Perfluorinated Compounds by LC/MS/MS

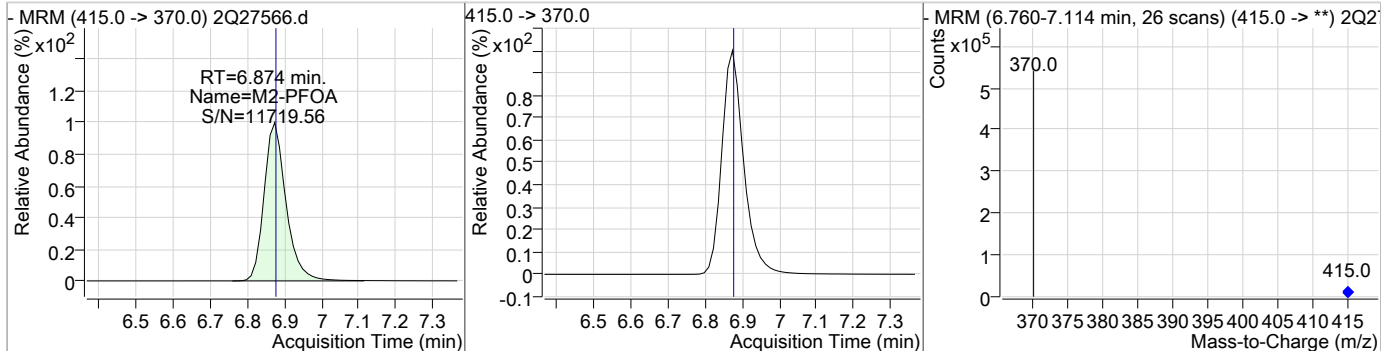
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 5.10  | 6.86 | 0.00     | 11220 | 427.0 -> 81.0 | 30.8   | 0.9  | 60.9 |



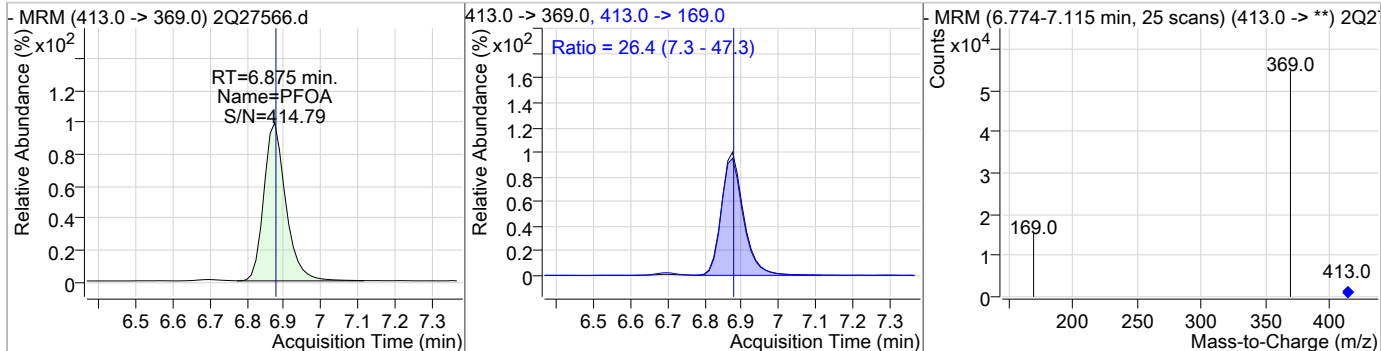
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 20.83 | 6.87 | 0.01     | 310225 |      |        |      |      |



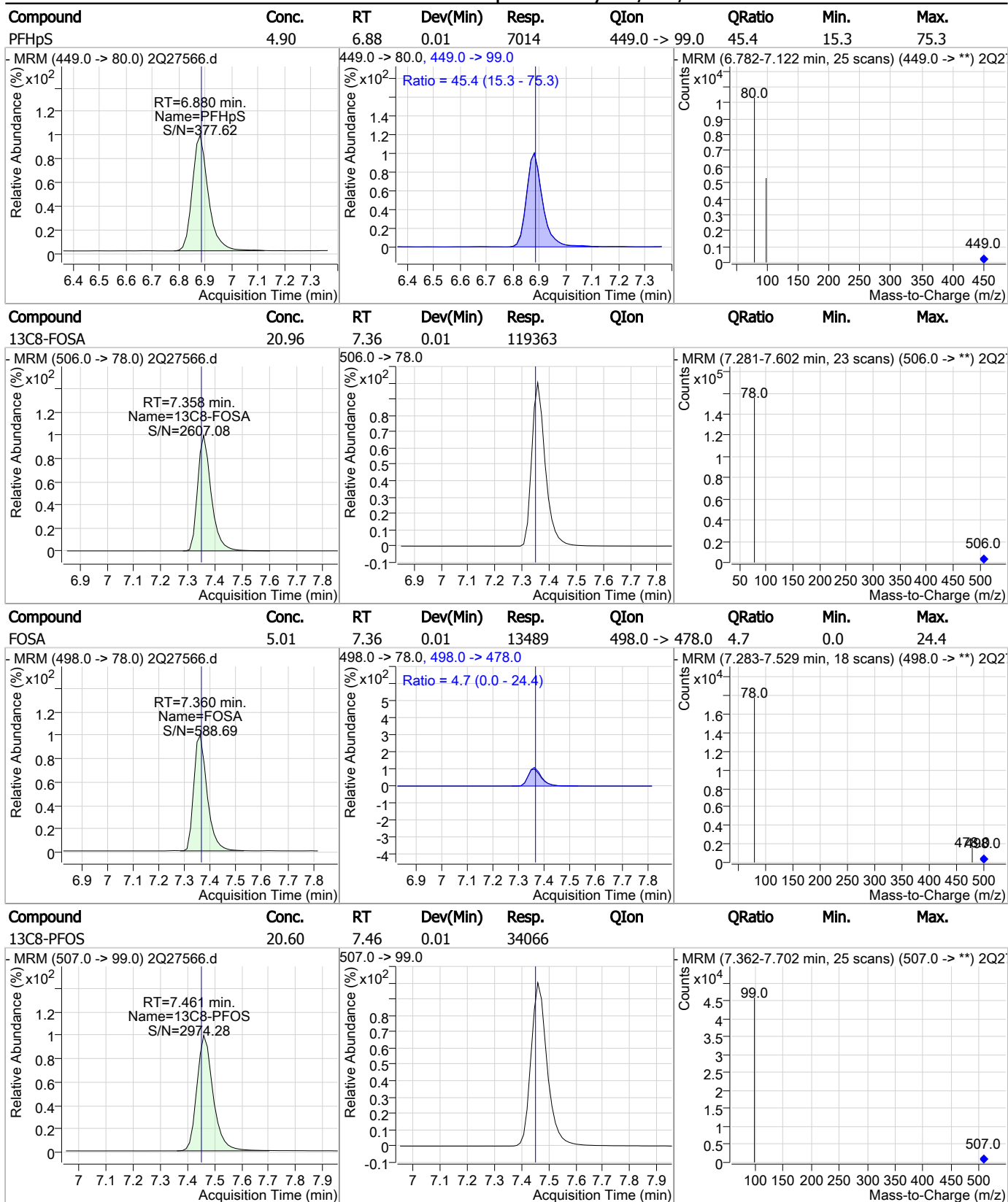
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.01 | 6.87 | 0.01     | 408656 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 4.74  | 6.88 | 0.01     | 40216 | 413.0 -> 169.0 | 26.4   | 7.3  | 47.3 |

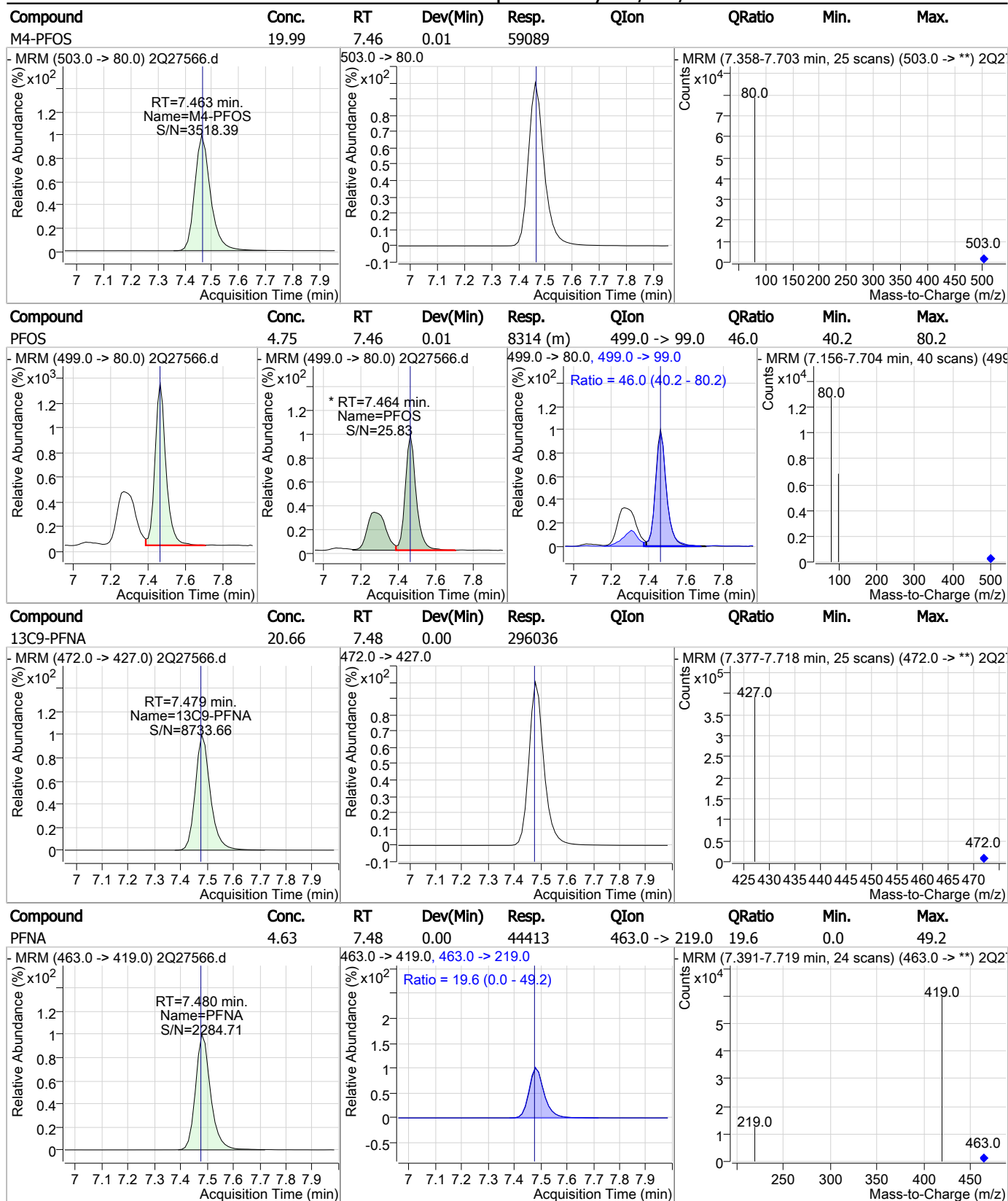


### Perfluorinated Compounds by LC/MS/MS



7.6.4  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.4

7

### Perfluorinated Compounds by LC/MS/MS

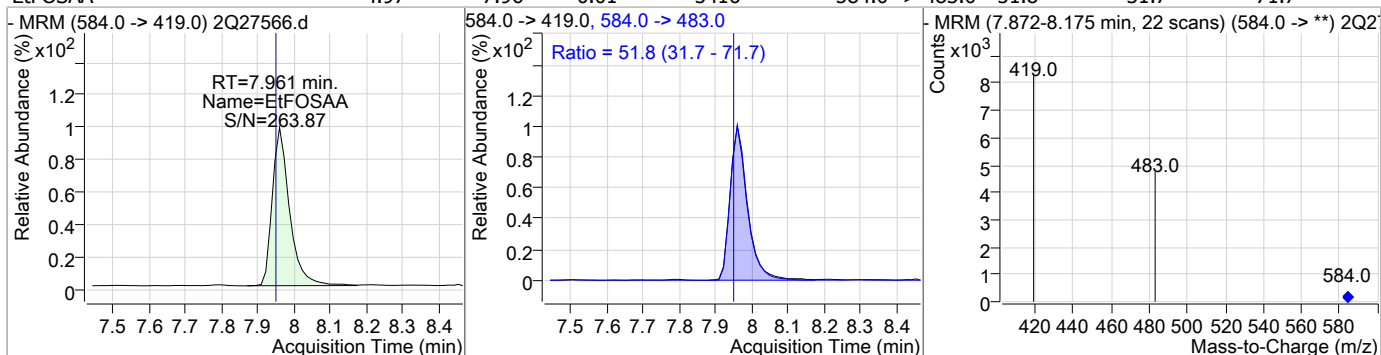
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 4.98  | 7.72 | 0.01     | 7001  |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 20.55 | 7.82 | 0.00     | 49146 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 4.86  | 7.84 | 0.01     | 6288  | 570.0 -> 512.0 | 24.8   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 5.10  | 7.94 | 0.00     | 6513  | 549.0 -> 99.0  | 45.6   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

7.6.4

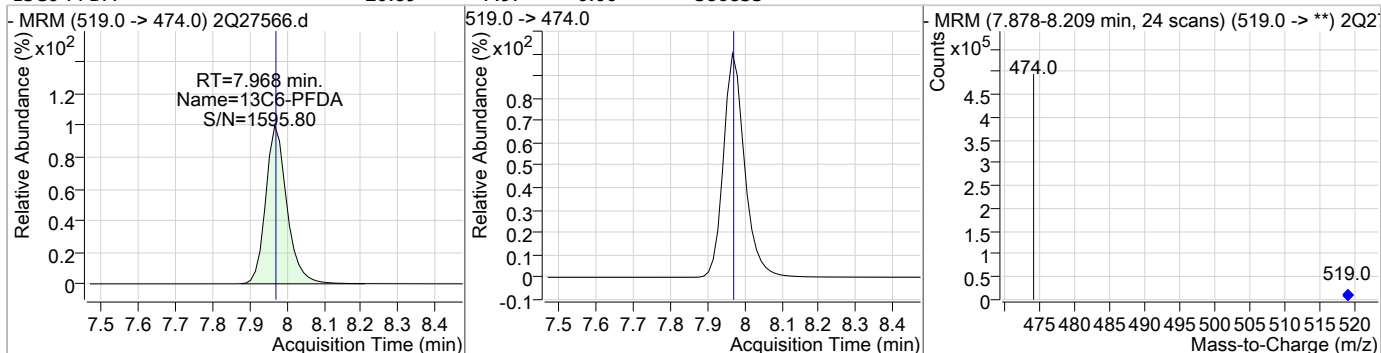
7

### Perfluorinated Compounds by LC/MS/MS

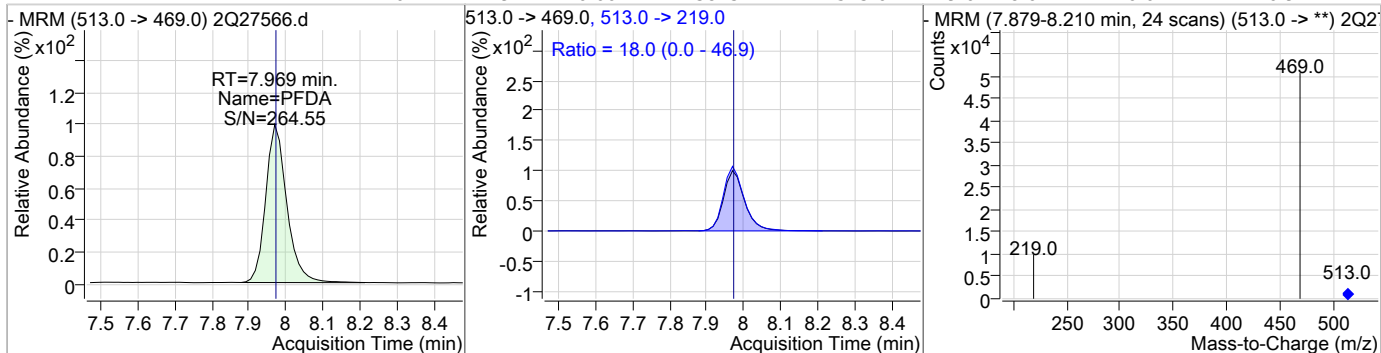
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 4.97  | 7.96 | 0.01     | 5416  | 584.0 -> 483.0 | 51.8   | 31.7 | 71.7 |



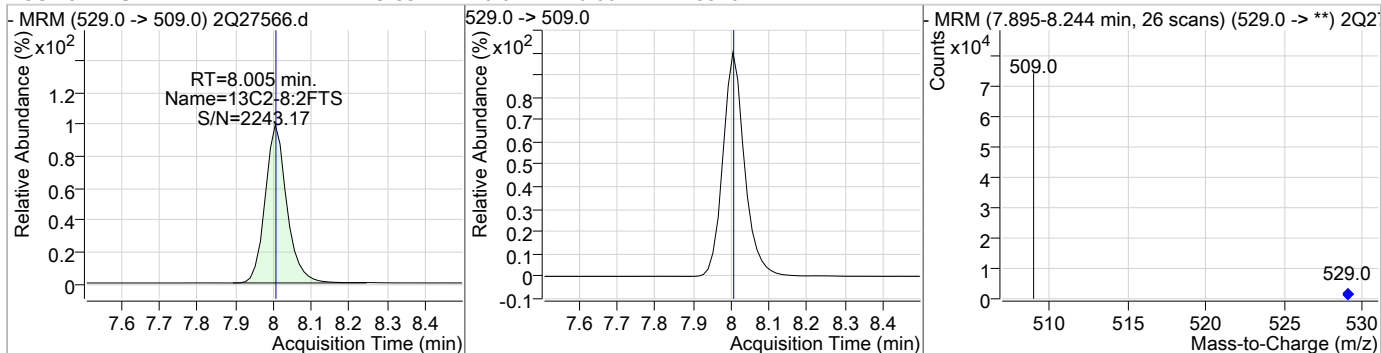
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 20.89 | 7.97 | 0.00     | 386833 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFDA     | 4.70  | 7.97 | 0.00     | 38434 | 513.0 -> 219.0 | 18.0   | 0.0  | 46.9 |

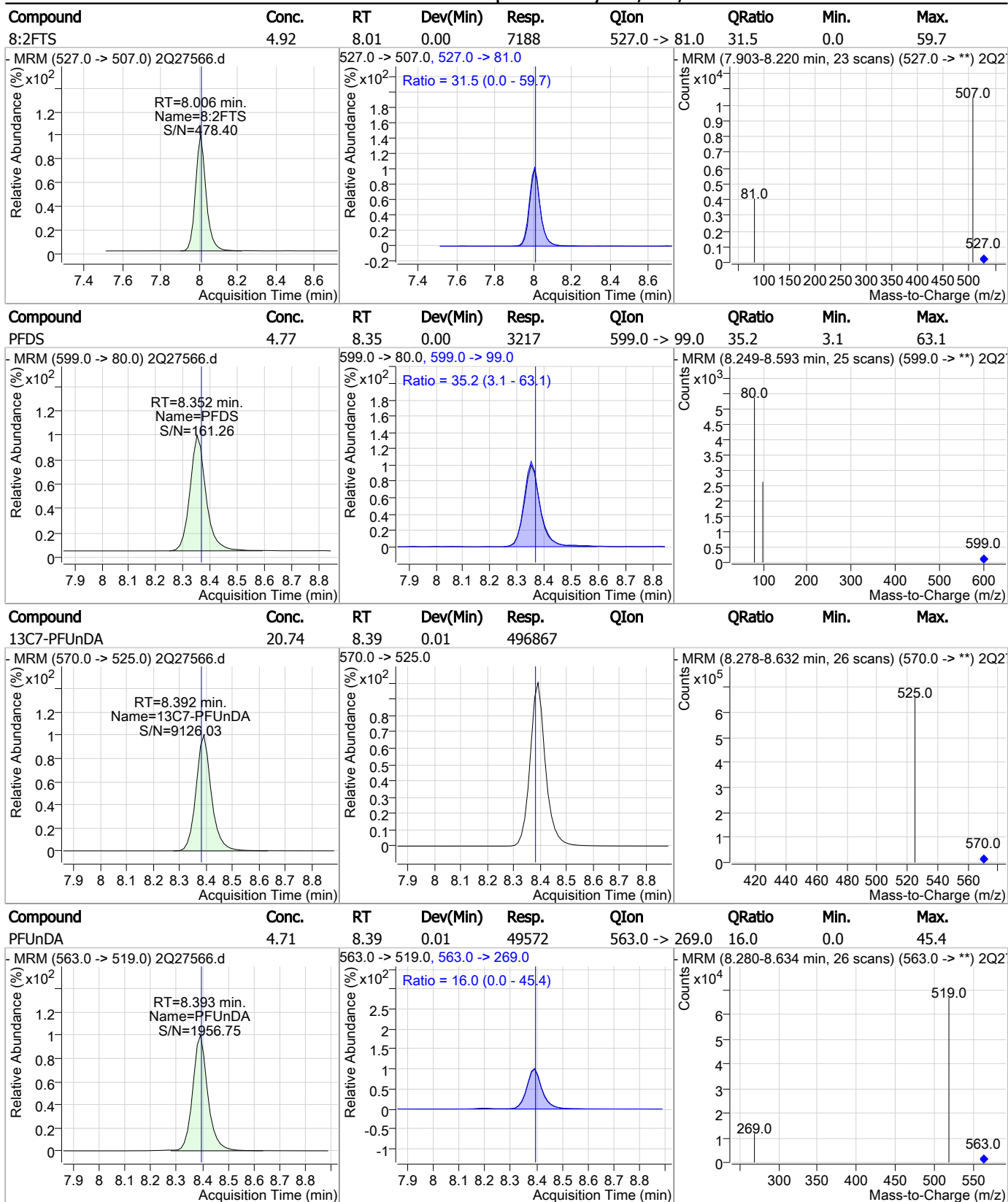


| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 19.53 | 8.01 | 0.00     | 55462 |      |        |      |      |





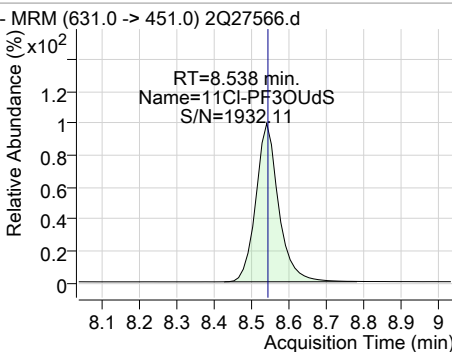
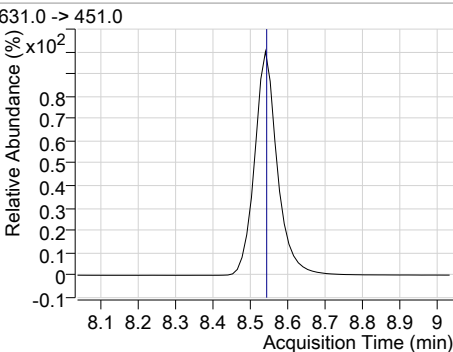
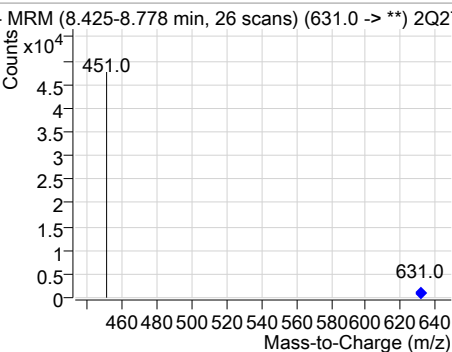
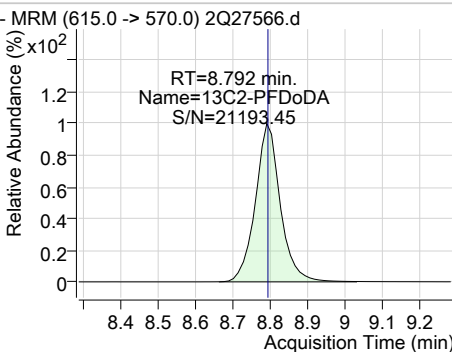
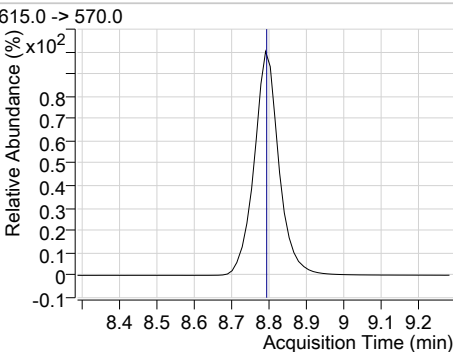
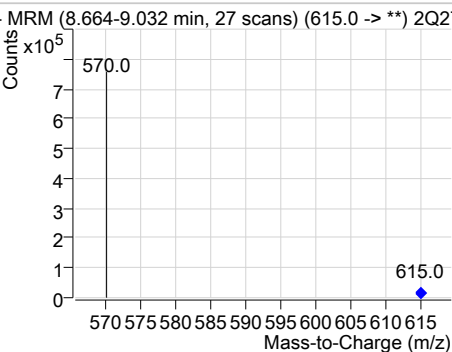
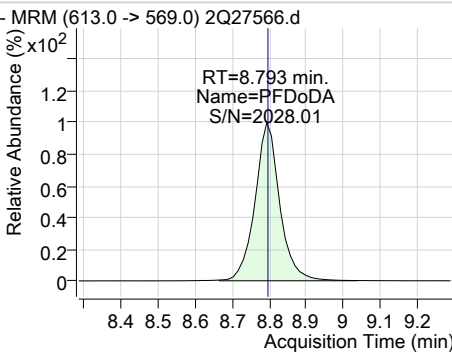
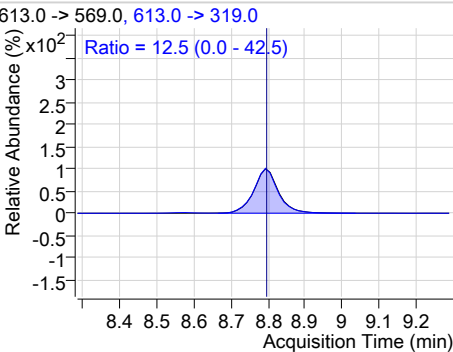
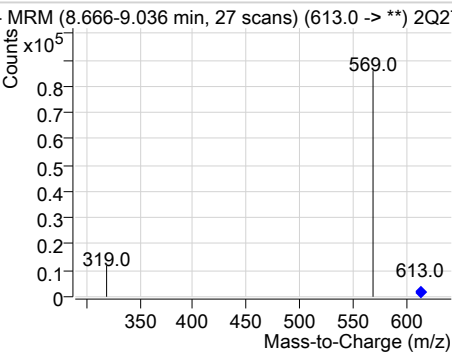
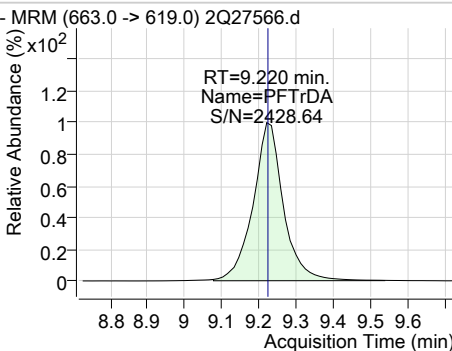
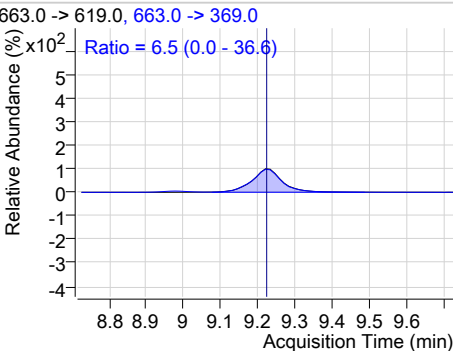
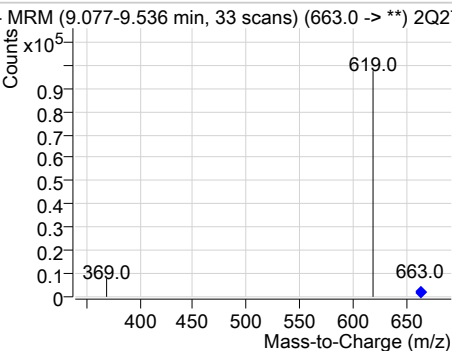
### Perfluorinated Compounds by LC/MS/MS



7.6.4

7

### Perfluorinated Compounds by LC/MS/MS

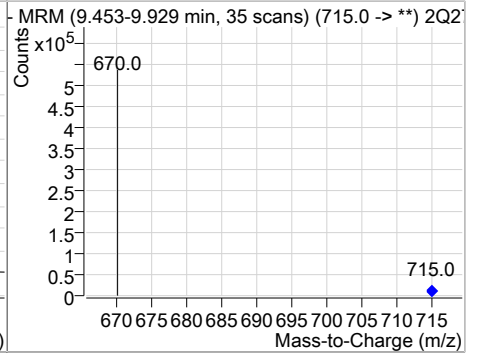
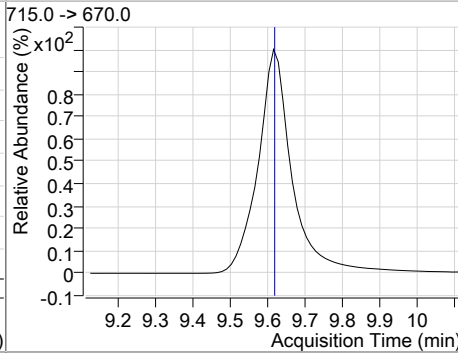
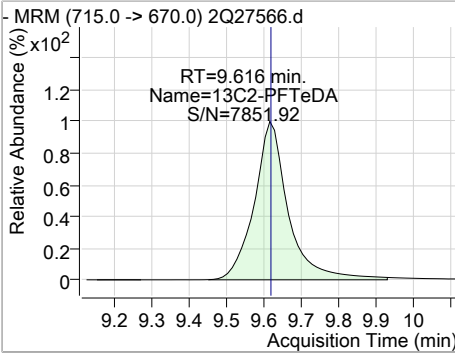
| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon           | QRatio  | Min. | Max. |
|--|-------|------|---|--------|----------------|---|------|------|
| 11Cl-PF3OUdS   | 4.83  | 8.54 | 0.00  | 34886  |                |   |      |      |
|    |       |      |    |        |                |    |      |      |
| 13C2-PFDoDA  | 20.45 | 8.79 | 0.00  | 570755 |                |   |      |      |
|    |       |      |    |        |                |    |      |      |
| PFDoDA   | 4.76  | 8.79 | 0.00  | 63652  | 613.0 -> 319.0 | 12.5  | 0.0  | 42.5 |
|  |       |      |  |        |                |  |      |      |
| PFTTrDA  | 4.77  | 9.22 | 0.00  | 72138  | 663.0 -> 369.0 | 6.5   | 0.0  | 36.6 |
|  |       |      |  |        |                |  |      |      |

7.6.4

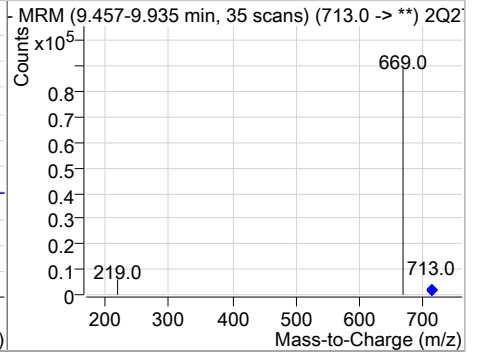
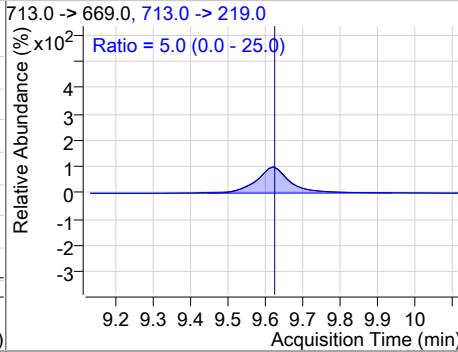
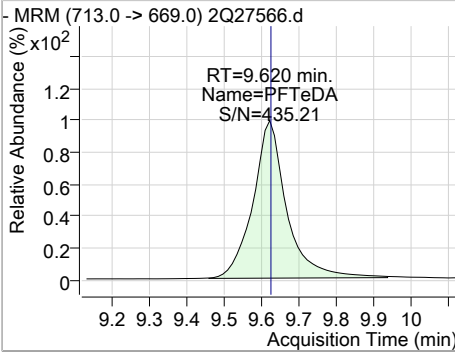
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.82 | 9.62 | 0.00     | 402452 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 4.66  | 9.62 | 0.00     | 64089 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



7.6.4

7

# Manual Integration Approval Summary

**Sample Number:** S2Q439-IC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27566.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 11:31      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46           | Split peak |

7.6.4.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

**Mike Eger**  
 03/14/19 15:20

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27567.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 11:47:28 AM  
 Sample Name : ic439-10  
 Vial : Vial 6  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 401943 | 20.00 µg/L        | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 58477  | 20.00 µg/L        | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 176340 | 20.00 µg/L        | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 145301 | 20.00 µg/L        | 0.025    |
| M5-PFHxA                           | 5.189                | 318.0 -> 273.0 | 208877 | 20.00 µg/L        | 0.013    |
| M4-PFHpA                           | 6.142                | 367.0 -> 322.0 | 293305 | 20.00 µg/L        | 0.024    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 303820 | 20.00 µg/L        | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 292795 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 383640 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 491923 | 20.00 µg/L        | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 569546 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 398279 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 118557 | 20.00 µg/L        | 0.011    |
| M3-PFBS                            | 4.130                | 302.0 -> 99.0  | 24565  | 20.00 µg/L        | 0.038    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 27858  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 34319  | 20.00 µg/L        | 0.012    |
| M2-4:2FTS                          | 5.097                | 329.0 -> 309.0 | 80193  | 20.00 µg/L        | 0.025    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 85746  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 55778  | 20.00 µg/L        | 0.001    |
| M3-MeFOSAA                         | 7.822                | 573.0 -> 419.0 | 49261  | 20.00 µg/L        | -0.001   |
| M3-HFPO-DA                         | 5.494                | 287.0 -> 169.0 | 210776 | 100.00 µg/L       | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 5.097                | 329.0 -> 309.0 | 80186  | 19.32 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.6%  |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 85706  | 19.66 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.3%  |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 55716  | 19.62 µg/L        | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 569373 | 20.40 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.0% |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 391714 | 20.26 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C3-PFBS                          | 4.130                | 302.0 -> 99.0  | 24514  | 20.25 µg/L        | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.2% |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 27762  | 20.38 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.9% |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 175457 | 20.24 µg/L        | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.2% |          |
| 13C4-PFHpA                         | 6.142                | 367.0 -> 322.0 | 292800 | 20.34 µg/L        | 0.024    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.7% |          |
| 13C5-PFHxA                         | 5.189                | 318.0 -> 273.0 | 208796 | 20.36 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.8% |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 145393 | 20.27 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.4% |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 383918 | 20.74 µg/L        | 0.000    |

7.65  
7

## Perfluorinated Compounds by LC/MS/MS

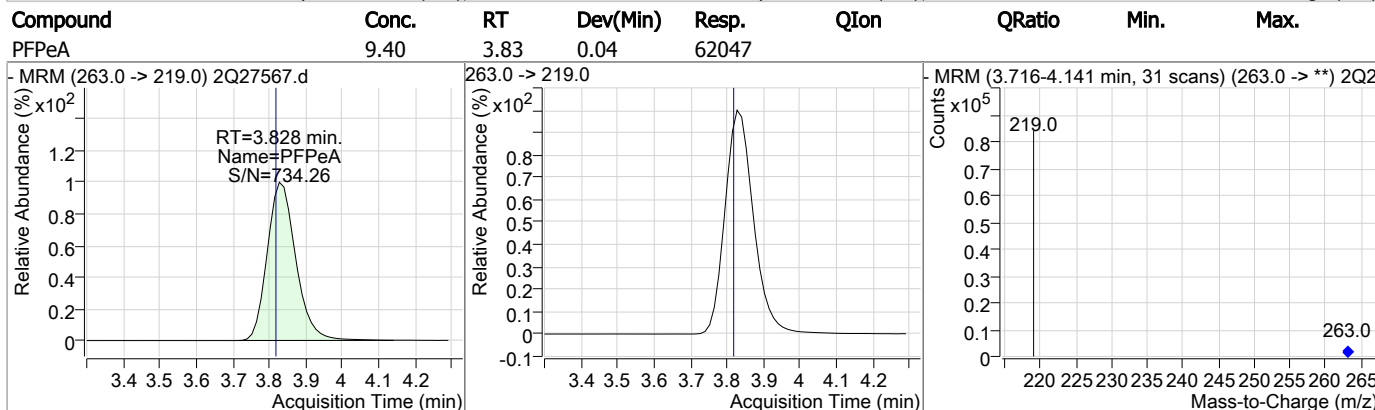
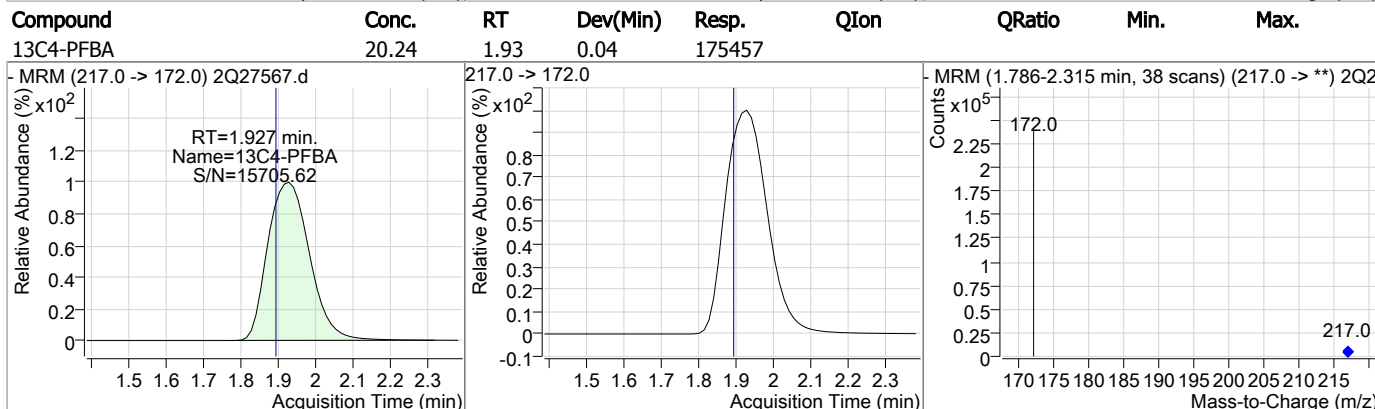
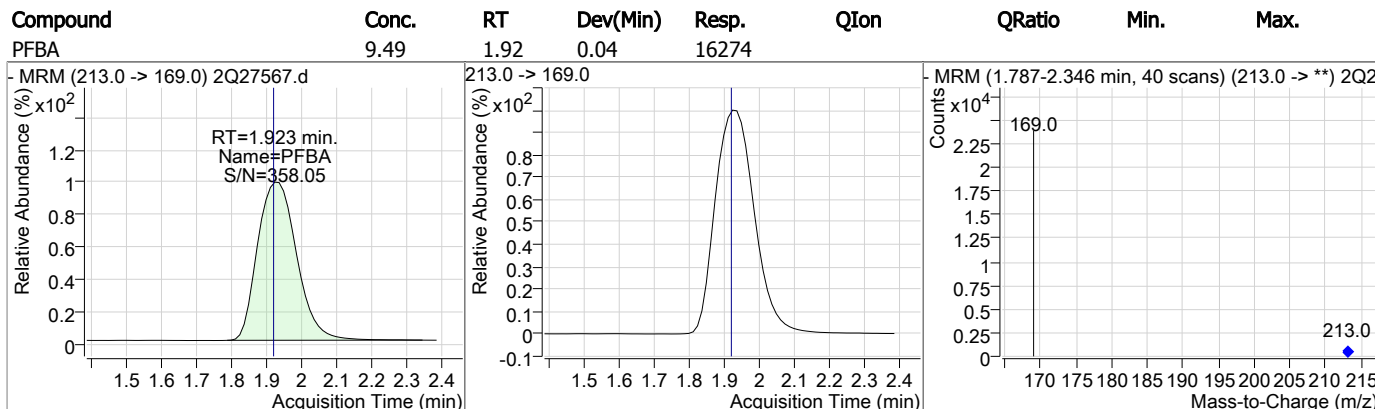
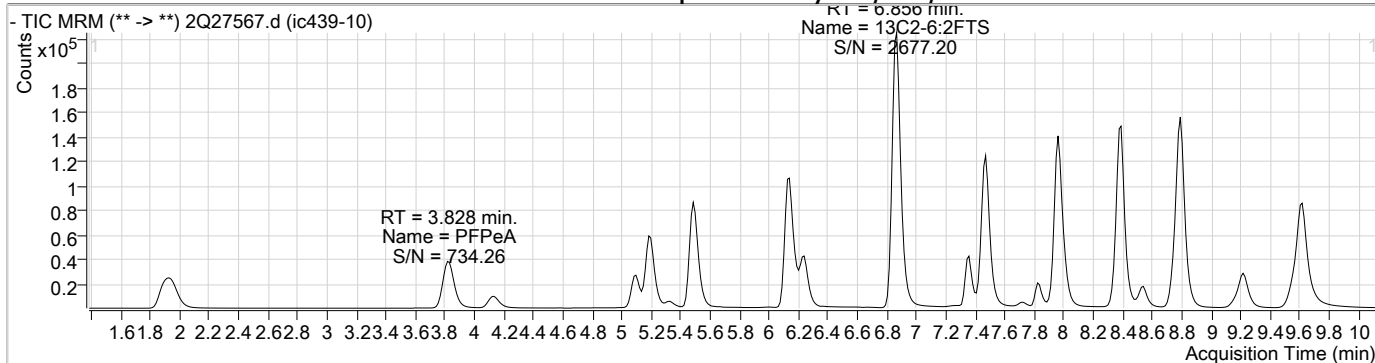
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.7% |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 492133 | 20.54 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.7% |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 118562 | 20.82 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.1% |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 303521 | 20.38 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.9% |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 34260  | 20.71 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.6% |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 292757 | 20.43 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.1% |          |
| d3-MeFOSAA            | 7.822                | 573.0 -> 419.0 | 49291  | 20.61 µg/L        | -0.001   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.1% |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 402254 | 20.00 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 58496  | 20.00 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.494                | 287.0 -> 169.0 | 210776 | 103.76 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 103.8% |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 5.100 | 327.0 -> 307.0 | 23797  | 10.20 µg/L  | 99     |
| 6:2FTS           | 6.858 | 427.0 -> 407.0 | 21650  | 9.87 µg/L   | 98     |
| 8:2FTS           | 8.006 | 527.0 -> 507.0 | 14760  | 10.02 µg/L  | 98     |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 10577  | 9.70 µg/L   | 99     |
| FOSA             | 7.360 | 498.0 -> 78.0  | 26827  | 10.00 µg/L  | 100    |
| MeFOSAA          | 7.823 | 570.0 -> 419.0 | 12633  | 9.71 µg/L   | 98     |
| PFBA             | 1.923 | 213.0 -> 169.0 | 16274  | 9.49 µg/L   | 100    |
| PFBS             | 4.134 | 299.0 -> 80.0  | 19386  | 9.55 µg/L   | 100    |
| PFDA             | 7.969 | 513.0 -> 469.0 | 76978  | 9.50 µg/L   | 100    |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 126062 | 9.44 µg/L   | 100    |
| PFDS             | 8.352 | 599.0 -> 80.0  | 6510   | 9.60 µg/L   | 100    |
| PFHpA            | 6.132 | 363.0 -> 319.0 | 130335 | 9.48 µg/L   | 100    |
| PFHpS            | 6.880 | 449.0 -> 80.0  | 13948  | 9.88 µg/L   | 97     |
| PFHxA            | 5.191 | 313.0 -> 269.0 | 34474  | 9.54 µg/L   | 100    |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 15392  | 9.28 µg/L   | m 99   |
| PFNA             | 7.480 | 463.0 -> 419.0 | 88283  | 9.31 µg/L   | 100    |
| PFNS             | 7.939 | 549.0 -> 80.0  | 12257  | 9.54 µg/L   | 99     |
| PFOA             | 6.875 | 413.0 -> 369.0 | 78787  | 9.48 µg/L   | 99     |
| PFOS             | 7.464 | 499.0 -> 80.0  | 16200  | 9.21 µg/L   | m 79   |
| PFPeA            | 3.828 | 263.0 -> 219.0 | 62047  | 9.40 µg/L   | 100    |
| PFPeS            | 5.321 | 349.0 -> 80.0  | 13404  | 9.65 µg/L   | 95     |
| PFTeDA           | 9.607 | 713.0 -> 669.0 | 129249 | 9.51 µg/L   | 100    |
| PFTTrDA          | 9.220 | 663.0 -> 619.0 | 143691 | 9.61 µg/L   | 100    |
| PFUnDA           | 8.393 | 563.0 -> 519.0 | 96832  | 9.30 µg/L   | 99     |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 70590  | 9.79 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 13429  | 9.59 µg/L   | 100    |
| ADONA            | 6.241 | 377.0 -> 251.0 | 149707 | 9.71 µg/L   | 100    |
| HFPO-DA          | 5.486 | 329.0 -> 169.0 | 124103 | 48.53 µg/L  | 100    |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



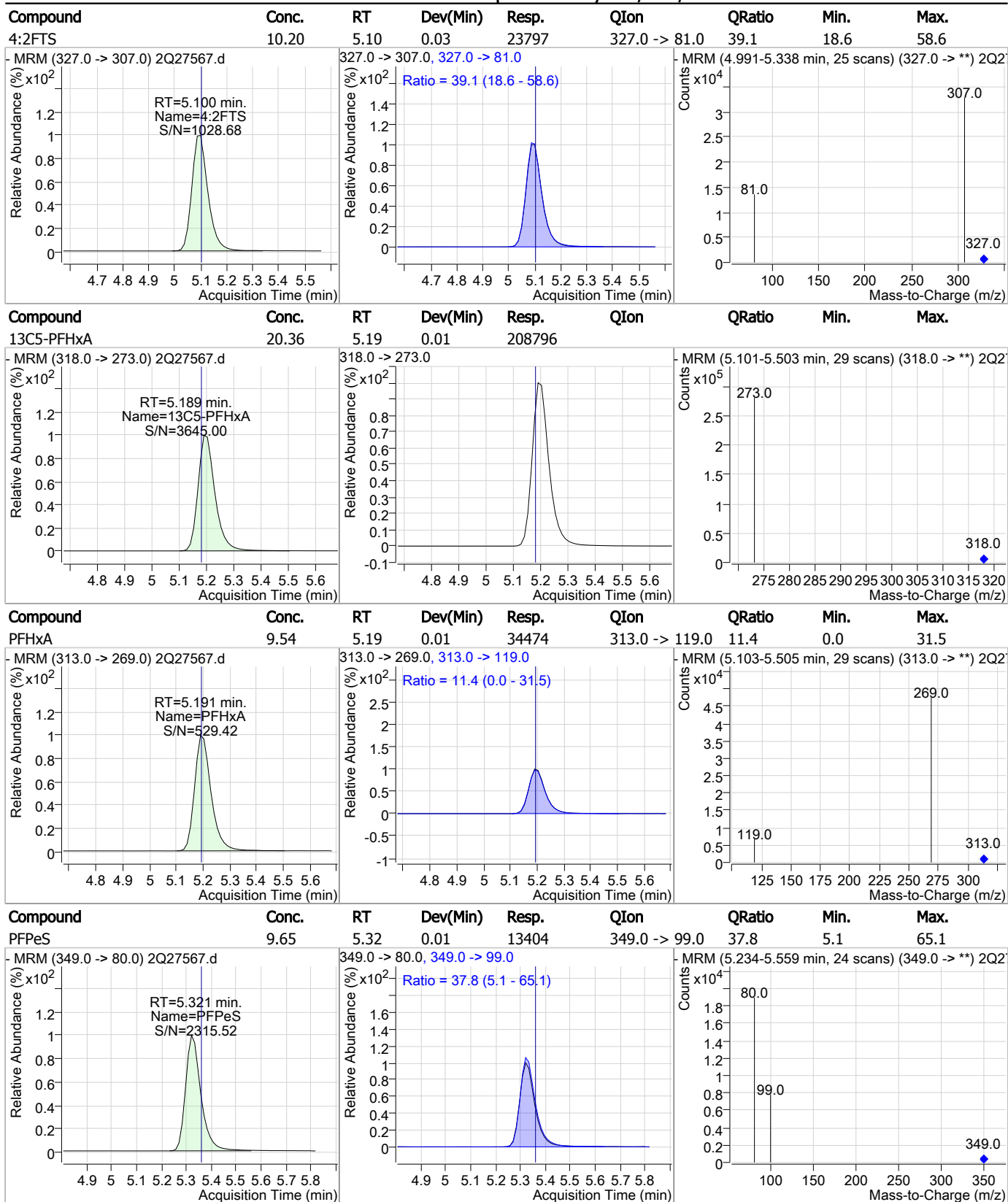
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 20.27 | 3.82 | 0.03     | 145393 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 20.25 | 4.13 | 0.04     | 24514  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 9.55  | 4.13 | 0.04     | 19386  | 299.0 -> 99.0 | 35.9   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 19.32 | 5.10 | 0.03     | 80186  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.5  
7



### Perfluorinated Compounds by LC/MS/MS

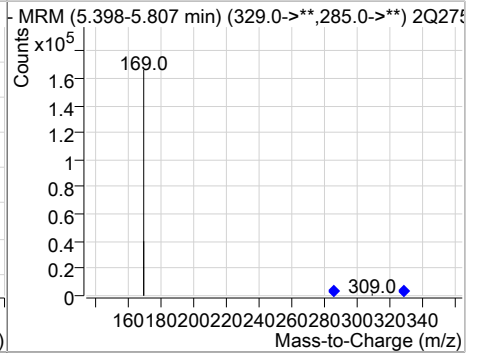
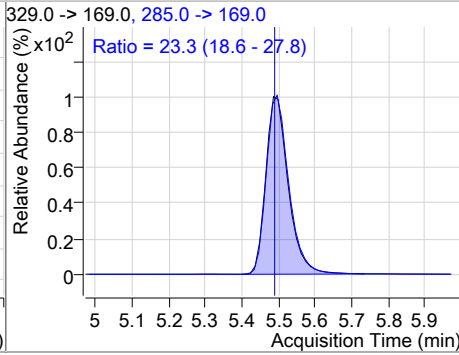
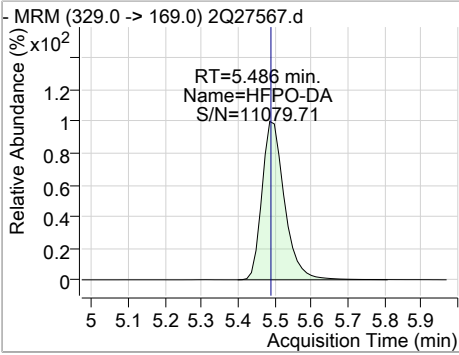


7.6.5

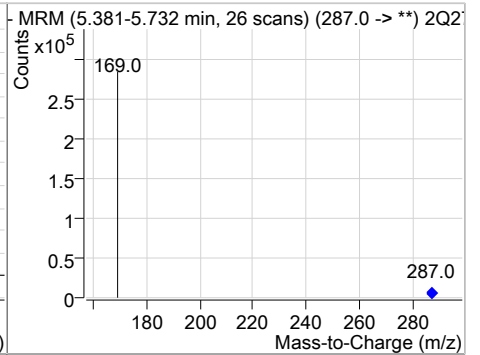
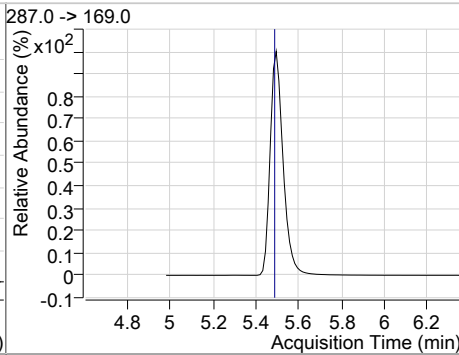
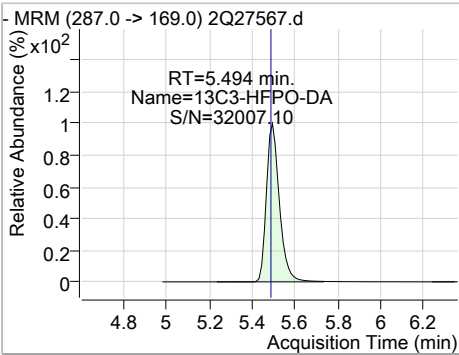
7

### Perfluorinated Compounds by LC/MS/MS

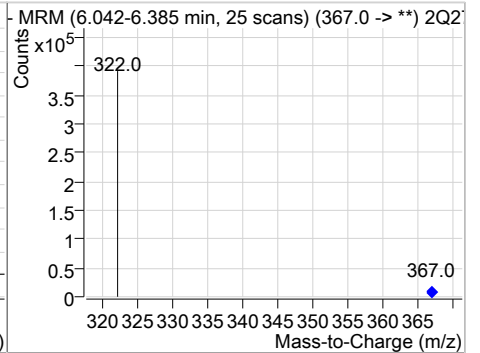
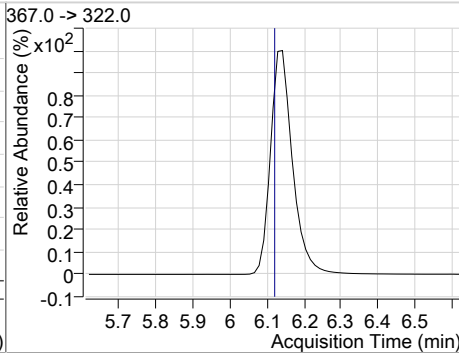
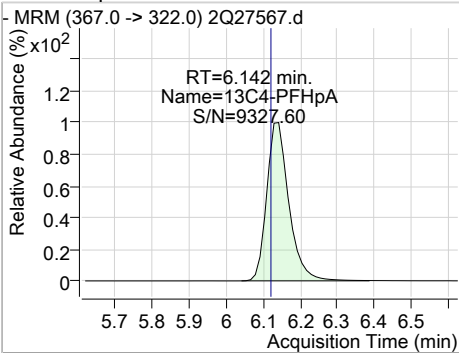
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 48.53 | 5.49 | 0.01     | 124103 | 285.0 -> 169.0 | 23.3   | 18.6 | 27.8 |



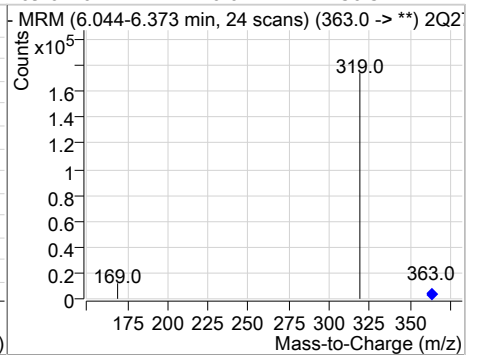
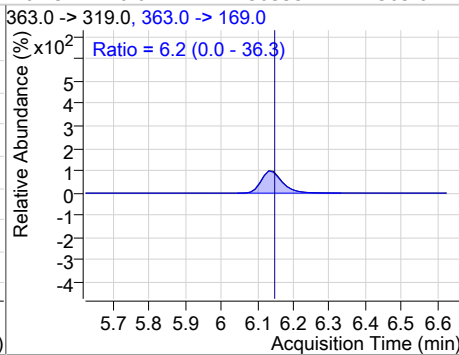
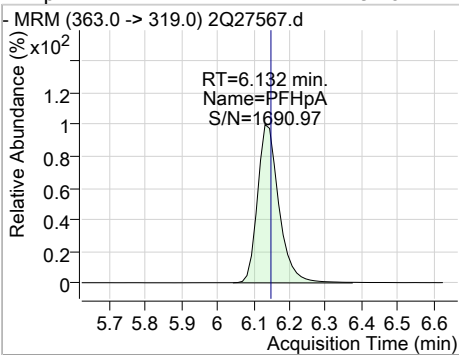
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 103.76 | 5.49 | 0.01     | 210776 |      |        |      |      |



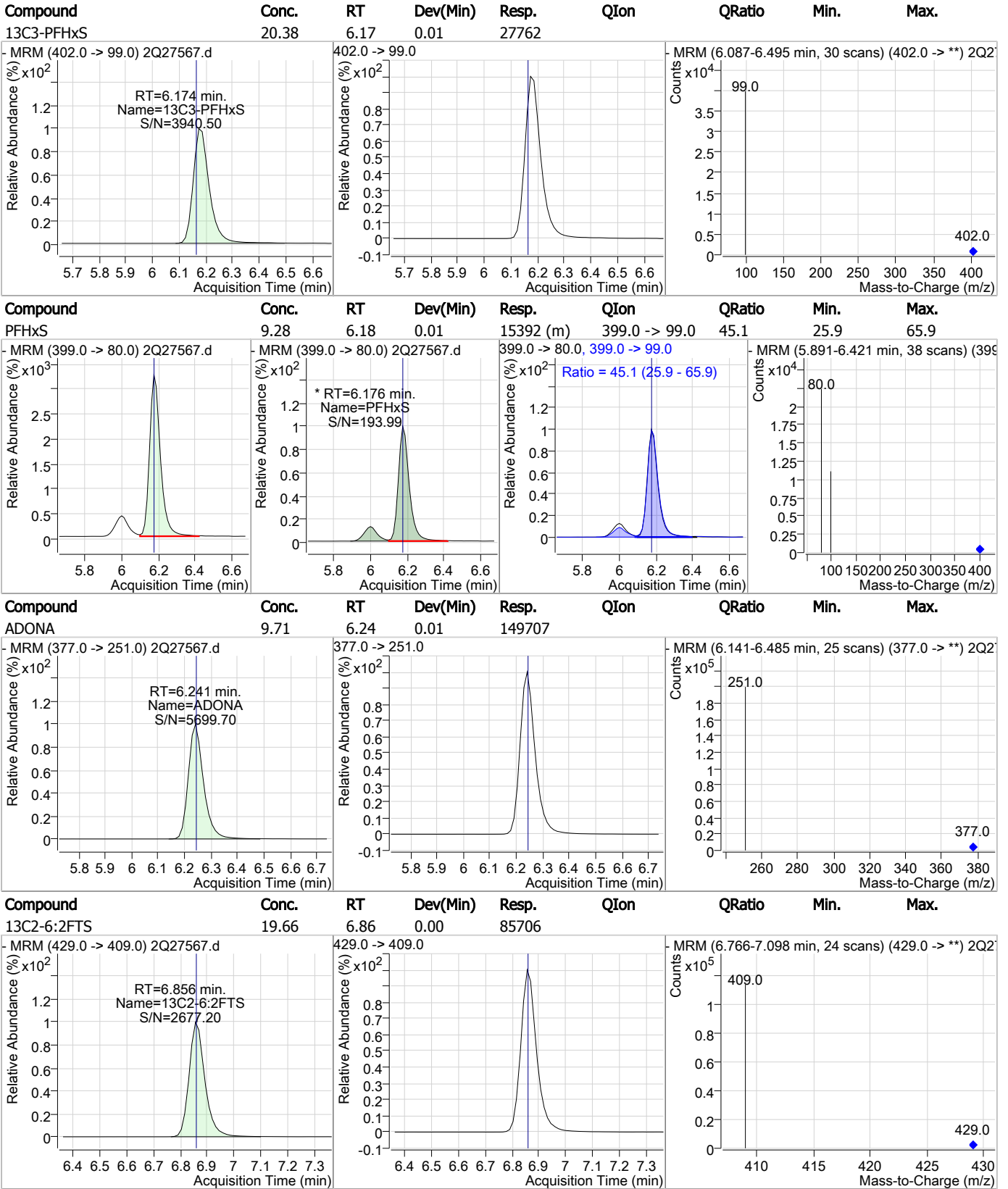
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 20.34 | 6.14 | 0.02     | 292800 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 9.48  | 6.13 | 0.01     | 130335 | 363.0 -> 169.0 | 6.2    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS



7.6.5  
7

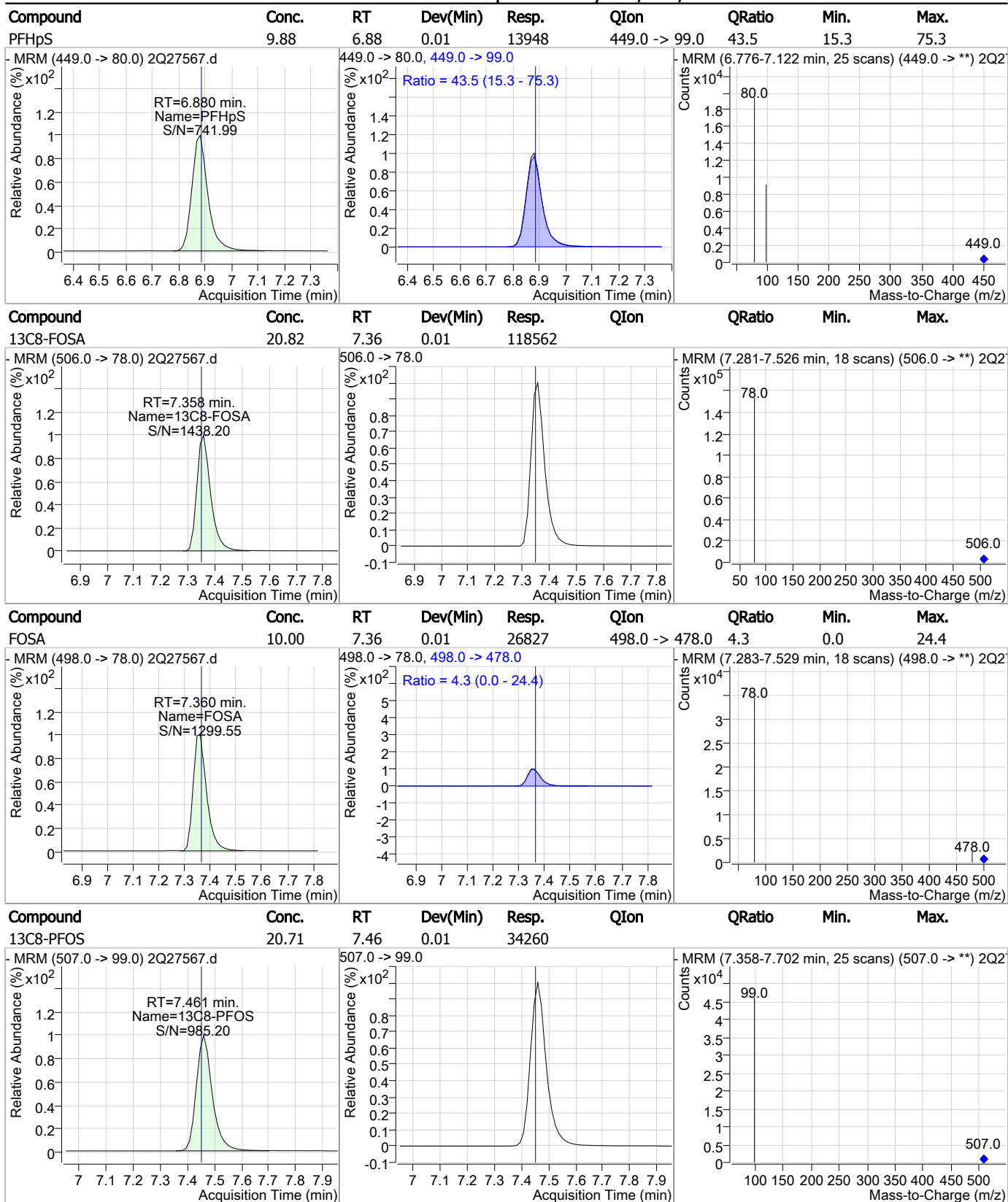
### Perfluorinated Compounds by LC/MS/MS

| Compound                         | Conc. | RT   | Dev(Min)                       | Resp.  | QIon  | QRatio | Min. | Max. |
|----------------------------------|-------|------|--------------------------------|--------|---|--------|------|------|
| 6:2FTS                           | 9.87  | 6.86 | 0.00                           | 21650  | 427.0 -> 81.0                                       | 32.2   | 0.9  | 60.9 |
| - MRM (427.0 -> 407.0) 2Q27567.d |       |      | 427.0 -> 407.0, 427.0 -> 81.0  |        | - MRM (6.755-7.099 min, 25 scans) (427.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |
| 13C8-PFOA                        | 20.38 | 6.87 | 0.01                           | 303521 |   |        |      |      |
| - MRM (421.0 -> 376.0) 2Q27567.d |       |      | 421.0 -> 376.0                 |        | - MRM (6.766-7.113 min, 25 scans) (421.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |
| M2-PFOA                          | 20.00 | 6.87 | 0.01                           | 402254 |   |        |      |      |
| - MRM (415.0 -> 370.0) 2Q27567.d |       |      | 415.0 -> 370.0                 |        | - MRM (6.760-7.114 min, 26 scans) (415.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |
| PFOA                             | 9.48  | 6.88 | 0.01                           | 78787  | 413.0 -> 169.0                                      | 26.7   | 7.3  | 47.3 |
| - MRM (413.0 -> 369.0) 2Q27567.d |       |      | 413.0 -> 369.0, 413.0 -> 169.0 |        | - MRM (6.774-7.115 min, 25 scans) (413.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |

7.6.5

7

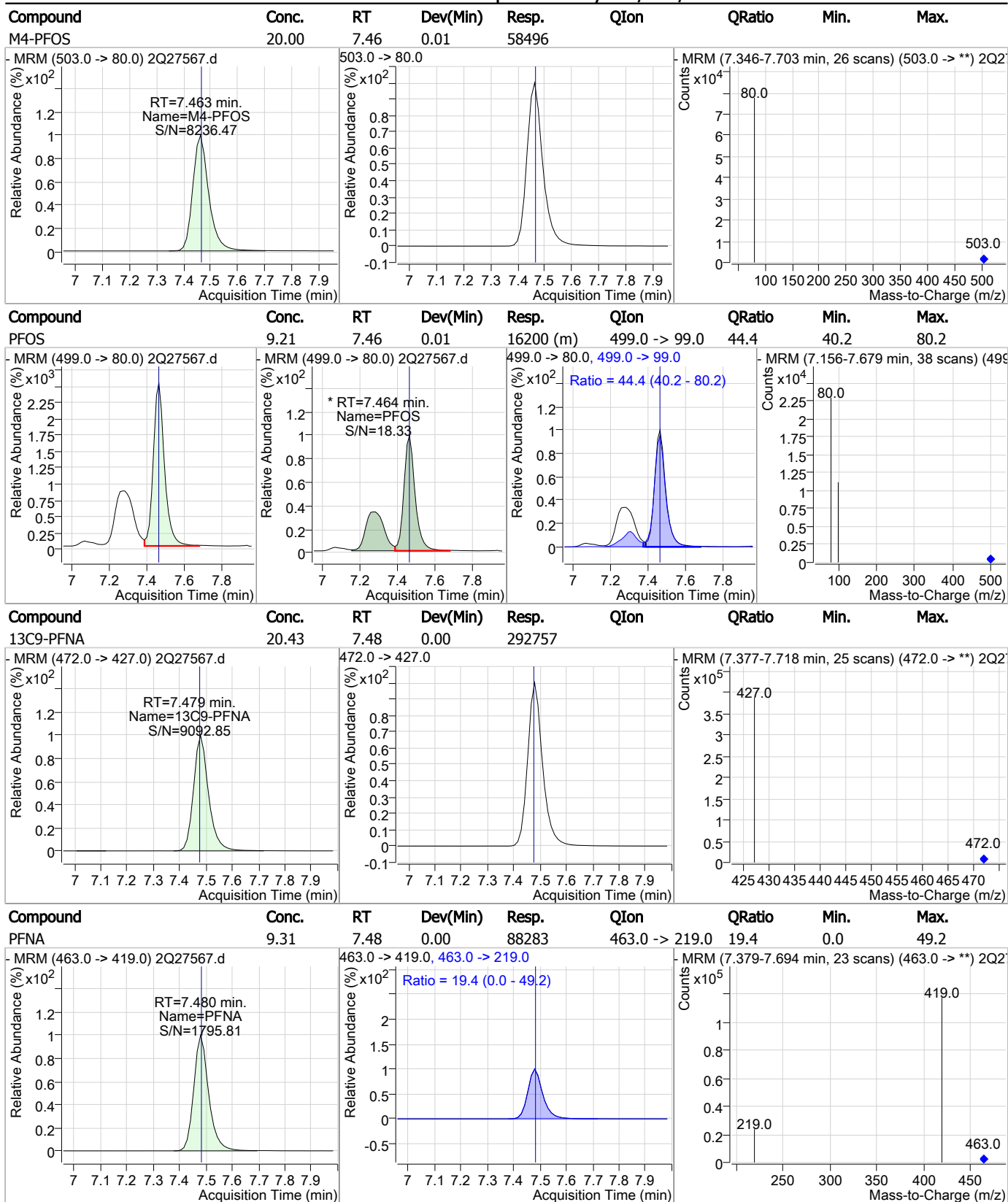
### Perfluorinated Compounds by LC/MS/MS



7.6.5

7

### Perfluorinated Compounds by LC/MS/MS



7.6.5  
7

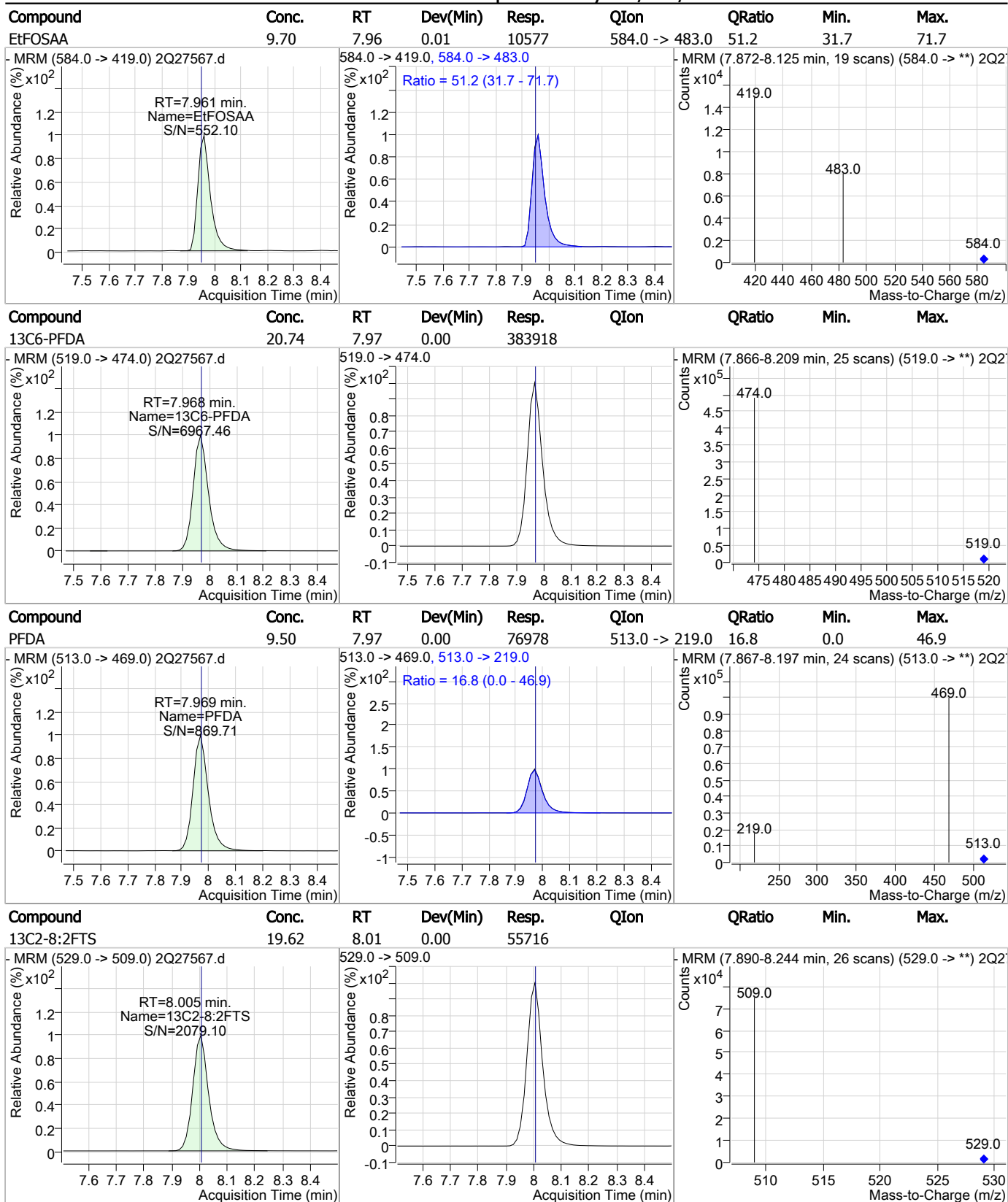
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 9.59  | 7.72 | 0.01     | 13429 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 20.61 | 7.82 | 0.00     | 49291 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 9.71  | 7.82 | 0.00     | 12633 | 570.0 -> 512.0 | 23.3   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 9.54  | 7.94 | 0.00     | 12257 | 549.0 -> 99.0  | 49.7   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

7.6.5

7

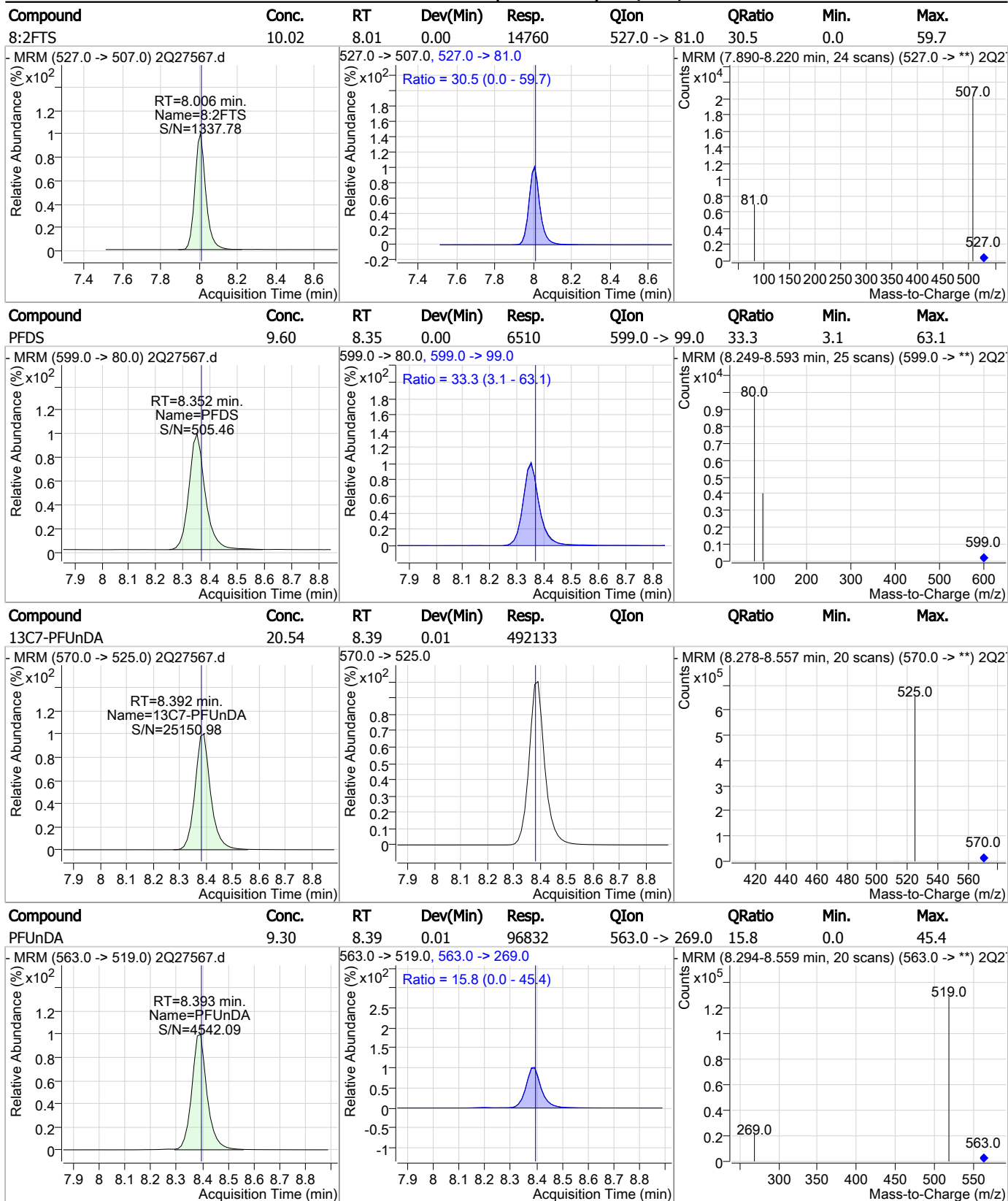
### Perfluorinated Compounds by LC/MS/MS



7.6.5  
7

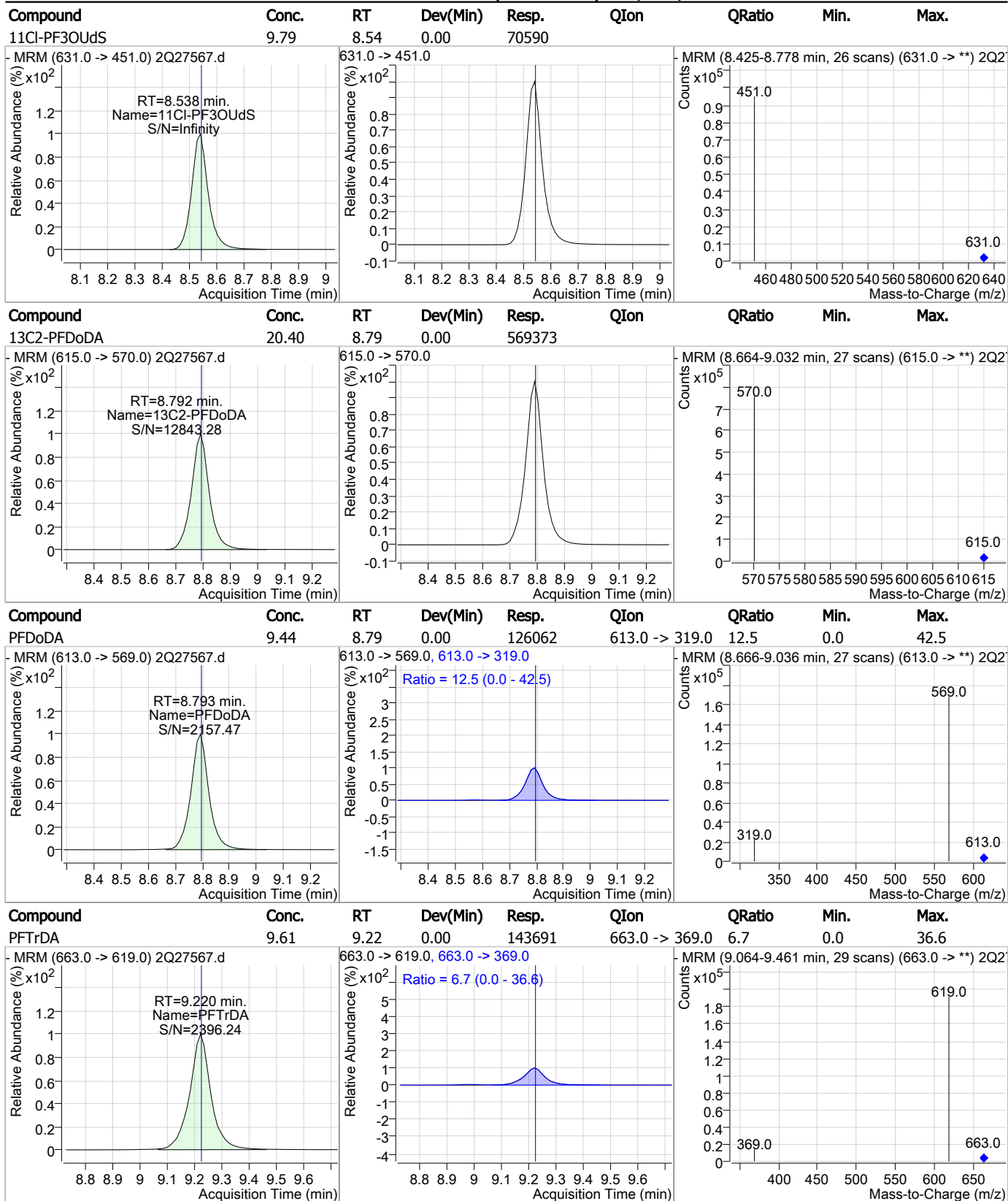


### Perfluorinated Compounds by LC/MS/MS



7.6.5  
7

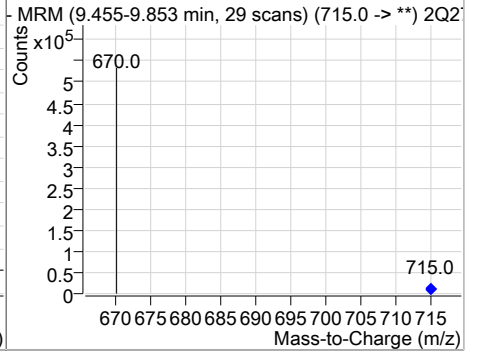
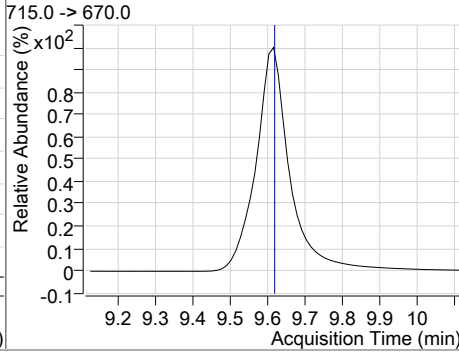
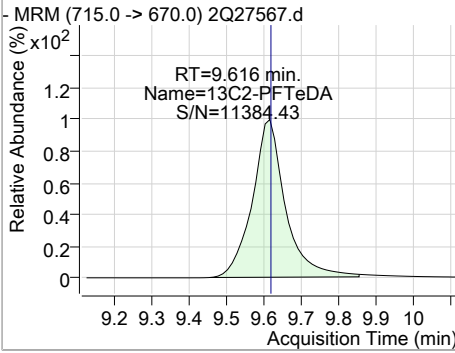
### Perfluorinated Compounds by LC/MS/MS



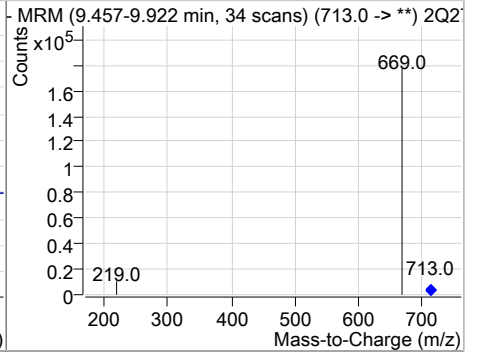
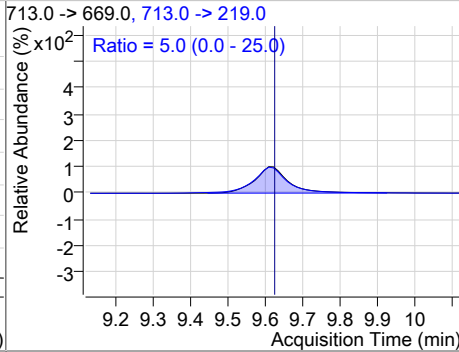
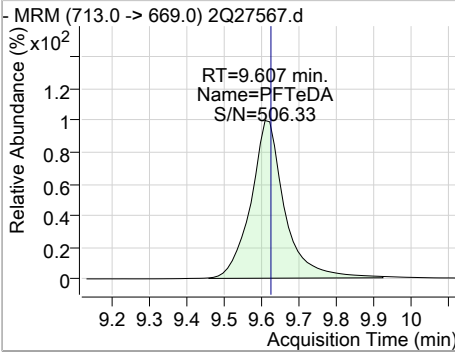
7.6.5  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.26 | 9.62 | 0.00     | 391714 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 9.51  | 9.61 | -0.01    | 129249 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



7.6.5  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q439-IC439  
**Lab FileID:** 2Q27567.D  
**Injection Time:** 03/13/19 11:47

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46           | Split peak |

7.6.5.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Mike Eger  
 03/14/19 15:20

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27568.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 12:03:12 PM  
 Sample Name : icc439-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 358299 | 20.00 µg/L       | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 52649  | 20.00 µg/L       | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 161181 | 20.00 µg/L       | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 132817 | 20.00 µg/L       | 0.025    |
| M5-PFHxA                           | 5.202                | 318.0 -> 273.0 | 189791 | 20.00 µg/L       | 0.025    |
| M4-PFHpA                           | 6.142                | 367.0 -> 322.0 | 266270 | 20.00 µg/L       | 0.024    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 276598 | 20.00 µg/L       | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 267252 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 345006 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 446290 | 20.00 µg/L       | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 528650 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 334540 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 105657 | 20.00 µg/L       | 0.011    |
| M3-PFBS                            | 4.130                | 302.0 -> 99.0  | 22489  | 20.00 µg/L       | 0.038    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 25188  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 30663  | 20.00 µg/L       | 0.012    |
| M2-4:2FTS                          | 5.097                | 329.0 -> 309.0 | 76025  | 20.00 µg/L       | 0.025    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 80905  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 53083  | 20.00 µg/L       | 0.001    |
| M3-MeFOSAA                         | 7.834                | 573.0 -> 419.0 | 44437  | 20.00 µg/L       | 0.012    |
| M3-HFPO-DA                         | 5.494                | 287.0 -> 169.0 | 194289 | 100.00 µg/L      | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 5.097                | 329.0 -> 309.0 | 76039  | 18.32 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.6% |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 80924  | 18.57 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.8% |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 53081  | 18.70 µg/L       | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.5% |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 529046 | 18.95 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.8% |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 334497 | 17.30 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.5% |          |
| 13C3-PFBS                          | 4.130                | 302.0 -> 99.0  | 22373  | 18.48 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.4% |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 25206  | 18.51 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.5% |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 160378 | 18.50 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.5% |          |
| 13C4-PFHpA                         | 6.142                | 367.0 -> 322.0 | 265855 | 18.47 µg/L       | 0.024    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.3% |          |
| 13C5-PFHxA                         | 5.202                | 318.0 -> 273.0 | 189625 | 18.49 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.4% |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 132649 | 18.50 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.5% |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 344713 | 18.62 µg/L       | 0.000    |

7.6.6  
7

## Perfluorinated Compounds by LC/MS/MS

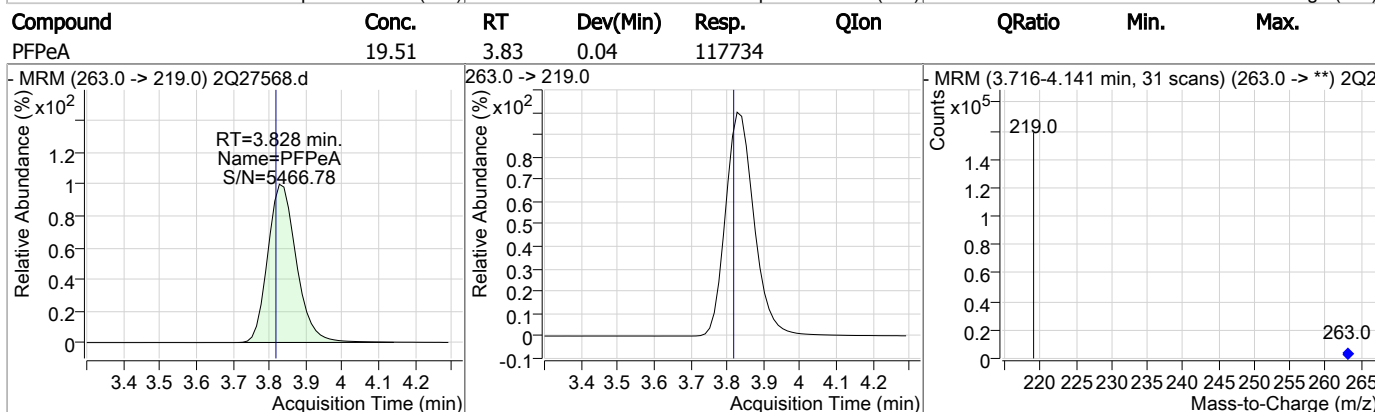
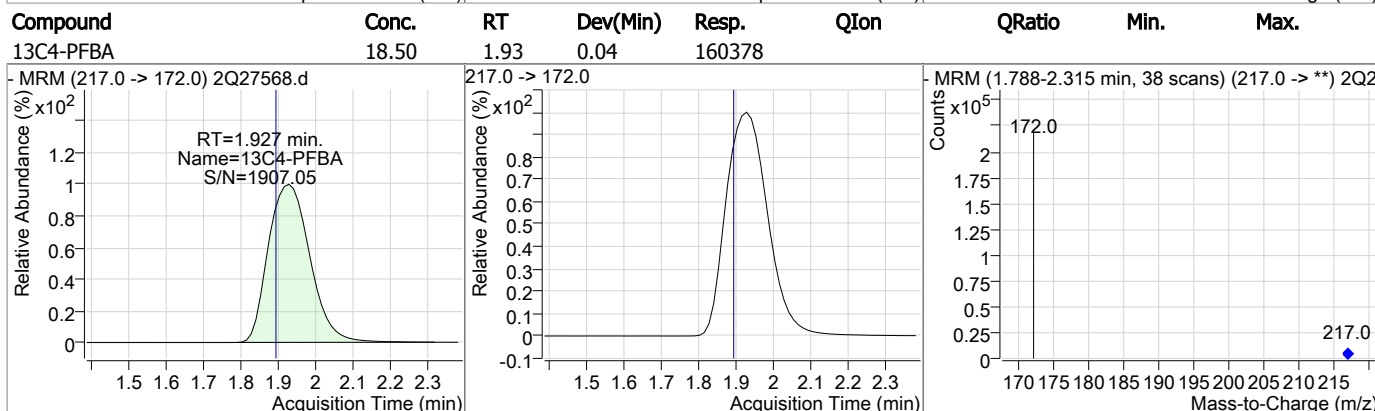
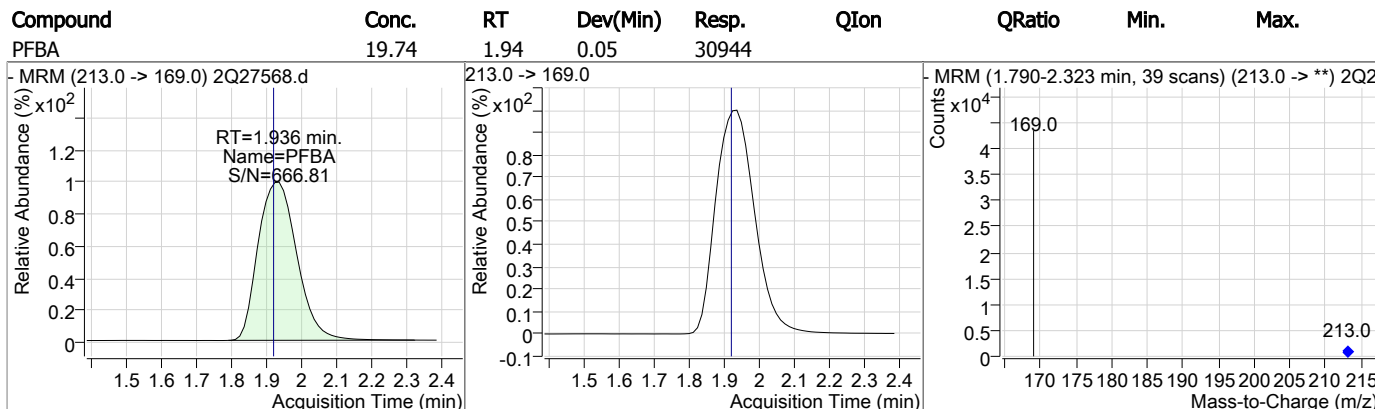
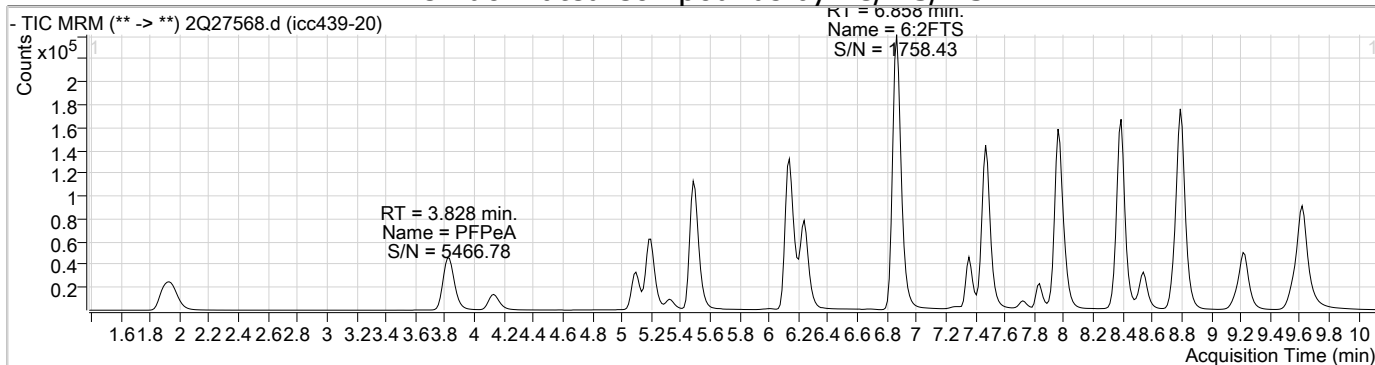
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.1%  |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 446179 | 18.63 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.1%  |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 105660 | 18.55 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.8%  |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 276526 | 18.57 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.8%  |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 30692  | 18.56 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.8%  |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 267180 | 18.64 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.2%  |          |
| d3-MeFOSAA            | 7.834                | 573.0 -> 419.0 | 44446  | 18.59 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.9%  |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 358631 | 20.00 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 52608  | 19.98 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C3-HFPO-DA          | 5.494                | 287.0 -> 169.0 | 194289 | 95.65 µg/L        | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 95.6%  |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 5.100 | 327.0 -> 307.0 | 45680  | 20.65 µg/L  | 99     |
| 6:2FTS           | 6.858 | 427.0 -> 407.0 | 41708  | 20.16 µg/L  | 99     |
| 8:2FTS           | 8.006 | 527.0 -> 507.0 | 27779  | 19.81 µg/L  | 98     |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 20260  | 20.73 µg/L  | 97     |
| FOSA             | 7.360 | 498.0 -> 78.0  | 49077  | 20.38 µg/L  | 100    |
| MeFOSAA          | 7.835 | 570.0 -> 419.0 | 23679  | 20.05 µg/L  | 100    |
| PFBA             | 1.936 | 213.0 -> 169.0 | 30944  | 19.74 µg/L  | 100    |
| PFBS             | 4.134 | 299.0 -> 80.0  | 36666  | 19.74 µg/L  | 100    |
| PFDA             | 7.969 | 513.0 -> 469.0 | 146399 | 20.10 µg/L  | 99     |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 245205 | 19.79 µg/L  | 100    |
| PFDS             | 8.352 | 599.0 -> 80.0  | 12350  | 20.38 µg/L  | 99     |
| PFHpA            | 6.144 | 363.0 -> 319.0 | 246230 | 19.72 µg/L  | 100    |
| PFHpS            | 6.880 | 449.0 -> 80.0  | 26244  | 20.57 µg/L  | 99     |
| PFHxA            | 5.203 | 313.0 -> 269.0 | 65318  | 19.89 µg/L  | 100    |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 29333  | 19.55 µg/L  | m 96   |
| PFNA             | 7.480 | 463.0 -> 419.0 | 171057 | 19.77 µg/L  | 100    |
| PFNS             | 7.939 | 549.0 -> 80.0  | 23676  | 20.63 µg/L  | 99     |
| PFOA             | 6.875 | 413.0 -> 369.0 | 149686 | 19.78 µg/L  | 99     |
| PFOS             | 7.464 | 499.0 -> 80.0  | 30608  | 19.47 µg/L  | m 79   |
| PFPeA            | 3.828 | 263.0 -> 219.0 | 117734 | 19.51 µg/L  | 100    |
| PFPeS            | 5.321 | 349.0 -> 80.0  | 25707  | 20.21 µg/L  | 100    |
| PFTeDA           | 9.620 | 713.0 -> 669.0 | 222698 | 19.50 µg/L  | 100    |
| PFTTrDA          | 9.220 | 663.0 -> 619.0 | 254547 | 20.26 µg/L  | 100    |
| PFUnDA           | 8.393 | 563.0 -> 519.0 | 186925 | 19.78 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 133877 | 20.01 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 25774  | 20.21 µg/L  | 100    |
| ADONA            | 6.241 | 377.0 -> 251.0 | 286190 | 20.15 µg/L  | 100    |
| HFPO-DA          | 5.486 | 329.0 -> 169.0 | 232910 | 98.81 µg/L  | 99     |

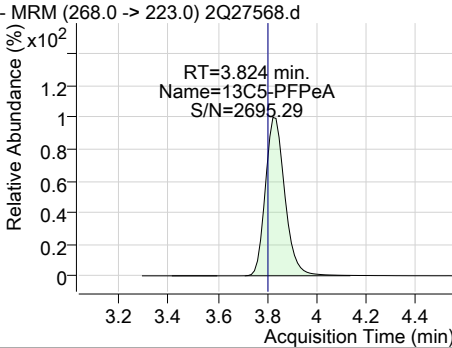
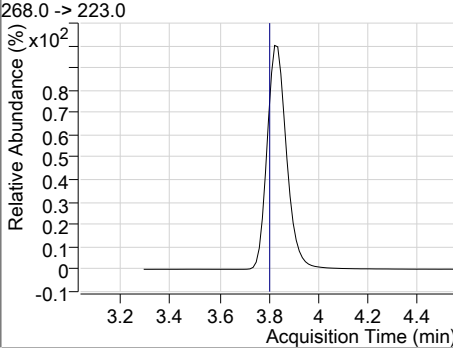
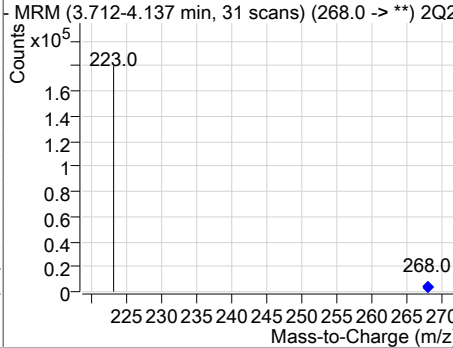
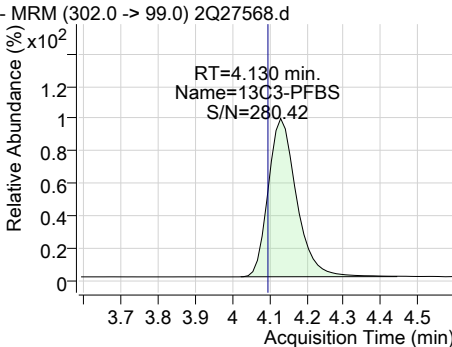
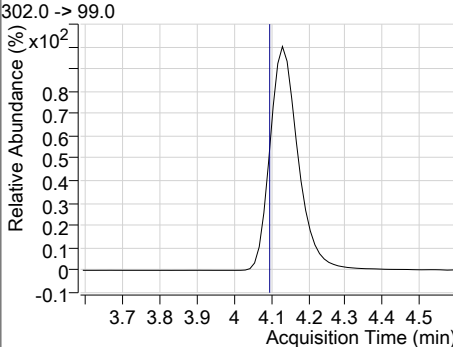
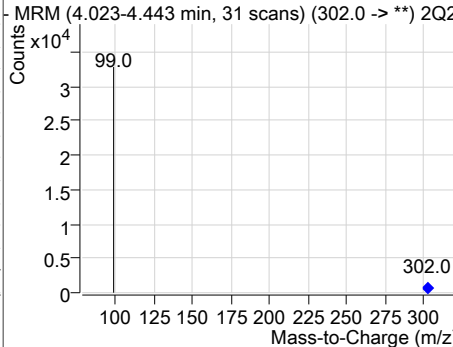
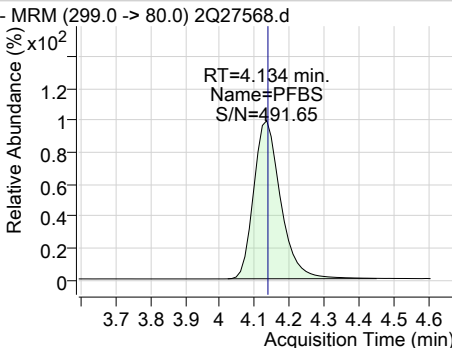
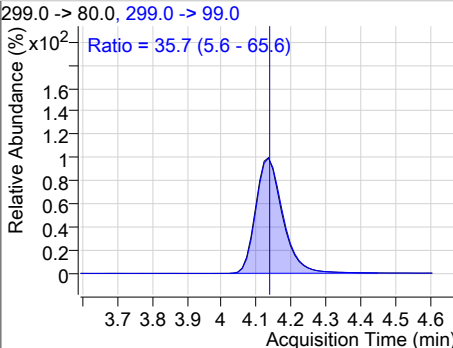
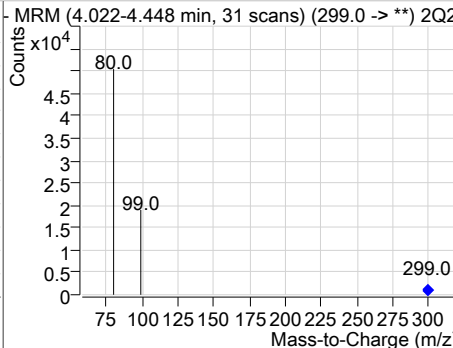
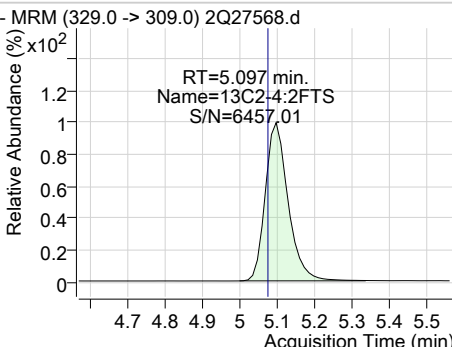
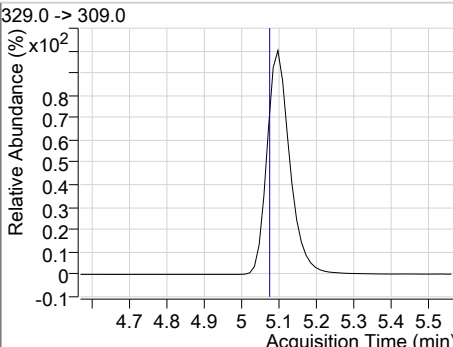
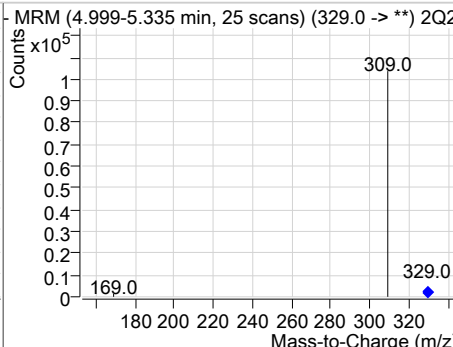
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.6  
7

### Perfluorinated Compounds by LC/MS/MS

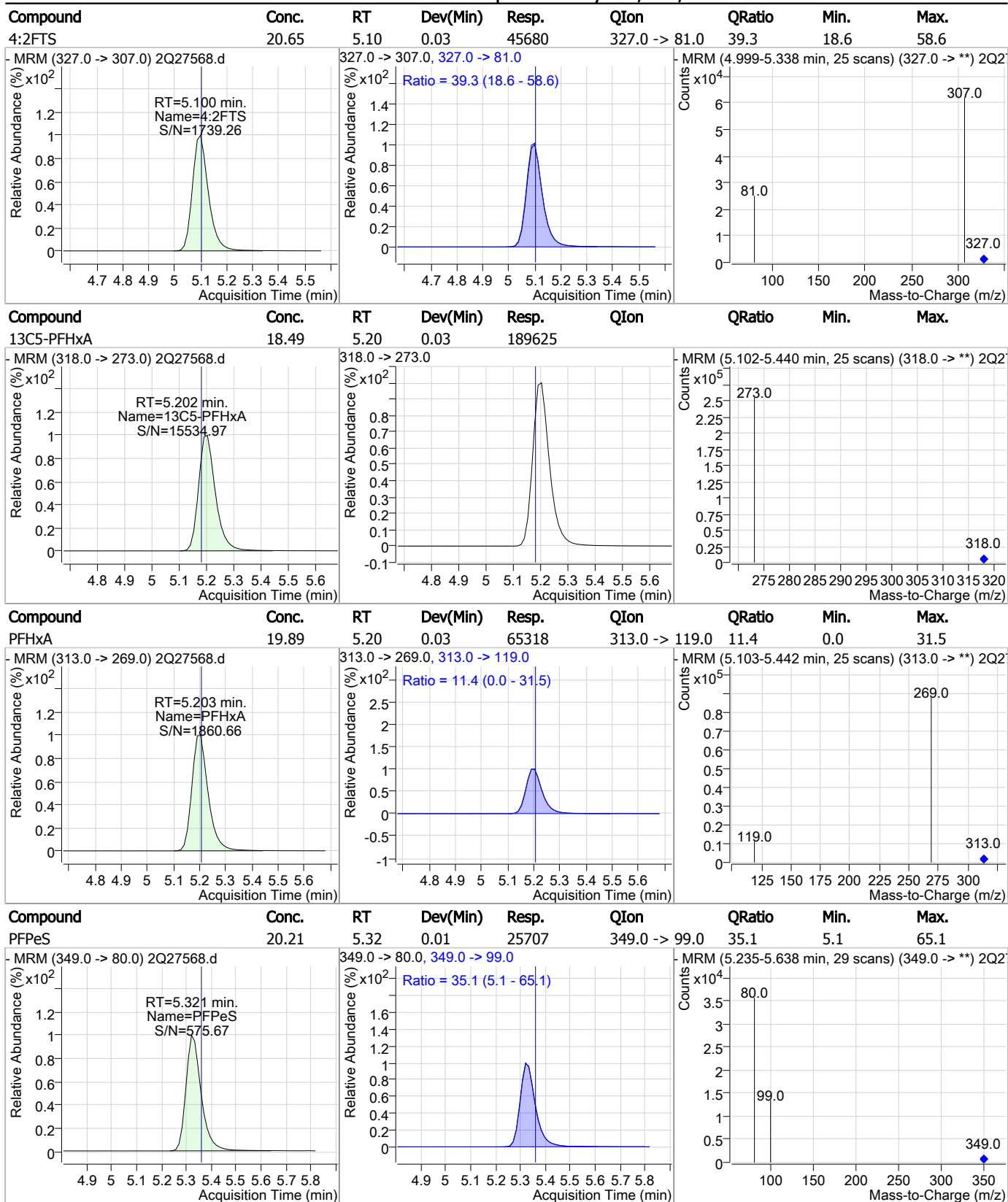
| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon          | QRatio   | Min. | Max. |
|--|-------|------|---|--------|---------------|--|------|------|
| 13C5-PFPeA   | 18.50 | 3.82 | 0.03  | 132649 |               |  |      |      |
|    |       |      |    |        |               |    |      |      |
| 13C3-PFBS  | 18.48 | 4.13 | 0.04  | 22373  |               |  |      |      |
|    |       |      |    |        |               |    |      |      |
| PFBS   | 19.74 | 4.13 | 0.04  | 36666  | 299.0 -> 99.0 | 35.7   | 5.6  | 65.6 |
|  |       |      |  |        |               |  |      |      |
| 13C2-4:2FTS  | 18.32 | 5.10 | 0.03  | 76039  |               |  |      |      |
|  |       |      |  |        |               |  |      |      |

7.6.6

7



### Perfluorinated Compounds by LC/MS/MS

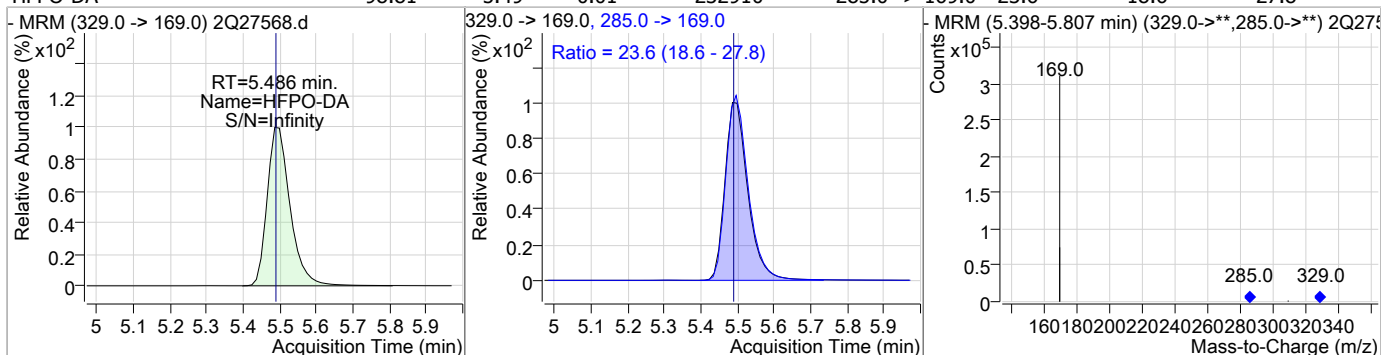


7.6.6

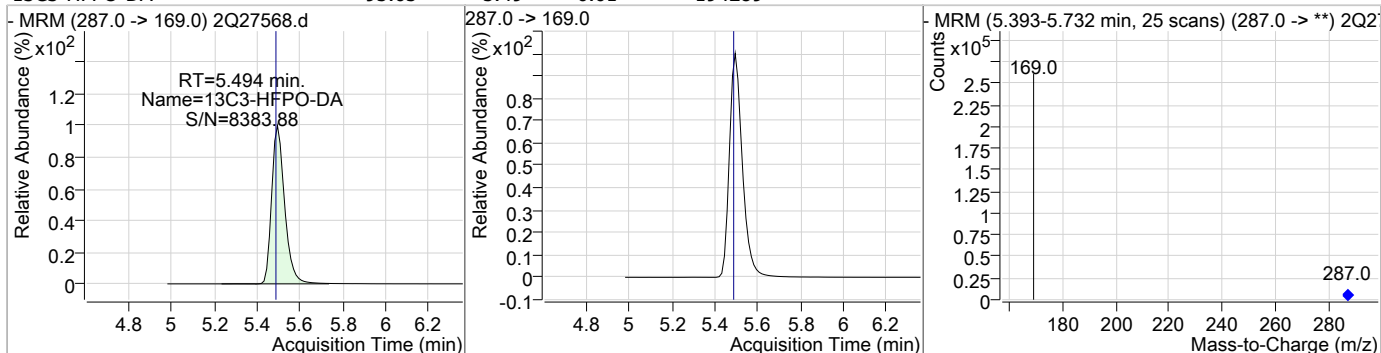
7

### Perfluorinated Compounds by LC/MS/MS

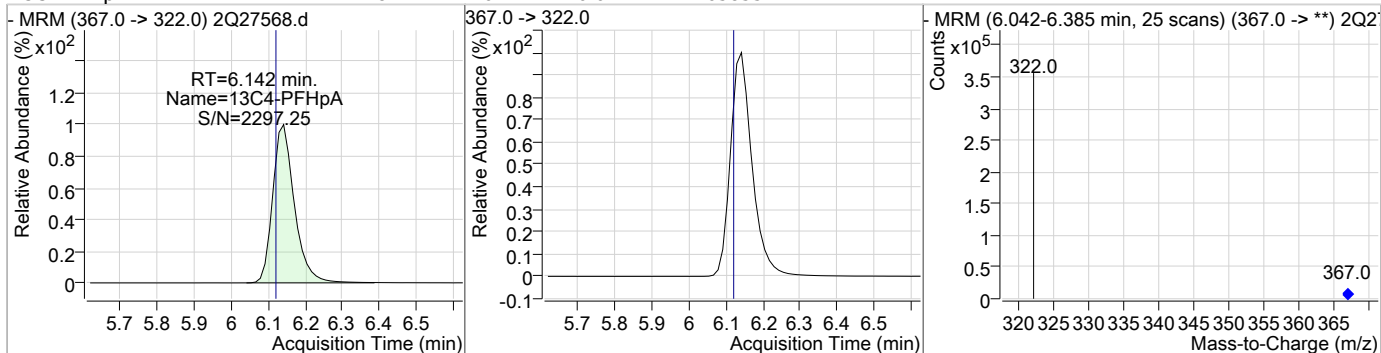
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 98.81 | 5.49 | 0.01     | 232910 | 285.0 -> 169.0 | 23.6   | 18.6 | 27.8 |



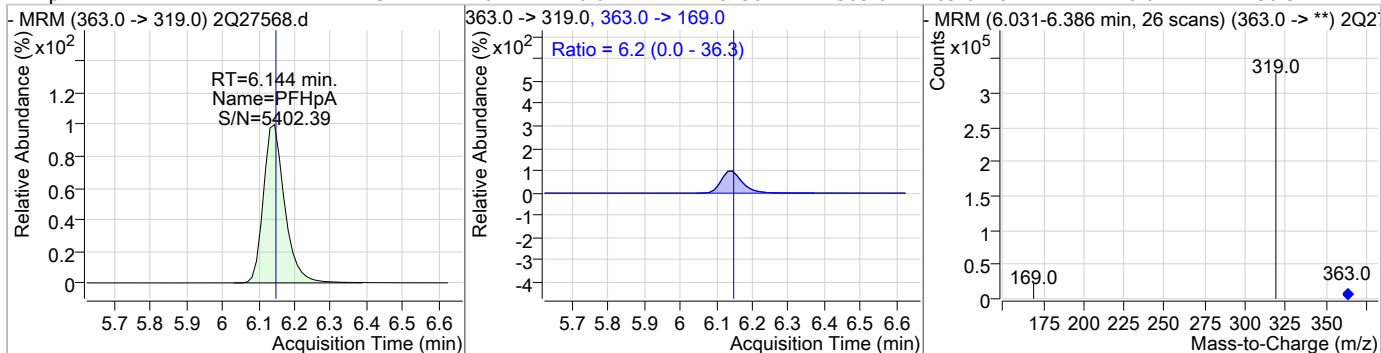
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 95.65 | 5.49 | 0.01     | 194289 |      |        |      |      |



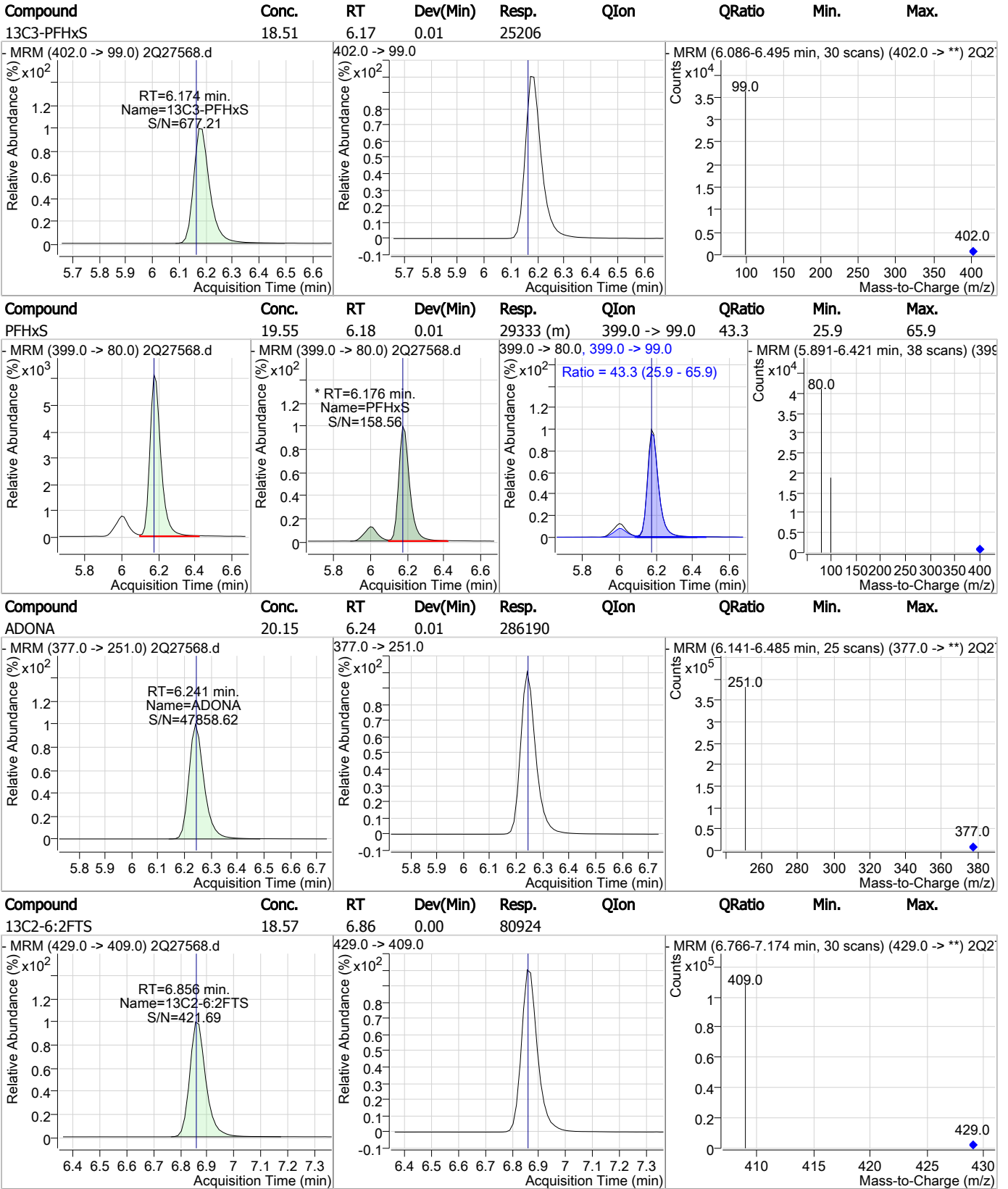
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 18.47 | 6.14 | 0.02     | 265855 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.72 | 6.14 | 0.02     | 246230 | 363.0 -> 169.0 | 6.2    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

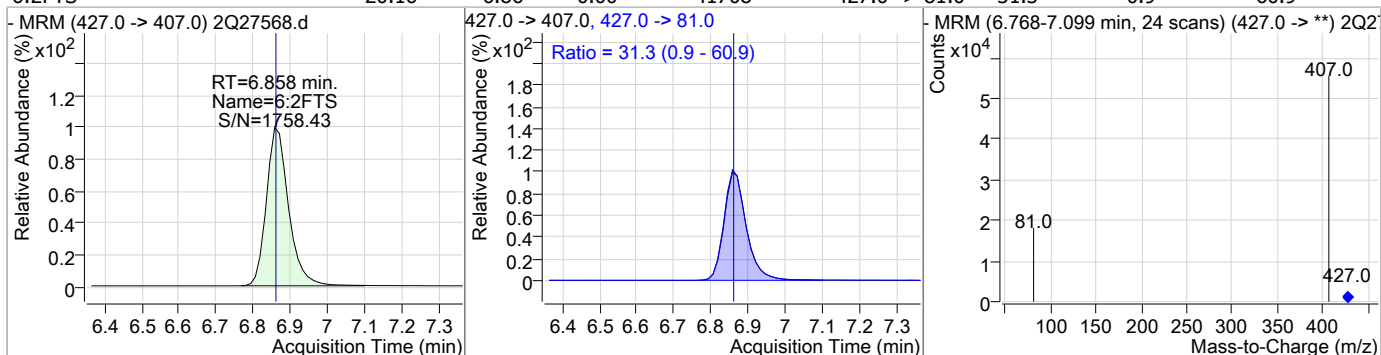


7.6.6

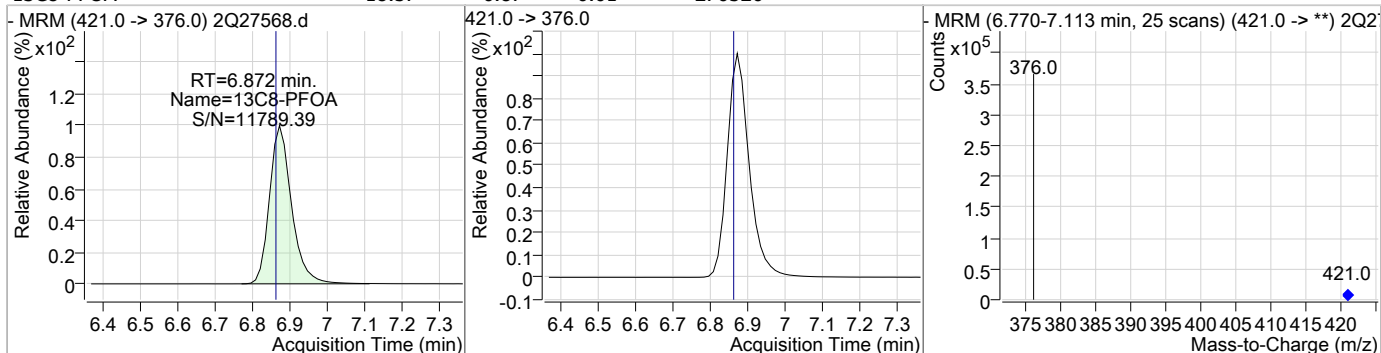
7

### Perfluorinated Compounds by LC/MS/MS

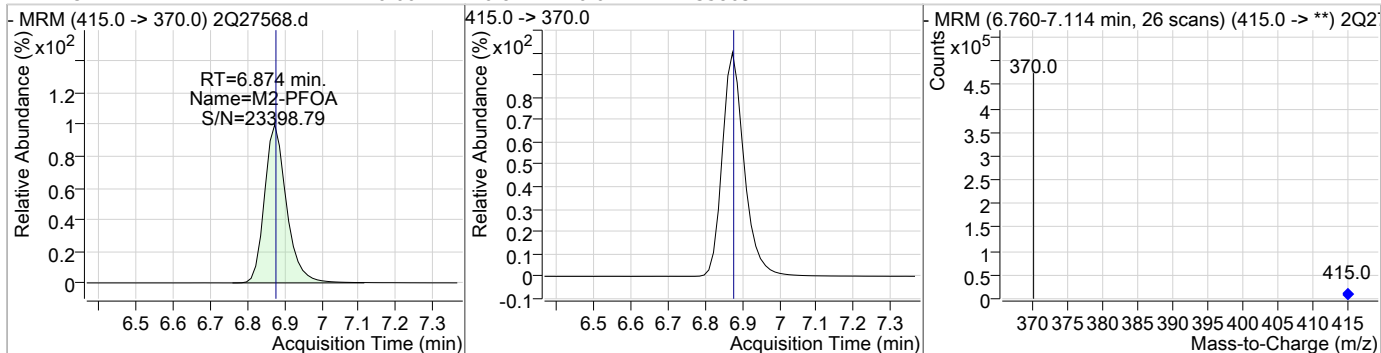
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 20.16 | 6.86 | 0.00     | 41708 | 427.0 -> 81.0 | 31.3   | 0.9  | 60.9 |



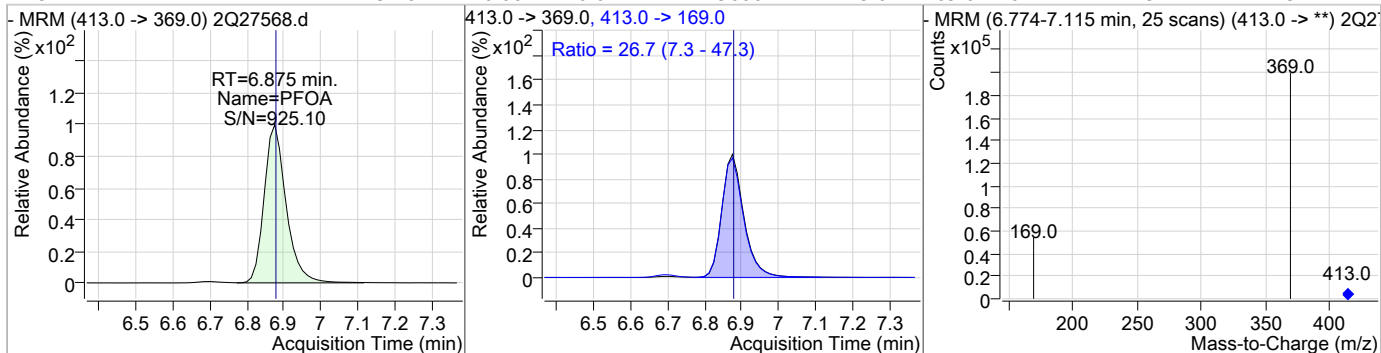
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 18.57 | 6.87 | 0.01     | 276526 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.87 | 0.01     | 358631 |      |        |      |      |

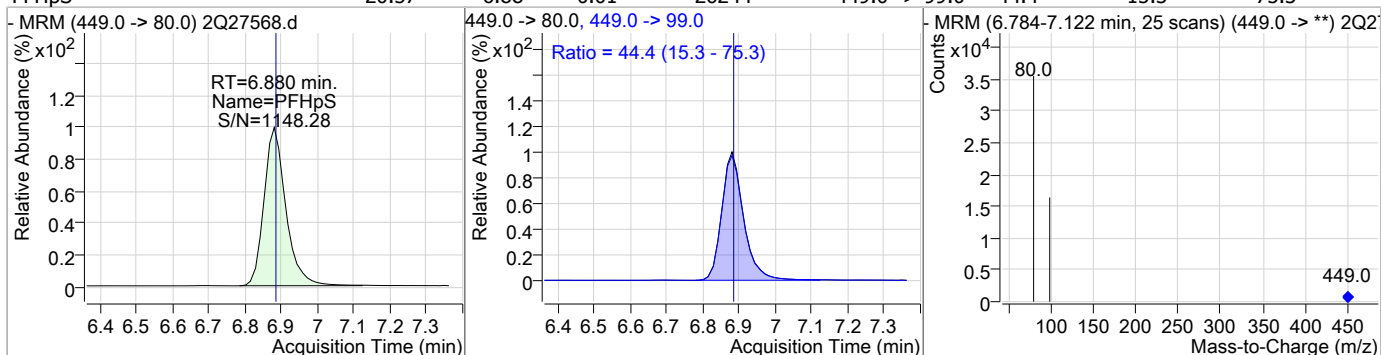


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.78 | 6.88 | 0.01     | 149686 | 413.0 -> 169.0 | 26.7   | 7.3  | 47.3 |

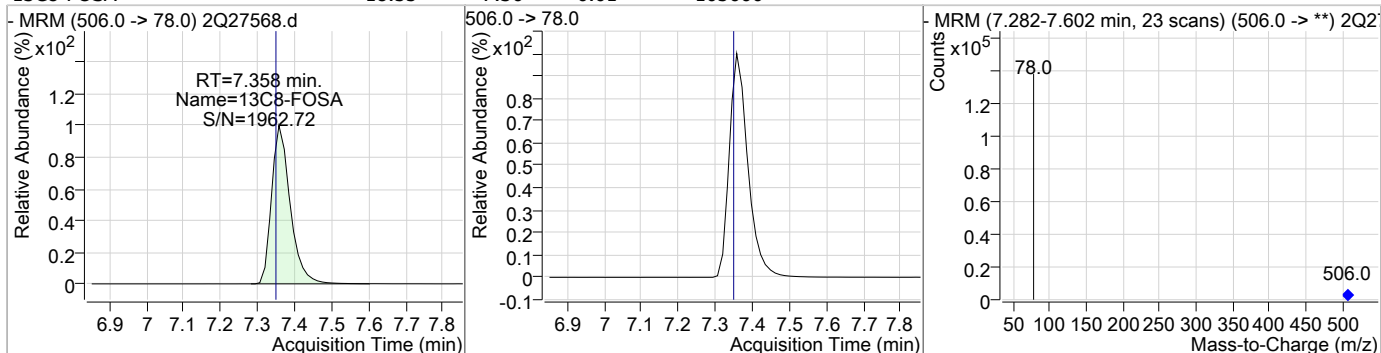


### Perfluorinated Compounds by LC/MS/MS

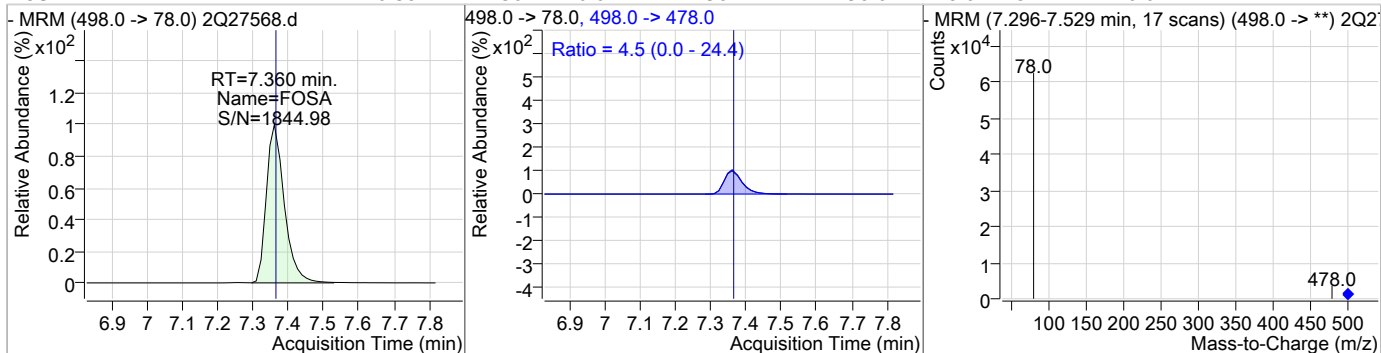
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 20.57 | 6.88 | 0.01     | 26244 | 449.0 -> 99.0 | 44.4   | 15.3 | 75.3 |



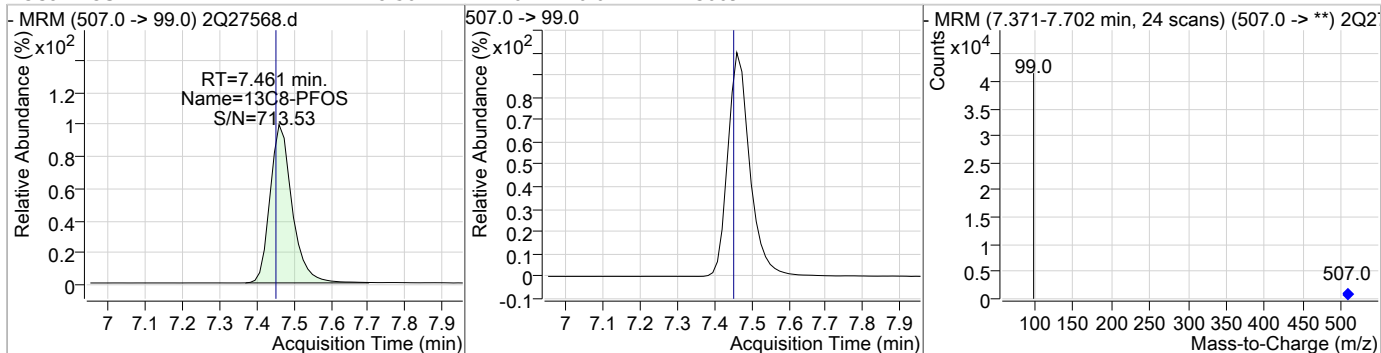
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 18.55 | 7.36 | 0.01     | 105660 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 20.38 | 7.36 | 0.01     | 49077 | 498.0 -> 478.0 | 4.5    | 0.0  | 24.4 |

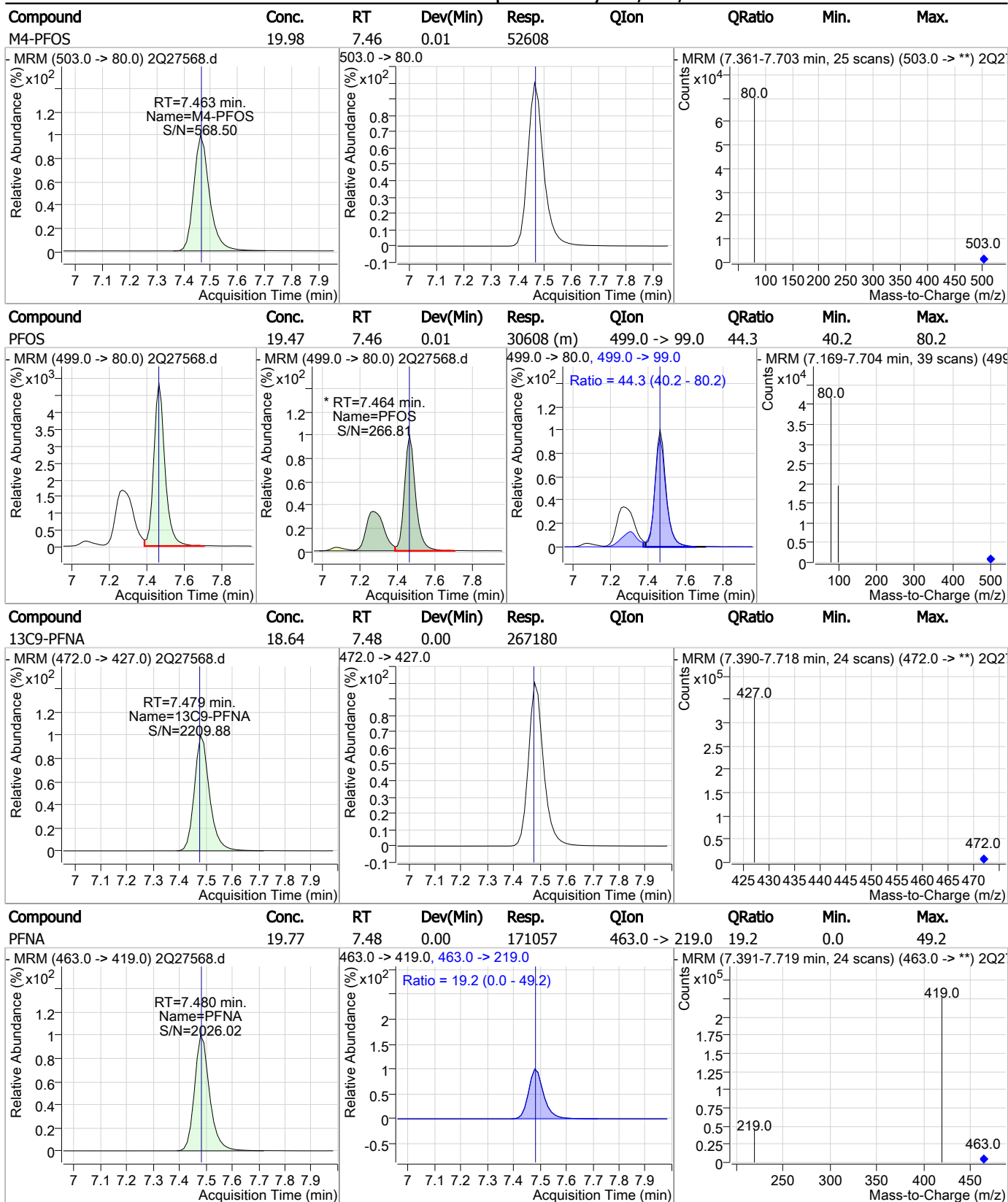


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 18.56 | 7.46 | 0.01     | 30692 |      |        |      |      |



7.6.6  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.6  
7

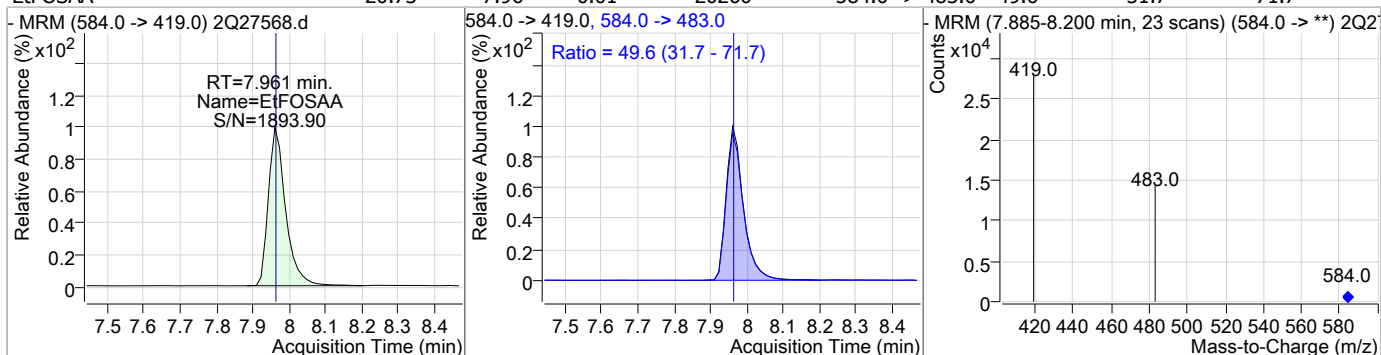
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 20.21 | 7.72 | 0.01     | 25774 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 18.59 | 7.83 | 0.01     | 44446 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 20.05 | 7.84 | 0.01     | 23679 | 570.0 -> 512.0 | 22.4   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 20.63 | 7.94 | 0.00     | 23676 | 549.0 -> 99.0  | 48.3   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

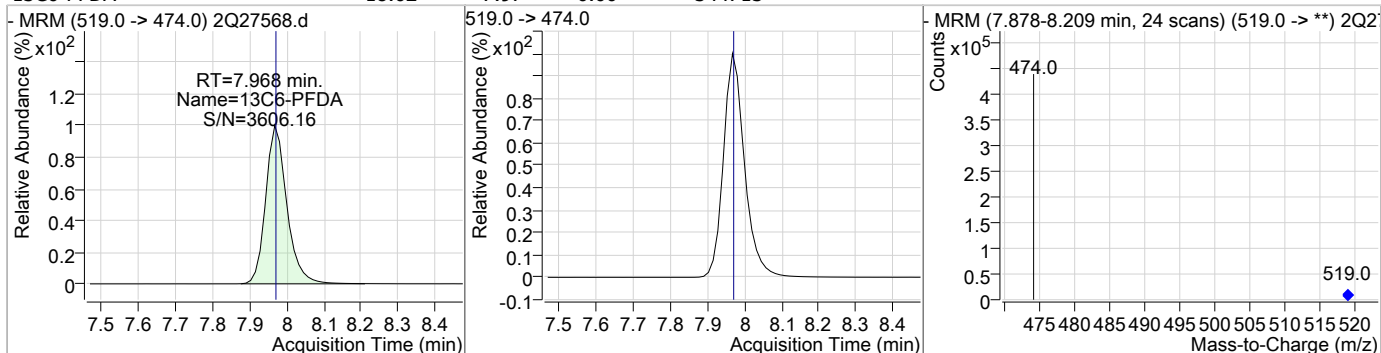
7.6.6  
7

### Perfluorinated Compounds by LC/MS/MS

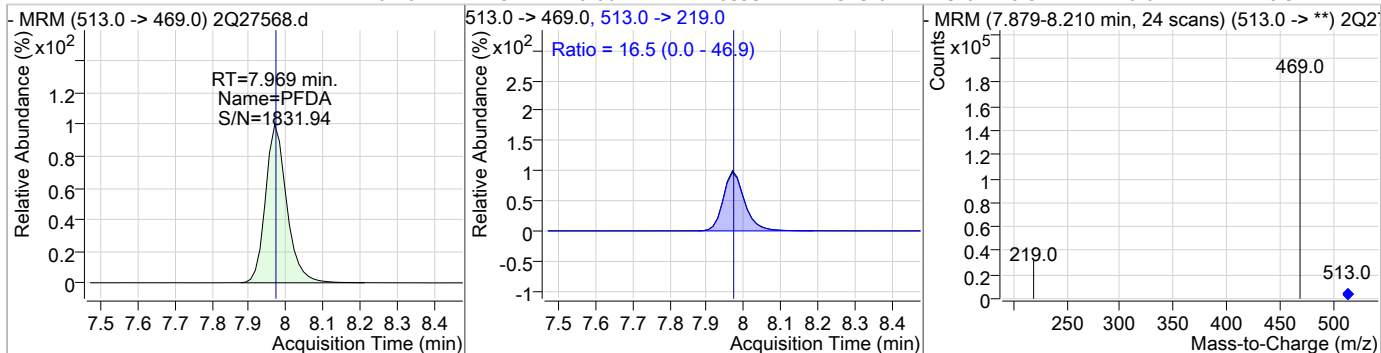
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 20.73 | 7.96 | 0.01     | 20260 | 584.0 -> 483.0 | 49.6   | 31.7 | 71.7 |



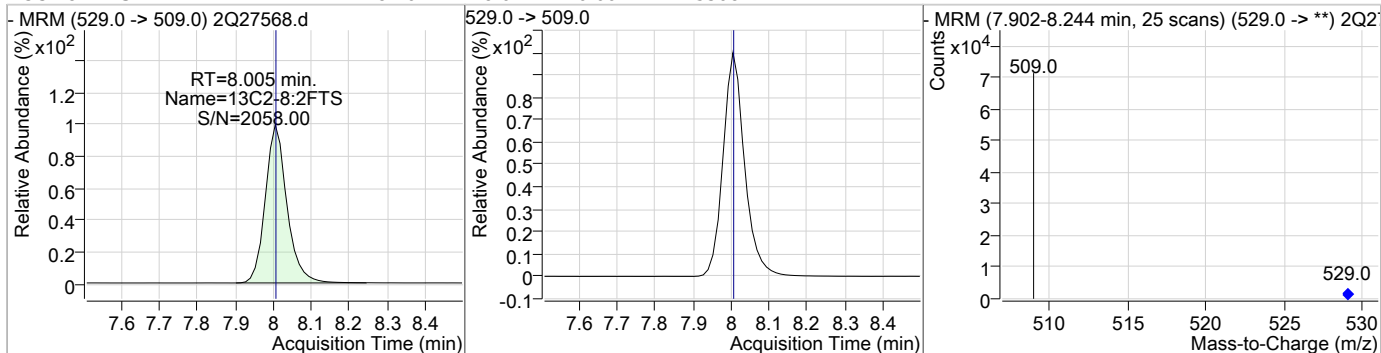
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 18.62 | 7.97 | 0.00     | 344713 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFDA     | 20.10 | 7.97 | 0.00     | 146399 | 513.0 -> 219.0 | 16.5   | 0.0  | 46.9 |



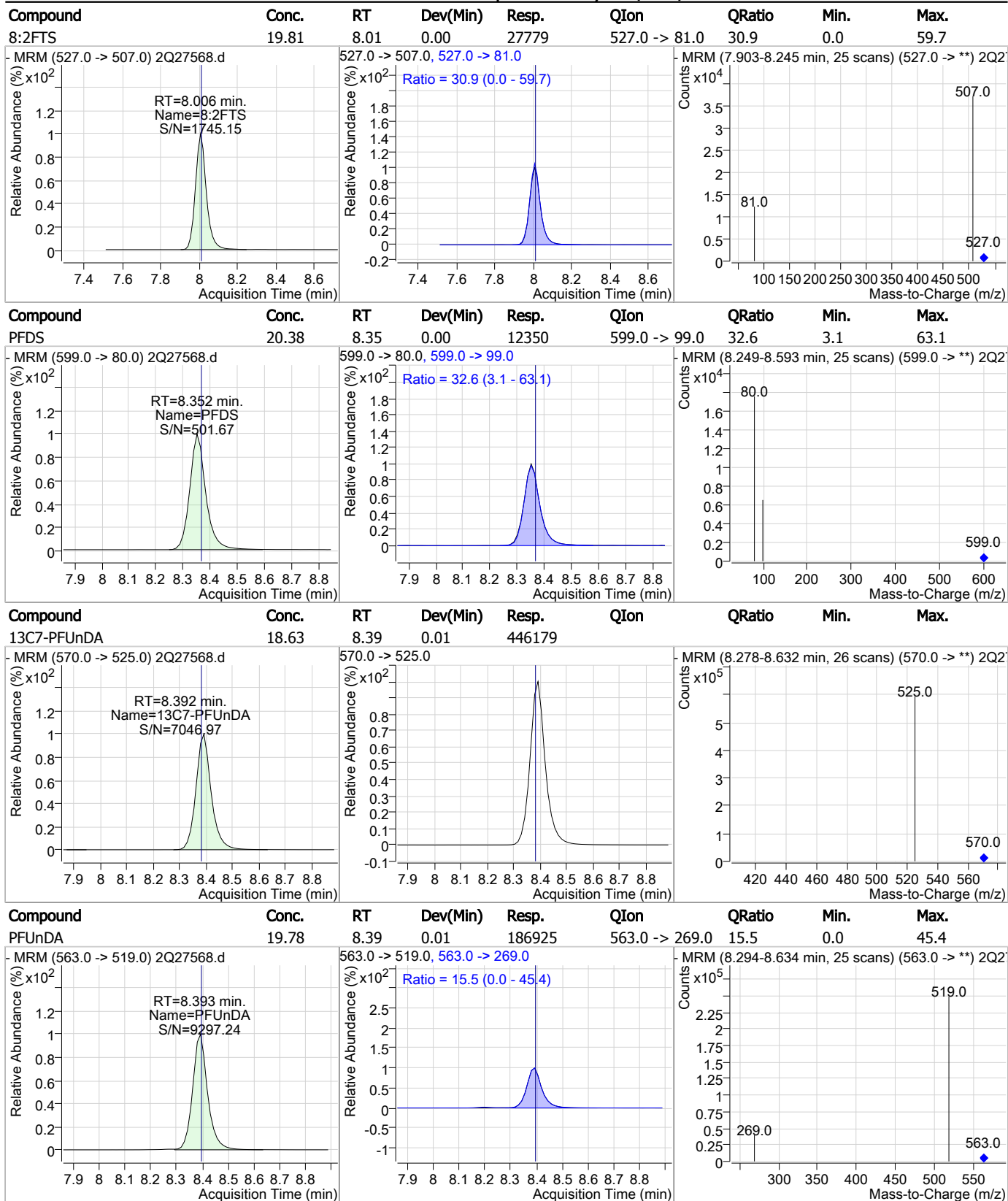
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 18.70 | 8.01 | 0.00     | 53081 |      |        |      |      |



7.6.6  
7



### Perfluorinated Compounds by LC/MS/MS



7.6.6

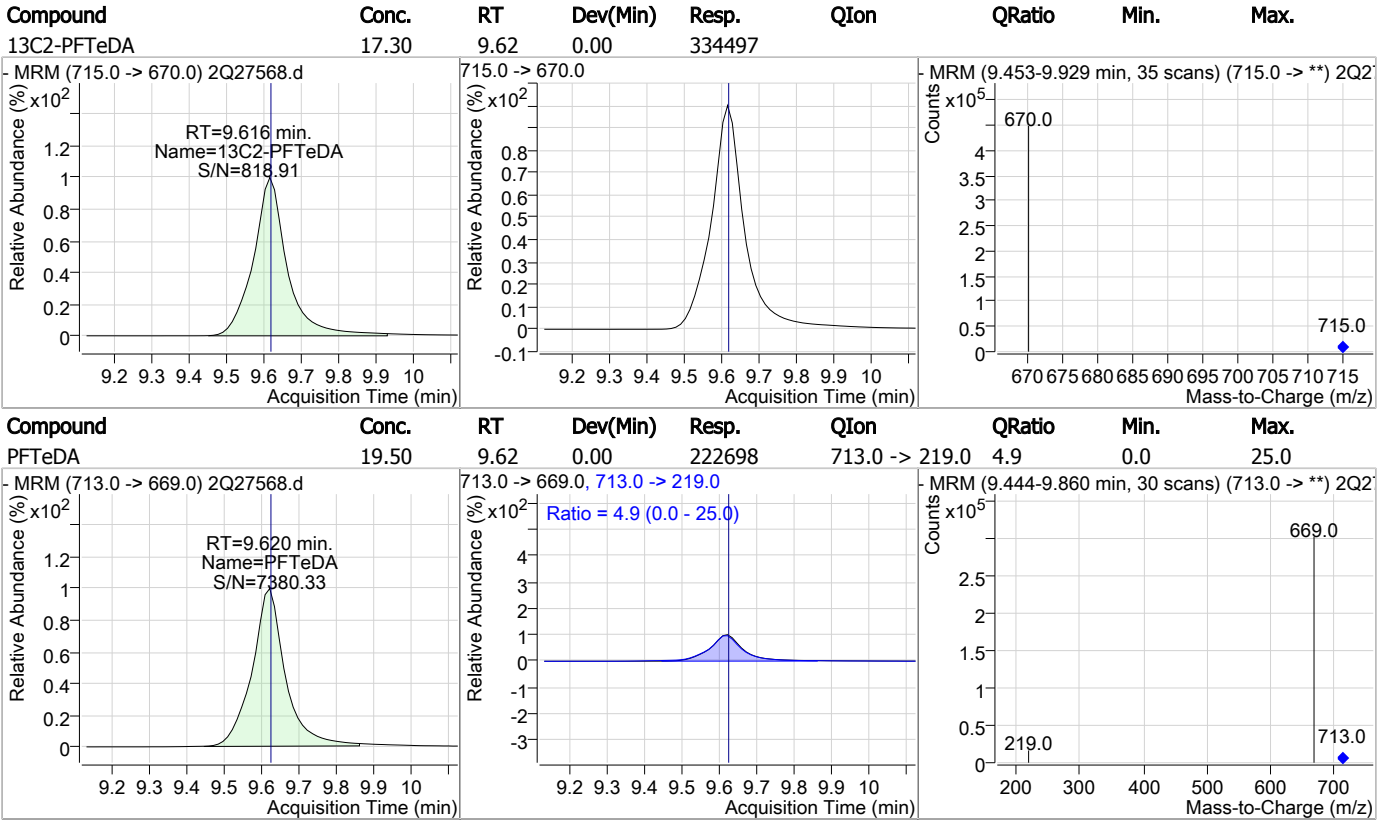
7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11CI-PF3OUdS | 20.01 | 8.54 | 0.00     | 133877 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 18.95 | 8.79 | 0.00     | 529046 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 19.79 | 8.79 | 0.00     | 245205 | 613.0 -> 319.0 | 12.5   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 20.26 | 9.22 | 0.00     | 254547 | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.6  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.6

7

# Manual Integration Approval Summary

**Sample Number:** S2Q439-ICC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27568.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 12:03      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46           | Split peak |

7.6.6.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Mike Eger  
 03/14/19 15:20

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27569.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 12:18:56 PM  
 Sample Name : ic439-50  
 Vial : Vial 8  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 363435 | 20.00 µg/L        | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 53630  | 20.00 µg/L        | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 168375 | 20.00 µg/L        | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 138757 | 20.00 µg/L        | 0.025    |
| M5-PFHxA                           | 5.189                | 318.0 -> 273.0 | 198032 | 20.00 µg/L        | 0.013    |
| M4-PFHpA                           | 6.129                | 367.0 -> 322.0 | 276183 | 20.00 µg/L        | 0.011    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 279142 | 20.00 µg/L        | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 273073 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 347540 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 459524 | 20.00 µg/L        | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 543981 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 384749 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 104438 | 20.00 µg/L        | 0.011    |
| M3-PFBS                            | 4.130                | 302.0 -> 99.0  | 23433  | 20.00 µg/L        | 0.038    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 25941  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 31433  | 20.00 µg/L        | 0.012    |
| M2-4:2FTS                          | 5.097                | 329.0 -> 309.0 | 87058  | 20.00 µg/L        | 0.025    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 88401  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 59274  | 20.00 µg/L        | 0.001    |
| M3-MeFOSAA                         | 7.835                | 573.0 -> 419.0 | 45705  | 20.00 µg/L        | 0.012    |
| M3-HFPO-DA                         | 5.481                | 287.0 -> 169.0 | 184322 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 5.097                | 329.0 -> 309.0 | 86860  | 20.92 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.6% |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 88460  | 20.29 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 59277  | 20.88 µg/L        | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.4% |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 543604 | 19.48 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.4%  |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 380668 | 19.69 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.5%  |          |
| 13C3-PFBS                          | 4.130                | 302.0 -> 99.0  | 23384  | 19.31 µg/L        | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.6%  |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 25932  | 19.04 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.2%  |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 167482 | 19.32 µg/L        | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.6%  |          |
| 13C4-PFHpA                         | 6.129                | 367.0 -> 322.0 | 275910 | 19.16 µg/L        | 0.011    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.8%  |          |
| 13C5-PFHxA                         | 5.189                | 318.0 -> 273.0 | 198142 | 19.32 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.6%  |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 138596 | 19.33 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.6%  |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 347571 | 18.77 µg/L        | 0.000    |

7.67  
7

## Perfluorinated Compounds by LC/MS/MS

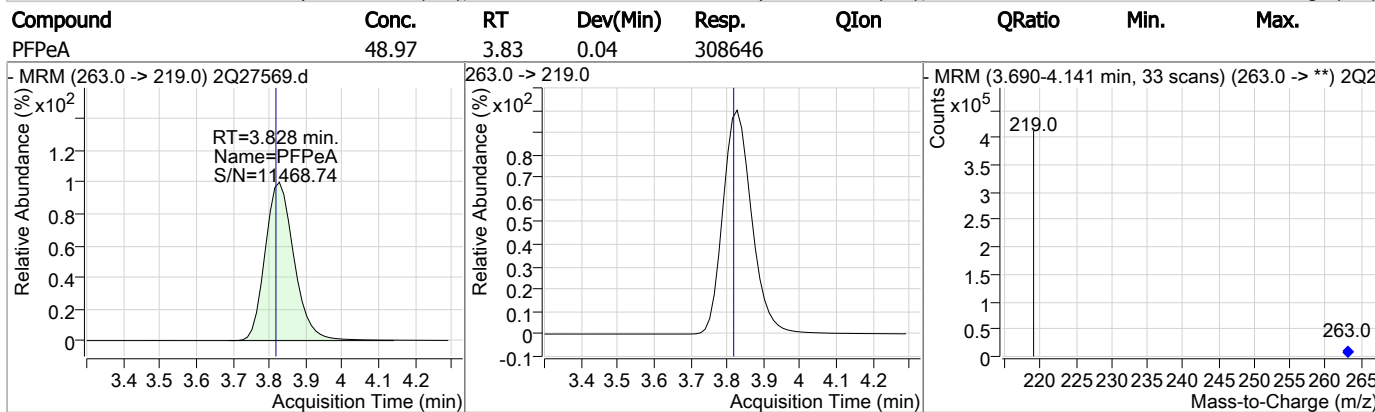
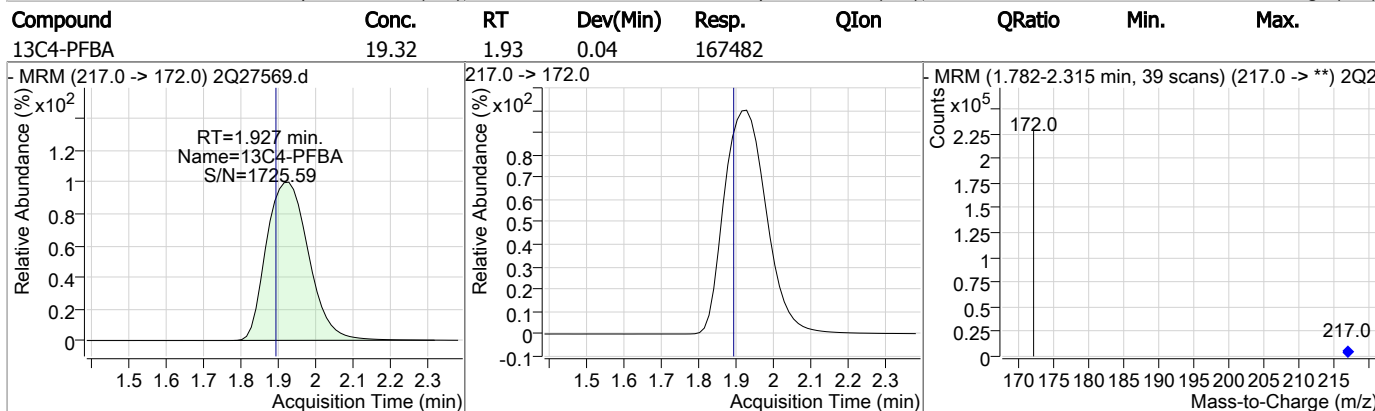
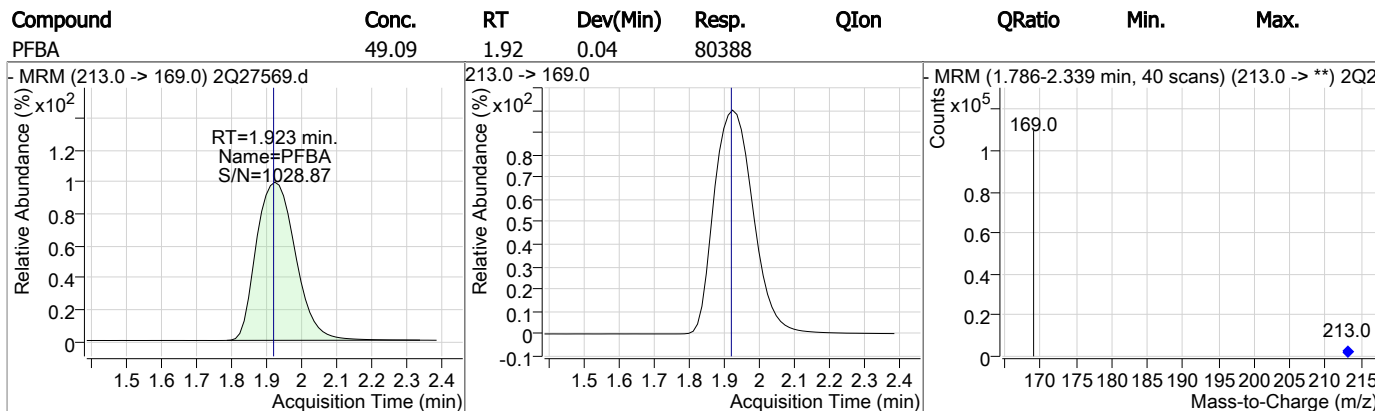
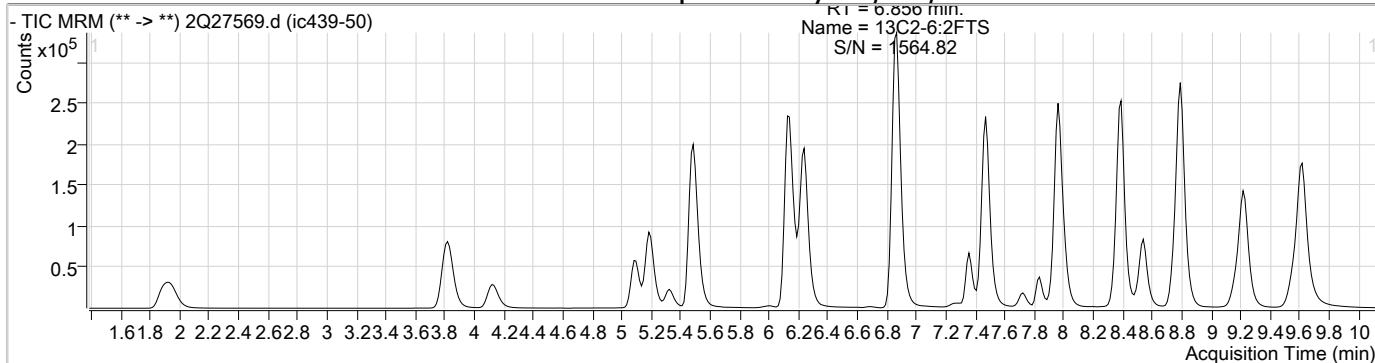
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.9%  |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 459344 | 19.17 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.9%  |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 104400 | 18.33 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 91.7%  |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 278874 | 18.73 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.6%  |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 31469  | 19.03 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.1%  |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 272836 | 19.04 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.2%  |          |
| d3-MeFOSAA            | 7.835                | 573.0 -> 419.0 | 45713  | 19.12 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.6%  |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 363921 | 20.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 53650  | 20.00 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.481                | 287.0 -> 169.0 | 184322 | 90.74 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 90.7%  |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 5.087 | 327.0 -> 307.0 | 118271 | 46.70 µg/L  | 100    |
| 6:2FTS           | 6.858 | 427.0 -> 407.0 | 104687 | 46.31 µg/L  | 100    |
| 8:2FTS           | 8.006 | 527.0 -> 507.0 | 72763  | 46.48 µg/L  | 99     |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 49063  | 49.63 µg/L  | 99     |
| FOSA             | 7.360 | 498.0 -> 78.0  | 120930 | 49.77 µg/L  | 100    |
| MeFOSAA          | 7.835 | 570.0 -> 419.0 | 61845  | 50.09 µg/L  | 98     |
| PFBA             | 1.923 | 213.0 -> 169.0 | 80388  | 49.09 µg/L  | 100    |
| PFBS             | 4.121 | 299.0 -> 80.0  | 95569  | 49.37 µg/L  | 100    |
| PFDA             | 7.969 | 513.0 -> 469.0 | 362981 | 49.47 µg/L  | 100    |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 629882 | 49.41 µg/L  | 100    |
| PFDS             | 8.352 | 599.0 -> 80.0  | 30897  | 49.75 µg/L  | 99     |
| PFHpA            | 6.132 | 363.0 -> 319.0 | 634406 | 48.98 µg/L  | 100    |
| PFHpS            | 6.880 | 449.0 -> 80.0  | 65679  | 49.99 µg/L  | 99     |
| PFHxA            | 5.191 | 313.0 -> 269.0 | 167231 | 48.81 µg/L  | 99     |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 75581  | 48.92 µg/L  | m 96   |
| PFNA             | 7.480 | 463.0 -> 419.0 | 431648 | 48.82 µg/L  | 100    |
| PFNS             | 7.939 | 549.0 -> 80.0  | 58855  | 50.02 µg/L  | 99     |
| PFOA             | 6.875 | 413.0 -> 369.0 | 378465 | 49.57 µg/L  | 98     |
| PFOS             | 7.464 | 499.0 -> 80.0  | 78901  | 48.96 µg/L  | m 80   |
| PFPeA            | 3.828 | 263.0 -> 219.0 | 308646 | 48.97 µg/L  | 100    |
| PFPeS            | 5.321 | 349.0 -> 80.0  | 65832  | 49.68 µg/L  | 99     |
| PFTeDA           | 9.620 | 713.0 -> 669.0 | 645380 | 49.14 µg/L  | 100    |
| PFTrDA           | 9.220 | 663.0 -> 619.0 | 719250 | 49.78 µg/L  | 100    |
| PFUnDA           | 8.393 | 563.0 -> 519.0 | 473763 | 48.70 µg/L  | 99     |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 344357 | 50.01 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 66560  | 50.02 µg/L  | 100    |
| ADONA            | 6.241 | 377.0 -> 251.0 | 741692 | 50.03 µg/L  | 100    |
| HFPO-DA          | 5.486 | 329.0 -> 169.0 | 562246 | 251.43 µg/L | 98     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.7  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 19.33 | 3.82 | 0.03     | 138596 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 19.31 | 4.13 | 0.04     | 23384  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 49.37 | 4.12 | 0.03     | 95569  | 299.0 -> 99.0 | 35.5   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 20.92 | 5.10 | 0.03     | 86860  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.67

7



### Perfluorinated Compounds by LC/MS/MS

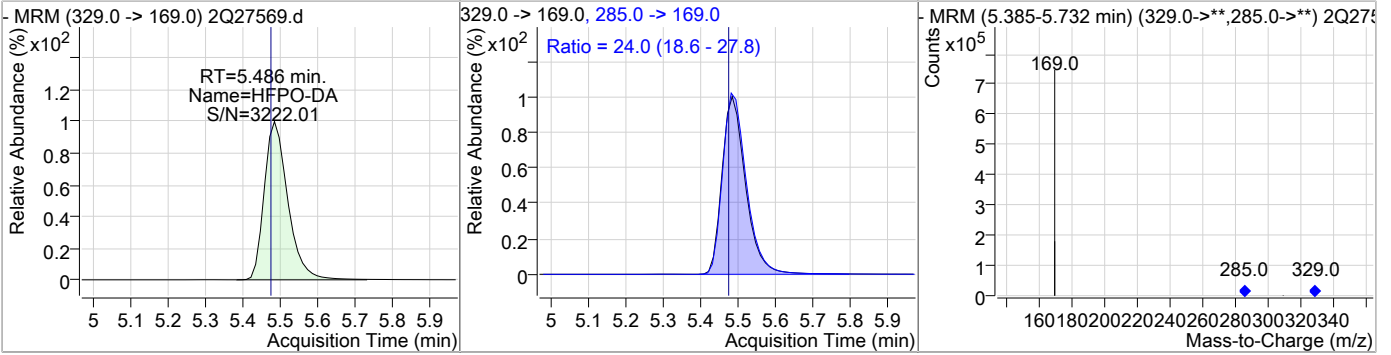
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 4:2FTS     | 46.70 | 5.09 | 0.01     | 118271 | 327.0 -> 81.0  | 38.8   | 18.6 | 58.6 |
|            |       |      |          |        |                |        |      |      |
| 13C5-PFHxA | 19.32 | 5.19 | 0.01     | 198142 | 318.0 -> 273.0 |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFHxA      | 48.81 | 5.19 | 0.01     | 167231 | 313.0 -> 119.0 | 11.2   | 0.0  | 31.5 |
|            |       |      |          |        |                |        |      |      |
| PFPeS      | 49.68 | 5.32 | 0.01     | 65832  | 349.0 -> 99.0  | 35.5   | 5.1  | 65.1 |
|            |       |      |          |        |                |        |      |      |

7.6.7

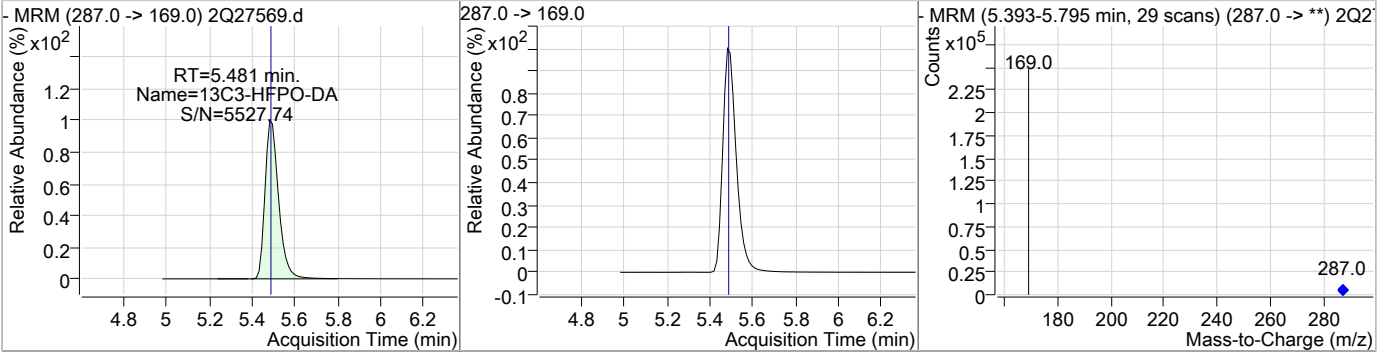
7

### Perfluorinated Compounds by LC/MS/MS

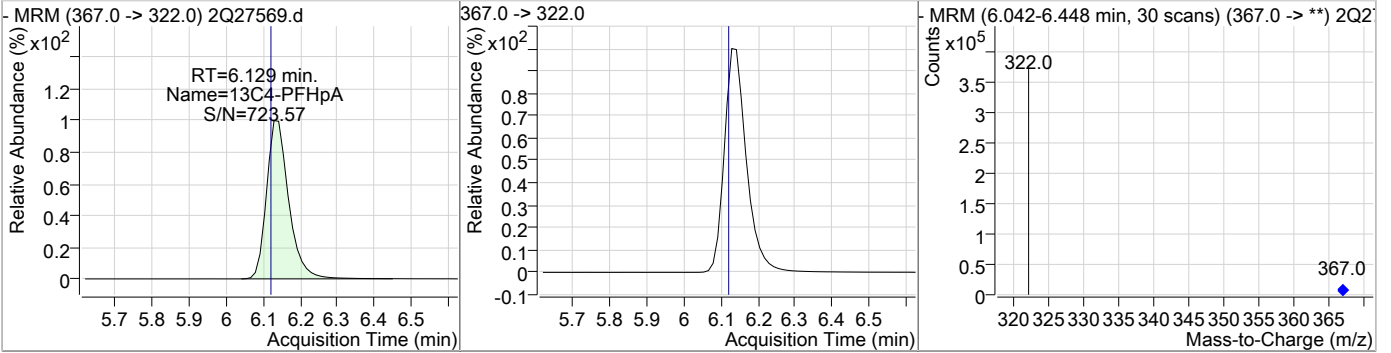
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 251.43 | 5.49 | 0.01     | 562246 | 285.0 -> 169.0 | 24.0   | 18.6 | 27.8 |



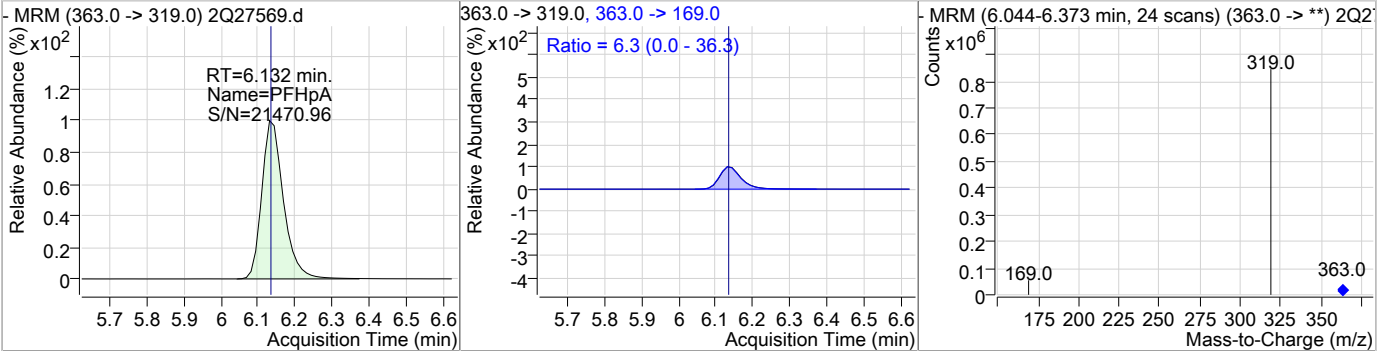
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 90.74 | 5.48 | 0.00     | 184322 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 19.16 | 6.13 | 0.01     | 275910 |      |        |      |      |

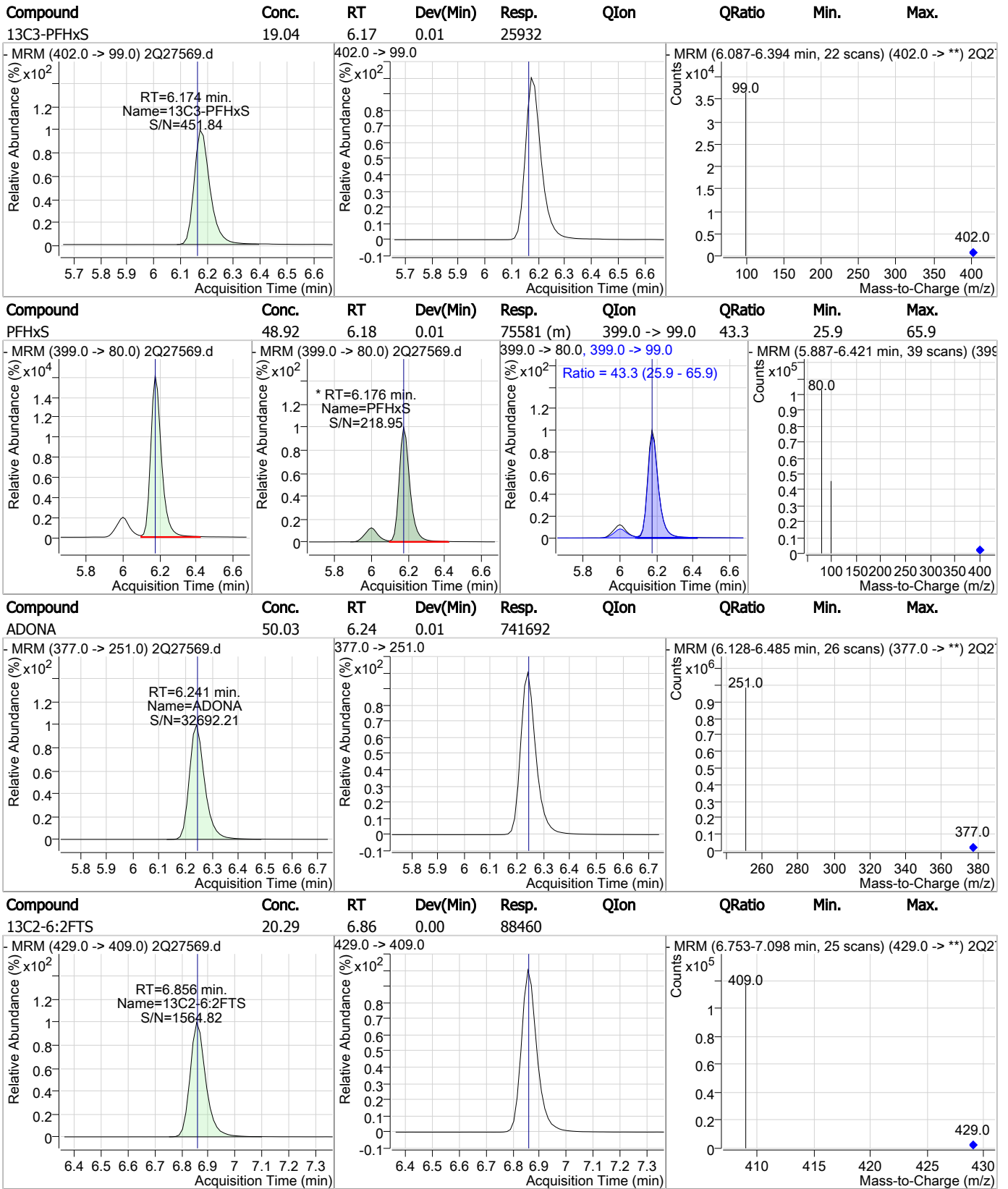


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 48.98 | 6.13 | 0.01     | 634406 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



7.6.7  
7

### Perfluorinated Compounds by LC/MS/MS

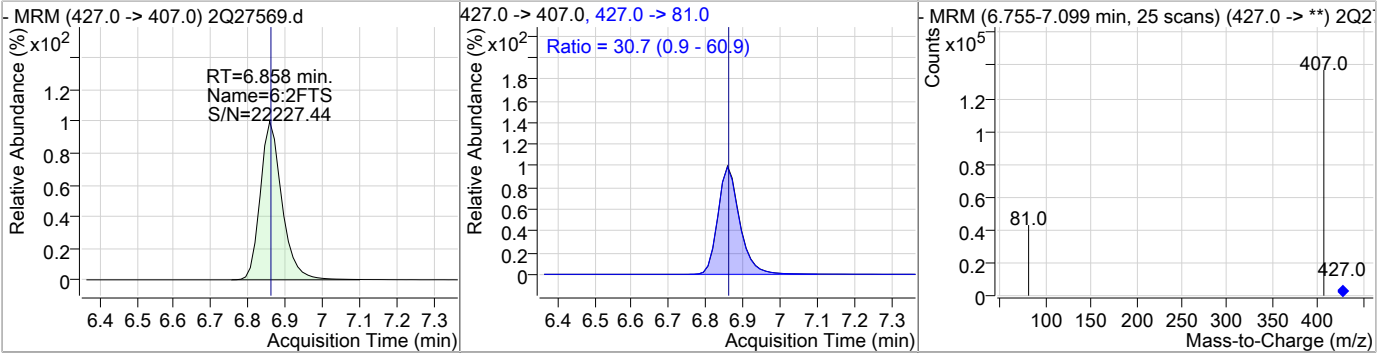


7.67

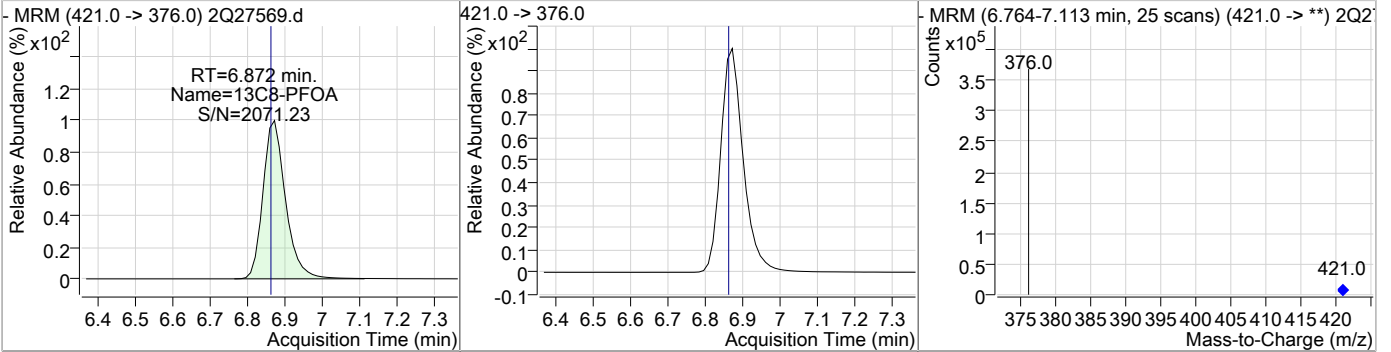
7

### Perfluorinated Compounds by LC/MS/MS

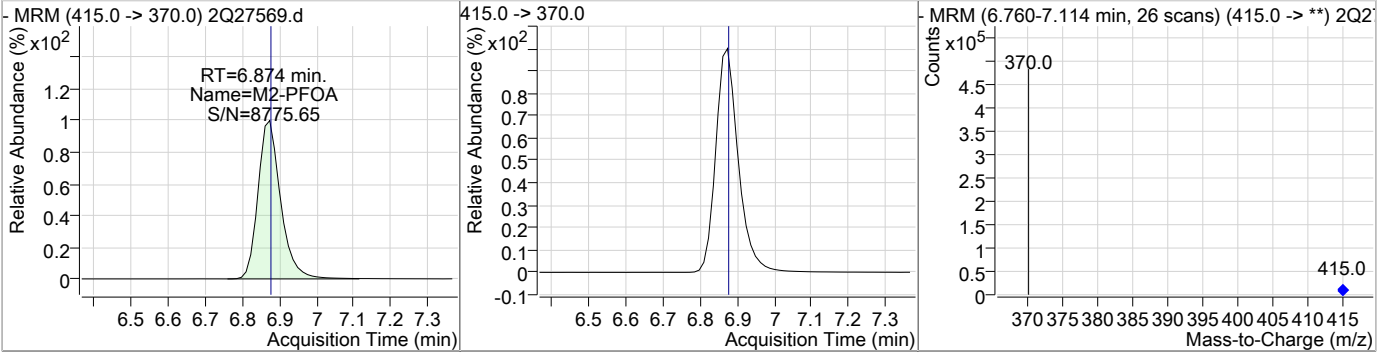
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| 6:2FTS   | 46.31 | 6.86 | 0.00     | 104687 | 427.0 -> 81.0 | 30.7   | 0.9  | 60.9 |



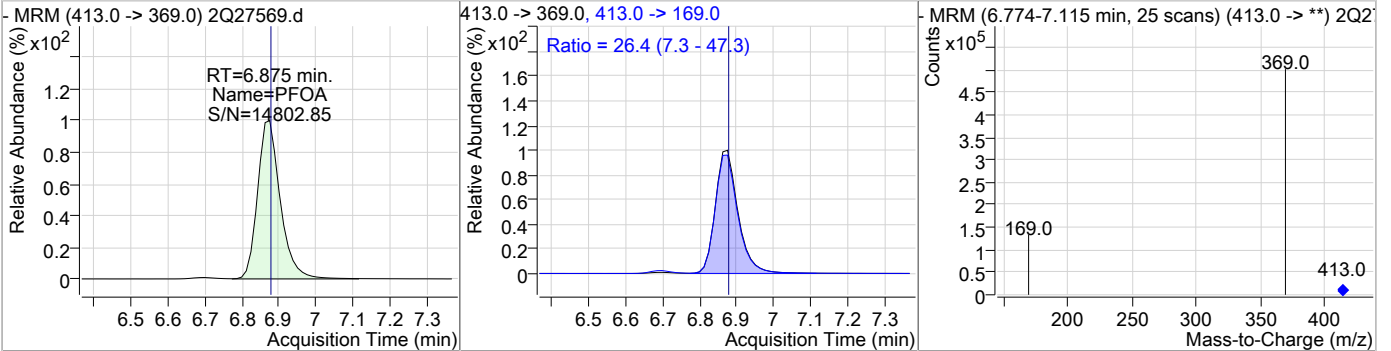
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 18.73 | 6.87 | 0.01     | 278874 |      |        |      |      |



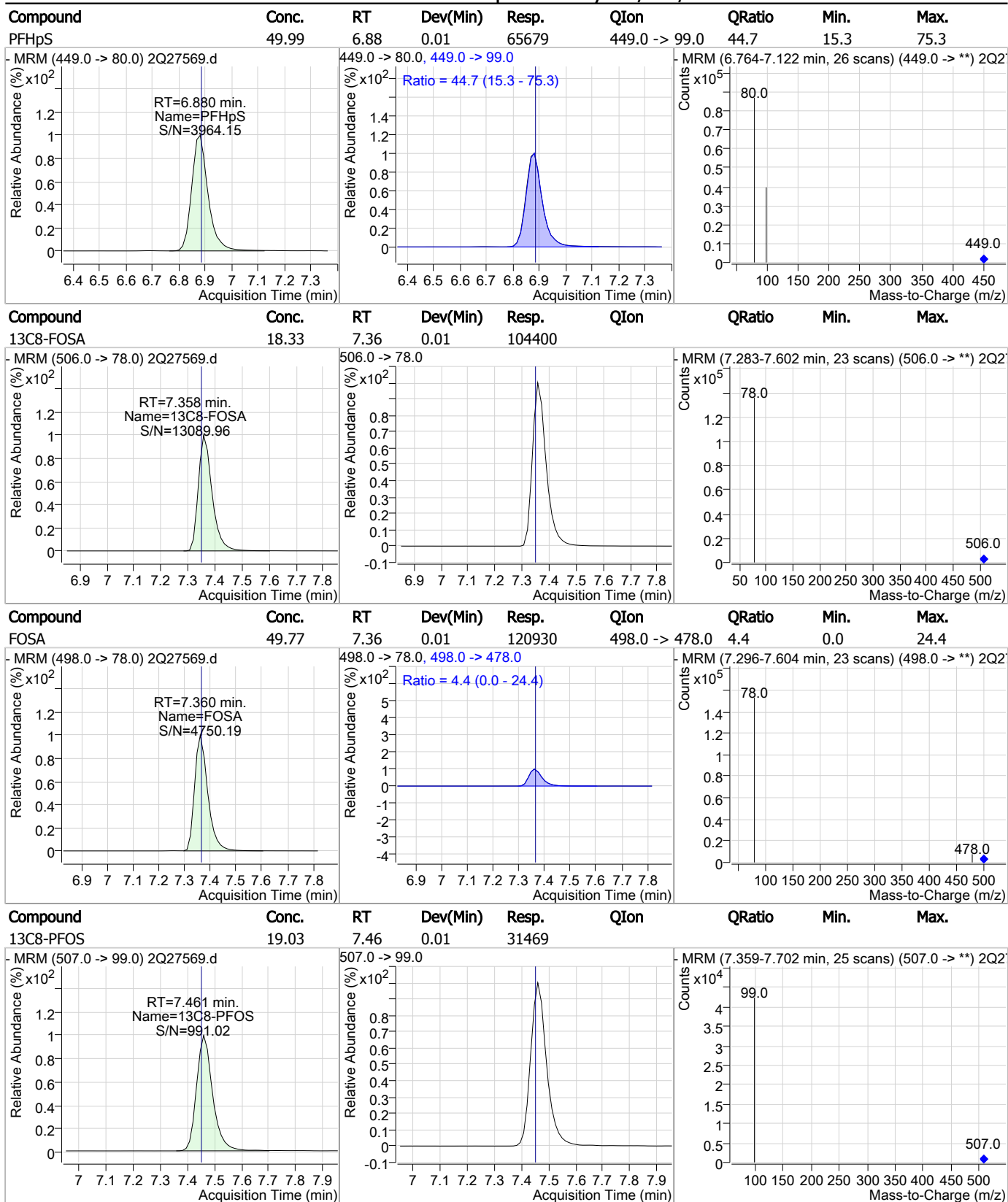
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.01 | 6.87 | 0.01     | 363921 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 49.57 | 6.88 | 0.01     | 378465 | 413.0 -> 169.0 | 26.4   | 7.3  | 47.3 |

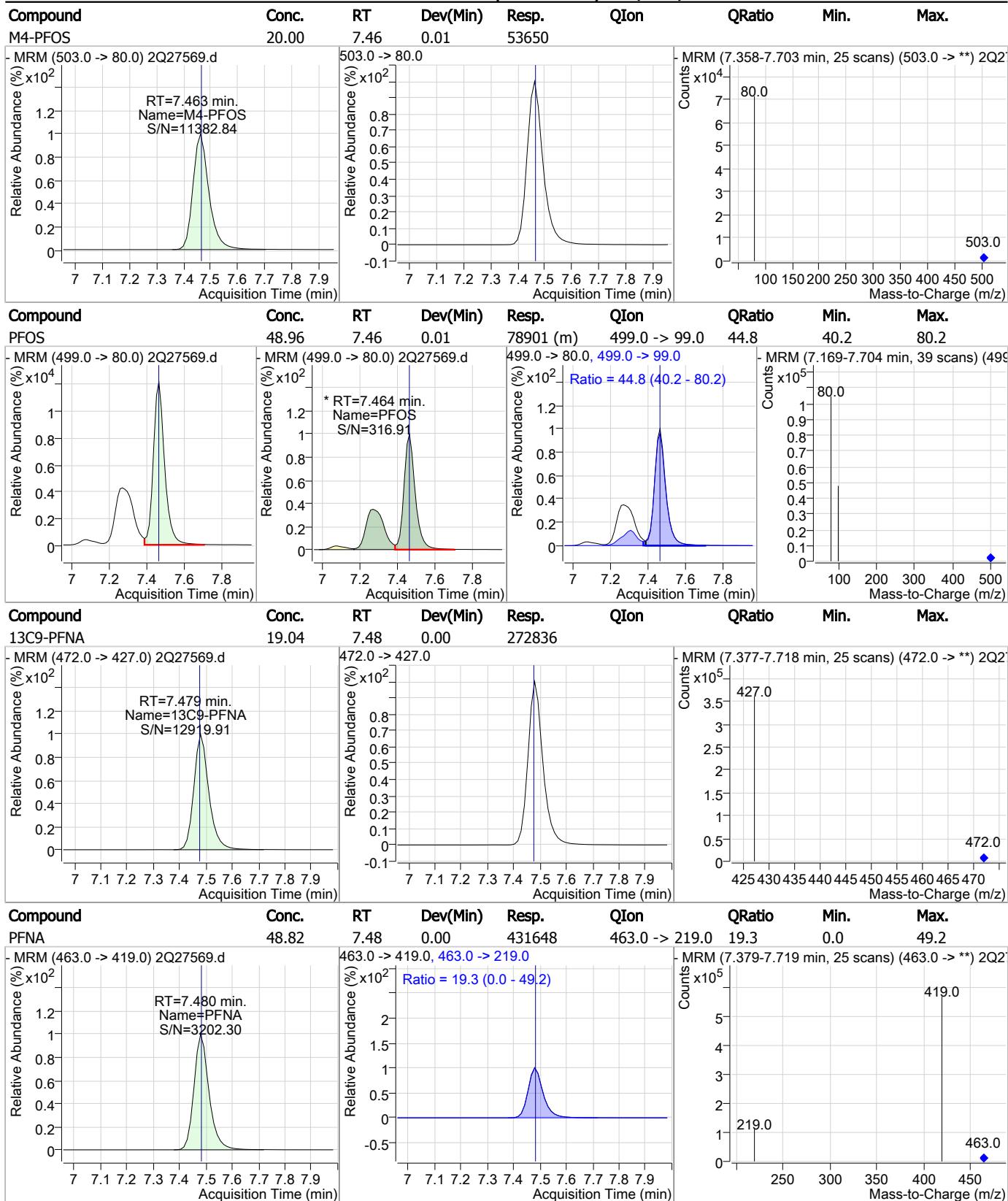


### Perfluorinated Compounds by LC/MS/MS



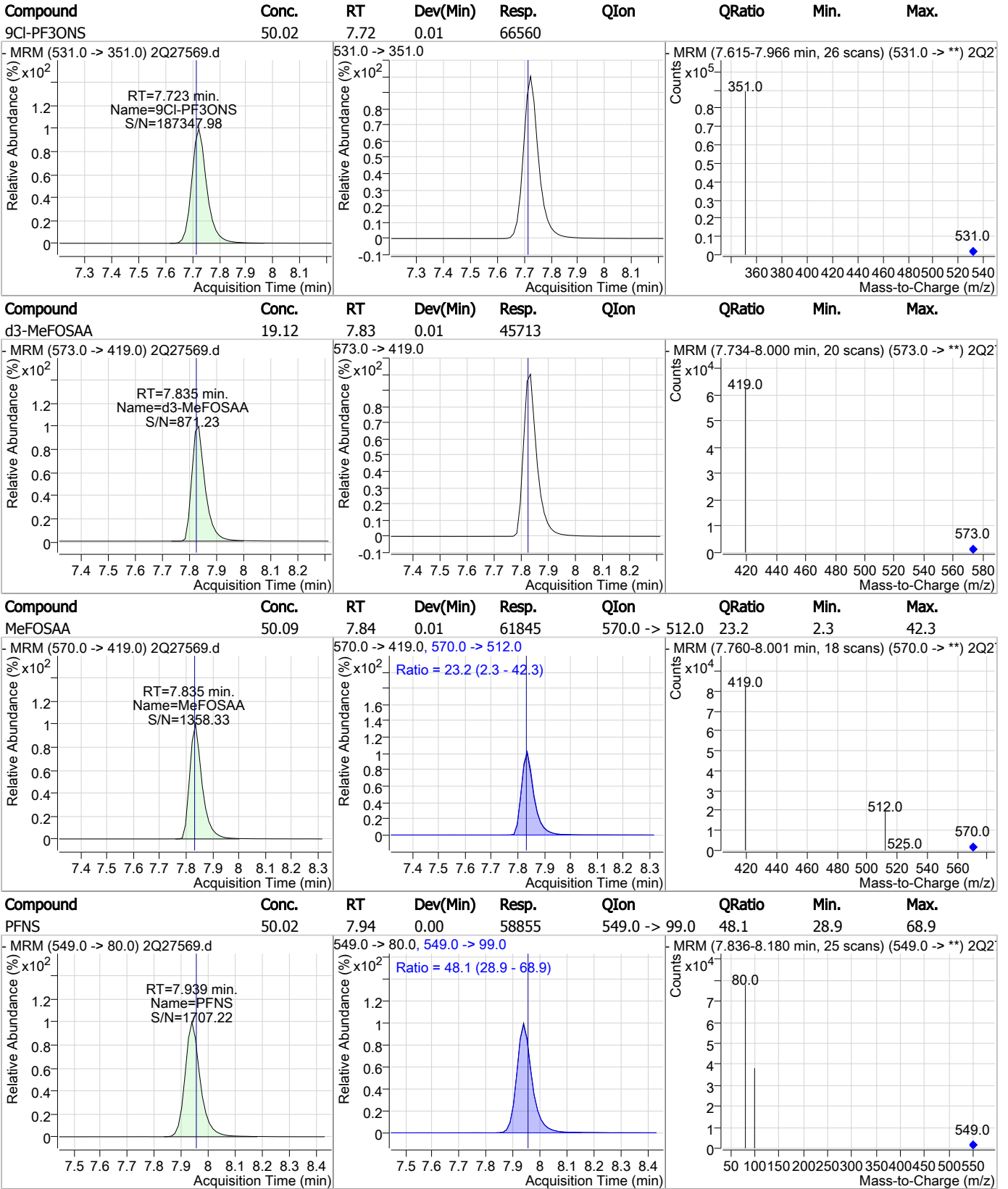
7.67  
7

### Perfluorinated Compounds by LC/MS/MS



7.67  
7

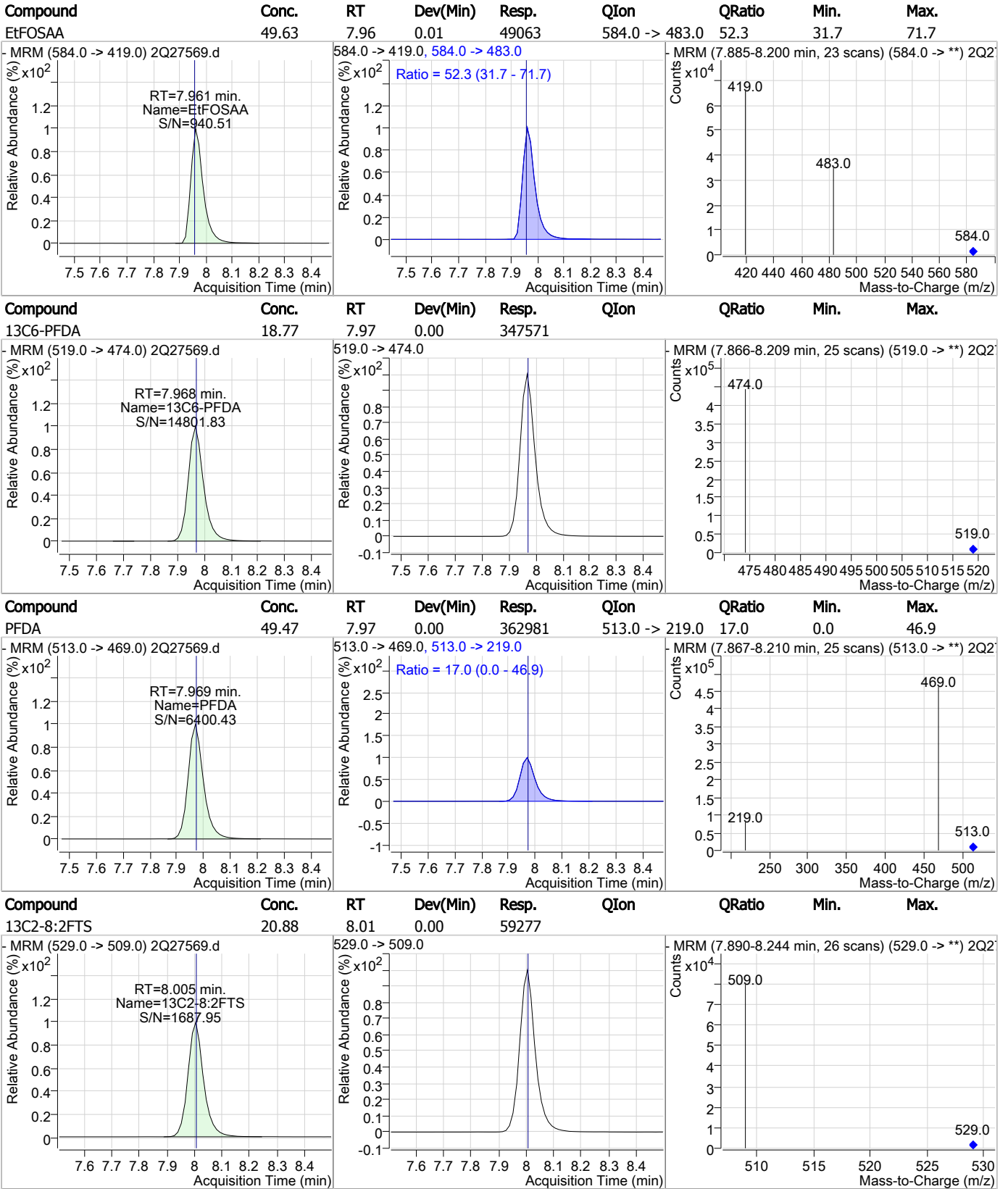
### Perfluorinated Compounds by LC/MS/MS



7.67

7

### Perfluorinated Compounds by LC/MS/MS

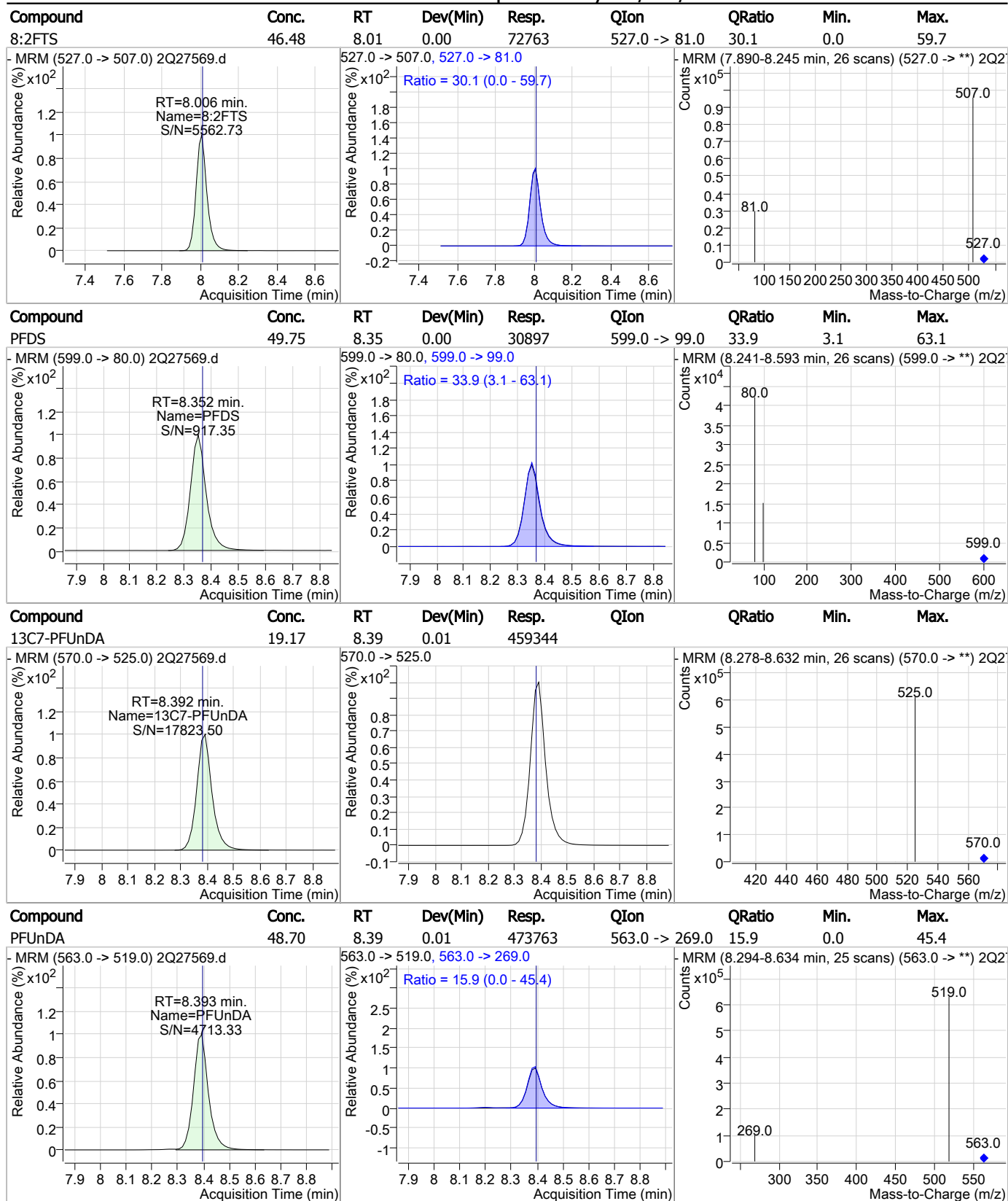


7.6.7

7

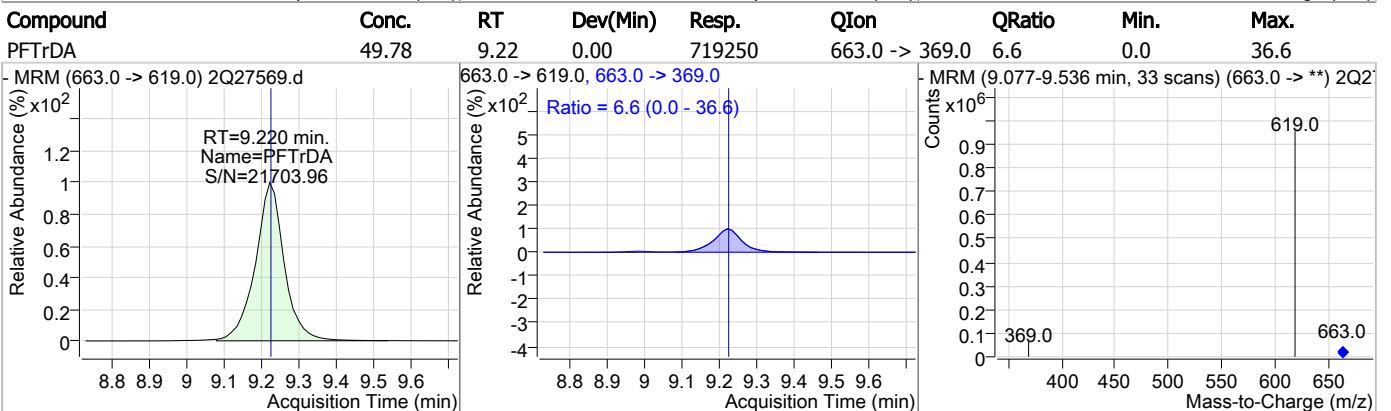
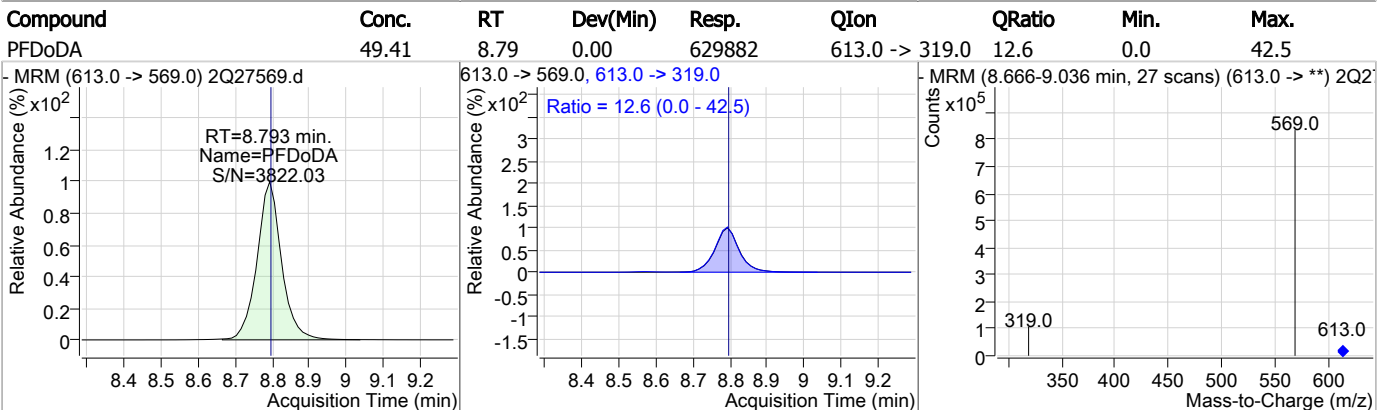
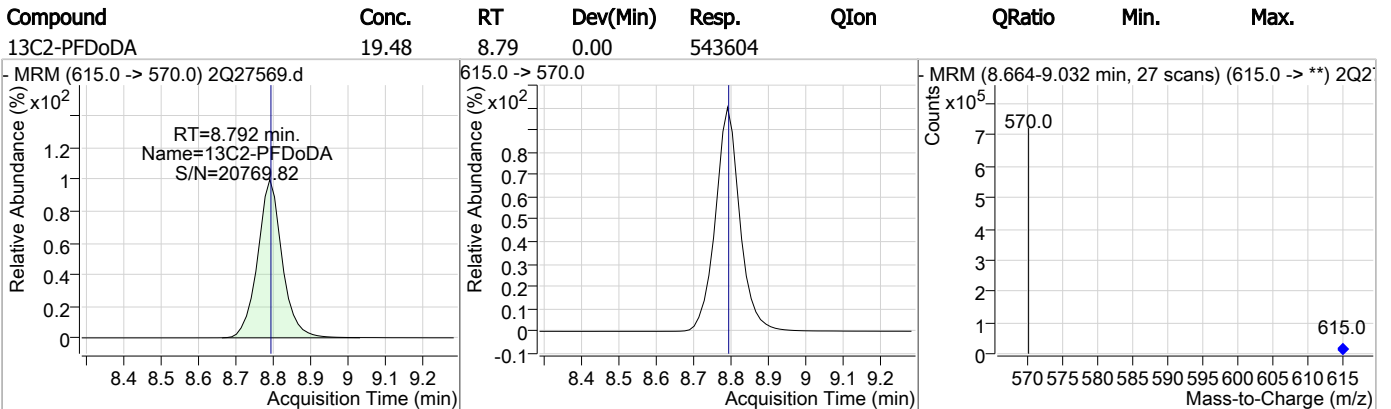
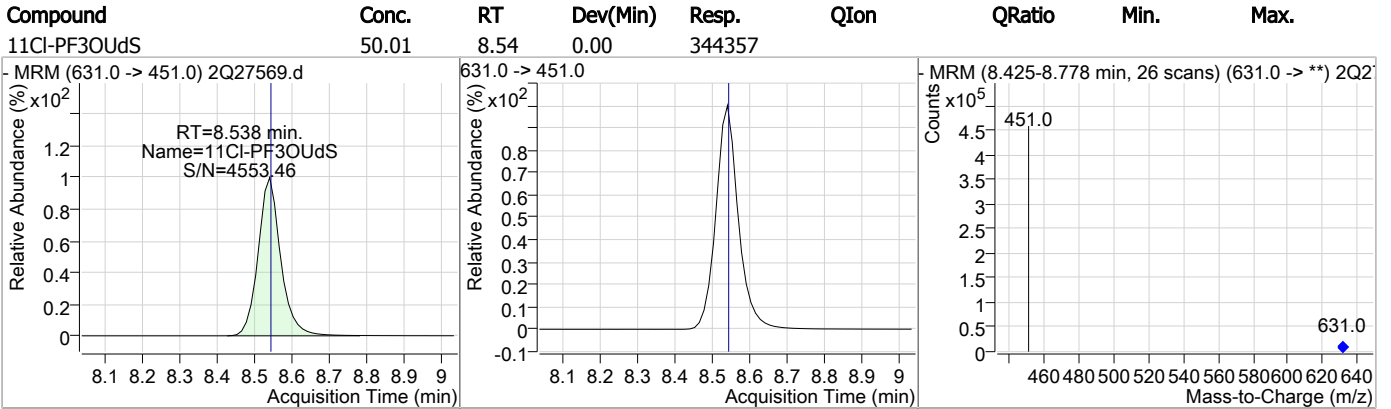


### Perfluorinated Compounds by LC/MS/MS



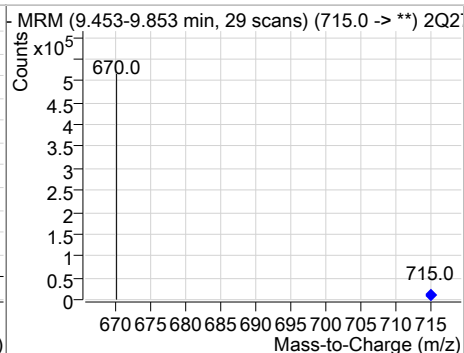
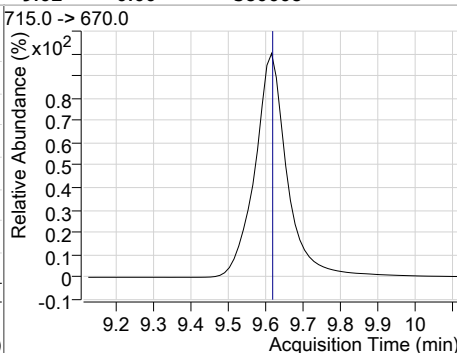
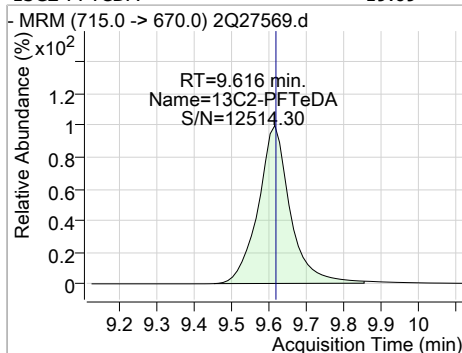
7.67  
7

### Perfluorinated Compounds by LC/MS/MS

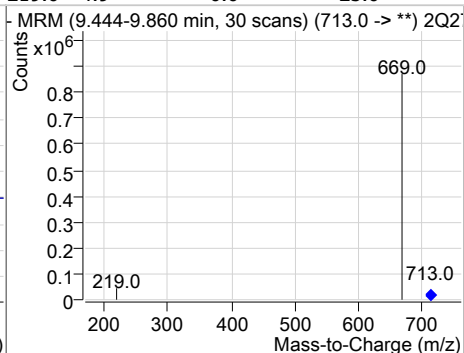
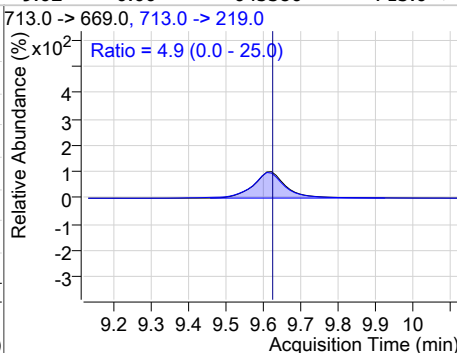
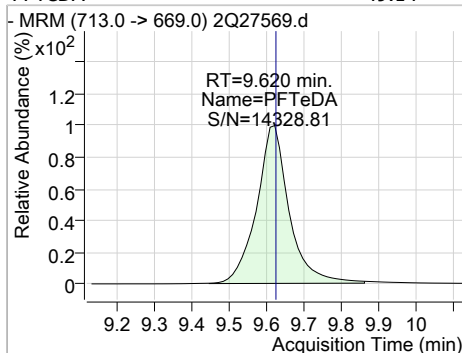


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 19.69 | 9.62 | 0.00     | 380668 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 49.14 | 9.62 | 0.00     | 645380 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



7.6.7  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q439-IC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27569.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 12:18      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46           | Split peak |

7.6.7.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Mike Eger  
 03/14/19 15:20

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27570.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 12:34:40 PM  
 Sample Name : ic439-100  
 Vial : Vial 9  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.861                | 415.0 -> 370.0 | 371228 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.450                | 503.0 -> 80.0  | 54641  | 20.00 µg/L        | -0.001   |
| M4-PFBA                            | 1.915                | 217.0 -> 172.0 | 168608 | 20.00 µg/L        | 0.025    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 137545 | 20.00 µg/L        | 0.025    |
| M5-PFHxA                           | 5.189                | 318.0 -> 273.0 | 193878 | 20.00 µg/L        | 0.013    |
| M4-PFHpA                           | 6.129                | 367.0 -> 322.0 | 268438 | 20.00 µg/L        | 0.011    |
| M8-PFOA                            | 6.860                | 421.0 -> 376.0 | 266751 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 261498 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 327886 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.380                | 570.0 -> 525.0 | 441457 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 536789 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 388637 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 93775  | 20.00 µg/L        | 0.011    |
| M3-PFBS                            | 4.118                | 302.0 -> 99.0  | 23316  | 20.00 µg/L        | 0.025    |
| M3-PFHxS                           | 6.174                | 402.0 -> 99.0  | 25264  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 30543  | 20.00 µg/L        | 0.012    |
| M2-4:2FTS                          | 5.084                | 329.0 -> 309.0 | 97107  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 95761  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.993                | 529.0 -> 509.0 | 66778  | 20.00 µg/L        | -0.011   |
| M3-MeFOSAA                         | 7.834                | 573.0 -> 419.0 | 45599  | 20.00 µg/L        | 0.012    |
| M3-HFPO-DA                         | 5.481                | 287.0 -> 169.0 | 174387 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 5.084                | 329.0 -> 309.0 | 96913  | 23.34 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 116.7% |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 95736  | 21.96 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 109.8% |          |
| 13C2-8:2FTS                        | 7.993                | 529.0 -> 509.0 | 66762  | 23.51 µg/L        | -0.011   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 117.6% |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 537233 | 19.25 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.2%  |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 385145 | 19.92 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.6%  |          |
| 13C3-PFBS                          | 4.118                | 302.0 -> 99.0  | 23290  | 19.23 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.2%  |          |
| 13C3-PFHxS                         | 6.174                | 402.0 -> 99.0  | 25286  | 18.56 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.8%  |          |
| 13C4-PFBA                          | 1.915                | 217.0 -> 172.0 | 167568 | 19.33 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.7%  |          |
| 13C4-PFHpA                         | 6.129                | 367.0 -> 322.0 | 268023 | 18.62 µg/L        | 0.011    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.1%  |          |
| 13C5-PFHxA                         | 5.189                | 318.0 -> 273.0 | 193715 | 18.89 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.4%  |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 137328 | 19.15 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.7%  |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 328060 | 17.72 µg/L        | 0.000    |

7.68  
7

## Perfluorinated Compounds by LC/MS/MS

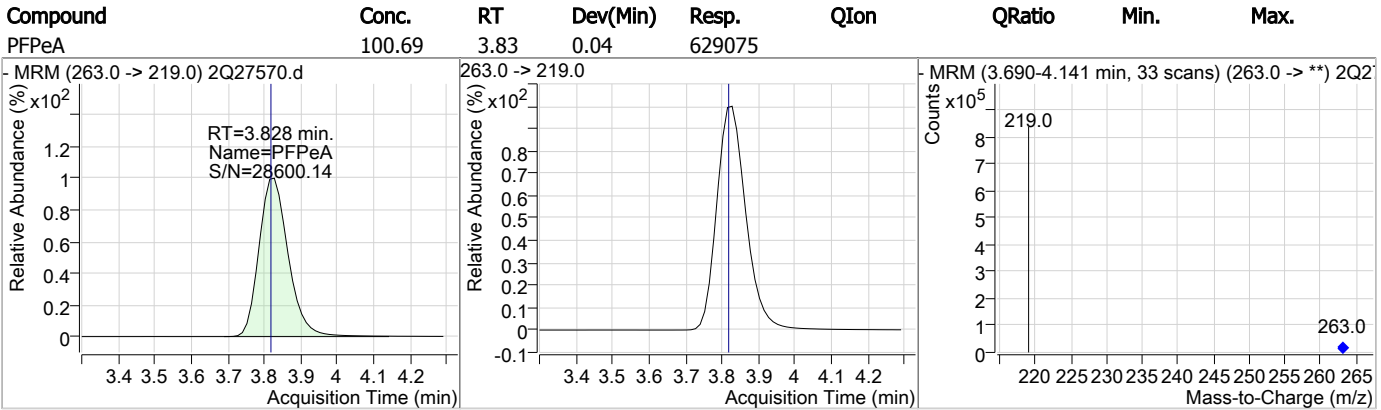
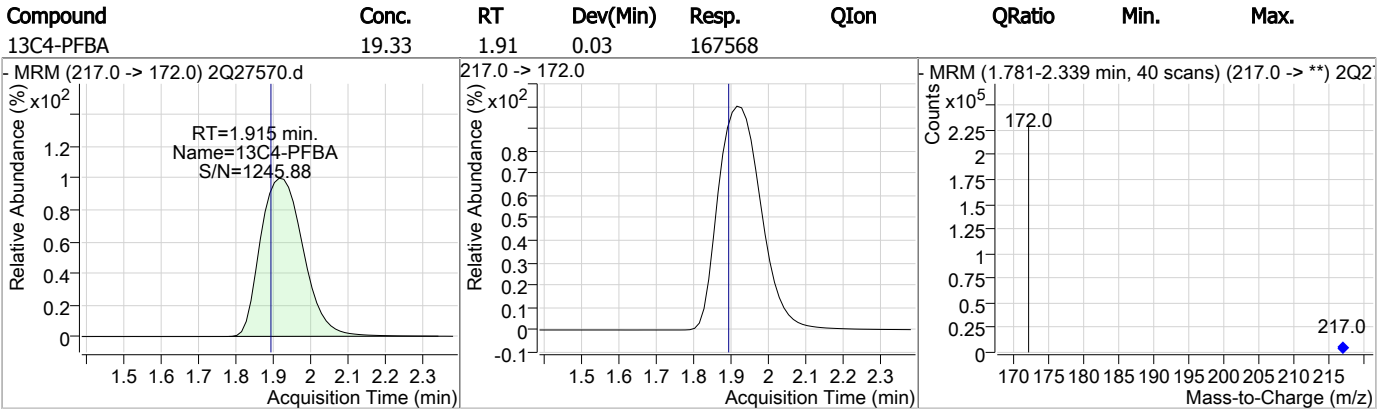
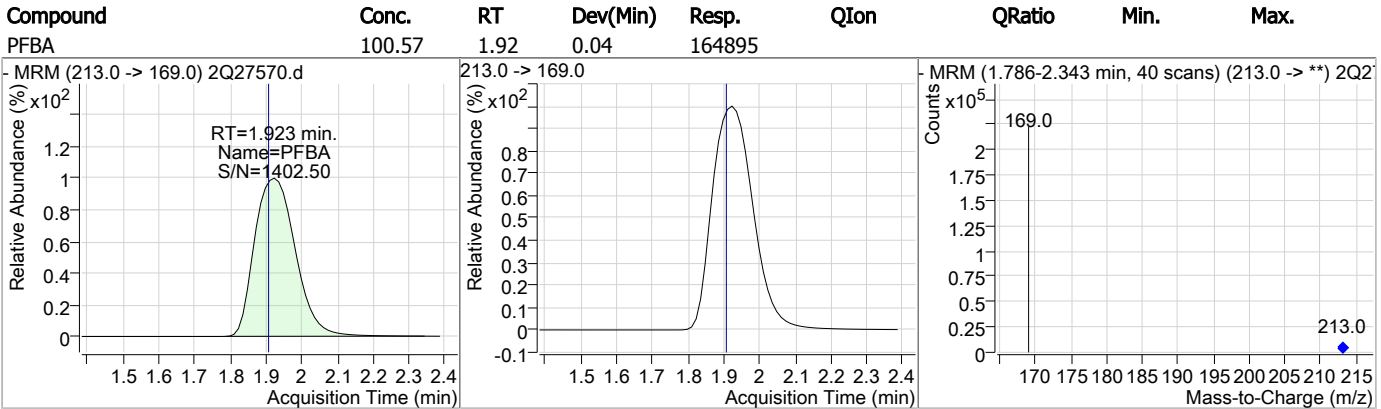
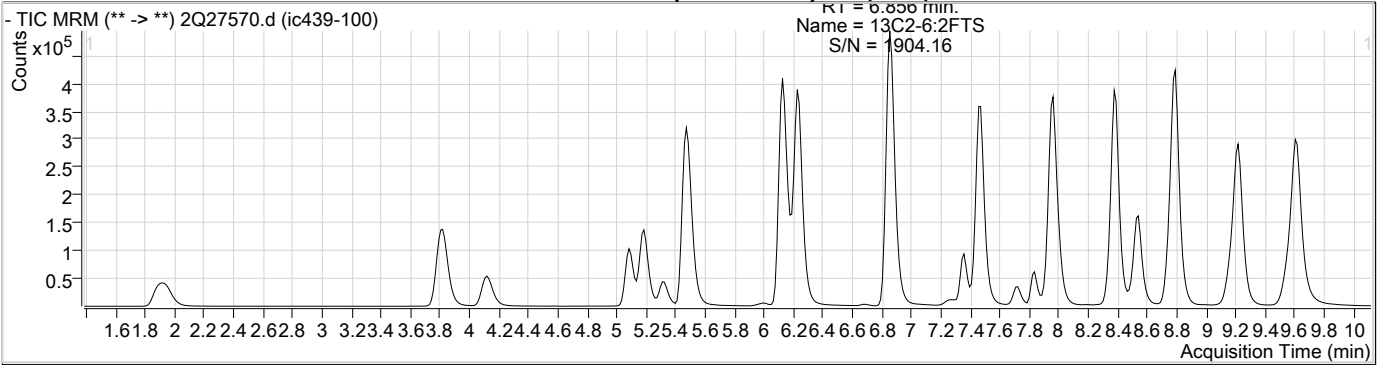
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.6%  |          |
| 13C7-PFUnDA           | 8.380                | 570.0 -> 525.0 | 441534 | 18.43 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.2%  |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 93799  | 16.47 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 82.3%  |          |
| 13C8-PFOA             | 6.860                | 421.0 -> 376.0 | 266610 | 17.90 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 89.5%  |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 30538  | 18.46 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.3%  |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 261638 | 18.26 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 91.3%  |          |
| d3-MeFOSAA            | 7.834                | 573.0 -> 419.0 | 45574  | 19.06 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.3%  |          |
| M2-PFOA               | 6.861                | 415.0 -> 370.0 | 371494 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.450                | 503.0 -> 80.0  | 54717  | 20.02 µg/L        | -0.001   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.481                | 287.0 -> 169.0 | 174387 | 85.85 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 85.9%  |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp.   | Conc. Units | QValue |
|------------------|-------|----------------|---------|-------------|--------|
| 4:2FTS           | 5.087 | 327.0 -> 307.0 | 243769  | 86.29 µg/L  | 99     |
| 6:2FTS           | 6.858 | 427.0 -> 407.0 | 203470  | 83.10 µg/L  | 99     |
| 8:2FTS           | 7.994 | 527.0 -> 507.0 | 148070  | 83.96 µg/L  | 99     |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 95776   | 100.07 µg/L | 99     |
| FOSA             | 7.360 | 498.0 -> 78.0  | 225790  | 100.04 µg/L | 100    |
| MeFOSAA          | 7.835 | 570.0 -> 419.0 | 126546  | 99.98 µg/L  | 99     |
| PFBA             | 1.923 | 213.0 -> 169.0 | 164895  | 100.57 µg/L | 100    |
| PFBS             | 4.121 | 299.0 -> 80.0  | 193438  | 100.43 µg/L | 100    |
| PFDA             | 7.969 | 513.0 -> 469.0 | 694355  | 100.31 µg/L | 100    |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 1263211 | 100.41 µg/L | 100    |
| PFDS             | 8.352 | 599.0 -> 80.0  | 60404   | 100.10 µg/L | 100    |
| PFHpA            | 6.132 | 363.0 -> 319.0 | 1266865 | 100.63 µg/L | 100    |
| PFHpS            | 6.867 | 449.0 -> 80.0  | 127856  | 99.91 µg/L  | 98     |
| PFHxA            | 5.191 | 313.0 -> 269.0 | 337739  | 100.68 µg/L | 100    |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 151537  | 100.72 µg/L | m 96   |
| PFNA             | 7.480 | 463.0 -> 419.0 | 852799  | 100.73 µg/L | 100    |
| PFNS             | 7.939 | 549.0 -> 80.0  | 114232  | 99.91 µg/L  | 99     |
| PFOA             | 6.863 | 413.0 -> 369.0 | 732011  | 100.33 µg/L | 99     |
| PFOS             | 7.451 | 499.0 -> 80.0  | 157695  | 100.71 µg/L | m 78   |
| PFPeA            | 3.828 | 263.0 -> 219.0 | 629075  | 100.69 µg/L | 100    |
| PFPeS            | 5.321 | 349.0 -> 80.0  | 132064  | 100.16 µg/L | 100    |
| PFTeDA           | 9.607 | 713.0 -> 669.0 | 1334438 | 100.60 µg/L | 100    |
| PFTrDA           | 9.220 | 663.0 -> 619.0 | 1461007 | 100.11 µg/L | 100    |
| PFUnDA           | 8.381 | 563.0 -> 519.0 | 941992  | 100.78 µg/L | 100    |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 682584  | 100.45 µg/L | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 132794  | 99.99 µg/L  | 100    |
| ADONA            | 6.229 | 377.0 -> 251.0 | 1495067 | 99.99 µg/L  | 100    |
| HFPO-DA          | 5.473 | 329.0 -> 169.0 | 1057247 | 499.71 µg/L | 98     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.8

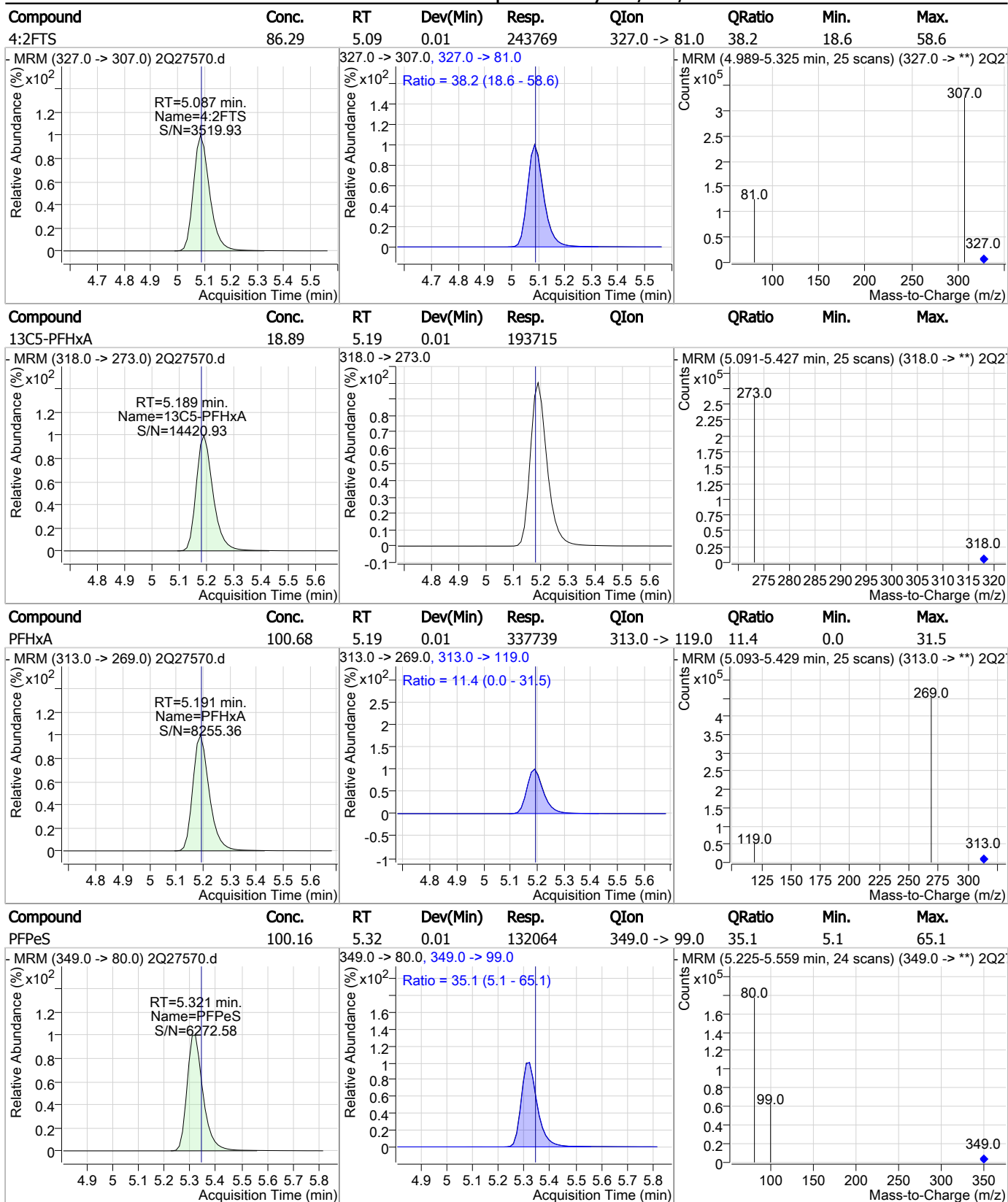
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc.  | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|--------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 19.15  | 3.82 | 0.03     | 137328 |               |        |      |      |
|             |        |      |          |        |               |        |      |      |
| 13C3-PFBS   | 19.23  | 4.12 | 0.03     | 23290  |               |        |      |      |
|             |        |      |          |        |               |        |      |      |
| PFBS        | 100.43 | 4.12 | 0.03     | 193438 | 299.0 -> 99.0 | 35.4   | 5.6  | 65.6 |
|             |        |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 23.34  | 5.08 | 0.01     | 96913  |               |        |      |      |
|             |        |      |          |        |               |        |      |      |

7.6.8  
7



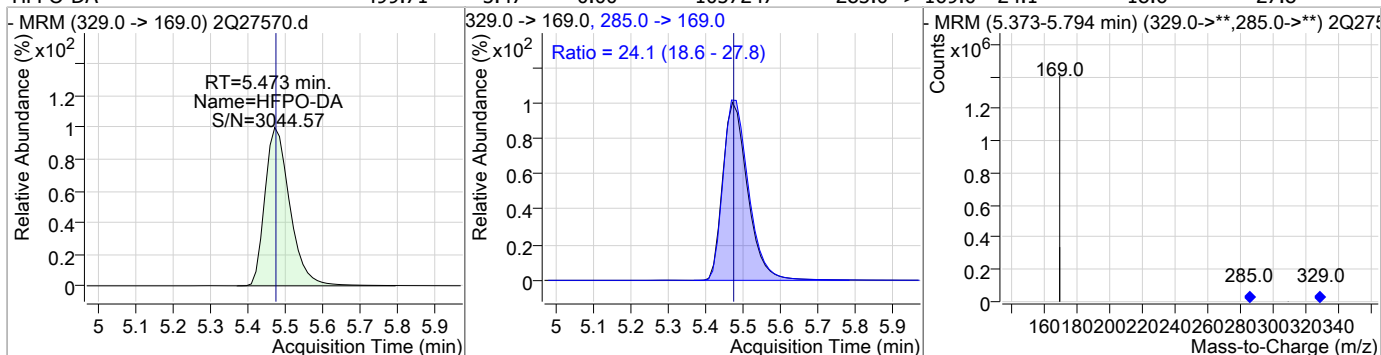
### Perfluorinated Compounds by LC/MS/MS



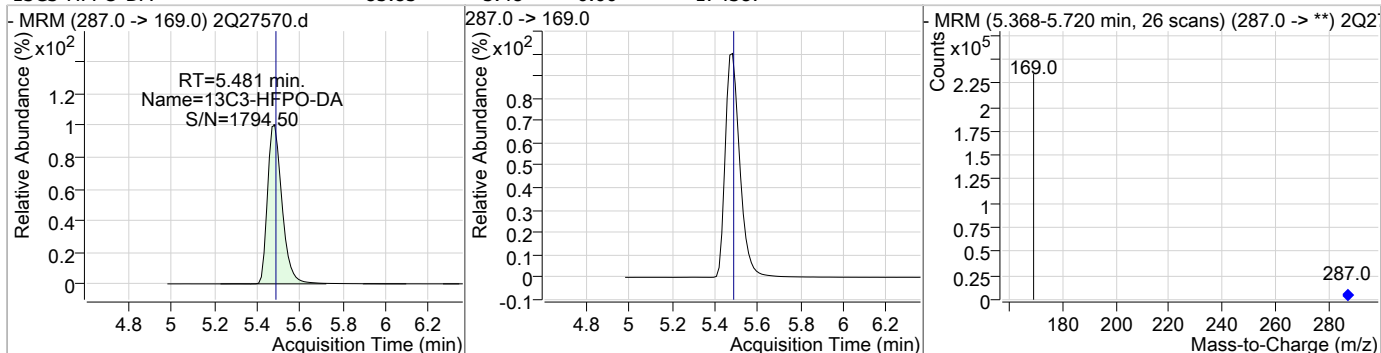
7.6.8  
7

### Perfluorinated Compounds by LC/MS/MS

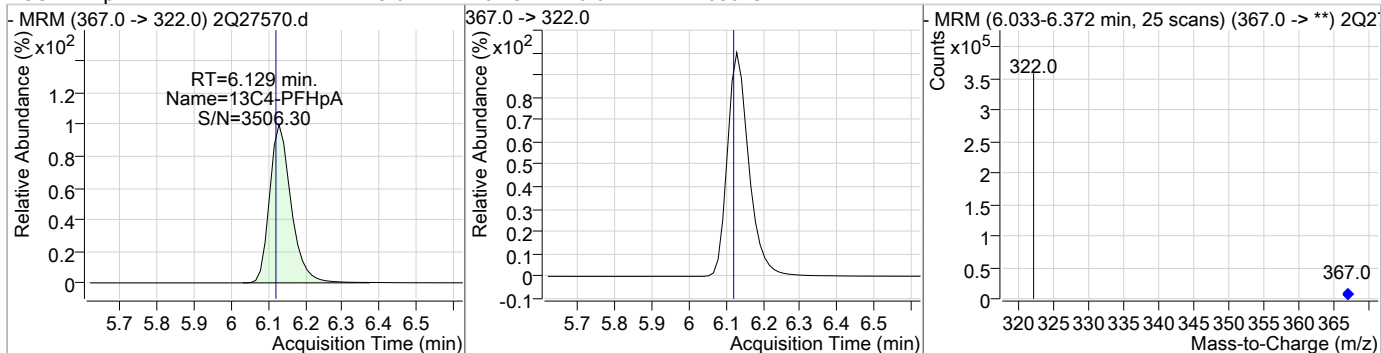
| Compound | Conc.  | RT   | Dev(Min) | Resp.   | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|---------|----------------|--------|------|------|
| HFPO-DA  | 499.71 | 5.47 | 0.00     | 1057247 | 285.0 -> 169.0 | 24.1   | 18.6 | 27.8 |



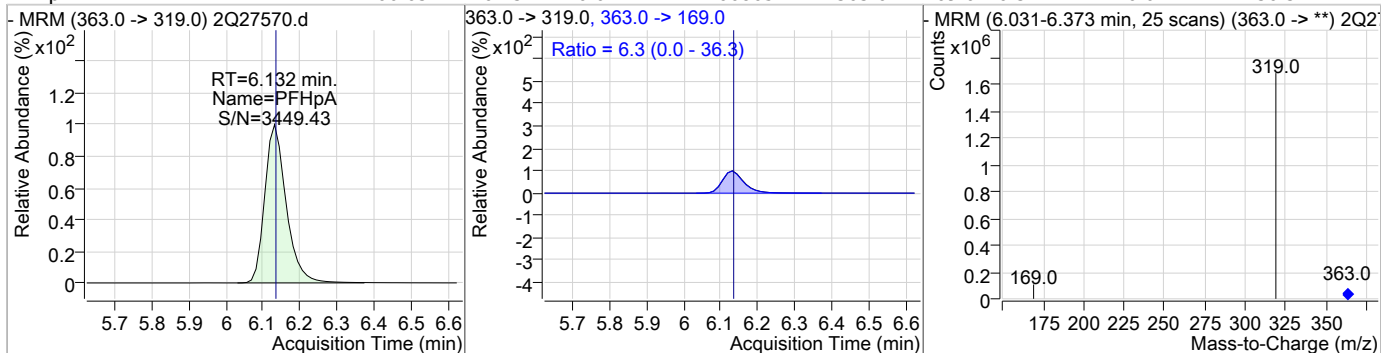
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 85.85 | 5.48 | 0.00     | 174387 |      |        |      |      |



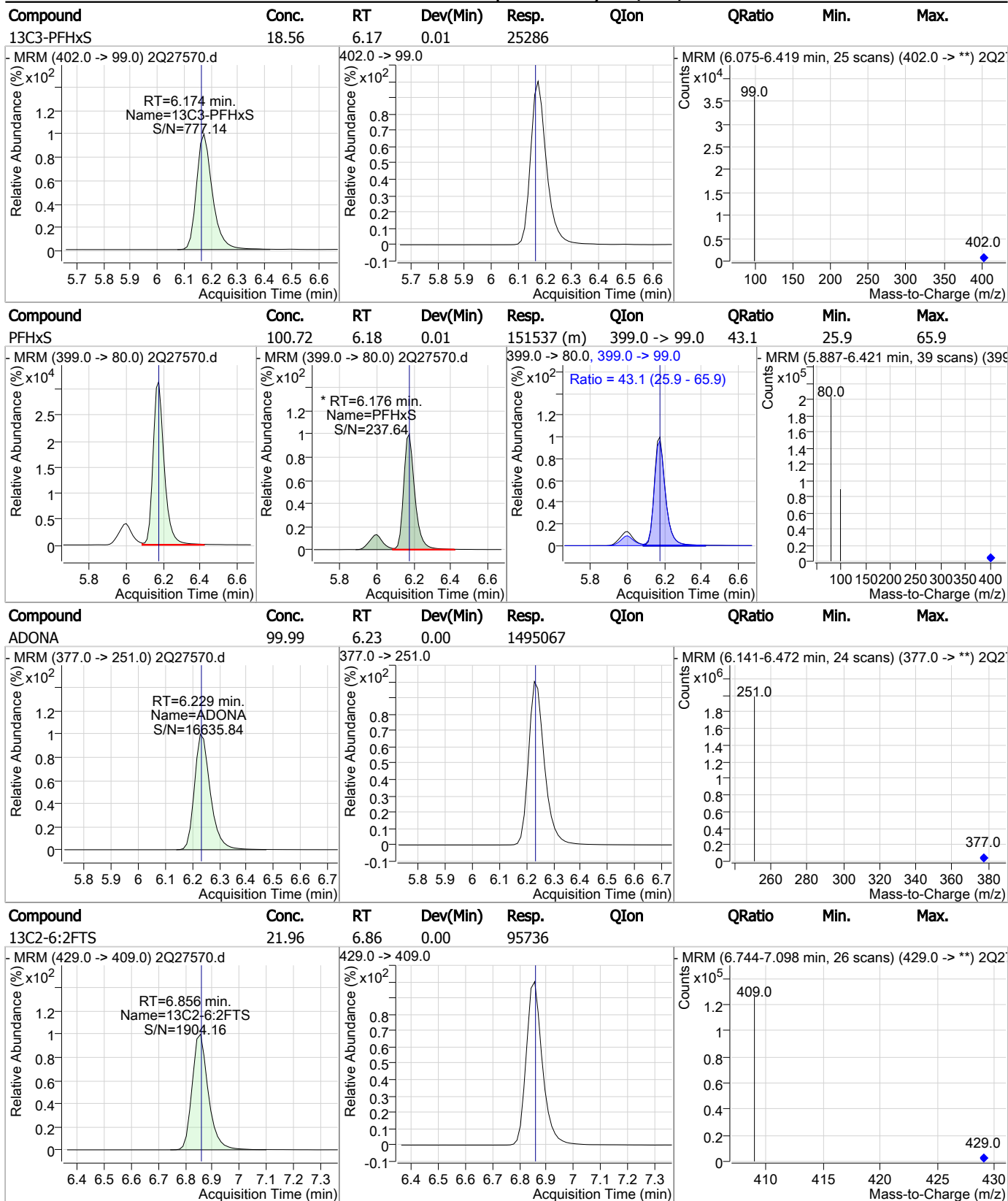
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 18.62 | 6.13 | 0.01     | 268023 |      |        |      |      |



| Compound | Conc.  | RT   | Dev(Min) | Resp.   | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|---------|----------------|--------|------|------|
| PFHpA    | 100.63 | 6.13 | 0.01     | 1266865 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |

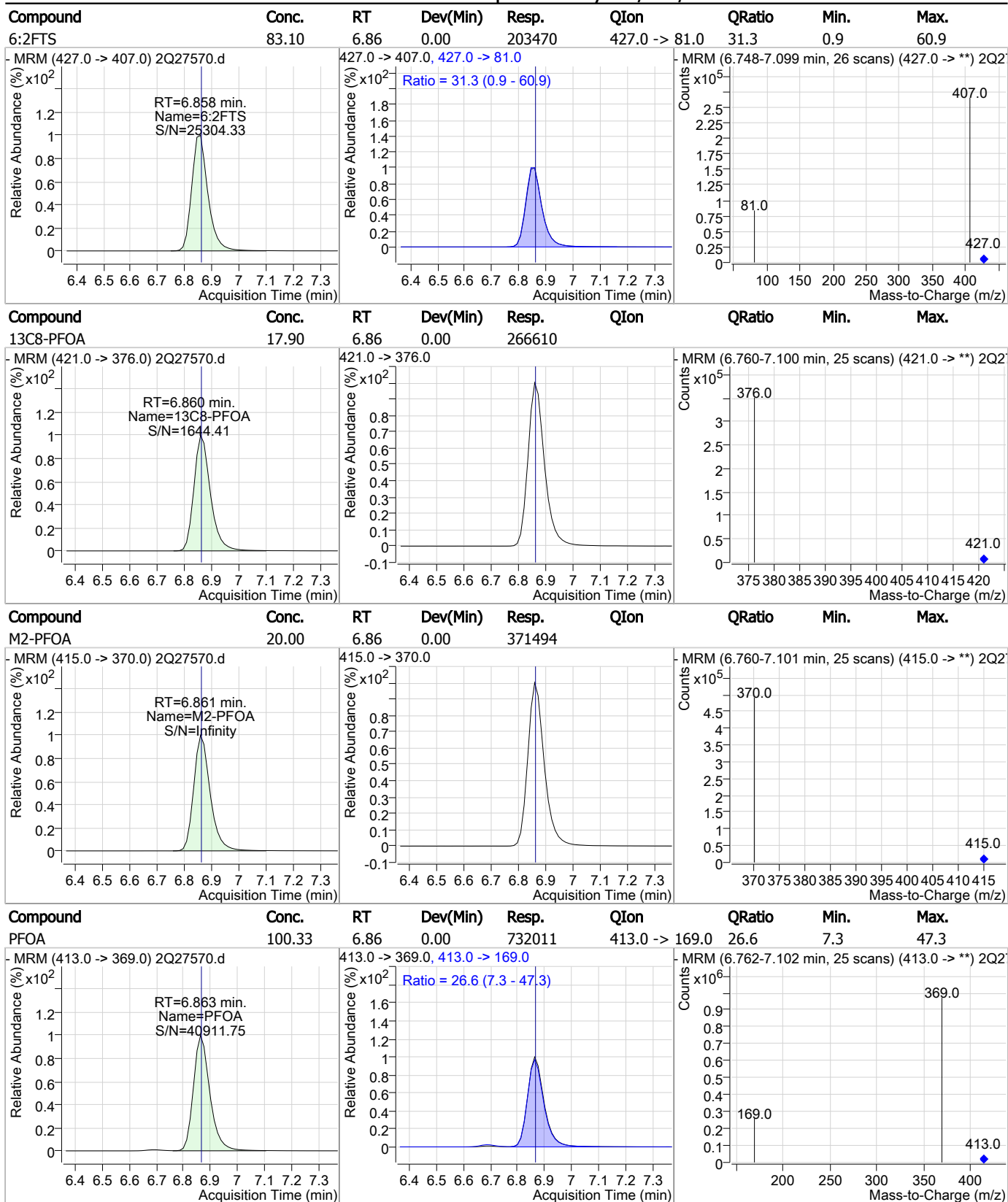


### Perfluorinated Compounds by LC/MS/MS



7.6.8  
7

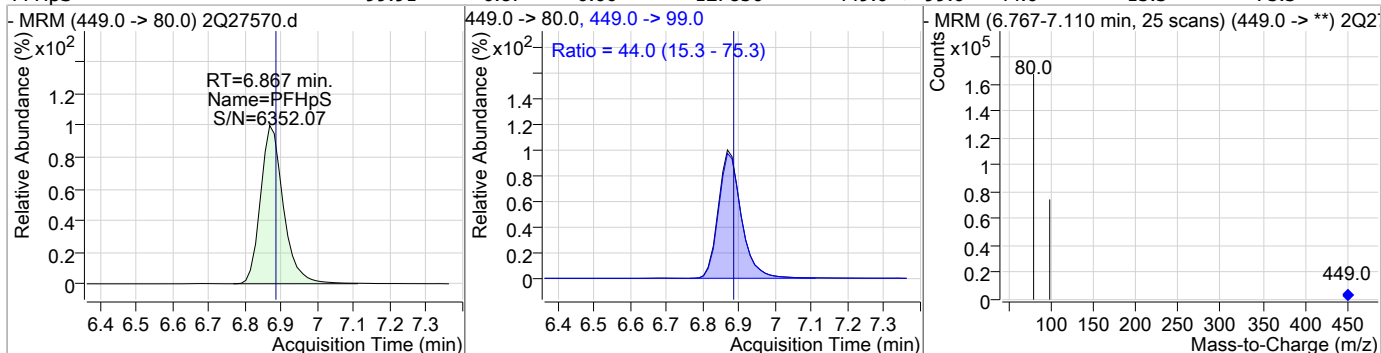
### Perfluorinated Compounds by LC/MS/MS



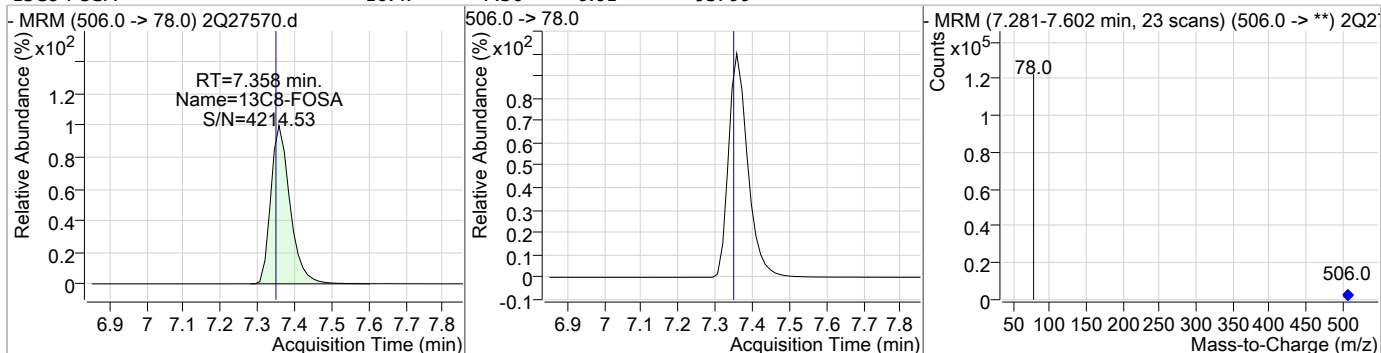
7.6.8

### Perfluorinated Compounds by LC/MS/MS

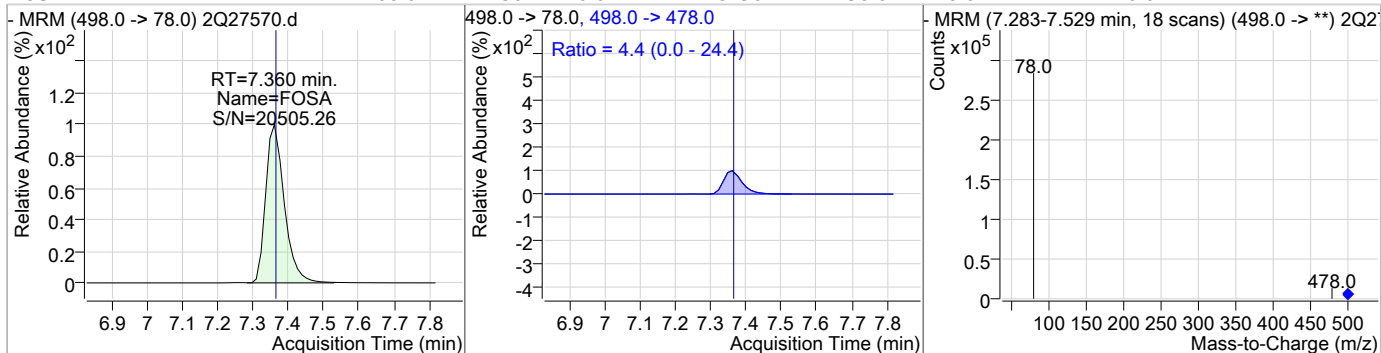
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| PFHpS    | 99.91 | 6.87 | 0.00     | 127856 | 449.0 -> 99.0 | 44.0   | 15.3 | 75.3 |



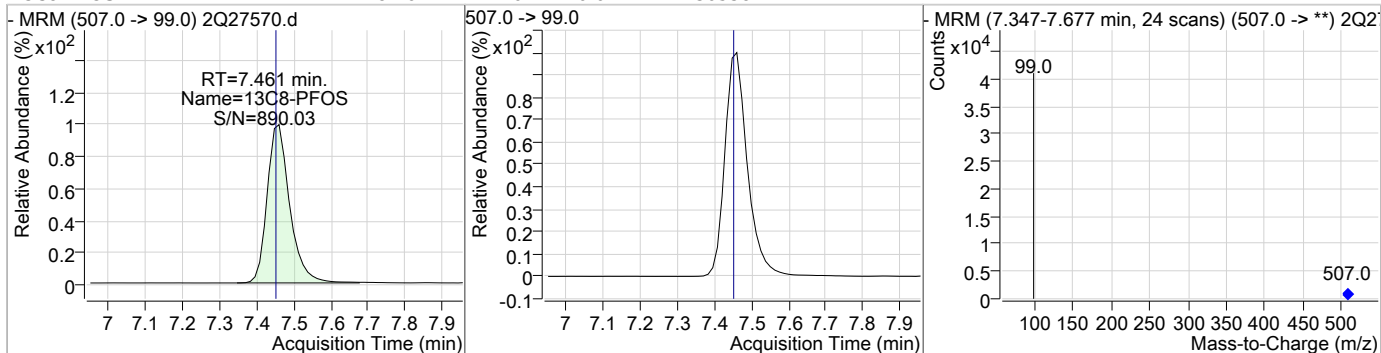
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-FOSA | 16.47 | 7.36 | 0.01     | 93799 | 506.0 -> 78.0 | 4.4    | 0.0  | 24.4 |



| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| FOSA     | 100.04 | 7.36 | 0.01     | 225790 | 498.0 -> 478.0 | 4.4    | 0.0  | 24.4 |

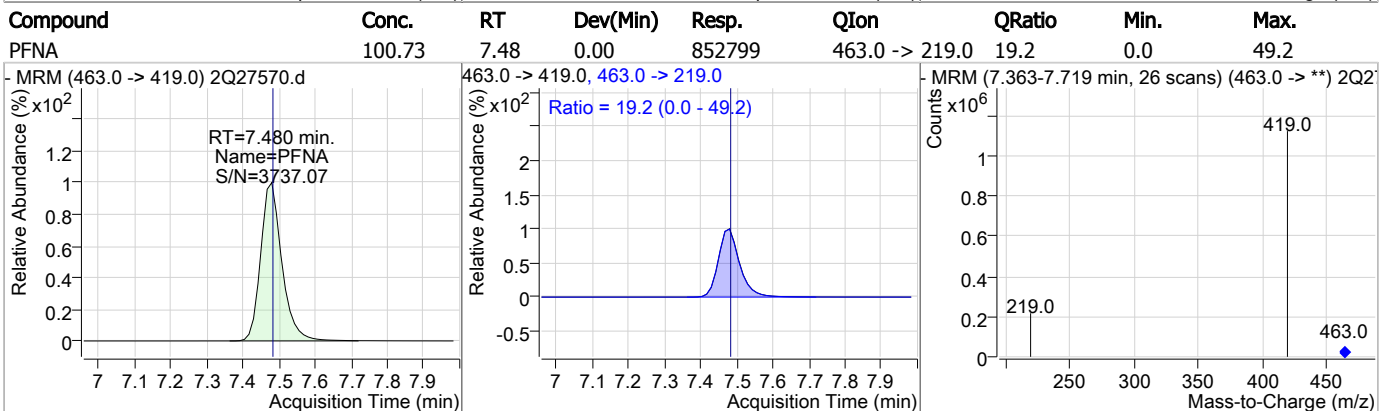
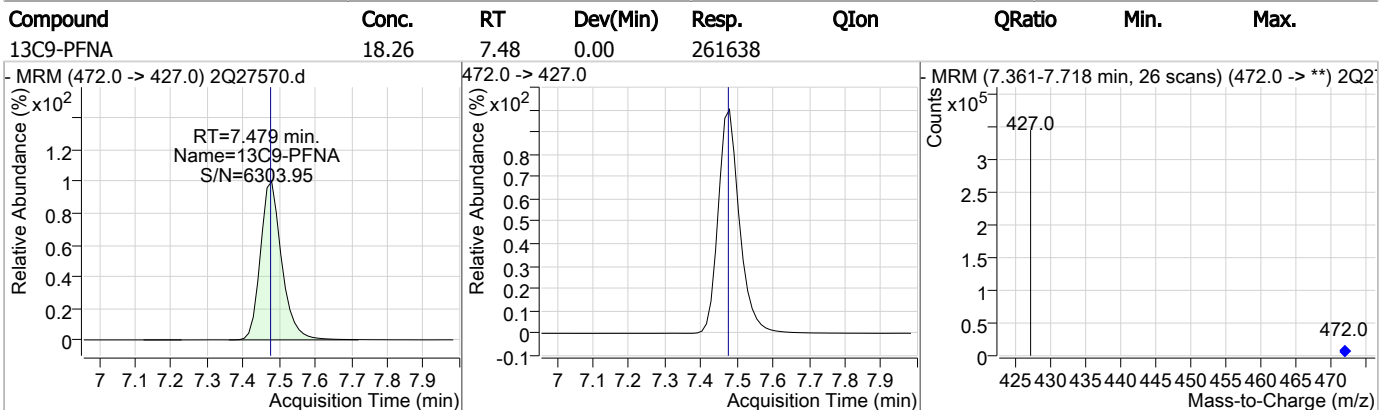
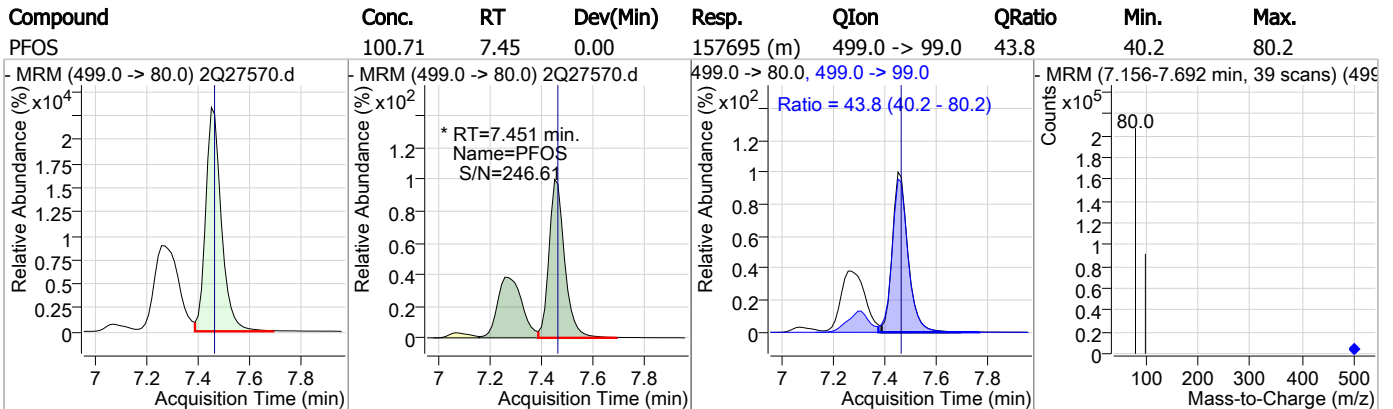
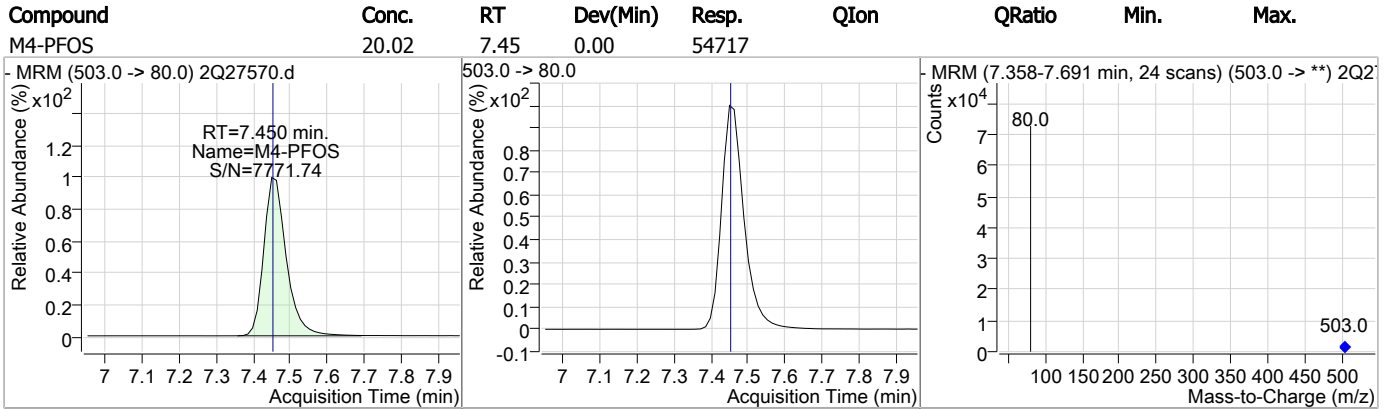


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-PFOS | 18.46 | 7.46 | 0.01     | 30538 | 507.0 -> 99.0 | 4.4    | 0.0  | 24.4 |



7.6.8  
7

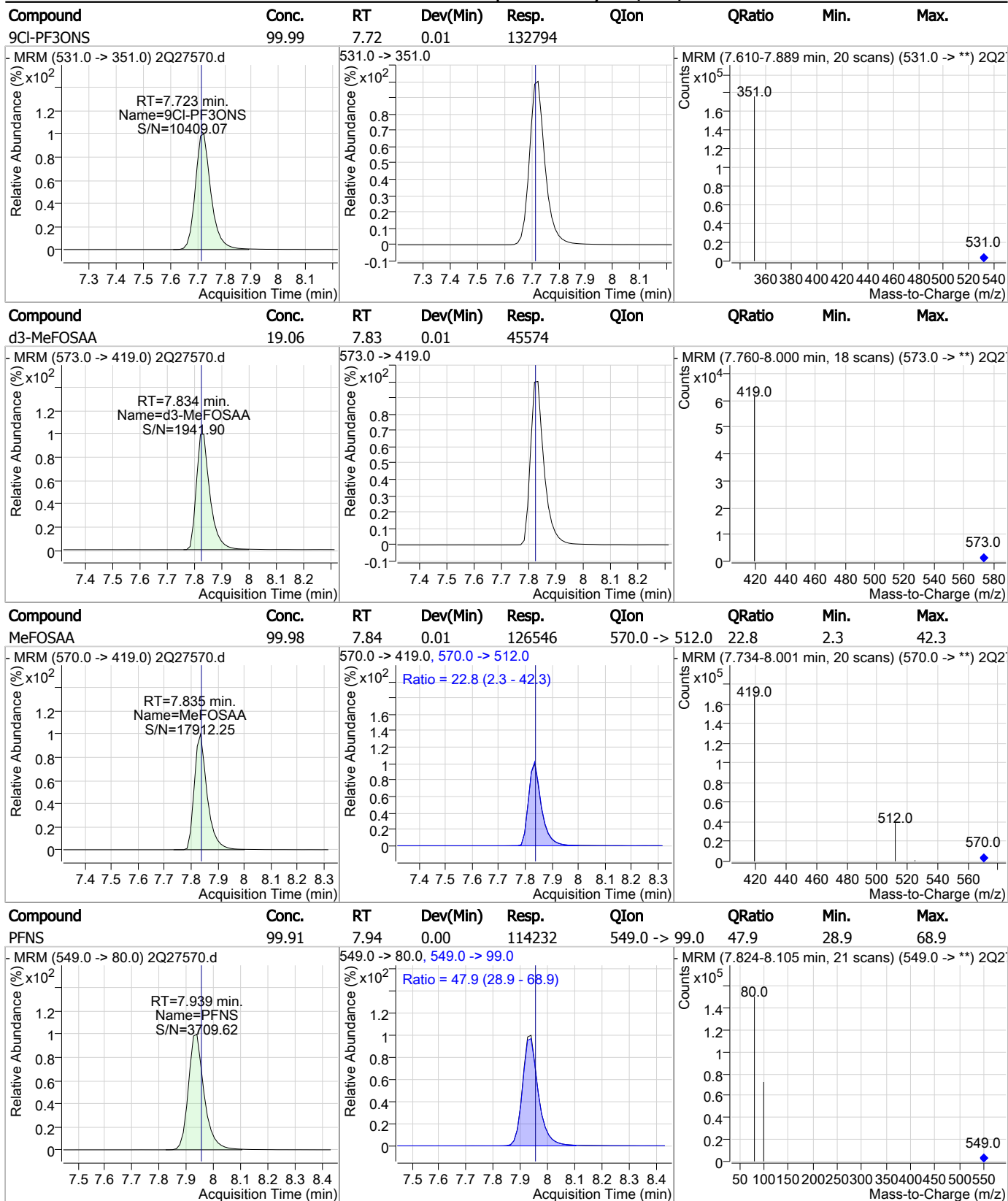
### Perfluorinated Compounds by LC/MS/MS



7.6.8

7

### Perfluorinated Compounds by LC/MS/MS

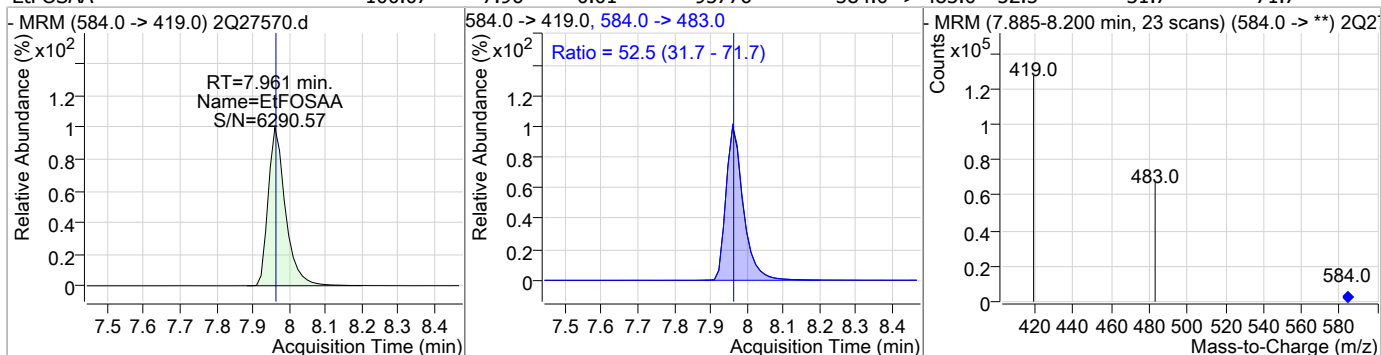


7.6.8  
7

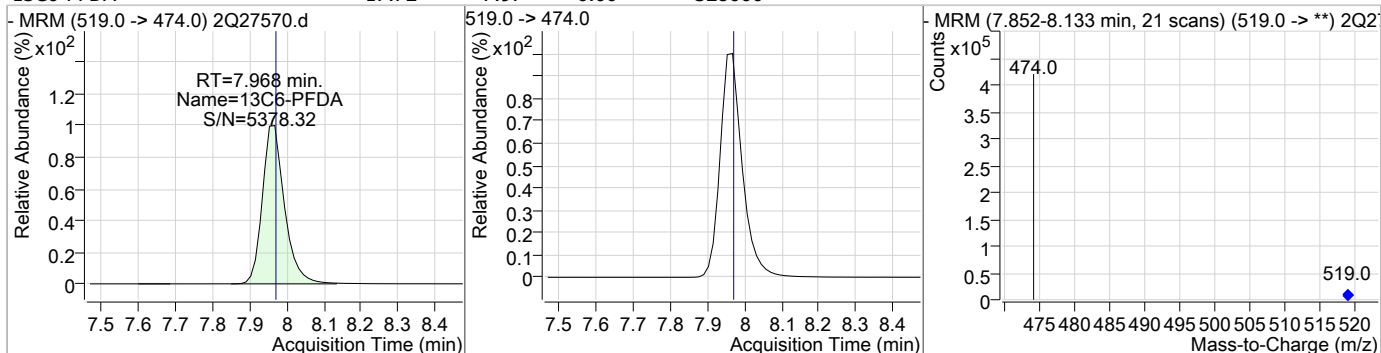


### Perfluorinated Compounds by LC/MS/MS

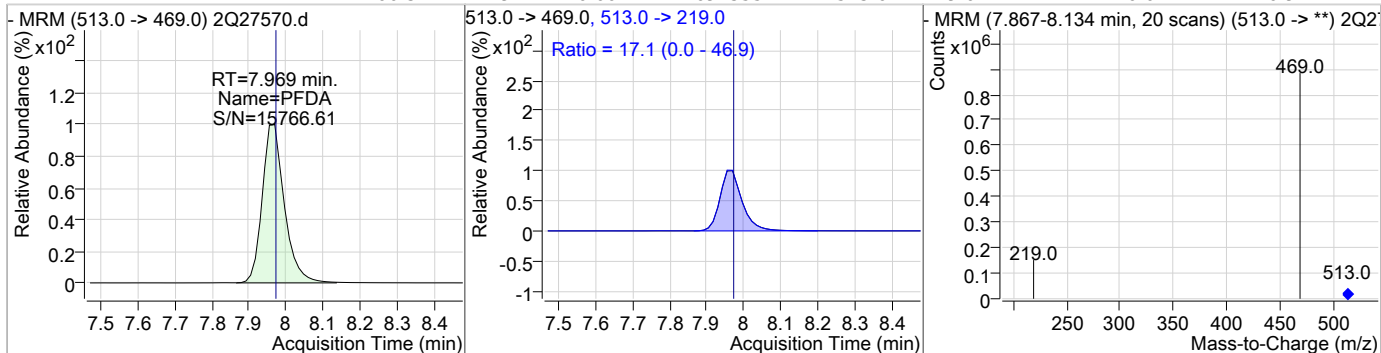
| Compound | Conc.  | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 100.07 | 7.96 | 0.01     | 95776 | 584.0 -> 483.0 | 52.5   | 31.7 | 71.7 |



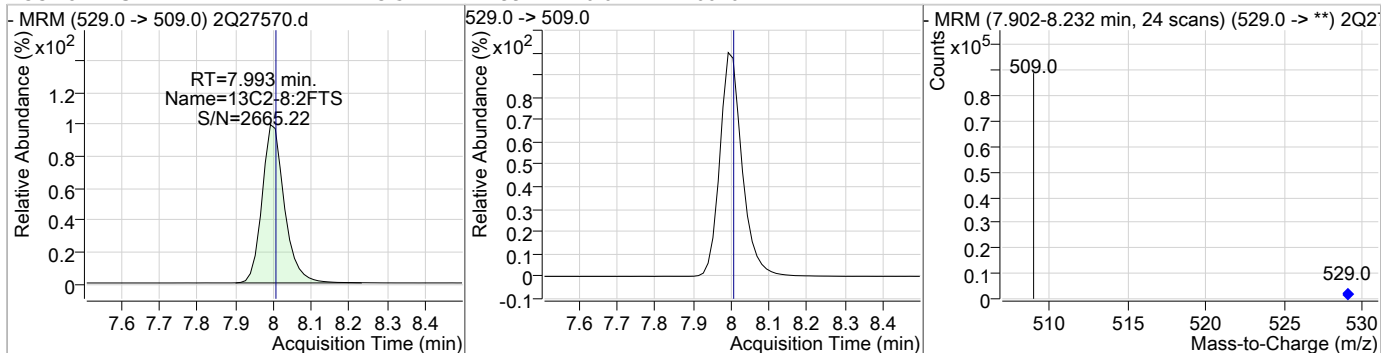
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 17.72 | 7.97 | 0.00     | 328060 |      |        |      |      |



| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFDA     | 100.31 | 7.97 | 0.00     | 694355 | 513.0 -> 219.0 | 17.1   | 0.0  | 46.9 |



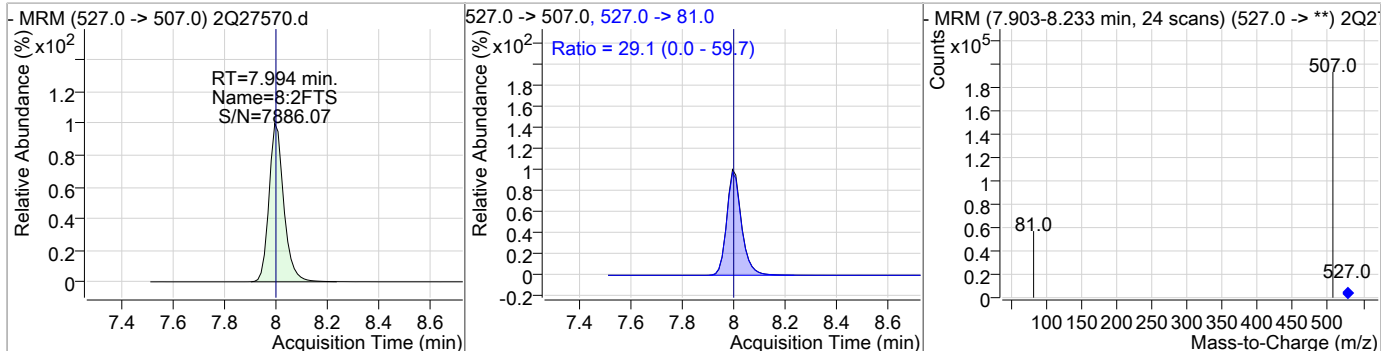
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 23.51 | 7.99 | -0.01    | 66762 |      |        |      |      |



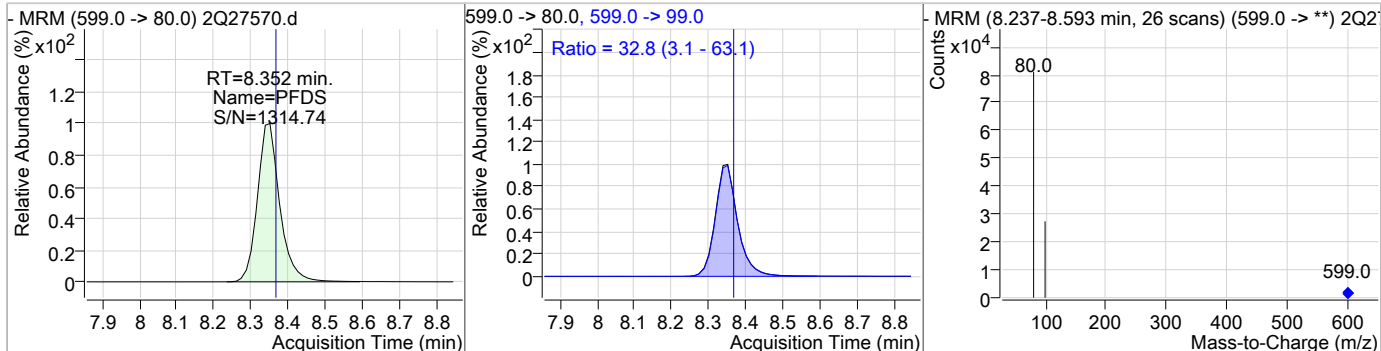


### Perfluorinated Compounds by LC/MS/MS

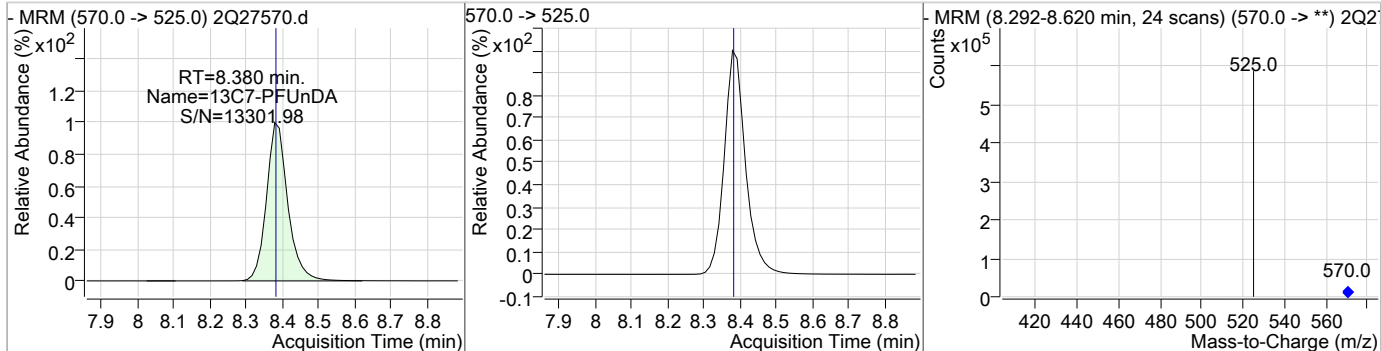
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| 8:2FTS   | 83.96 | 7.99 | -0.01    | 148070 | 527.0 -> 81.0 | 29.1   | 0.0  | 59.7 |



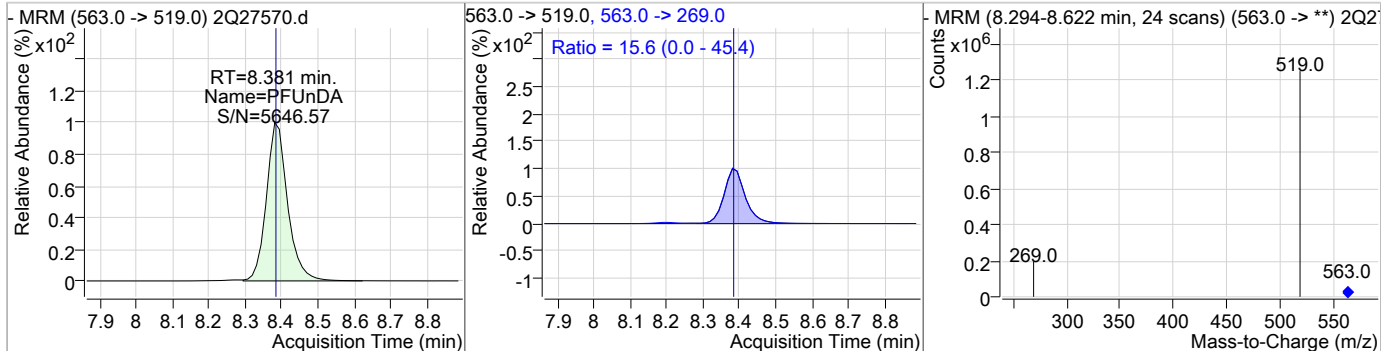
| Compound | Conc.  | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|--------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 100.10 | 8.35 | 0.00     | 60404 | 599.0 -> 99.0 | 32.8   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 18.43 | 8.38 | 0.00     | 441534 | 570.0 -> 525.0 |        |      |      |

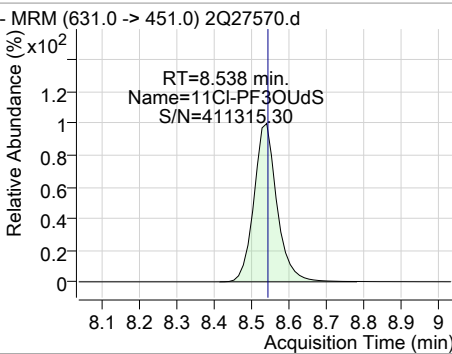
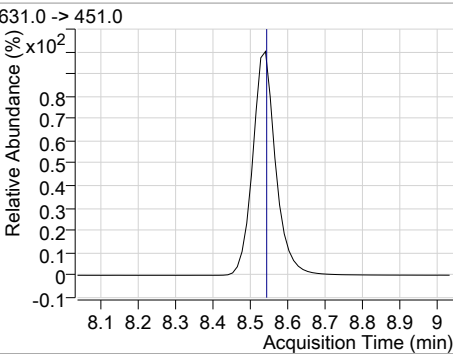
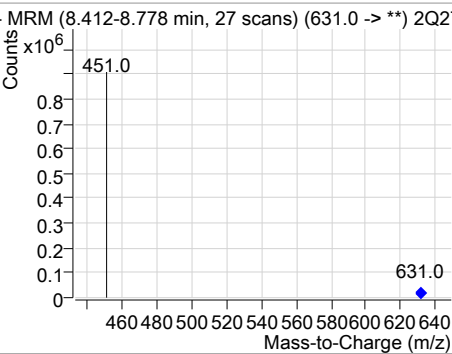
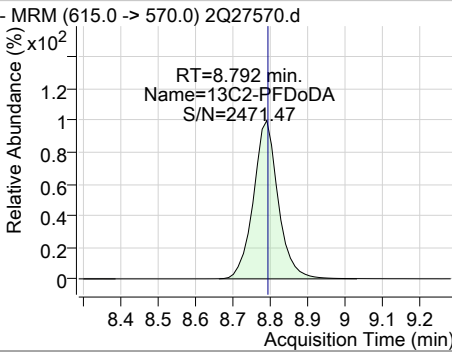
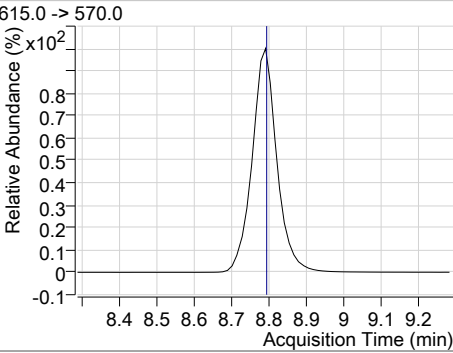
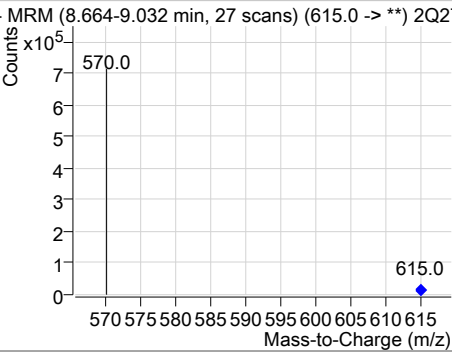
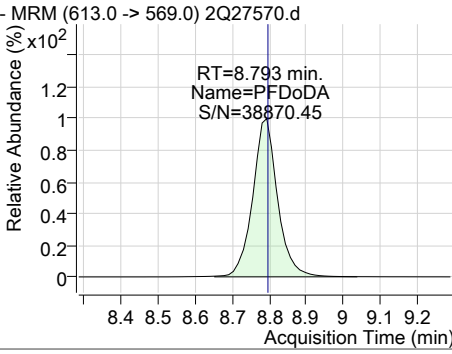
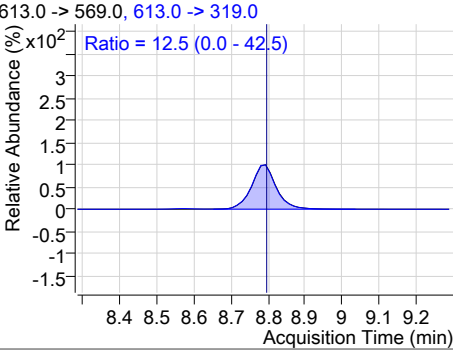
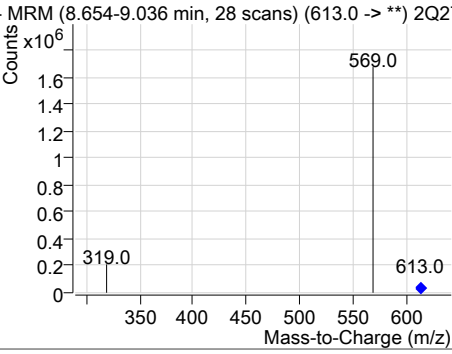
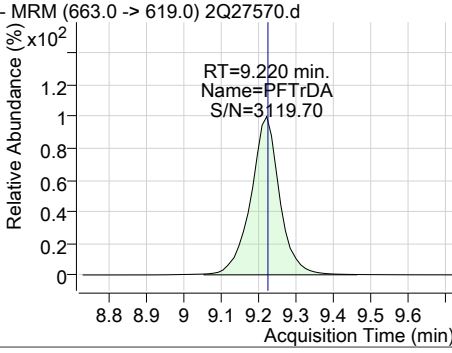
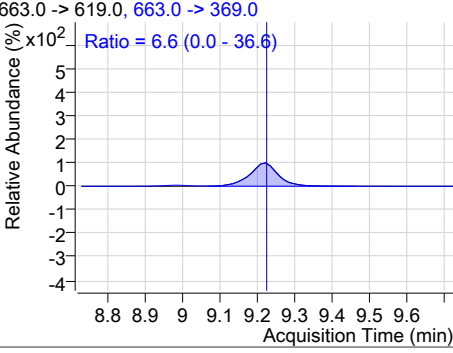
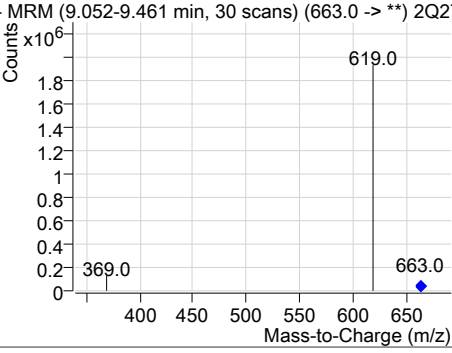


| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 100.78 | 8.38 | 0.00     | 941992 | 563.0 -> 269.0 | 15.6   | 0.0  | 45.4 |



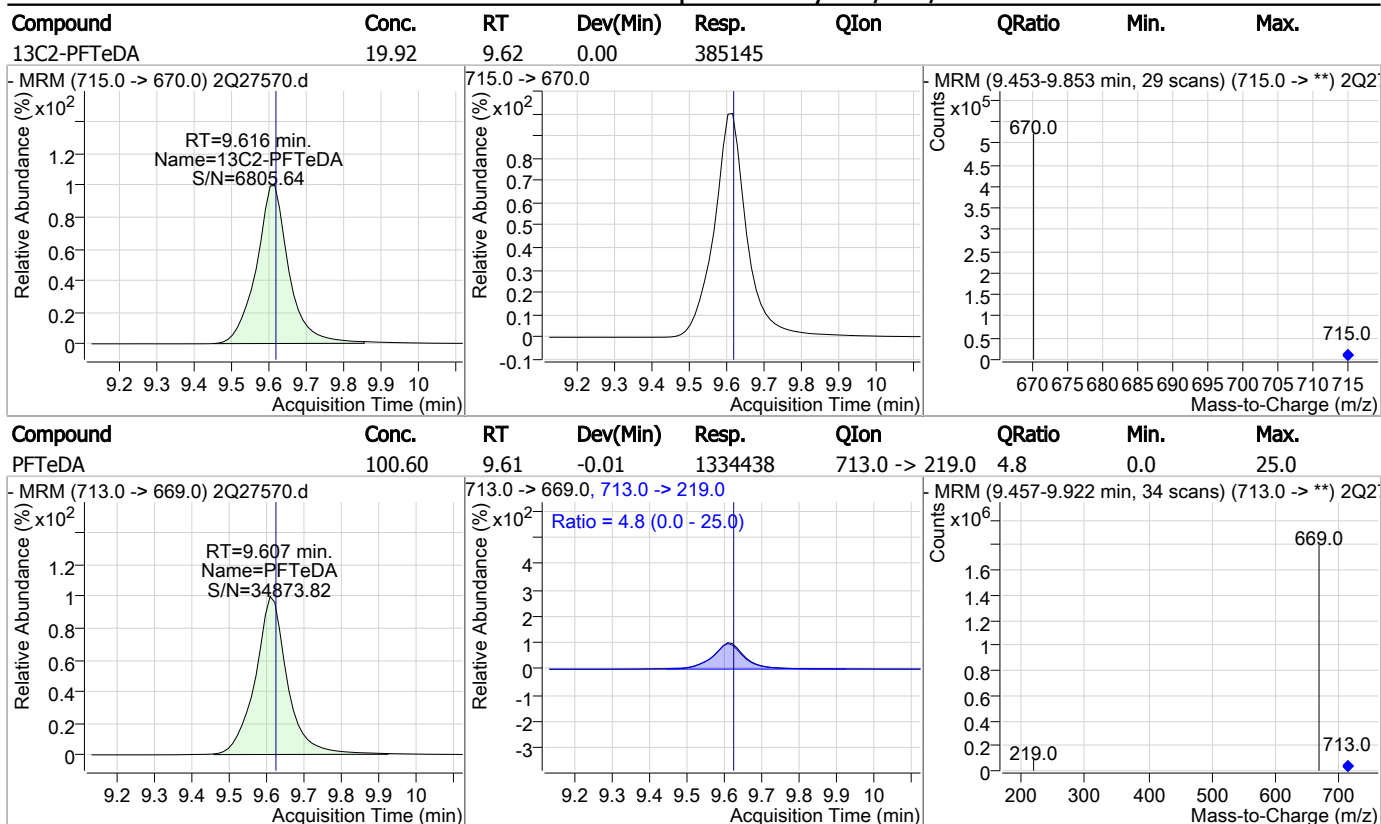
7.6.8  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc.  | RT   | Dev(Min)  | Resp.   | QIon           | QRatio  | Min. | Max. |
|--|--------|------|---|---------|----------------|---|------|------|
| 11Cl-PF3OUdS   | 100.45 | 8.54 | 0.00  | 682584  |                |   |      |      |
|    |        |      |    |         |                |    |      |      |
| 13C2-PFDoDA  | 19.25  | 8.79 | 0.00  | 537233  |                |   |      |      |
|    |        |      |    |         |                |    |      |      |
| PFDoDA   | 100.41 | 8.79 | 0.00  | 1263211 | 613.0 -> 319.0 | 12.5  | 0.0  | 42.5 |
|  |        |      |  |         |                |  |      |      |
| PFTTrDA  | 100.11 | 9.22 | 0.00  | 1461007 | 663.0 -> 369.0 | 6.6   | 0.0  | 36.6 |
|  |        |      |  |         |                |  |      |      |

7.6.8

### Perfluorinated Compounds by LC/MS/MS



7.6.8  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q439-IC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27570.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 12:34      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.45           | Split peak |

7.6.8.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27572.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 1:06:07 PM  
 Sample Name : icv439-20  
 Vial : Vial 10  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.874                | 415.0 -> 370.0 | 402015 | 20.00 µg/L       | 0.013    |
| 13C4-PFOS                          | 7.463                | 503.0 -> 80.0  | 56550  | 20.00 µg/L       | 0.012    |
| M4-PFBA                            | 1.927                | 217.0 -> 172.0 | 158860 | 20.00 µg/L       | 0.038    |
| M5-PFPeA                           | 3.824                | 268.0 -> 223.0 | 130957 | 20.00 µg/L       | 0.025    |
| M5-PFHxA                           | 5.202                | 318.0 -> 273.0 | 187333 | 20.00 µg/L       | 0.025    |
| M4-PFHpA                           | 6.142                | 367.0 -> 322.0 | 262351 | 20.00 µg/L       | 0.024    |
| M8-PFOA                            | 6.872                | 421.0 -> 376.0 | 279392 | 20.00 µg/L       | 0.013    |
| M9-PFNA                            | 7.479                | 472.0 -> 427.0 | 265760 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.968                | 519.0 -> 474.0 | 354949 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.392                | 570.0 -> 525.0 | 458213 | 20.00 µg/L       | 0.013    |
| M2-PFDoDA                          | 8.792                | 615.0 -> 570.0 | 532476 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 9.616                | 715.0 -> 670.0 | 359406 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 7.358                | 506.0 -> 78.0  | 110410 | 20.00 µg/L       | 0.011    |
| M3-PFBS                            | 4.130                | 302.0 -> 99.0  | 21964  | 20.00 µg/L       | 0.038    |
| M3-PFHxS                           | 6.186                | 402.0 -> 99.0  | 24867  | 20.00 µg/L       | 0.025    |
| M8-PFOS                            | 7.461                | 507.0 -> 99.0  | 30019  | 20.00 µg/L       | 0.012    |
| M2-4:2FTS                          | 5.097                | 329.0 -> 309.0 | 71860  | 20.00 µg/L       | 0.025    |
| M2-6:2FTS                          | 6.856                | 429.0 -> 409.0 | 77787  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 8.005                | 529.0 -> 509.0 | 50052  | 20.00 µg/L       | 0.001    |
| M3-MeFOSAA                         | 7.835                | 573.0 -> 419.0 | 45273  | 20.00 µg/L       | 0.012    |
| M3-HFPO-DA                         | 5.494                | 287.0 -> 169.0 | 205828 | 100.00 µg/L      | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 5.097                | 329.0 -> 309.0 | 71855  | 17.31 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 86.5% |          |
| 13C2-6:2FTS                        | 6.856                | 429.0 -> 409.0 | 77707  | 17.83 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 89.1% |          |
| 13C2-8:2FTS                        | 8.005                | 529.0 -> 509.0 | 50068  | 17.63 µg/L       | 0.001    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.2% |          |
| 13C2-PFDoDA                        | 8.792                | 615.0 -> 570.0 | 533392 | 19.11 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.6% |          |
| 13C2-PFTeDA                        | 9.616                | 715.0 -> 670.0 | 359693 | 18.61 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.0% |          |
| 13C3-PFBS                          | 4.130                | 302.0 -> 99.0  | 21836  | 18.03 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.2% |          |
| 13C3-PFHxS                         | 6.186                | 402.0 -> 99.0  | 24905  | 18.28 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.4% |          |
| 13C4-PFBA                          | 1.927                | 217.0 -> 172.0 | 157984 | 18.23 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.1% |          |
| 13C4-PFHpA                         | 6.142                | 367.0 -> 322.0 | 262123 | 18.21 µg/L       | 0.024    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.0% |          |
| 13C5-PFHxA                         | 5.202                | 318.0 -> 273.0 | 187047 | 18.24 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.2% |          |
| 13C5-PFPeA                         | 3.824                | 268.0 -> 223.0 | 130785 | 18.24 µg/L       | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.2% |          |
| 13C6-PFDA                          | 7.968                | 519.0 -> 474.0 | 354926 | 19.17 µg/L       | 0.000    |

7.6.9  
7

### Perfluorinated Compounds by LC/MS/MS

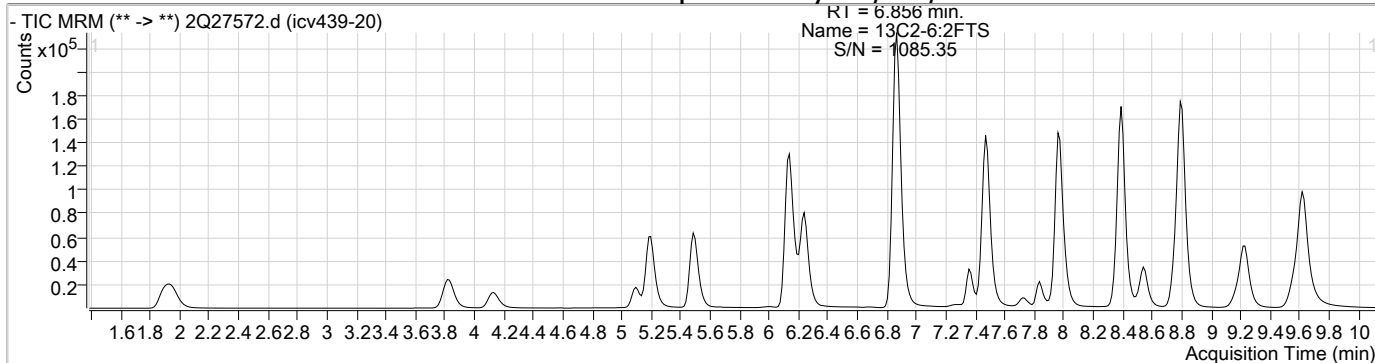
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.9%  |          |
| 13C7-PFUnDA           | 8.392                | 570.0 -> 525.0 | 457775 | 19.11 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.5%  |          |
| 13C8-FOSA             | 7.358                | 506.0 -> 78.0  | 110412 | 19.39 µg/L        | 0.011    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.9%  |          |
| 13C8-PFOA             | 6.872                | 421.0 -> 376.0 | 279087 | 18.74 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.7%  |          |
| 13C8-PFOS             | 7.461                | 507.0 -> 99.0  | 30049  | 18.17 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.8%  |          |
| 13C9-PFNA             | 7.479                | 472.0 -> 427.0 | 265634 | 18.54 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 92.7%  |          |
| d3-MeFOSAA            | 7.835                | 573.0 -> 419.0 | 45265  | 18.93 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 94.7%  |          |
| M2-PFOA               | 6.874                | 415.0 -> 370.0 | 402163 | 19.99 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.463                | 503.0 -> 80.0  | 56575  | 20.00 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.494                | 287.0 -> 169.0 | 205828 | 101.33 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |

7.6.9  
7

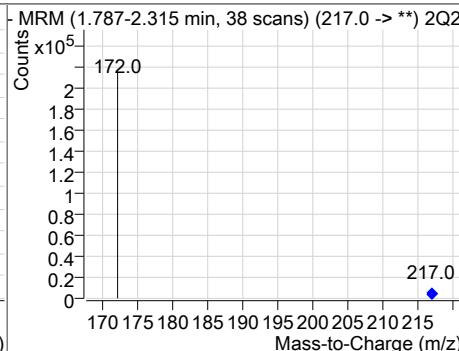
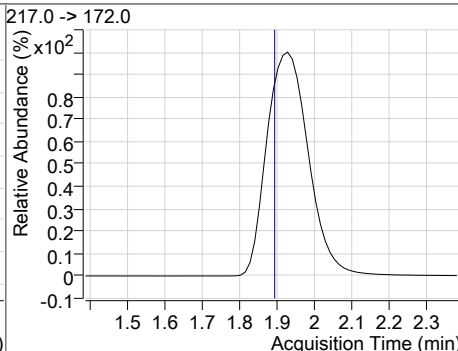
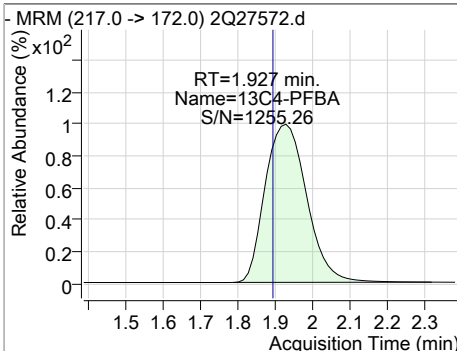
| Target Compounds | RT    | QIon           | Resp.  | Conc. Units  | QValue |
|------------------|-------|----------------|--------|--------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -      | N.D.         |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -      | N.D.         |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -      | N.D.         |        |
| EtFOSAA          | 7.961 | 584.0 -> 419.0 | 18917  | 18.98 µg/L m | 98     |
| FOSA             | -     | 498.0 -> 78.0  | -      | N.D.         |        |
| MeFOSAA          | 7.835 | 570.0 -> 419.0 | 21387  | 17.80 µg/L m | 92     |
| PFBA             | -     | 213.0 -> 169.0 | -      | N.D.         |        |
| PFBS             | 4.134 | 299.0 -> 80.0  | 35634  | 19.64 µg/L   | 100    |
| PFDA             | 7.969 | 513.0 -> 469.0 | 146803 | 19.59 µg/L   | 100    |
| PFDoDA           | 8.793 | 613.0 -> 569.0 | 242594 | 19.44 µg/L   | 100    |
| PFDS             | -     | 599.0 -> 80.0  | -      | N.D.         |        |
| PFHpA            | 6.144 | 363.0 -> 319.0 | 244332 | 19.86 µg/L   | 100    |
| PFHpS            | -     | 449.0 -> 80.0  | -      | N.D.         |        |
| PFHxA            | 5.191 | 313.0 -> 269.0 | 63783  | 19.68 µg/L   | 100    |
| PFHxS            | 6.176 | 399.0 -> 80.0  | 29148  | 19.68 µg/L m | 96     |
| PFNA             | 7.480 | 463.0 -> 419.0 | 175282 | 20.37 µg/L   | 99     |
| PFNS             | -     | 549.0 -> 80.0  | -      | N.D.         |        |
| PFOA             | 6.875 | 413.0 -> 369.0 | 154611 | 20.23 µg/L   | 99     |
| PFOS             | 7.464 | 499.0 -> 80.0  | 30336  | 19.71 µg/L m | 79     |
| PFPeA            | -     | 263.0 -> 219.0 | -      | N.D.         |        |
| PFPeS            | -     | 349.0 -> 80.0  | -      | N.D.         |        |
| PFTeDA           | 9.620 | 713.0 -> 669.0 | 240334 | 19.59 µg/L   | 99     |
| PFTTrDA          | 9.232 | 663.0 -> 619.0 | 273449 | 20.26 µg/L   | 100    |
| PFUnDA           | 8.393 | 563.0 -> 519.0 | 192458 | 19.84 µg/L   | 99     |
| 11Cl-PF3OUdS     | 8.538 | 631.0 -> 451.0 | 140508 | 20.85 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.723 | 531.0 -> 351.0 | 27323  | 20.81 µg/L   | 100    |
| ADONA            | 6.241 | 377.0 -> 251.0 | 295798 | 20.61 µg/L   | 100    |
| HFPO-DA          | 5.498 | 329.0 -> 169.0 | 46048  | 18.44 µg/L   | 96     |

# = Qualifier out of range, m = manually integrated, + = Area summed

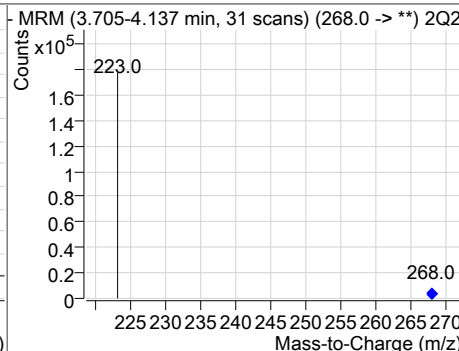
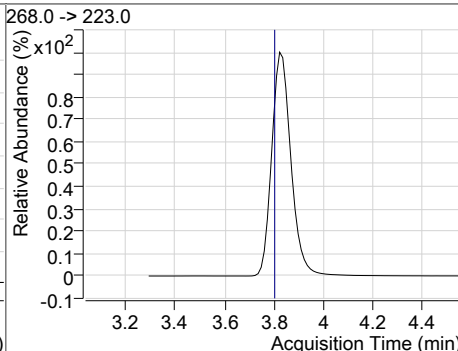
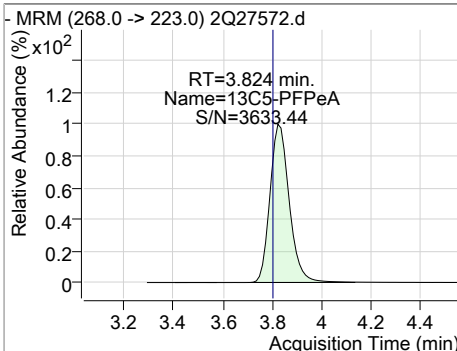
### Perfluorinated Compounds by LC/MS/MS



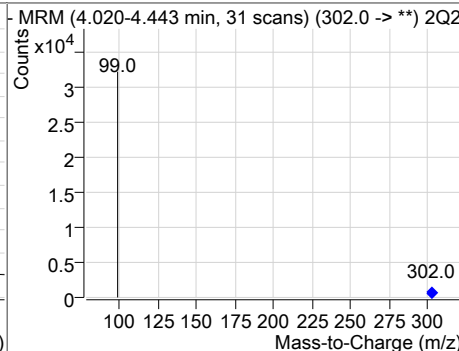
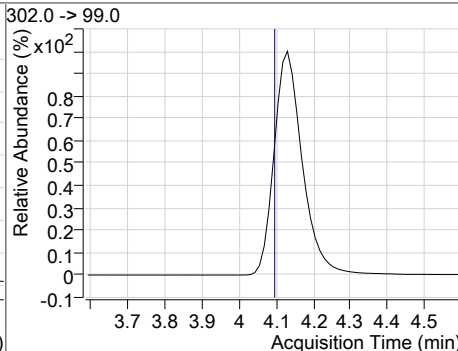
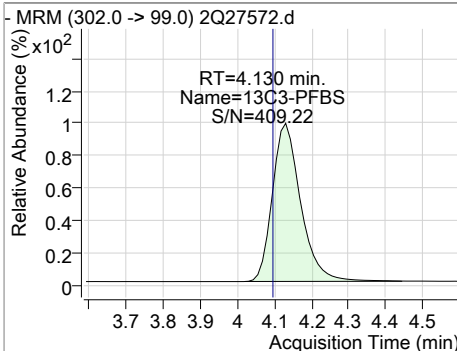
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 18.23 | 1.93 | 0.04     | 157984 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 18.24 | 3.82 | 0.03     | 130785 |      |        |      |      |



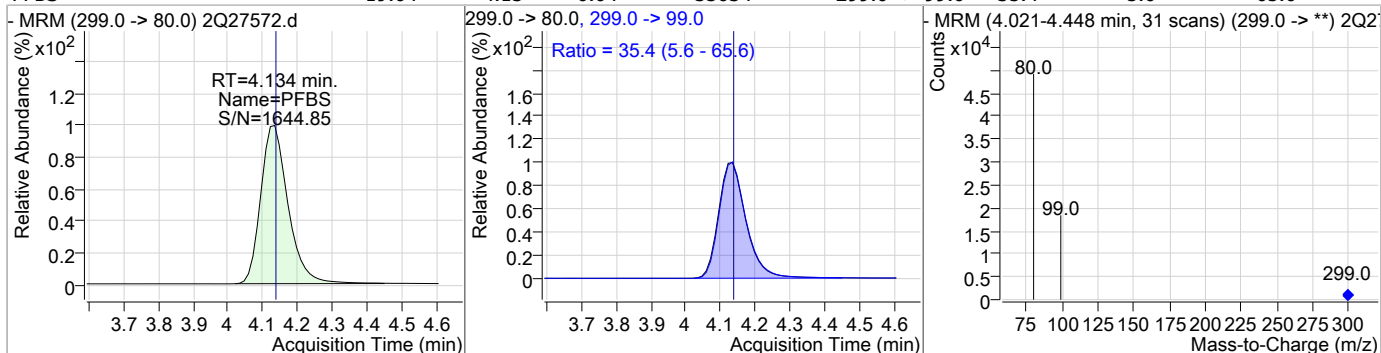
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFBS | 18.03 | 4.13 | 0.04     | 21836 |      |        |      |      |



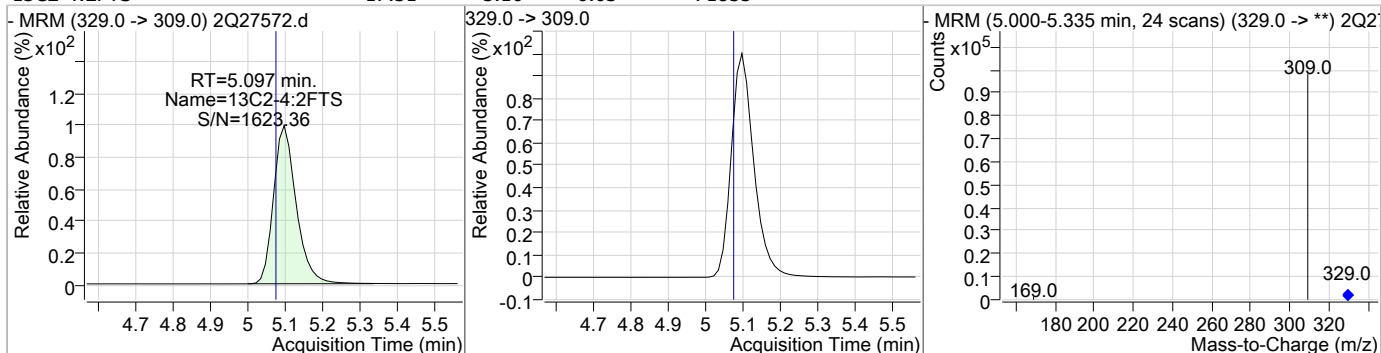
7.6.9

### Perfluorinated Compounds by LC/MS/MS

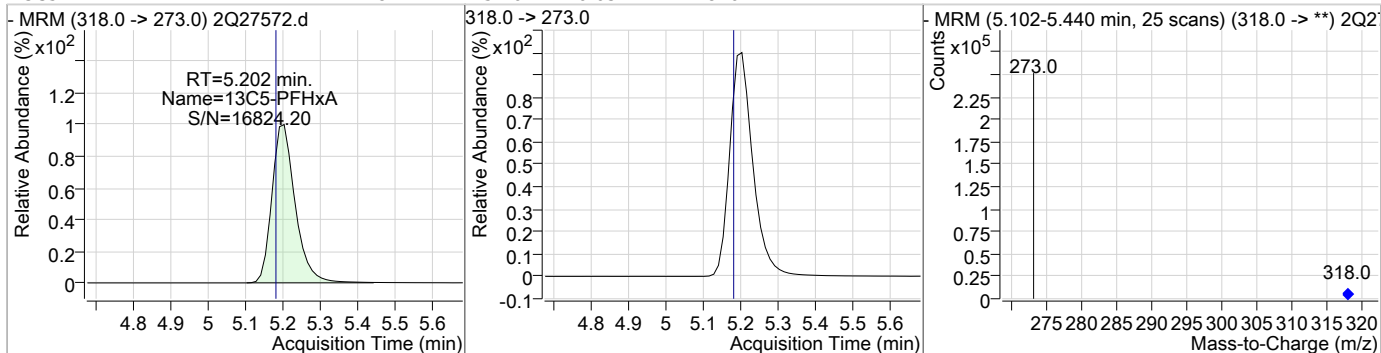
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFBS     | 19.64 | 4.13 | 0.04     | 35634 | 299.0 -> 99.0 | 35.4   | 5.6  | 65.6 |



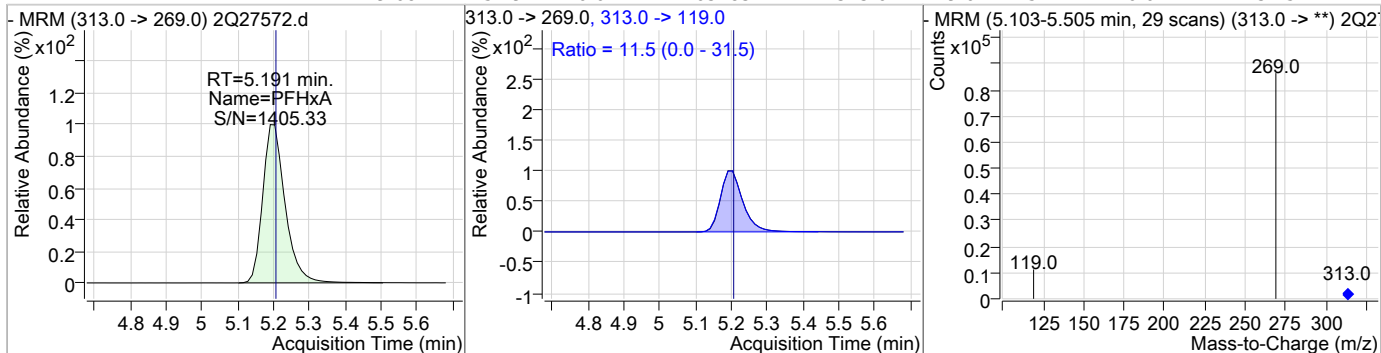
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-4:2FTS | 17.31 | 5.10 | 0.03     | 71855 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 18.24 | 5.20 | 0.03     | 187047 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 19.68 | 5.19 | 0.01     | 63783 | 313.0 -> 119.0 | 11.5   | 0.0  | 31.5 |

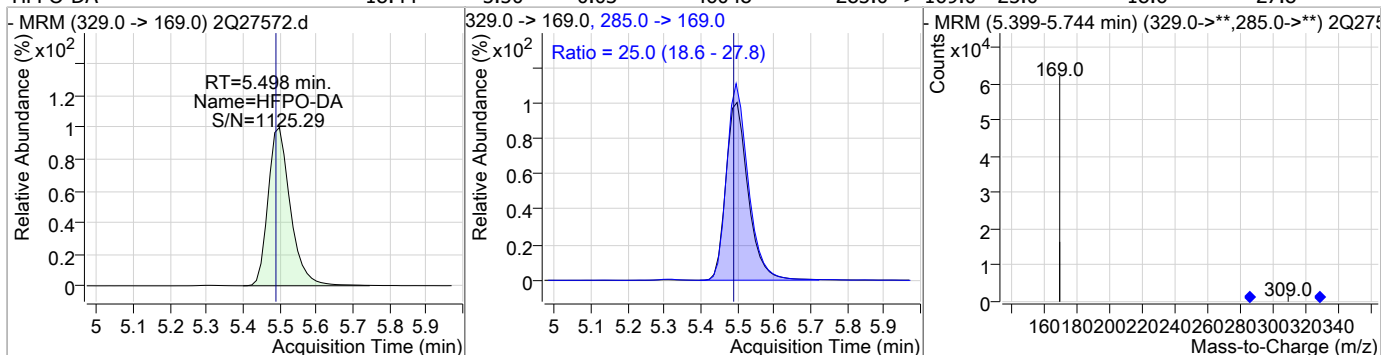


7.6.9  
7

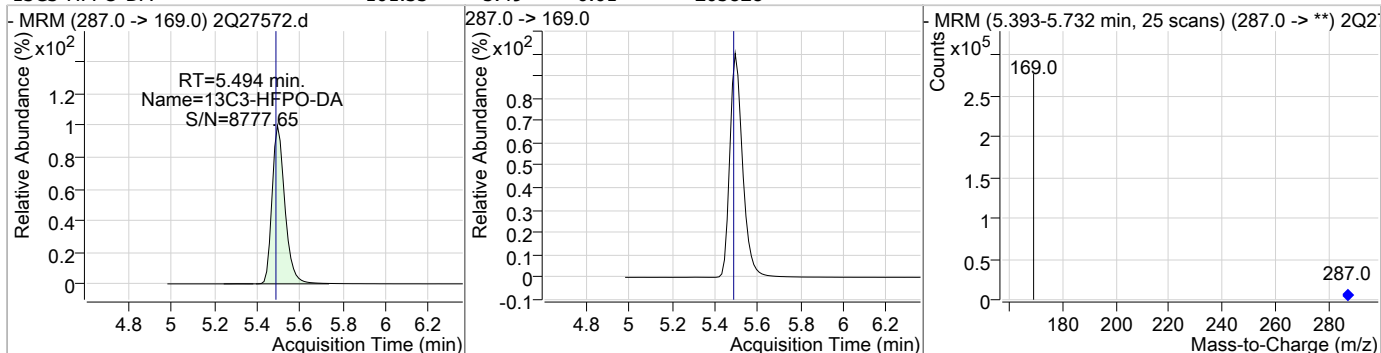


### Perfluorinated Compounds by LC/MS/MS

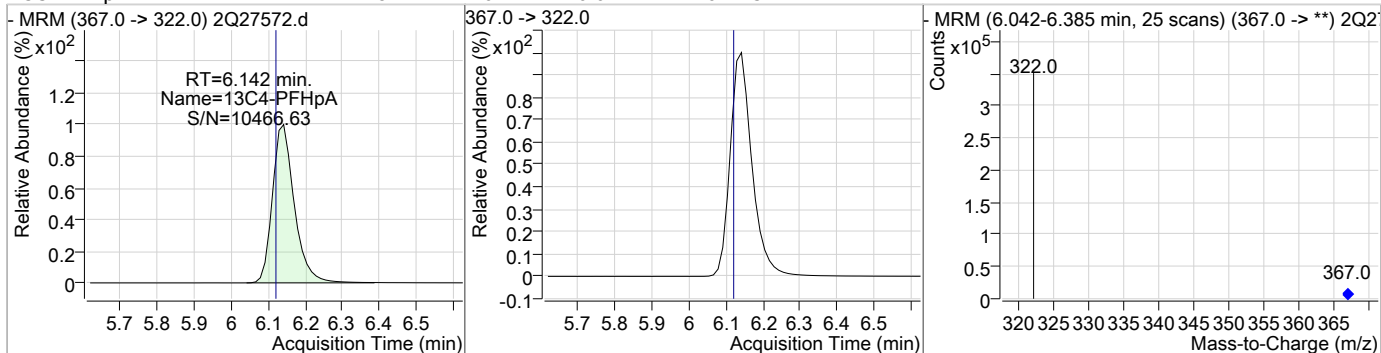
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 18.44 | 5.50 | 0.03     | 46048 | 285.0 -> 169.0 | 25.0   | 18.6 | 27.8 |



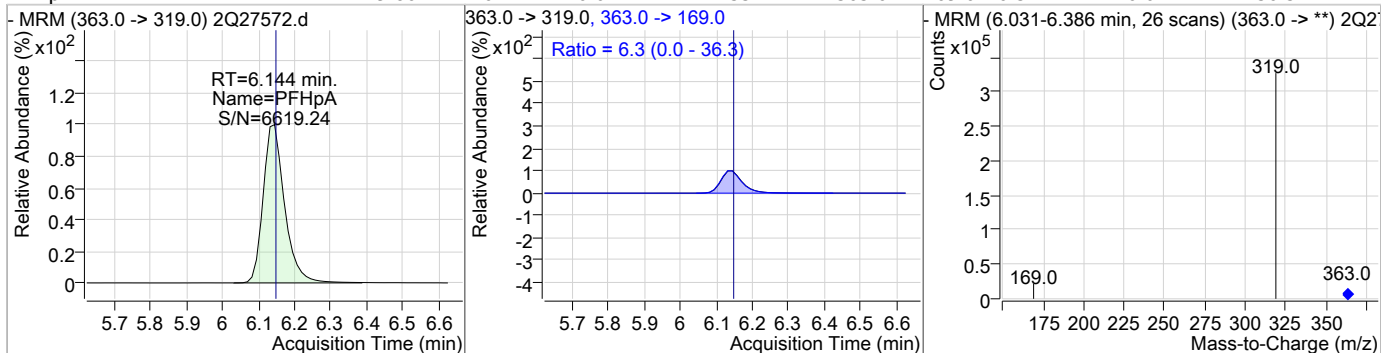
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 101.33 | 5.49 | 0.01     | 205828 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 18.21 | 6.14 | 0.02     | 262123 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.86 | 6.14 | 0.02     | 244332 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



7.6.9  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|-----------|---------------|--------|------|------|
| 13C3-PFHxS  | 18.28 | 6.19 | 0.03     | 24905     |               |        |      |      |
|             |       |      |          |           |               |        |      |      |
| PFHxS       | 19.68 | 6.18 | 0.01     | 29148 (m) | 399.0 -> 99.0 | 43.2   | 25.9 | 65.9 |
|             |       |      |          |           |               |        |      |      |
| ADONA       | 20.61 | 6.24 | 0.01     | 295798    |               |        |      |      |
|             |       |      |          |           |               |        |      |      |
| 13C2-6:2FTS | 17.83 | 6.86 | 0.00     | 77707     |               |        |      |      |
|             |       |      |          |           |               |        |      |      |

7.6.9  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 18.74 | 6.87 | 0.01     | 279087 |                |        |      |      |
|           |       |      |          |        |                |        |      |      |
| M2-PFOA   | 19.99 | 6.87 | 0.01     | 402163 |                |        |      |      |
|           |       |      |          |        |                |        |      |      |
| PFOA      | 20.23 | 6.88 | 0.01     | 154611 | 413.0 -> 169.0 | 26.6   | 7.3  | 47.3 |
|           |       |      |          |        |                |        |      |      |
| 13C8-FOSA | 19.39 | 7.36 | 0.01     | 110412 |                |        |      |      |
|           |       |      |          |        |                |        |      |      |

7.6.9  
7

### Perfluorinated Compounds by LC/MS/MS

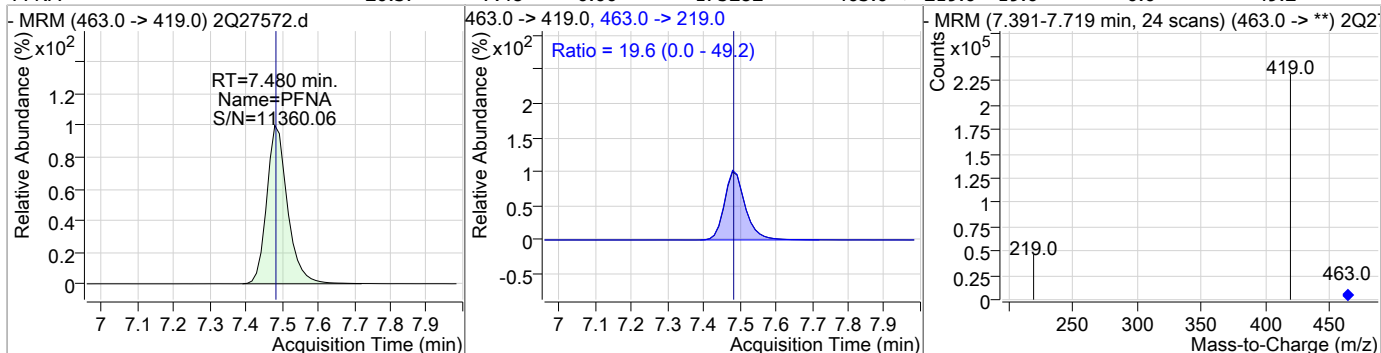
| Compound  | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-----------|---------------|--------|------|------|
| 13C8-PFOS | 18.17 | 7.46 | 0.01     | 30049     |               |        |      |      |
|           |       |      |          |           |               |        |      |      |
| M4-PFOS   | 20.00 | 7.46 | 0.01     | 56575     |               |        |      |      |
|           |       |      |          |           |               |        |      |      |
| PFOS      | 19.71 | 7.46 | 0.01     | 30336 (m) | 499.0 -> 99.0 | 44.4   | 40.2 | 80.2 |
|           |       |      |          |           |               |        |      |      |
| 13C9-PFNA | 18.54 | 7.48 | 0.00     | 265634    |               |        |      |      |
|           |       |      |          |           |               |        |      |      |

7.6.9

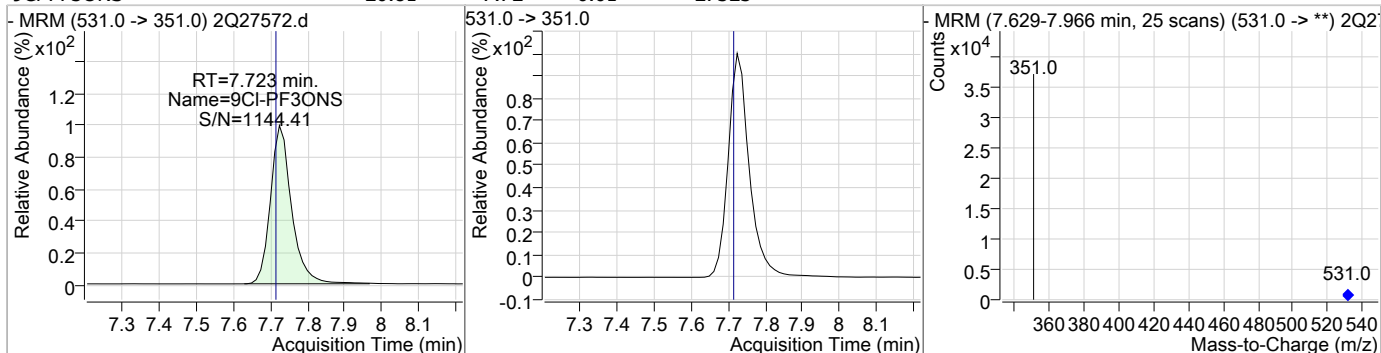
7

### Perfluorinated Compounds by LC/MS/MS

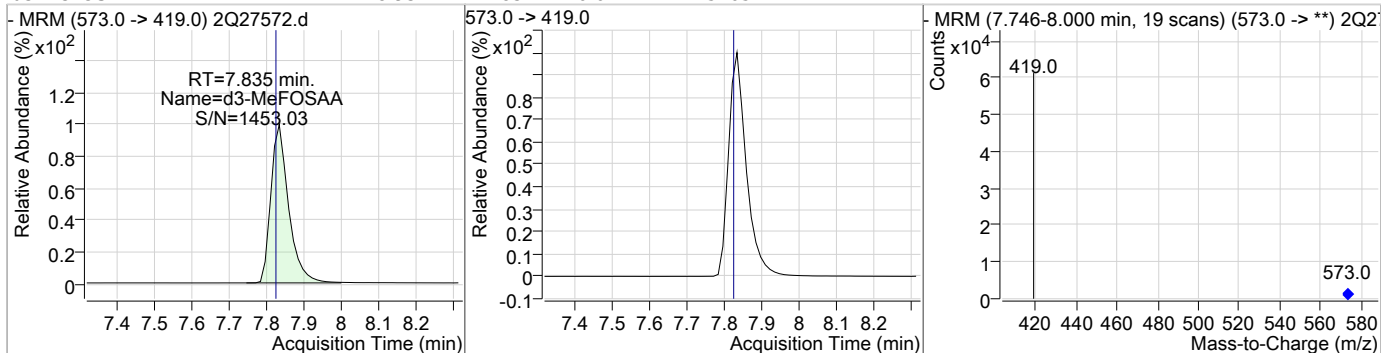
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 20.37 | 7.48 | 0.00     | 175282 | 463.0 -> 219.0 | 19.6   | 0.0  | 49.2 |



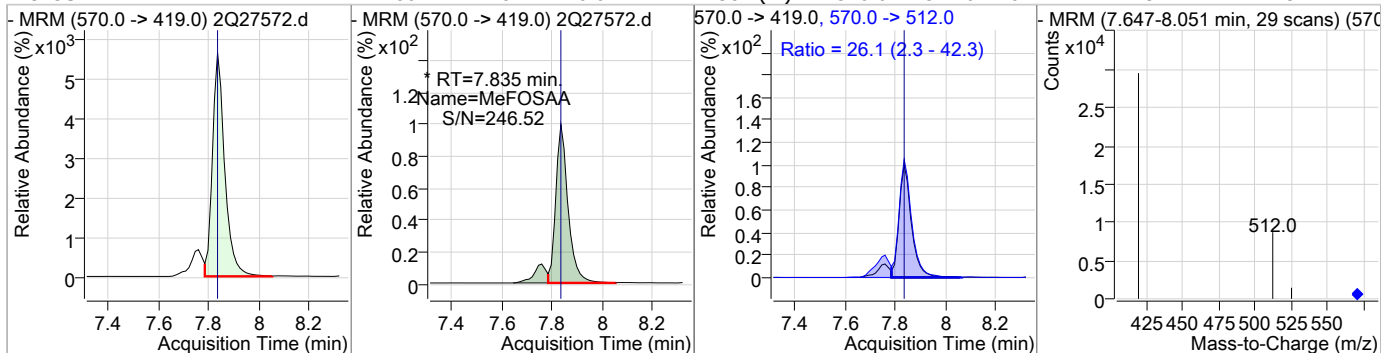
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 9CI-PF3ONS | 20.81 | 7.72 | 0.01     | 27323 |      |        |      |      |



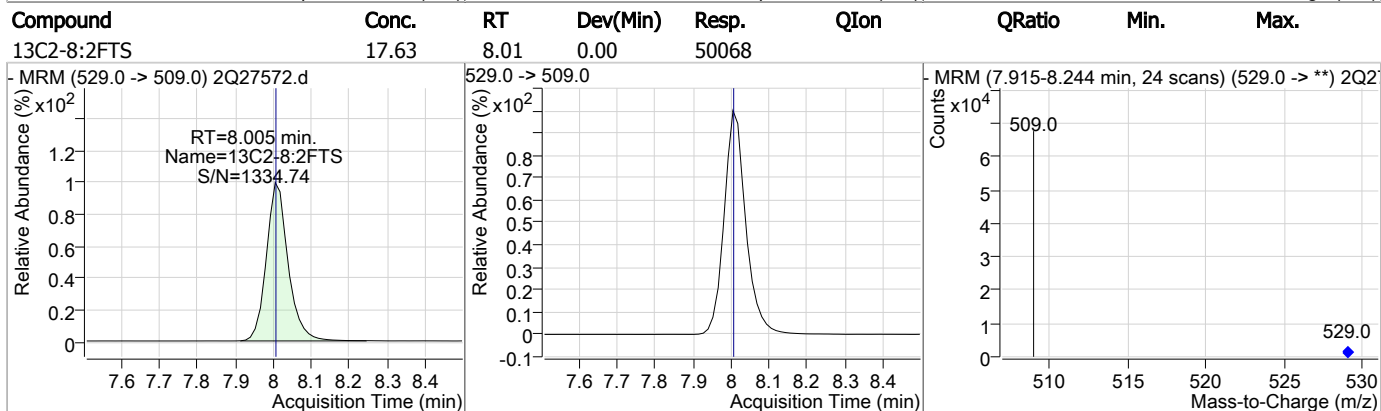
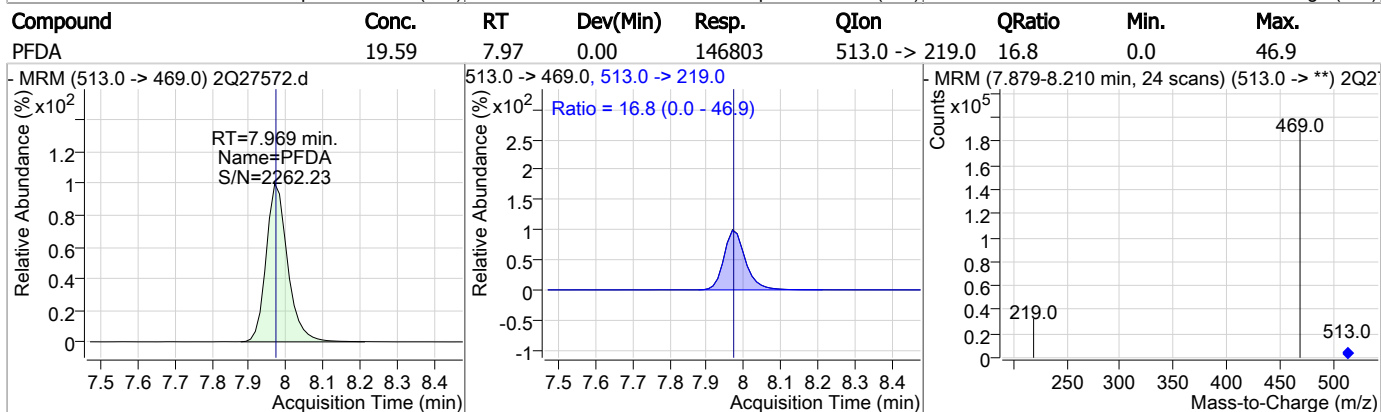
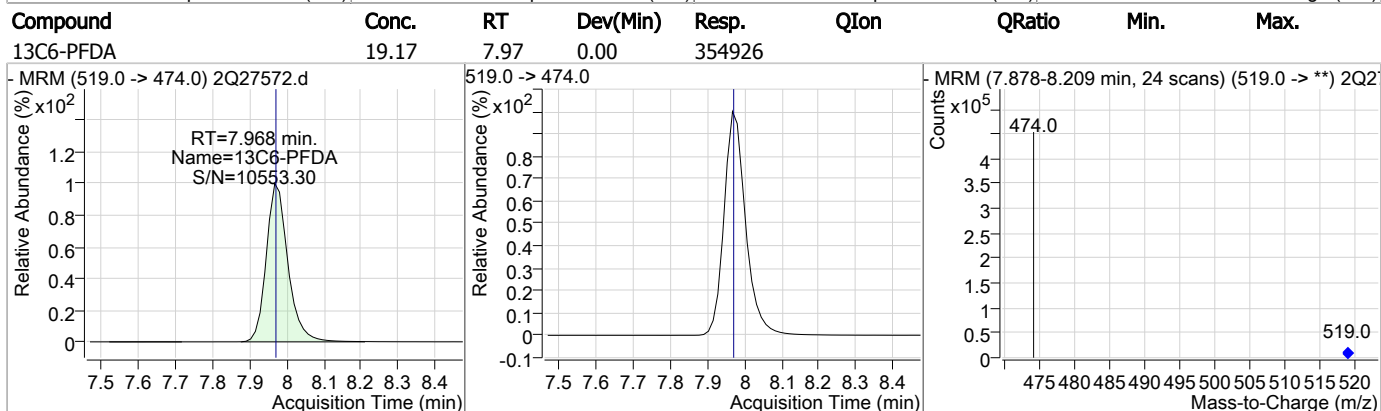
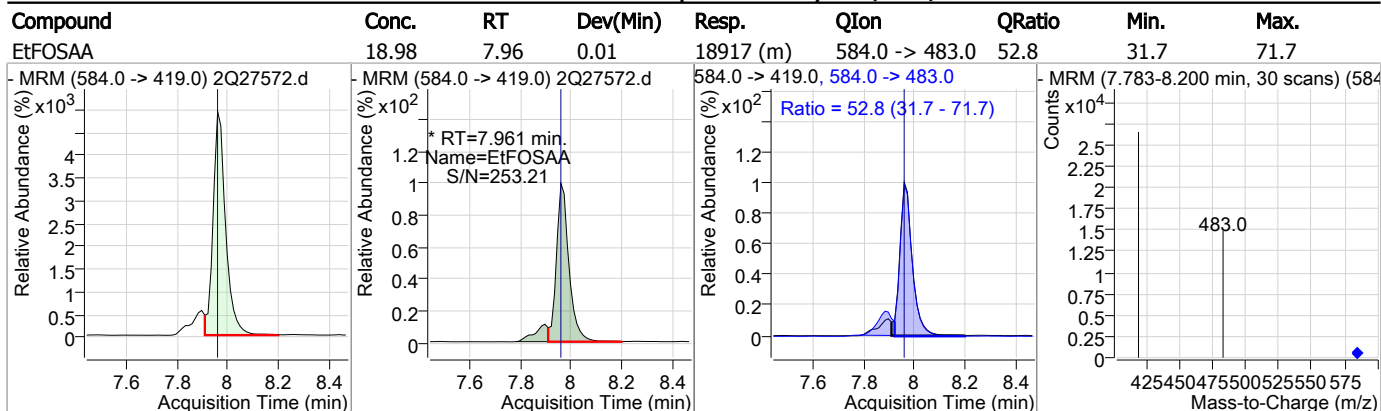
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 18.93 | 7.83 | 0.01     | 45265 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|----------------|--------|------|------|
| MeFOSAA  | 17.80 | 7.84 | 0.01     | 21387 (m) | 570.0 -> 512.0 | 26.1   | 2.3  | 42.3 |

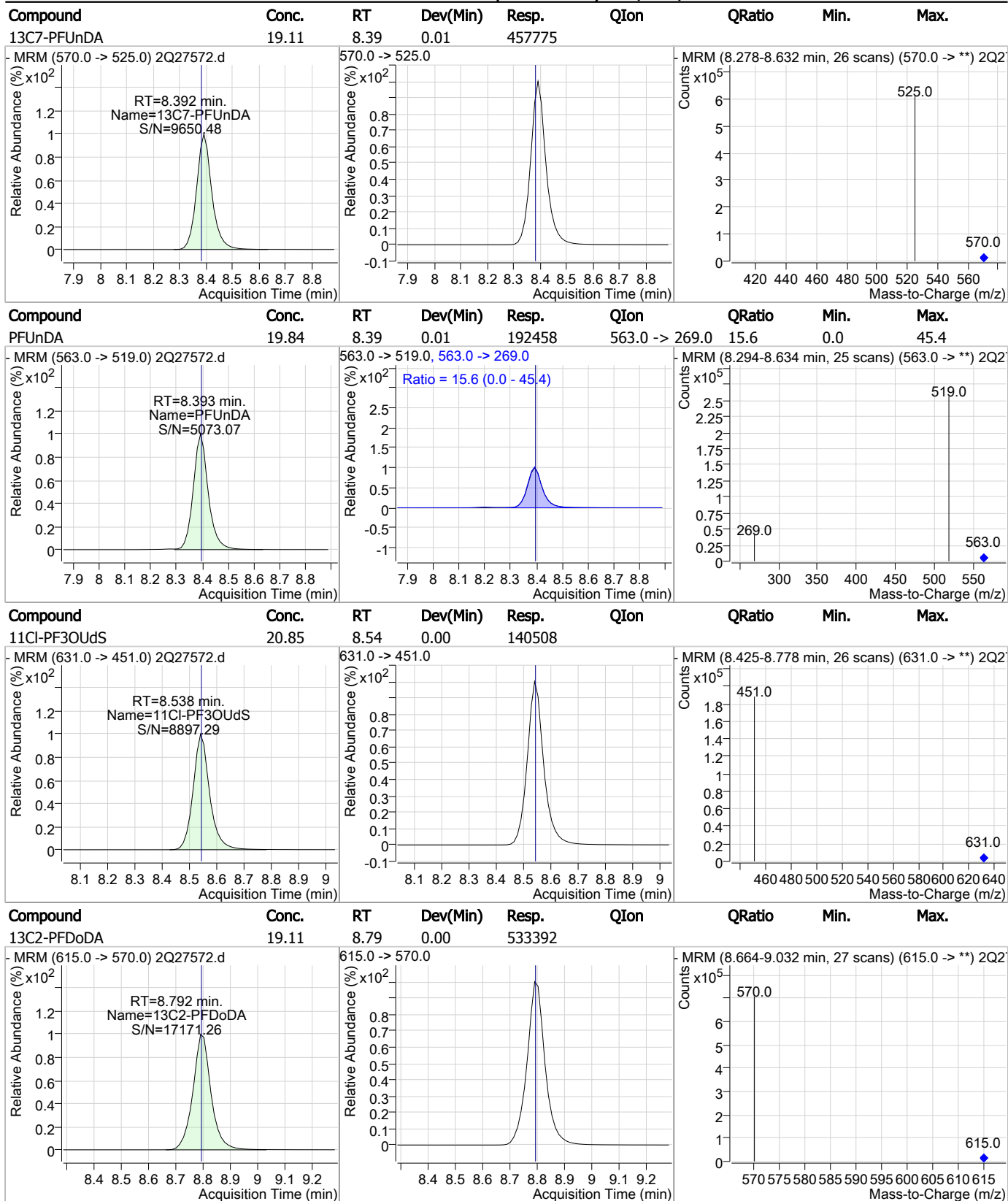


### Perfluorinated Compounds by LC/MS/MS



7.6.9  
7

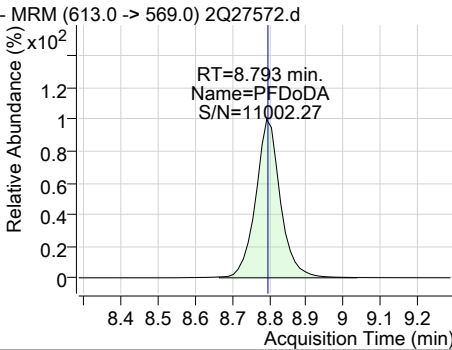
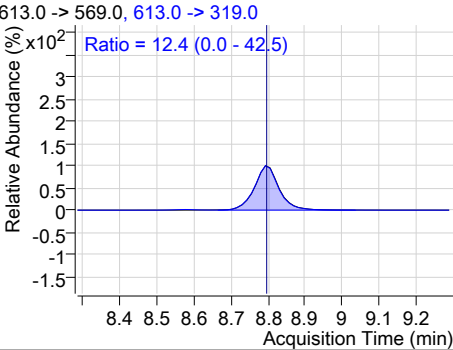
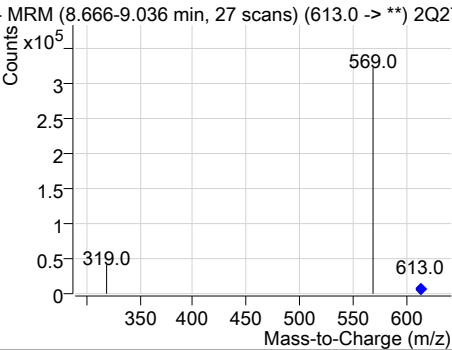
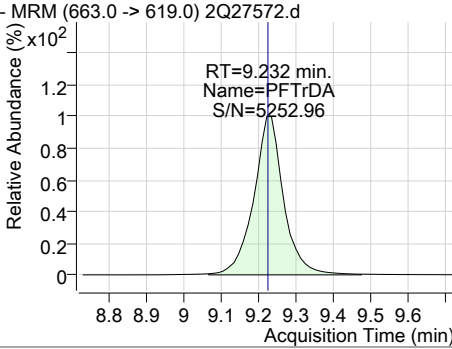
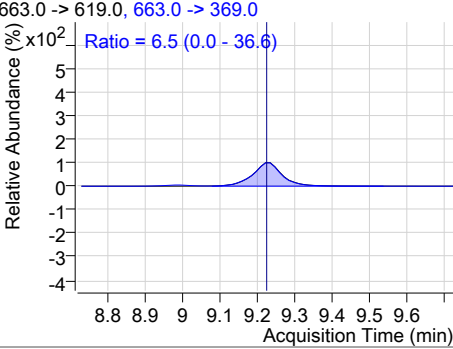
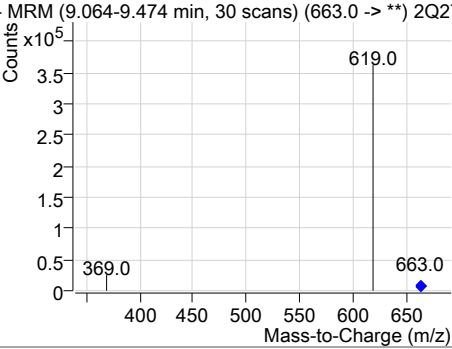
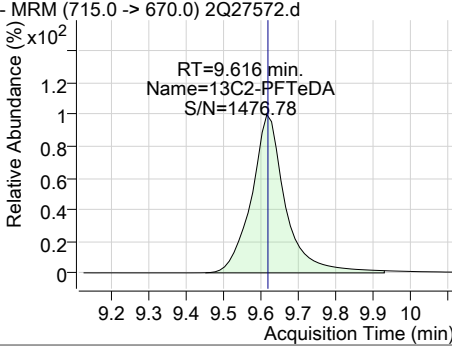
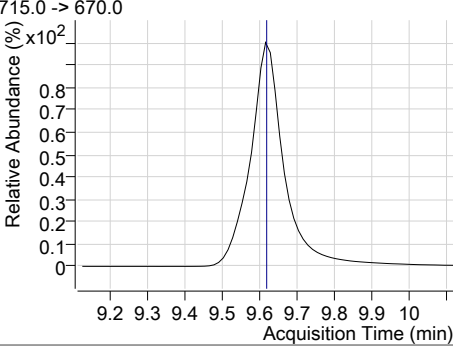
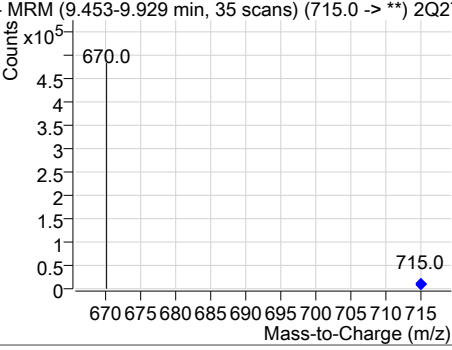
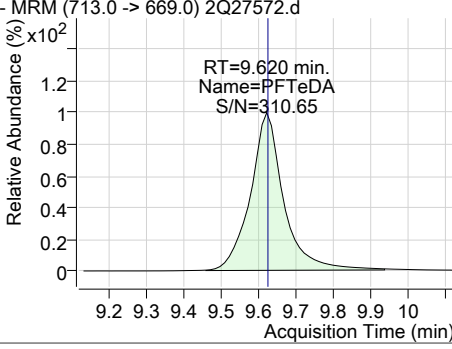
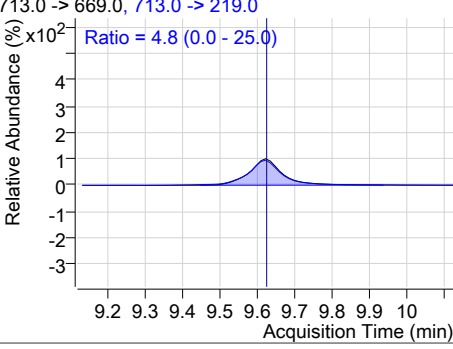
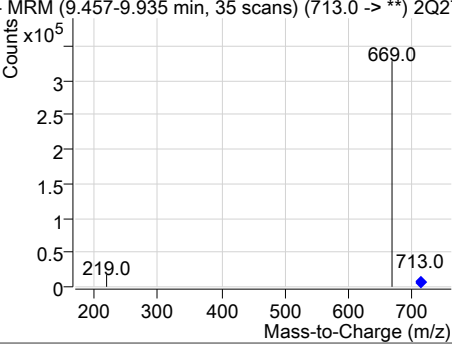
### Perfluorinated Compounds by LC/MS/MS



7.6.9

7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon           | QRatio  | Min. | Max. |
|--|-------|------|---|--------|----------------|---|------|------|
| PFDODA   | 19.44 | 8.79 | 0.00  | 242594 | 613.0 -> 319.0 | 12.4  | 0.0  | 42.5 |
|    |       |      |    |        |                |    |      |      |
| PFTTrDA  | 20.26 | 9.23 | 0.01  | 273449 | 663.0 -> 369.0 | 6.5   | 0.0  | 36.6 |
|    |       |      |    |        |                |    |      |      |
| 13C2-PFTeDA  | 18.61 | 9.62 | 0.00  | 359693 | 715.0 -> 670.0 |   |      |      |
|  |       |      |  |        |                |  |      |      |
| PFTeDA   | 19.59 | 9.62 | 0.00  | 240334 | 713.0 -> 219.0 | 4.8   | 0.0  | 25.0 |
|  |       |      |  |        |                |  |      |      |

7.6.9

7



# Manual Integration Approval Summary

**Sample Number:** S2Q439-ICV439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27572.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 13:06      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T. (min.) | Reason     |
|------------------------------|-----------|------|-------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.18        | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.46        | Split peak |
| MeFOSAA                      | 2355-31-9 |      | 7.83        | Split peak |
| EtFOSAA                      | 2991-50-6 |      | 7.96        | Split peak |

7.6.9.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27573.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 1:23:46 PM  
 Sample Name : icv439-20  
 Vial : Vial 11  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.            | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                  |             |          |
| 13C2-PFOA                          | 6.886                | 415.0 -> 370.0 | 403894           | 20.00 µg/L  | 0.025    |
| 13C4-PFOS                          | 7.476                | 503.0 -> 80.0  | 58871            | 20.00 µg/L  | 0.025    |
| M4-PFBA                            | 1.902                | 217.0 -> 172.0 | 158344           | 20.00 µg/L  | 0.013    |
| M5-PFPeA                           | 3.837                | 268.0 -> 223.0 | 132719           | 20.00 µg/L  | 0.038    |
| M5-PFHxA                           | 5.214                | 318.0 -> 273.0 | 191122           | 20.00 µg/L  | 0.038    |
| M4-PFHpA                           | 6.155                | 367.0 -> 322.0 | 267134           | 20.00 µg/L  | 0.036    |
| M8-PFOA                            | 6.885                | 421.0 -> 376.0 | 277950           | 20.00 µg/L  | 0.025    |
| M9-PFNA                            | 7.504                | 472.0 -> 427.0 | 269016           | 20.00 µg/L  | 0.025    |
| M6-PFDA                            | 7.981                | 519.0 -> 474.0 | 352507           | 20.00 µg/L  | 0.013    |
| M7-PFUnDA                          | 8.405                | 570.0 -> 525.0 | 459010           | 20.00 µg/L  | 0.025    |
| M2-PFDoDA                          | 8.804                | 615.0 -> 570.0 | 549207           | 20.00 µg/L  | 0.013    |
| M2-PFTeDA                          | 9.628                | 715.0 -> 670.0 | 379826           | 20.00 µg/L  | 0.013    |
| M8-FOSA                            | 7.372                | 506.0 -> 78.0  | 108240           | 20.00 µg/L  | 0.026    |
| M3-PFBS                            | 4.143                | 302.0 -> 99.0  | 22417            | 20.00 µg/L  | 0.050    |
| M3-PFHxS                           | 6.199                | 402.0 -> 99.0  | 25178            | 20.00 µg/L  | 0.038    |
| M8-PFOS                            | 7.474                | 507.0 -> 99.0  | 30825            | 20.00 µg/L  | 0.025    |
| M2-4:2FTS                          | 5.109                | 329.0 -> 309.0 | 77076            | 20.00 µg/L  | 0.038    |
| M2-6:2FTS                          | 6.881                | 429.0 -> 409.0 | 81419            | 20.00 µg/L  | 0.025    |
| M2-8:2FTS                          | 8.018                | 529.0 -> 509.0 | 53460            | 20.00 µg/L  | 0.014    |
| M3-MeFOSAA                         | 7.834                | 573.0 -> 419.0 | 45474            | 20.00 µg/L  | 0.012    |
| M3-HFPO-DA                         | 5.506                | 287.0 -> 169.0 | 209449           | 100.00 µg/L | 0.025    |
| <b>System Monitoring Compounds</b> |                      |                |                  |             |          |
| 13C2-4:2FTS                        | 5.109                | 329.0 -> 309.0 | 76843            | 18.51 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 92.5% |             |          |
| 13C2-6:2FTS                        | 6.881                | 429.0 -> 409.0 | 81318            | 18.66 µg/L  | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 93.3% |             |          |
| 13C2-8:2FTS                        | 8.018                | 529.0 -> 509.0 | 53492            | 18.84 µg/L  | 0.014    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 94.2% |             |          |
| 13C2-PFDoDA                        | 8.804                | 615.0 -> 570.0 | 549273           | 19.68 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 98.4% |             |          |
| 13C2-PFTeDA                        | 9.628                | 715.0 -> 670.0 | 373258           | 19.31 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 96.5% |             |          |
| 13C3-PFBS                          | 4.143                | 302.0 -> 99.0  | 22320            | 18.43 µg/L  | 0.050    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 92.2% |             |          |
| 13C3-PFHxS                         | 6.199                | 402.0 -> 99.0  | 25142            | 18.46 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 92.3% |             |          |
| 13C4-PFBA                          | 1.902                | 217.0 -> 172.0 | 157354           | 18.15 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 90.8% |             |          |
| 13C4-PFHpA                         | 6.155                | 367.0 -> 322.0 | 266687           | 18.52 µg/L  | 0.036    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 92.6% |             |          |
| 13C5-PFHxA                         | 5.214                | 318.0 -> 273.0 | 190327           | 18.56 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 92.8% |             |          |
| 13C5-PFPeA                         | 3.837                | 268.0 -> 223.0 | 132469           | 18.47 µg/L  | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 92.4% |             |          |
| 13C6-PFDA                          | 7.981                | 519.0 -> 474.0 | 352621           | 19.05 µg/L  | 0.013    |

7.6-10  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.2%  |          |
| 13C7-PFUnDA           | 8.405                | 570.0 -> 525.0 | 458895 | 19.16 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.8%  |          |
| 13C8-FOSA             | 7.372                | 506.0 -> 78.0  | 108274 | 19.01 µg/L        | 0.026    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.1%  |          |
| 13C8-PFOA             | 6.885                | 421.0 -> 376.0 | 277535 | 18.64 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.2%  |          |
| 13C8-PFOS             | 7.474                | 507.0 -> 99.0  | 30857  | 18.66 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.3%  |          |
| 13C9-PFNA             | 7.504                | 472.0 -> 427.0 | 268832 | 18.76 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.8%  |          |
| d3-MeFOSAA            | 7.834                | 573.0 -> 419.0 | 45498  | 19.03 µg/L        | 0.012    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.1%  |          |
| M2-PFOA               | 6.886                | 415.0 -> 370.0 | 404113 | 19.99 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.476                | 503.0 -> 80.0  | 58854  | 19.99 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C3-HFPO-DA          | 5.506                | 287.0 -> 169.0 | 209449 | 103.11 µg/L       | 0.025    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 103.1% |          |

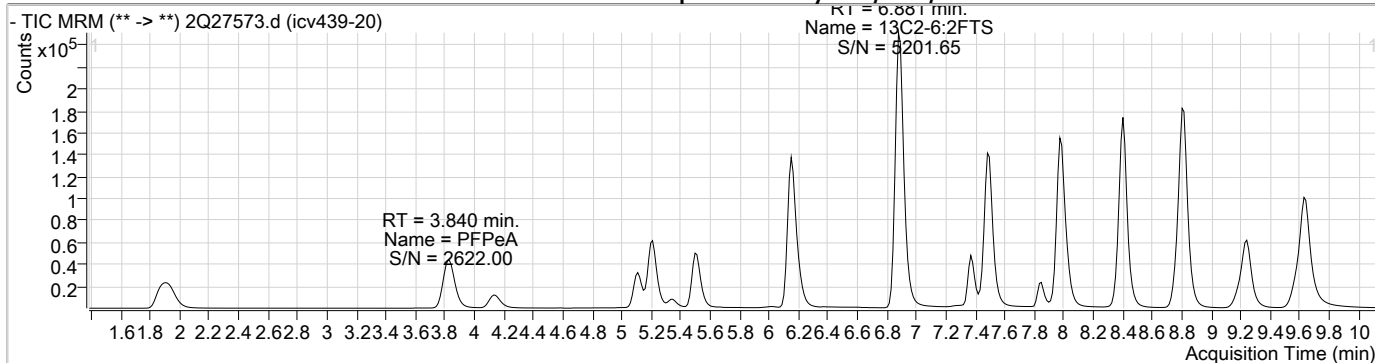
7.6.10  
7

**Target Compounds**

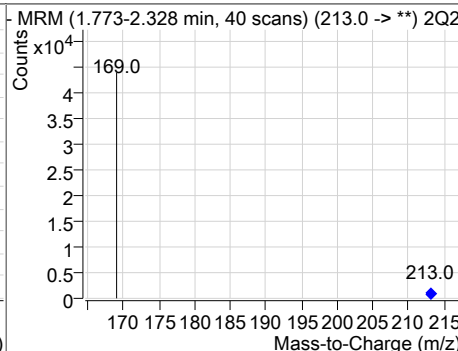
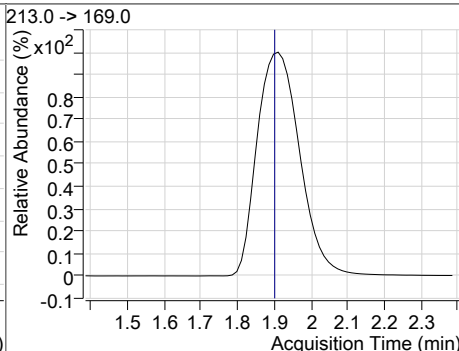
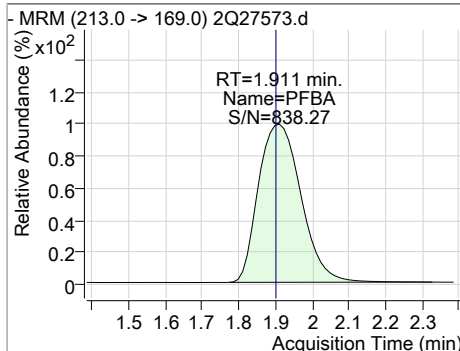
| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 5.112 | 327.0 -> 307.0 | 42991  | 19.17 µg/L  | 99     |
| 6:2FTS       | 6.883 | 427.0 -> 407.0 | 41070  | 19.73 µg/L  | 100    |
| 8:2FTS       | 8.019 | 527.0 -> 507.0 | 27826  | 19.71 µg/L  | 98     |
| EtFOSAA      | 7.973 | 584.0 -> 419.0 | 20808  | 20.80 µg/L  | 98     |
| FOSA         | 7.376 | 498.0 -> 78.0  | 52802  | 21.38 µg/L  | 100    |
| MeFOSAA      | 7.848 | 570.0 -> 419.0 | 24943  | 20.64 µg/L  | 99     |
| PFBA         | 1.911 | 213.0 -> 169.0 | 31120  | 20.21 µg/L  | 100    |
| PFBS         | 4.134 | 299.0 -> 80.0  | 31584  | 17.05 µg/L  | 99     |
| PFDA         | 7.982 | 513.0 -> 469.0 | 139824 | 18.79 µg/L  | 100    |
| PFDoDA       | 8.806 | 613.0 -> 569.0 | 270424 | 21.01 µg/L  | 100    |
| PFDS         | 8.364 | 599.0 -> 80.0  | 11321  | 18.59 µg/L  | 98     |
| PFHpA        | 6.157 | 363.0 -> 319.0 | 262028 | 20.92 µg/L  | 100    |
| PFHpS        | 6.892 | 449.0 -> 80.0  | 25090  | 19.67 µg/L  | 100    |
| PFHxA        | 5.216 | 313.0 -> 269.0 | 60385  | 18.26 µg/L  | 100    |
| PFHxS        | 6.201 | 399.0 -> 80.0  | 25796  | 17.20 µg/L  | m 98   |
| PFNA         | 7.505 | 463.0 -> 419.0 | 162528 | 18.66 µg/L  | 100    |
| PFNS         | 7.951 | 549.0 -> 80.0  | 22086  | 19.14 µg/L  | 99     |
| PFOA         | 6.888 | 413.0 -> 369.0 | 155982 | 20.52 µg/L  | 97     |
| PFOS         | 7.477 | 499.0 -> 80.0  | 30988  | 19.61 µg/L  | m 85   |
| PFPeA        | 3.840 | 263.0 -> 219.0 | 114709 | 19.03 µg/L  | 100    |
| PFPeS        | 5.346 | 349.0 -> 80.0  | 21756  | 17.16 µg/L  | 98     |
| PFTeDA       | 9.632 | 713.0 -> 669.0 | 240086 | 18.52 µg/L  | 100    |
| PFTTrDA      | 9.245 | 663.0 -> 619.0 | 318720 | 22.35 µg/L  | 100    |
| PFUnDA       | 8.406 | 563.0 -> 519.0 | 198889 | 20.47 µg/L  | 100    |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

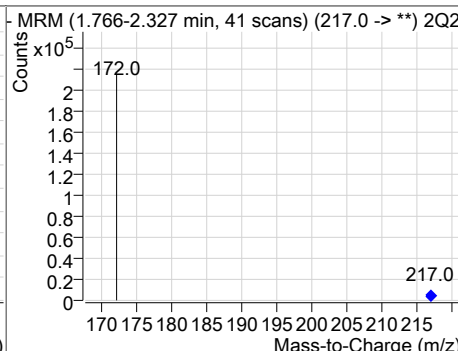
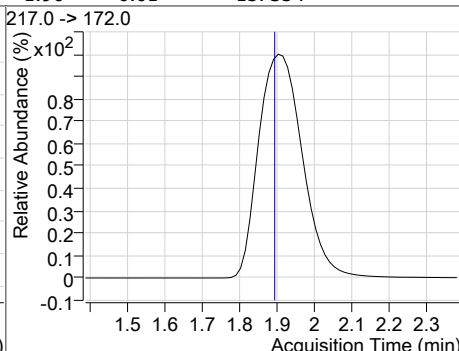
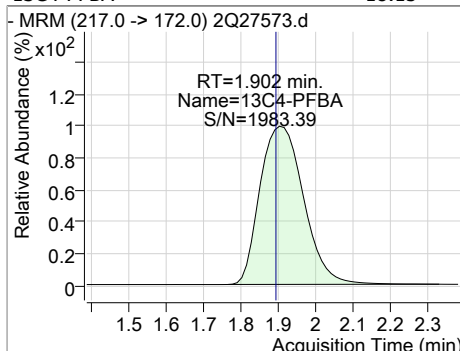
### Perfluorinated Compounds by LC/MS/MS



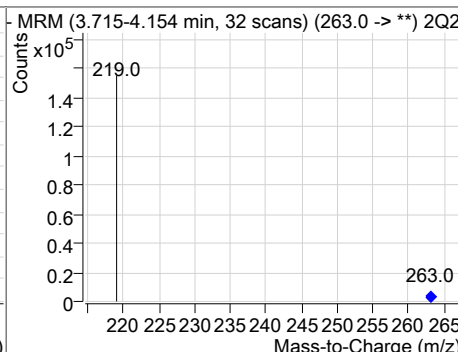
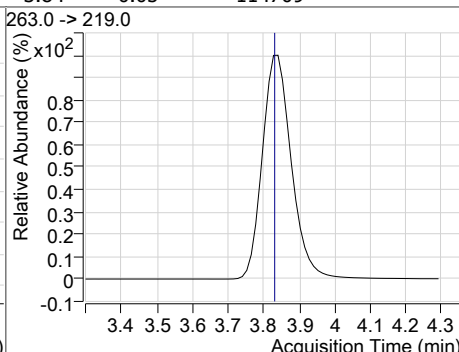
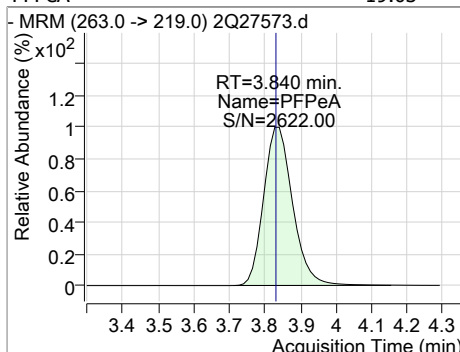
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 20.21 | 1.91 | 0.03     | 31120 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 18.15 | 1.90 | 0.01     | 157354 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| PFPeA    | 19.03 | 3.84 | 0.05     | 114709 |      |        |      |      |



7.6-10  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C5-PFPeA  | 18.47 | 3.84 | 0.04     | 132469 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 18.43 | 4.14 | 0.05     | 22320  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 17.05 | 4.13 | 0.04     | 31584  | 299.0 -> 99.0 | 35.9   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 18.51 | 5.11 | 0.04     | 76843  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.10 7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 4:2FTS     | 19.17 | 5.11 | 0.04     | 42991  | 327.0 -> 81.0  | 39.2   | 18.6 | 58.6 |
|            |       |      |          |        |                |        |      |      |
| 13C5-PFHxA | 18.56 | 5.21 | 0.04     | 190327 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFHxA      | 18.26 | 5.22 | 0.04     | 60385  | 313.0 -> 119.0 | 11.3   | 0.0  | 31.5 |
|            |       |      |          |        |                |        |      |      |
| PFPeS      | 17.16 | 5.35 | 0.04     | 21756  | 349.0 -> 99.0  | 36.0   | 5.1  | 65.1 |
|            |       |      |          |        |                |        |      |      |

7.6-10  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|----------------|--------|------|------|
| 13C3-HFPO-DA | 103.11 | 5.51 | 0.03     | 209449 |                |        |      |      |
|              |        |      |          |        |                |        |      |      |
| 13C4-PFHpA   | 18.52  | 6.15 | 0.04     | 266687 |                |        |      |      |
|              |        |      |          |        |                |        |      |      |
| PFHpA        | 20.92  | 6.16 | 0.04     | 262028 | 363.0 -> 169.0 | 6.4    | 0.0  | 36.3 |
|              |        |      |          |        |                |        |      |      |
| 13C3-PFHxS   | 18.46  | 6.20 | 0.04     | 25142  |                |        |      |      |
|              |        |      |          |        |                |        |      |      |

7.6.10 7

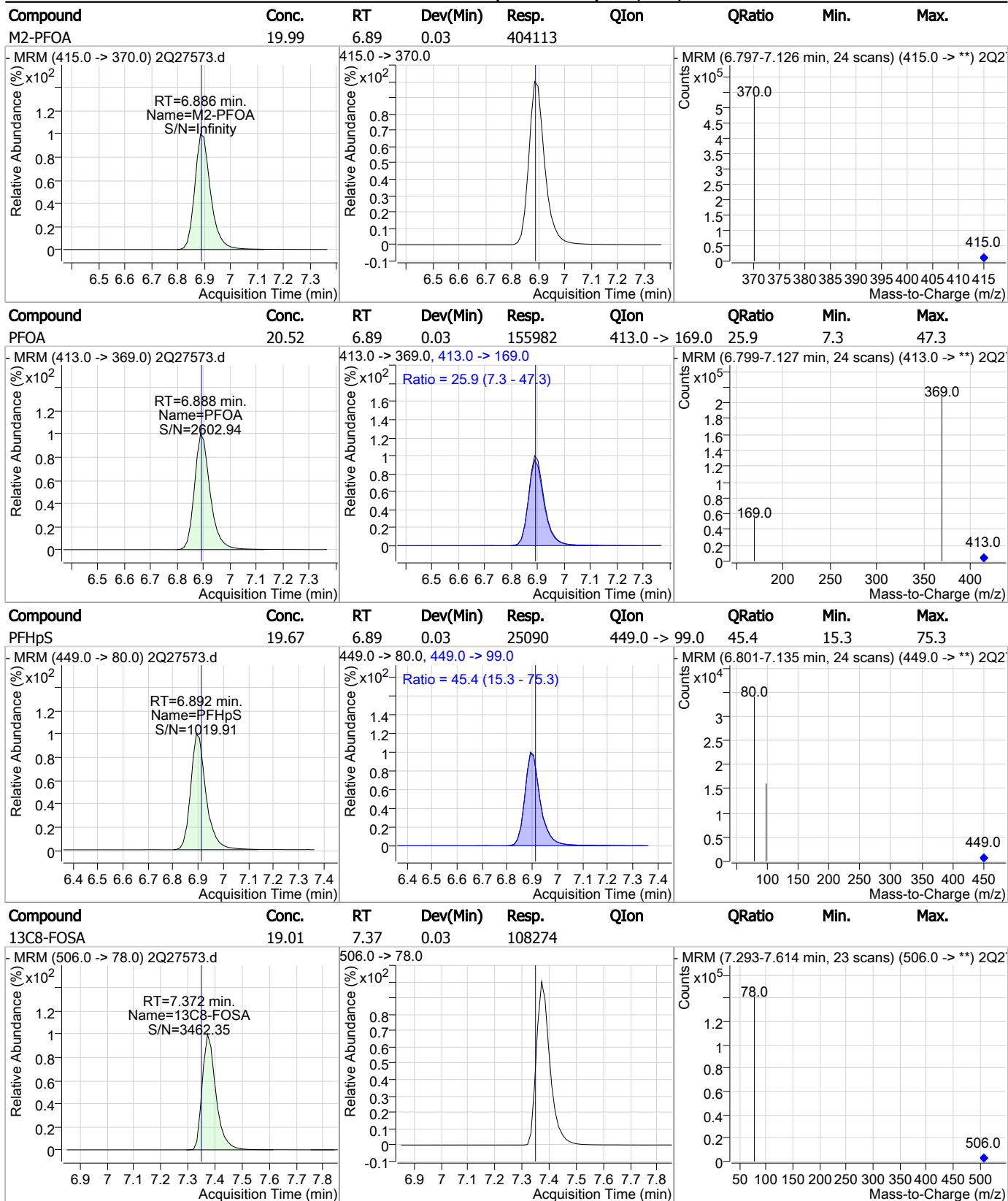
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |  |
|-------------|-------|------|----------|-----------|---------------|--------|------|------|--|
| PFHxS       | 17.20 | 6.20 | 0.04     | 25796 (m) | 399.0 -> 99.0 | 44.6   | 25.9 | 65.9 |  |
|             |       |      |          |           |               |        |      |      |  |
| 13C2-6:2FTS | 18.66 | 6.88 | 0.03     | 81318     |               |        |      |      |  |
|             |       |      |          |           |               |        |      |      |  |
| 6:2FTS      | 19.73 | 6.88 | 0.03     | 41070     | 427.0 -> 81.0 | 31.0   | 0.9  | 60.9 |  |
|             |       |      |          |           |               |        |      |      |  |
| 13C8-PFOA   | 18.64 | 6.88 | 0.03     | 277535    |               |        |      |      |  |
|             |       |      |          |           |               |        |      |      |  |

7.6.10  
7



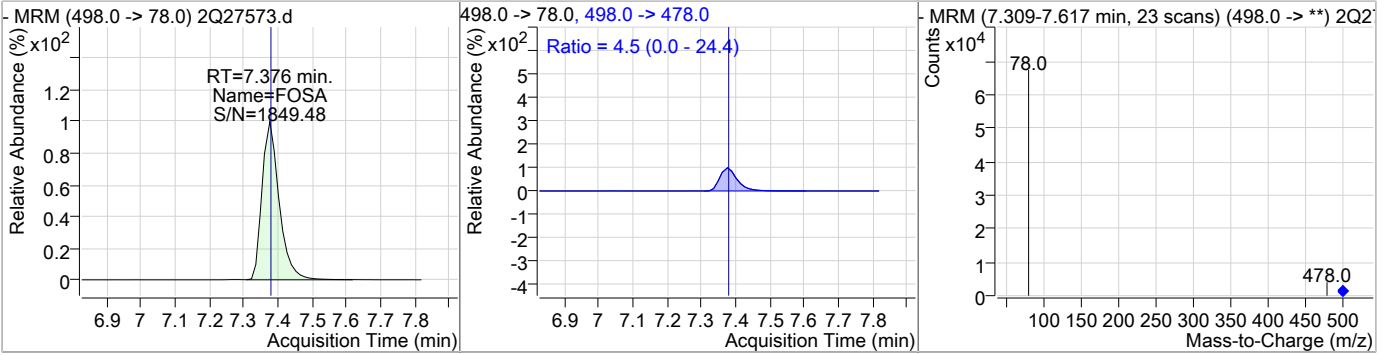
### Perfluorinated Compounds by LC/MS/MS



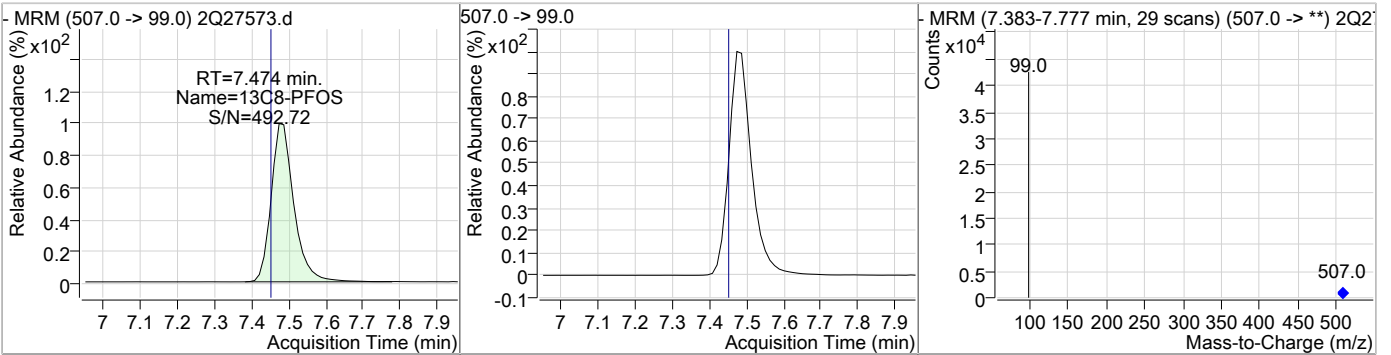
7.6.10  
7

### Perfluorinated Compounds by LC/MS/MS

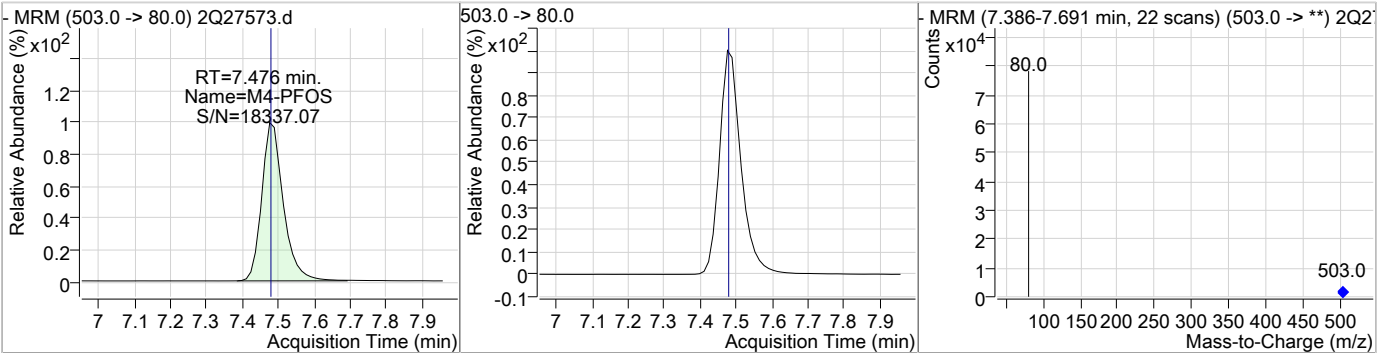
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 21.38 | 7.38 | 0.03     | 52802 | 498.0 -> 478.0 | 4.5    | 0.0  | 24.4 |



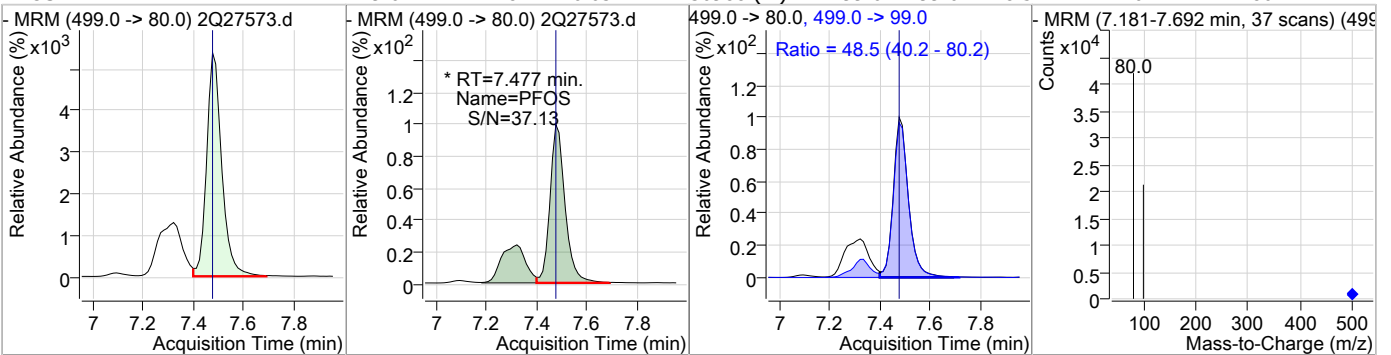
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 18.66 | 7.47 | 0.03     | 30857 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| M4-PFOS  | 19.99 | 7.48 | 0.03     | 58854 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.61 | 7.48 | 0.03     | 30988 (m) | 499.0 -> 99.0 | 48.5   | 40.2 | 80.2 |

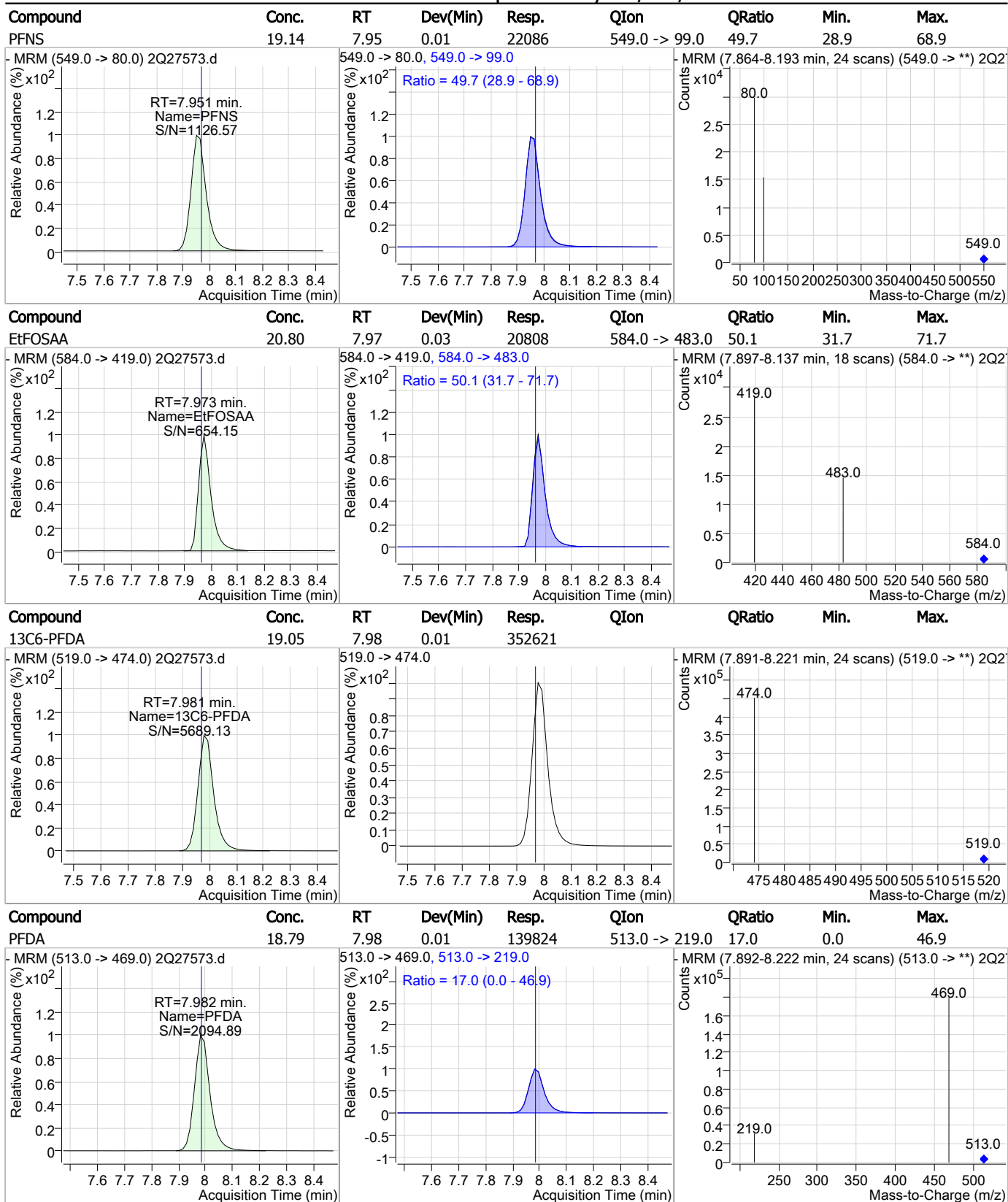


### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C9-PFNA  | 18.76 | 7.50 | 0.02     | 268832 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFNA       | 18.66 | 7.50 | 0.03     | 162528 | 463.0 -> 219.0 | 19.0   | 0.0  | 49.2 |
|            |       |      |          |        |                |        |      |      |
| d3-MeFOSAA | 19.03 | 7.83 | 0.01     | 45498  |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| MeFOSAA    | 20.64 | 7.85 | 0.02     | 24943  | 570.0 -> 512.0 | 22.9   | 2.3  | 42.3 |
|            |       |      |          |        |                |        |      |      |

7.6-10  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.10  
7

### Perfluorinated Compounds by LC/MS/MS

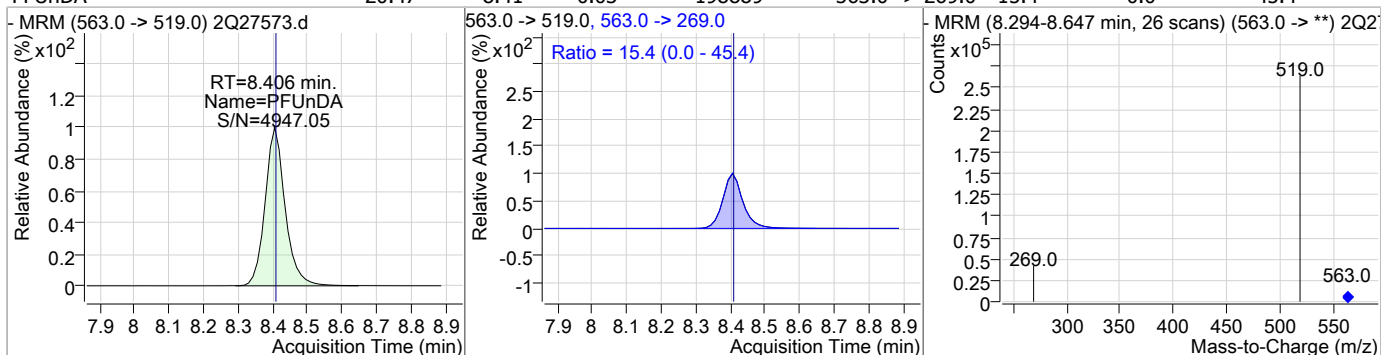
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| 13C2-8:2FTS | 18.84 | 8.02 | 0.01     | 53492  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 8:2FTS      | 19.71 | 8.02 | 0.01     | 27826  | 527.0 -> 81.0 | 30.8   | 0.0  | 59.7 |
|             |       |      |          |        |               |        |      |      |
| PFDS        | 18.59 | 8.36 | 0.01     | 11321  | 599.0 -> 99.0 | 34.0   | 3.1  | 63.1 |
|             |       |      |          |        |               |        |      |      |
| 13C7-PFUnDA | 19.16 | 8.40 | 0.03     | 458895 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.10 7

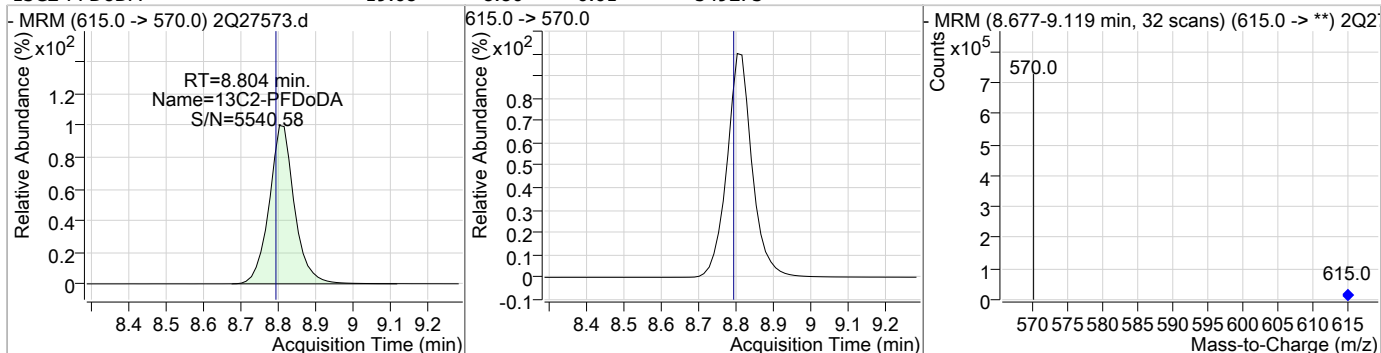


### Perfluorinated Compounds by LC/MS/MS

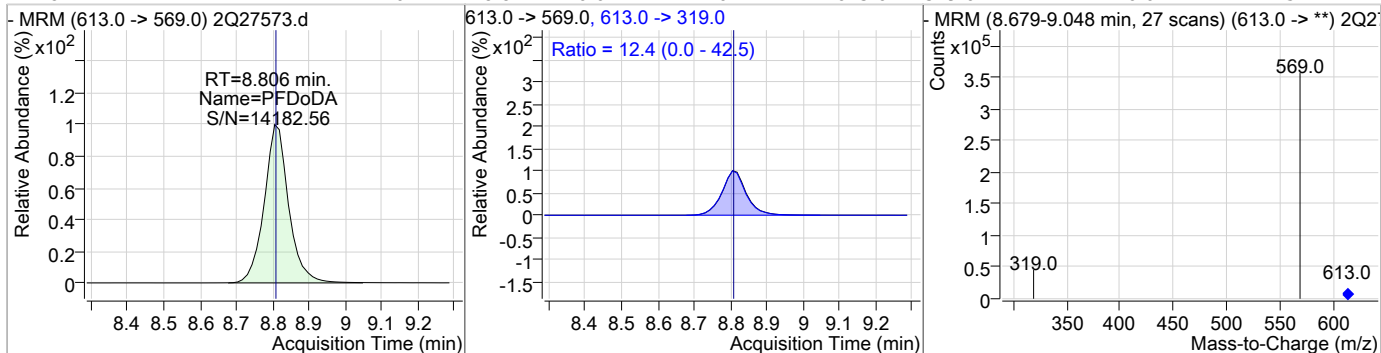
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 20.47 | 8.41 | 0.03     | 198889 | 563.0 -> 269.0 | 15.4   | 0.0  | 45.4 |



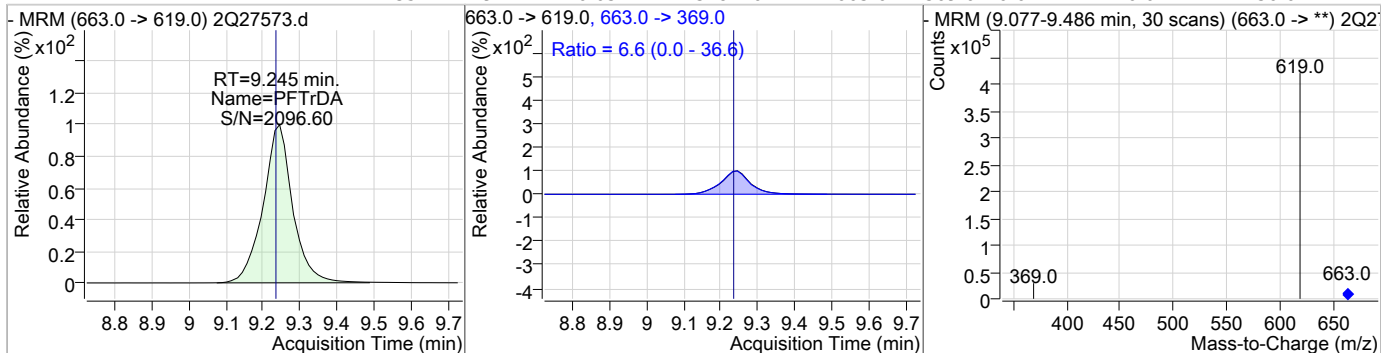
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 19.68 | 8.80 | 0.01     | 549273 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFDoDA   | 21.01 | 8.81 | 0.01     | 270424 | 613.0 -> 319.0 | 12.4   | 0.0  | 42.5 |

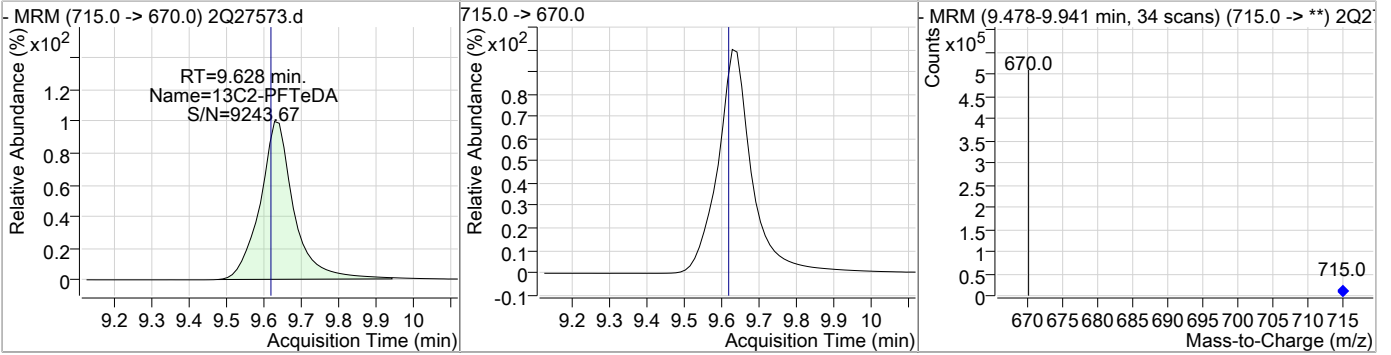


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTTrDA  | 22.35 | 9.24 | 0.03     | 318720 | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |

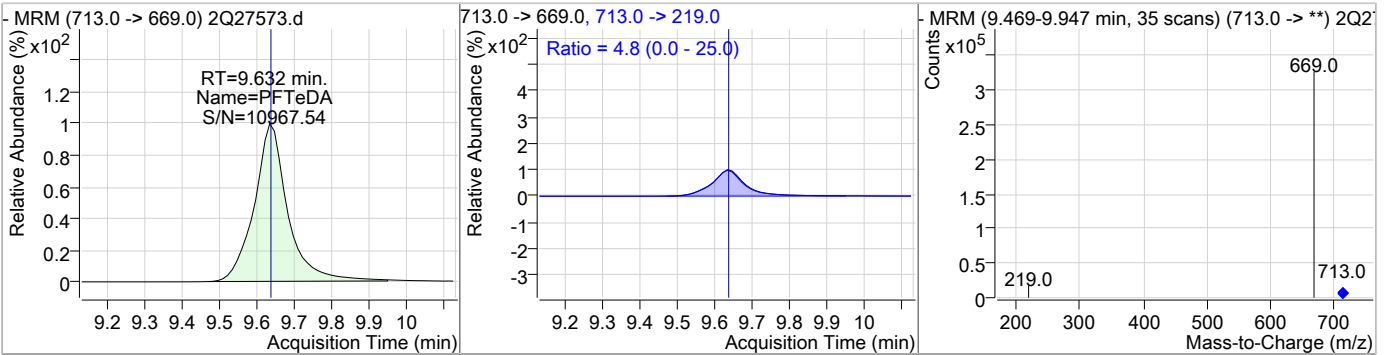


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 19.31 | 9.63 | 0.01     | 373258 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 18.52 | 9.63 | 0.01     | 240086 | 713.0 -> 219.0 | 4.8    | 0.0  | 25.0 |



7.6.10 7



# Manual Integration Approval Summary

**Sample Number:** S2Q439-ICV439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27573.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 13:23      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 6.20           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.48           | Split peak |

7.6.10.1

7



Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27574.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/13/2019 1:39:29 PM  
 Sample Name : icv439-20  
 Vial : Vial 12  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q439.batch.bin  
 Sample Information : op73501,S2Q439,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.886                | 415.0 -> 370.0 | 437152 | 20.00 µg/L        | 0.025    |
| 13C4-PFOS                          | 7.476                | 503.0 -> 80.0  | 59994  | 20.00 µg/L        | 0.025    |
| M4-PFBA                            | 1.940                | 217.0 -> 172.0 | 175729 | 20.00 µg/L        | 0.050    |
| M5-PFPeA                           | 3.849                | 268.0 -> 223.0 | 145741 | 20.00 µg/L        | 0.050    |
| M5-PFHxA                           | 5.214                | 318.0 -> 273.0 | 210047 | 20.00 µg/L        | 0.038    |
| M4-PFHpA                           | 6.155                | 367.0 -> 322.0 | 296736 | 20.00 µg/L        | 0.036    |
| M8-PFOA                            | 6.885                | 421.0 -> 376.0 | 314798 | 20.00 µg/L        | 0.025    |
| M9-PFNA                            | 7.504                | 472.0 -> 427.0 | 299183 | 20.00 µg/L        | 0.025    |
| M6-PFDA                            | 7.995                | 519.0 -> 474.0 | 399892 | 20.00 µg/L        | 0.027    |
| M7-PFUnDA                          | 8.405                | 570.0 -> 525.0 | 514639 | 20.00 µg/L        | 0.025    |
| M2-PFDoDA                          | 8.817                | 615.0 -> 570.0 | 605370 | 20.00 µg/L        | 0.025    |
| M2-PFTeDA                          | 9.641                | 715.0 -> 670.0 | 419260 | 20.00 µg/L        | 0.025    |
| M8-FOSA                            | 7.372                | 506.0 -> 78.0  | 126007 | 20.00 µg/L        | 0.026    |
| M3-PFBS                            | 4.155                | 302.0 -> 99.0  | 24355  | 20.00 µg/L        | 0.063    |
| M3-PFHxS                           | 6.199                | 402.0 -> 99.0  | 27755  | 20.00 µg/L        | 0.038    |
| M8-PFOS                            | 7.474                | 507.0 -> 99.0  | 33984  | 20.00 µg/L        | 0.025    |
| M2-4:2FTS                          | 5.122                | 329.0 -> 309.0 | 79947  | 20.00 µg/L        | 0.050    |
| M2-6:2FTS                          | 6.882                | 429.0 -> 409.0 | 89181  | 20.00 µg/L        | 0.025    |
| M2-8:2FTS                          | 8.031                | 529.0 -> 509.0 | 56026  | 20.00 µg/L        | 0.026    |
| M3-MeFOSAA                         | 7.847                | 573.0 -> 419.0 | 48613  | 20.00 µg/L        | 0.025    |
| M3-HFPO-DA                         | 5.519                | 287.0 -> 169.0 | 209590 | 100.00 µg/L       | 0.038    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 5.122                | 329.0 -> 309.0 | 79774  | 19.22 µg/L        | 0.050    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.1%  |          |
| 13C2-6:2FTS                        | 6.882                | 429.0 -> 409.0 | 89186  | 20.46 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.3% |          |
| 13C2-8:2FTS                        | 8.031                | 529.0 -> 509.0 | 56030  | 19.73 µg/L        | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.7%  |          |
| 13C2-PFDoDA                        | 8.817                | 615.0 -> 570.0 | 604239 | 21.65 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.2% |          |
| 13C2-PFTeDA                        | 9.641                | 715.0 -> 670.0 | 409486 | 21.18 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.9% |          |
| 13C3-PFBS                          | 4.155                | 302.0 -> 99.0  | 24318  | 20.08 µg/L        | 0.063    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.4% |          |
| 13C3-PFHxS                         | 6.199                | 402.0 -> 99.0  | 27737  | 20.36 µg/L        | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.8% |          |
| 13C4-PFBA                          | 1.940                | 217.0 -> 172.0 | 174651 | 20.15 µg/L        | 0.050    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.7% |          |
| 13C4-PFHpA                         | 6.155                | 367.0 -> 322.0 | 296263 | 20.58 µg/L        | 0.036    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.9% |          |
| 13C5-PFHxA                         | 5.214                | 318.0 -> 273.0 | 209665 | 20.44 µg/L        | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.2% |          |
| 13C5-PFPeA                         | 3.849                | 268.0 -> 223.0 | 145529 | 20.29 µg/L        | 0.050    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| 13C6-PFDA                          | 7.995                | 519.0 -> 474.0 | 399785 | 21.59 µg/L        | 0.027    |

7.6.11  
7

### Perfluorinated Compounds by LC/MS/MS

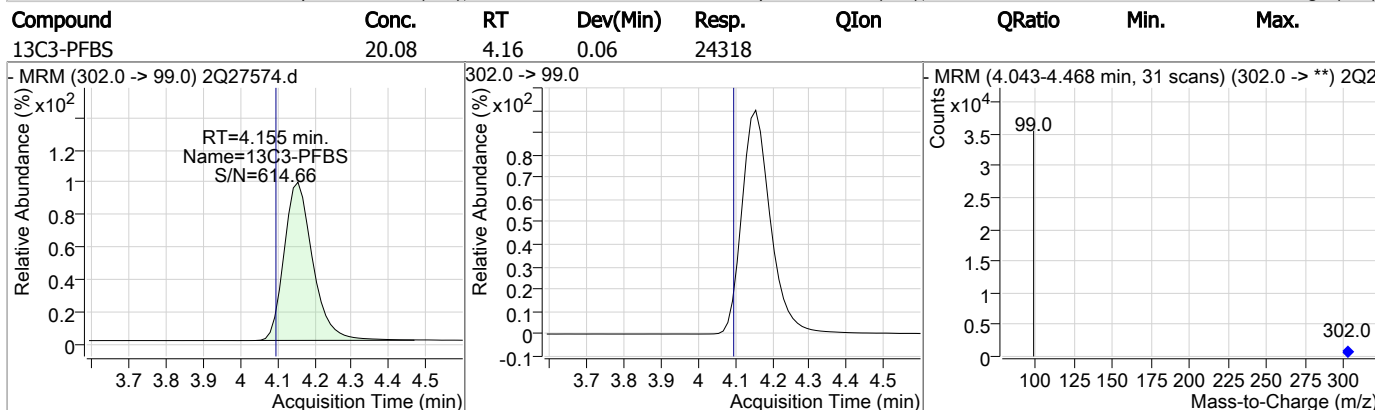
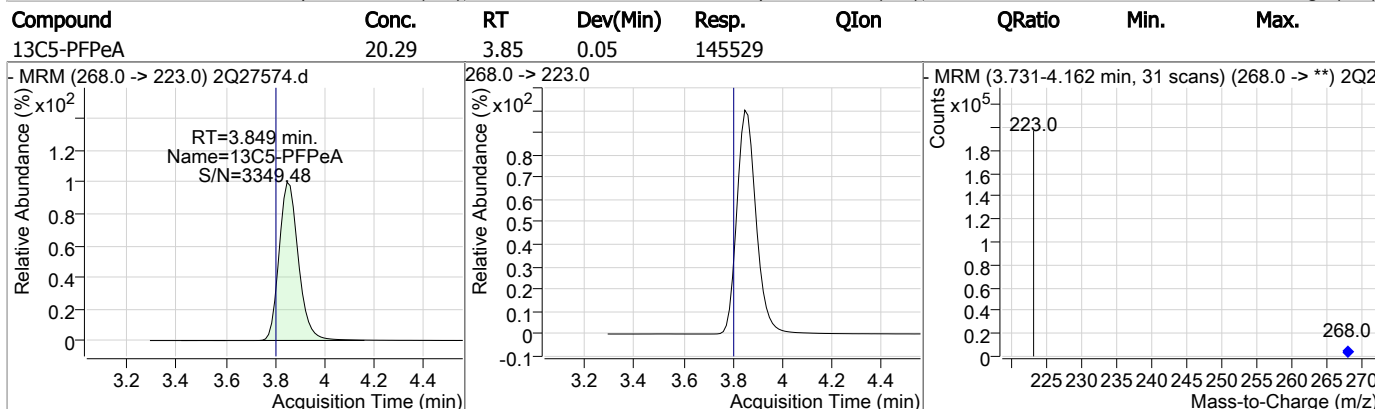
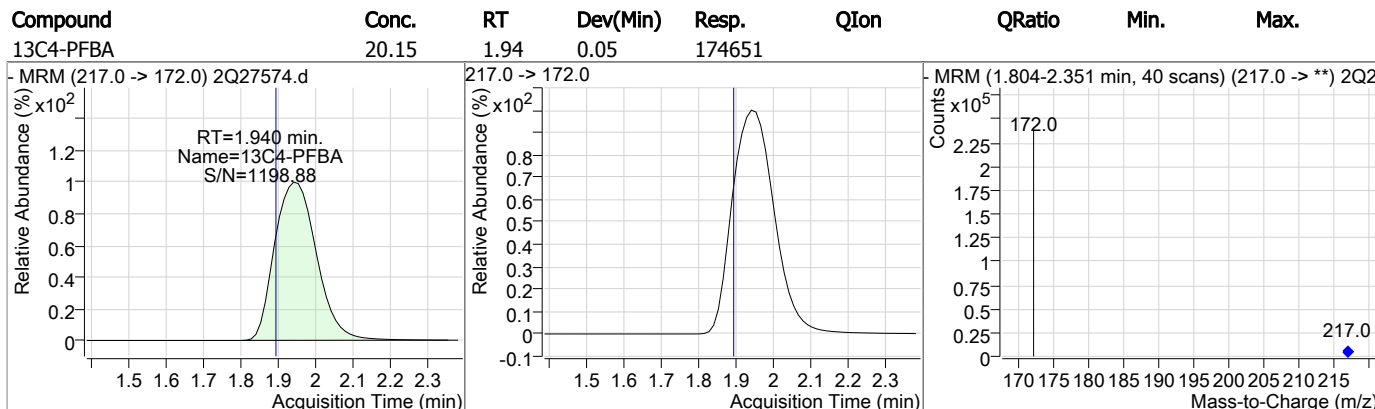
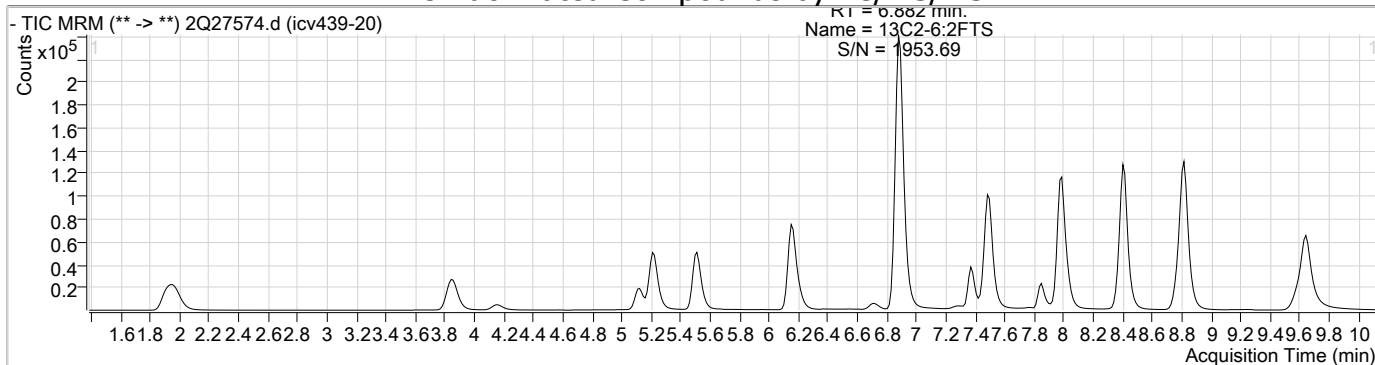
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.0% |          |
| 13C7-PFUnDA           | 8.405                | 570.0 -> 525.0 | 514340 | 21.47 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.4% |          |
| 13C8-FOSA             | 7.372                | 506.0 -> 78.0  | 126043 | 22.13 µg/L        | 0.026    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.7% |          |
| 13C8-PFOA             | 6.885                | 421.0 -> 376.0 | 314439 | 21.12 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.6% |          |
| 13C8-PFOS             | 7.474                | 507.0 -> 99.0  | 33973  | 20.54 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.7% |          |
| 13C9-PFNA             | 7.504                | 472.0 -> 427.0 | 298953 | 20.86 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.3% |          |
| d3-MeFOSAA            | 7.847                | 573.0 -> 419.0 | 48627  | 20.34 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.7% |          |
| M2-PFOA               | 6.886                | 415.0 -> 370.0 | 437689 | 20.01 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.476                | 503.0 -> 80.0  | 60024  | 20.01 µg/L        | 0.025    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.519                | 287.0 -> 169.0 | 209590 | 103.18 µg/L       | 0.038    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |

7.6.11  
7

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units  | QValue |
|------------------|-------|----------------|--------|--------------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -      | N.D.         |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -      | N.D.         |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -      | N.D.         |        |
| EtFOSAA          | 7.973 | 584.0 -> 419.0 | 17367  | 16.20 µg/L m | 92     |
| FOSA             | -     | 498.0 -> 78.0  | -      | N.D.         |        |
| MeFOSAA          | 7.848 | 570.0 -> 419.0 | 22558  | 17.49 µg/L m | 95     |
| PFBA             | -     | 213.0 -> 169.0 | -      | N.D.         |        |
| PFBS             | -     | 299.0 -> 80.0  | -      | N.D.         |        |
| PFDA             | -     | 513.0 -> 469.0 | -      | N.D.         |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -      | N.D.         |        |
| PFDS             | -     | 599.0 -> 80.0  | -      | N.D.         |        |
| PFHpA            | -     | 363.0 -> 319.0 | -      | N.D.         |        |
| PFHpS            | 6.892 | 449.0 -> 80.0  | 0      | 0.00 µg/L m  | 1      |
| PFHxA            | -     | 313.0 -> 269.0 | -      | N.D.         |        |
| PFHxS            | 6.201 | 399.0 -> 80.0  | 0      | 0.00 µg/L m  | 1      |
| PFNA             | -     | 463.0 -> 419.0 | -      | N.D.         |        |
| PFNS             | -     | 549.0 -> 80.0  | -      | N.D.         |        |
| PFOA             | 6.888 | 413.0 -> 369.0 | 143695 | 16.69 µg/L m | 98     |
| PFOS             | 7.477 | 499.0 -> 80.0  | 32564  | 18.69 µg/L m | 75     |
| PFPeA            | -     | 263.0 -> 219.0 | -      | N.D.         |        |
| PFPeS            | -     | 349.0 -> 80.0  | -      | N.D.         |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -      | N.D.         |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -      | N.D.         |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -      | N.D.         |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -      | N.D.         |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -      | N.D.         |        |
| ADONA            | -     | 377.0 -> 251.0 | -      | N.D.         |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -      | N.D.         |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.11  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C2-4:2FTS  | 19.22  | 5.12 | 0.05     | 79774  |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C5-PFHxA   | 20.44  | 5.21 | 0.04     | 209665 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C3-HFPO-DA | 103.18 | 5.52 | 0.04     | 209590 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C4-PFHpA   | 20.58  | 6.15 | 0.04     | 296263 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |

7.6.11

7

### Perfluorinated Compounds by LC/MS/MS

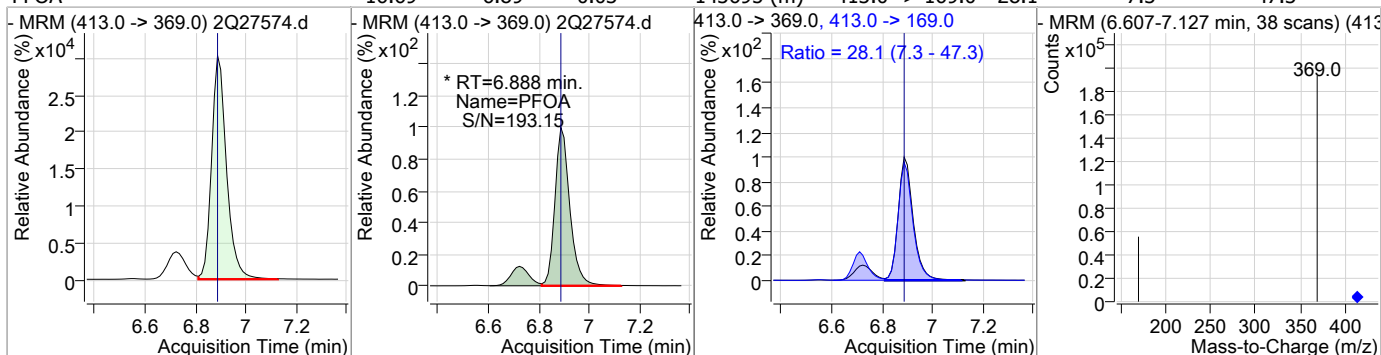
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-PFHxS  | 20.36 | 6.20 | 0.04     | 27737  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-6:2FTS | 20.46 | 6.88 | 0.03     | 89186  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 21.12 | 6.88 | 0.03     | 314439 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 20.01 | 6.89 | 0.03     | 437689 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

7.6.11  
7

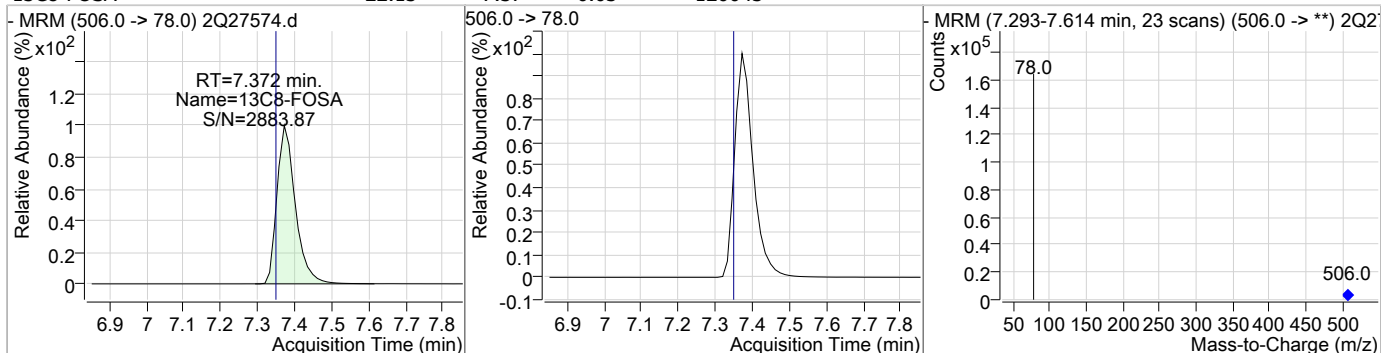


### Perfluorinated Compounds by LC/MS/MS

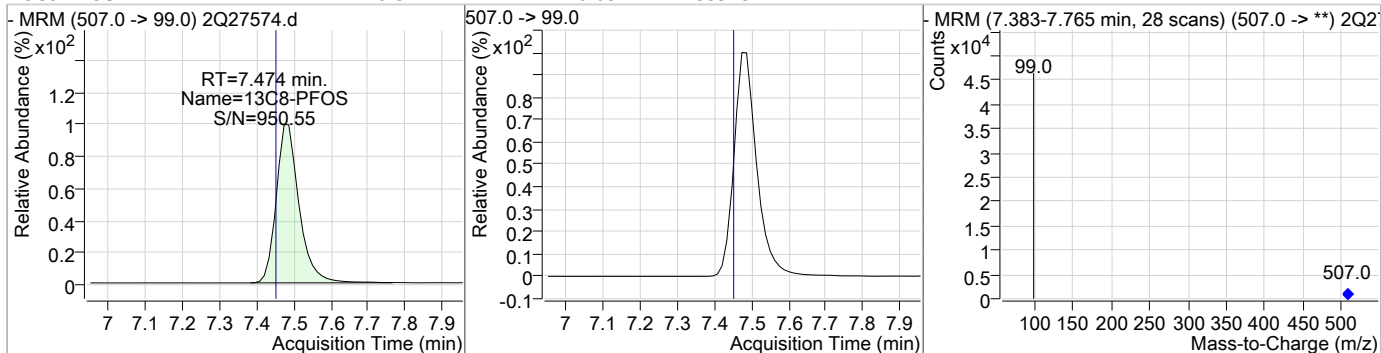
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon               | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|--------------------|--------|------|------|
| PFOA     | 16.69 | 6.89 | 0.03     | 143695 | (m) 413.0 -> 169.0 | 28.1   | 7.3  | 47.3 |



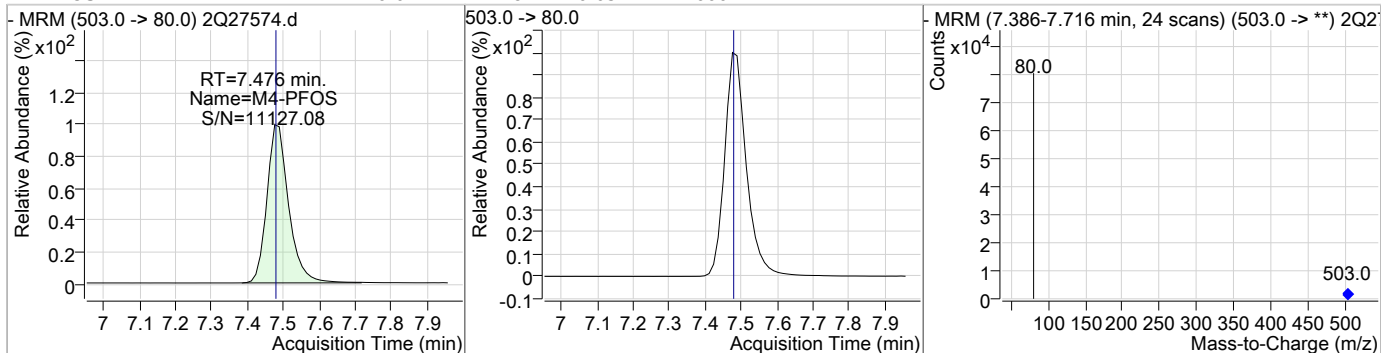
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 22.13 | 7.37 | 0.03     | 126043 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.54 | 7.47 | 0.03     | 33973 |      |        |      |      |



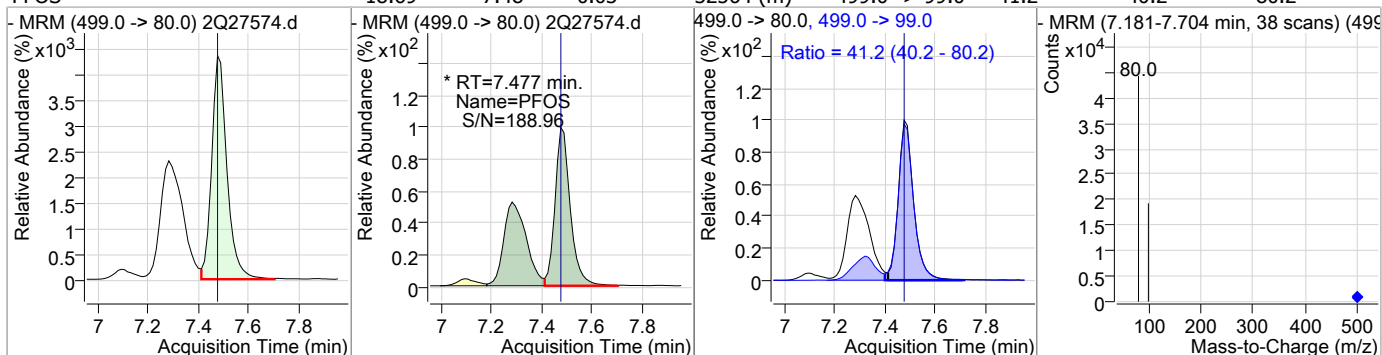
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| M4-PFOS  | 20.01 | 7.48 | 0.03     | 60024 |      |        |      |      |



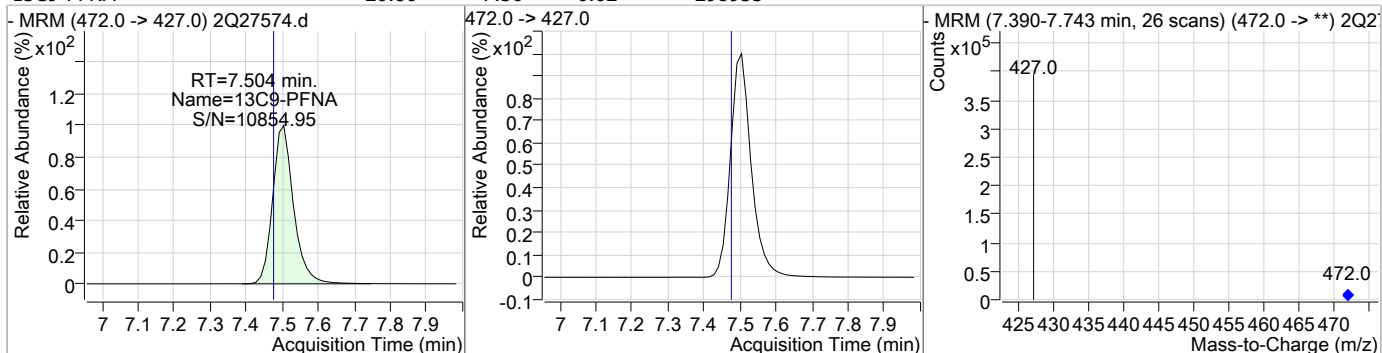
7.6.11  
7

### Perfluorinated Compounds by LC/MS/MS

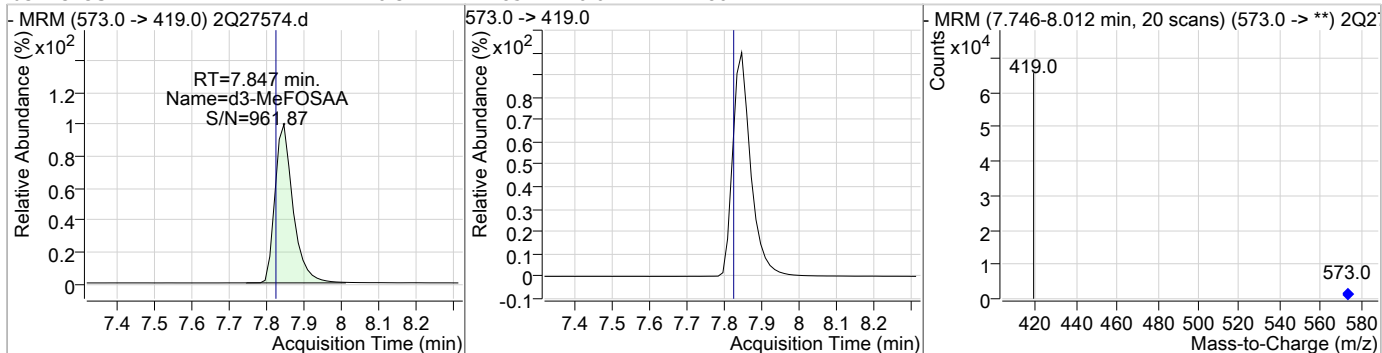
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 18.69 | 7.48 | 0.03     | 32564 (m) | 499.0 -> 99.0 | 41.2   | 40.2 | 80.2 |



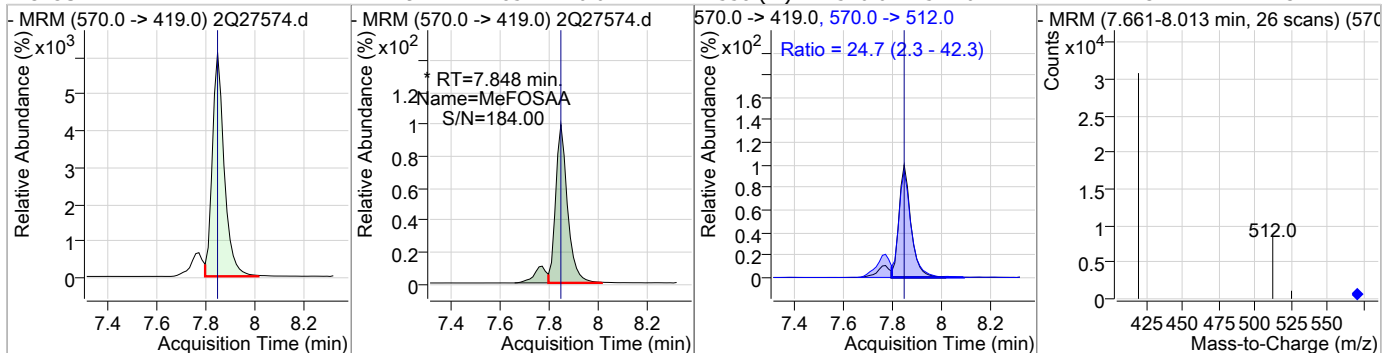
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 20.86 | 7.50 | 0.02     | 298953 |      |        |      |      |



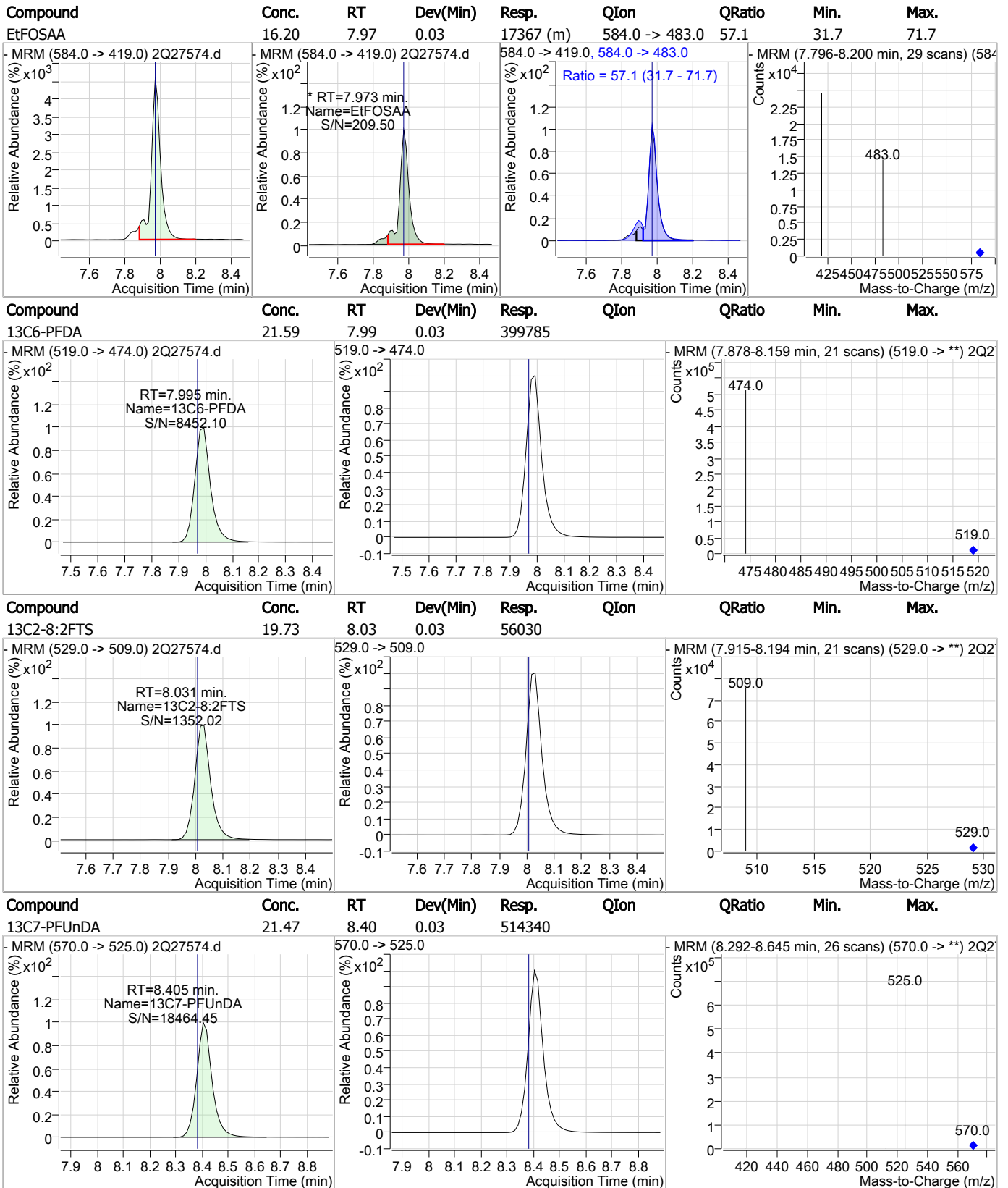
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 20.34 | 7.85 | 0.02     | 48627 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|----------------|--------|------|------|
| MeFOSAA  | 17.49 | 7.85 | 0.02     | 22558 (m) | 570.0 -> 512.0 | 24.7   | 2.3  | 42.3 |



### Perfluorinated Compounds by LC/MS/MS



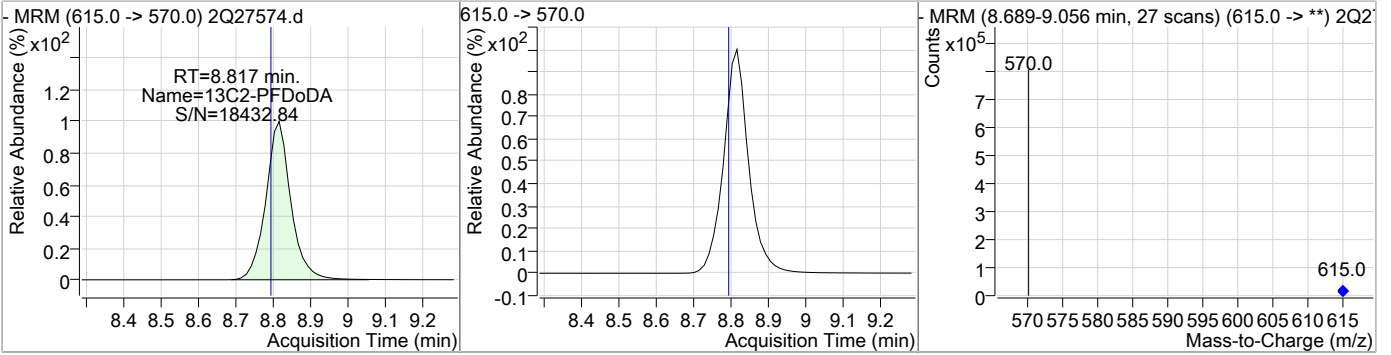
7.6.11

7

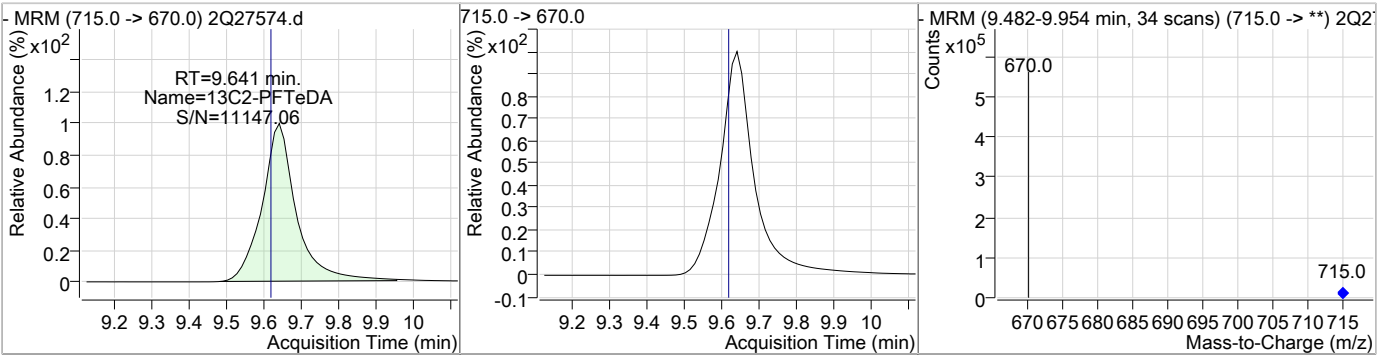


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 21.65 | 8.82 | 0.03     | 604239 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 21.18 | 9.64 | 0.03     | 409486 |      |        |      |      |



7.6.11

7



# Manual Integration Approval Summary

**Sample Number:** S2Q439-ICV439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27574.D      **Analyst approved:** 03/14/19 09:05 Nancy Saunders  
**Injection Time:** 03/13/19 13:39      **Supervisor approved:** 03/14/19 15:20 Mike Eger

| Parameter                    | CAS       | Sig# | R.T. (min.) | Reason     |
|------------------------------|-----------|------|-------------|------------|
| Perfluorooctanoic acid       | 335-67-1  |      | 6.89        | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.48        | Split peak |
| MeFOSAA                      | 2355-31-9 |      | 7.85        | Split peak |
| EtFOSAA                      | 2991-50-6 |      | 7.97        | Split peak |

7.6.11.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27653.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 4:06:32 PM  
 Sample Name : CC439-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op73501,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 349896 | 20.00 µg/L        | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 49627  | 20.00 µg/L        | 0.031    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 146607 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 126379 | 20.00 µg/L        | 0.032    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 180100 | 20.00 µg/L        | 0.026    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 253097 | 20.00 µg/L        | 0.017    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 267625 | 20.00 µg/L        | 0.031    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 276181 | 20.00 µg/L        | 0.020    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 374984 | 20.00 µg/L        | 0.033    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 469185 | 20.00 µg/L        | 0.028    |
| M2-PFDoDA                          | 8.478                | 615.0 -> 570.0 | 549018 | 20.00 µg/L        | 0.028    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 345814 | 20.00 µg/L        | 0.025    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 107724 | 20.00 µg/L        | 0.032    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 20799  | 20.00 µg/L        | 0.025    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 22970  | 20.00 µg/L        | 0.026    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 29844  | 20.00 µg/L        | 0.030    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 73305  | 20.00 µg/L        | 0.028    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 79094  | 20.00 µg/L        | 0.030    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 57913  | 20.00 µg/L        | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 46883  | 20.00 µg/L        | 0.029    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 177858 | 100.00 µg/L       | 0.026    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 73292  | 17.65 µg/L        | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.3%  |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 79238  | 18.18 µg/L        | 0.030    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.9%  |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 57910  | 20.40 µg/L        | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.0% |          |
| 13C2-PFDoDA                        | 8.478                | 615.0 -> 570.0 | 548451 | 19.65 µg/L        | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.2%  |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 344802 | 17.84 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 89.2%  |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 20672  | 17.07 µg/L        | 0.025    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 85.4%  |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 22941  | 16.84 µg/L        | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.2%  |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 146033 | 16.85 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.2%  |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 253009 | 17.57 µg/L        | 0.017    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.9%  |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 180107 | 17.56 µg/L        | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 87.8%  |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 126364 | 17.62 µg/L        | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 88.1%  |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 374951 | 20.25 µg/L        | 0.033    |

7.6.12  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 468948 | 19.58 µg/L        | 0.028    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.9%  |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 107665 | 18.90 µg/L        | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 94.5%  |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 267374 | 17.95 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 89.8%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 29820  | 18.03 µg/L        | 0.030    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.1%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 276094 | 19.26 µg/L        | 0.020    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.3%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 46870  | 19.60 µg/L        | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.0%  |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 349882 | 19.98 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 49638  | 20.00 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 177858 | 87.56 µg/L        | 0.026    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 87.6%  |          |

7.6.12  
7

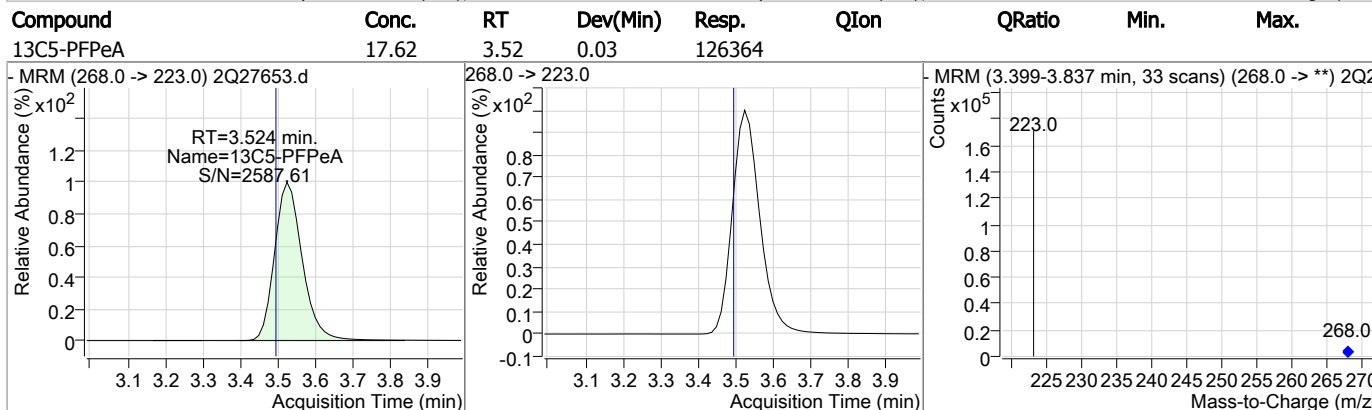
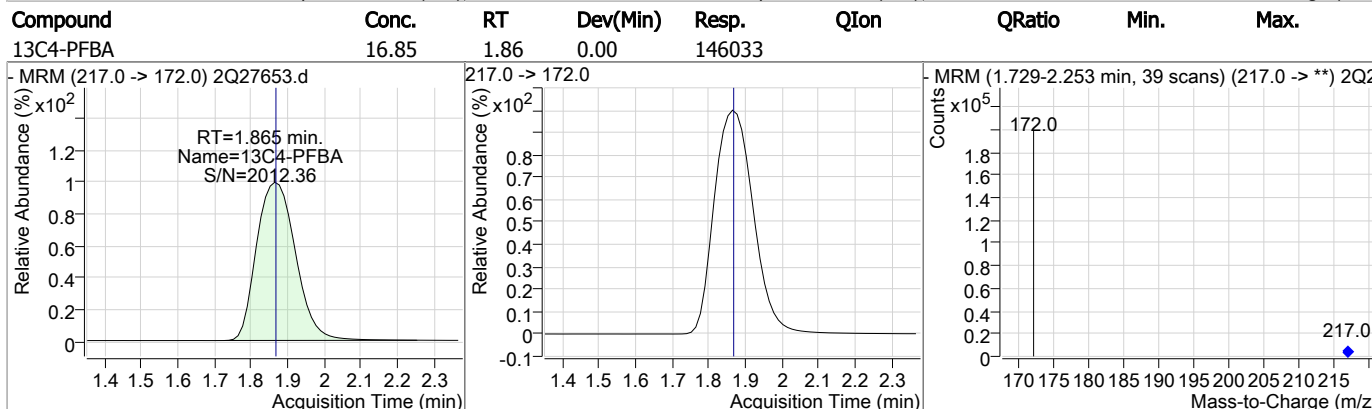
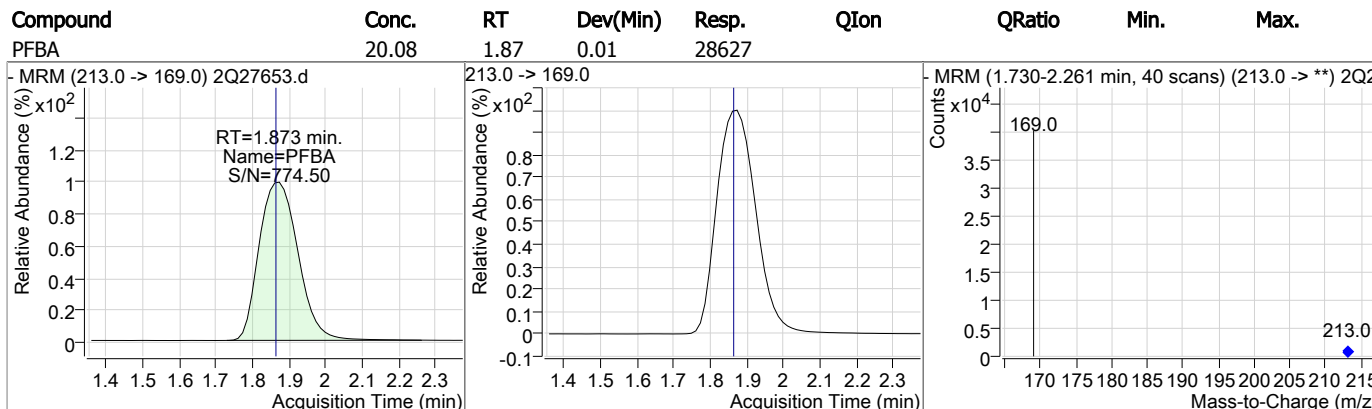
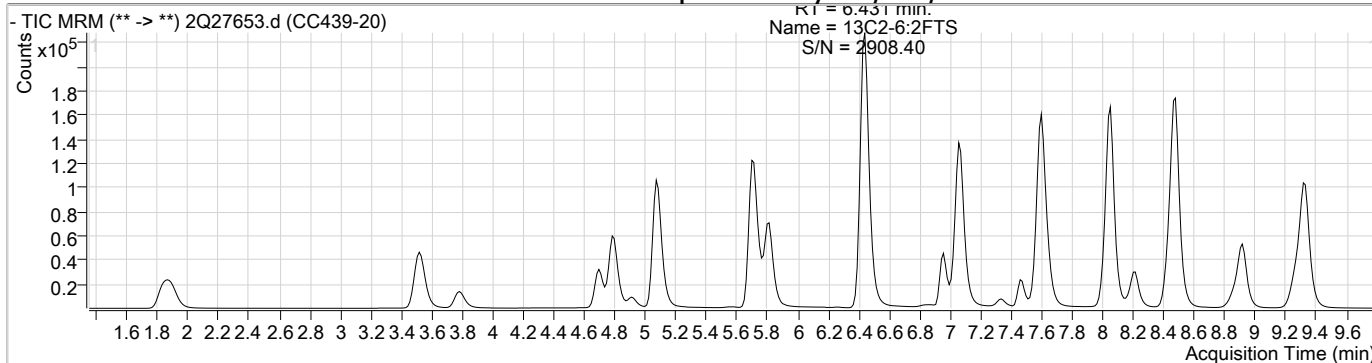
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.699 | 327.0 -> 307.0 | 43146  | 20.23 µg/L  | 100    |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 40234  | 19.89 µg/L  | 100    |
| 8:2FTS       | 7.643 | 527.0 -> 507.0 | 30525  | 19.96 µg/L  | 100    |
| EtFOSAA      | 7.610 | 584.0 -> 419.0 | 21377  | 20.73 µg/L  | 100    |
| FOSA         | 6.963 | 498.0 -> 78.0  | 50923  | 20.73 µg/L  | 100    |
| MeFOSAA      | 7.473 | 570.0 -> 419.0 | 25911  | 20.79 µg/L  | 99     |
| PFBA         | 1.873 | 213.0 -> 169.0 | 28627  | 20.08 µg/L  | 100    |
| PFBS         | 3.783 | 299.0 -> 80.0  | 33756  | 19.65 µg/L  | 99     |
| PFDA         | 7.608 | 513.0 -> 469.0 | 157508 | 19.90 µg/L  | 99     |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 254455 | 19.78 µg/L  | 99     |
| PFDS         | 8.014 | 599.0 -> 80.0  | 11818  | 20.04 µg/L  | 99     |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 229969 | 19.37 µg/L  | 100    |
| PFHpS        | 6.454 | 449.0 -> 80.0  | 23883  | 20.53 µg/L  | 99     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 60518  | 19.42 µg/L  | 100    |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 26893  | 19.66 µg/L  | m 96   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 172284 | 19.27 µg/L  | 99     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 23111  | 20.69 µg/L  | 99     |
| PFOA         | 6.450 | 413.0 -> 369.0 | 145689 | 19.90 µg/L  | 97     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 29413  | 19.23 µg/L  | m 80   |
| PFPeA        | 3.528 | 263.0 -> 219.0 | 110488 | 19.25 µg/L  | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 23249  | 19.77 µg/L  | 98     |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 233690 | 19.80 µg/L  | 99     |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 262915 | 20.25 µg/L  | 100    |
| PFUnDA       | 8.056 | 563.0 -> 519.0 | 199681 | 20.10 µg/L  | 99     |
| 11Cl-PF3OUdS | 8.212 | 631.0 -> 451.0 | 126772 | 18.24 µg/L  | 100    |
| 9Cl-PF3ONS   | 7.335 | 531.0 -> 351.0 | 25721  | 18.59 µg/L  | 100    |
| ADONA        | 5.817 | 377.0 -> 251.0 | 266541 | 19.41 µg/L  | 100    |
| HFPO-DA      | 5.073 | 329.0 -> 169.0 | 219937 | 101.93 µg/L | 100    |

# = Qualifier out of range, m = manually integrated, + = Area summed



### Perfluorinated Compounds by LC/MS/MS



7.6.12  
7

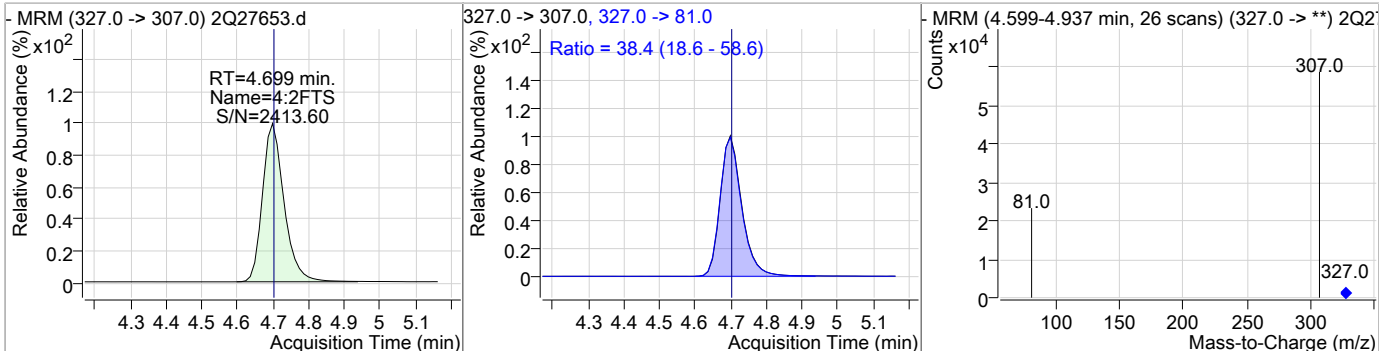
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| PFPeA       | 19.25 | 3.53 | 0.03     | 110488 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 17.07 | 3.78 | 0.03     | 20672  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 19.65 | 3.78 | 0.03     | 33756  | 299.0 -> 99.0 | 36.1   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 17.65 | 4.70 | 0.03     | 73292  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

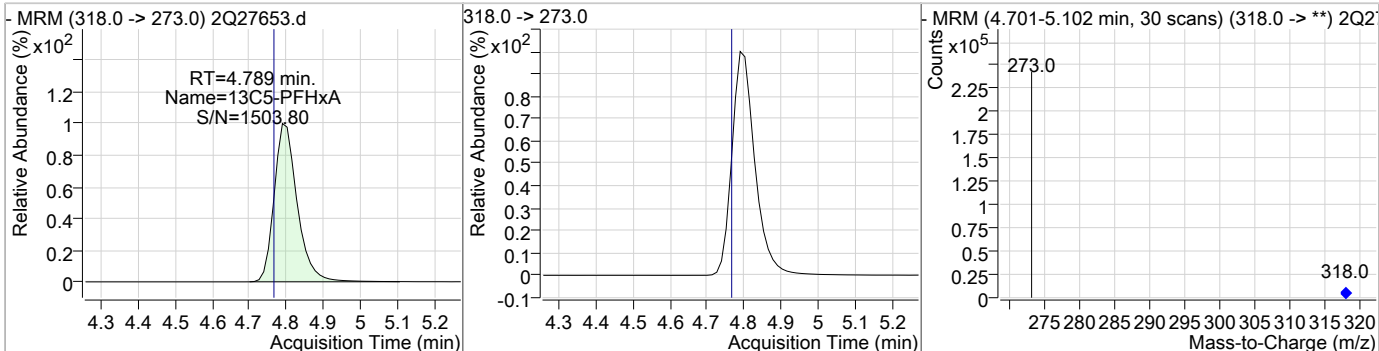
7.6.12  
7

### Perfluorinated Compounds by LC/MS/MS

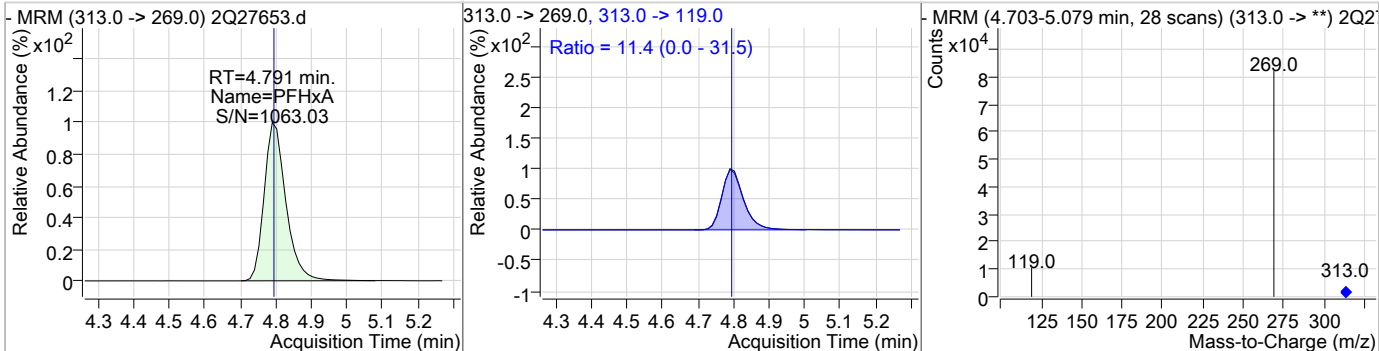
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 20.23 | 4.70 | 0.03     | 43146 | 327.0 -> 81.0 | 38.4   | 18.6 | 58.6 |



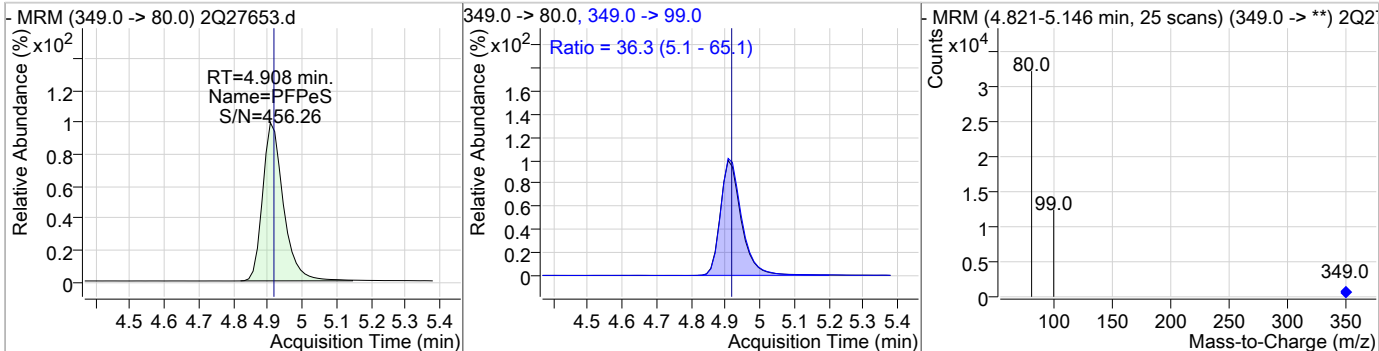
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 17.56 | 4.79 | 0.03     | 180107 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 19.42 | 4.79 | 0.02     | 60518 | 313.0 -> 119.0 | 11.4   | 0.0  | 31.5 |



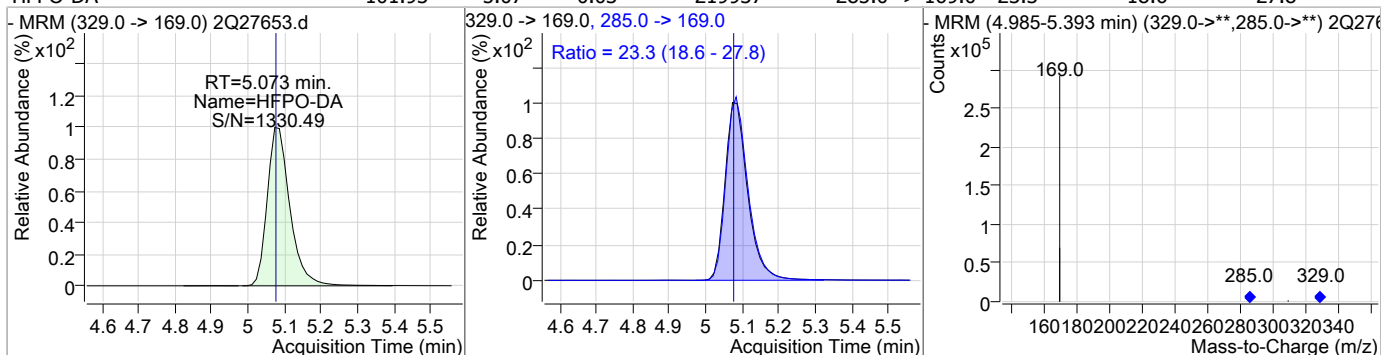
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 19.77 | 4.91 | 0.03     | 23249 | 349.0 -> 99.0 | 36.3   | 5.1  | 65.1 |



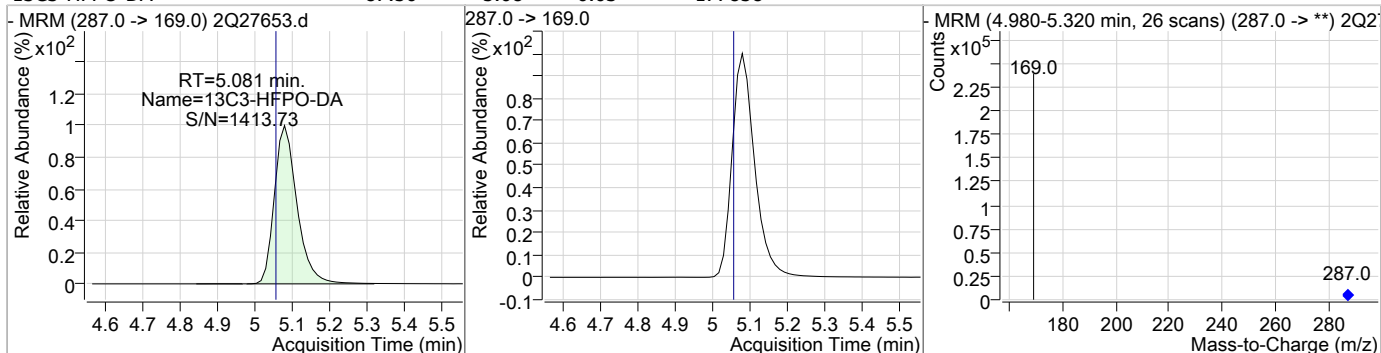
7.6.12  
7

### Perfluorinated Compounds by LC/MS/MS

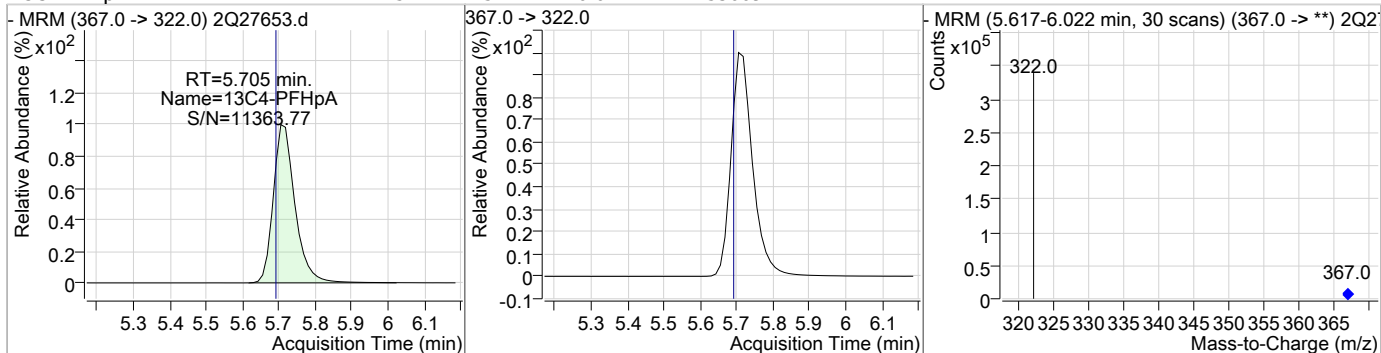
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 101.93 | 5.07 | 0.03     | 219937 | 285.0 -> 169.0 | 23.3   | 18.6 | 27.8 |



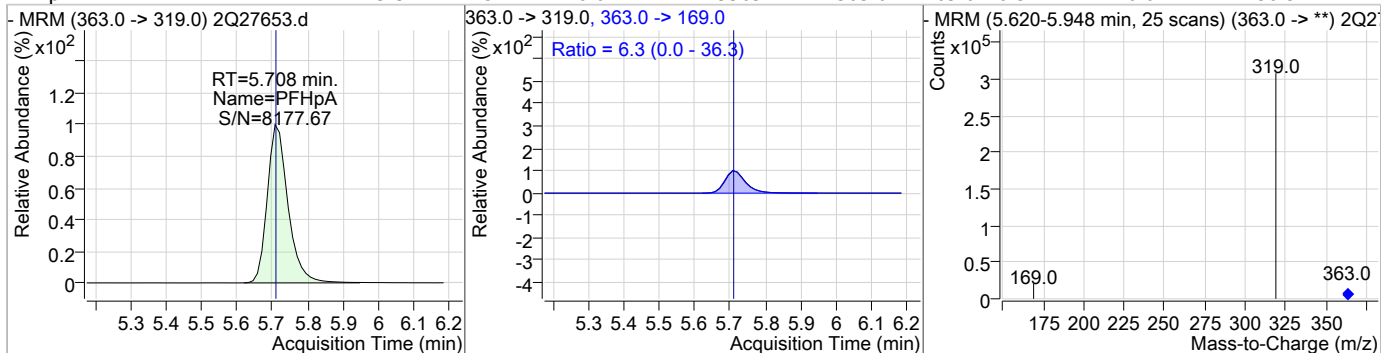
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C3-HFPO-DA | 87.56 | 5.08 | 0.03     | 177858 | 287.0 -> 169.0 | 23.3   | 18.6 | 27.8 |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C4-PFHpA | 17.57 | 5.71 | 0.02     | 253009 | 367.0 -> 322.0 | 6.3    | 0.0  | 36.3 |

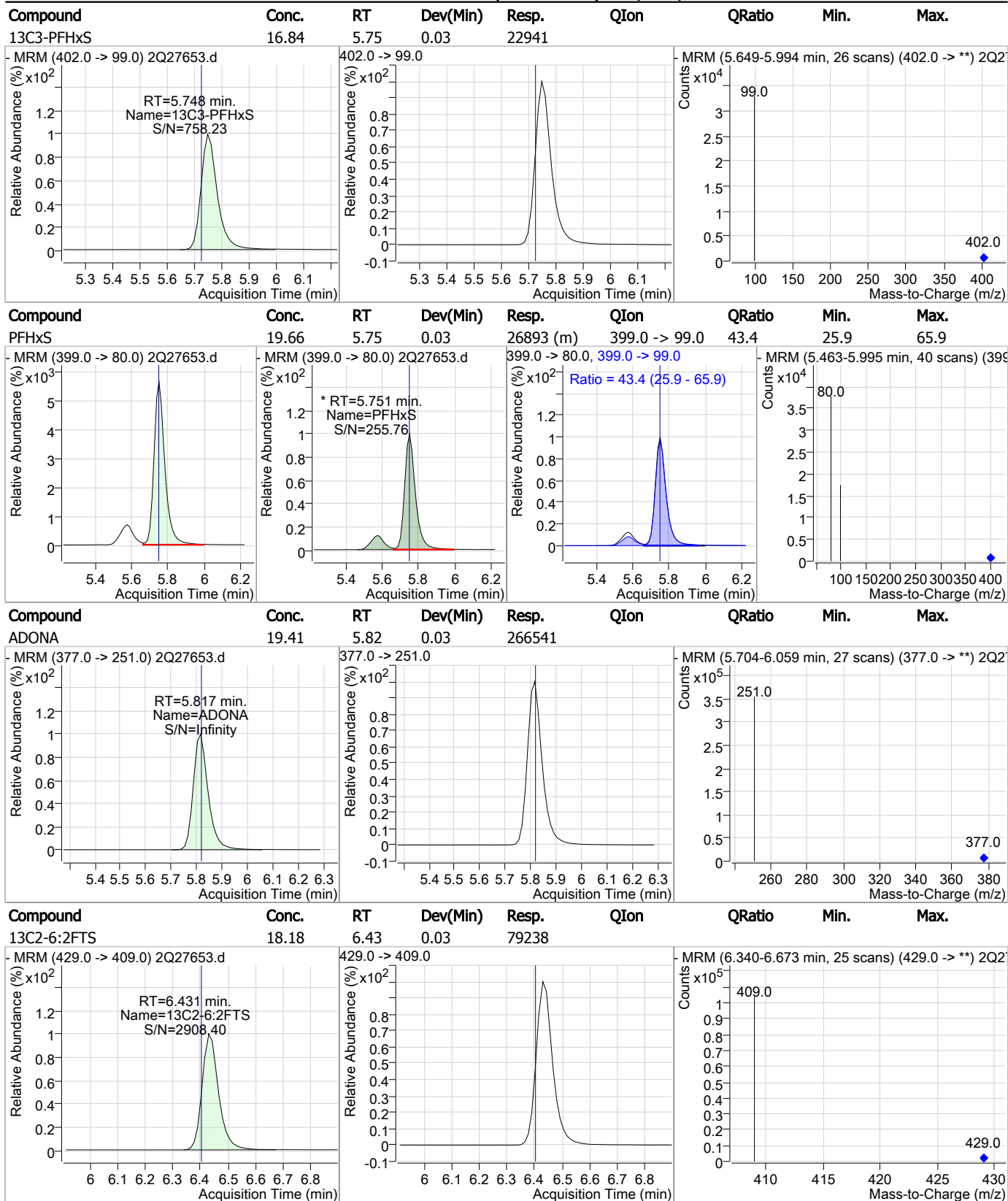


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.37 | 5.71 | 0.02     | 229969 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |





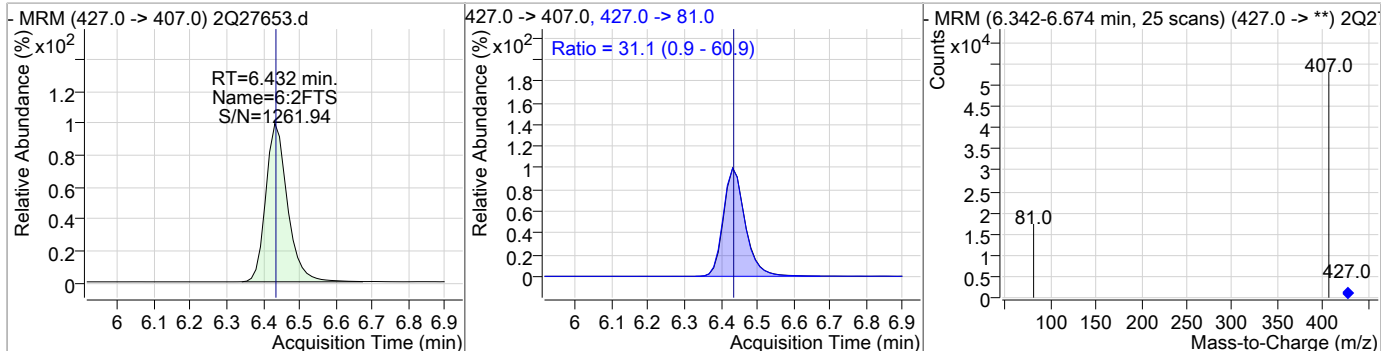
### Perfluorinated Compounds by LC/MS/MS



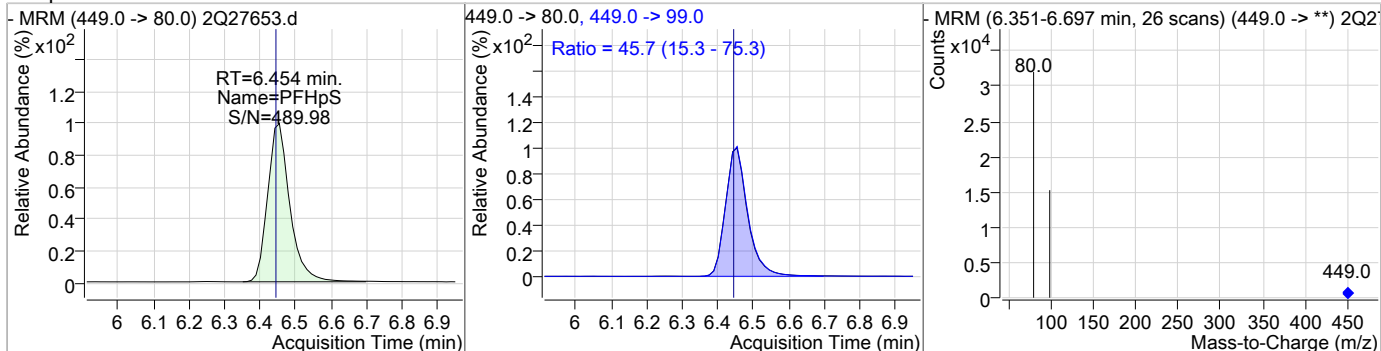
7.6.12  
7

### Perfluorinated Compounds by LC/MS/MS

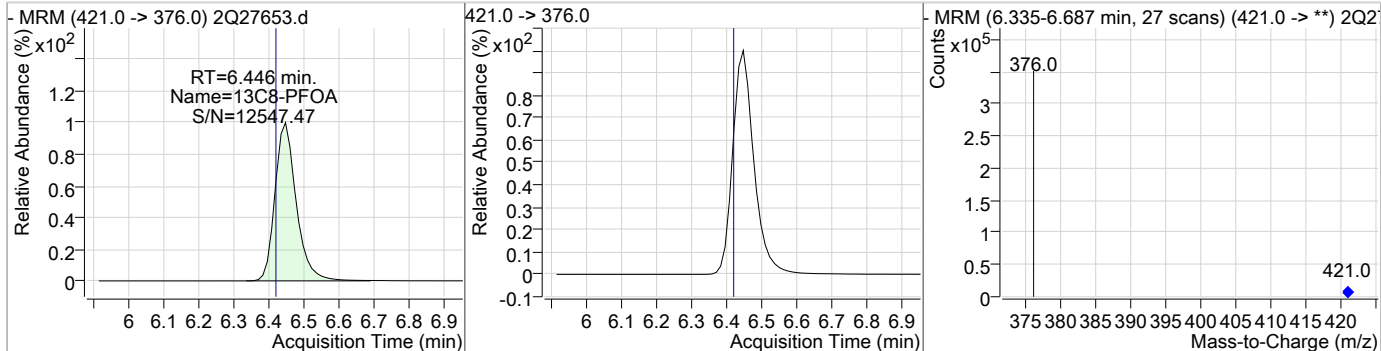
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 19.89 | 6.43 | 0.03     | 40234 | 427.0 -> 81.0 | 31.1   | 0.9  | 60.9 |



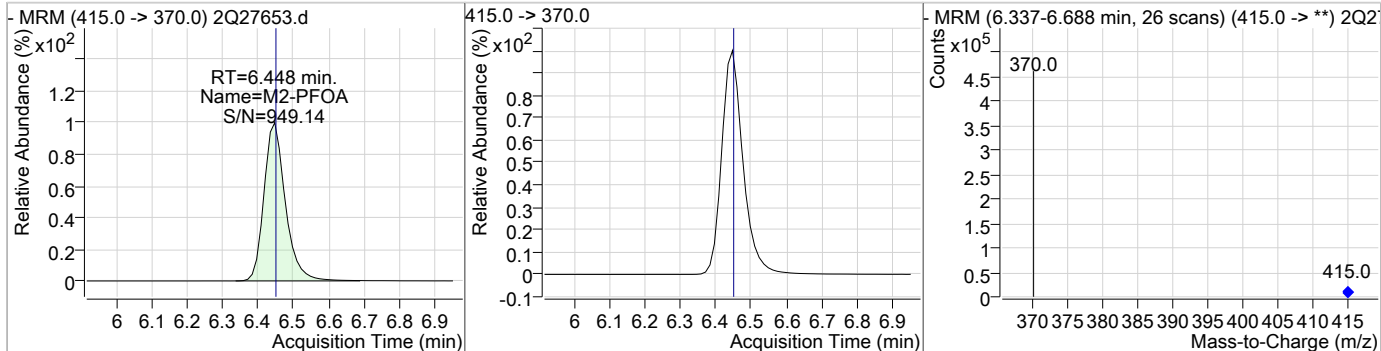
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 20.53 | 6.45 | 0.04     | 23883 | 449.0 -> 99.0 | 45.7   | 15.3 | 75.3 |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 17.95 | 6.45 | 0.03     | 267374 |      |        |      |      |



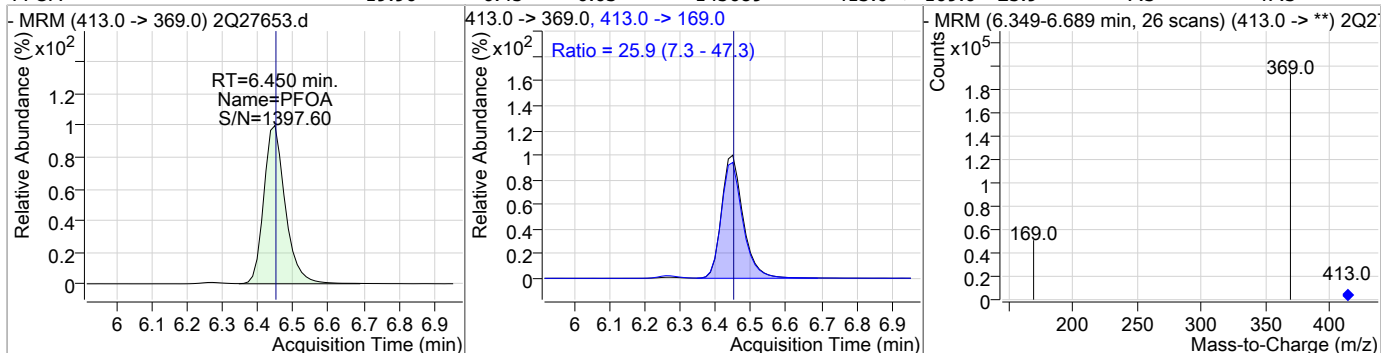
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.98 | 6.45 | 0.03     | 349882 |      |        |      |      |



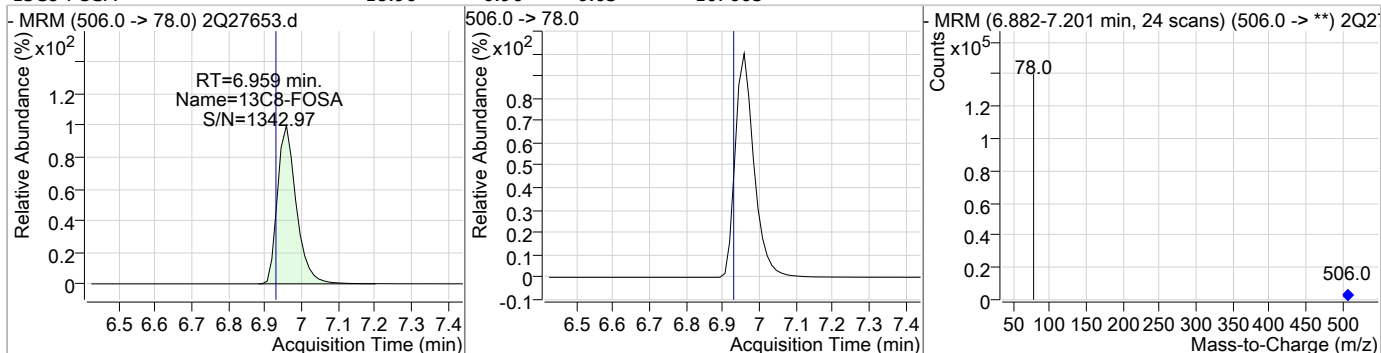
7.6.12  
7

### Perfluorinated Compounds by LC/MS/MS

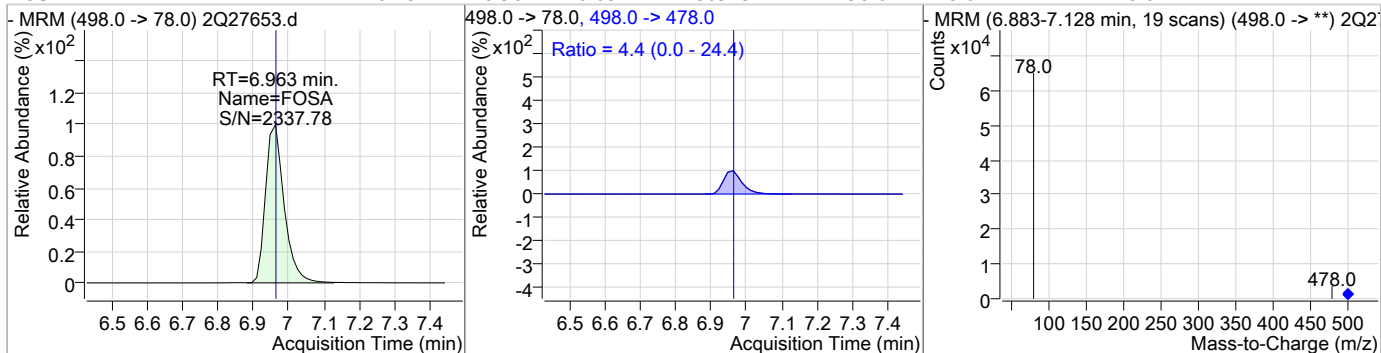
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.90 | 6.45 | 0.03     | 145689 | 413.0 -> 169.0 | 25.9   | 7.3  | 47.3 |



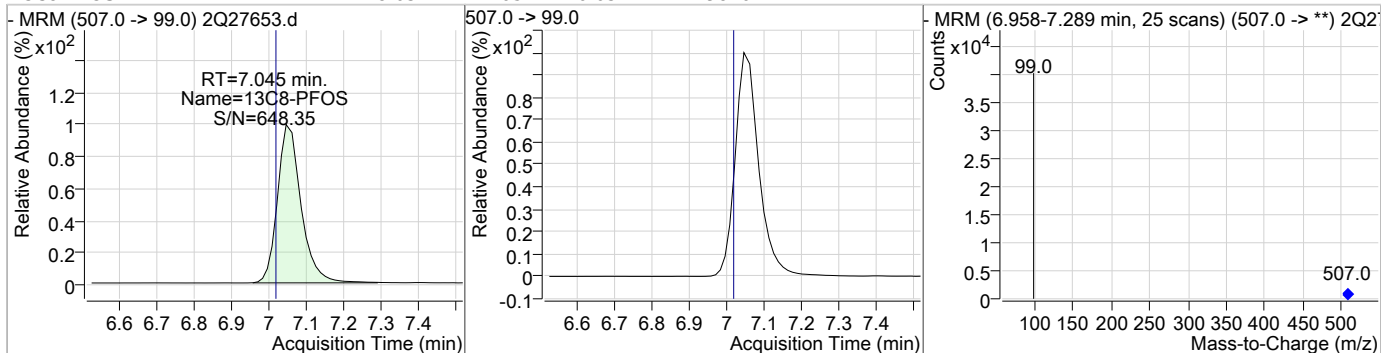
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|---------------|--------|------|------|
| 13C8-FOSA | 18.90 | 6.96 | 0.03     | 107665 | 506.0 -> 78.0 | 4.4    | 0.0  | 24.4 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 20.73 | 6.96 | 0.03     | 50923 | 498.0 -> 478.0 | 4.4    | 0.0  | 24.4 |

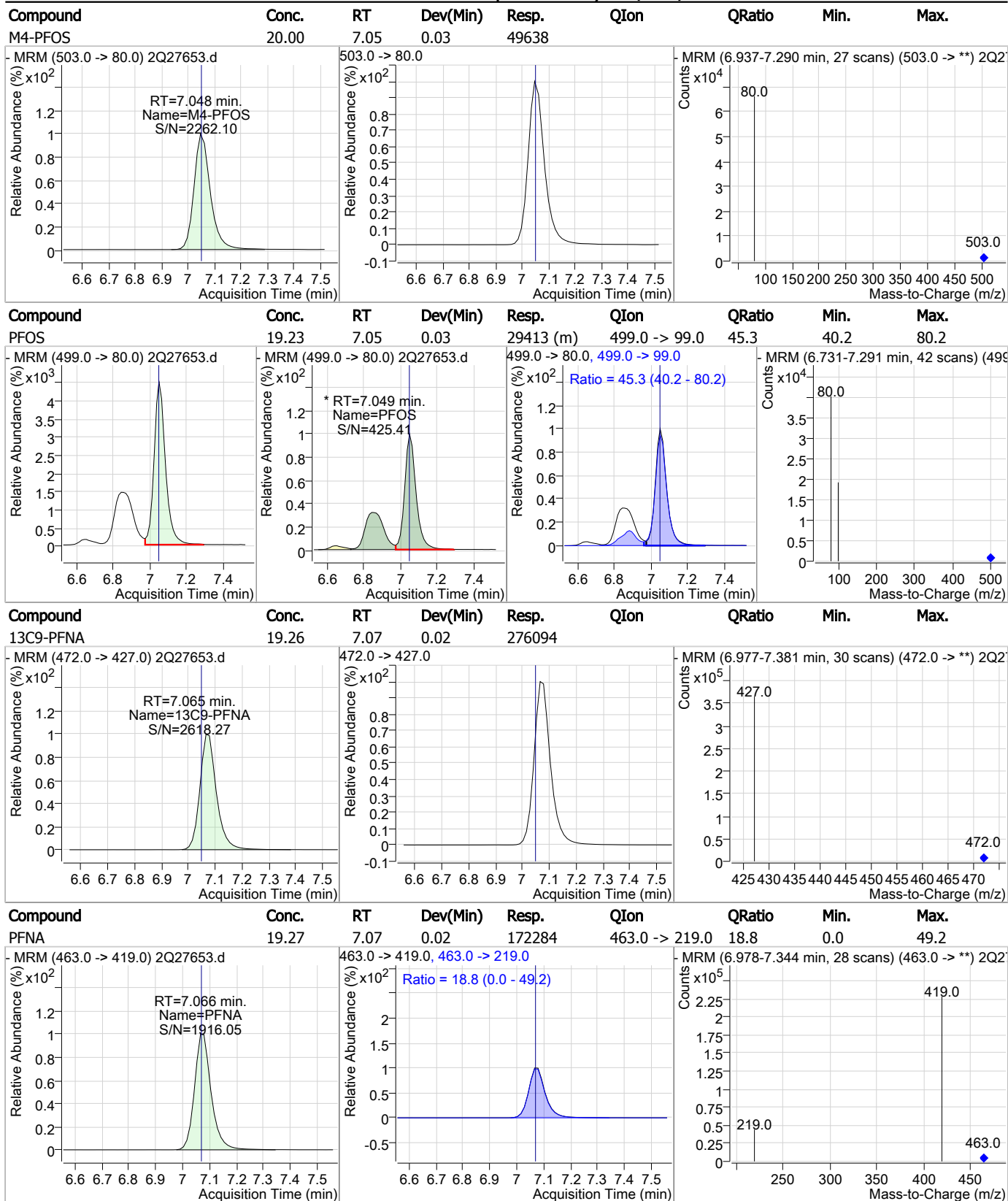


| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-PFOS | 18.03 | 7.05 | 0.03     | 29820 | 507.0 -> 99.0 | 4.4    | 0.0  | 24.4 |



7.6.12  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.12  
7

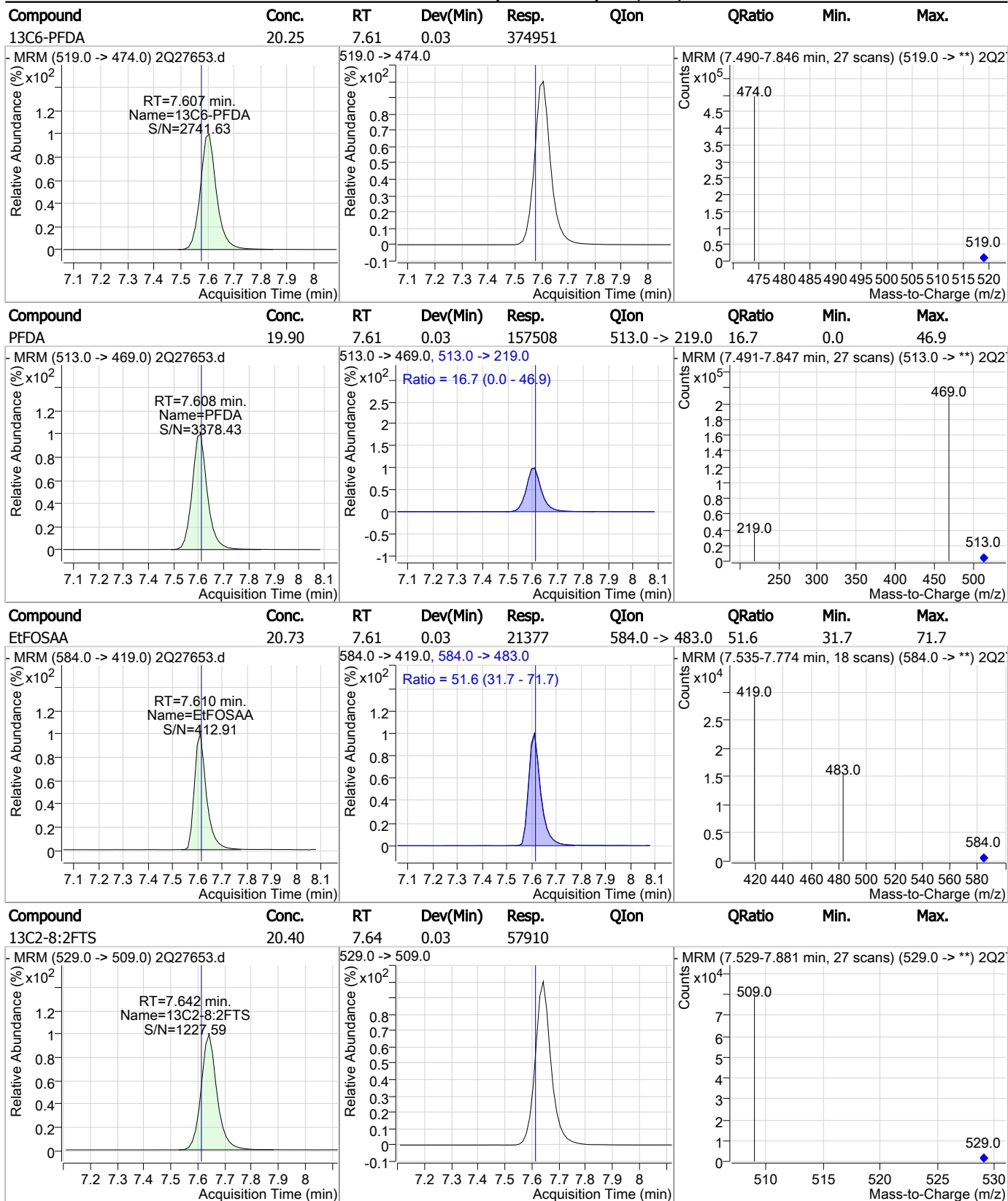
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 18.59 | 7.34 | 0.03     | 25721 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 19.60 | 7.46 | 0.03     | 46870 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 20.79 | 7.47 | 0.03     | 25911 | 570.0 -> 512.0 | 22.7   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 20.69 | 7.57 | 0.02     | 23111 | 549.0 -> 99.0  | 48.0   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

7.6.12

7

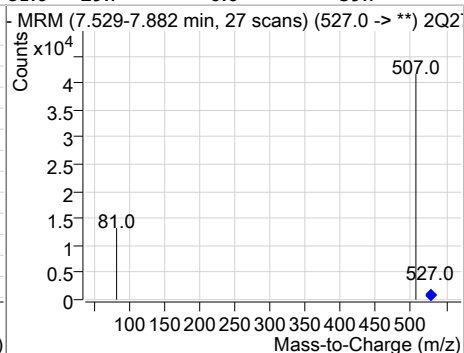
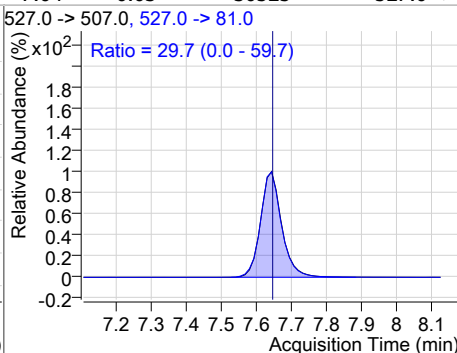
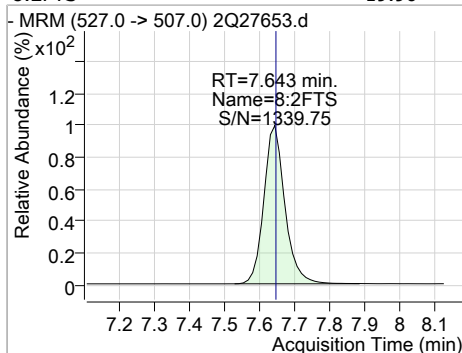
### Perfluorinated Compounds by LC/MS/MS



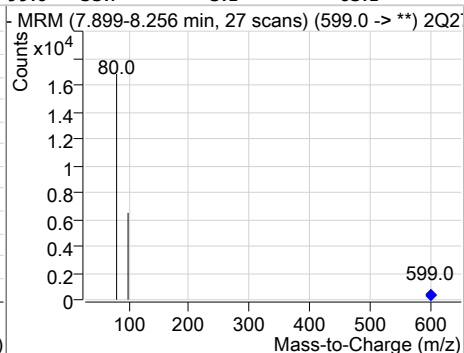
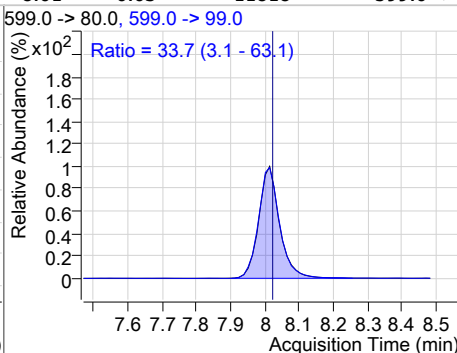
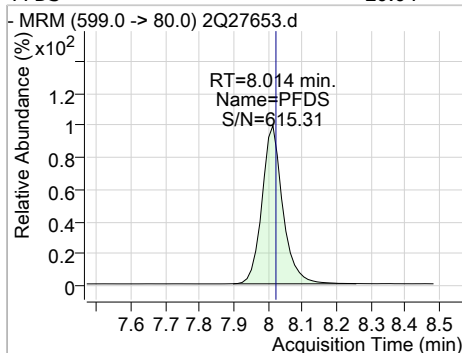
7.6.12  
7

### Perfluorinated Compounds by LC/MS/MS

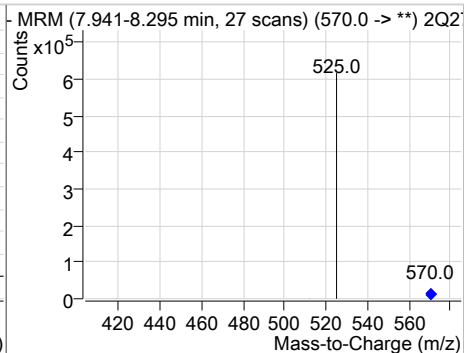
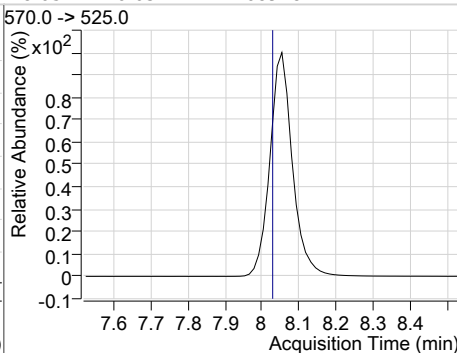
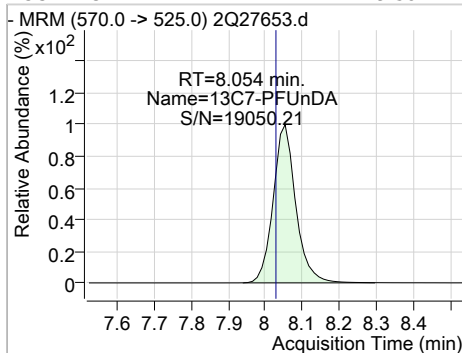
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 19.96 | 7.64 | 0.03     | 30525 | 527.0 -> 81.0 | 29.7   | 0.0  | 59.7 |



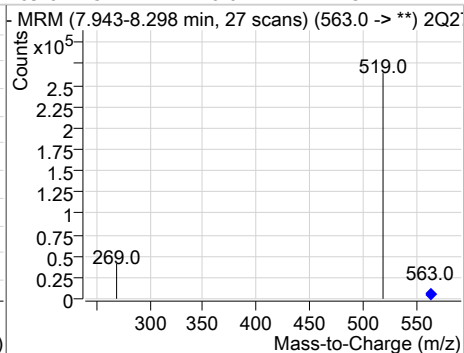
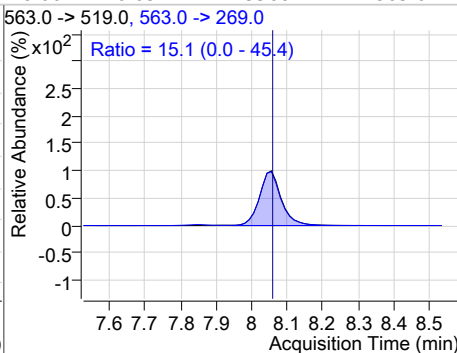
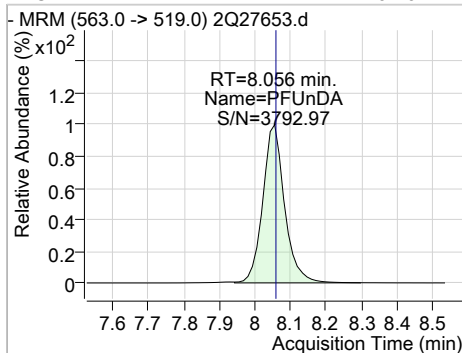
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 20.04 | 8.01 | 0.03     | 11818 | 599.0 -> 99.0 | 33.7   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 19.58 | 8.05 | 0.03     | 468948 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 20.10 | 8.06 | 0.03     | 199681 | 563.0 -> 269.0 | 15.1   | 0.0  | 45.4 |



7.6.12  
7

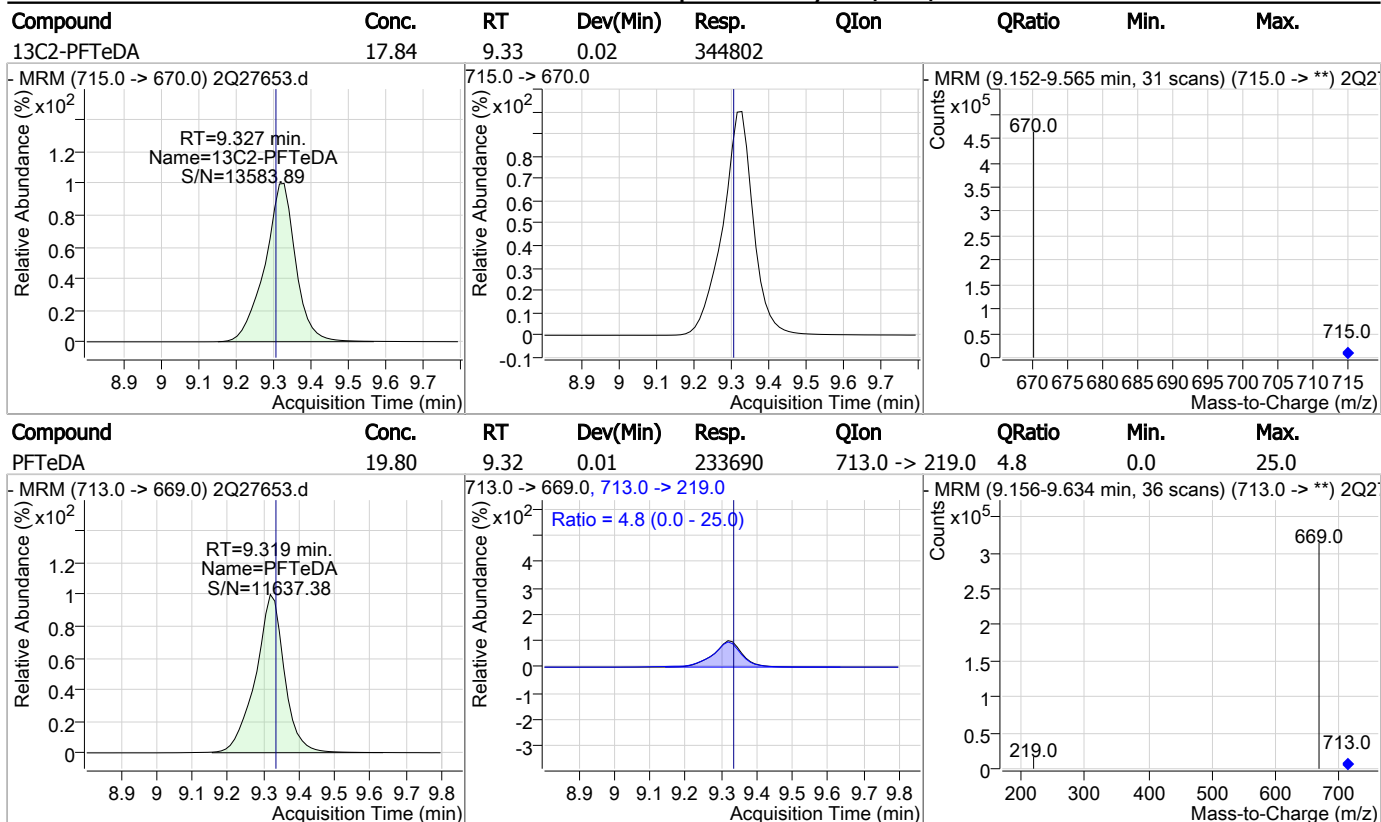
### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 18.24 | 8.21 | 0.03     | 126772 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 19.65 | 8.48 | 0.03     | 548451 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 19.78 | 8.47 | 0.02     | 254455 | 613.0 -> 319.0 | 12.3   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 20.25 | 8.92 | 0.02     | 262915 | 663.0 -> 369.0 | 6.5    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.12  
7



### Perfluorinated Compounds by LC/MS/MS



7.6.12  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q441-CC439  
**Lab FileID:** 2Q27653.D  
**Injection Time:** 03/15/19 16:06

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/18/19 08:53 Nancy Saunders  
**Supervisor approved:** 03/18/19 13:59 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.6.12.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27663.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/15/2019 6:43:50 PM  
 Sample Name : ECC439-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031319\_S2Q439.quantmethod.xml  
 Batch Name : S2Q441.batch.bin  
 Sample Information : op73501,S2Q441,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 327096 | 20.00 µg/L       | 0.031    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 46482  | 20.00 µg/L       | 0.031    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 136698 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.536                | 268.0 -> 223.0 | 117527 | 20.00 µg/L       | 0.045    |
| M5-PFHxA                           | 4.801                | 318.0 -> 273.0 | 167924 | 20.00 µg/L       | 0.038    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 235387 | 20.00 µg/L       | 0.029    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 252479 | 20.00 µg/L       | 0.031    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 259649 | 20.00 µg/L       | 0.020    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 348721 | 20.00 µg/L       | 0.033    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 435203 | 20.00 µg/L       | 0.028    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 497808 | 20.00 µg/L       | 0.015    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 304468 | 20.00 µg/L       | 0.012    |
| M8-FOSA                            | 6.959                | 506.0 -> 78.0  | 100144 | 20.00 µg/L       | 0.032    |
| M3-PFBS                            | 3.792                | 302.0 -> 99.0  | 19305  | 20.00 µg/L       | 0.038    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 21501  | 20.00 µg/L       | 0.026    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 27683  | 20.00 µg/L       | 0.030    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 68390  | 20.00 µg/L       | 0.028    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 73949  | 20.00 µg/L       | 0.030    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 53974  | 20.00 µg/L       | 0.032    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 44876  | 20.00 µg/L       | 0.029    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 155576 | 100.00 µg/L      | 0.026    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 68115  | 16.41 µg/L       | 0.028    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.0% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 73866  | 16.95 µg/L       | 0.030    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 84.7% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 53877  | 18.98 µg/L       | 0.032    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.9% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 496868 | 17.80 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 89.0% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 303342 | 15.69 µg/L       | 0.012    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.5% |          |
| 13C3-PFBS                          | 3.792                | 302.0 -> 99.0  | 19295  | 15.94 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 79.7% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 21463  | 15.76 µg/L       | 0.026    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.8% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 136019 | 15.69 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 78.5% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 235400 | 16.35 µg/L       | 0.029    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.8% |          |
| 13C5-PFHxA                         | 4.801                | 318.0 -> 273.0 | 167710 | 16.35 µg/L       | 0.038    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 81.8% |          |
| 13C5-PFPeA                         | 3.536                | 268.0 -> 223.0 | 117543 | 16.39 µg/L       | 0.045    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 82.0% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 348629 | 18.83 µg/L       | 0.033    |

7.6.13  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 94.2%  |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 435222 | 18.17 µg/L        | 0.028    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.8%  |          |
| 13C8-FOSA             | 6.959                | 506.0 -> 78.0  | 100145 | 17.58 µg/L        | 0.032    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.9%  |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 252306 | 16.94 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 84.7%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 27671  | 16.73 µg/L        | 0.030    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 83.7%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 259499 | 18.11 µg/L        | 0.020    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.5%  |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 44913  | 18.78 µg/L        | 0.029    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.9%  |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 327257 | 19.99 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 46428  | 19.97 µg/L        | 0.031    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 155576 | 76.59 µg/L        | 0.026    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 76.6%  |          |

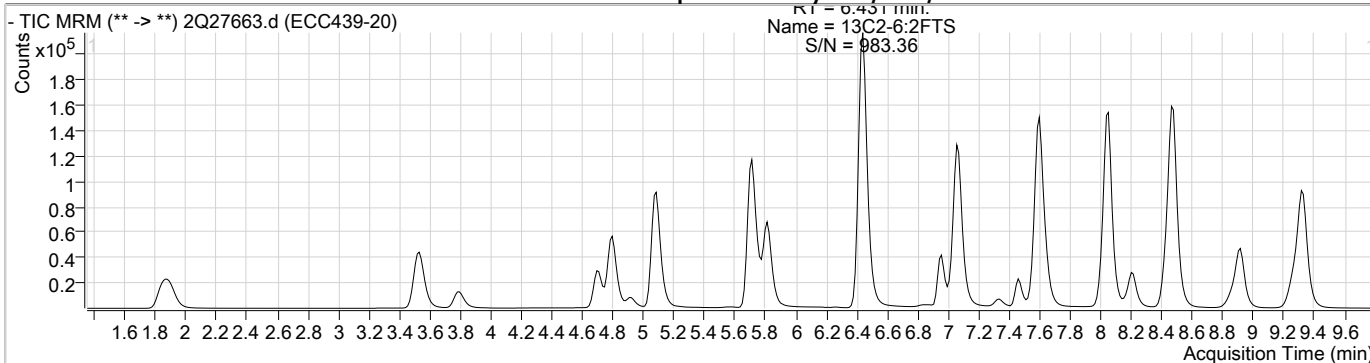
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.699 | 327.0 -> 307.0 | 40143  | 20.18 µg/L  | 100    |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 38392  | 20.30 µg/L  | 100    |
| 8:2FTS       | 7.643 | 527.0 -> 507.0 | 28489  | 19.99 µg/L  | 100    |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 20268  | 20.53 µg/L  | 100    |
| FOSA         | 6.963 | 498.0 -> 78.0  | 46862  | 20.53 µg/L  | 100    |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 24559  | 20.59 µg/L  | 98     |
| PFBA         | 1.873 | 213.0 -> 169.0 | 26742  | 20.12 µg/L  | 100    |
| PFBS         | 3.783 | 299.0 -> 80.0  | 31682  | 19.87 µg/L  | 100    |
| PFDA         | 7.608 | 513.0 -> 469.0 | 144390 | 19.61 µg/L  | 100    |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 231132 | 19.81 µg/L  | 100    |
| PFDS         | 8.014 | 599.0 -> 80.0  | 10807  | 19.76 µg/L  | 96     |
| PFHpA        | 5.720 | 363.0 -> 319.0 | 216417 | 19.60 µg/L  | 100    |
| PFHpS        | 6.454 | 449.0 -> 80.0  | 22671  | 20.82 µg/L  | 99     |
| PFHxA        | 4.803 | 313.0 -> 269.0 | 57420  | 19.76 µg/L  | 99     |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 25200  | 19.68 µg/L  | m 96   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 161230 | 19.18 µg/L  | 99     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 21783  | 21.02 µg/L  | 96     |
| PFOA         | 6.450 | 413.0 -> 369.0 | 137044 | 19.84 µg/L  | 98     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 26947  | 18.99 µg/L  | m 80   |
| PFPeA        | 3.540 | 263.0 -> 219.0 | 103750 | 19.43 µg/L  | 100    |
| PFPeS        | 4.920 | 349.0 -> 80.0  | 21710  | 19.89 µg/L  | 100    |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 203871 | 19.62 µg/L  | 99     |
| PFTrDA       | 8.919 | 663.0 -> 619.0 | 231496 | 20.25 µg/L  | 100    |
| PFUnDA       | 8.056 | 563.0 -> 519.0 | 184761 | 20.05 µg/L  | 99     |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 116006 | 18.41 µg/L  | 100    |
| 9Cl-PF3ONS   | 7.335 | 531.0 -> 351.0 | 23922  | 18.59 µg/L  | 100    |
| ADONA        | 5.817 | 377.0 -> 251.0 | 249696 | 19.28 µg/L  | 100    |
| HFPO-DA      | 5.085 | 329.0 -> 169.0 | 190374 | 100.86 µg/L | 100    |

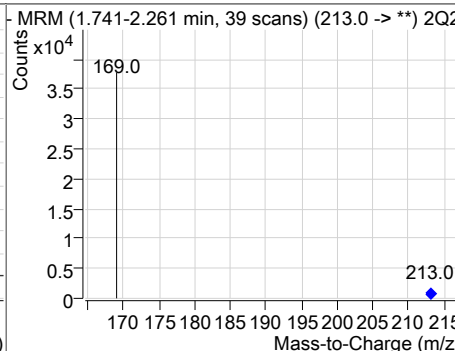
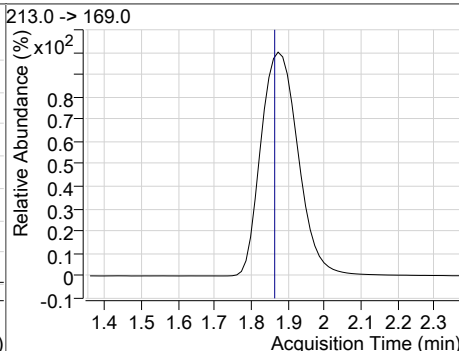
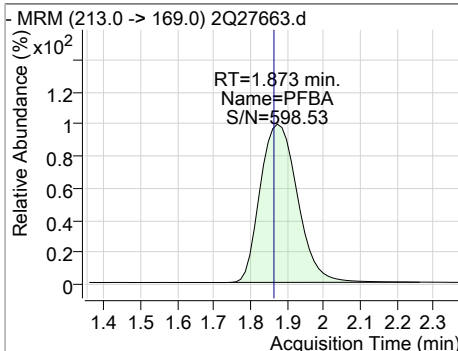
# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.13  
7

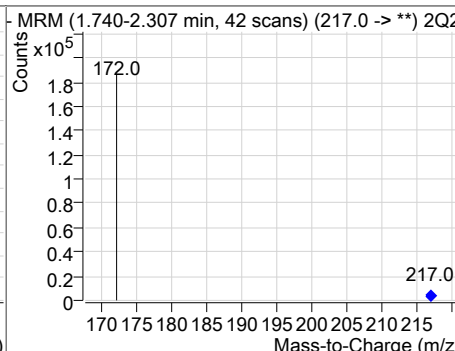
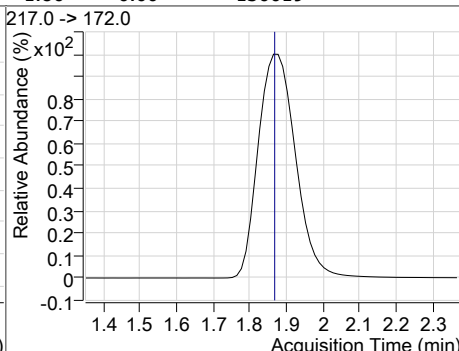
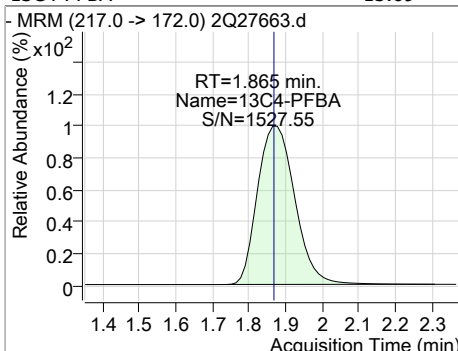
### Perfluorinated Compounds by LC/MS/MS



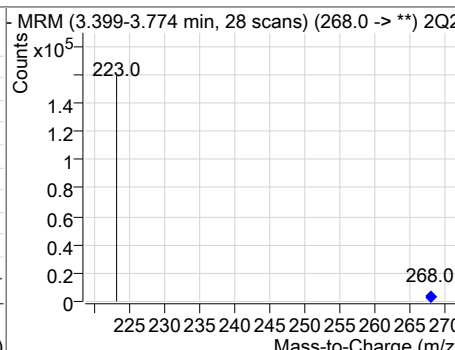
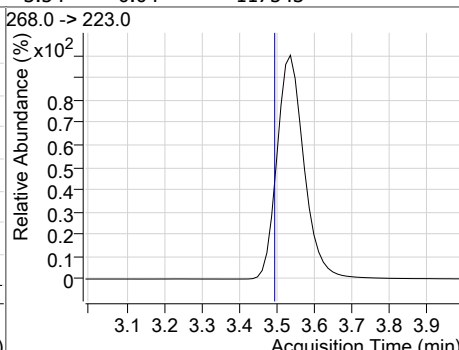
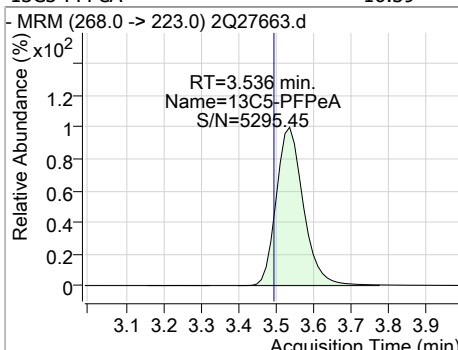
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 20.12 | 1.87 | 0.01     | 26742 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 15.69 | 1.86 | 0.00     | 136019 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 16.39 | 3.54 | 0.04     | 117543 |      |        |      |      |



7.6.13  
7

### Perfluorinated Compounds by LC/MS/MS

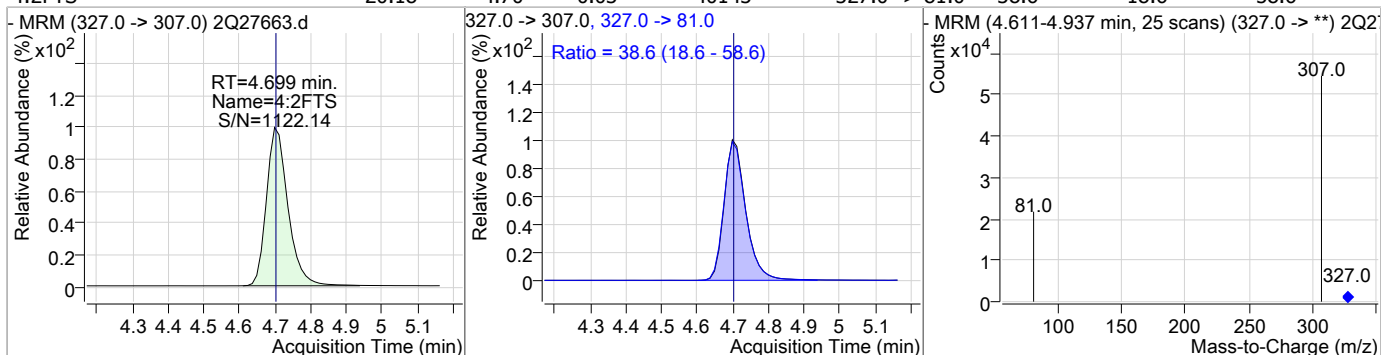
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|---------------|--------|------|------|
| PFPeA       | 19.43 | 3.54 | 0.04     | 103750 |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| 13C3-PFBS   | 15.94 | 3.79 | 0.04     | 19295  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |
| PFBS        | 19.87 | 3.78 | 0.03     | 31682  | 299.0 -> 99.0 | 35.7   | 5.6  | 65.6 |
|             |       |      |          |        |               |        |      |      |
| 13C2-4:2FTS | 16.41 | 4.70 | 0.03     | 68115  |               |        |      |      |
|             |       |      |          |        |               |        |      |      |

7.6.13

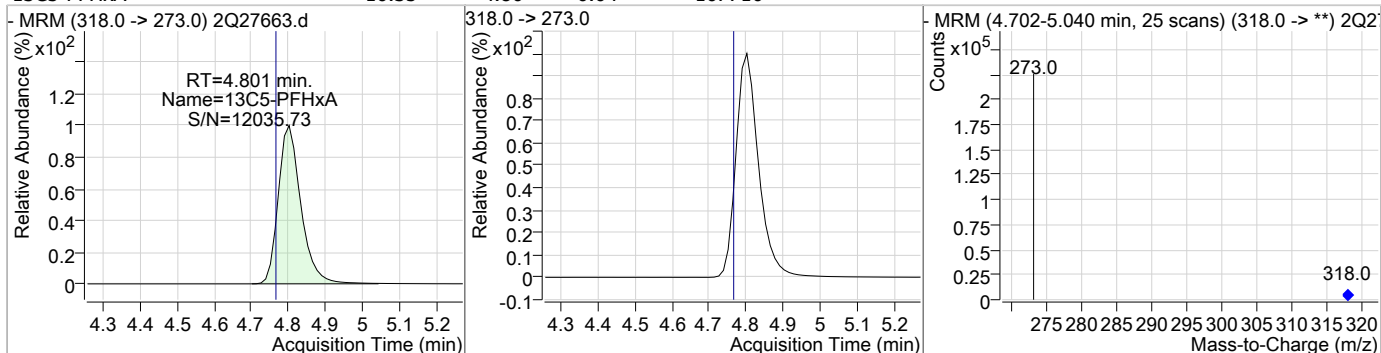
7

### Perfluorinated Compounds by LC/MS/MS

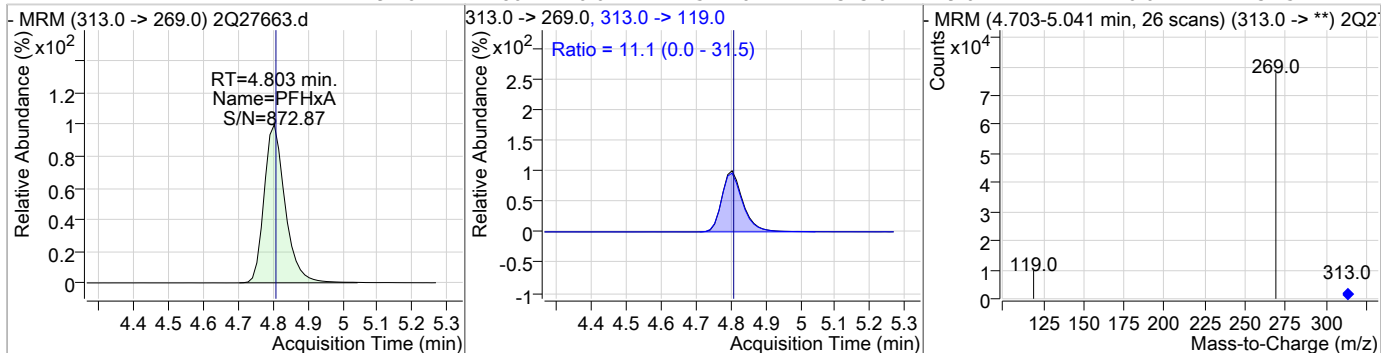
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 20.18 | 4.70 | 0.03     | 40143 | 327.0 -> 81.0 | 38.6   | 18.6 | 58.6 |



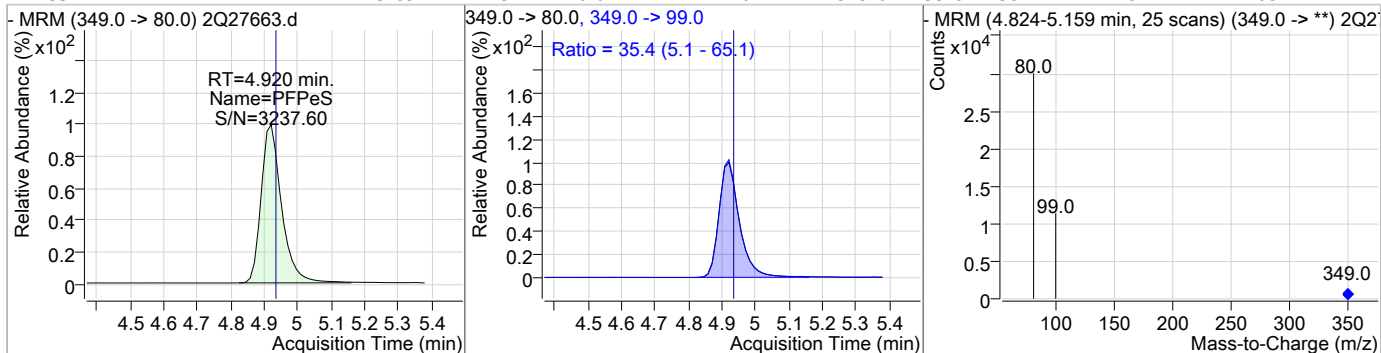
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 16.35 | 4.80 | 0.04     | 167710 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 19.76 | 4.80 | 0.04     | 57420 | 313.0 -> 119.0 | 11.1   | 0.0  | 31.5 |

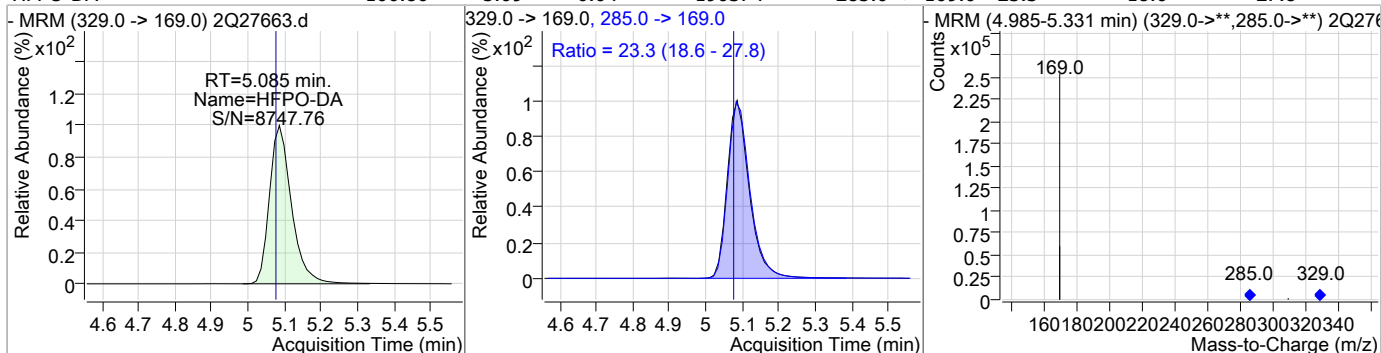


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 19.89 | 4.92 | 0.04     | 21710 | 349.0 -> 99.0 | 35.4   | 5.1  | 65.1 |

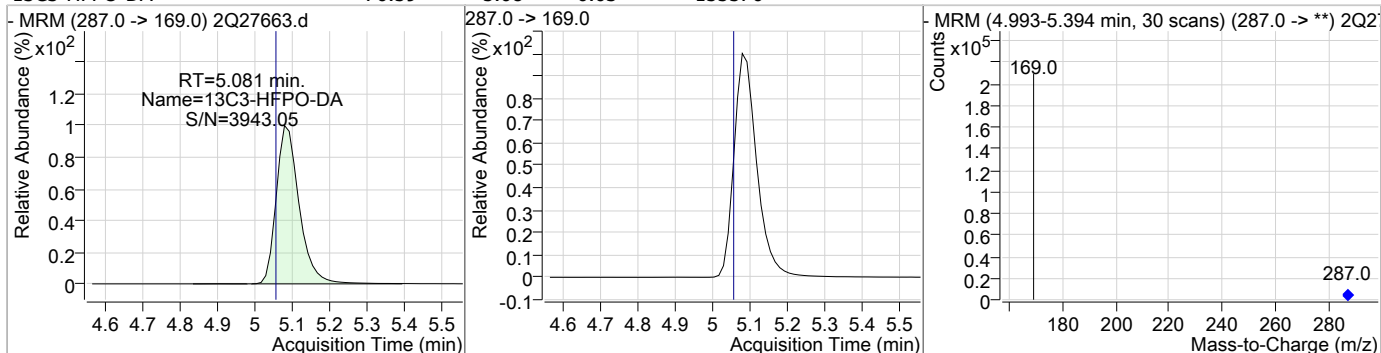


### Perfluorinated Compounds by LC/MS/MS

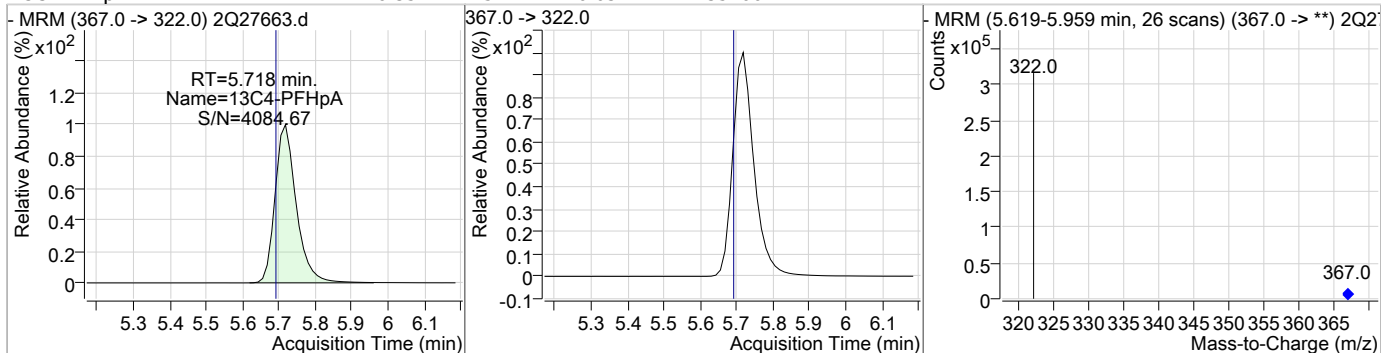
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 100.86 | 5.09 | 0.04     | 190374 | 285.0 -> 169.0 | 23.3   | 18.6 | 27.8 |



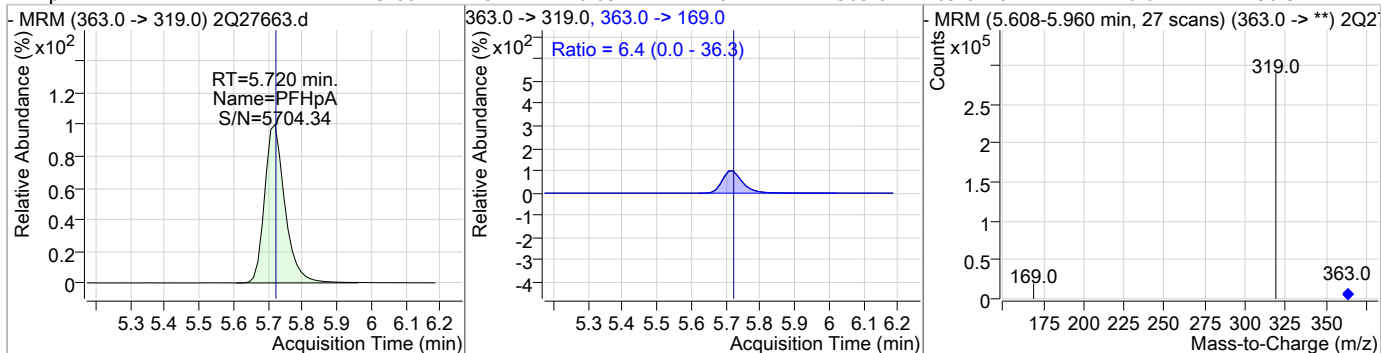
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 76.59 | 5.08 | 0.03     | 155576 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 16.35 | 5.72 | 0.03     | 235400 |      |        |      |      |



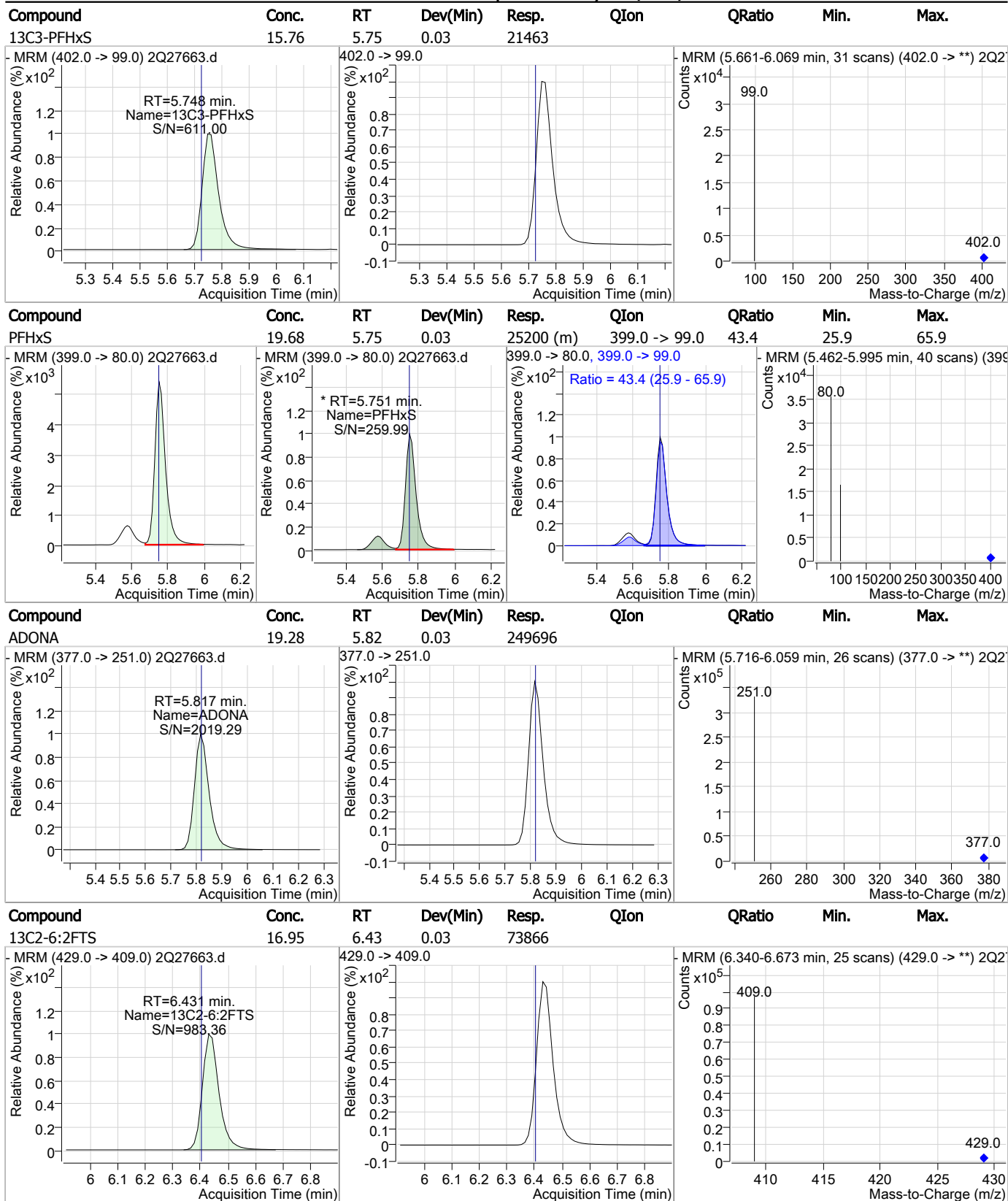
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.60 | 5.72 | 0.03     | 216417 | 363.0 -> 169.0 | 6.4    | 0.0  | 36.3 |



7.6.13  
7



### Perfluorinated Compounds by LC/MS/MS

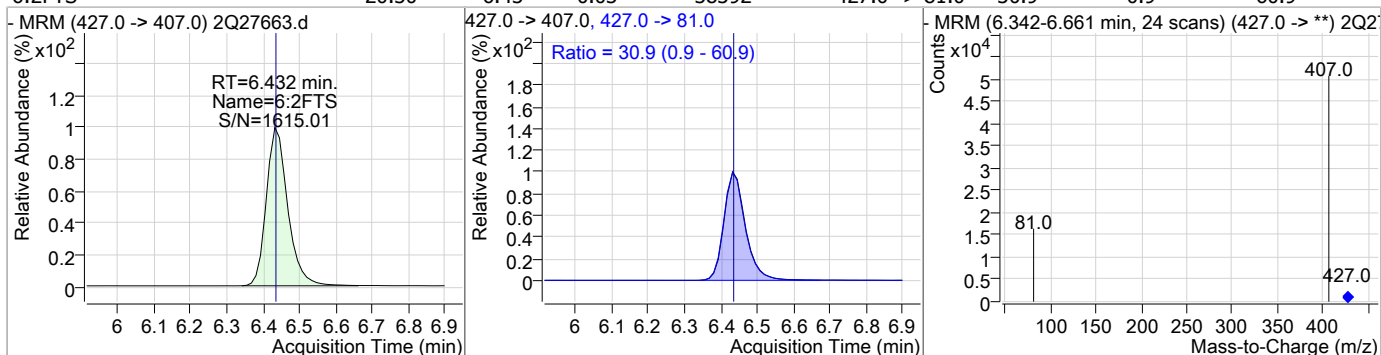


7.6.13

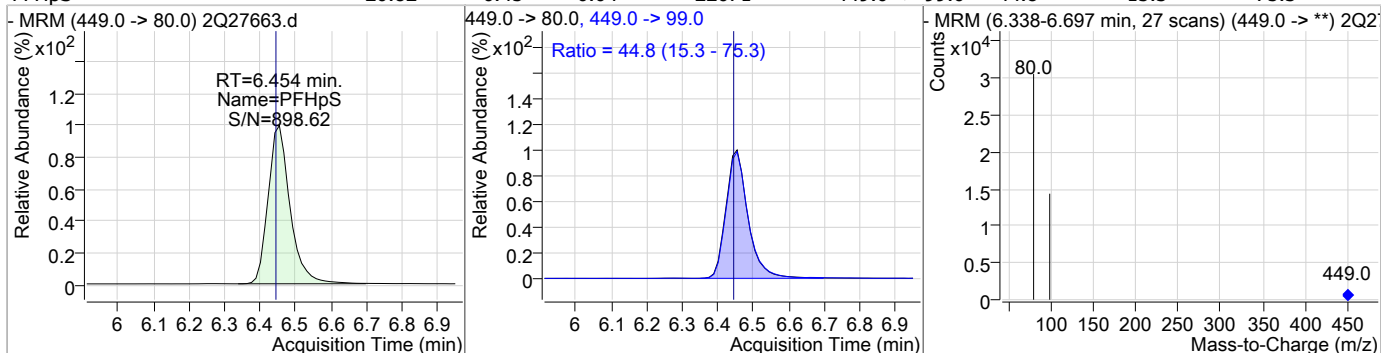
7

### Perfluorinated Compounds by LC/MS/MS

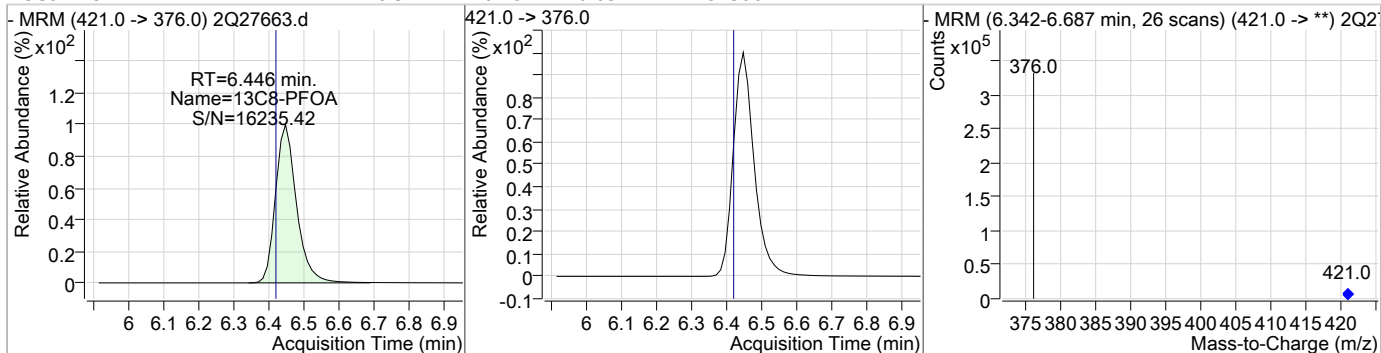
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 20.30 | 6.43 | 0.03     | 38392 | 427.0 -> 81.0 | 30.9   | 0.9  | 60.9 |



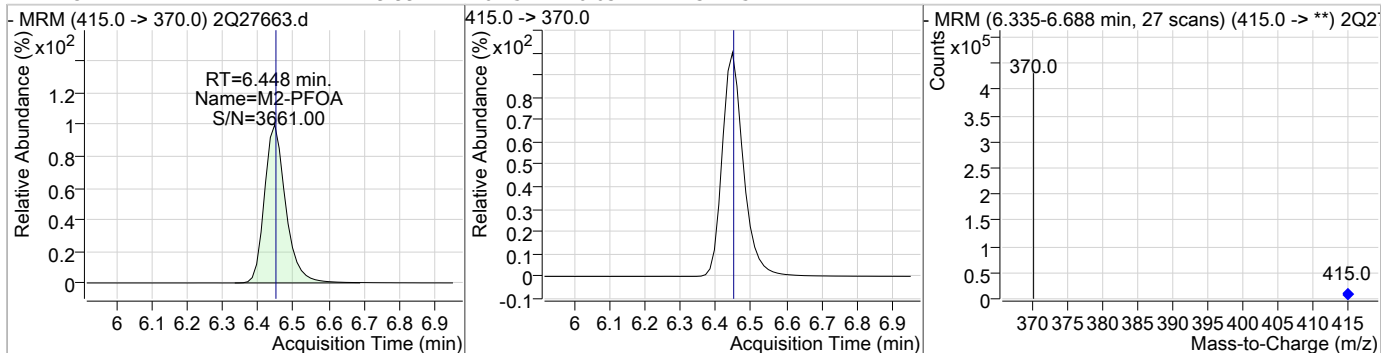
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 20.82 | 6.45 | 0.04     | 22671 | 449.0 -> 99.0 | 44.8   | 15.3 | 75.3 |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 16.94 | 6.45 | 0.03     | 252306 | 421.0 -> 376.0 |        |      |      |



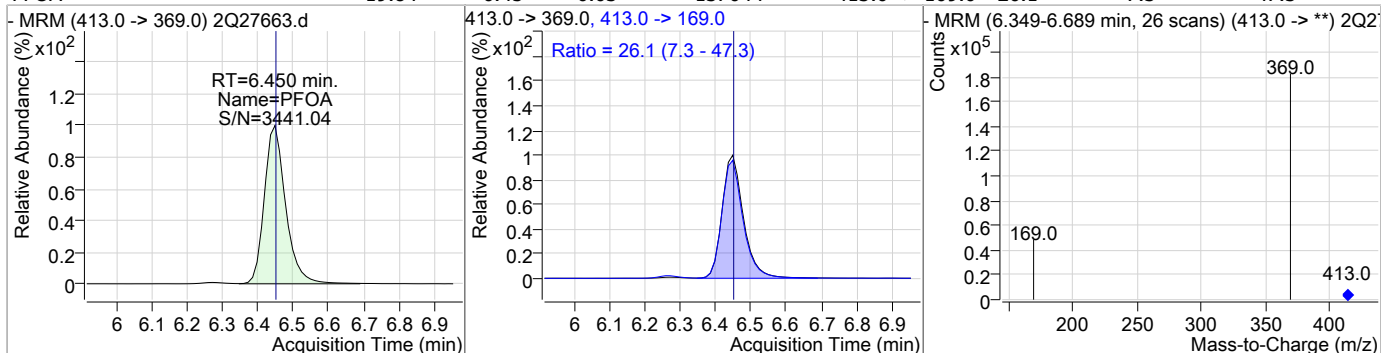
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| M2-PFOA  | 19.99 | 6.45 | 0.03     | 327257 | 415.0 -> 370.0 |        |      |      |



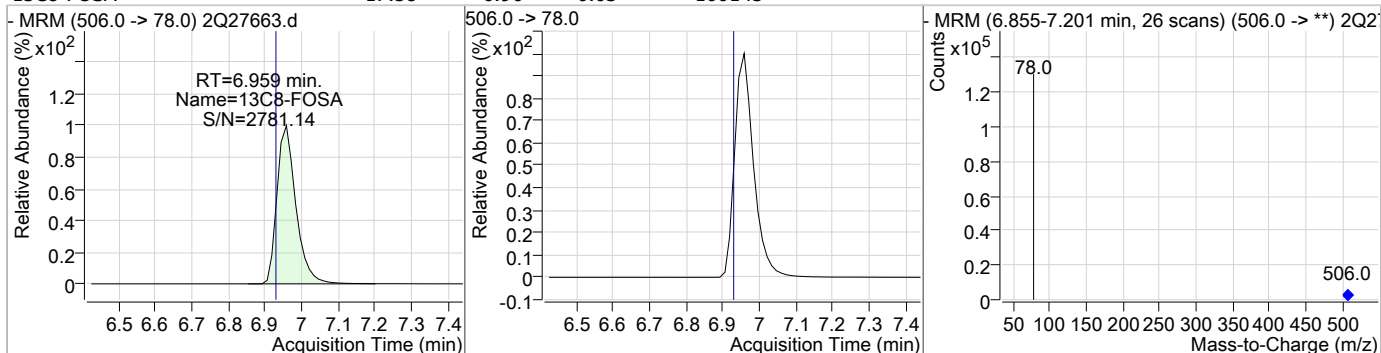
7.6.13  
7

### Perfluorinated Compounds by LC/MS/MS

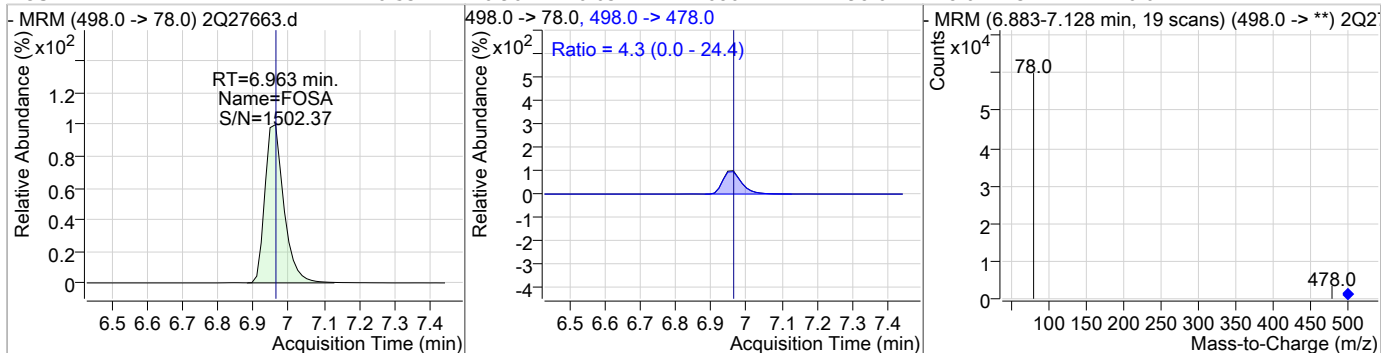
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.84 | 6.45 | 0.03     | 137044 | 413.0 -> 169.0 | 26.1   | 7.3  | 47.3 |



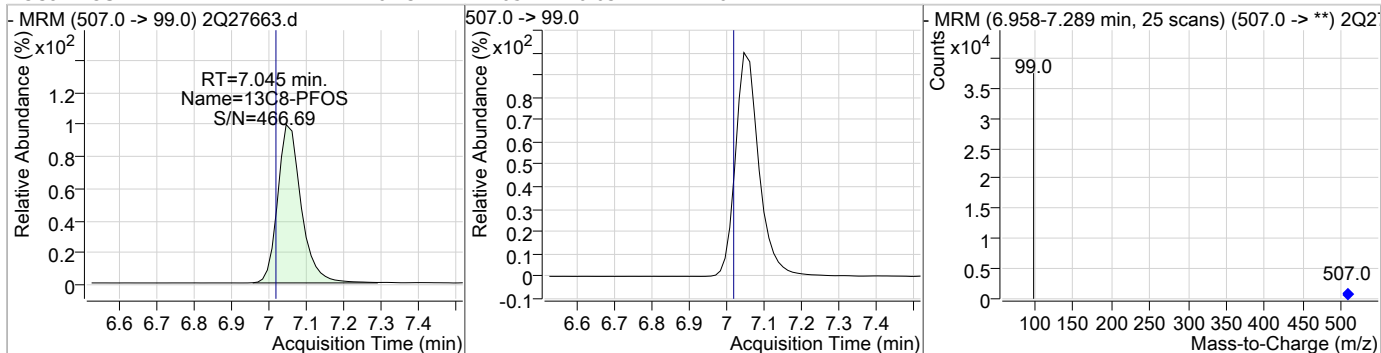
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-FOSA | 17.58 | 6.96 | 0.03     | 100145 |      |        |      |      |



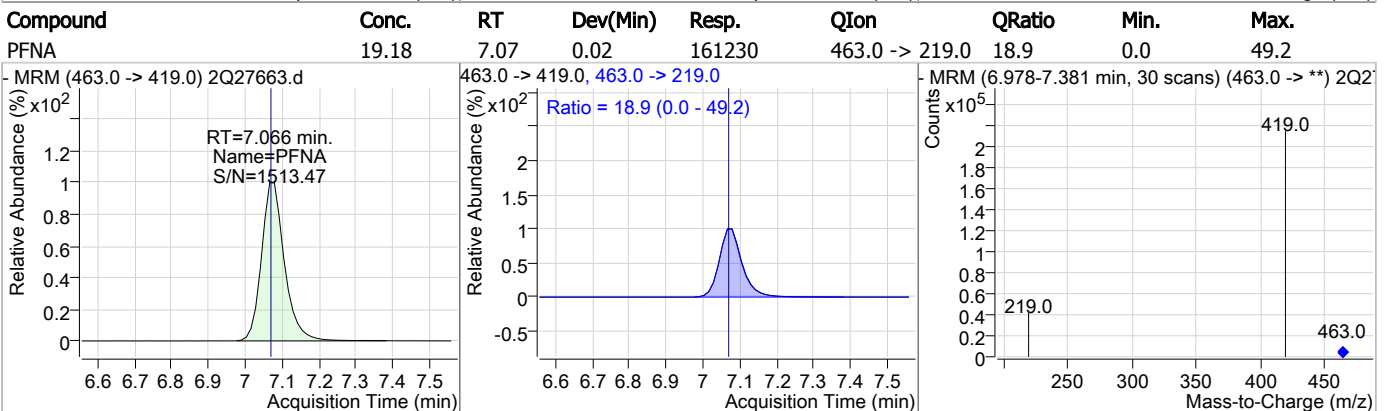
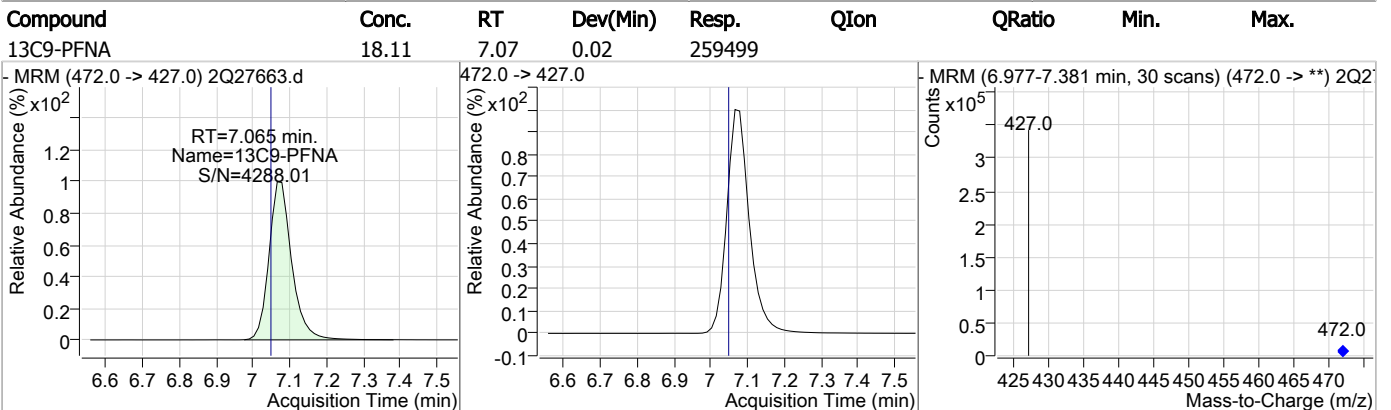
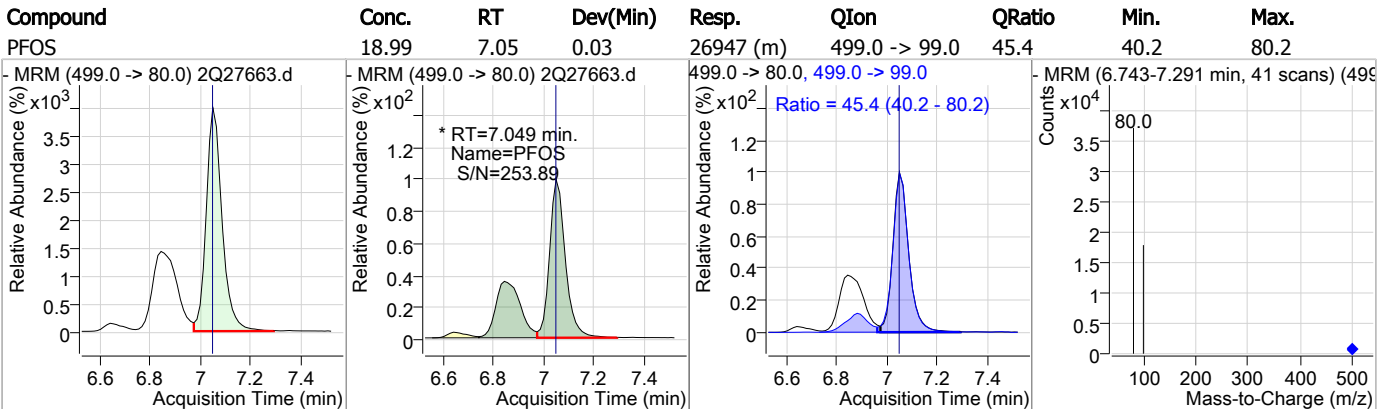
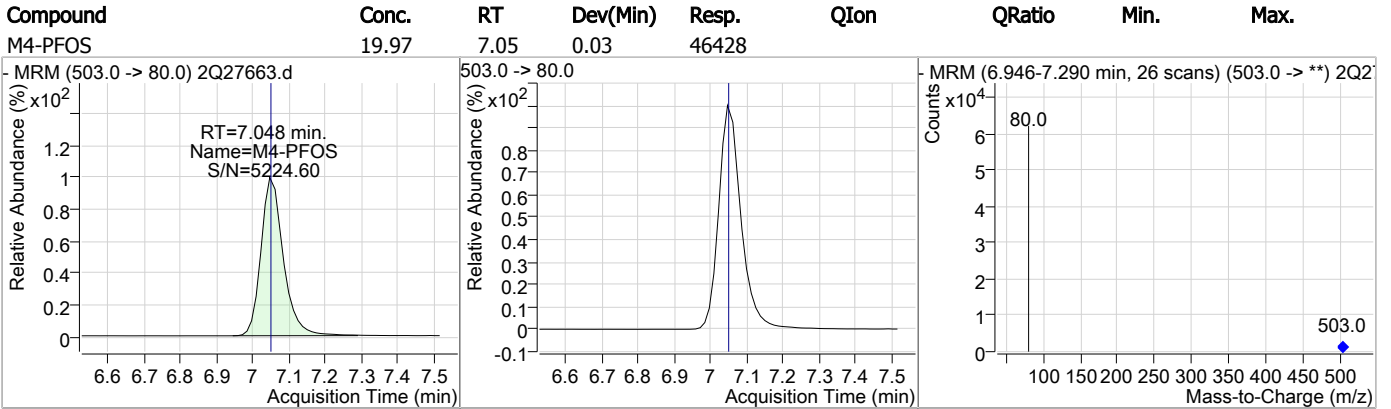
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 20.53 | 6.96 | 0.03     | 46862 | 498.0 -> 478.0 | 4.3    | 0.0  | 24.4 |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 16.73 | 7.05 | 0.03     | 27671 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS



7.6.13

7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9Cl-PF3ONS | 18.59 | 7.34 | 0.03     | 23922 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 18.78 | 7.46 | 0.03     | 44913 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 20.59 | 7.46 | 0.01     | 24559 | 570.0 -> 512.0 | 23.5   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 21.02 | 7.57 | 0.02     | 21783 | 549.0 -> 99.0  | 46.5   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

7.6.13  
7



### Perfluorinated Compounds by LC/MS/MS

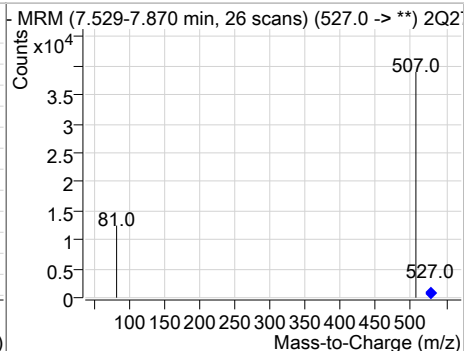
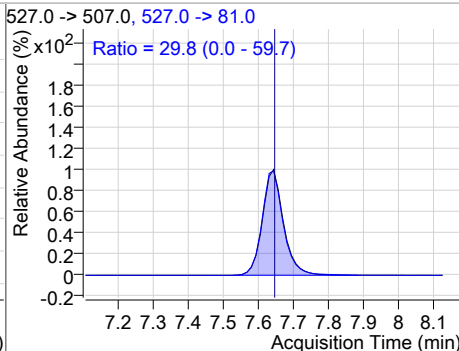
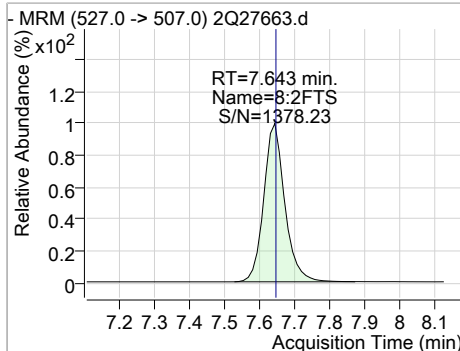
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA   | 18.83 | 7.61 | 0.03     | 348629 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDA        | 19.61 | 7.61 | 0.03     | 144390 | 513.0 -> 219.0 | 16.8   | 0.0  | 46.9 |
|             |       |      |          |        |                |        |      |      |
| EtFOSAA     | 20.53 | 7.60 | 0.02     | 20268  | 584.0 -> 483.0 | 51.9   | 31.7 | 71.7 |
|             |       |      |          |        |                |        |      |      |
| 13C2-8:2FTS | 18.98 | 7.64 | 0.03     | 53877  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |

7.6.13  
7

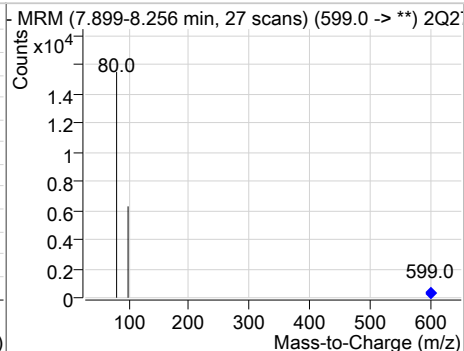
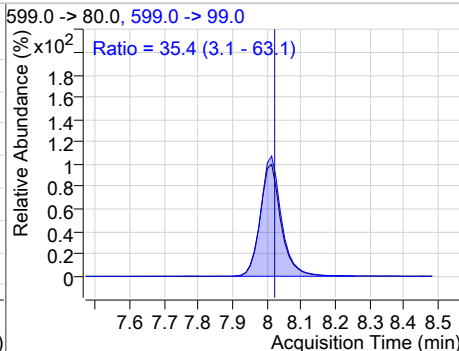
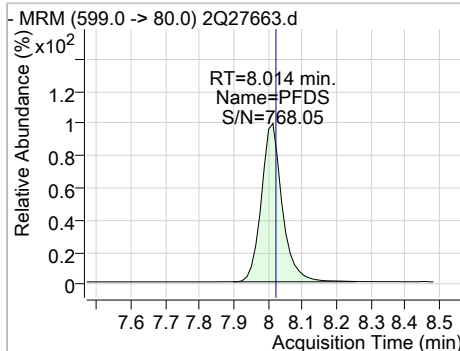


### Perfluorinated Compounds by LC/MS/MS

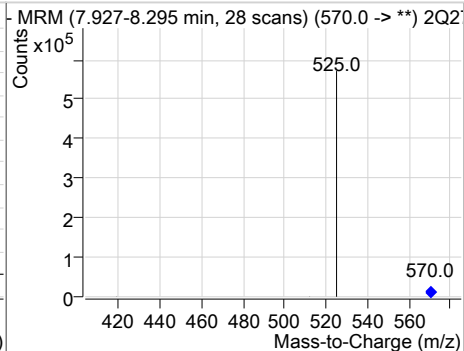
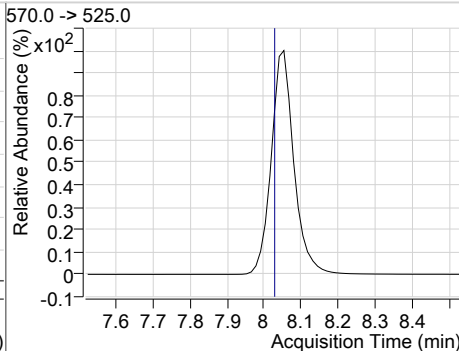
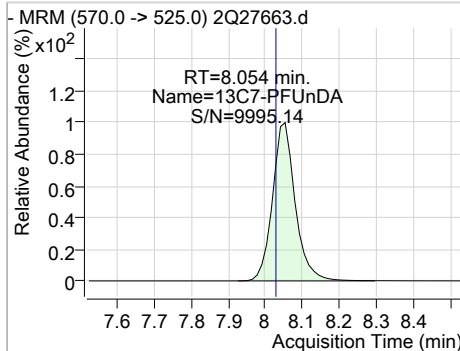
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 19.99 | 7.64 | 0.03     | 28489 | 527.0 -> 81.0 | 29.8   | 0.0  | 59.7 |



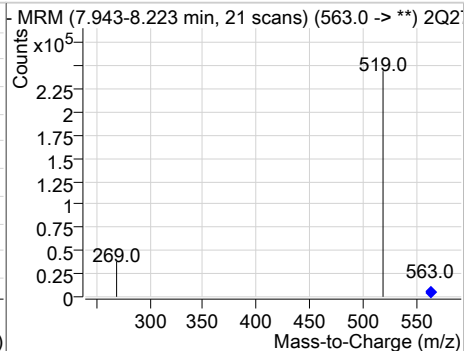
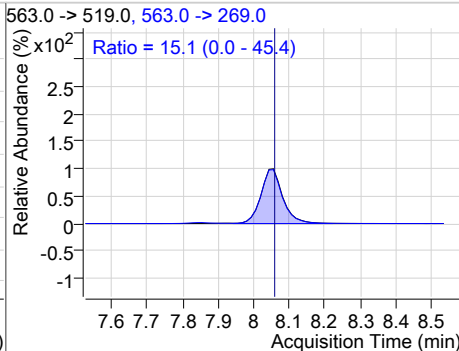
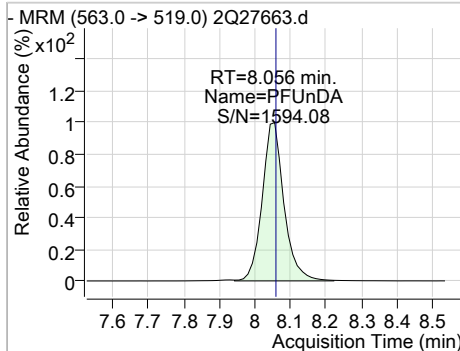
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 19.76 | 8.01 | 0.03     | 10807 | 599.0 -> 99.0 | 35.4   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 18.17 | 8.05 | 0.03     | 435222 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 20.05 | 8.06 | 0.03     | 184761 | 563.0 -> 269.0 | 15.1   | 0.0  | 45.4 |



7.6.13  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 18.41 | 8.20 | 0.01     | 116006 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 17.80 | 8.47 | 0.02     | 496868 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 19.81 | 8.47 | 0.02     | 231132 | 613.0 -> 319.0 | 12.4   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 20.25 | 8.92 | 0.02     | 231496 | 663.0 -> 369.0 | 6.5    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

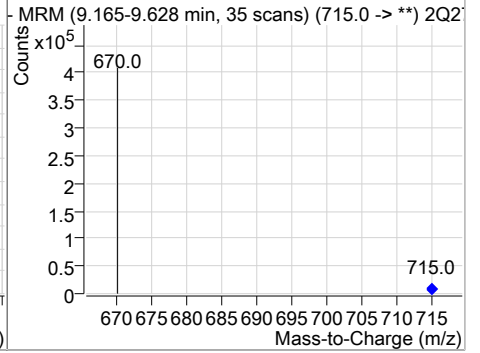
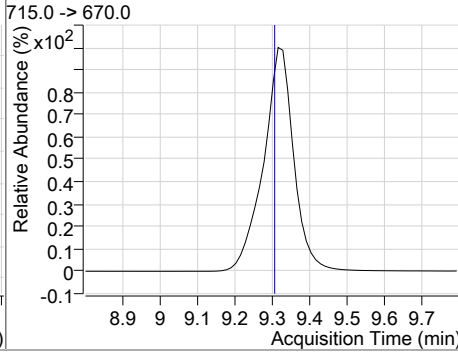
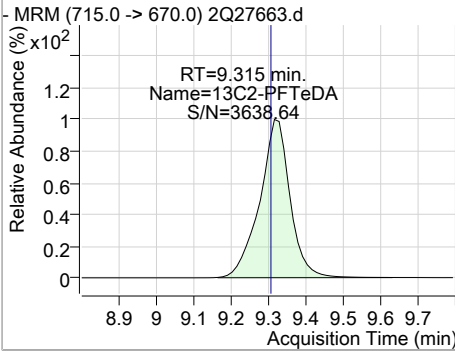
7.6.13

7

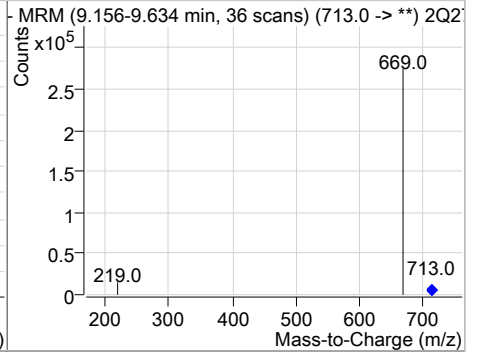
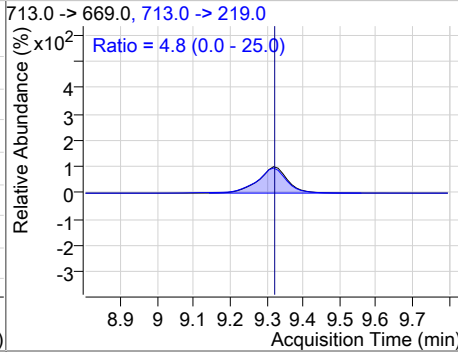
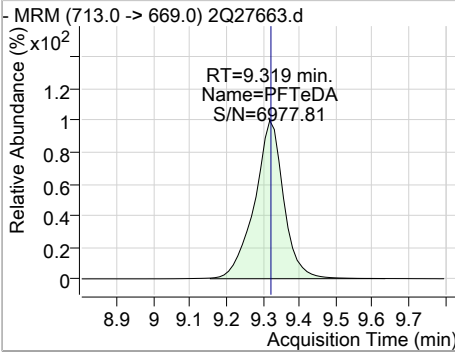


### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 15.69 | 9.31 | 0.01     | 303342 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.62 | 9.32 | 0.01     | 203871 | 713.0 -> 219.0 | 4.8    | 0.0  | 25.0 |



7.6.13  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q441-ECC439      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27663.D      **Analyst approved:** 03/18/19 08:53 Nancy Saunders  
**Injection Time:** 03/15/19 18:43      **Supervisor approved:** 03/18/19 13:59 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.6.13.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27667.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 8:18:31 AM  
 Sample Name : IC442-0.5  
 Vial : Vial 2  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 299448 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 48055  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 126091 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 107090 | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.776                | 318.0 -> 273.0 | 153864 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.693                | 367.0 -> 322.0 | 219389 | 20.00 µg/L        | -0.013   |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 222345 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 222059 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 289682 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 350380 | 20.00 µg/L        | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 380854 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 261787 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 89064  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 19561  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 21796  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 28319  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 59534  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 64438  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 43344  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 40197  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 168010 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 59520  | 20.02 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 64509  | 20.10 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.5% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 43348  | 19.55 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.7%  |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 381325 | 20.27 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.4% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 260655 | 20.30 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 19519  | 21.41 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.0% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 21786  | 21.37 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.9% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 125531 | 20.93 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.7% |          |
| 13C4-PFHpA                         | 5.693                | 367.0 -> 322.0 | 219198 | 21.19 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.0% |          |
| 13C5-PFHxA                         | 4.776                | 318.0 -> 273.0 | 153709 | 21.15 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.8% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 106481 | 20.95 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.7% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 289679 | 21.23 µg/L        | 0.000    |

7.6.14  
7

Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.1% |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 350546 | 20.71 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.6% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 89010  | 21.95 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.8% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 222515 | 21.33 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.7% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 28299  | 21.71 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.5% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 221802 | 20.95 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.7% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 40201  | 20.97 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 299633 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 48005  | 19.97 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.8%  |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 168010 | 105.07 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 105.1% |          |

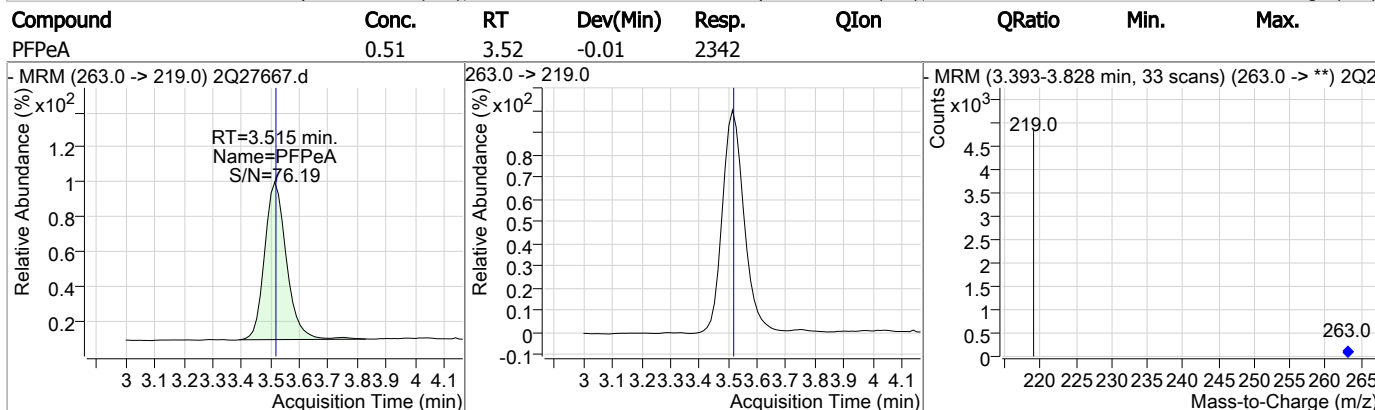
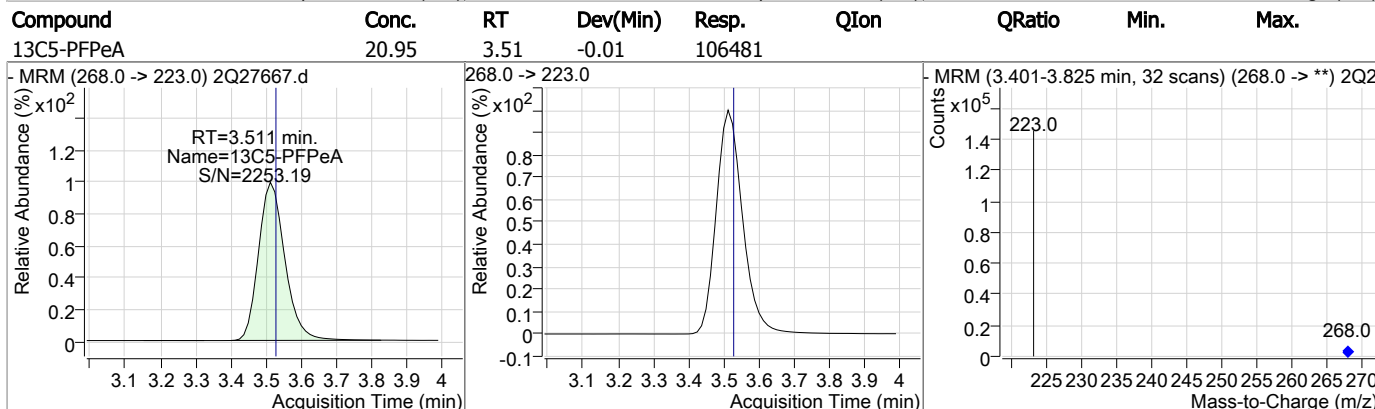
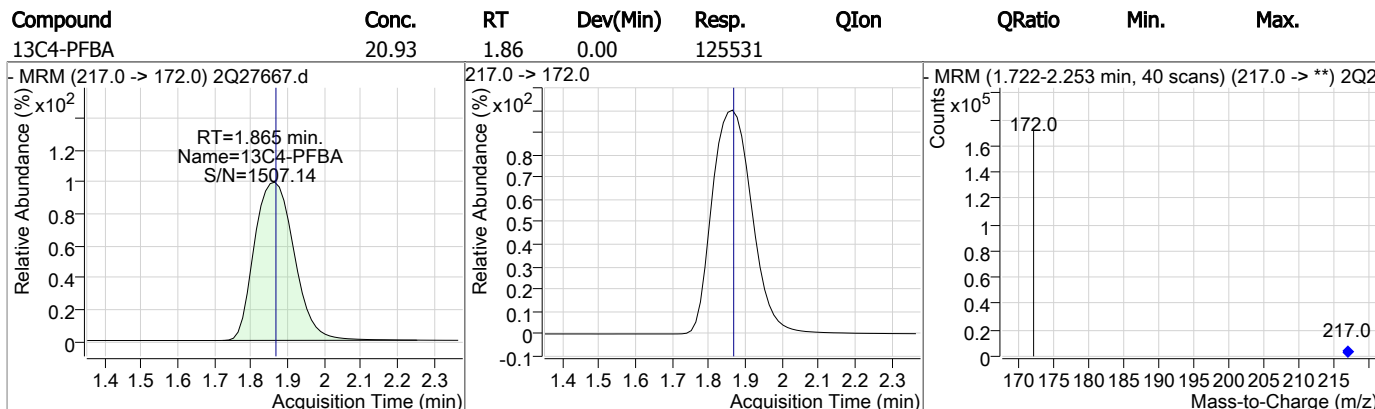
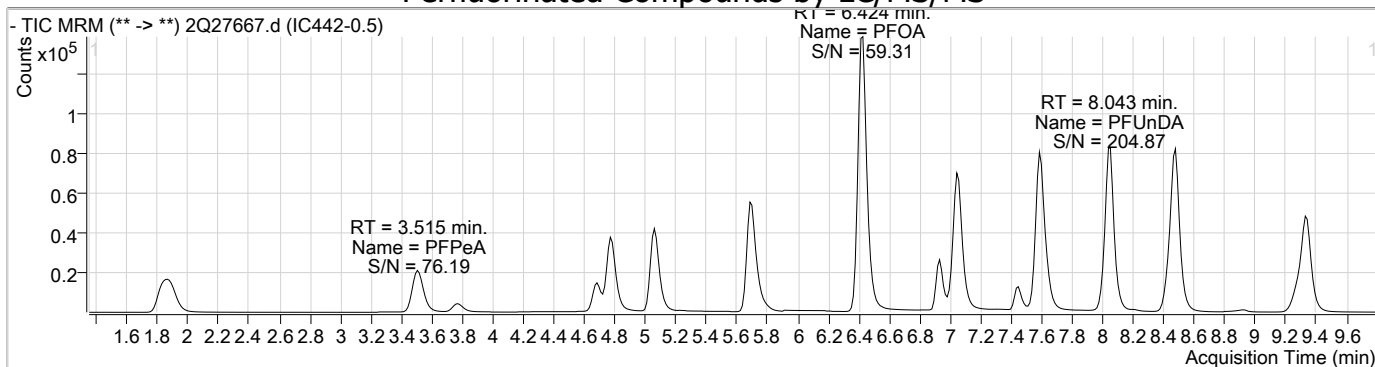
Target Compounds

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | 4.687 | 327.0 -> 307.0 | 830   | 0.51 µg/L   | 89     |
| 6:2FTS       | 6.418 | 427.0 -> 407.0 | 852   | 0.54 µg/L   | 99     |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 581   | 0.54 µg/L   | 97     |
| EtFOSAA      | 7.585 | 584.0 -> 419.0 | 425   | 0.49 µg/L   | 92     |
| FOSA         | 6.935 | 498.0 -> 78.0  | 992   | 0.49 µg/L   | 99     |
| MeFOSAA      | 7.447 | 570.0 -> 419.0 | 446   | 0.44 µg/L   | 98     |
| PFBA         | 1.873 | 213.0 -> 169.0 | 595   | 0.48 µg/L   | 100    |
| PFBS         | 3.771 | 299.0 -> 80.0  | 753   | 0.49 µg/L   | 93     |
| PFDA         | 7.595 | 513.0 -> 469.0 | 2954  | 0.47 µg/L   | 98     |
| PFDoDA       | 8.480 | 613.0 -> 569.0 | 3992  | 0.47 µg/L   | 98     |
| PFDS         | 8.014 | 599.0 -> 80.0  | 262   | 0.50 µg/L   | 100    |
| PFHpA        | 5.695 | 363.0 -> 319.0 | 4341  | 0.46 µg/L   | 99     |
| PFHpS        | 6.429 | 449.0 -> 80.0  | 508   | 0.48 µg/L   | 97     |
| PFHxA        | 4.778 | 313.0 -> 269.0 | 1263  | 0.48 µg/L   | 97     |
| PFHxS        | 5.739 | 399.0 -> 80.0  | 587   | 0.49 µg/L   | m 97   |
| PFNA         | 7.053 | 463.0 -> 419.0 | 3416  | 0.46 µg/L   | 98     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 414   | 0.43 µg/L   | 79     |
| PFOA         | 6.424 | 413.0 -> 369.0 | 2817  | 0.47 µg/L   | 99     |
| PFOS         | 7.037 | 499.0 -> 80.0  | 649   | 0.47 µg/L   | m 77   |
| PFPeA        | 3.515 | 263.0 -> 219.0 | 2342  | 0.51 µg/L   | 100    |
| PFPeS        | 4.895 | 349.0 -> 80.0  | 499   | 0.50 µg/L   | 95     |
| PFTeDA       | 9.332 | 713.0 -> 669.0 | 4419  | 0.48 µg/L   | 98     |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 4387  | 0.46 µg/L   | 99     |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 3234  | 0.45 µg/L   | 96     |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 2755  | 0.53 µg/L   | 100    |
| 9Cl-PF3ONS   | 7.323 | 531.0 -> 351.0 | 510   | 0.48 µg/L   | 100    |
| ADONA        | 5.804 | 377.0 -> 251.0 | 5096  | 0.47 µg/L   | 100    |
| HFPO-DA      | 5.060 | 329.0 -> 169.0 | 4827  | 2.42 µg/L   | 96     |

# = Qualifier out of range, m = manually integrated, + = Area summed

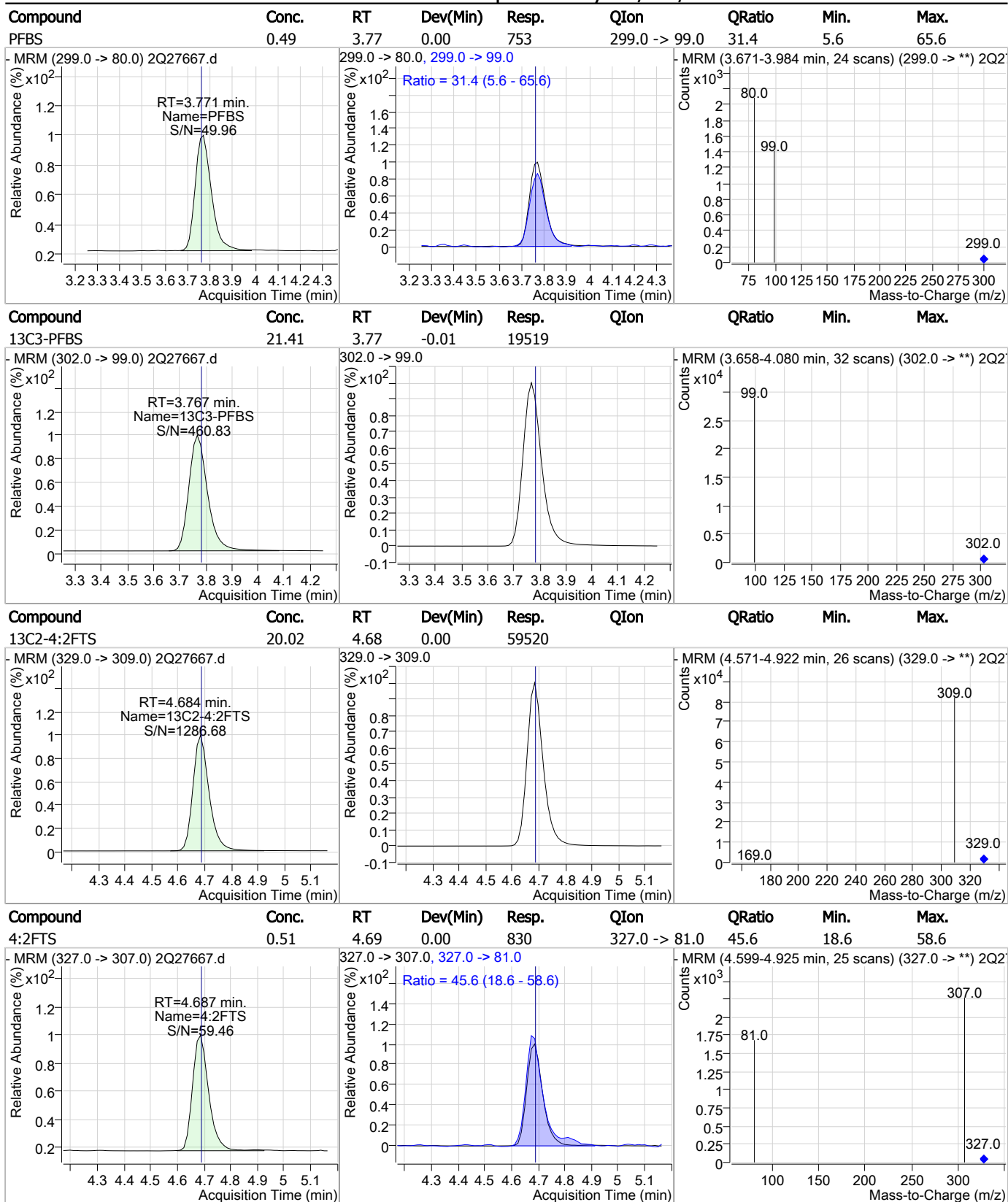
7.6.14  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.14  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.14

7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon     | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------|--------|------|------|
| 13C5-PFHxA | 21.15 | 4.78 | -0.01    | 153709 |          |        |      |      |
|            |       |      |          |        |          |        |      |      |
| PFHxA      | 0.48  | 4.78 | -0.01    | 1263   | 313.0 -> | 119.0  | 12.8 | 0.0  |
|            |       |      |          |        |          |        |      |      |
| PFPeS      | 0.50  | 4.90 | 0.00     | 499    | 349.0 -> | 99.0   | 32.1 | 5.1  |
|            |       |      |          |        |          |        |      |      |
| HFPO-DA    | 2.42  | 5.06 | 0.00     | 4827   | 285.0 -> | 169.0  | 25.3 | 18.6 |
|            |       |      |          |        |          |        |      |      |

7.6.14

7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|----------------|--------|------|------|
| 13C3-HFPO-DA | 105.07 | 5.07 | 0.00     | 168010 |                |        |      |      |
|              |        |      |          |        |                |        |      |      |
| 13C4-PFHpA   | 21.19  | 5.69 | -0.01    | 219198 |                |        |      |      |
|              |        |      |          |        |                |        |      |      |
| PFHpA        | 0.46   | 5.70 | -0.01    | 4341   | 363.0 -> 169.0 | 6.0    | 0.0  | 36.3 |
|              |        |      |          |        |                |        |      |      |
| 13C3-PFHxS   | 21.37  | 5.74 | 0.00     | 21786  |                |        |      |      |
|              |        |      |          |        |                |        |      |      |

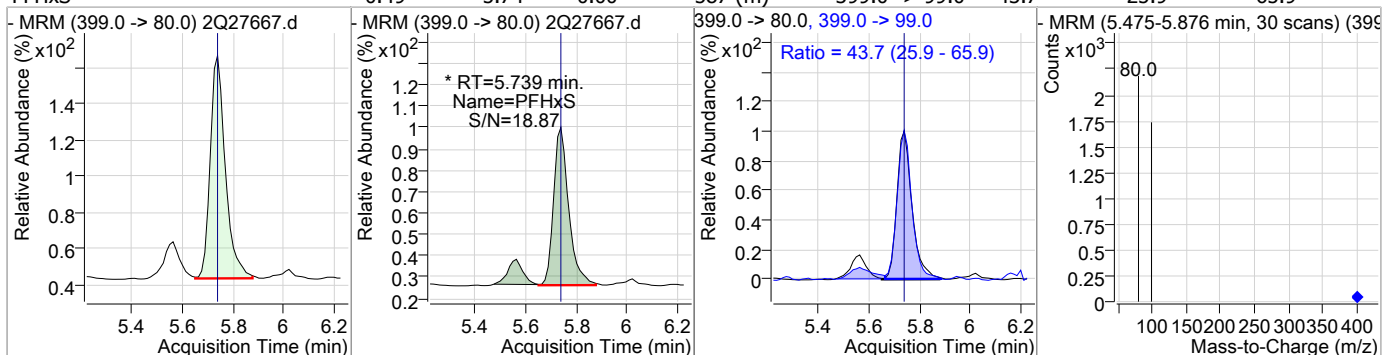
7.6.14  
7



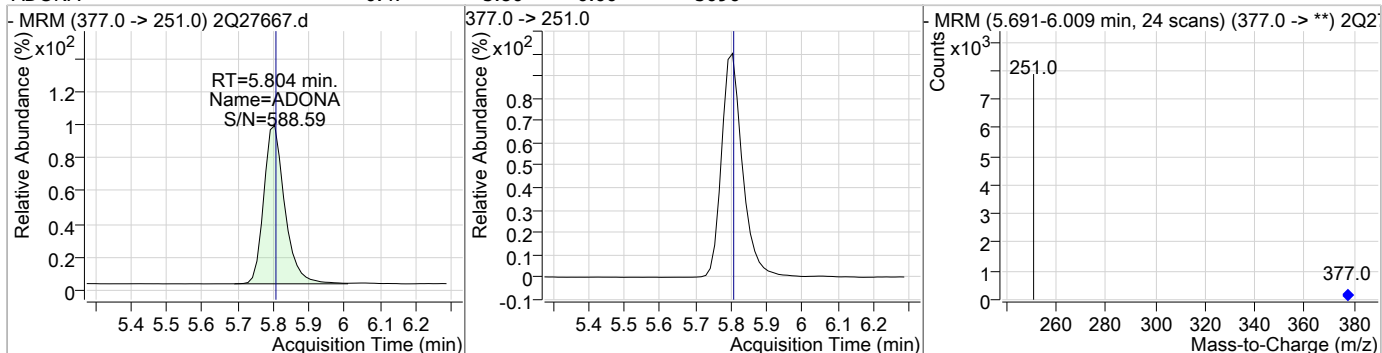


### Perfluorinated Compounds by LC/MS/MS

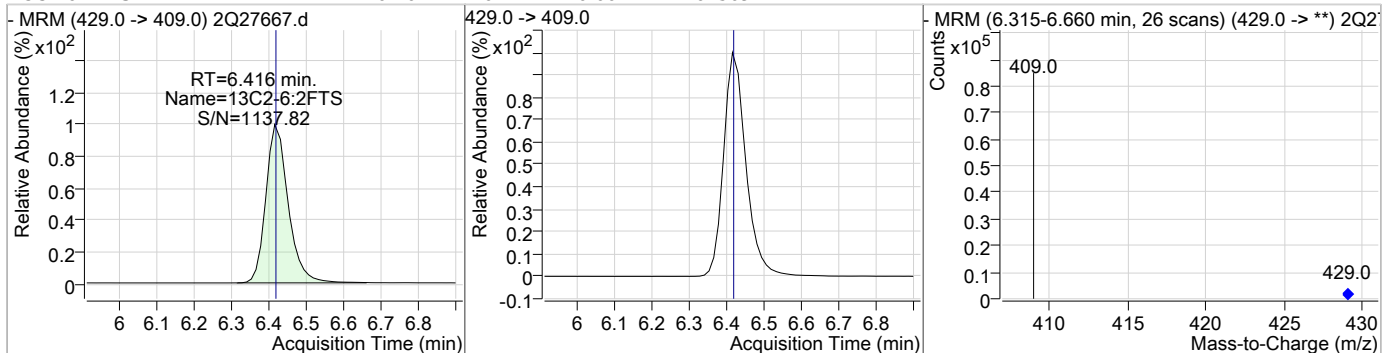
| Compound | Conc. | RT   | Dev(Min) | Resp.   | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|---------|---------------|--------|------|------|
| PFHxS    | 0.49  | 5.74 | 0.00     | 587 (m) | 399.0 -> 99.0 | 43.7   | 25.9 | 65.9 |



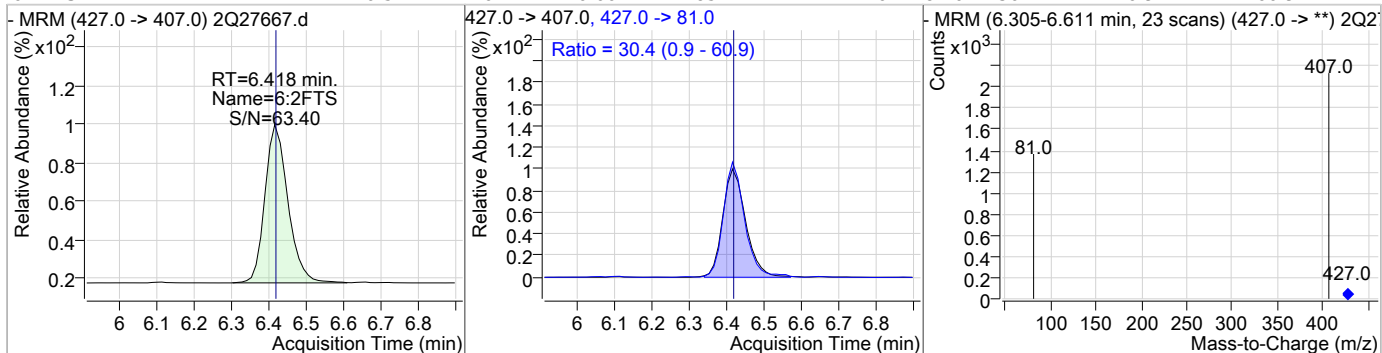
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| ADONA    | 0.47  | 5.80 | 0.00     | 5096  |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-6:2FTS | 20.10 | 6.42 | 0.00     | 64509 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 0.54  | 6.42 | 0.00     | 852   | 427.0 -> 81.0 | 30.4   | 0.9  | 60.9 |



7.6.14  
7

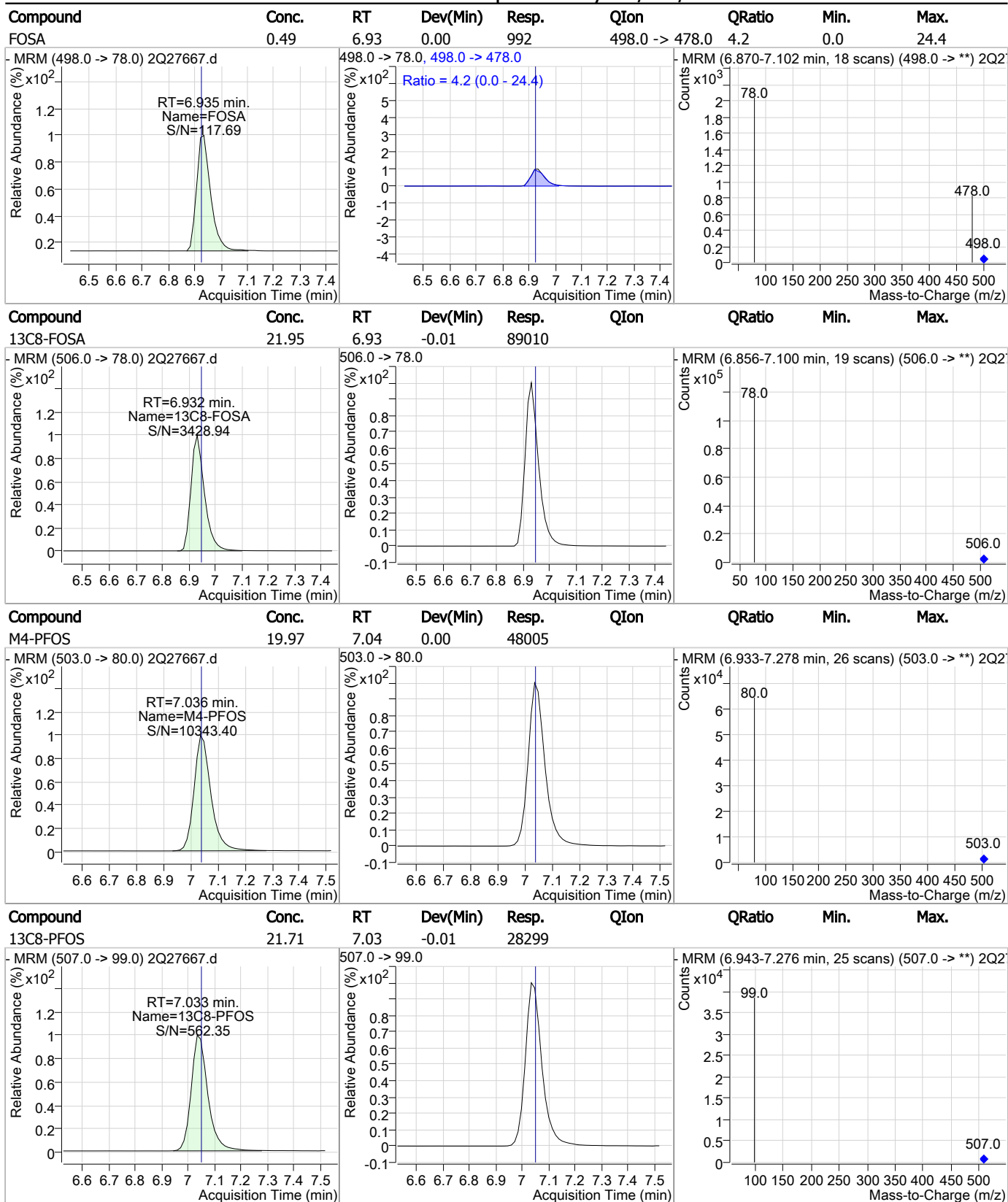
### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 21.33 | 6.43 | 0.00     | 222515 |                |        |      |      |
|           |       |      |          |        |                |        |      |      |
| M2-PFOA   | 19.99 | 6.44 | 0.00     | 299633 |                |        |      |      |
|           |       |      |          |        |                |        |      |      |
| PFOA      | 0.47  | 6.42 | -0.01    | 2817   | 413.0 -> 169.0 | 26.9   | 7.3  | 47.3 |
|           |       |      |          |        |                |        |      |      |
| PFHpS     | 0.48  | 6.43 | -0.01    | 508    | 449.0 -> 99.0  | 47.3   | 15.3 | 75.3 |
|           |       |      |          |        |                |        |      |      |

7.6.14



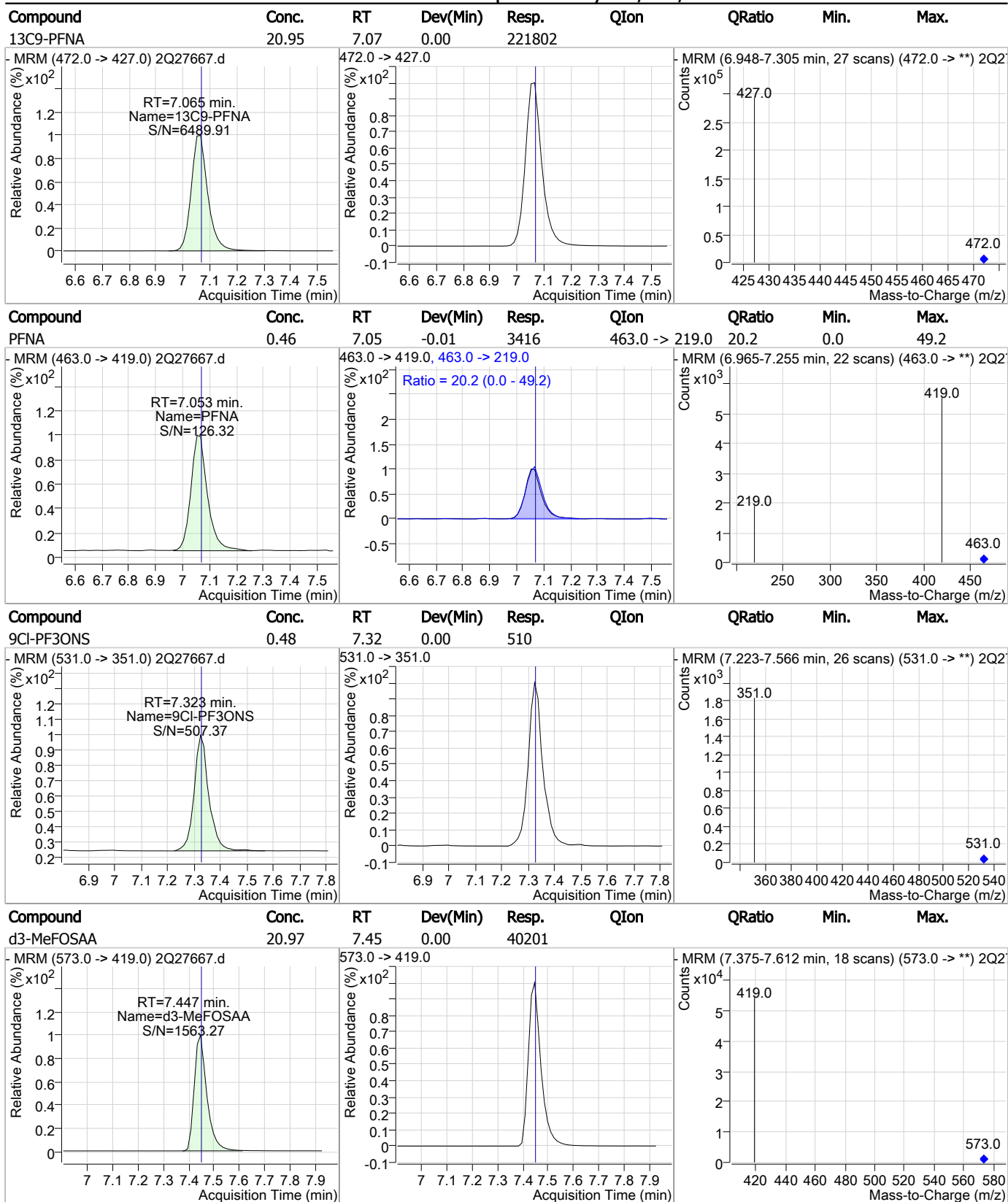
### Perfluorinated Compounds by LC/MS/MS



7.6.14

7

### Perfluorinated Compounds by LC/MS/MS

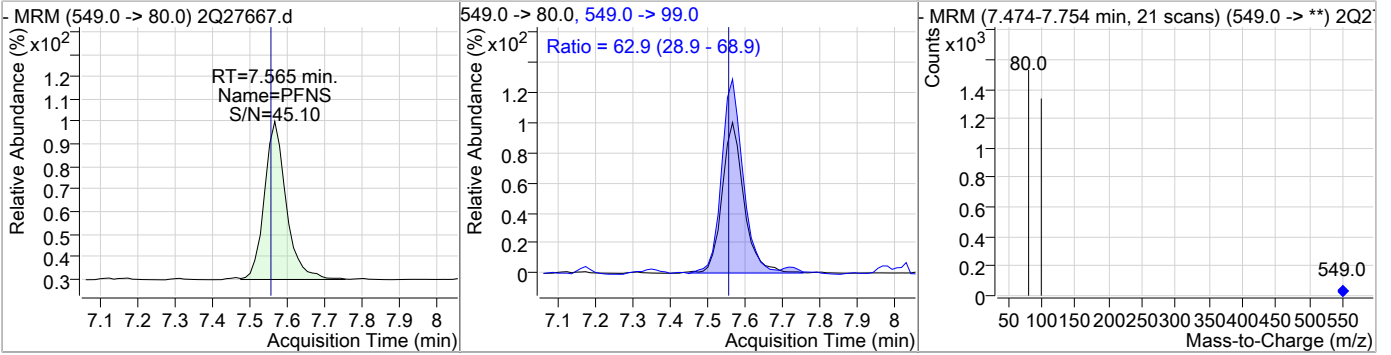


7.6.14

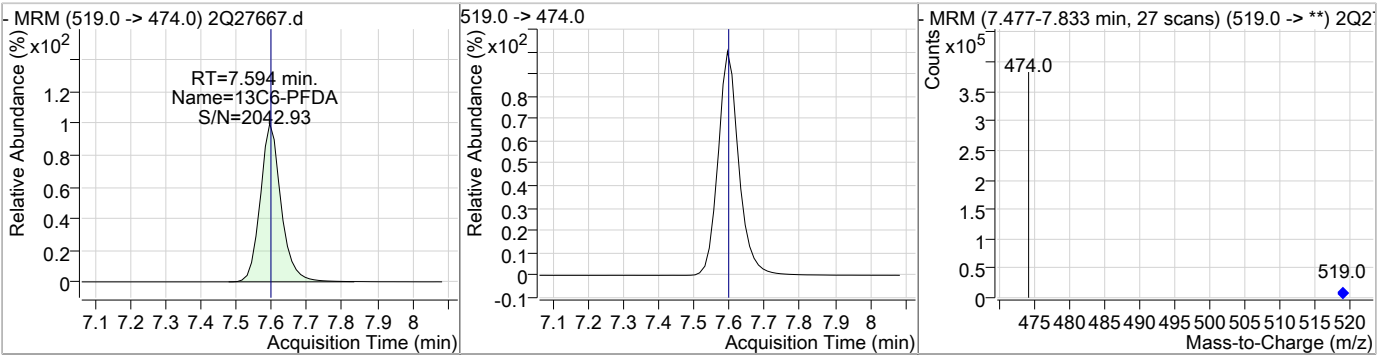
7

### Perfluorinated Compounds by LC/MS/MS

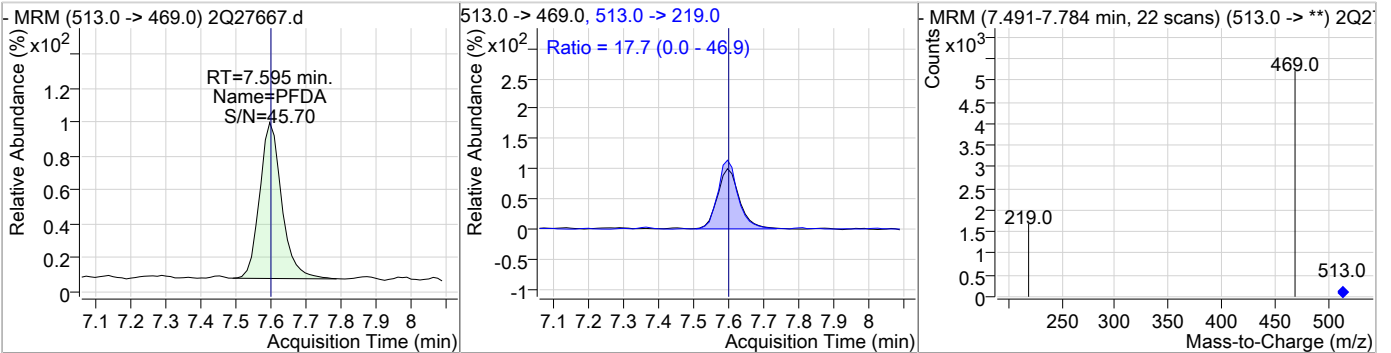
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFNS     | 0.43  | 7.57 | 0.00     | 414   | 549.0 -> 99.0 | 62.9   | 28.9 | 68.9 |



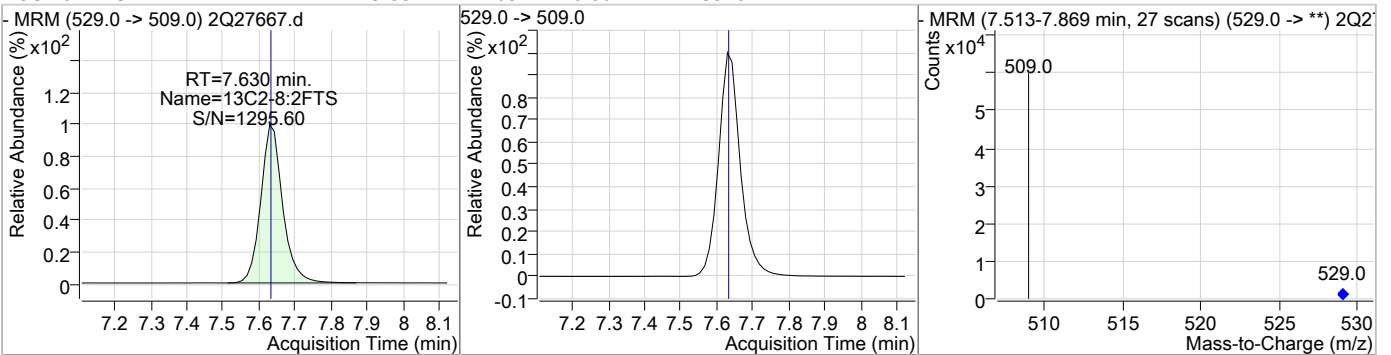
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C6-PFDA | 21.23 | 7.59 | 0.00     | 289679 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFDA     | 0.47  | 7.60 | 0.00     | 2954  | 513.0 -> 219.0 | 17.7   | 0.0  | 46.9 |

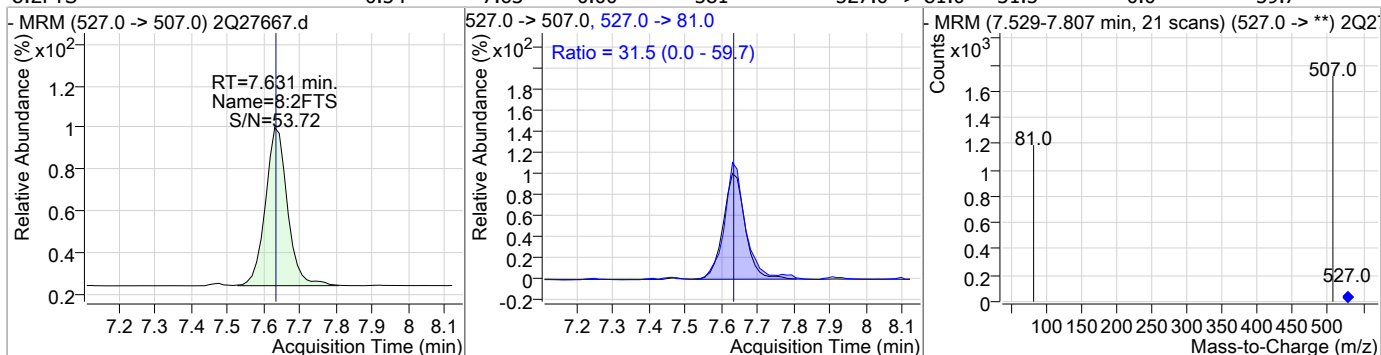


| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-8:2FTS | 19.55 | 7.63 | 0.00     | 43348 |      |        |      |      |

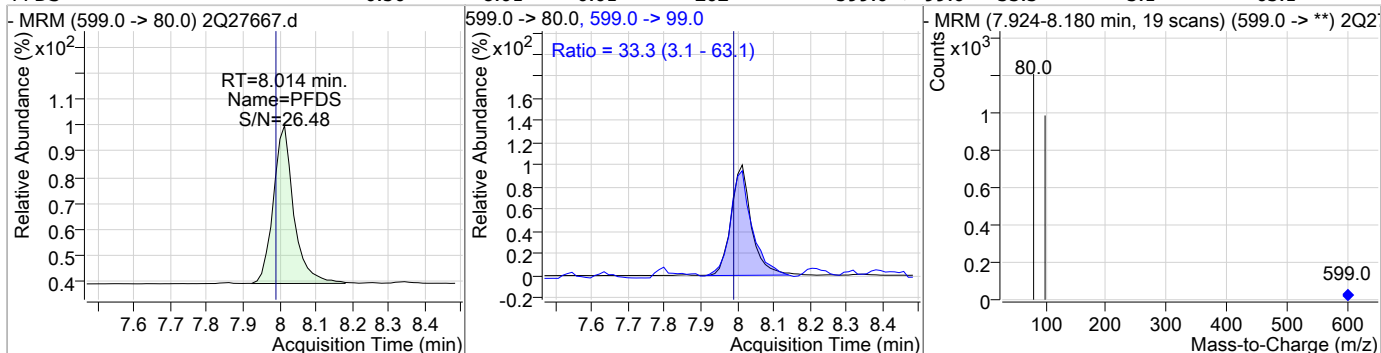


### Perfluorinated Compounds by LC/MS/MS

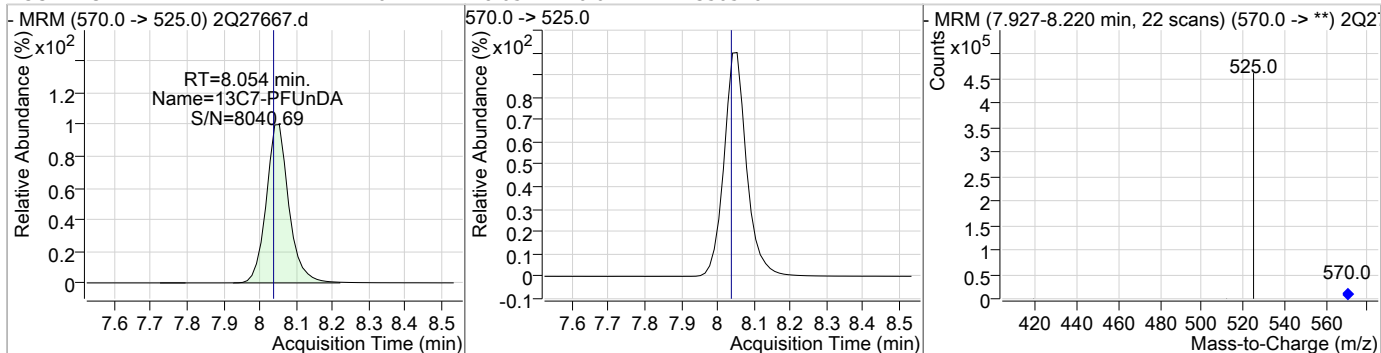
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 0.54  | 7.63 | 0.00     | 581   | 527.0 -> 81.0 | 31.5   | 0.0  | 59.7 |



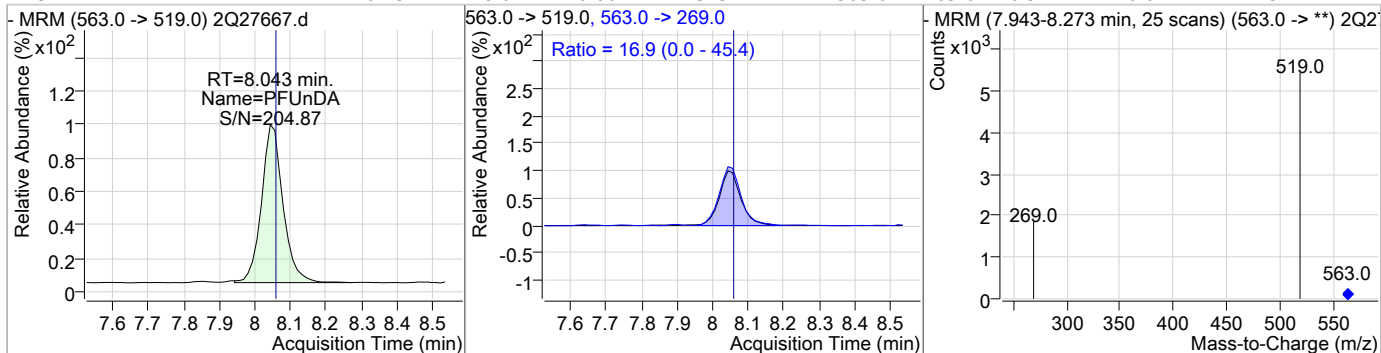
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 0.50  | 8.01 | 0.01     | 262   | 599.0 -> 99.0 | 33.3   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 20.71 | 8.05 | 0.01     | 350546 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFUnDA   | 0.45  | 8.04 | 0.00     | 3234  | 563.0 -> 269.0 | 16.9   | 0.0  | 45.4 |



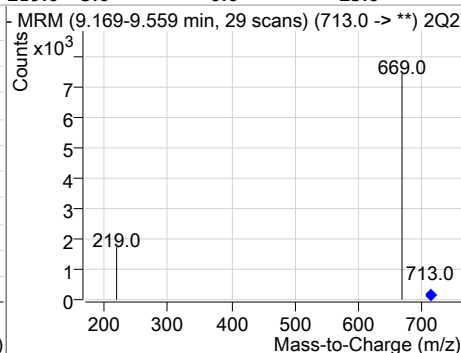
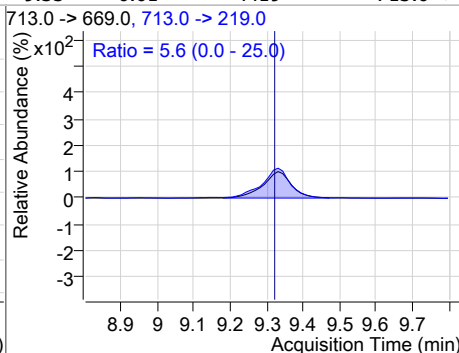
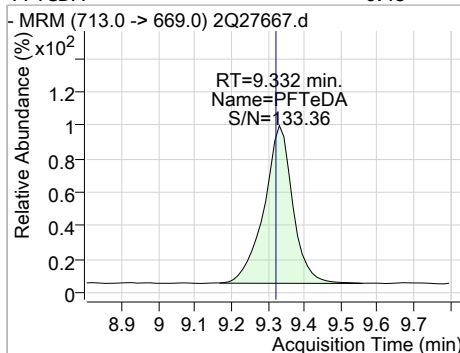
### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 0.53  | 8.20 | 0.00     | 2755   |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 20.27 | 8.48 | 0.01     | 381325 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 0.47  | 8.48 | 0.01     | 3992   | 613.0 -> 319.0 | 13.2   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 0.46  | 8.92 | 0.00     | 4387   | 663.0 -> 369.0 | 6.9    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

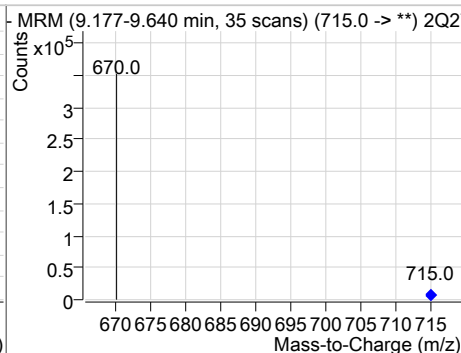
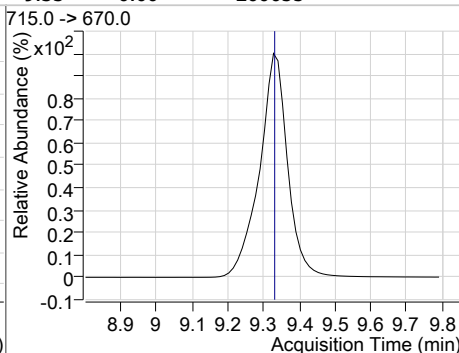
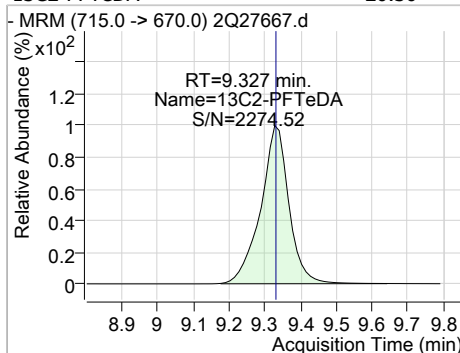
7.6.14  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 0.48  | 9.33 | 0.01     | 4419  | 713.0 -> 219.0 | 5.6    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.30 | 9.33 | 0.00     | 260655 |      |        |      |      |



7.6.14  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-IC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27667.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 08:18      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.14.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27668.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 8:34:20 AM  
 Sample Name : IC442-1.0  
 Vial : Vial 3  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 300424 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 47993  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 126023 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 105840 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 152335 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 216477 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 221022 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 220266 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 284714 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 351258 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 381204 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 258559 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 87684  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 19148  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 21789  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 27340  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 58391  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 63327  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 42612  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 38838  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 173054 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 58212  | 19.58 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.9%  |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 63312  | 19.73 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.6%  |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 42601  | 19.21 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.1%  |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 380634 | 20.24 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.2% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 257683 | 20.07 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.4% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 19097  | 20.94 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.7% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 21759  | 21.34 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.7% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 125482 | 20.93 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.6% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 216418 | 20.92 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.6% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 152076 | 20.93 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.6% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 105846 | 20.82 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.1% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 283962 | 20.81 µg/L        | 0.000    |

7.6.15  
7

## Perfluorinated Compounds by LC/MS/MS

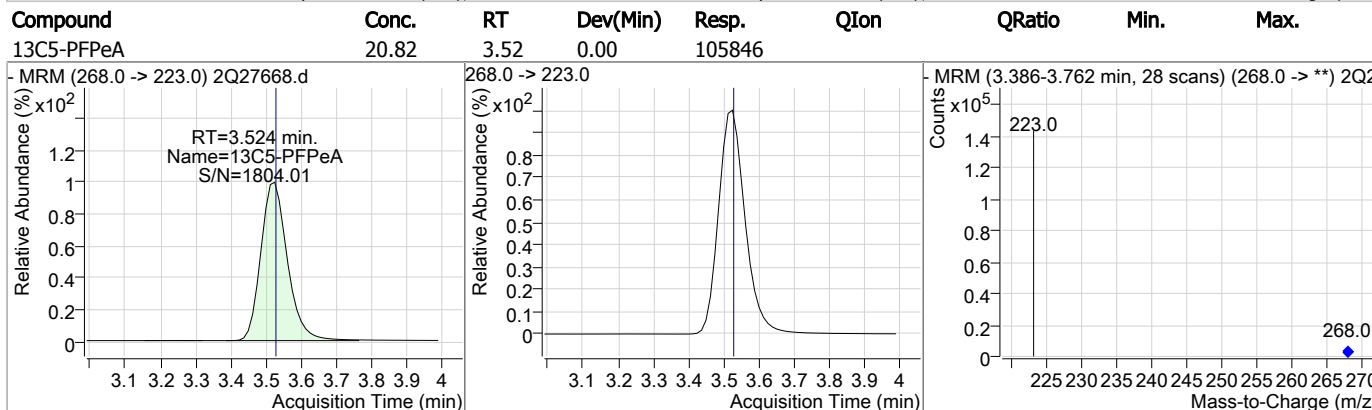
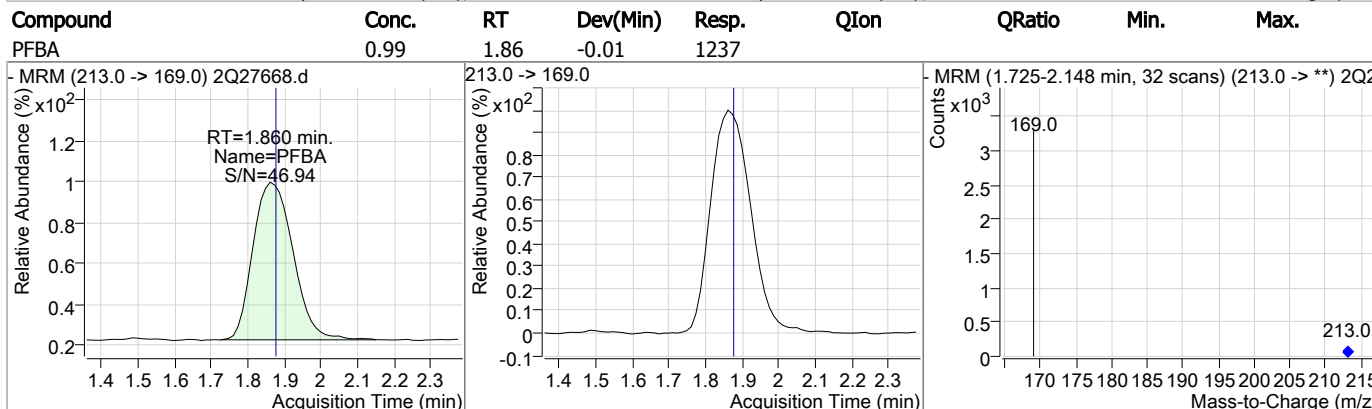
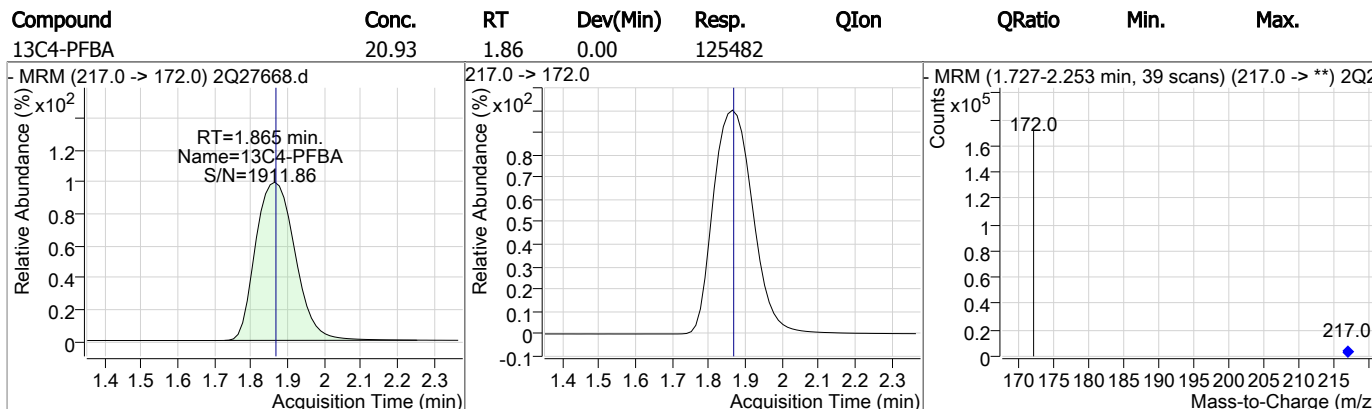
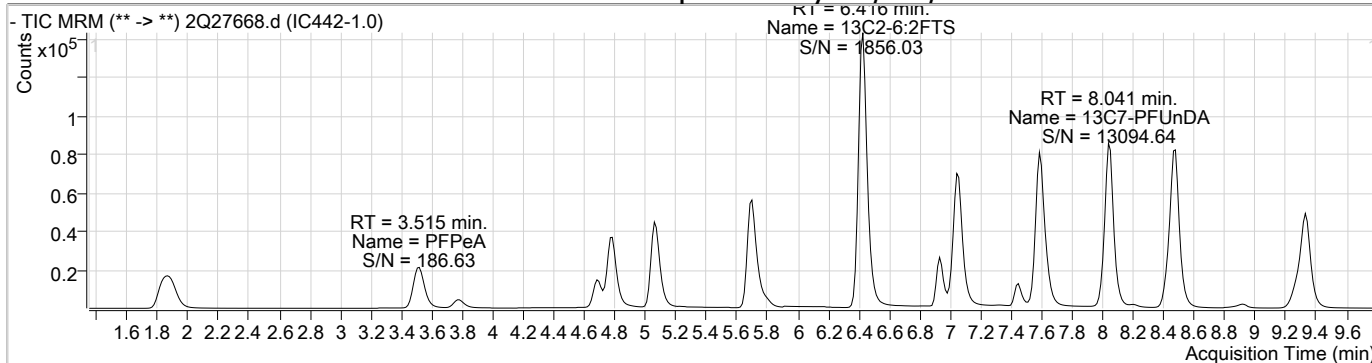
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 351164 | 20.75 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.7% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 87701  | 21.63 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.1% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 220862 | 21.17 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.9% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 27343  | 20.98 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 220168 | 20.79 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 38899  | 20.29 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 300789 | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 48057  | 20.02 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 173054 | 108.22 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 108.2% |          |

## Target Compounds

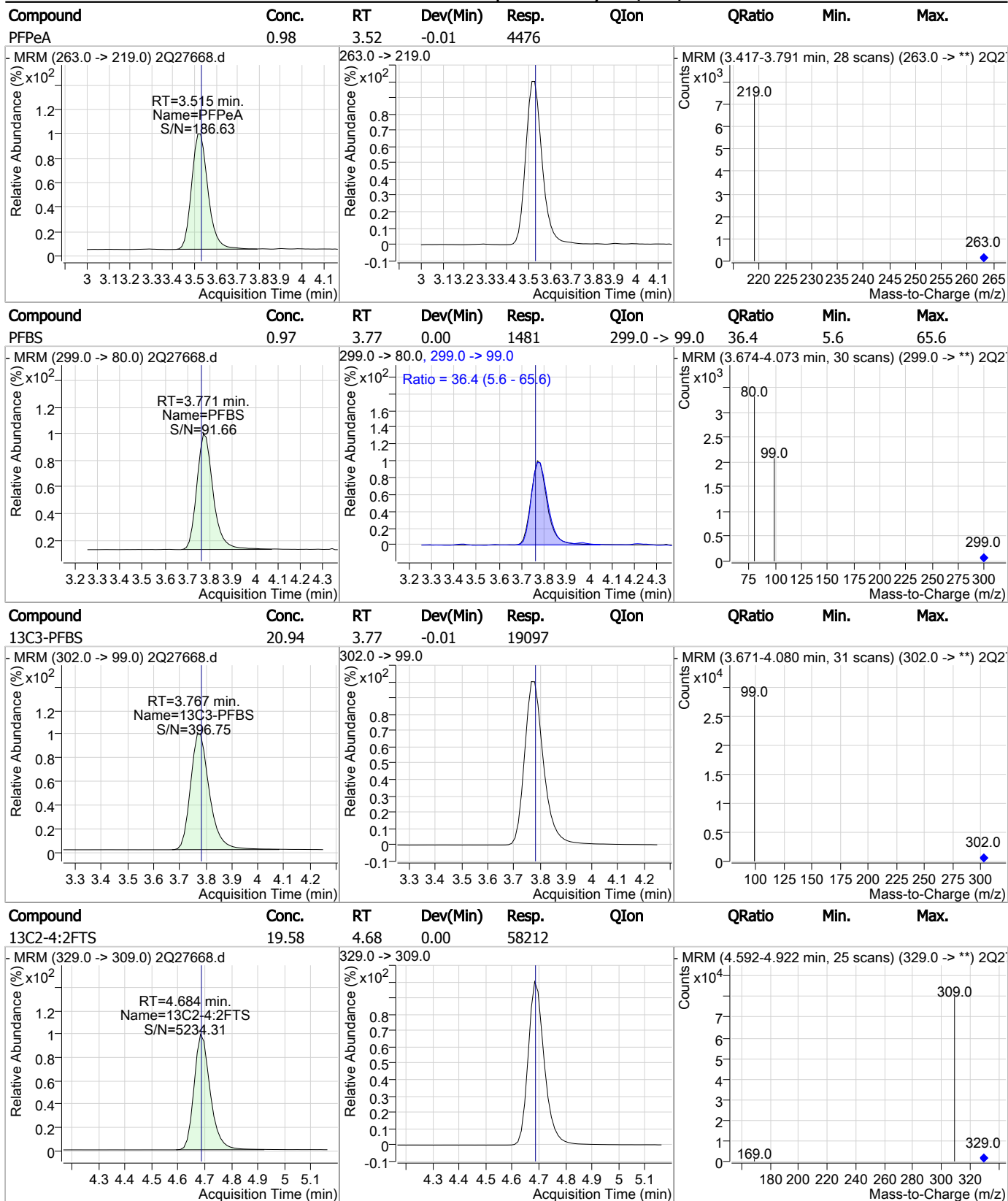
| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 1722  | 1.07 µg/L   | 93     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 1700  | 1.09 µg/L   | 98     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 1027  | 0.96 µg/L   | 91     |
| EtFOSAA          | 7.585 | 584.0 -> 419.0 | 960   | 1.15 µg/L   | 94     |
| FOSA             | 6.935 | 498.0 -> 78.0  | 1873  | 0.93 µg/L   | 98     |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 1018  | 1.03 µg/L   | 98     |
| PFBA             | 1.860 | 213.0 -> 169.0 | 1237  | 0.99 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 1481  | 0.97 µg/L   | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 5841  | 0.94 µg/L   | 97     |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 8162  | 0.96 µg/L   | 98     |
| PFDS             | 8.001 | 599.0 -> 80.0  | 520   | 1.03 µg/L   | 94     |
| PFHpA            | 5.695 | 363.0 -> 319.0 | 9156  | 0.98 µg/L   | 99     |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 1090  | 1.03 µg/L   | 92     |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 2553  | 0.97 µg/L   | 100    |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 1090  | 0.90 µg/L   | m 100  |
| PFNA             | 7.066 | 463.0 -> 419.0 | 6786  | 0.93 µg/L   | 97     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 1047  | 1.12 µg/L   | 91     |
| PFOA             | 6.437 | 413.0 -> 369.0 | 5758  | 0.96 µg/L   | 99     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 1263  | 0.95 µg/L   | m 84   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 4476  | 0.98 µg/L   | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 947   | 0.97 µg/L   | 96     |
| PFTeDA           | 9.332 | 713.0 -> 669.0 | 8669  | 0.96 µg/L   | 99     |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 8809  | 0.94 µg/L   | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 6706  | 0.93 µg/L   | 98     |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 5392  | 1.03 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 1088  | 1.03 µg/L   | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 10434 | 0.97 µg/L   | 100    |
| HFPO-DA          | 5.073 | 329.0 -> 169.0 | 9674  | 4.71 µg/L   | 98     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



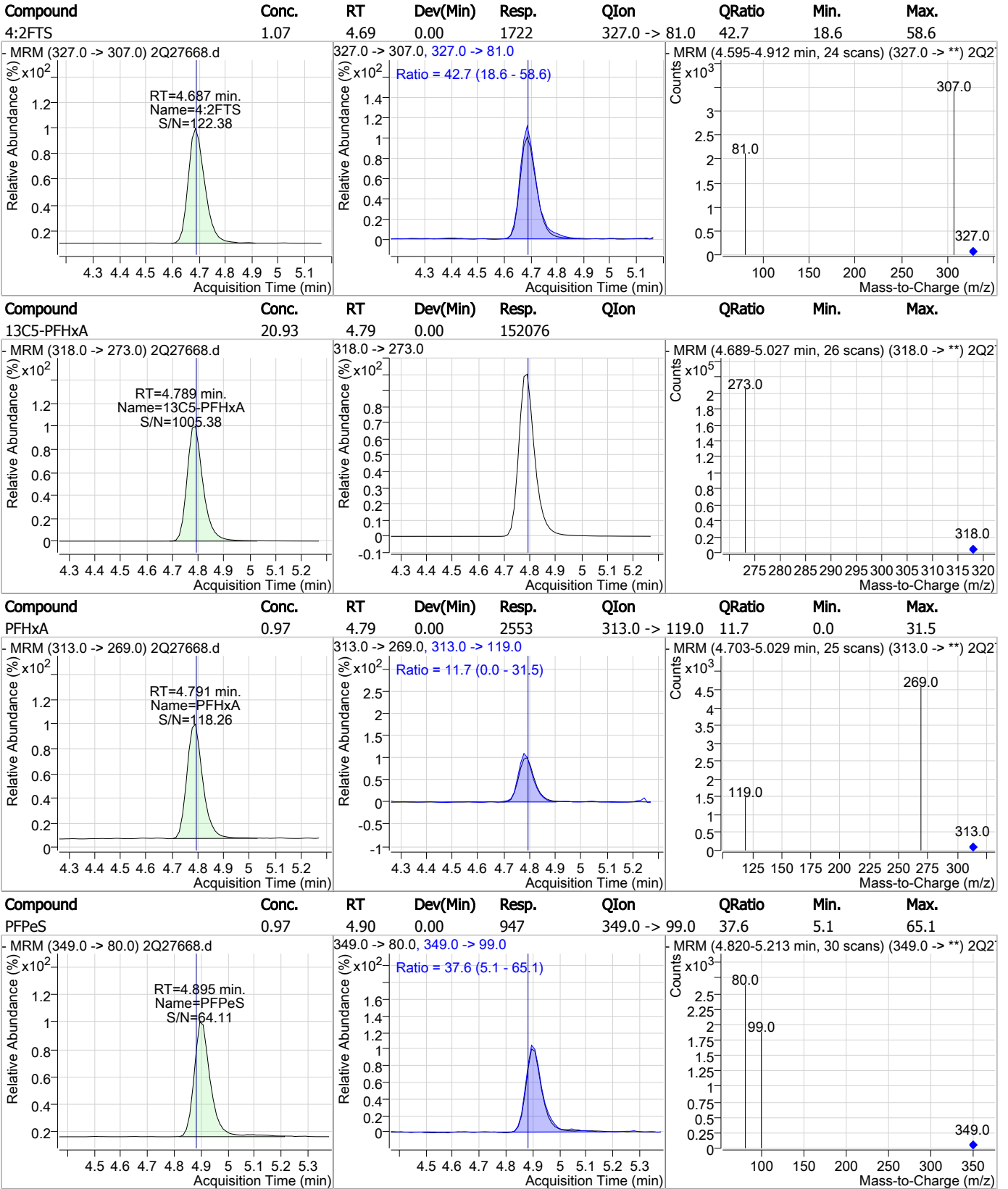
### Perfluorinated Compounds by LC/MS/MS



7.6.15

7

### Perfluorinated Compounds by LC/MS/MS



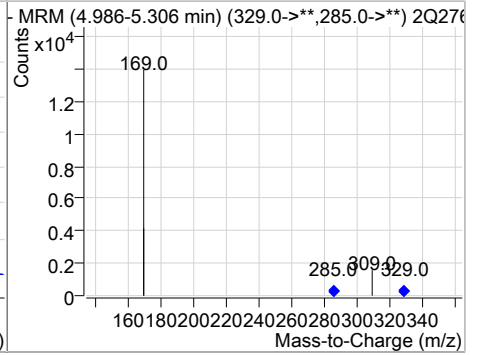
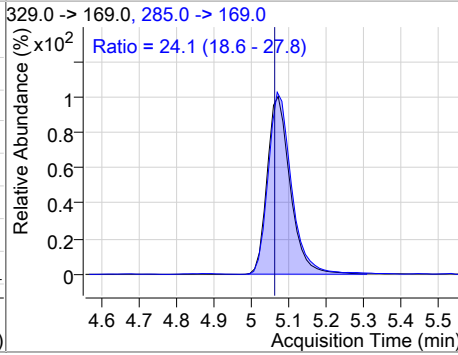
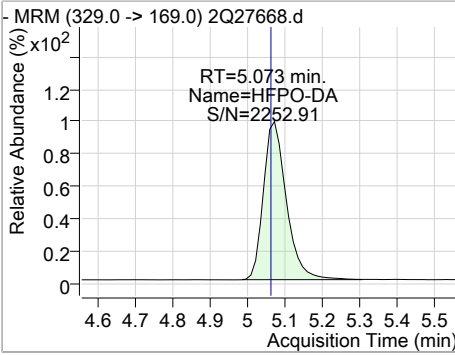
7.6.15

7

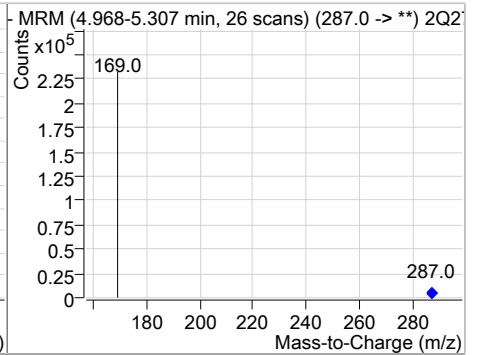
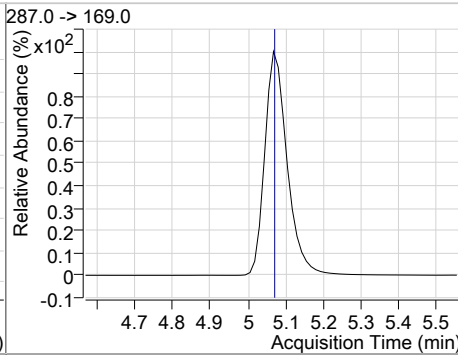
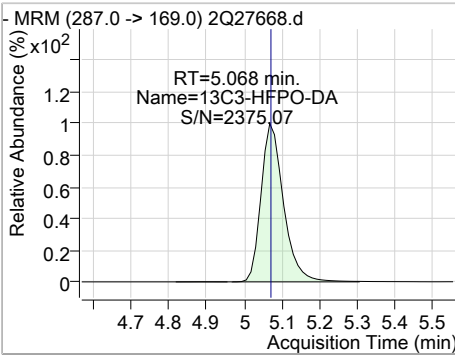


### Perfluorinated Compounds by LC/MS/MS

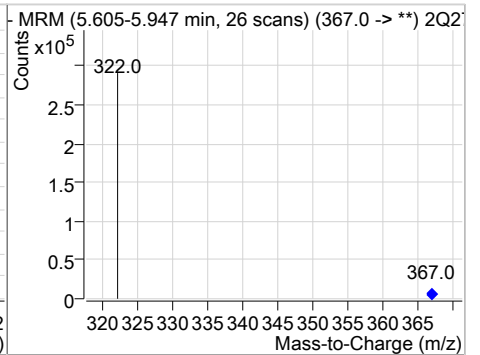
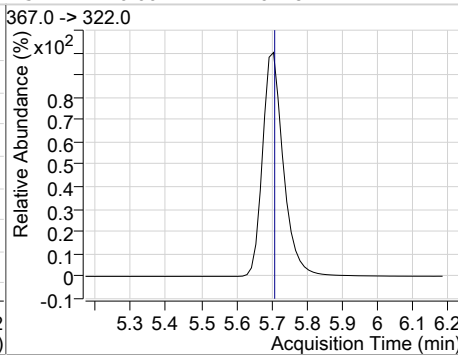
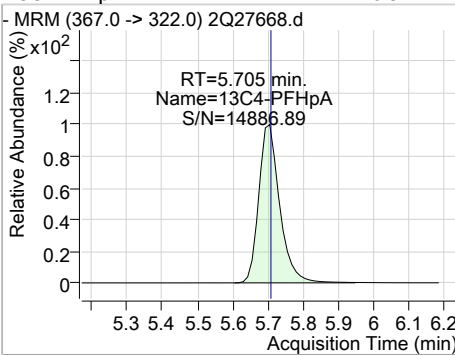
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 4.71  | 5.07 | 0.01     | 9674  | 285.0 -> 169.0 | 24.1   | 18.6 | 27.8 |



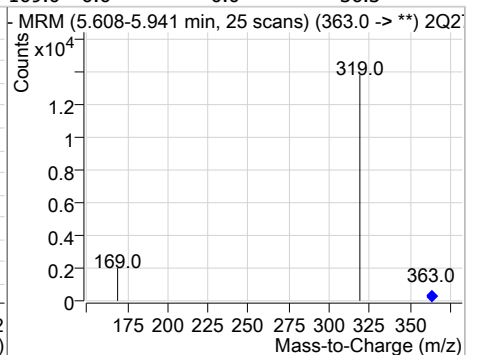
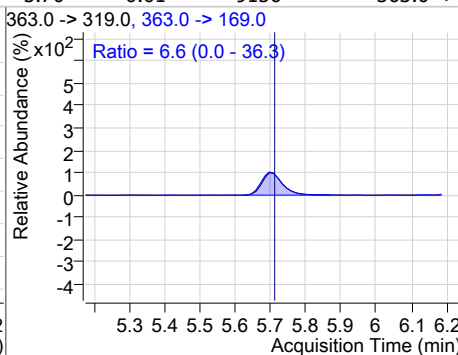
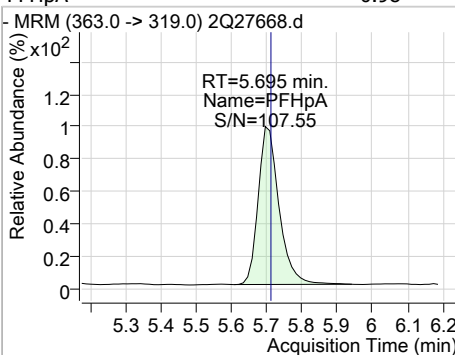
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 108.22 | 5.07 | 0.00     | 173054 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 20.92 | 5.71 | 0.00     | 216418 |      |        |      |      |

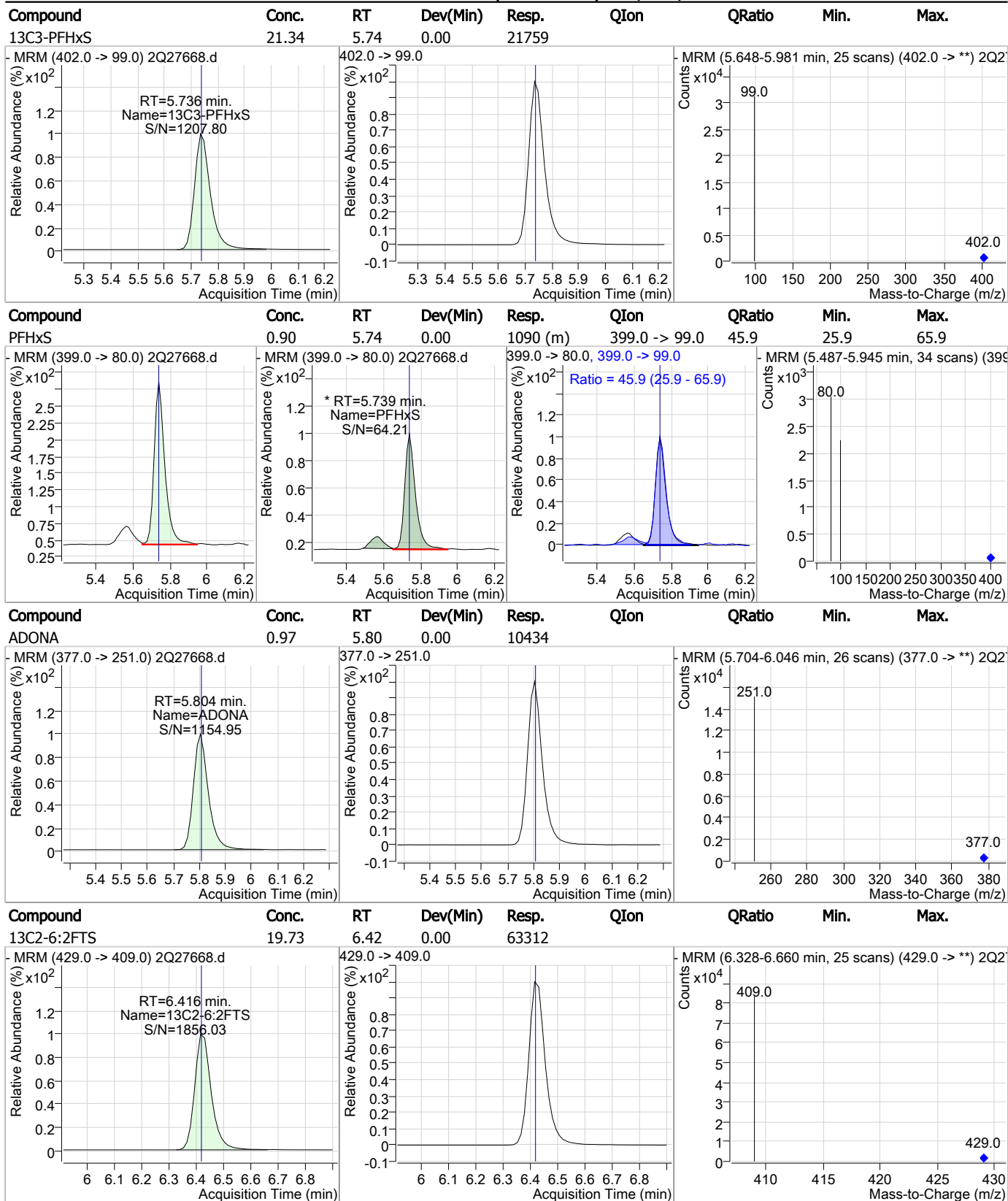


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 0.98  | 5.70 | -0.01    | 9156  | 363.0 -> 169.0 | 6.6    | 0.0  | 36.3 |



7.6.15  
7

### Perfluorinated Compounds by LC/MS/MS

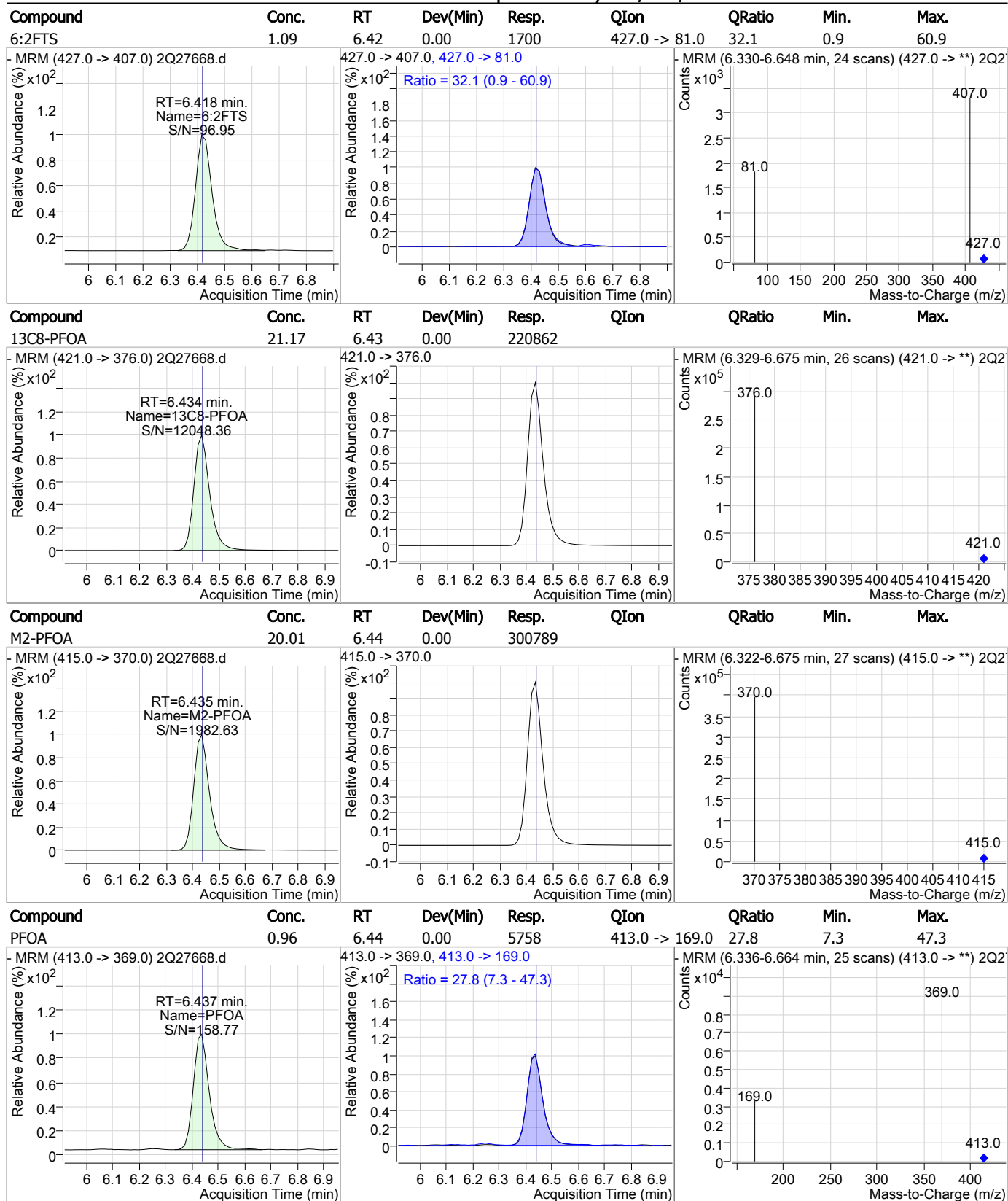


7.6.15

7



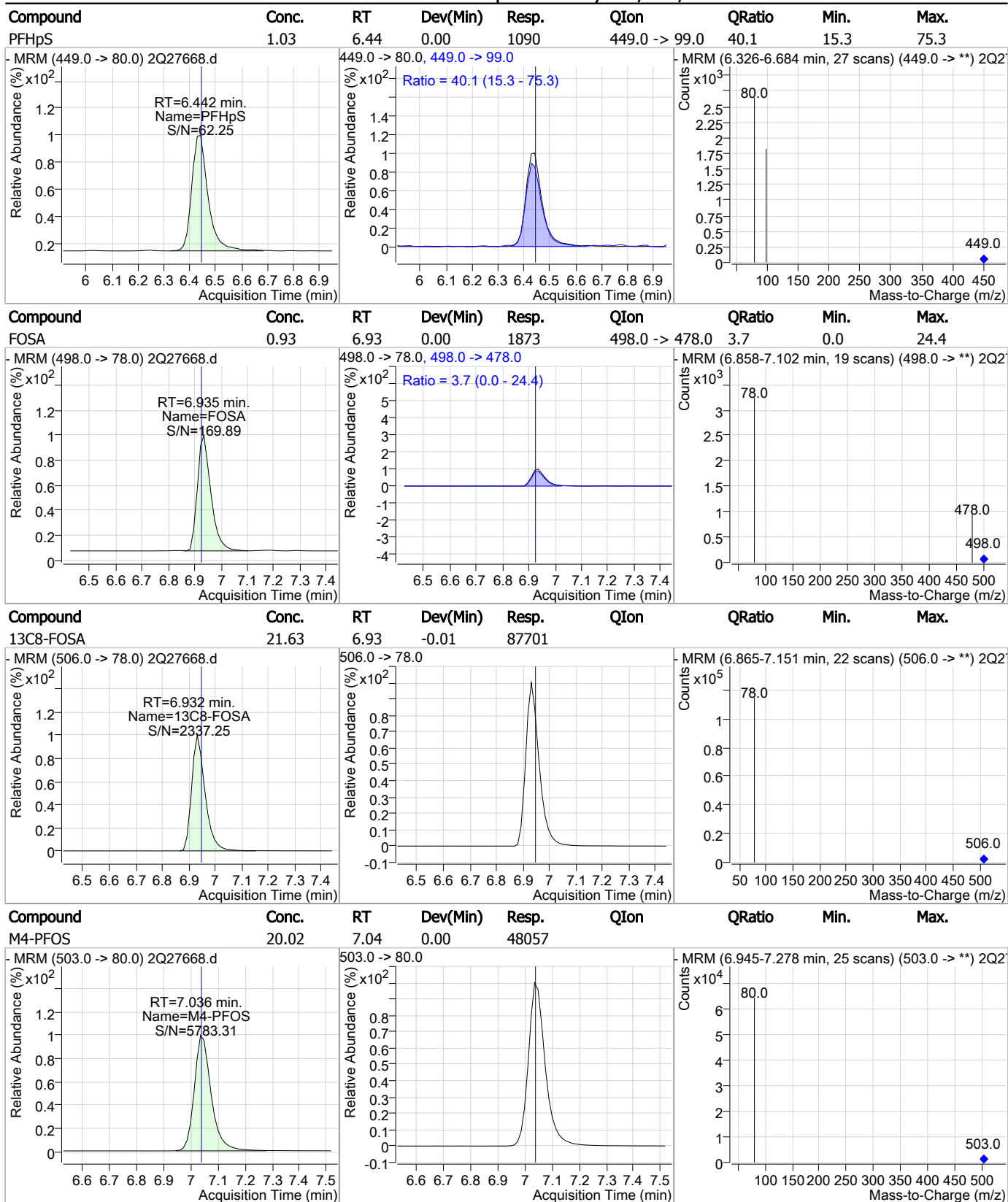
### Perfluorinated Compounds by LC/MS/MS



7.6.15

7

### Perfluorinated Compounds by LC/MS/MS

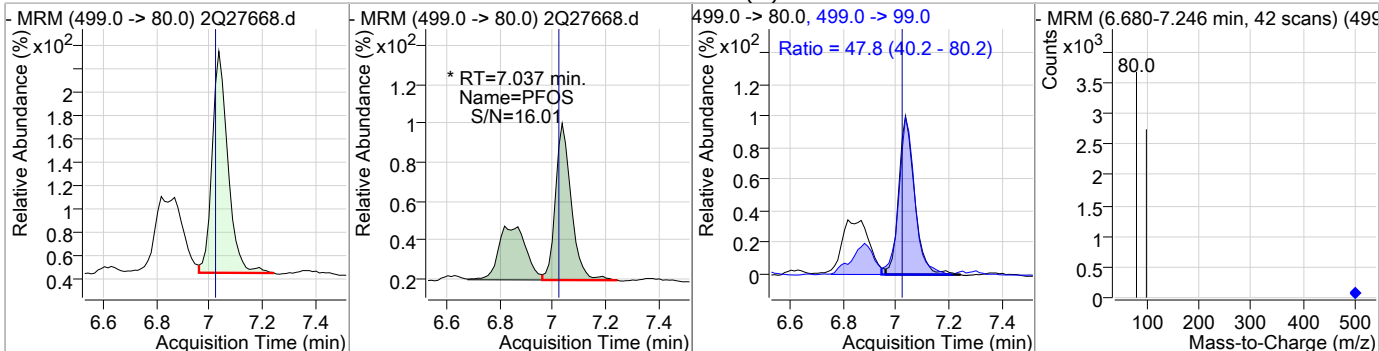


7.6.15

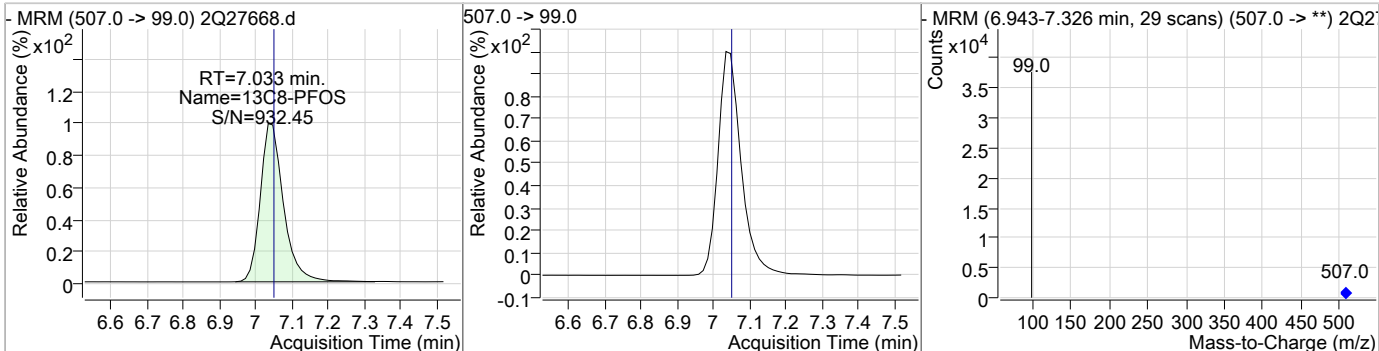
7

### Perfluorinated Compounds by LC/MS/MS

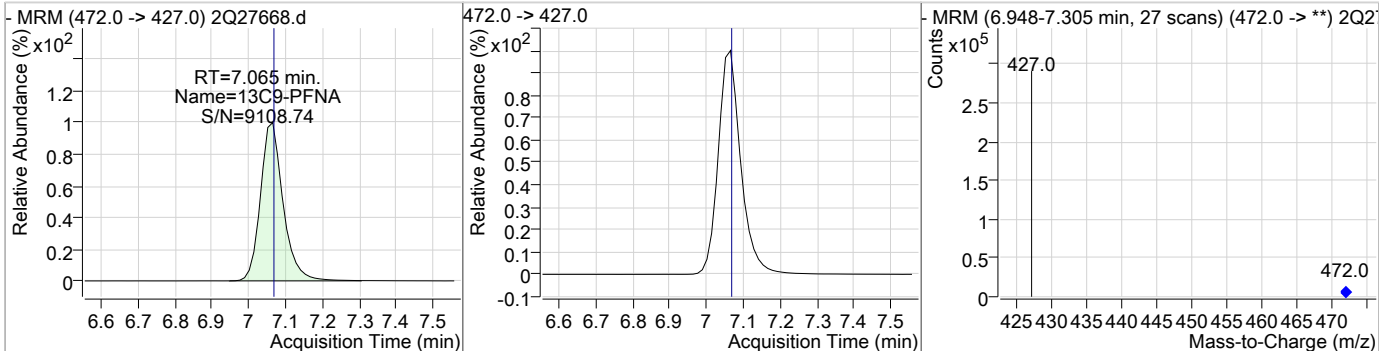
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFOS     | 0.95  | 7.04 | 0.00     | 1263 (m) | 499.0 -> 99.0 | 47.8   | 40.2 | 80.2 |



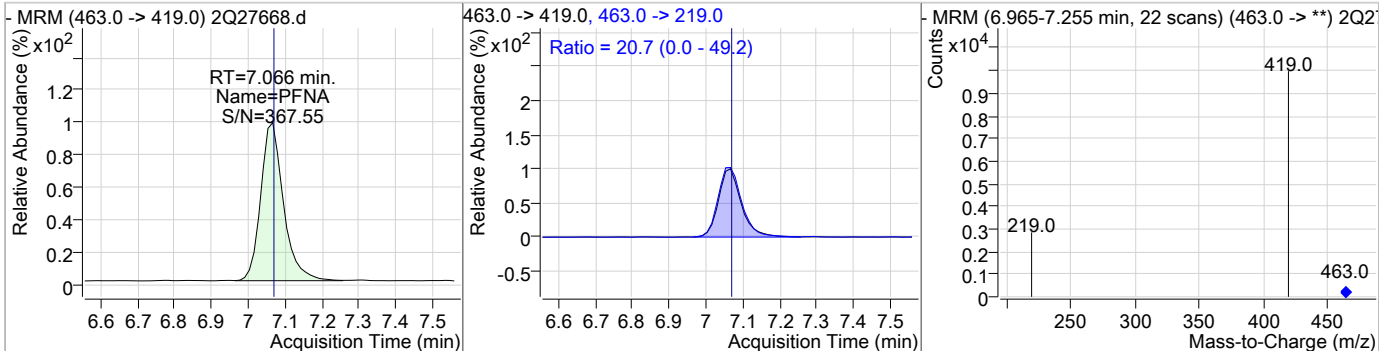
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.98 | 7.03 | -0.01    | 27343 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 20.79 | 7.07 | 0.00     | 220168 |      |        |      |      |

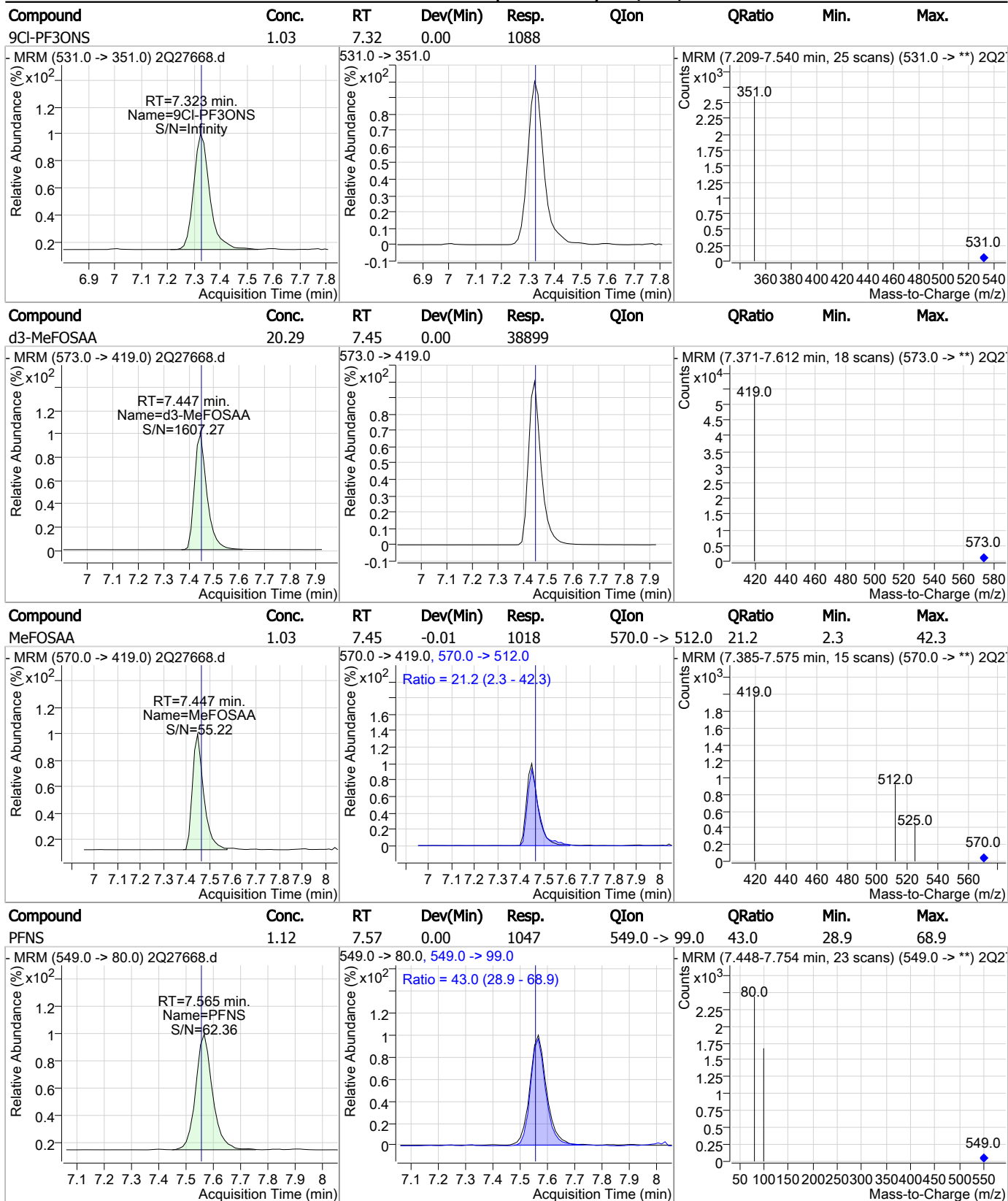


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFNA     | 0.93  | 7.07 | 0.00     | 6786  | 463.0 -> 219.0 | 20.7   | 0.0  | 49.2 |



7.6.15  
7

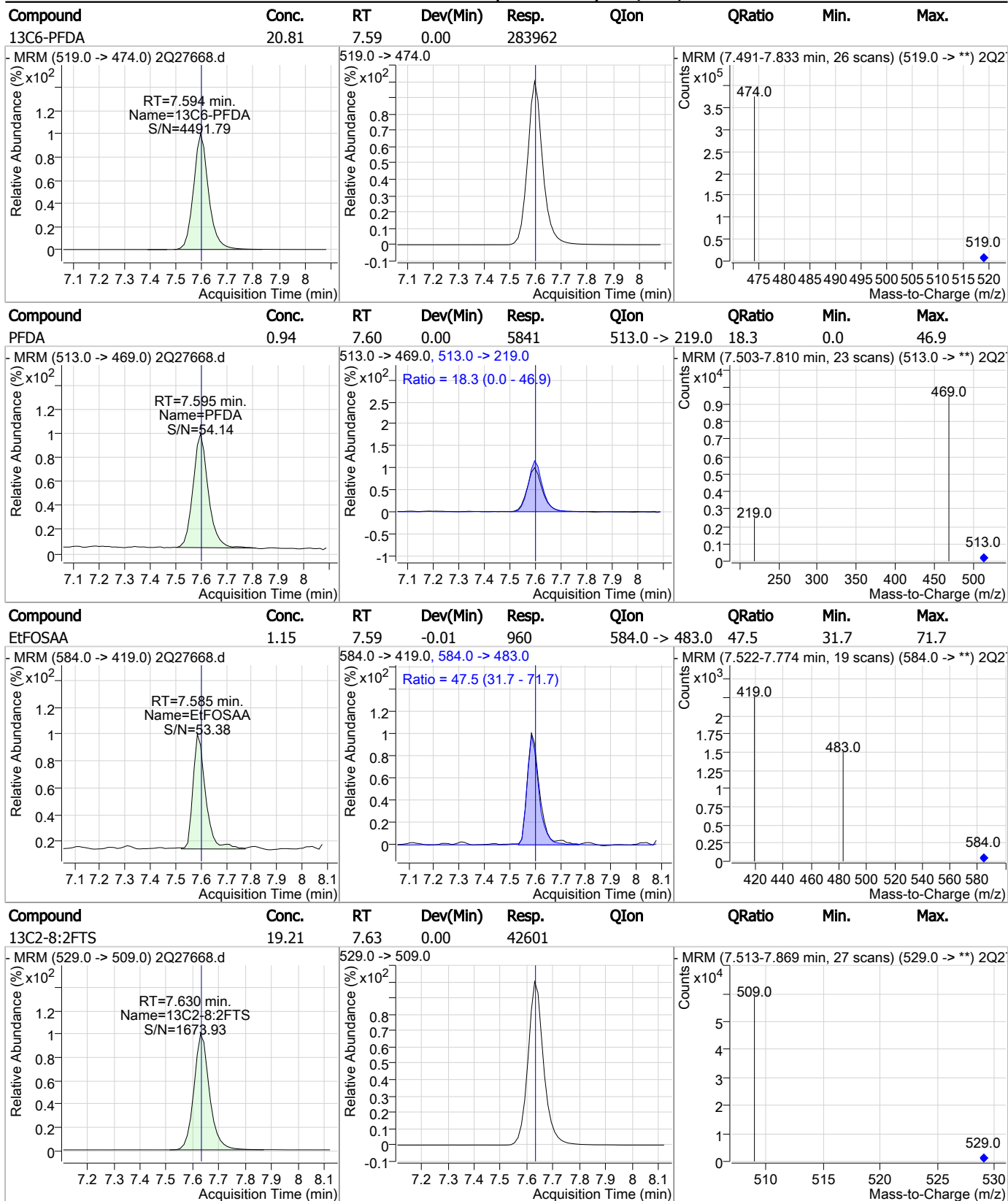
### Perfluorinated Compounds by LC/MS/MS



7.6.15

7

### Perfluorinated Compounds by LC/MS/MS

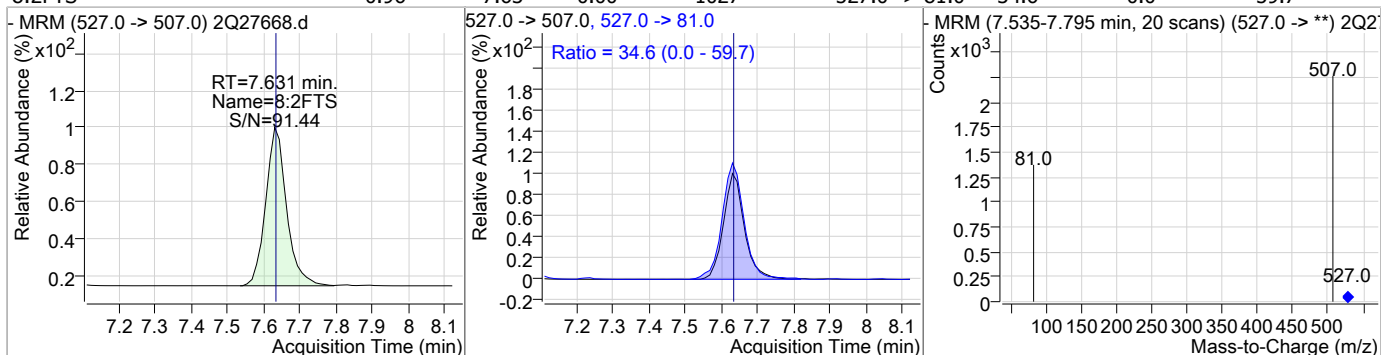


7.6.15  
7

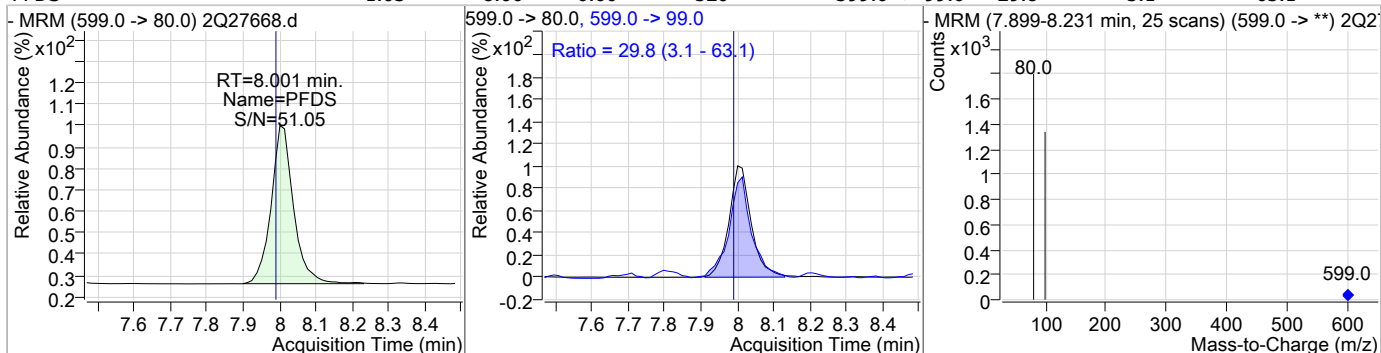


### Perfluorinated Compounds by LC/MS/MS

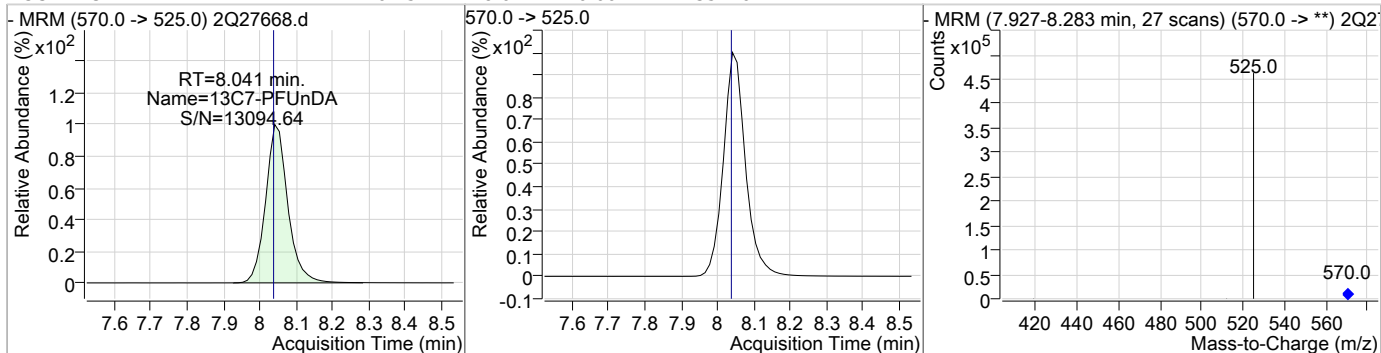
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 0.96  | 7.63 | 0.00     | 1027  | 527.0 -> 81.0 | 34.6   | 0.0  | 59.7 |



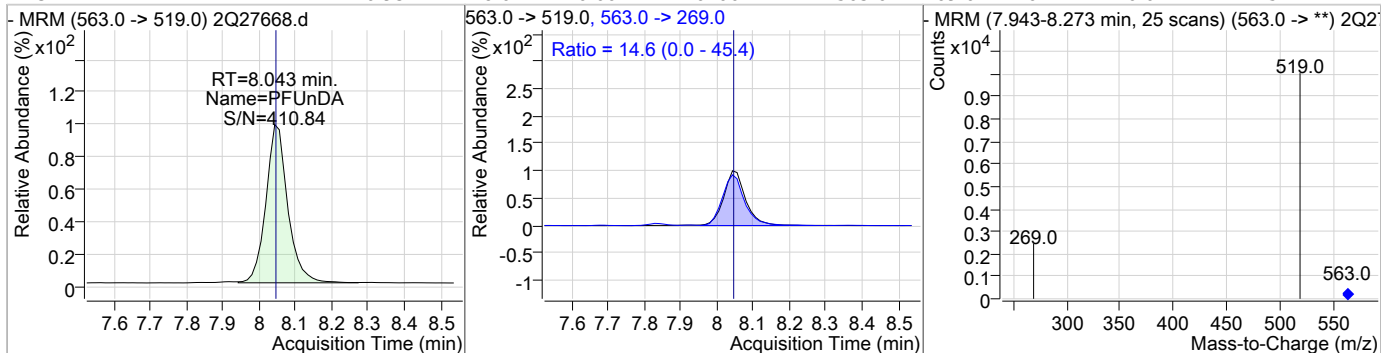
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 1.03  | 8.00 | 0.00     | 520   | 599.0 -> 99.0 | 29.8   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 20.75 | 8.04 | 0.00     | 351164 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFUnDA   | 0.93  | 8.04 | 0.00     | 6706  | 563.0 -> 269.0 | 14.6   | 0.0  | 45.4 |



### Perfluorinated Compounds by LC/MS/MS

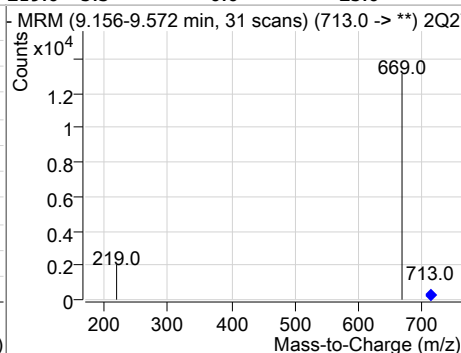
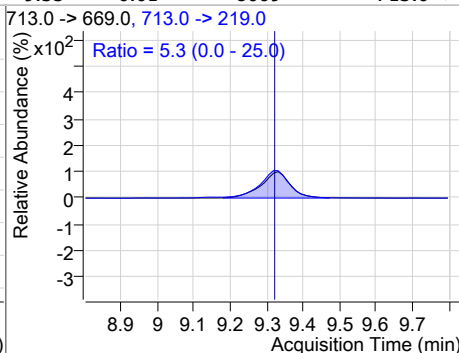
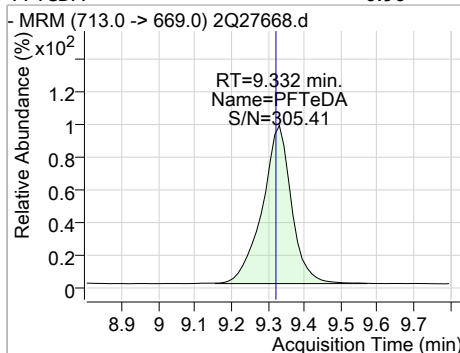
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 1.03  | 8.20 | 0.00     | 5392   |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 20.24 | 8.48 | 0.01     | 380634 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 0.96  | 8.47 | 0.00     | 8162   | 613.0 -> 319.0 | 13.4   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 0.94  | 8.92 | 0.00     | 8809   | 663.0 -> 369.0 | 6.8    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.15

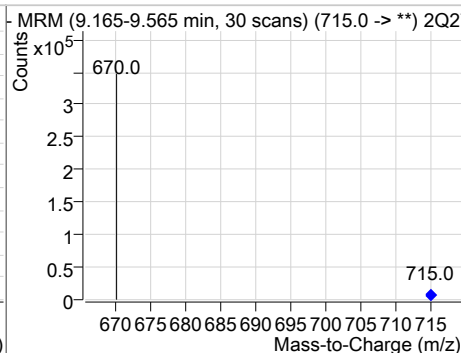
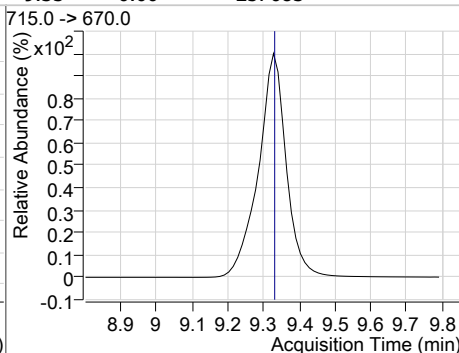
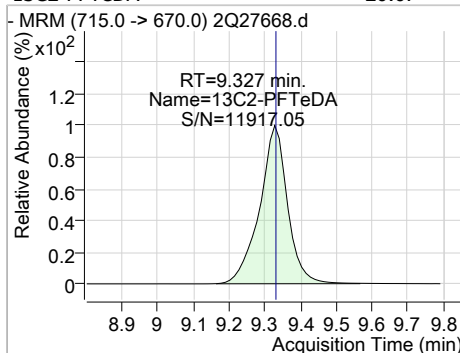
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 0.96  | 9.33 | 0.01     | 8669  | 713.0 -> 219.0 | 5.3    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.07 | 9.33 | 0.00     | 257683 |      |        |      |      |



7.6.15  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-IC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27668.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 08:34      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.15.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27669.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 8:50:04 AM  
 Sample Name : IC442-2.0  
 Vial : Vial 4  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 296487            | 20.00 µg/L  | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 46474             | 20.00 µg/L  | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 130519            | 20.00 µg/L  | 0.000    |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 109977            | 20.00 µg/L  | -0.013   |
| M5-PFHxA                           | 4.776                | 318.0 -> 273.0 | 158620            | 20.00 µg/L  | -0.013   |
| M4-PFHpA                           | 5.693                | 367.0 -> 322.0 | 225349            | 20.00 µg/L  | -0.013   |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 227282            | 20.00 µg/L  | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 229108            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 296639            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 365364            | 20.00 µg/L  | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 401133            | 20.00 µg/L  | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 272456            | 20.00 µg/L  | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 89406             | 20.00 µg/L  | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 19915             | 20.00 µg/L  | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 22211             | 20.00 µg/L  | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 28599             | 20.00 µg/L  | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 60920             | 20.00 µg/L  | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 65984             | 20.00 µg/L  | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 44903             | 20.00 µg/L  | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 40996             | 20.00 µg/L  | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 178710            | 100.00 µg/L | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 60882             | 20.47 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.4% |             |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 66713             | 20.79 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.9% |             |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 44896             | 20.25 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 101.2% |             |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 400775            | 21.31 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 106.5% |             |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 272230            | 21.20 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 106.0% |             |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 19886             | 21.81 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 109.1% |             |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 22180             | 21.76 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 108.8% |             |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 129932            | 21.67 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 108.3% |             |          |
| 13C4-PFHpA                         | 5.693                | 367.0 -> 322.0 | 225224            | 21.78 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 108.9% |             |          |
| 13C5-PFHxA                         | 4.776                | 318.0 -> 273.0 | 158276            | 21.78 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 108.9% |             |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 109677            | 21.58 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 107.9% |             |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 296591            | 21.73 µg/L  | 0.000    |

7.6.16  
7

## Perfluorinated Compounds by LC/MS/MS

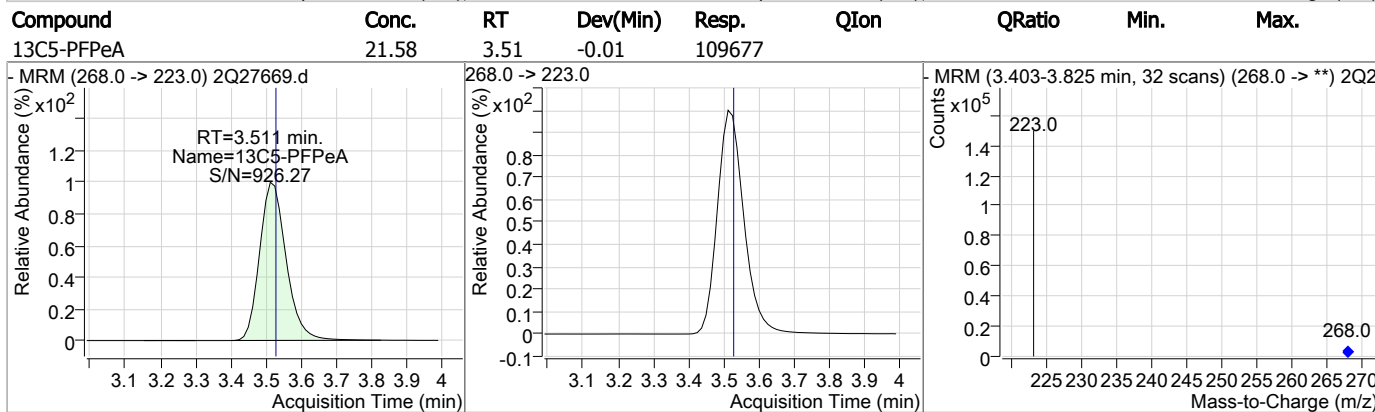
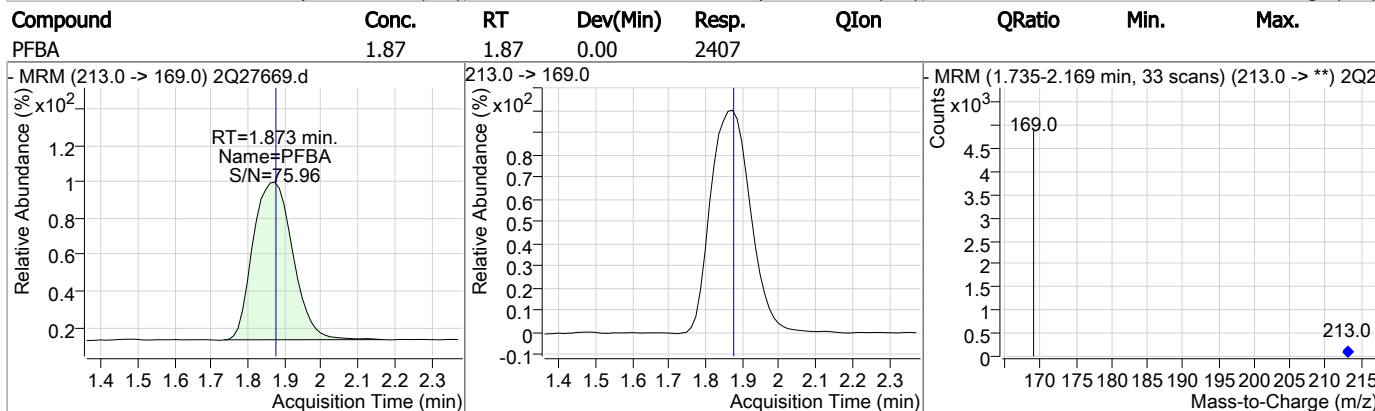
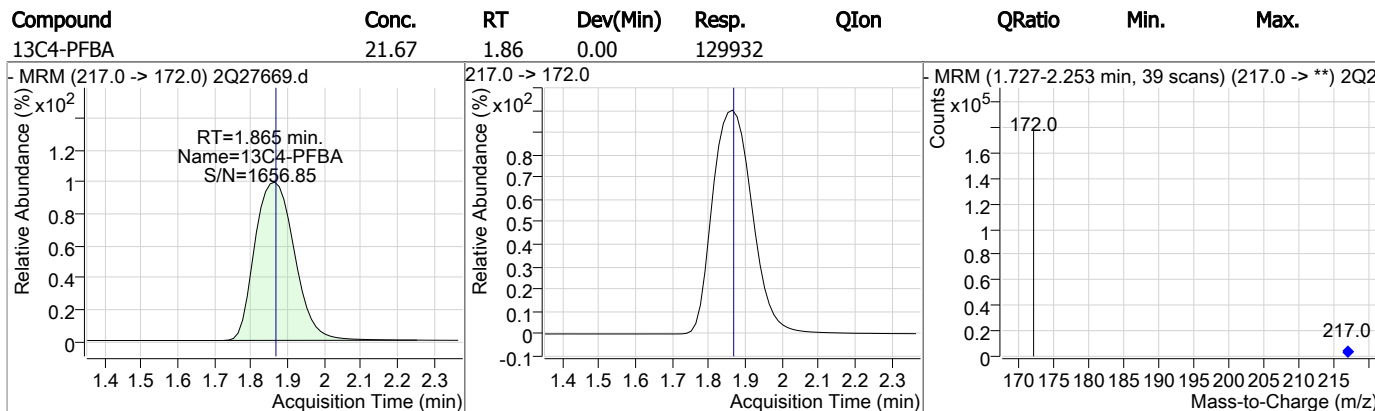
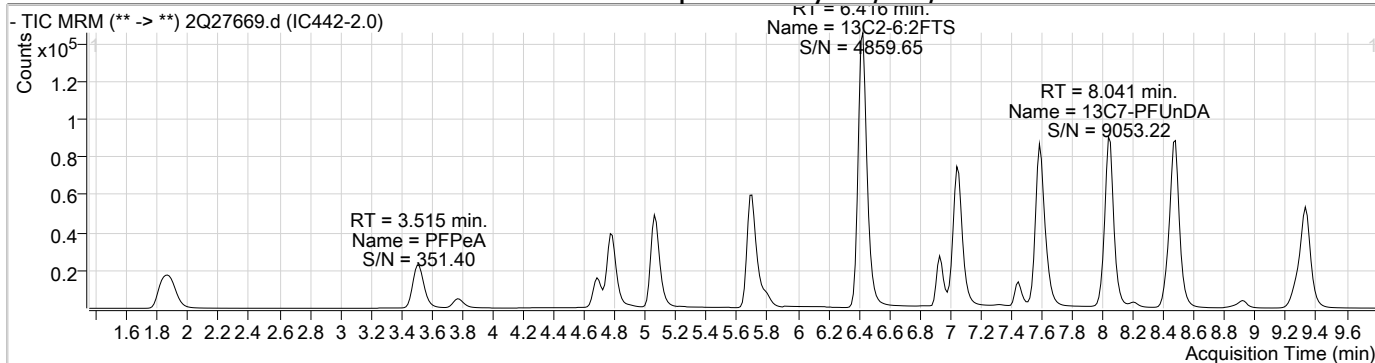
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.7% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 364997 | 21.57 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.8% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 89388  | 22.04 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.2% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 227037 | 21.76 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.8% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 28647  | 21.98 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.9% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 229052 | 21.63 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.2% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 40986  | 21.38 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.9% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 296687 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 46424  | 19.97 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.8%  |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 178710 | 111.76 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 111.8% |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 3350  | 2.00 µg/L   | 93     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 3359  | 2.07 µg/L   | 99     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 2328  | 2.07 µg/L   | 98     |
| EtFOSAA          | 7.585 | 584.0 -> 419.0 | 1670  | 1.90 µg/L   | 99     |
| FOSA             | 6.935 | 498.0 -> 78.0  | 3838  | 1.87 µg/L   | 98     |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 1903  | 1.83 µg/L   | 97     |
| PFBA             | 1.873 | 213.0 -> 169.0 | 2407  | 1.87 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 2977  | 1.88 µg/L   | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 12058 | 1.87 µg/L   | 99     |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 16161 | 1.81 µg/L   | 100    |
| PFDS             | 8.001 | 599.0 -> 80.0  | 1003  | 1.90 µg/L   | 97     |
| PFHpA            | 5.695 | 363.0 -> 319.0 | 17634 | 1.82 µg/L   | 99     |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 1979  | 1.84 µg/L   | 94     |
| PFHxA            | 4.778 | 313.0 -> 269.0 | 4997  | 1.83 µg/L   | 99     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 2274  | 1.85 µg/L   | m 95   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 13791 | 1.82 µg/L   | 99     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 1820  | 1.86 µg/L   | 98     |
| PFOA             | 6.437 | 413.0 -> 369.0 | 11272 | 1.84 µg/L   | 99     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 2733  | 1.97 µg/L   | m 76   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 9085  | 1.91 µg/L   | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 1879  | 1.86 µg/L   | 92     |
| PFTeDA           | 9.332 | 713.0 -> 669.0 | 17436 | 1.83 µg/L   | 99     |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 18191 | 1.83 µg/L   | 98     |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 13369 | 1.77 µg/L   | 100    |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 10429 | 1.90 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 2035  | 1.85 µg/L   | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 21002 | 1.89 µg/L   | 100    |
| HFPO-DA          | 5.073 | 329.0 -> 169.0 | 19460 | 9.17 µg/L   | 98     |

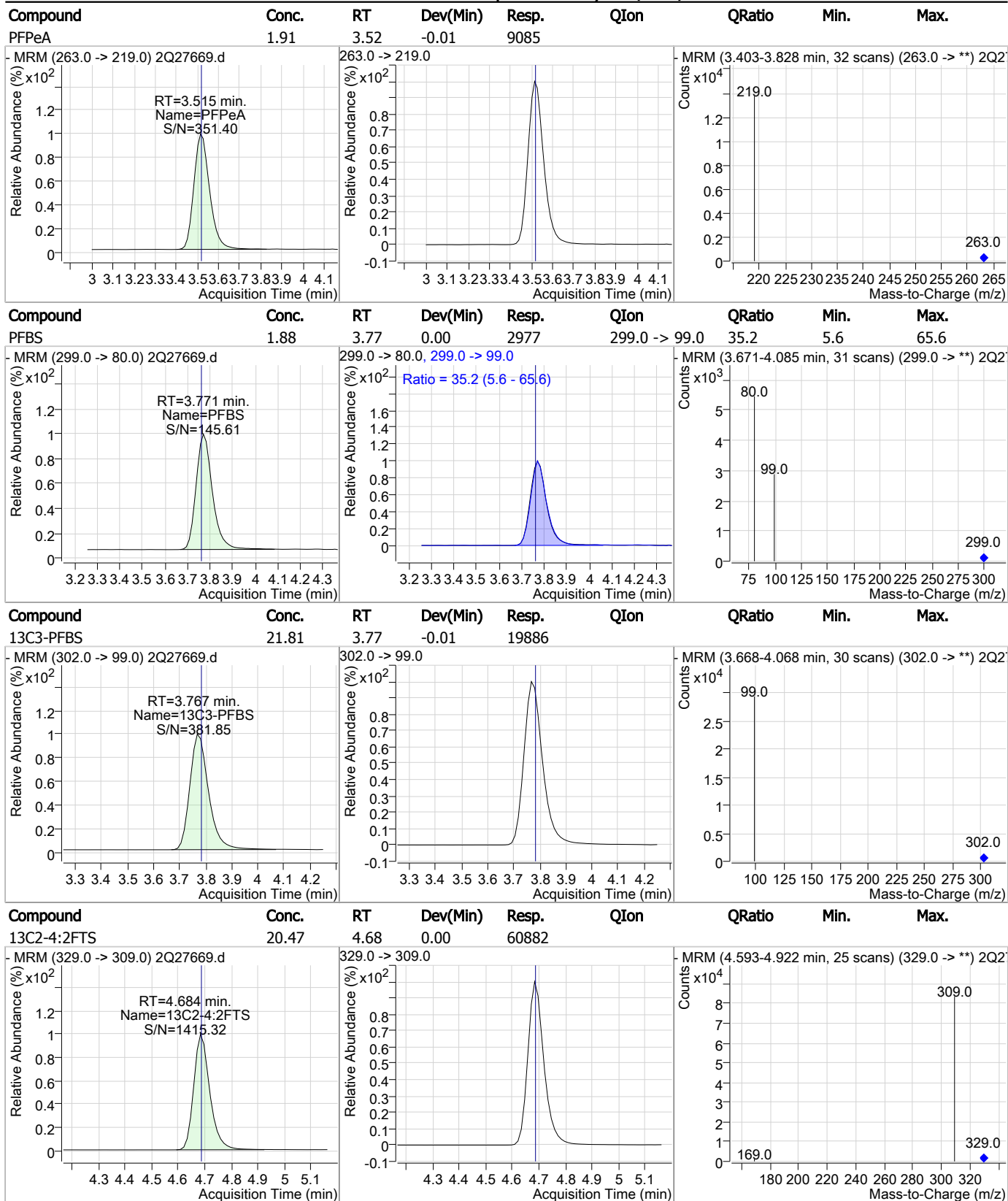
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.16  
7

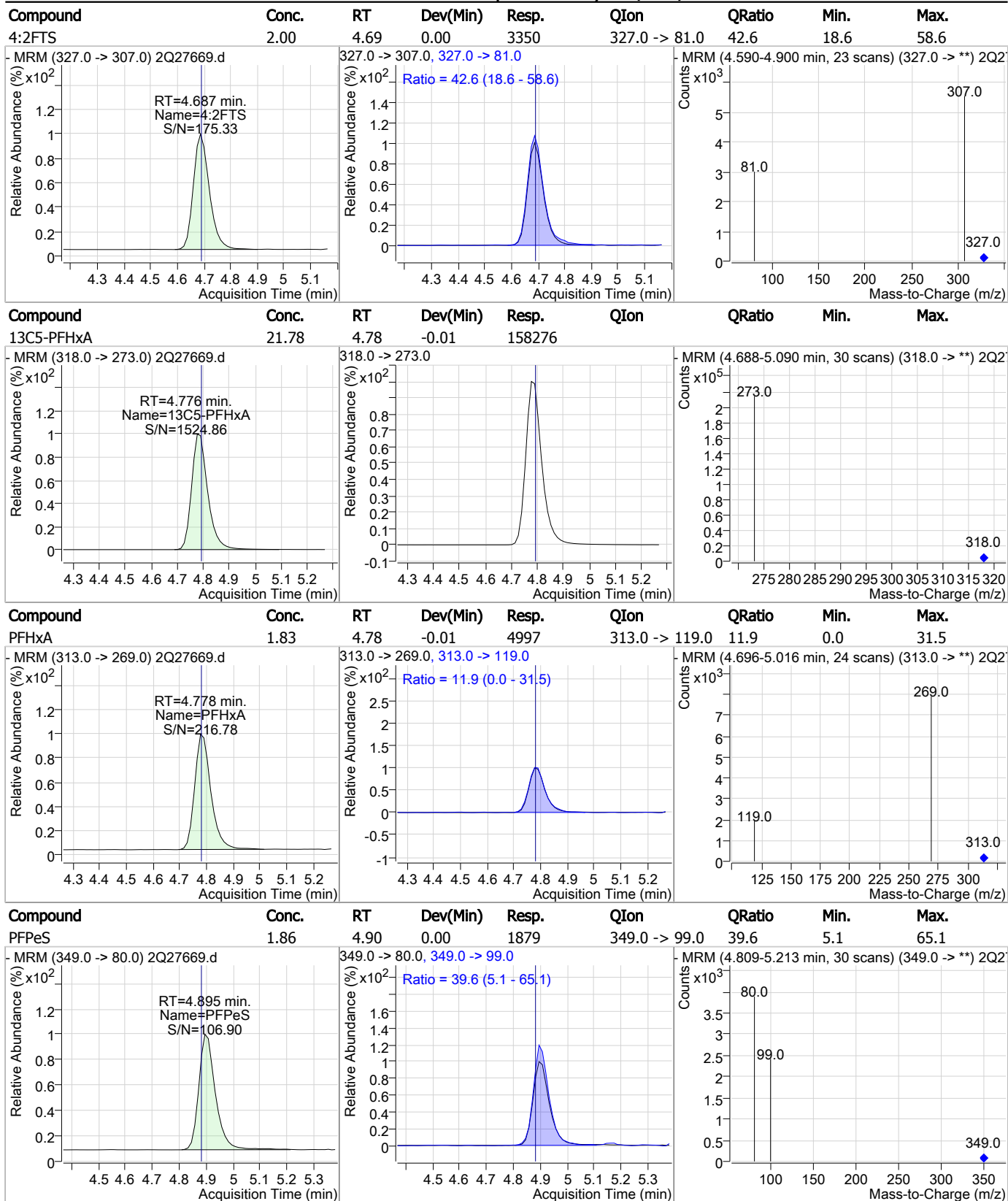
### Perfluorinated Compounds by LC/MS/MS



7.6.16

7

### Perfluorinated Compounds by LC/MS/MS

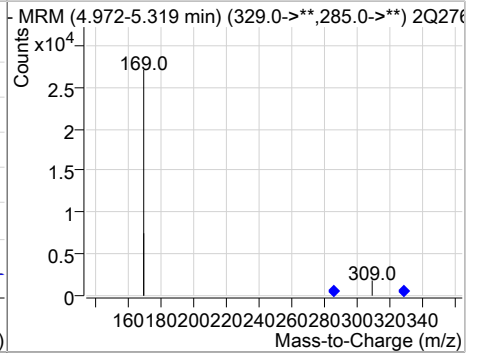
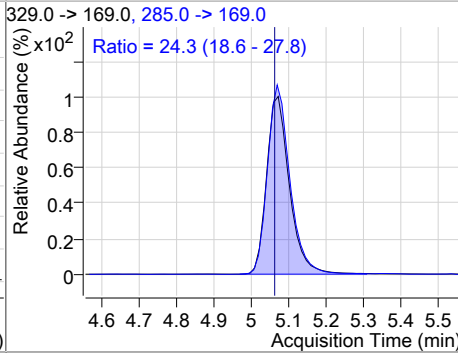
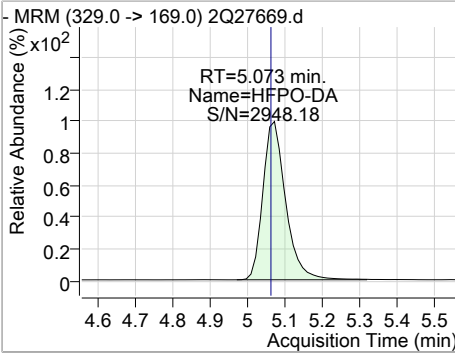


7.6.16

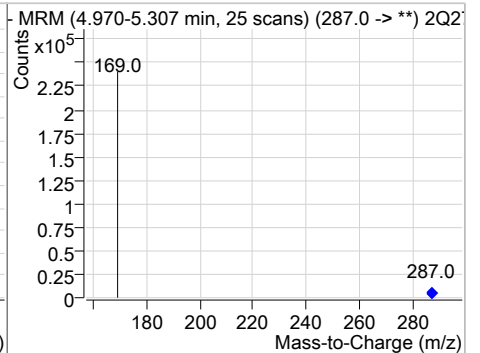
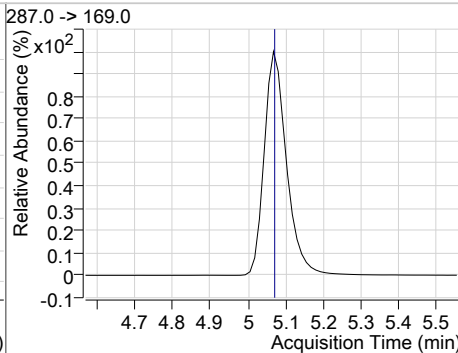
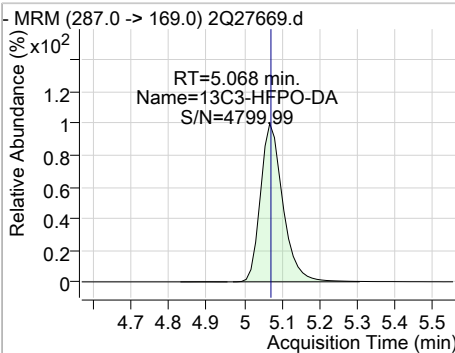
7

### Perfluorinated Compounds by LC/MS/MS

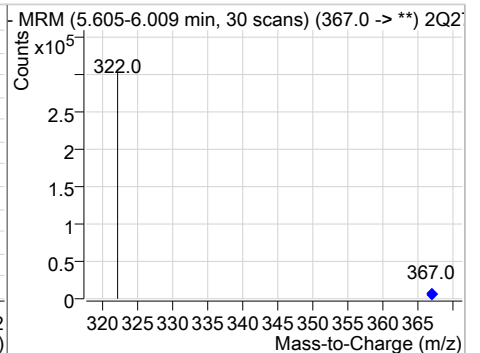
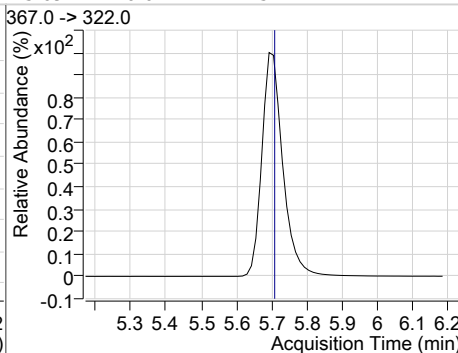
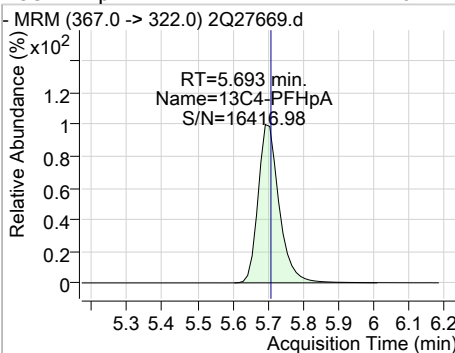
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 9.17  | 5.07 | 0.01     | 19460 | 285.0 -> 169.0 | 24.3   | 18.6 | 27.8 |



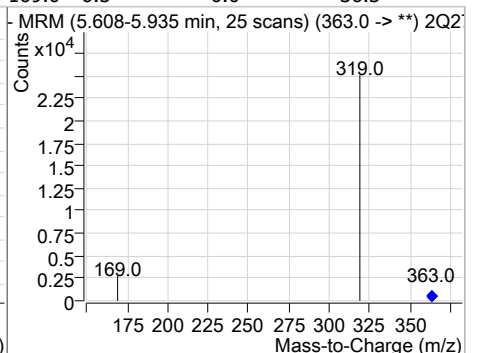
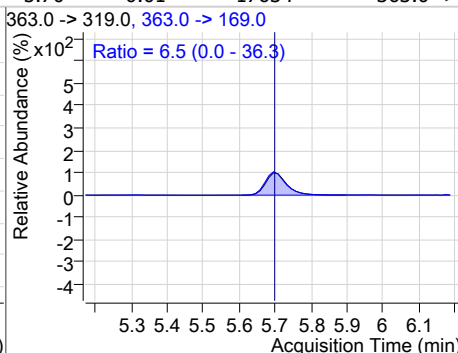
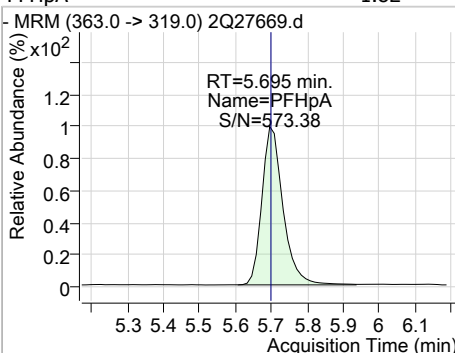
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 111.76 | 5.07 | 0.00     | 178710 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 21.78 | 5.69 | -0.01    | 225224 |      |        |      |      |

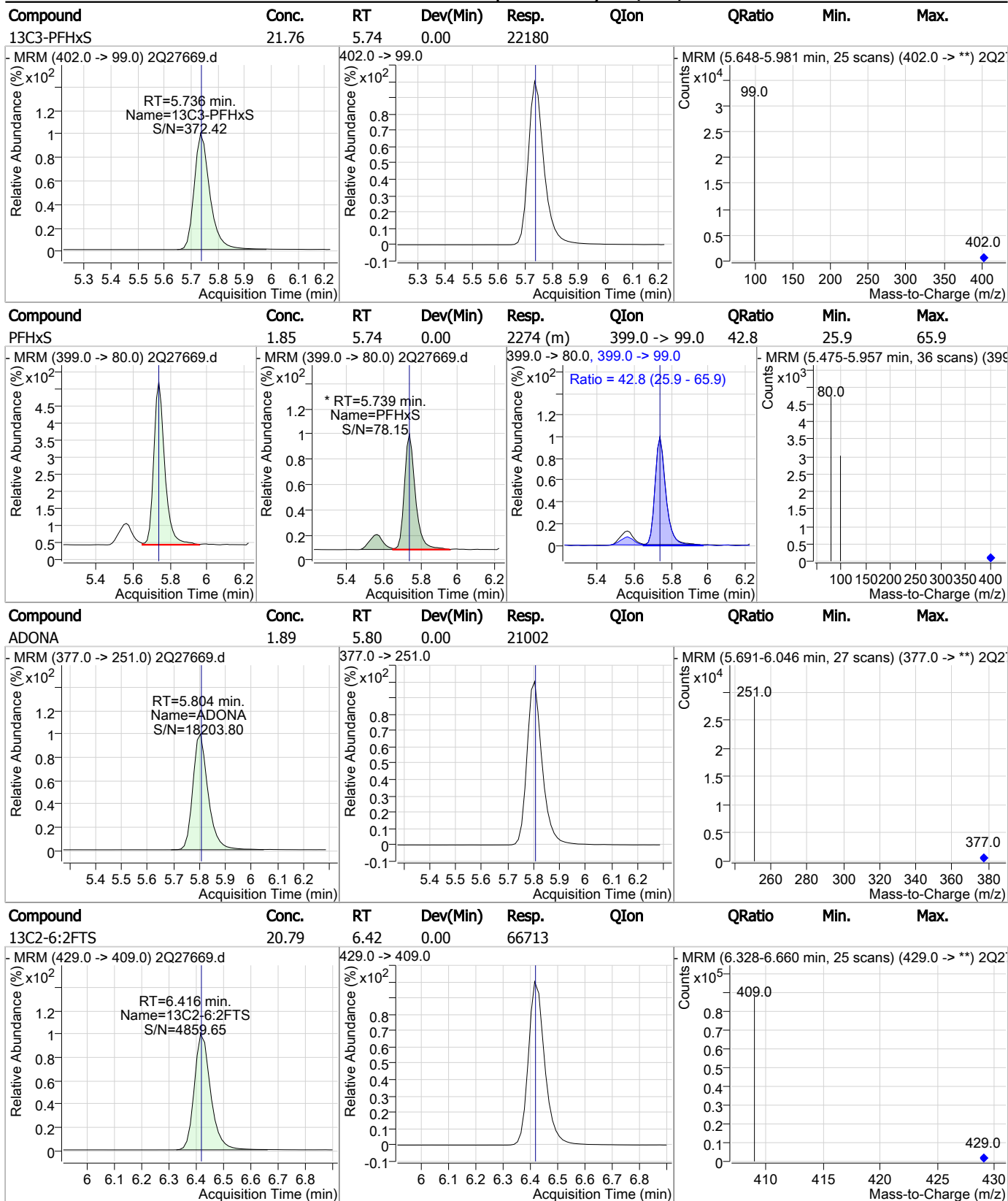


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 1.82  | 5.70 | -0.01    | 17634 | 363.0 -> 169.0 | 6.5    | 0.0  | 36.3 |



7.6.16  
7

### Perfluorinated Compounds by LC/MS/MS

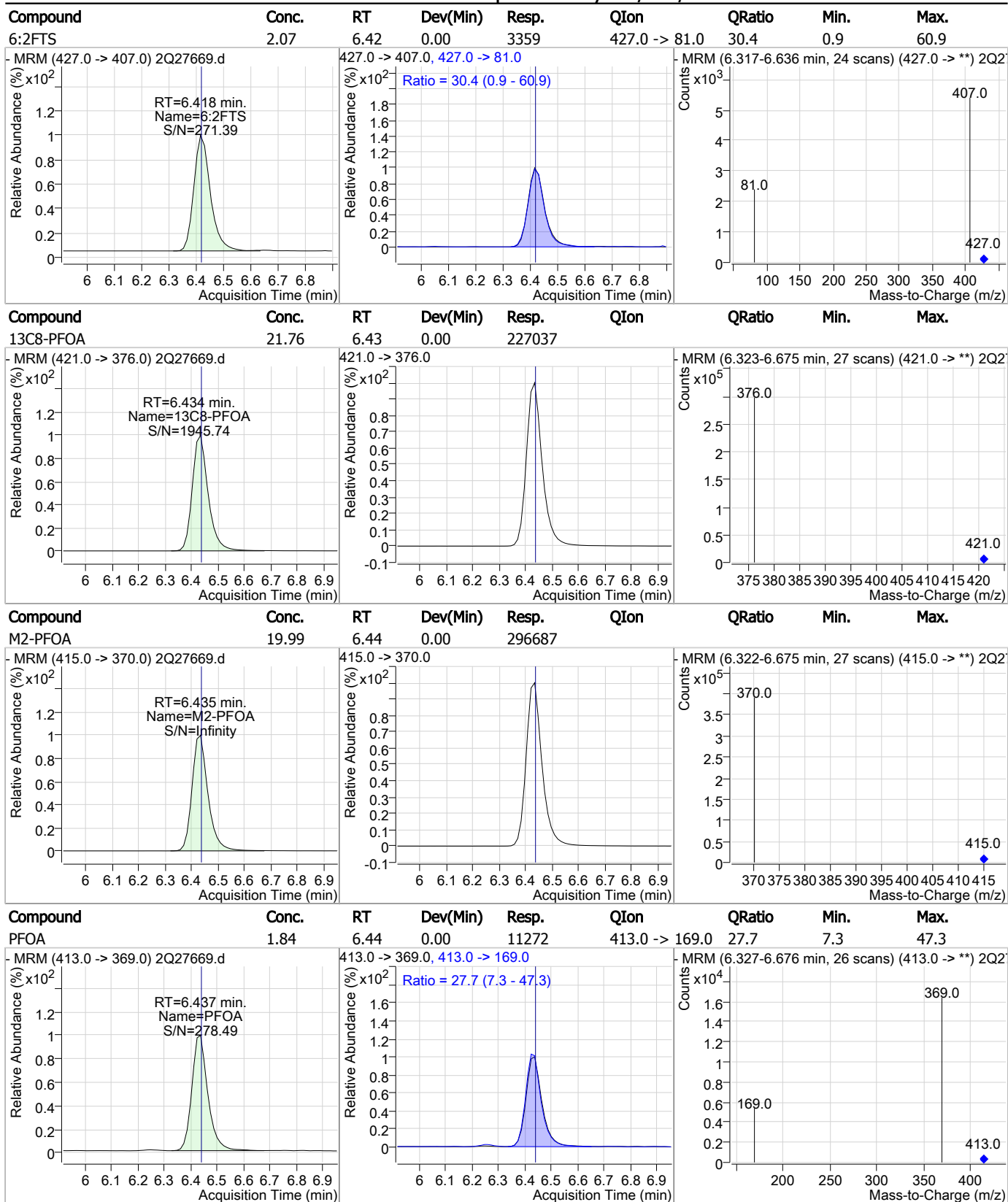


7.6.16

7



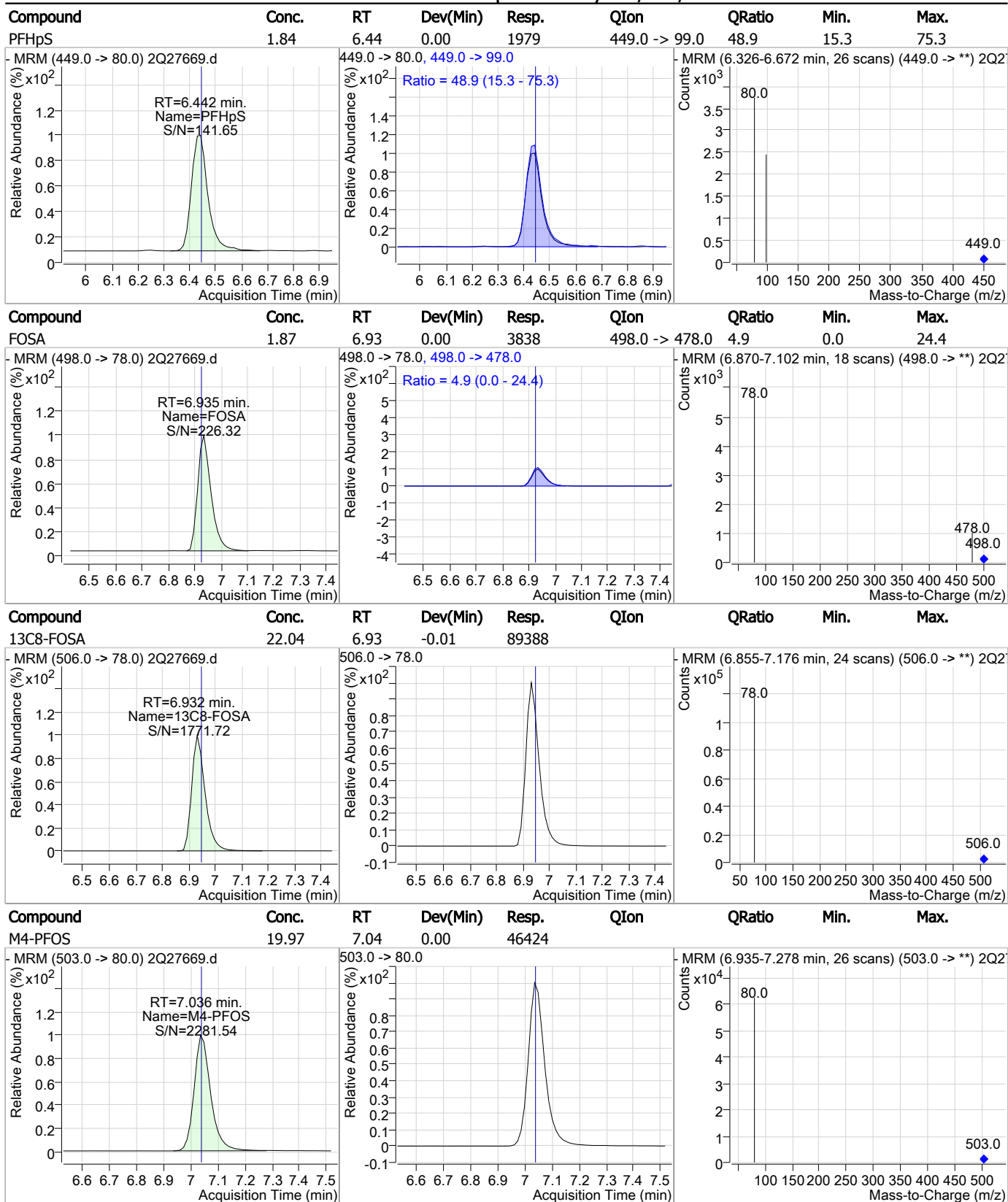
### Perfluorinated Compounds by LC/MS/MS



7.6.16

7

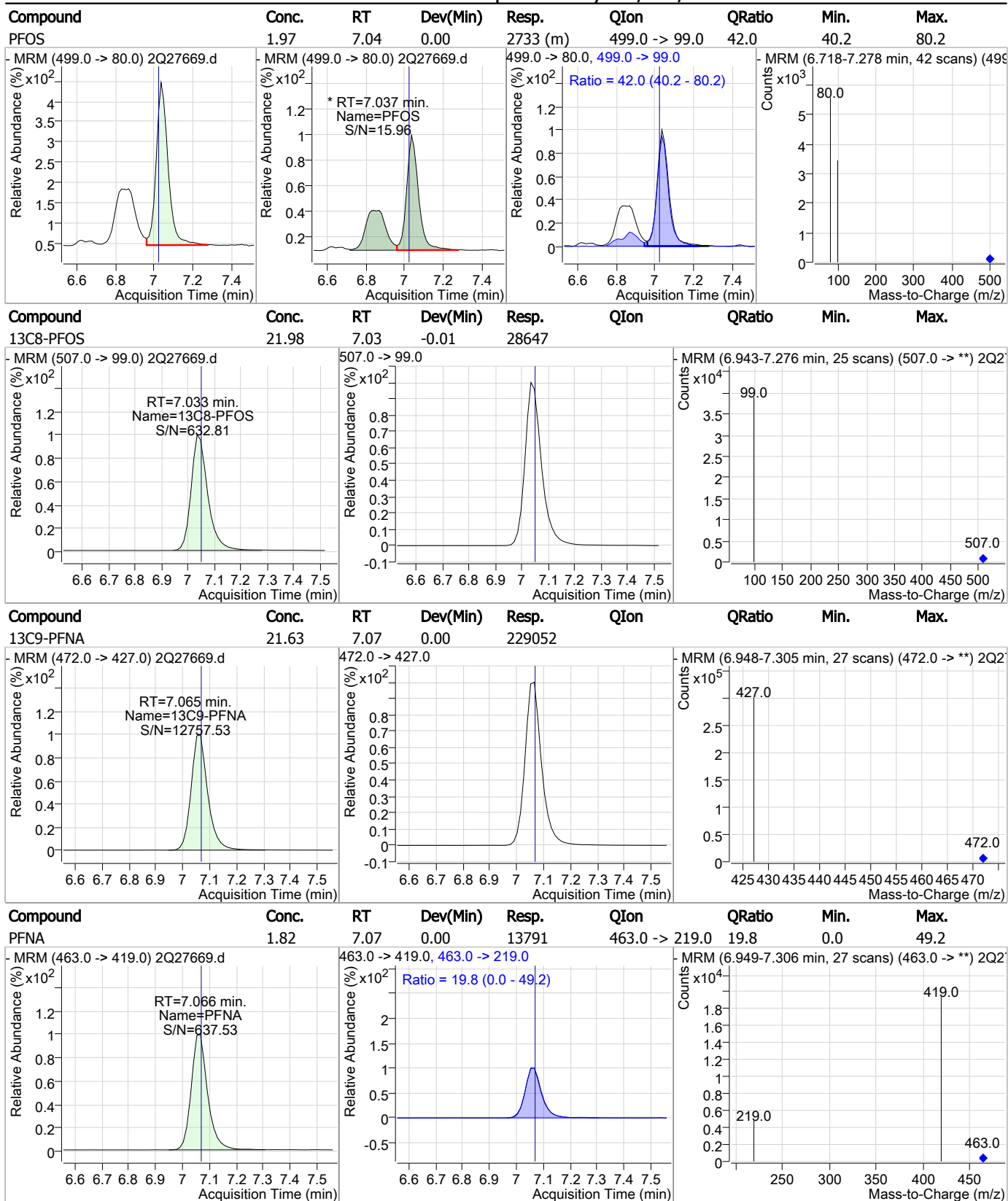
### Perfluorinated Compounds by LC/MS/MS



7.6.16

7

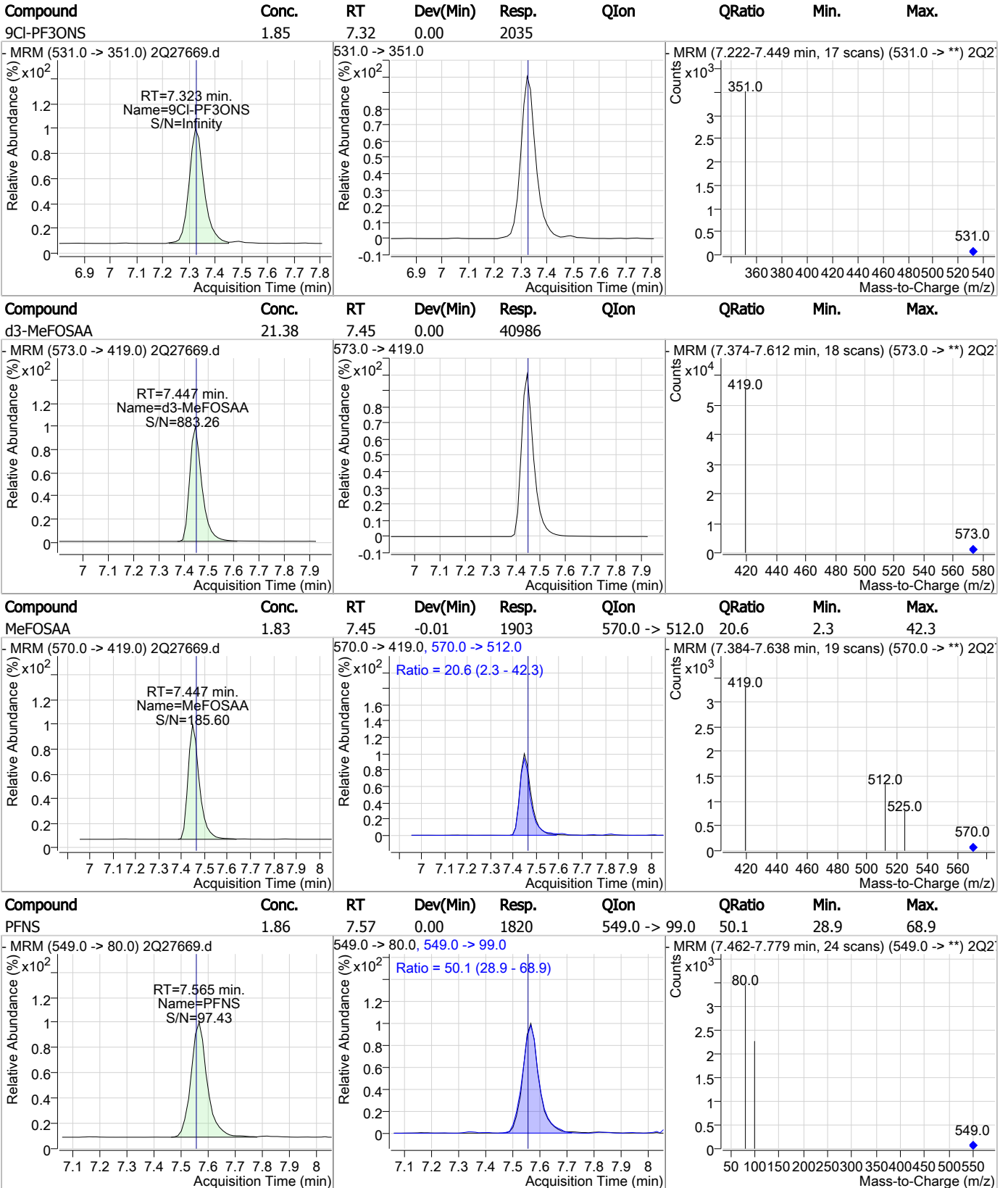
### Perfluorinated Compounds by LC/MS/MS



7.6.16

7

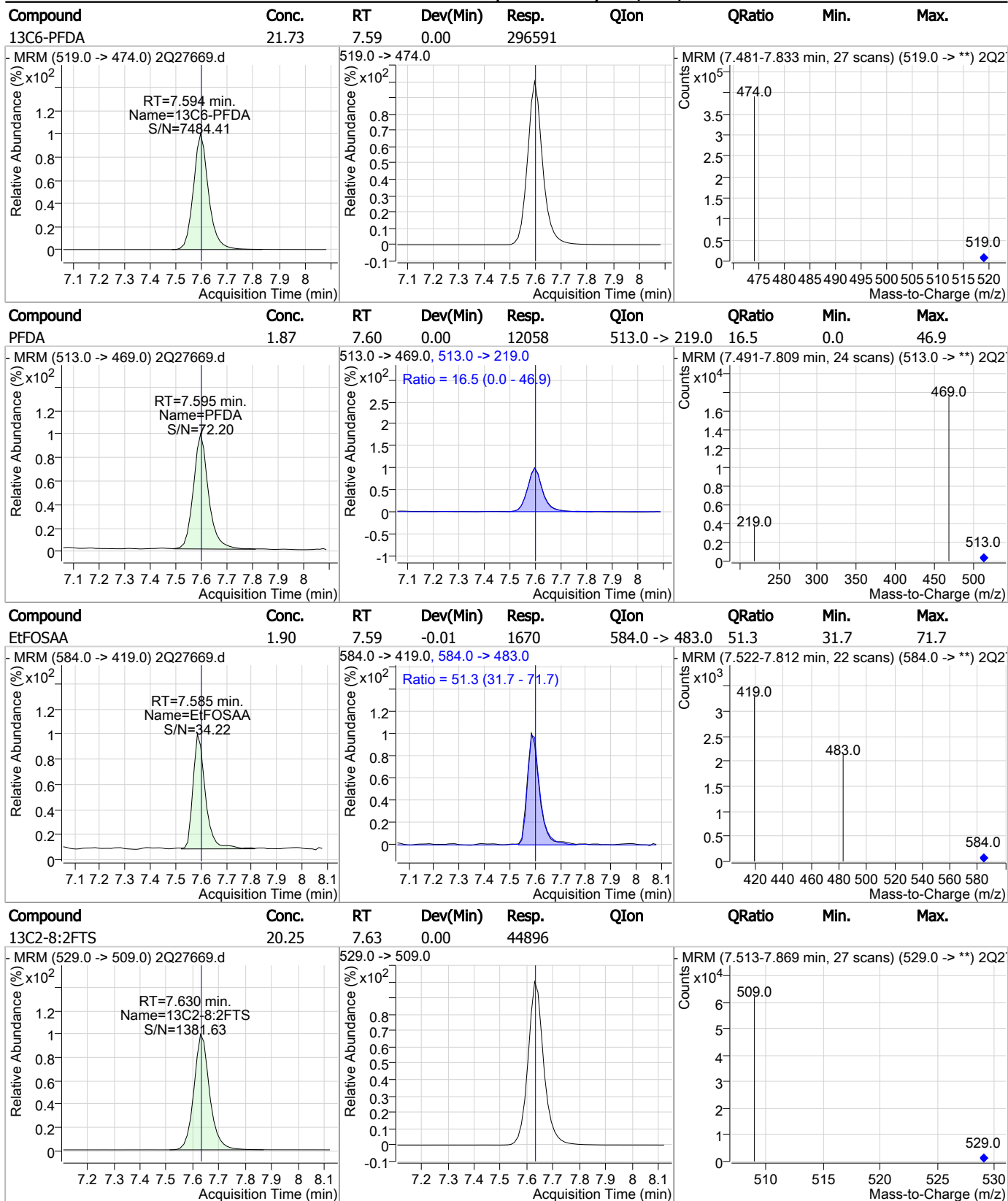
### Perfluorinated Compounds by LC/MS/MS



7.6.16

7

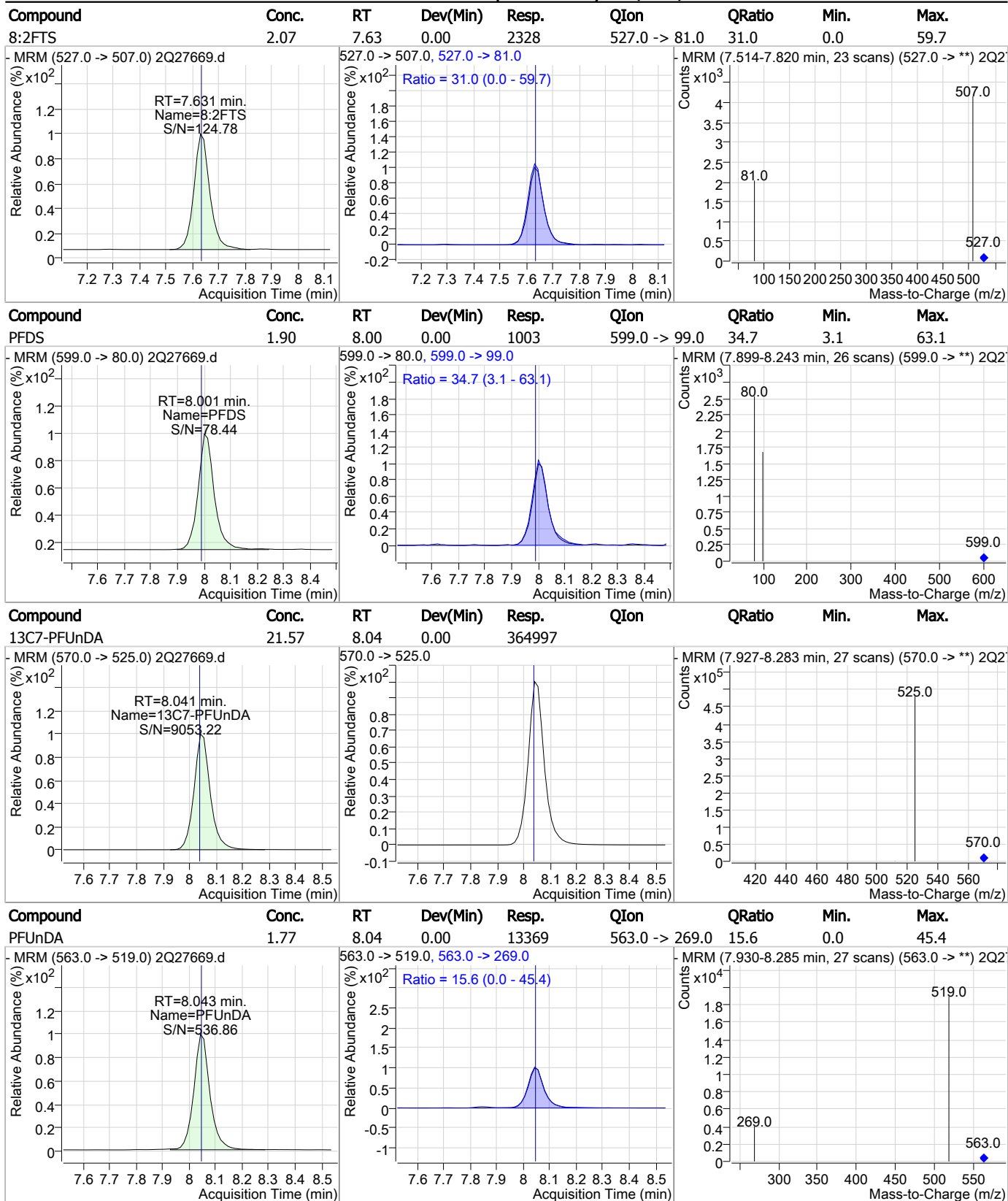
### Perfluorinated Compounds by LC/MS/MS



7.6.16

7

### Perfluorinated Compounds by LC/MS/MS



7.6.16

7

### Perfluorinated Compounds by LC/MS/MS

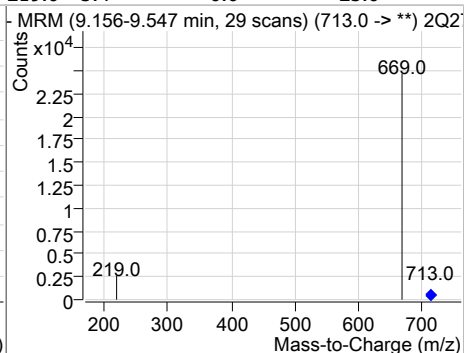
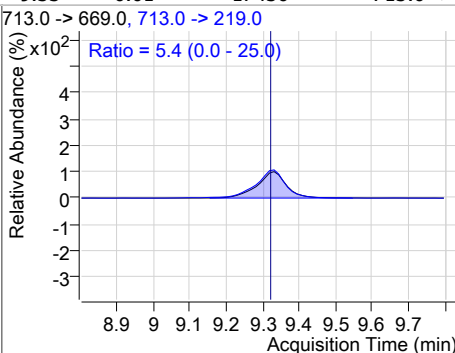
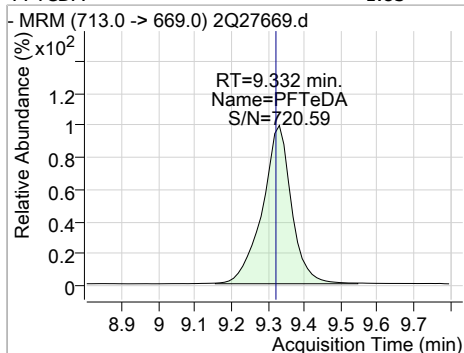
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11CI-PF3OUdS | 1.90  | 8.20 | 0.00     | 10429  |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 21.31 | 8.48 | 0.01     | 400775 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 1.81  | 8.47 | 0.00     | 16161  | 613.0 -> 319.0 | 12.5   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 1.83  | 8.92 | 0.00     | 18191  | 663.0 -> 369.0 | 7.1    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.16

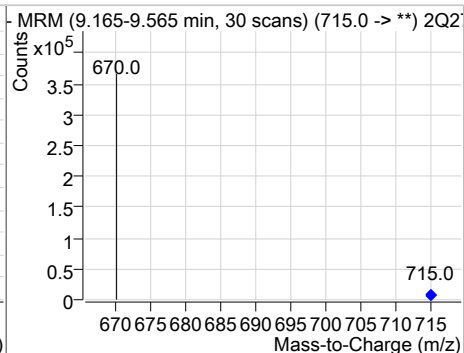
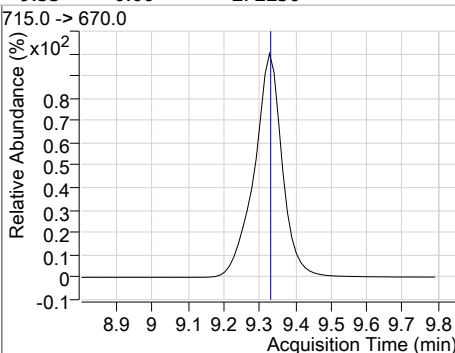
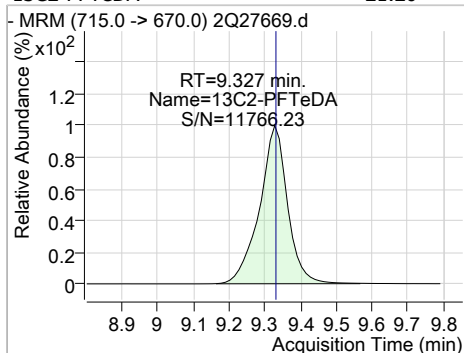
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 1.83  | 9.33 | 0.01     | 17436 | 713.0 -> 219.0 | 5.4    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFTeDA | 21.20 | 9.33 | 0.00     | 272230 | 715.0 -> 670.0 |        |      |      |



7.6.16  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-IC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27669.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 08:50      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.16.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27670.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 9:05:48 AM  
 Sample Name : IC442-5.0  
 Vial : Vial 5  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 278765 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 44175  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 118756 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 100253 | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 143772 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 204758 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 208189 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 210847 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 271790 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 337363 | 20.00 µg/L       | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 372836 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 253883 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 82894  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 18033  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 20096  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 25891  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 56481  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 61463  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 41420  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 37516  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 161737 | 100.00 µg/L      | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 56246  | 18.92 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.6% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 61459  | 19.15 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.7% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 41448  | 18.69 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.5% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 372217 | 19.79 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.9% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 253057 | 19.71 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.6% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 17967  | 19.71 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.5% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 20176  | 19.79 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.0% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 118229 | 19.72 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.6% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 204538 | 19.78 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.9% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 143561 | 19.76 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.8% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 100494 | 19.77 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.8% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 271715 | 19.91 µg/L       | 0.000    |

7.6.17  
7

## Perfluorinated Compounds by LC/MS/MS

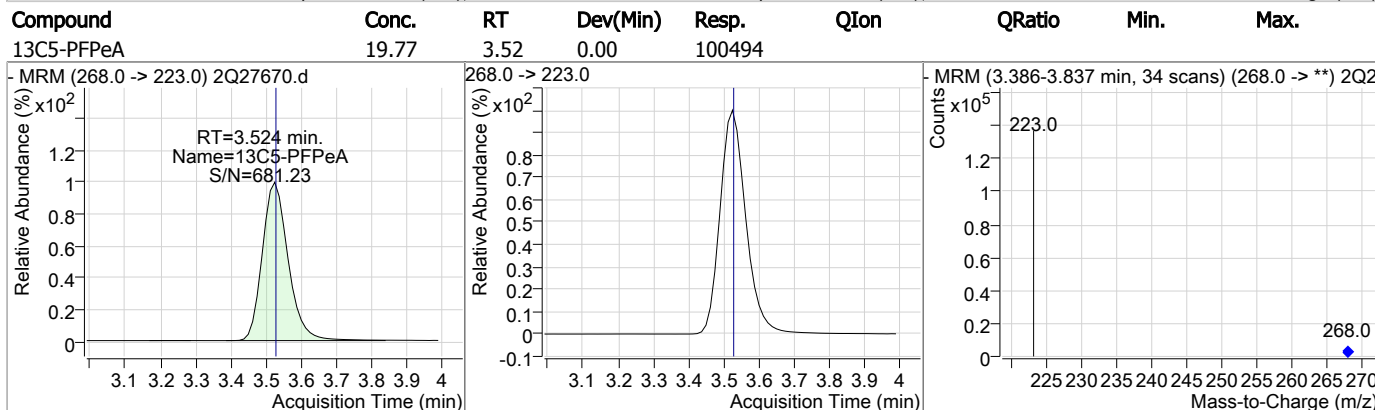
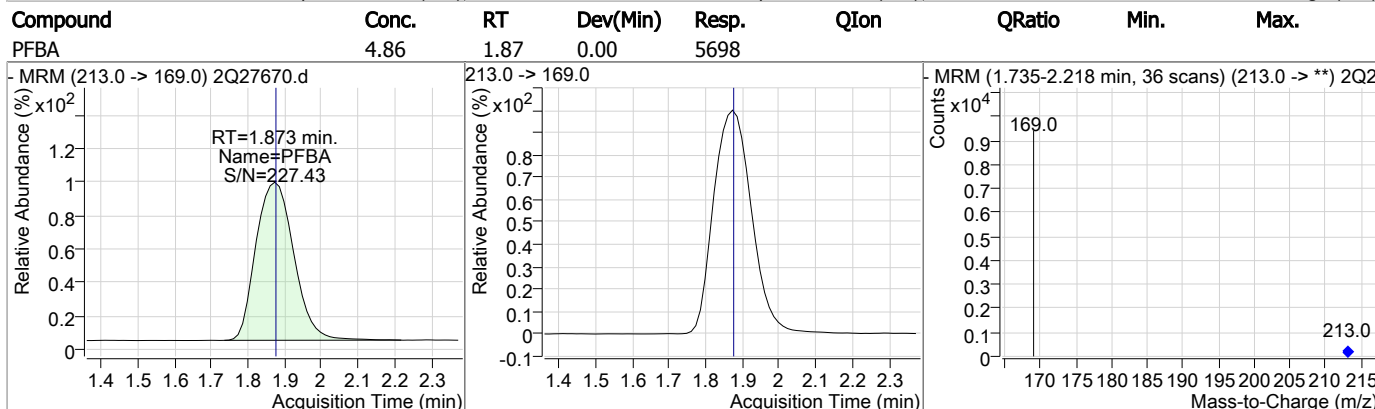
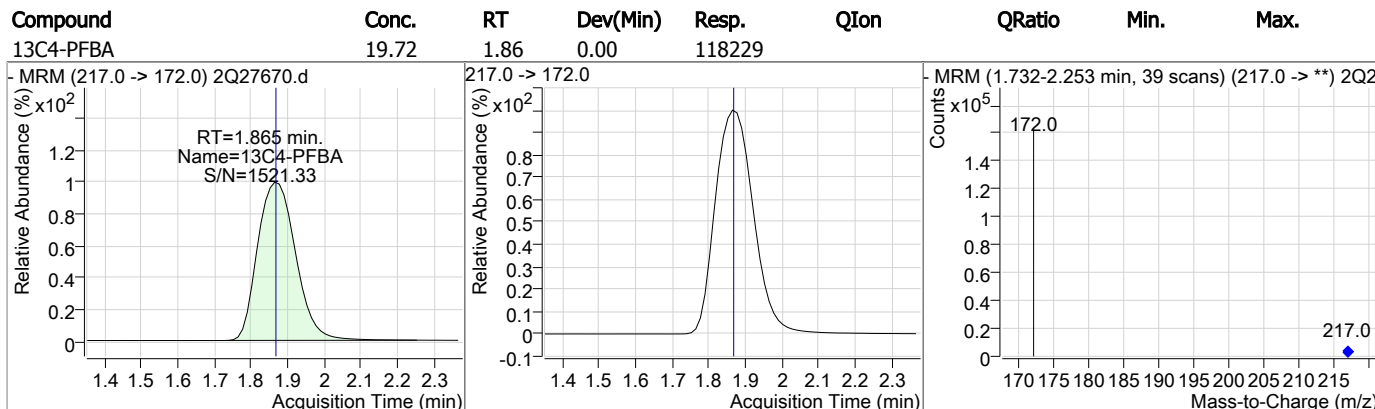
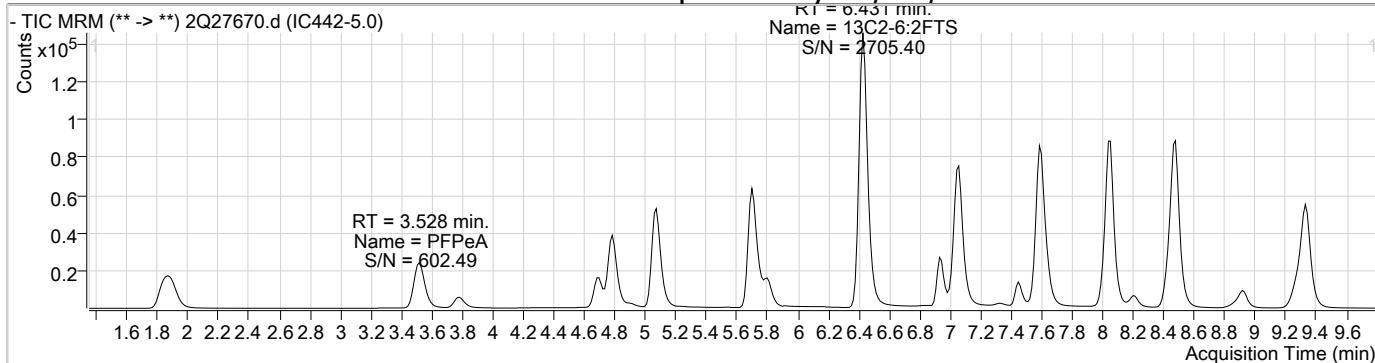
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.6%  |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 337295 | 19.93 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.7%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 82855  | 20.43 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.2% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 208115 | 19.95 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.8%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 25895  | 19.87 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.3%  |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 210750 | 19.91 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.5%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 37496  | 19.56 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.8%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 279046 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 44307  | 20.05 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.3% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 161737 | 101.15 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 101.1% |          |

## Target Compounds

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | 4.687 | 327.0 -> 307.0 | 8111  | 5.21 µg/L   | 97     |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 7596  | 5.02 µg/L   | 98     |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 5464  | 5.28 µg/L   | 100    |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 3796  | 4.72 µg/L   | 96     |
| FOSA         | 6.935 | 498.0 -> 78.0  | 9180  | 4.82 µg/L   | 99     |
| MeFOSAA      | 7.447 | 570.0 -> 419.0 | 4804  | 5.04 µg/L   | 100    |
| PFBA         | 1.873 | 213.0 -> 169.0 | 5698  | 4.86 µg/L   | 100    |
| PFBS         | 3.771 | 299.0 -> 80.0  | 6992  | 4.88 µg/L   | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 28522 | 4.82 µg/L   | 97     |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 40065 | 4.83 µg/L   | 100    |
| PFDS         | 8.014 | 599.0 -> 80.0  | 2395  | 5.02 µg/L   | 100    |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 43067 | 4.88 µg/L   | 100    |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 4822  | 4.95 µg/L   | 99     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 12169 | 4.91 µg/L   | 100    |
| PFHxS        | 5.739 | 399.0 -> 80.0  | 5346  | 4.81 µg/L   | m 98   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 33118 | 4.74 µg/L   | 99     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 4516  | 5.09 µg/L   | 98     |
| PFOA         | 6.437 | 413.0 -> 369.0 | 27043 | 4.81 µg/L   | 99     |
| PFOS         | 7.037 | 499.0 -> 80.0  | 6138  | 4.88 µg/L   | m 79   |
| PFPeA        | 3.528 | 263.0 -> 219.0 | 21279 | 4.90 µg/L   | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 4429  | 4.83 µg/L   | 95     |
| PFTeDA       | 9.332 | 713.0 -> 669.0 | 42796 | 4.82 µg/L   | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 44328 | 4.79 µg/L   | 99     |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 32956 | 4.74 µg/L   | 99     |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 25423 | 4.98 µg/L   | 100    |
| 9Cl-PF3ONS   | 7.323 | 531.0 -> 351.0 | 5049  | 5.00 µg/L   | 100    |
| ADONA        | 5.804 | 377.0 -> 251.0 | 50158 | 4.93 µg/L   | 100    |
| HFPO-DA      | 5.073 | 329.0 -> 169.0 | 47095 | 24.51 µg/L  | 99     |

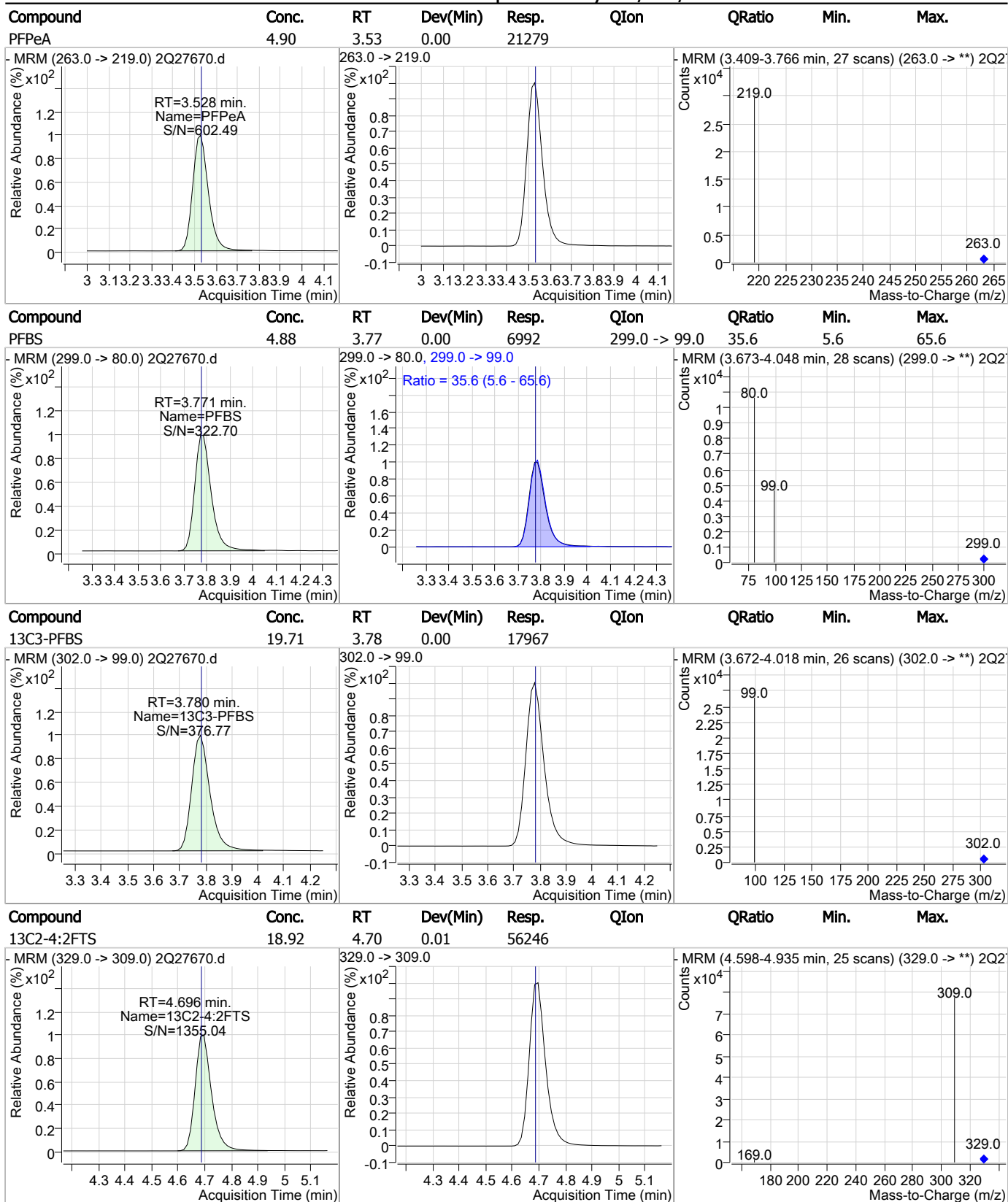
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.17

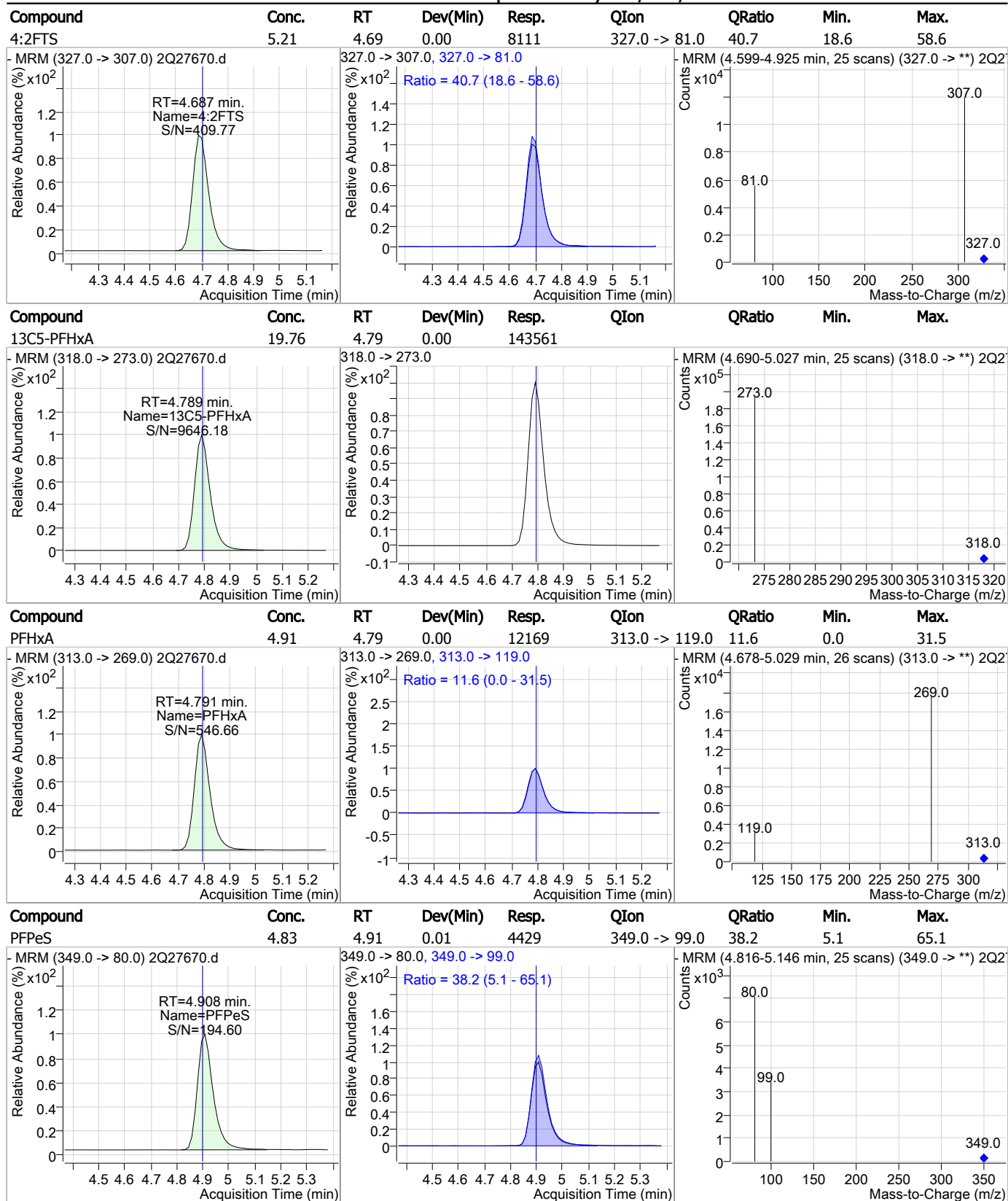
### Perfluorinated Compounds by LC/MS/MS



7.6.17

7

### Perfluorinated Compounds by LC/MS/MS

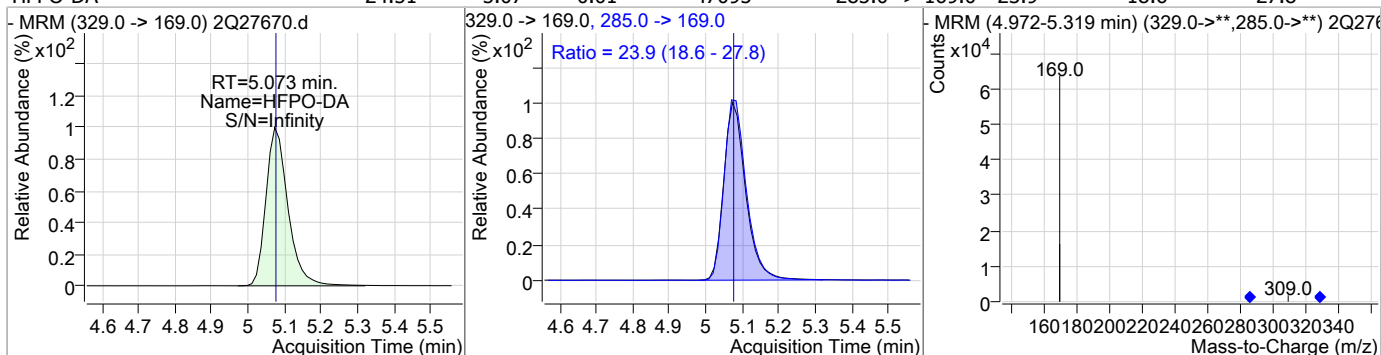


7.6.17

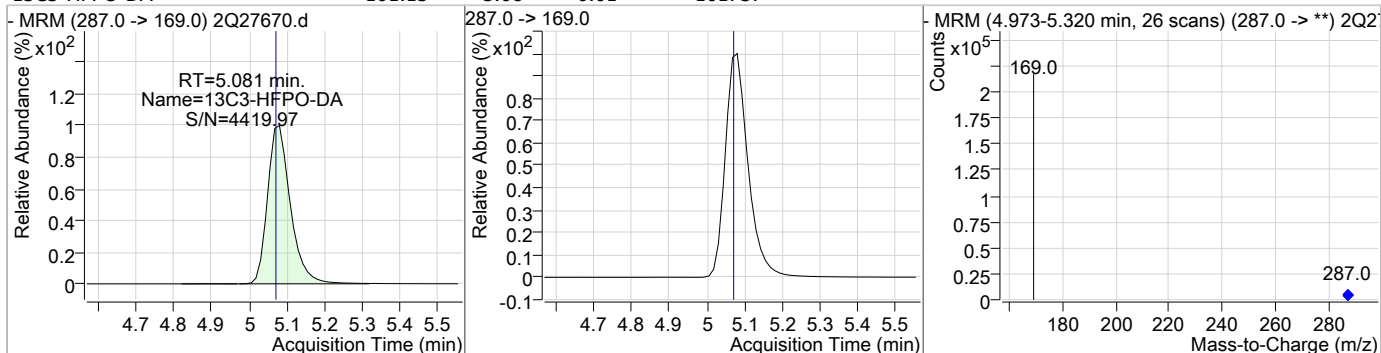
7

### Perfluorinated Compounds by LC/MS/MS

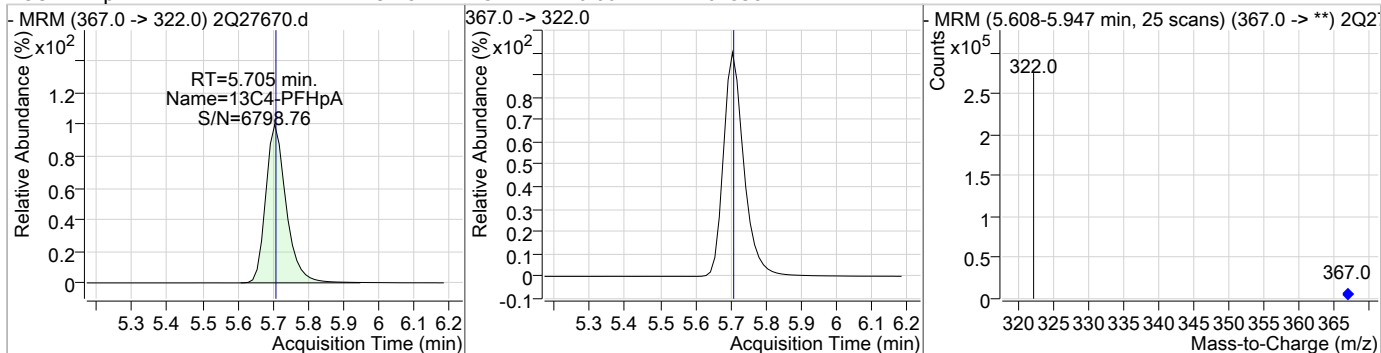
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 24.51 | 5.07 | 0.01     | 47095 | 285.0 -> 169.0 | 23.9   | 18.6 | 27.8 |



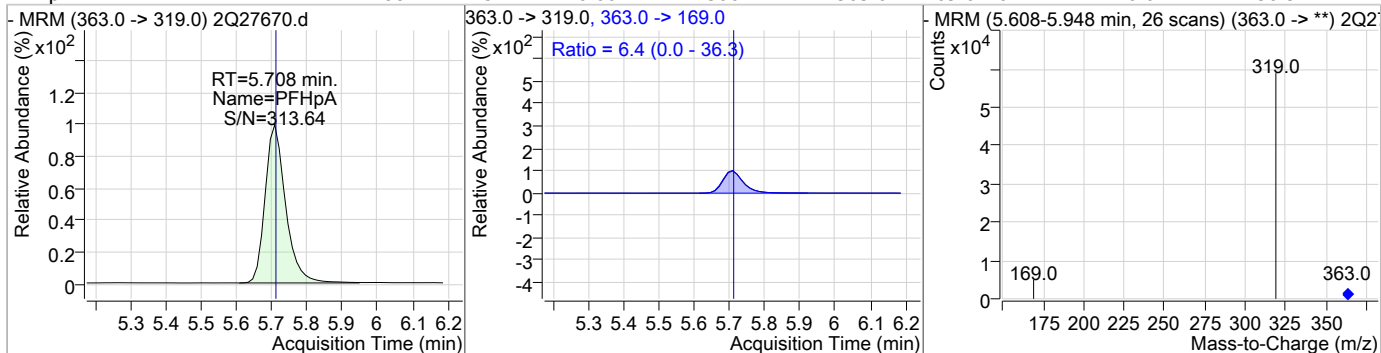
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 101.15 | 5.08 | 0.01     | 161737 |      |        |      |      |



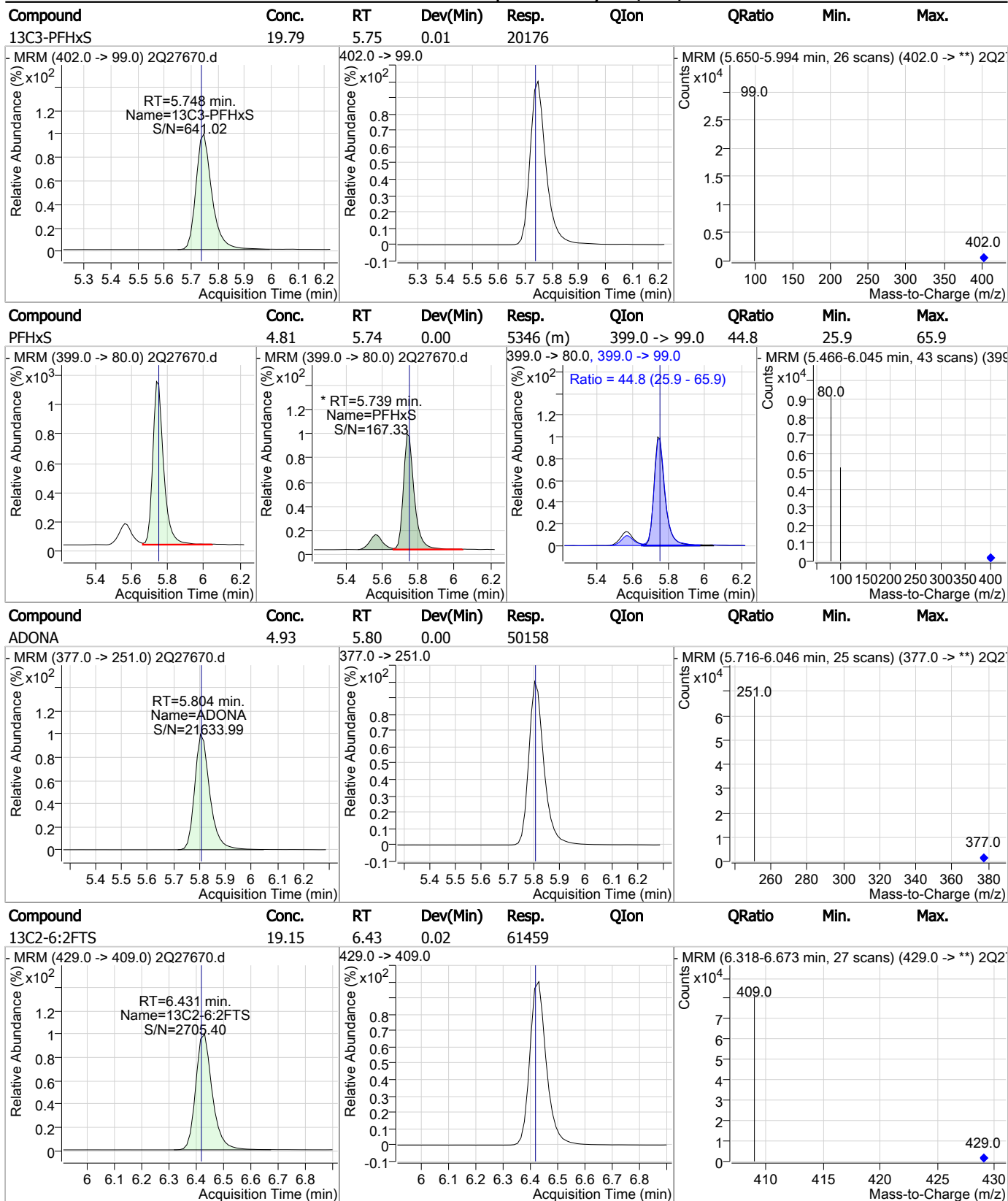
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 19.78 | 5.71 | 0.00     | 204538 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 4.88  | 5.71 | 0.00     | 43067 | 363.0 -> 169.0 | 6.4    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

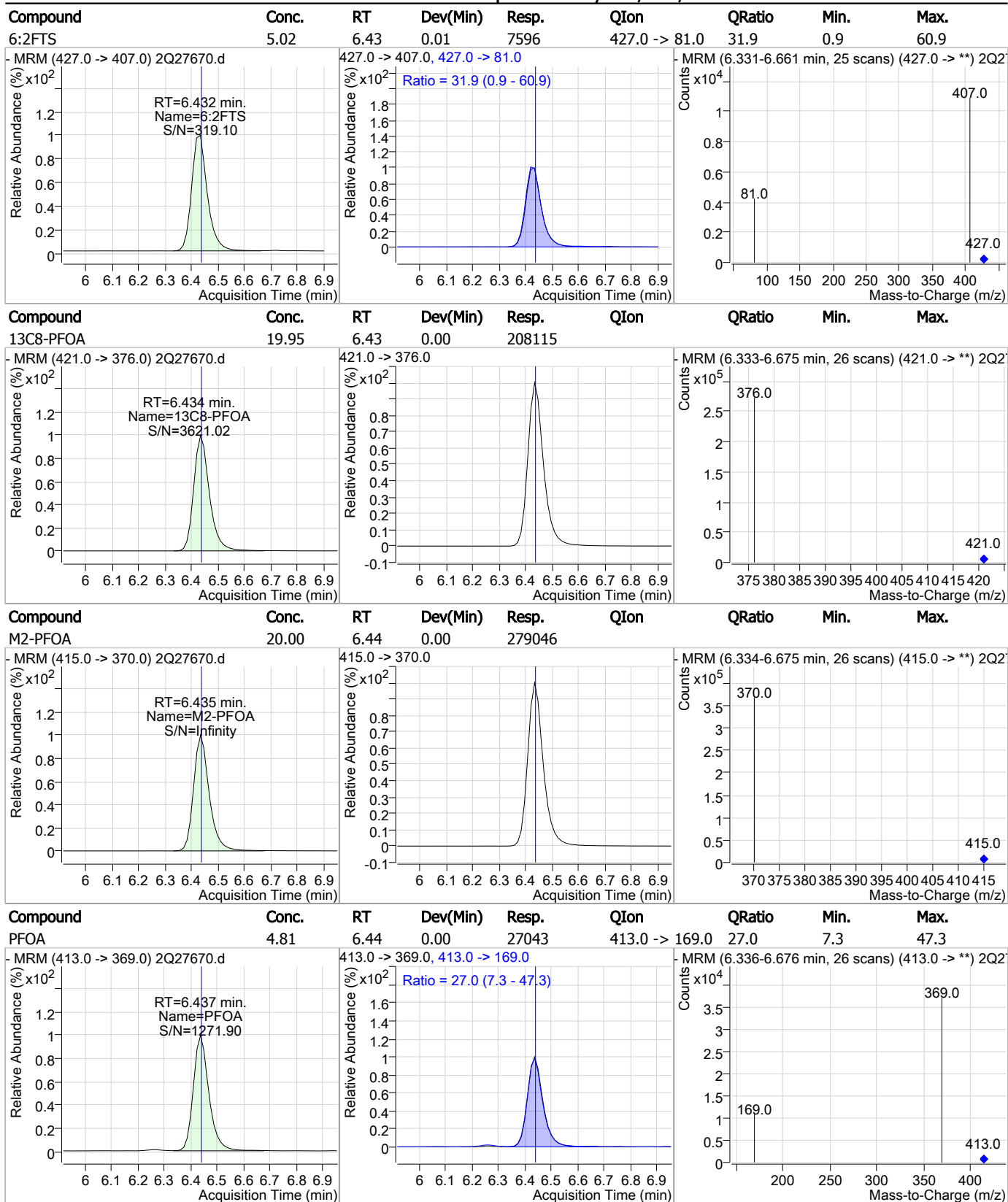


7.6.17

7



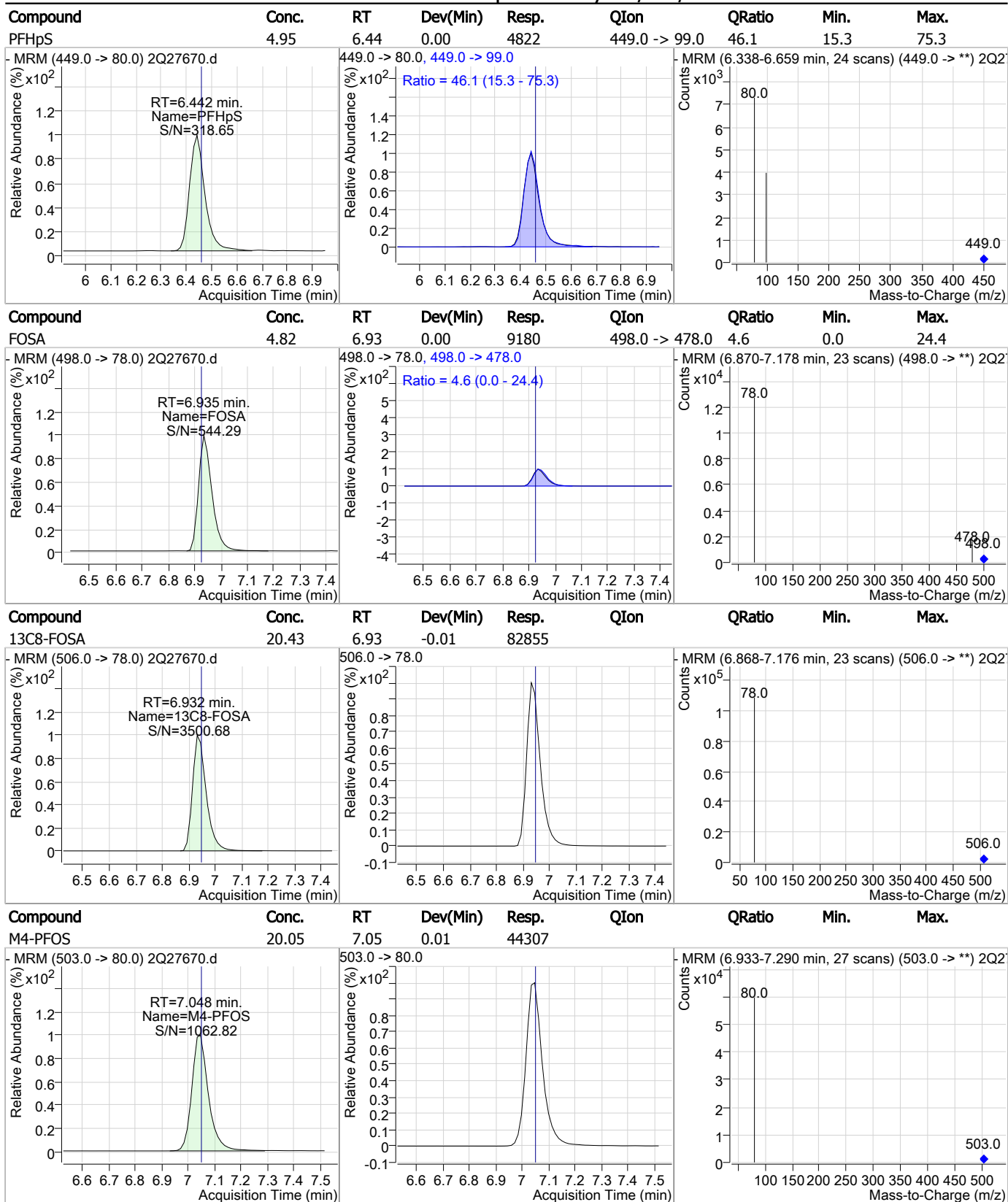
### Perfluorinated Compounds by LC/MS/MS



7.6.17

7

### Perfluorinated Compounds by LC/MS/MS

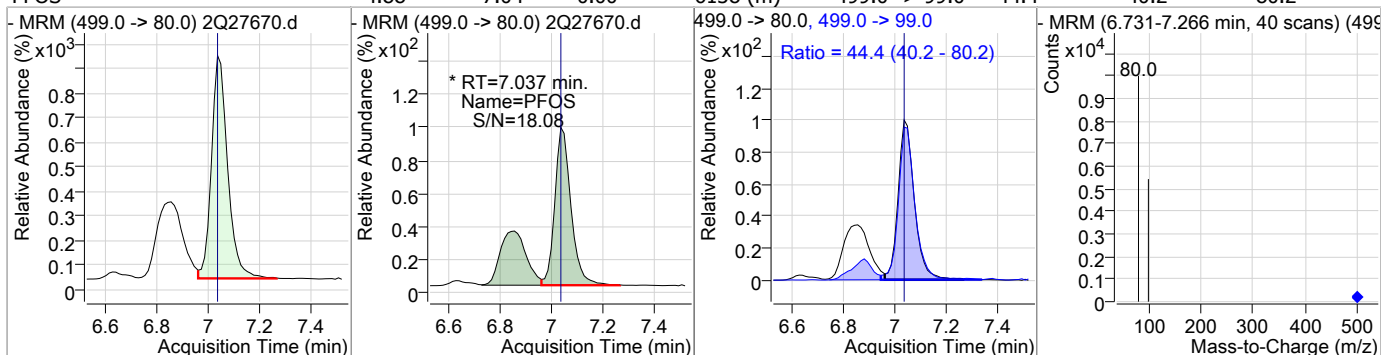


7.6-17

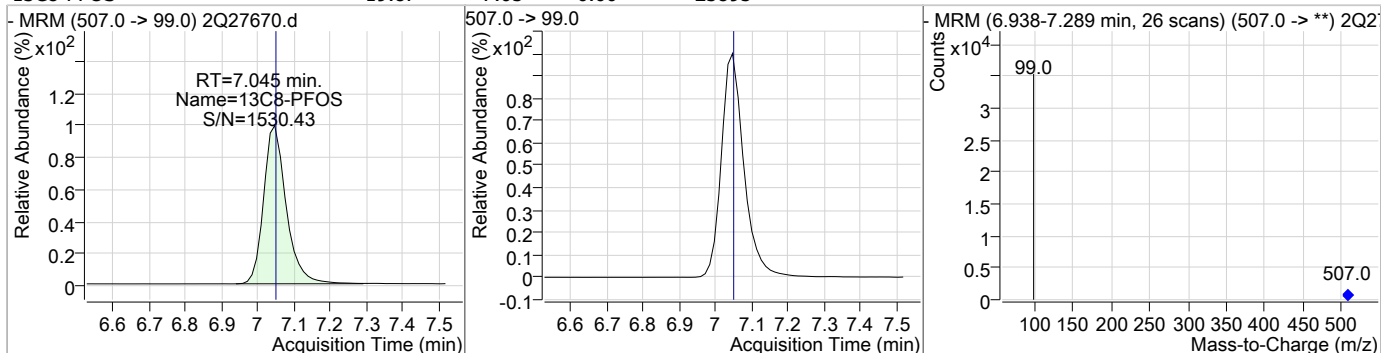
7

### Perfluorinated Compounds by LC/MS/MS

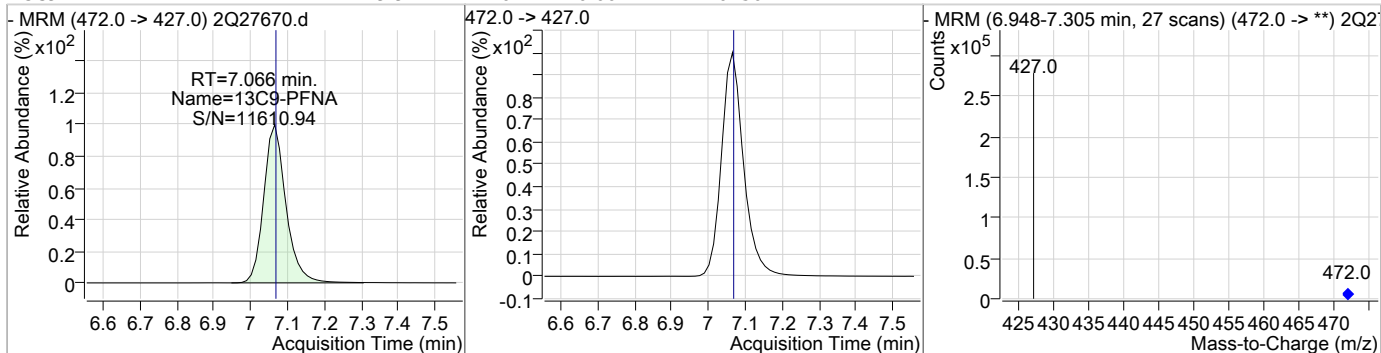
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFOS     | 4.88  | 7.04 | 0.00     | 6138 (m) | 499.0 -> 99.0 | 44.4   | 40.2 | 80.2 |



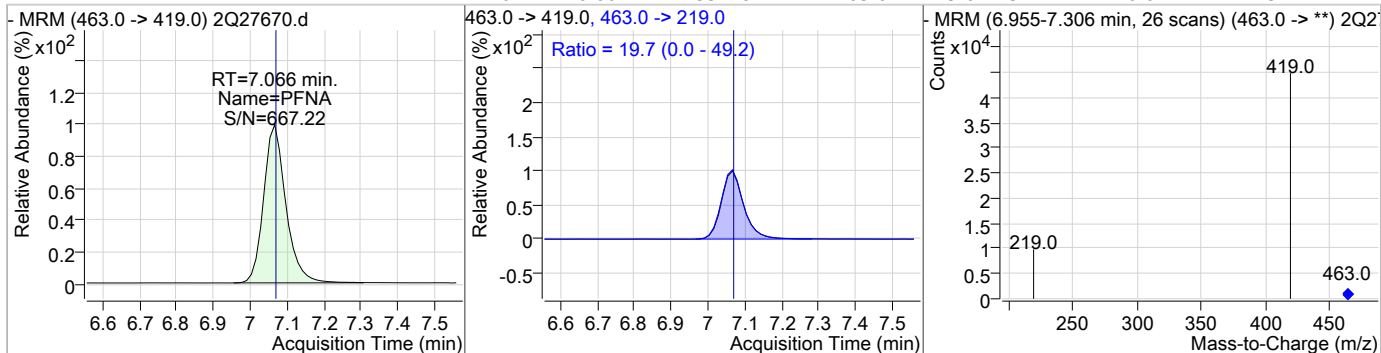
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 19.87 | 7.05 | 0.00     | 25895 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 19.91 | 7.07 | 0.00     | 210750 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFNA     | 4.74  | 7.07 | 0.00     | 33118 | 463.0 -> 219.0 | 19.7   | 0.0  | 49.2 |



7.6.17  
7

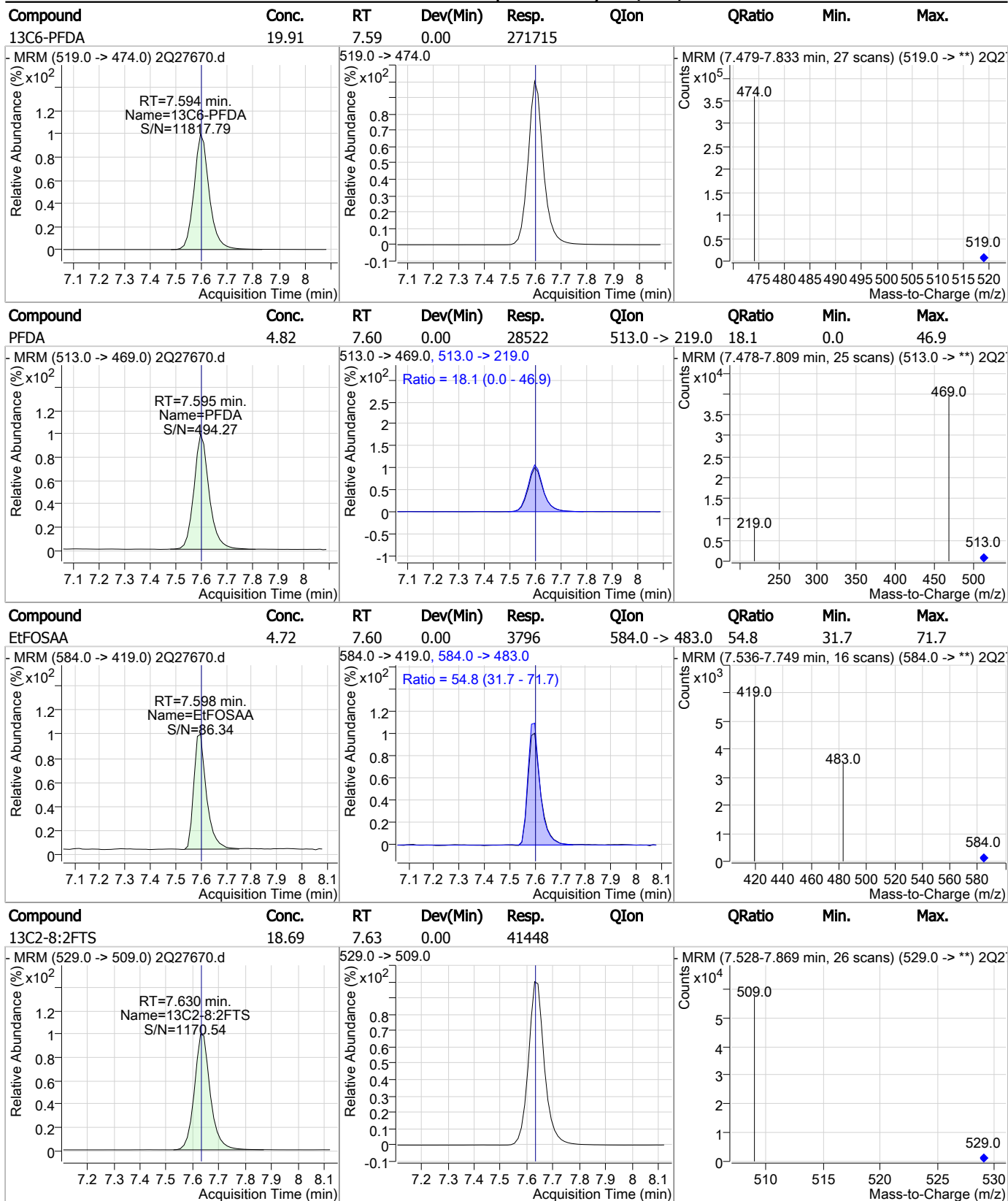
### Perfluorinated Compounds by LC/MS/MS

| Compound                         | Conc. | RT   | Dev(Min)                       | Resp. | QIon           | QRatio  | Min. | Max. |
|----------------------------------|-------|------|--------------------------------|-------|----------------|---|------|------|
| 9Cl-PF3ONS                       | 5.00  | 7.32 | 0.00                           | 5049  |                |   |      |      |
| - MRM (531.0 -> 351.0) 2Q27670.d |       |      | 531.0 -> 351.0                 |       |                | - MRM (7.225-7.540 min, 24 scans) (531.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| d3-MeFOSAA                       | 19.56 | 7.45 | 0.00                           | 37496 |                |   |      |      |
| - MRM (573.0 -> 419.0) 2Q27670.d |       |      | 573.0 -> 419.0                 |       |                | - MRM (7.371-7.687 min, 24 scans) (573.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| MeFOSAA                          | 5.04  | 7.45 | -0.01                          | 4804  | 570.0 -> 512.0 | 22.5  | 2.3  | 42.3 |
| - MRM (570.0 -> 419.0) 2Q27670.d |       |      | 570.0 -> 419.0, 570.0 -> 512.0 |       |                | - MRM (7.372-7.688 min, 24 scans) (570.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| PFNS                             | 5.09  | 7.57 | 0.00                           | 4516  | 549.0 -> 99.0  | 50.0  | 28.9 | 68.9 |
| - MRM (549.0 -> 80.0) 2Q27670.d  |       |      | 549.0 -> 80.0, 549.0 -> 99.0   |       |                | - MRM (7.462-7.805 min, 26 scans) (549.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |

7.6.17

7

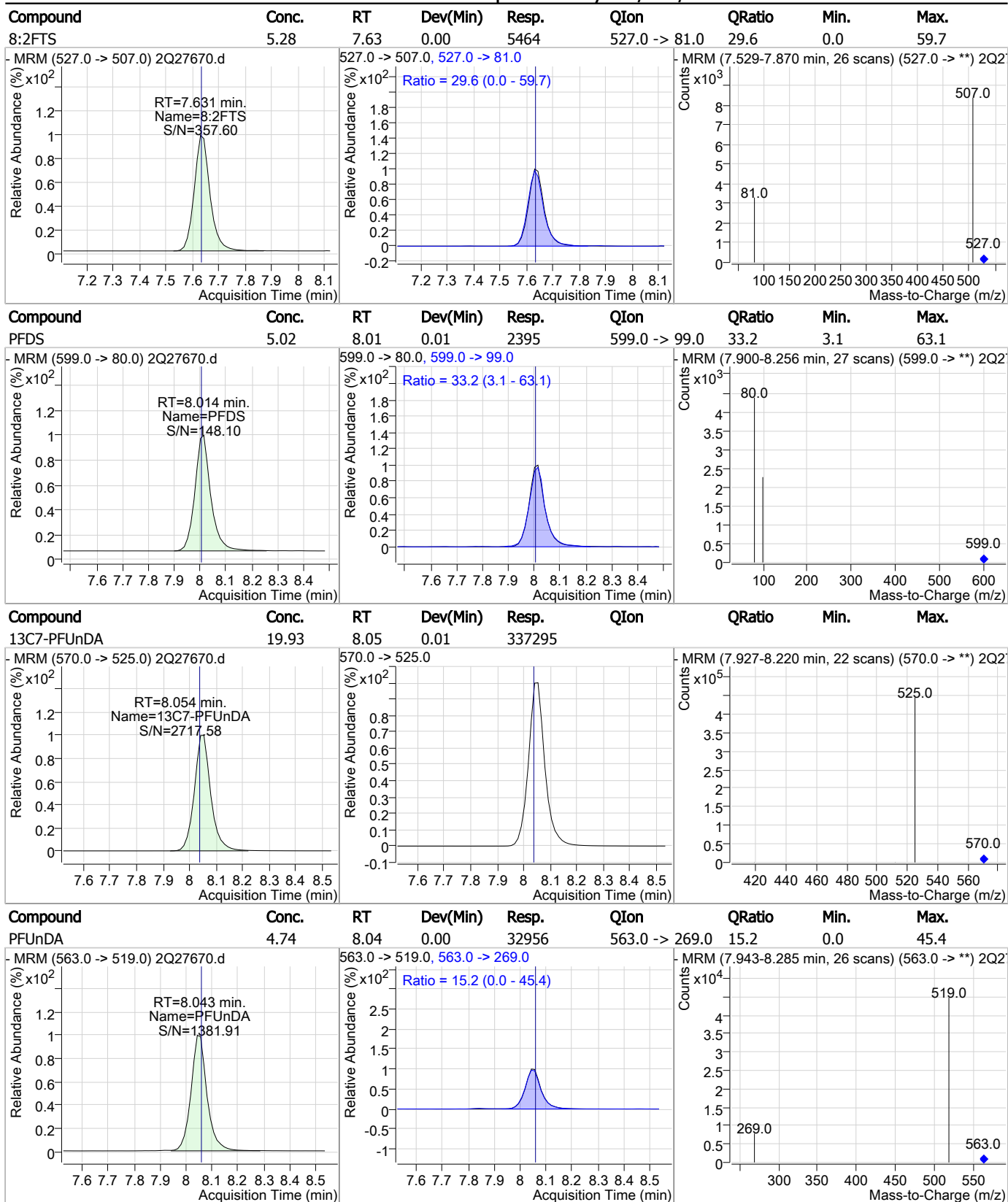
### Perfluorinated Compounds by LC/MS/MS



7.6.17

7

### Perfluorinated Compounds by LC/MS/MS



7.6.17

7

### Perfluorinated Compounds by LC/MS/MS

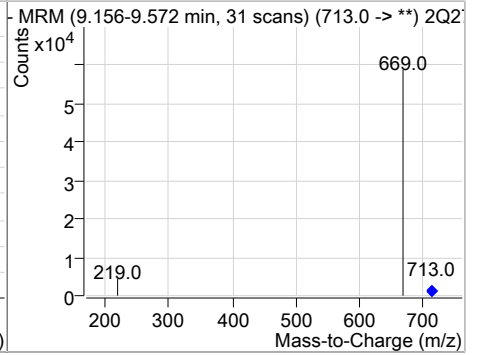
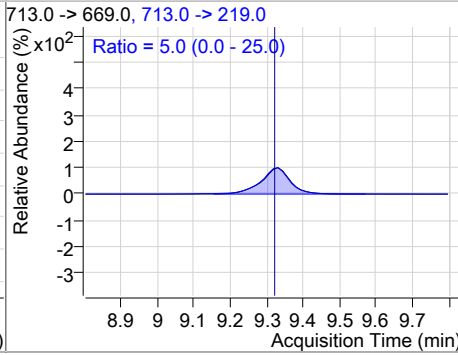
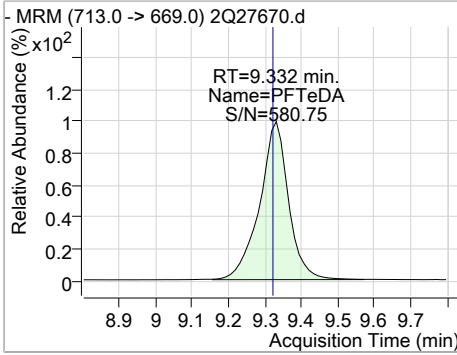
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 4.98  | 8.20 | 0.00     | 25423  |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 19.79 | 8.48 | 0.01     | 372217 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 4.83  | 8.47 | 0.00     | 40065  | 613.0 -> 319.0 | 12.5   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 4.79  | 8.92 | 0.00     | 44328  | 663.0 -> 369.0 | 7.0    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.17

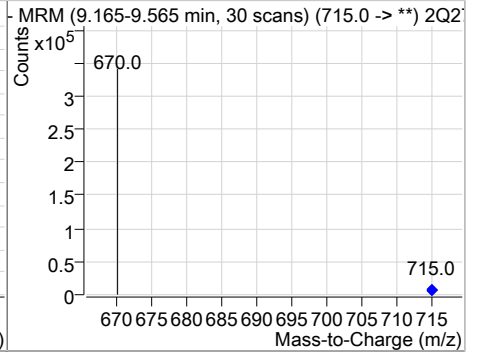
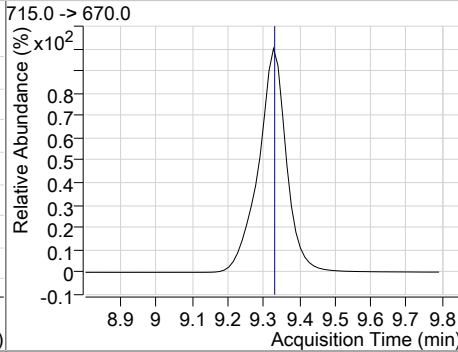
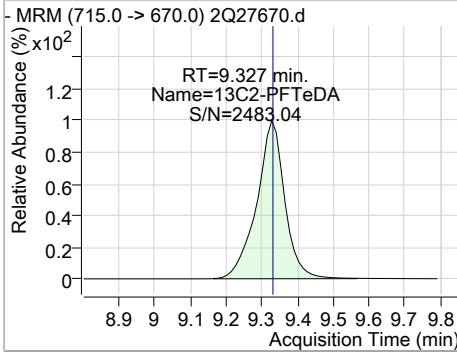
7

Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 4.82  | 9.33 | 0.01     | 42796 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 19.71 | 9.33 | 0.00     | 253057 |      |        |      |      |



7.6.17  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-IC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27670.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 09:05      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T. (min.) | Reason     |
|------------------------------|-----------|------|-------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74        | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04        | Split peak |

7.6.17.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27671.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 9:21:31 AM  
 Sample Name : IC442-10  
 Vial : Vial 6  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 273845 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 43510  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 115439 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 97742  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 138736 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 199316 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 203690 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 205438 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 265502 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 330165 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 368800 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 251650 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 79198  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 17491  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 19553  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 24727  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 55336  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 60730  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 41260  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 37611  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 159331 | 100.00 µg/L      | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 55125  | 18.54 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.7% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 60653  | 18.90 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.5% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 41259  | 18.61 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.0% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 368816 | 19.61 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.0% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 250927 | 19.54 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.7% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 17433  | 19.12 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.6% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 19521  | 19.15 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.7% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 114963 | 19.17 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.9% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 199188 | 19.26 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.3% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 138478 | 19.06 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.3% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 97995  | 19.28 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.4% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 265416 | 19.45 µg/L       | 0.000    |

7.6.18  
7

## Perfluorinated Compounds by LC/MS/MS

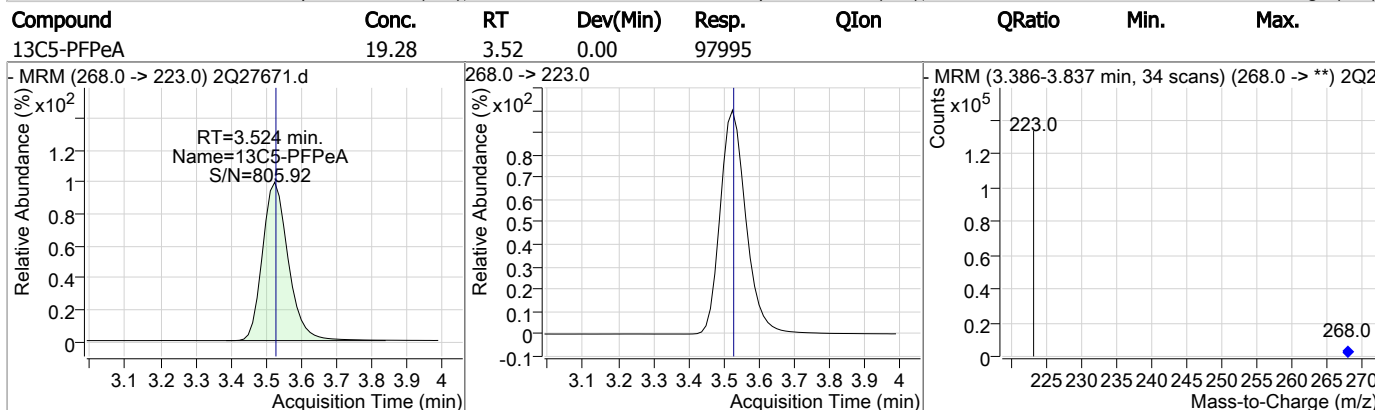
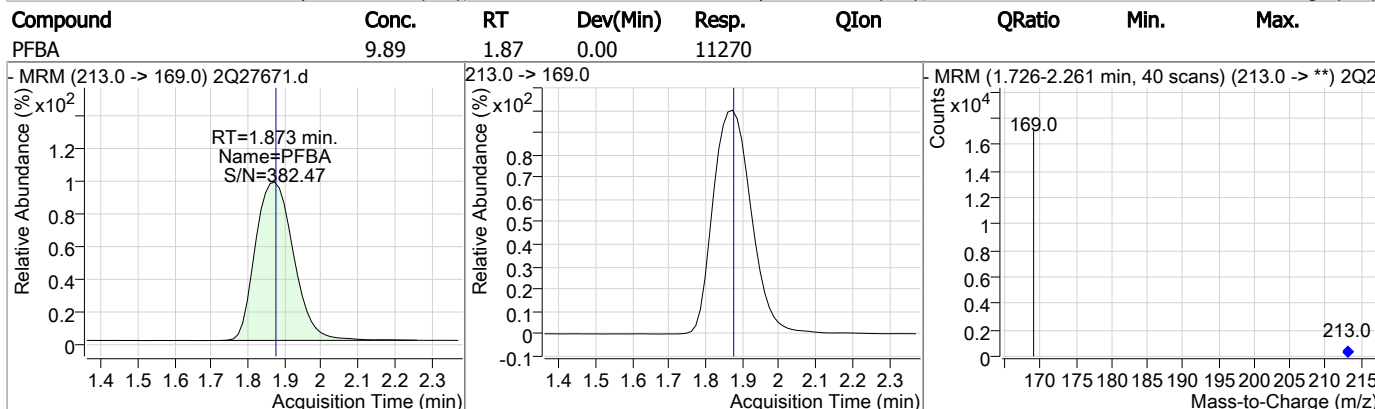
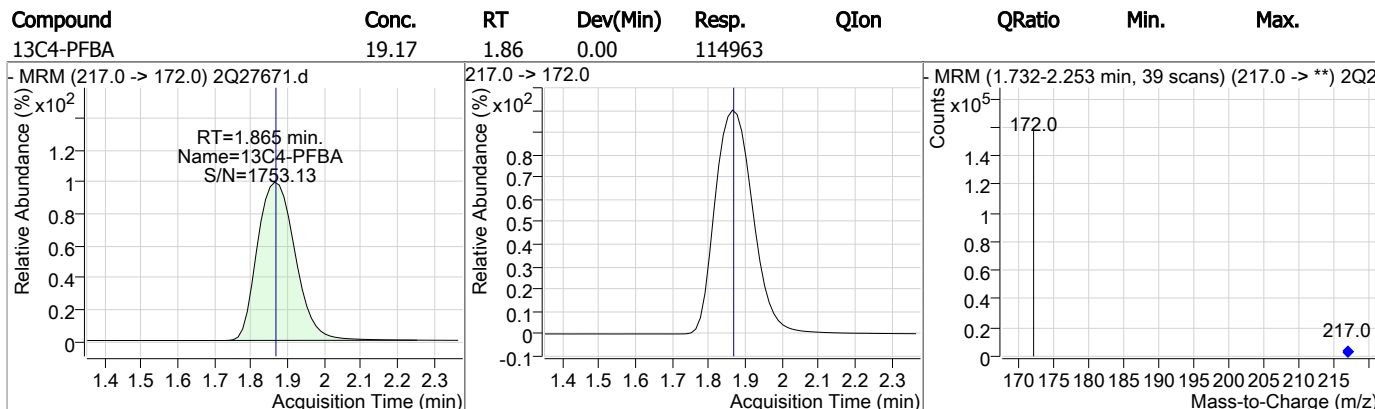
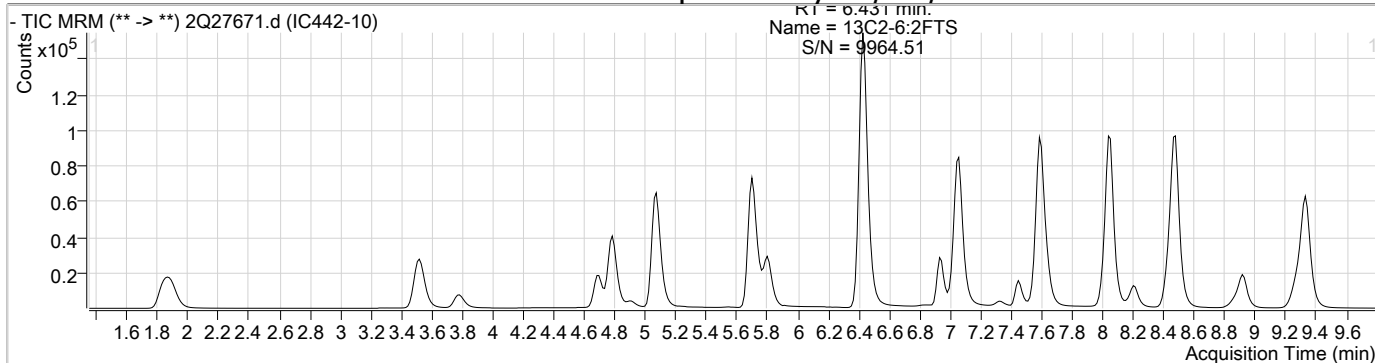
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.2%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 329815 | 19.49 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.4%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 79166  | 19.52 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.6%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 203450 | 19.50 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.5%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 24754  | 18.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.0%  |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 205369 | 19.40 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.0%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 37681  | 19.66 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.3%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 274046 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 43555  | 20.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 159331 | 99.64 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 99.6%  |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 15675  | 10.28 µg/L  | 96     |
| 6:2FTS           | 6.432 | 427.0 -> 407.0 | 15150  | 10.14 µg/L  | 98     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 10959  | 10.62 µg/L  | 98     |
| EtFOSAA          | 7.585 | 584.0 -> 419.0 | 7881   | 9.80 µg/L   | 98     |
| FOSAA            | 6.935 | 498.0 -> 78.0  | 17899  | 9.83 µg/L   | 100    |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 9373   | 9.80 µg/L   | 96     |
| PFBA             | 1.873 | 213.0 -> 169.0 | 11270  | 9.89 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 13704  | 9.87 µg/L   | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 57194  | 9.90 µg/L   | 100    |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 80823  | 9.85 µg/L   | 100    |
| PFDS             | 8.014 | 599.0 -> 80.0  | 4628   | 10.16 µg/L  | 98     |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 84384  | 9.82 µg/L   | 99     |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 9536   | 10.05 µg/L  | 100    |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 23822  | 9.97 µg/L   | 100    |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 10631  | 9.84 µg/L   | m 96   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 68218  | 10.01 µg/L  | 99     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 8932   | 10.54 µg/L  | 100    |
| PFOA             | 6.437 | 413.0 -> 369.0 | 52958  | 9.63 µg/L   | 99     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 12220  | 10.18 µg/L  | m 81   |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 41709  | 9.86 µg/L   | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 8833   | 9.94 µg/L   | 97     |
| PFTeDA           | 9.332 | 713.0 -> 669.0 | 87410  | 9.93 µg/L   | 100    |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 90708  | 9.90 µg/L   | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 66712  | 9.79 µg/L   | 99     |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 50832  | 10.06 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 10324  | 10.42 µg/L  | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 100336 | 10.03 µg/L  | 100    |
| HFPO-DA          | 5.073 | 329.0 -> 169.0 | 91283  | 48.23 µg/L  | 98     |

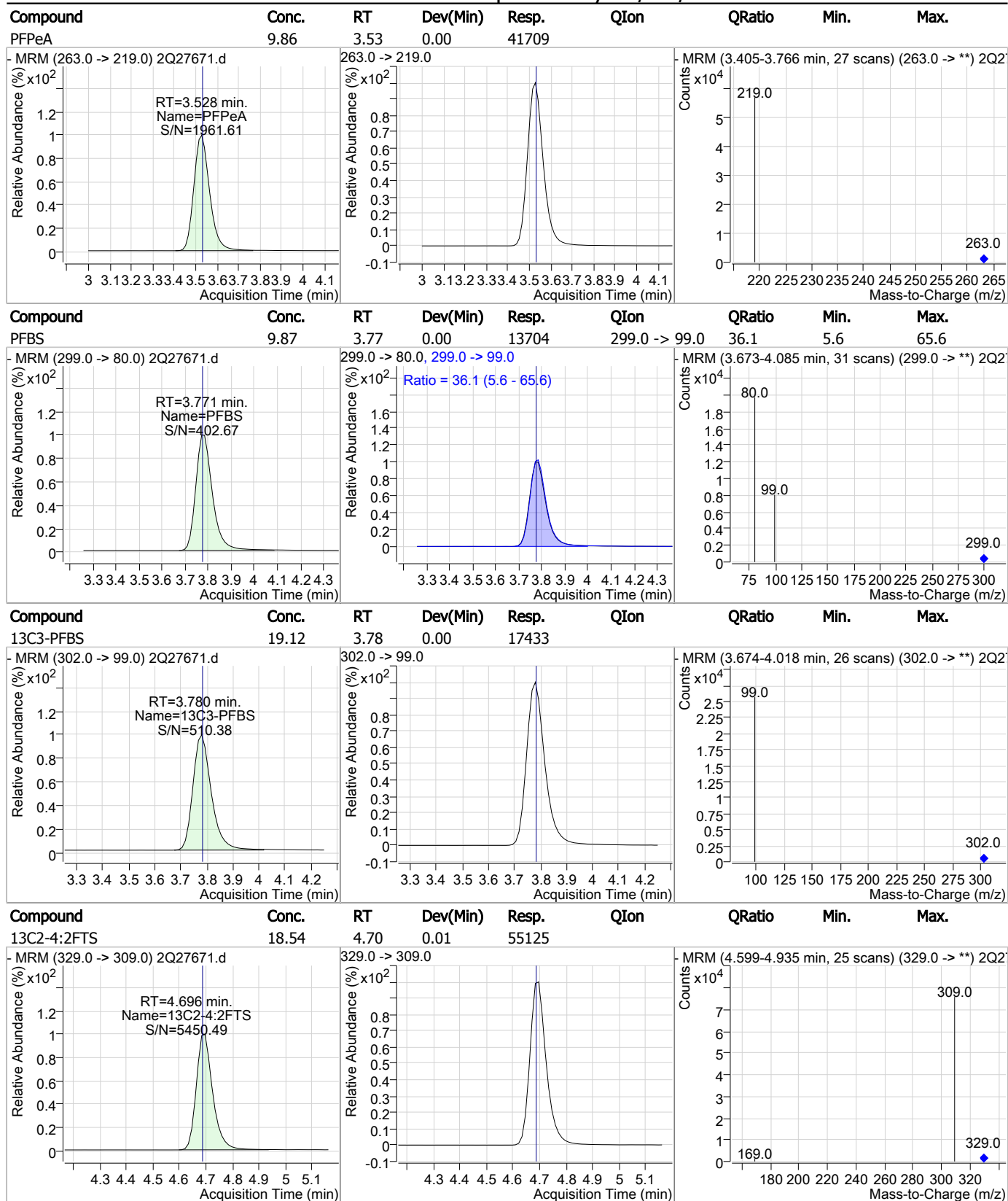
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.18  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.18

7

### Perfluorinated Compounds by LC/MS/MS

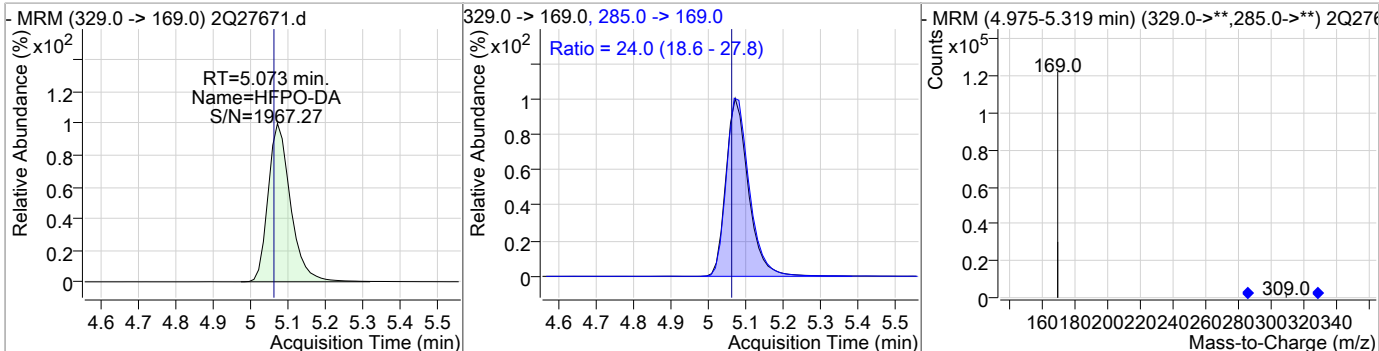
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 4:2FTS     | 10.28 | 4.69 | 0.00     | 15675  | 327.0 -> 81.0  | 40.8   | 18.6 | 58.6 |
|            |       |      |          |        |                |        |      |      |
| 13C5-PFHxA | 19.06 | 4.79 | 0.00     | 138478 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFHxA      | 9.97  | 4.79 | 0.00     | 23822  | 313.0 -> 119.0 | 11.5   | 0.0  | 31.5 |
|            |       |      |          |        |                |        |      |      |
| PFPeS      | 9.94  | 4.91 | 0.01     | 8833   | 349.0 -> 99.0  | 37.0   | 5.1  | 65.1 |
|            |       |      |          |        |                |        |      |      |

7.6.18

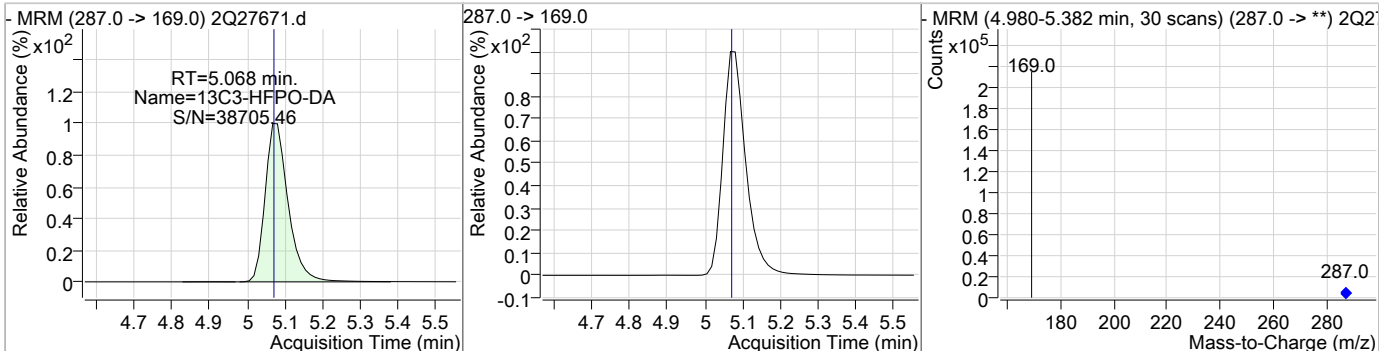
7

### Perfluorinated Compounds by LC/MS/MS

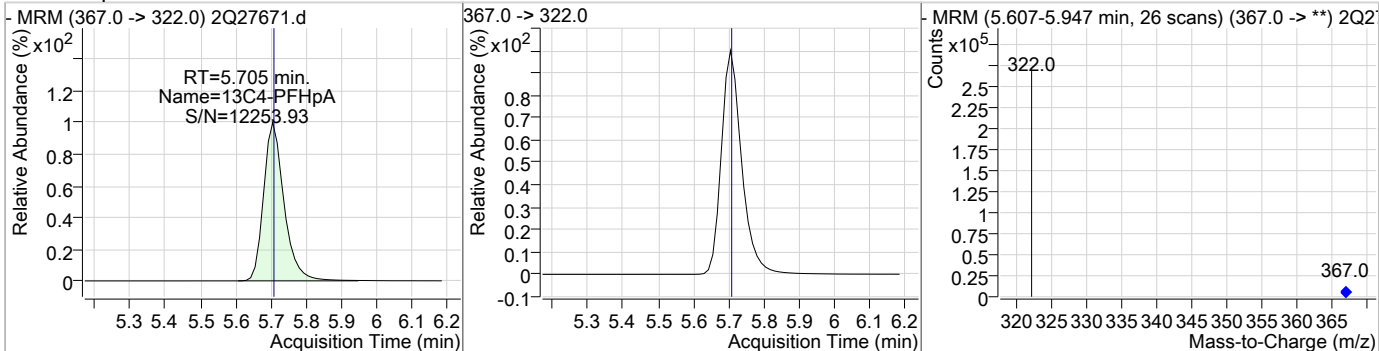
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 48.23 | 5.07 | 0.01     | 91283 | 285.0 -> 169.0 | 24.0   | 18.6 | 27.8 |



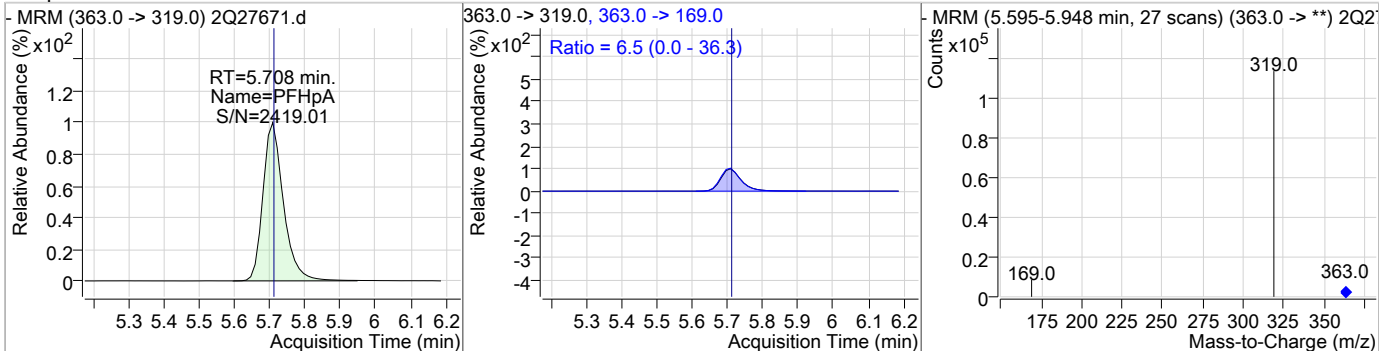
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 99.64 | 5.07 | 0.00     | 159331 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 19.26 | 5.71 | 0.00     | 199188 |      |        |      |      |

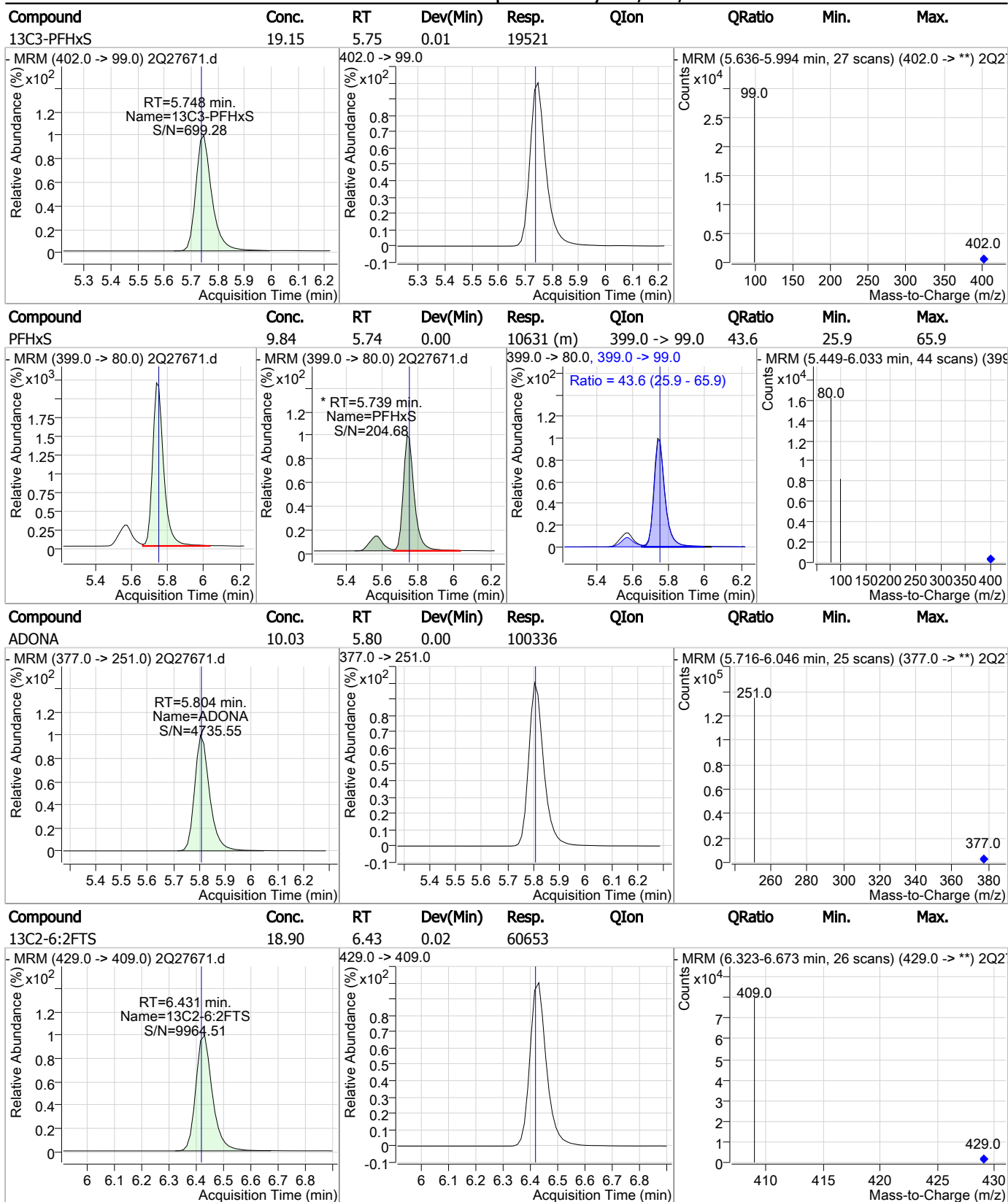


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 9.82  | 5.71 | 0.00     | 84384 | 363.0 -> 169.0 | 6.5    | 0.0  | 36.3 |



7.6.18  
7

### Perfluorinated Compounds by LC/MS/MS



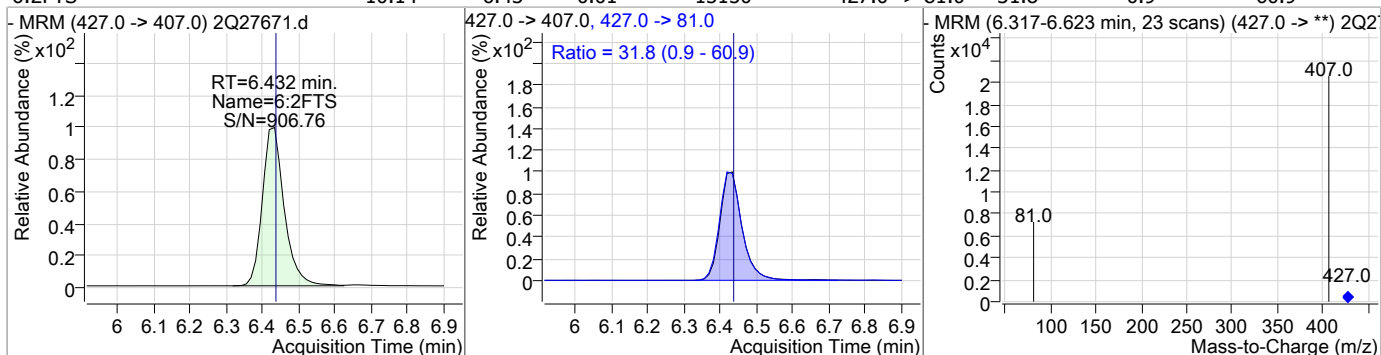
7.6.18

7

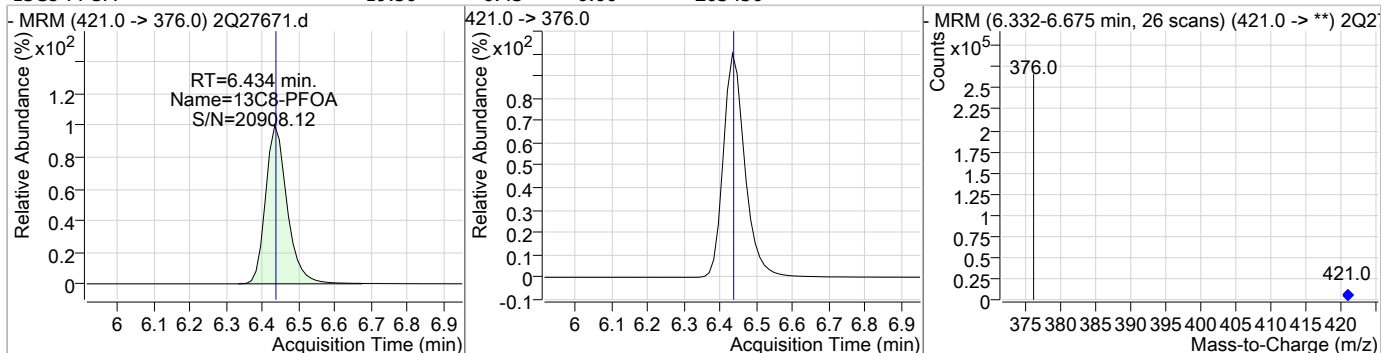


### Perfluorinated Compounds by LC/MS/MS

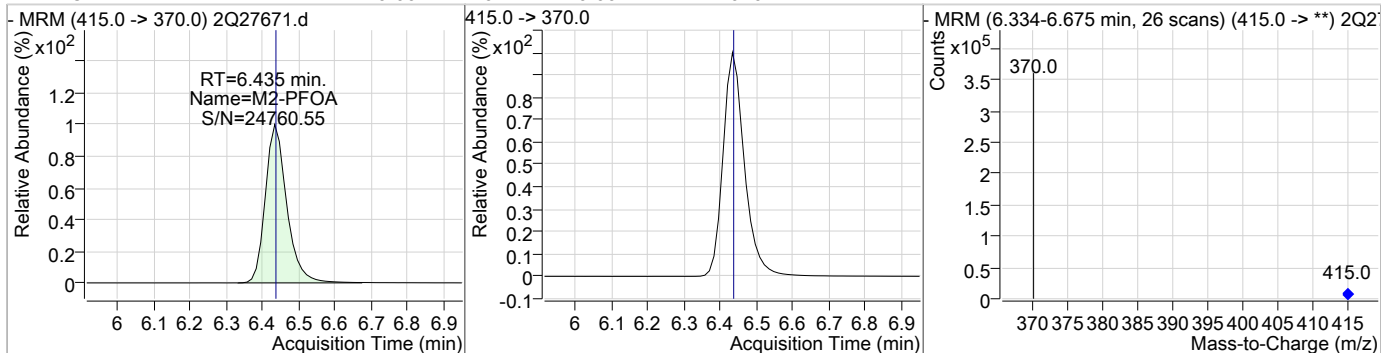
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 10.14 | 6.43 | 0.01     | 15150 | 427.0 -> 81.0 | 31.8   | 0.9  | 60.9 |



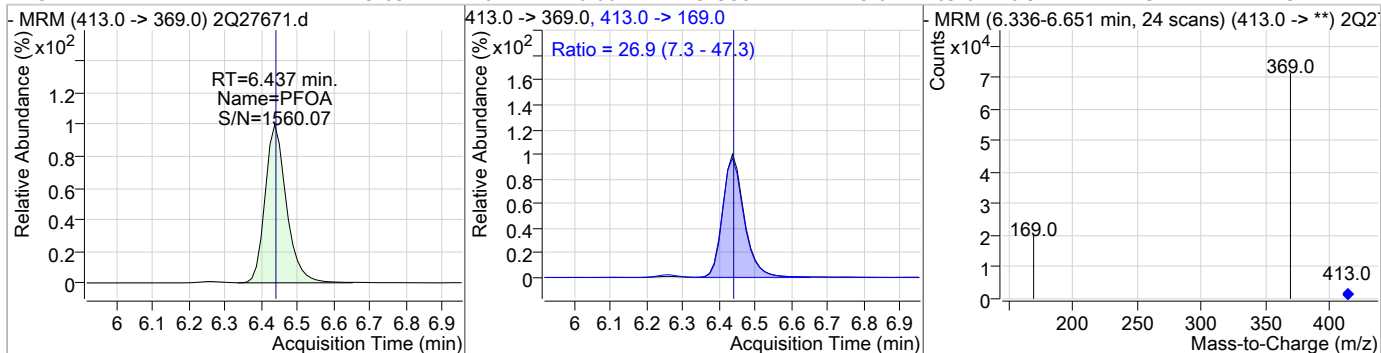
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 19.50 | 6.43 | 0.00     | 203450 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 274046 |      |        |      |      |

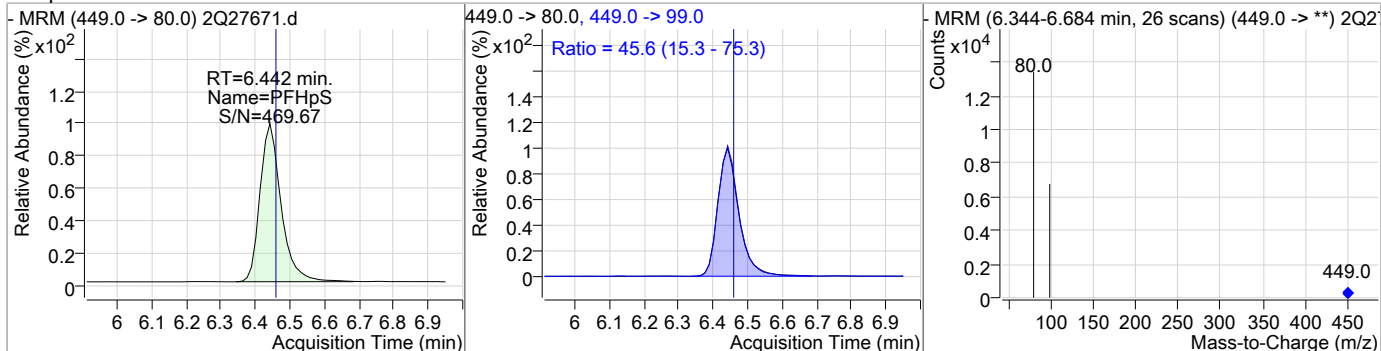


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 9.63  | 6.44 | 0.00     | 52958 | 413.0 -> 169.0 | 26.9   | 7.3  | 47.3 |

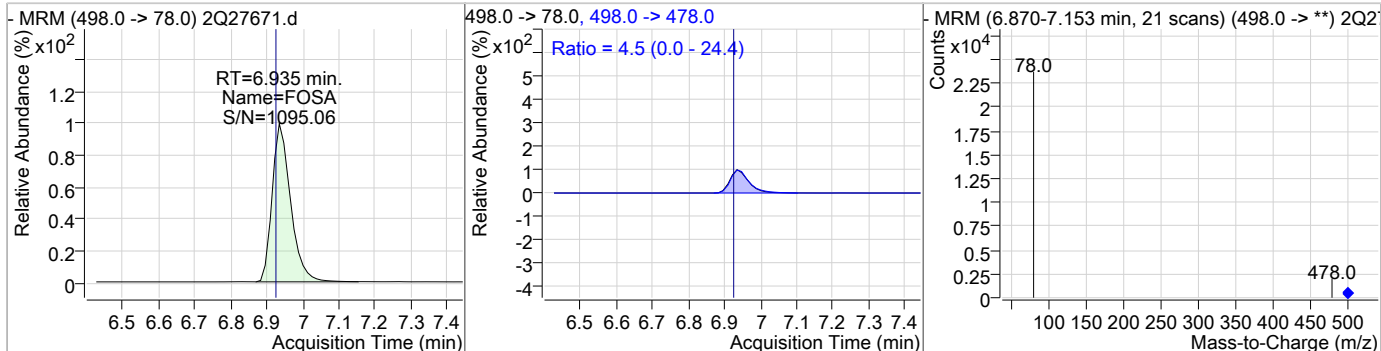


### Perfluorinated Compounds by LC/MS/MS

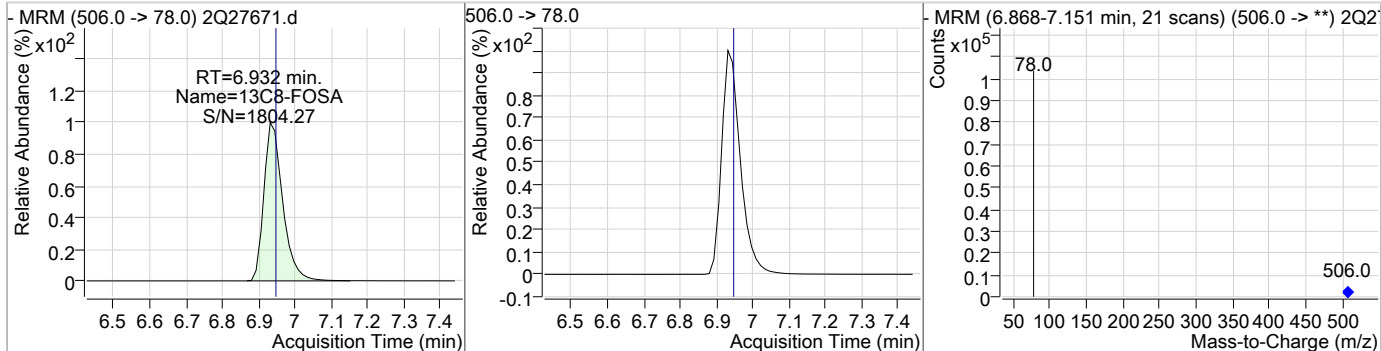
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 10.05 | 6.44 | 0.00     | 9536  | 449.0 -> 99.0 | 45.6   | 15.3 | 75.3 |



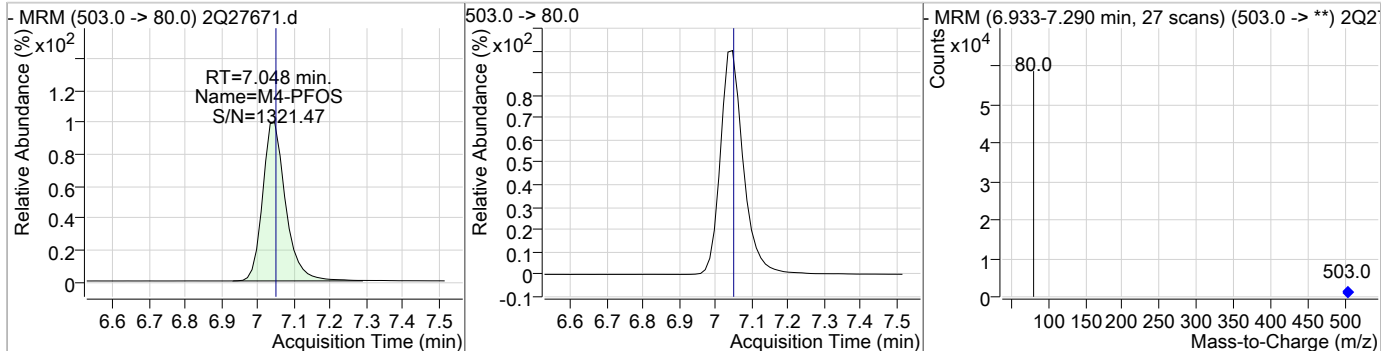
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 9.83  | 6.93 | 0.00     | 17899 | 498.0 -> 478.0 | 4.5    | 0.0  | 24.4 |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-FOSA | 19.52 | 6.93 | -0.01    | 79166 | 506.0 -> 78.0 |        |      |      |

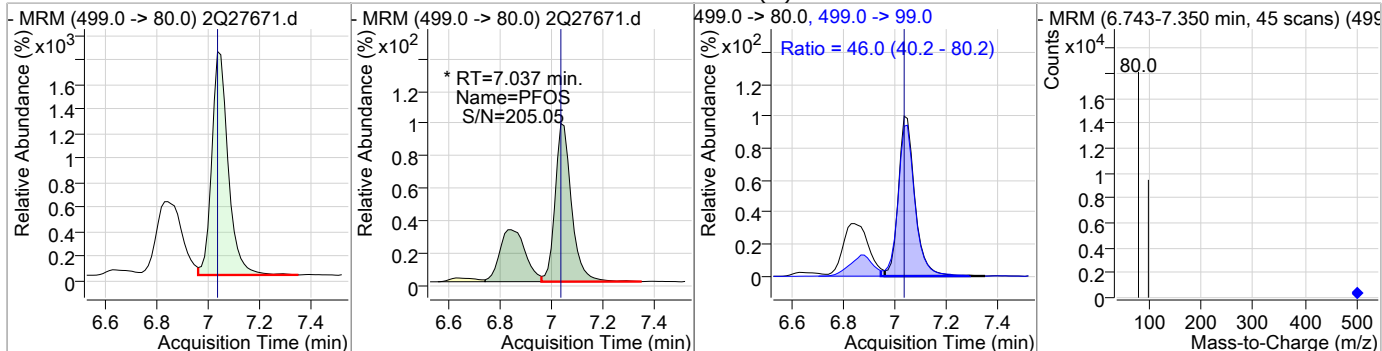


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| M4-PFOS  | 20.01 | 7.05 | 0.01     | 43555 | 503.0 -> 80.0 |        |      |      |

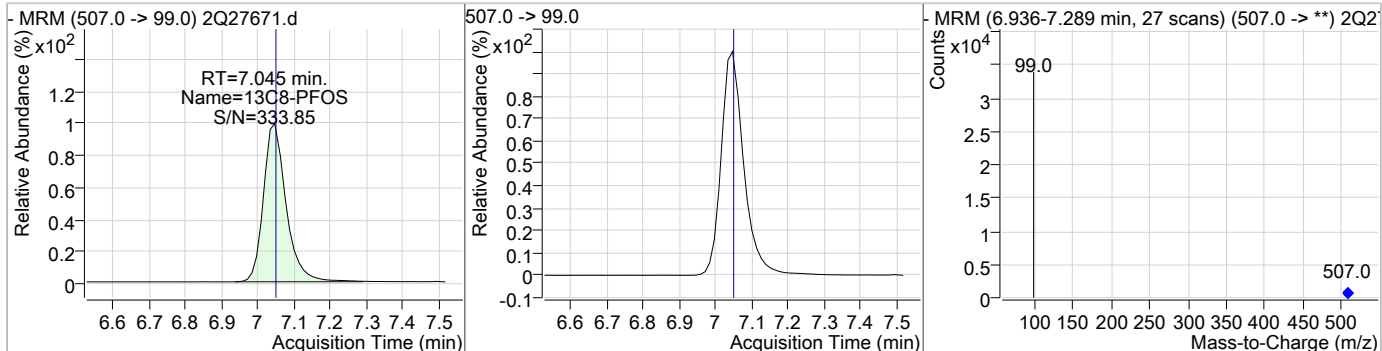


### Perfluorinated Compounds by LC/MS/MS

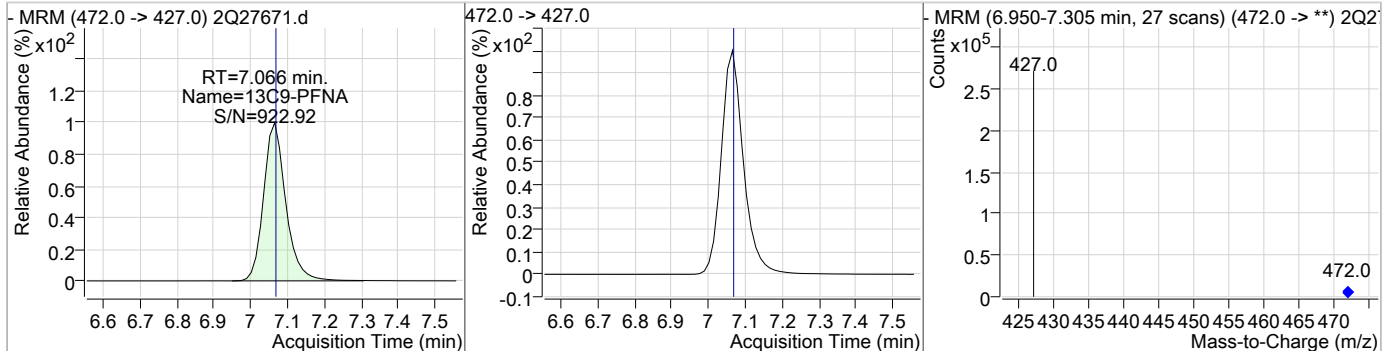
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 10.18 | 7.04 | 0.00     | 12220 (m) | 499.0 -> 99.0 | 46.0   | 40.2 | 80.2 |



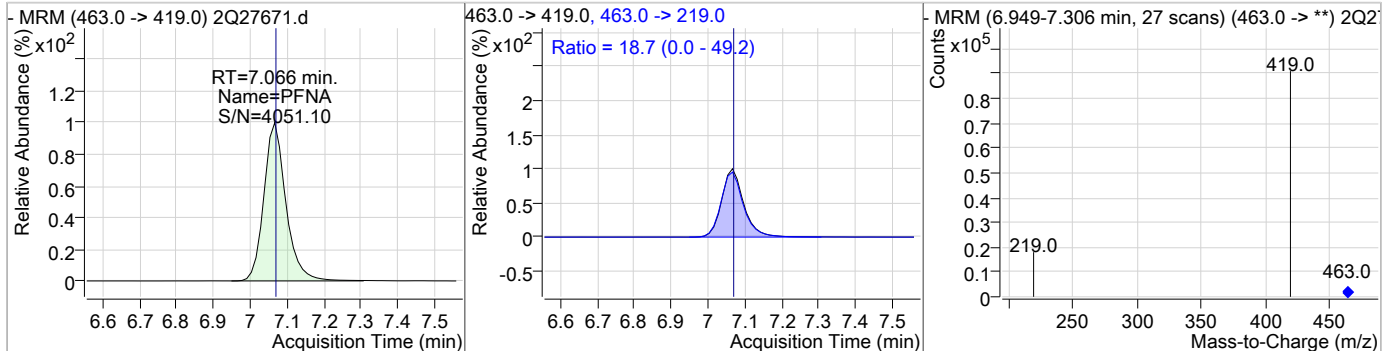
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 18.99 | 7.05 | 0.00     | 24754 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 19.40 | 7.07 | 0.00     | 205369 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFNA     | 10.01 | 7.07 | 0.00     | 68218 | 463.0 -> 219.0 | 18.7   | 0.0  | 49.2 |



### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 10.42 | 7.32 | 0.00     | 10324 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 19.66 | 7.45 | 0.00     | 37681 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 9.80  | 7.45 | -0.01    | 9373  | 570.0 -> 512.0 | 20.6   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 10.54 | 7.57 | 0.00     | 8932  | 549.0 -> 99.0  | 48.6   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

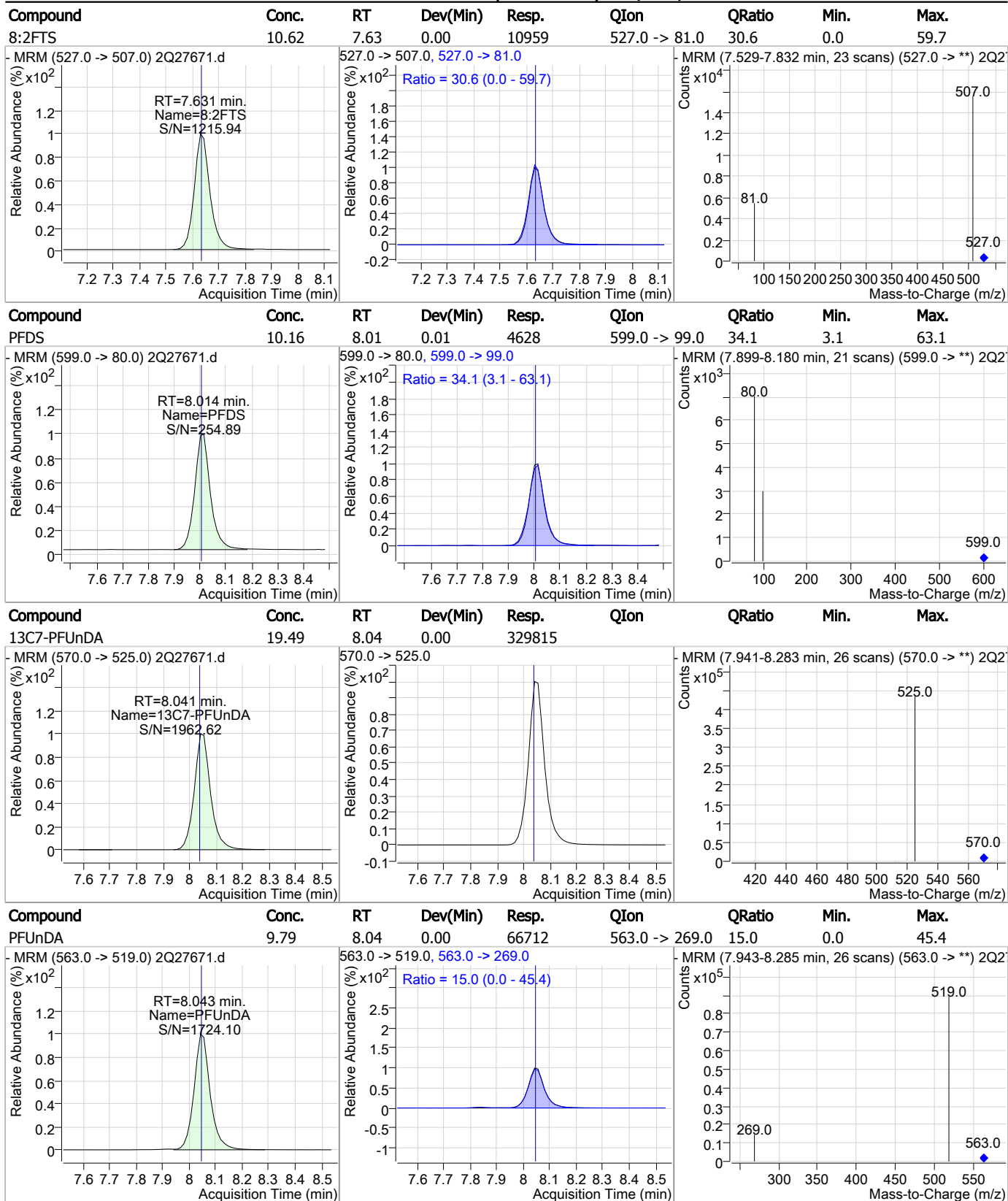
7.6.18

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA   | 19.45 | 7.59 | 0.00     | 265416 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDA        | 9.90  | 7.60 | 0.00     | 57194  | 513.0 -> 219.0 | 17.1   | 0.0  | 46.9 |
|             |       |      |          |        |                |        |      |      |
| EtFOSAA     | 9.80  | 7.59 | -0.01    | 7881   | 584.0 -> 483.0 | 53.1   | 31.7 | 71.7 |
|             |       |      |          |        |                |        |      |      |
| 13C2-8:2FTS | 18.61 | 7.63 | 0.00     | 41259  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |

7.6.18  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.18  
7

### Perfluorinated Compounds by LC/MS/MS

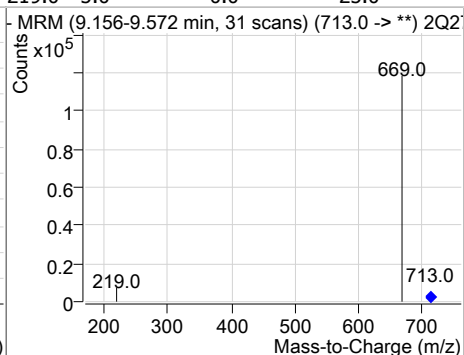
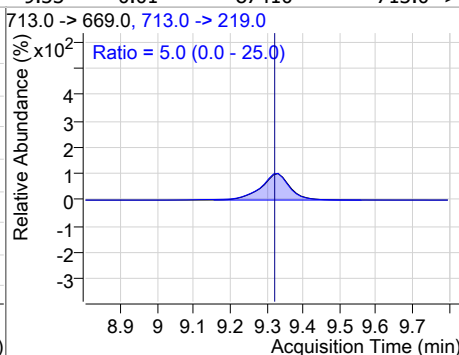
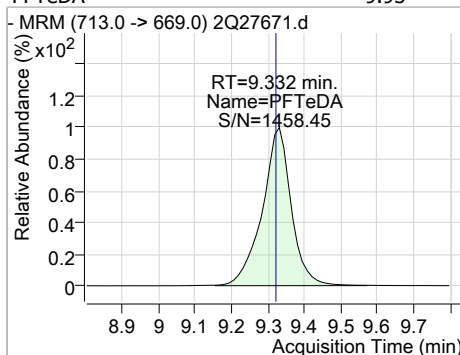
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 10.06 | 8.20 | 0.00     | 50832  |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 19.61 | 8.48 | 0.01     | 368816 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 9.85  | 8.47 | 0.00     | 80823  | 613.0 -> 319.0 | 12.4   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 9.90  | 8.92 | 0.00     | 90708  | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.18

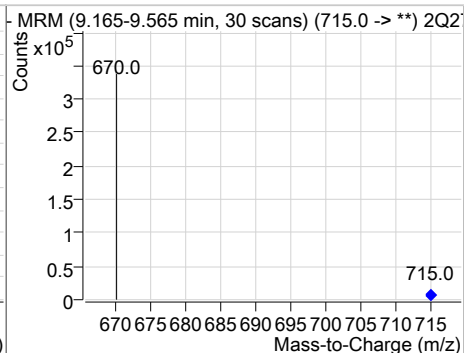
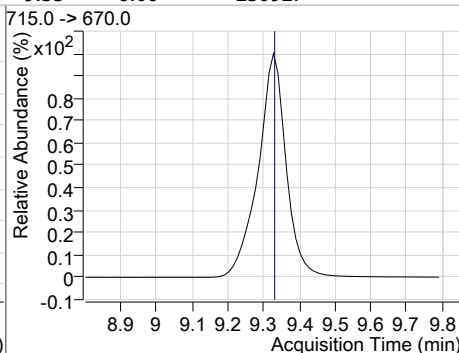
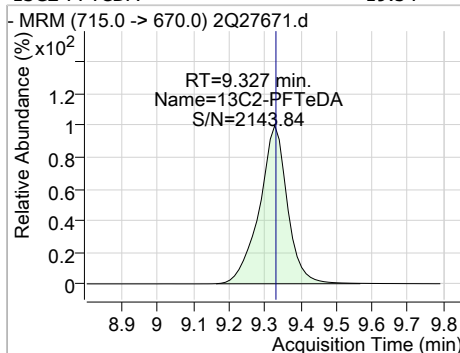
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 9.93  | 9.33 | 0.01     | 87410 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 19.54 | 9.33 | 0.00     | 250927 |      |        |      |      |



7.6.18  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-IC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27671.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 09:21      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.18.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

**Norman Farmer**  
 03/19/19 16:30

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27672.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 9:37:15 AM  
 Sample Name : ICC442-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 270918 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 43615  | 20.00 µg/L       | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 116579 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 98157  | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 140936 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 200132 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 202524 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 207931 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 267901 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 331809 | 20.00 µg/L       | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 370581 | 20.00 µg/L       | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 254652 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 78533  | 20.00 µg/L       | -0.013   |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 17716  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 19796  | 20.00 µg/L       | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 24876  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 56802  | 20.00 µg/L       | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 62247  | 20.00 µg/L       | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 42771  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 37381  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 154565 | 100.00 µg/L      | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 56835  | 19.11 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.6% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 62181  | 19.37 µg/L       | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.9% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 42748  | 19.28 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.4% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 370400 | 19.69 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.5% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 253852 | 19.77 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.9% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 17615  | 19.32 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.6% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 19744  | 19.37 µg/L       | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.8% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 116115 | 19.36 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.8% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 200121 | 19.35 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.7% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 140676 | 19.36 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.8% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 98524  | 19.38 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.9% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 267846 | 19.63 µg/L       | 0.000    |

7.6.19  
7

## Perfluorinated Compounds by LC/MS/MS

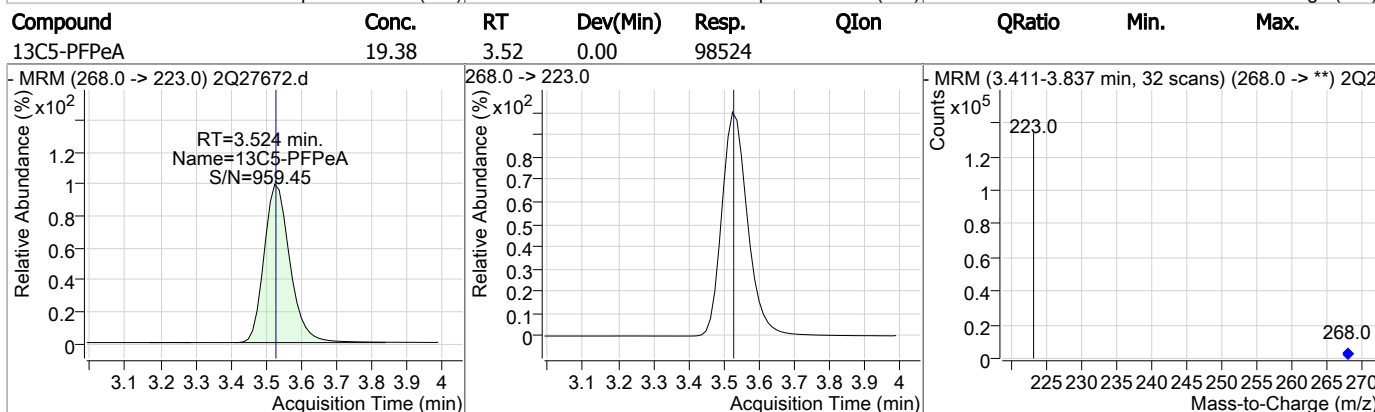
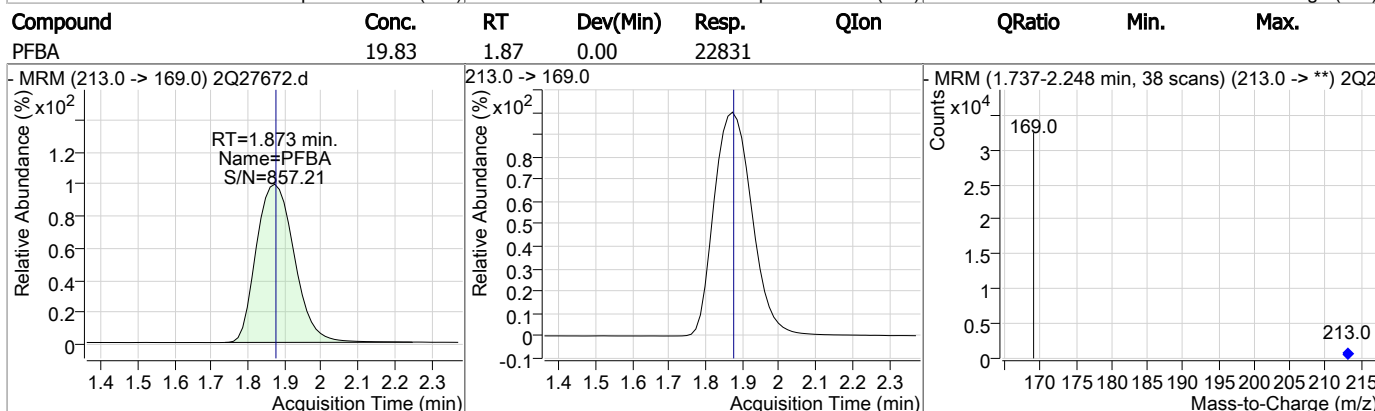
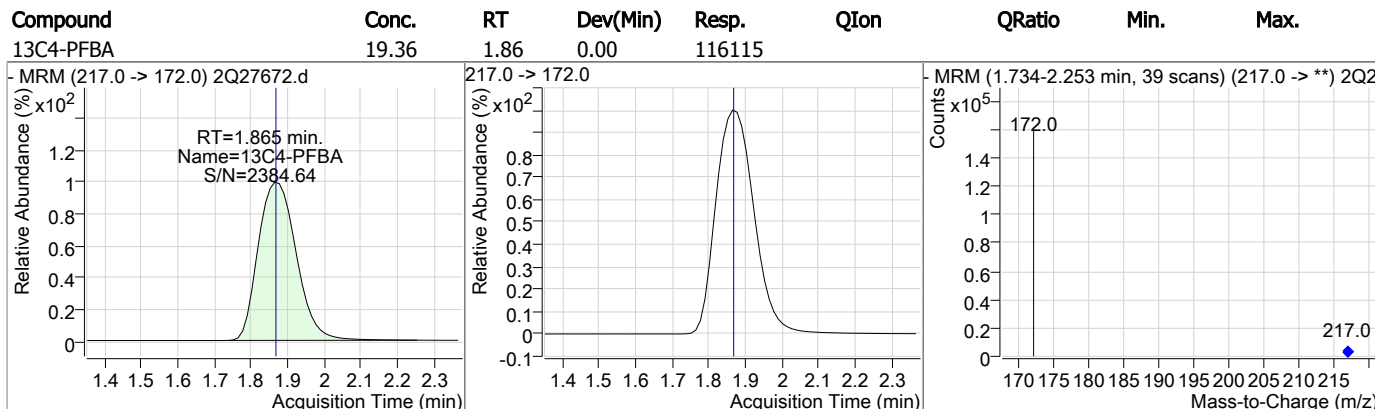
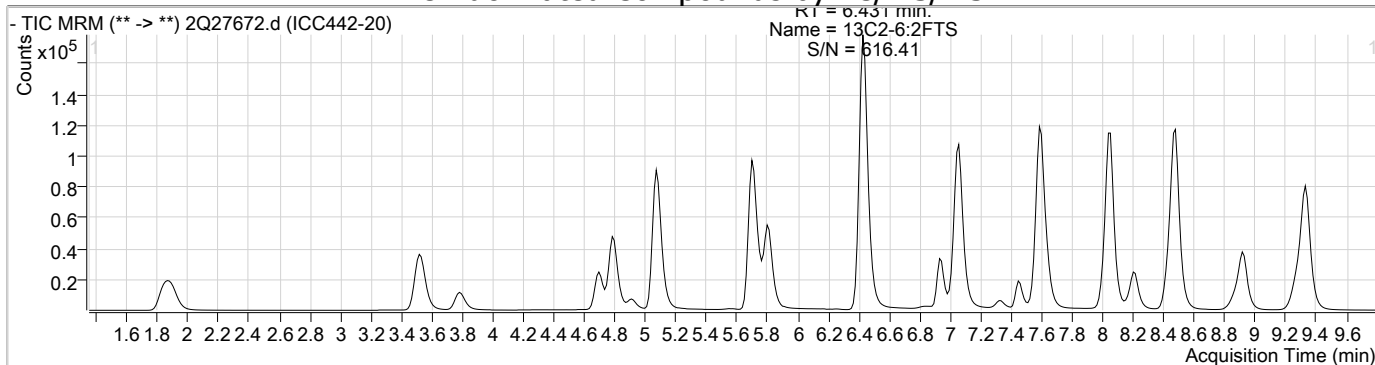
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 331909 | 19.61 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 78487  | 19.36 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.8%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 202362 | 19.40 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.0%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 24858  | 19.07 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.3%  |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 207826 | 19.63 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 37380  | 19.50 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.5%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 271272 | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 43617  | 19.99 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 154565 | 96.66 µg/L        | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 96.7%  |          |

## Target Compounds

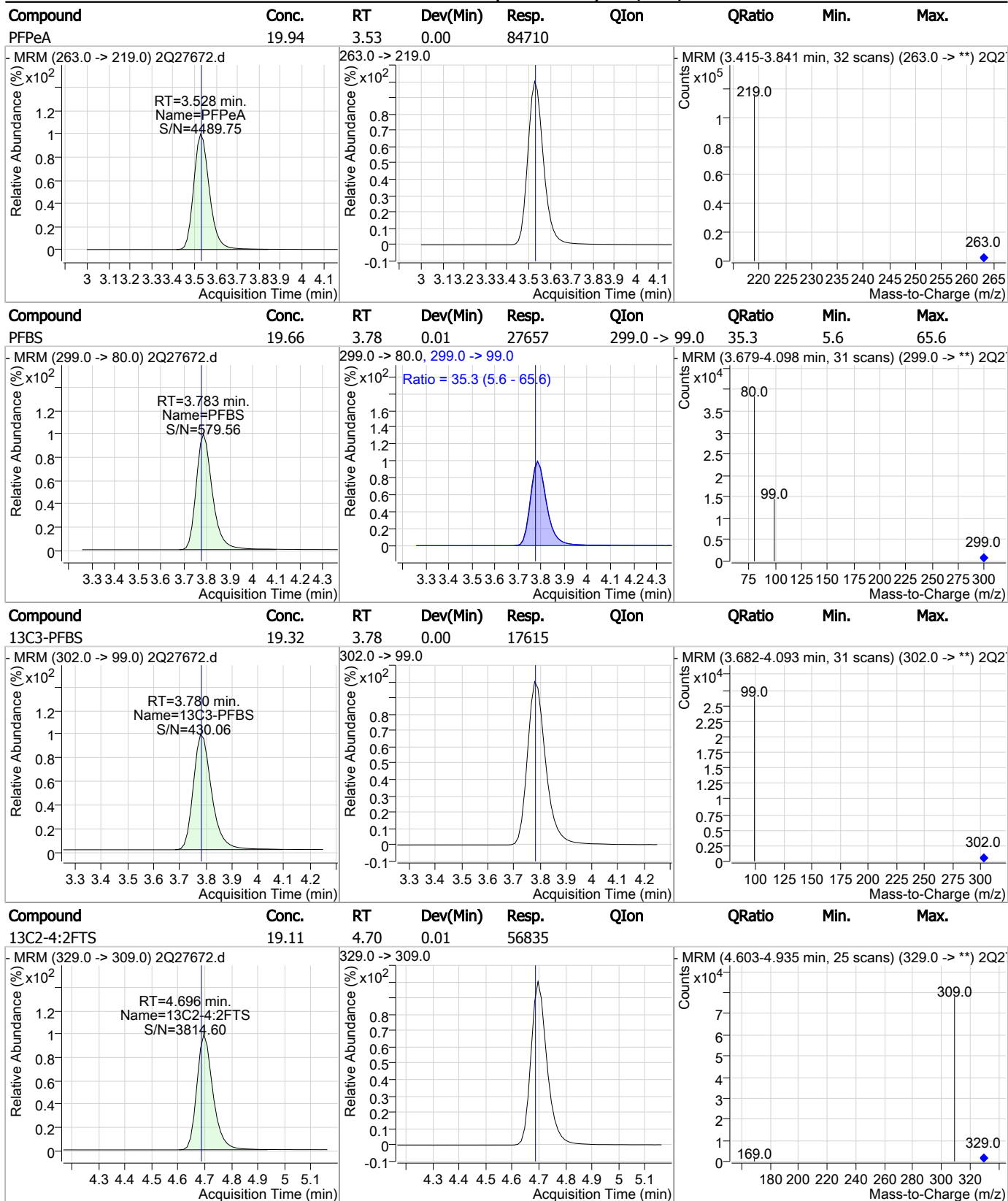
| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.699 | 327.0 -> 307.0 | 32151  | 20.55 µg/L  | 98     |
| 6:2FTS           | 6.432 | 427.0 -> 407.0 | 30897  | 20.18 µg/L  | 99     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 21942  | 20.52 µg/L  | 99     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 15813  | 19.90 µg/L  | 99     |
| FOSA             | 6.935 | 498.0 -> 78.0  | 36531  | 20.20 µg/L  | 100    |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 19229  | 20.16 µg/L  | 99     |
| PFBA             | 1.873 | 213.0 -> 169.0 | 22831  | 19.83 µg/L  | 100    |
| PFBS             | 3.783 | 299.0 -> 80.0  | 27657  | 19.66 µg/L  | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 116158 | 19.92 µg/L  | 100    |
| PFDoDA           | 8.480 | 613.0 -> 569.0 | 164848 | 19.99 µg/L  | 100    |
| PFDS             | 8.014 | 599.0 -> 80.0  | 9604   | 20.96 µg/L  | 97     |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 171573 | 19.89 µg/L  | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 19371  | 20.17 µg/L  | 99     |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 47811  | 19.70 µg/L  | 98     |
| PFHxS            | 5.751 | 399.0 -> 80.0  | 21300  | 19.46 µg/L  | m 97   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 137233 | 19.90 µg/L  | 99     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 17561  | 20.60 µg/L  | 97     |
| PFOA             | 6.437 | 413.0 -> 369.0 | 107547 | 19.66 µg/L  | 99     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 24125  | 19.97 µg/L  | m 79   |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 84710  | 19.94 µg/L  | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 17903  | 19.89 µg/L  | 97     |
| PFTeDA           | 9.332 | 713.0 -> 669.0 | 176805 | 19.85 µg/L  | 100    |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 183474 | 19.78 µg/L  | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 133542 | 19.51 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 102858 | 20.25 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 20261  | 20.09 µg/L  | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 201480 | 20.08 µg/L  | 100    |
| HFPO-DA          | 5.073 | 329.0 -> 169.0 | 182287 | 99.28 µg/L  | 99     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



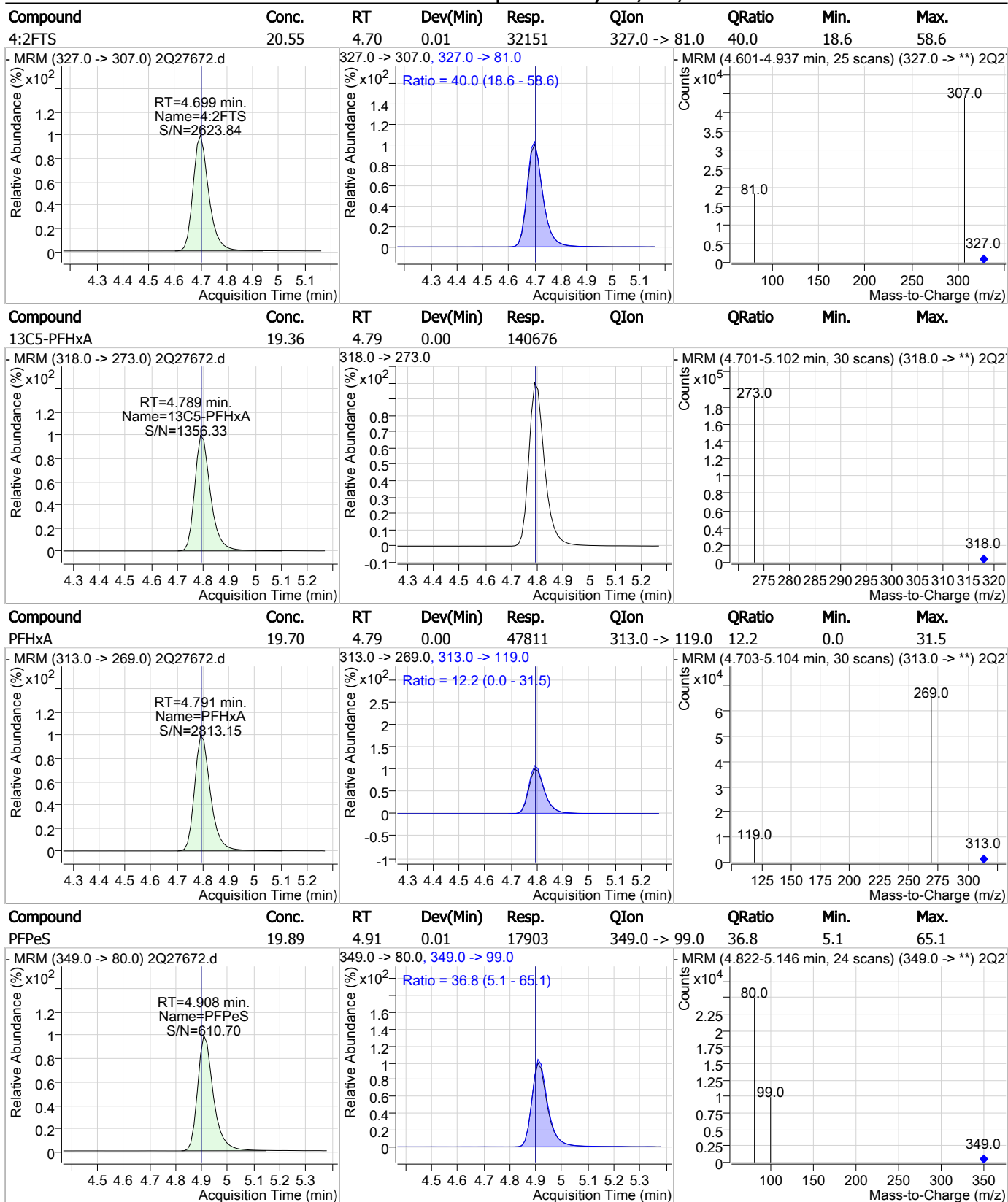
### Perfluorinated Compounds by LC/MS/MS



7.6.19

7

### Perfluorinated Compounds by LC/MS/MS

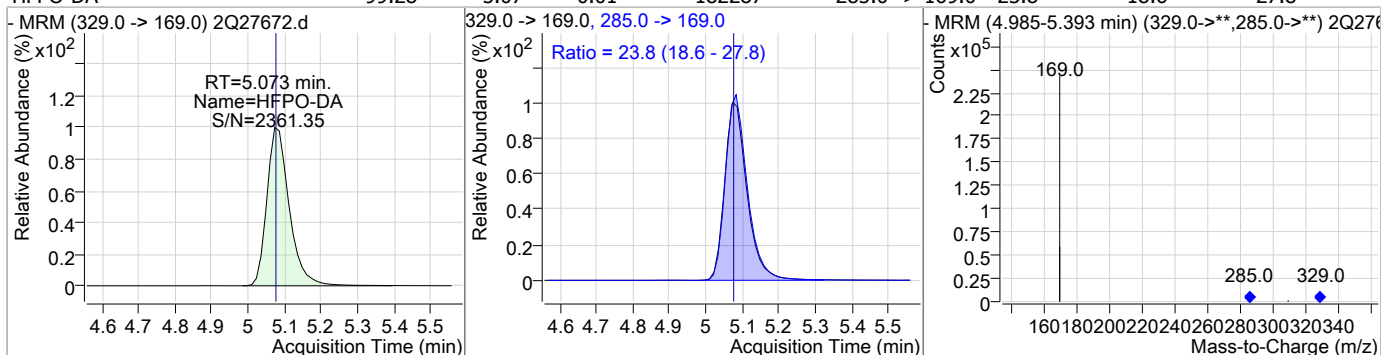


7.6.19

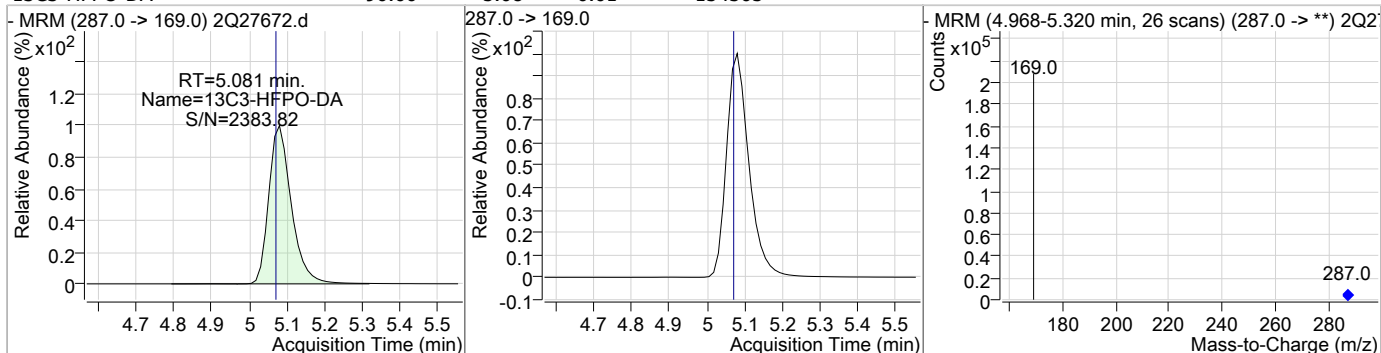
7

### Perfluorinated Compounds by LC/MS/MS

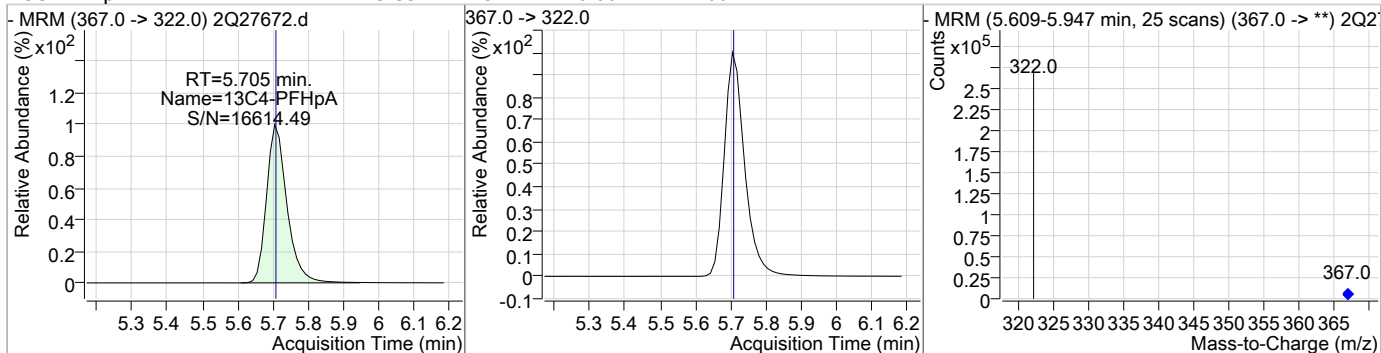
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 99.28 | 5.07 | 0.01     | 182287 | 285.0 -> 169.0 | 23.8   | 18.6 | 27.8 |



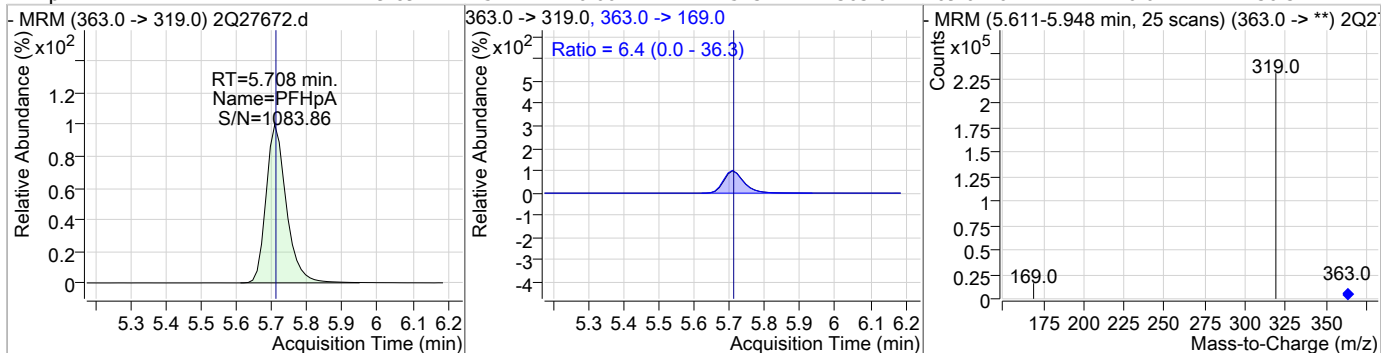
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 96.66 | 5.08 | 0.01     | 154565 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 19.35 | 5.71 | 0.00     | 200121 |      |        |      |      |

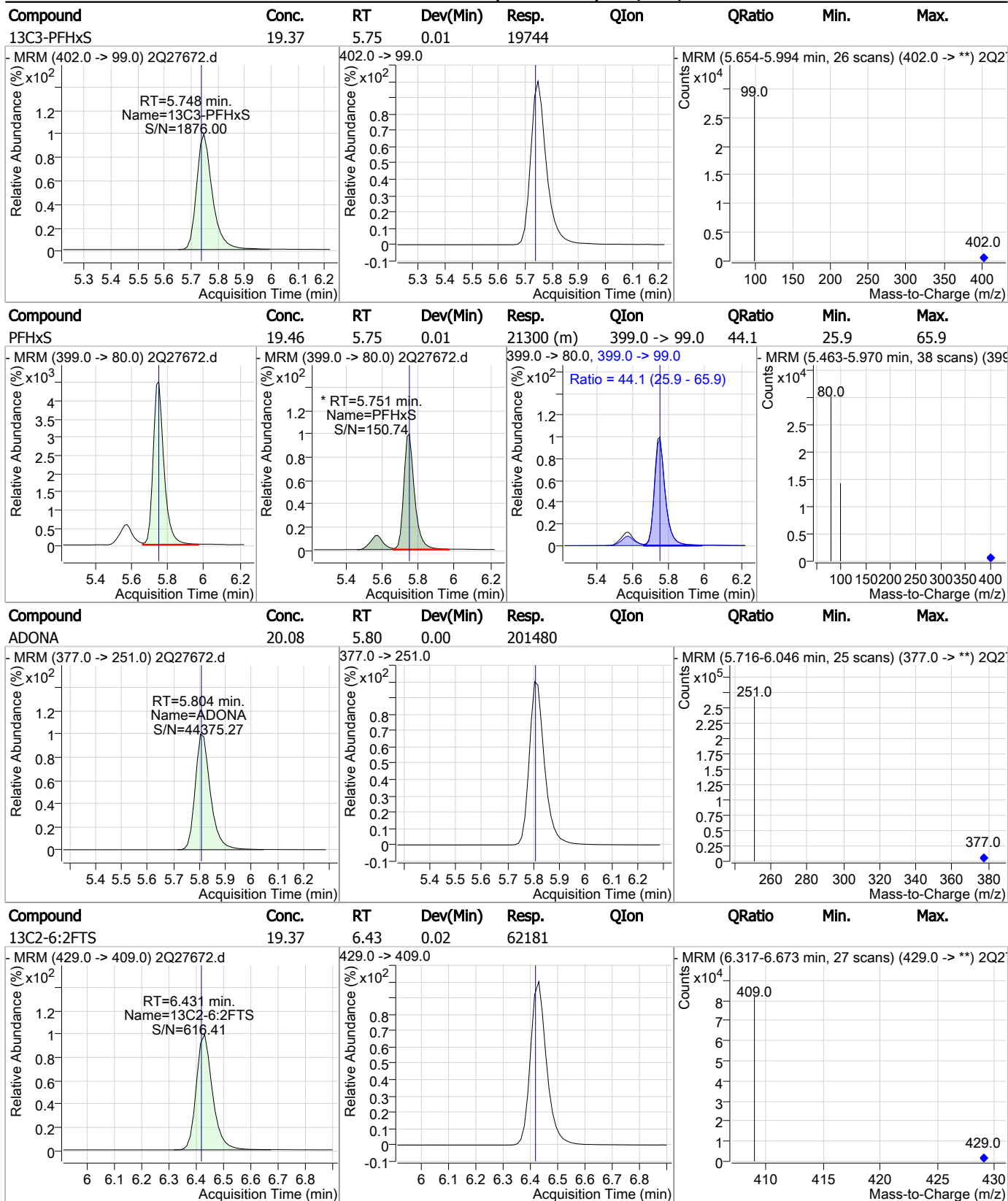


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.89 | 5.71 | 0.00     | 171573 | 363.0 -> 169.0 | 6.4    | 0.0  | 36.3 |



7.6.19 7

### Perfluorinated Compounds by LC/MS/MS



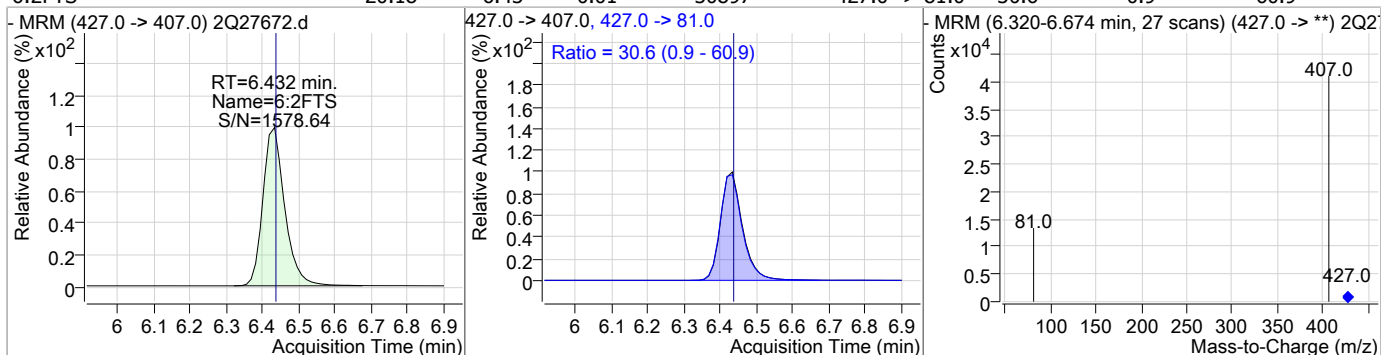
7.6.19

7

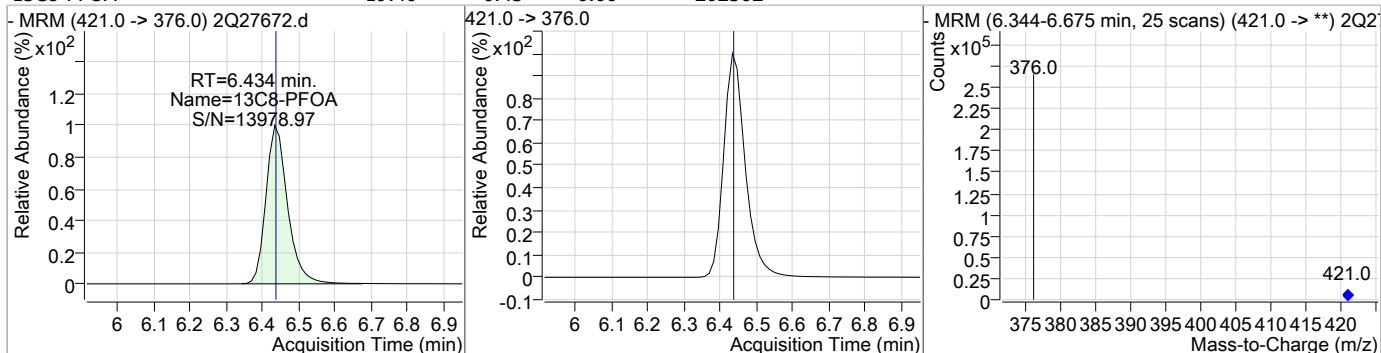


### Perfluorinated Compounds by LC/MS/MS

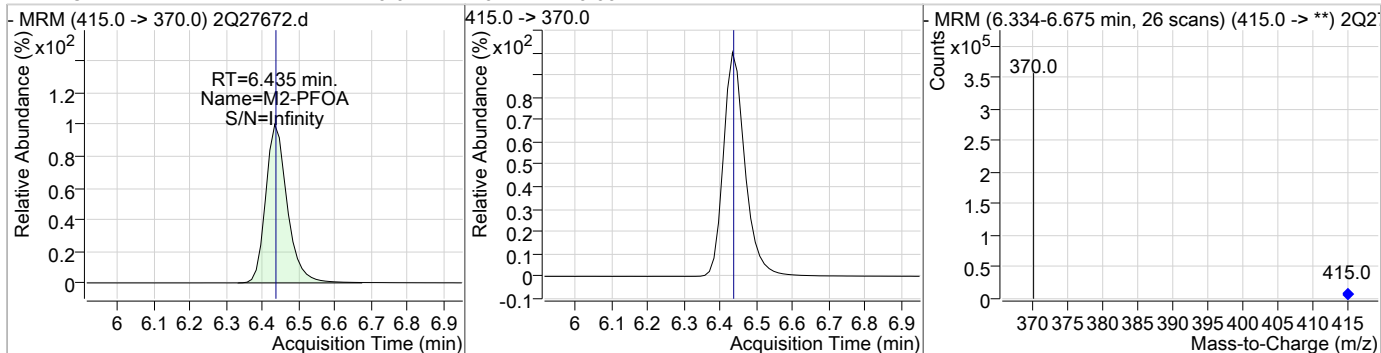
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 20.18 | 6.43 | 0.01     | 30897 | 427.0 -> 81.0 | 30.6   | 0.9  | 60.9 |



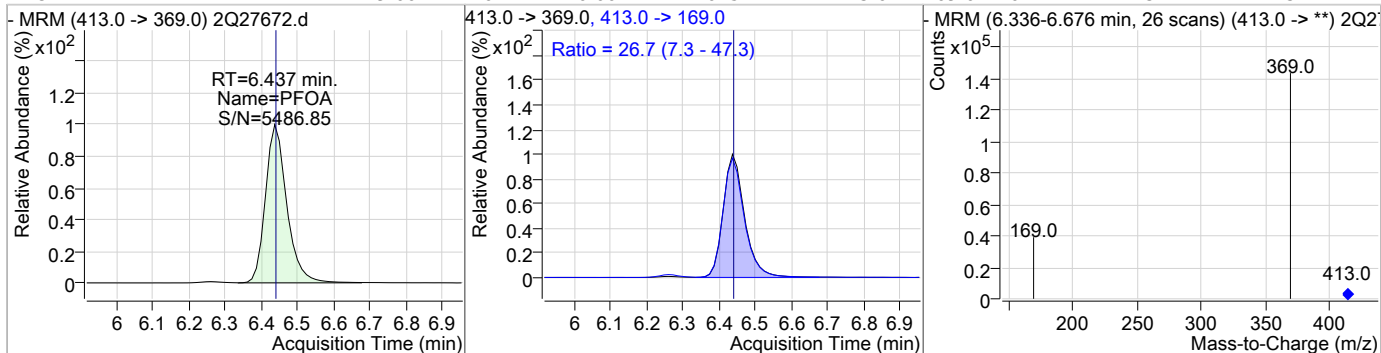
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 19.40 | 6.43 | 0.00     | 202362 |      |        |      |      |



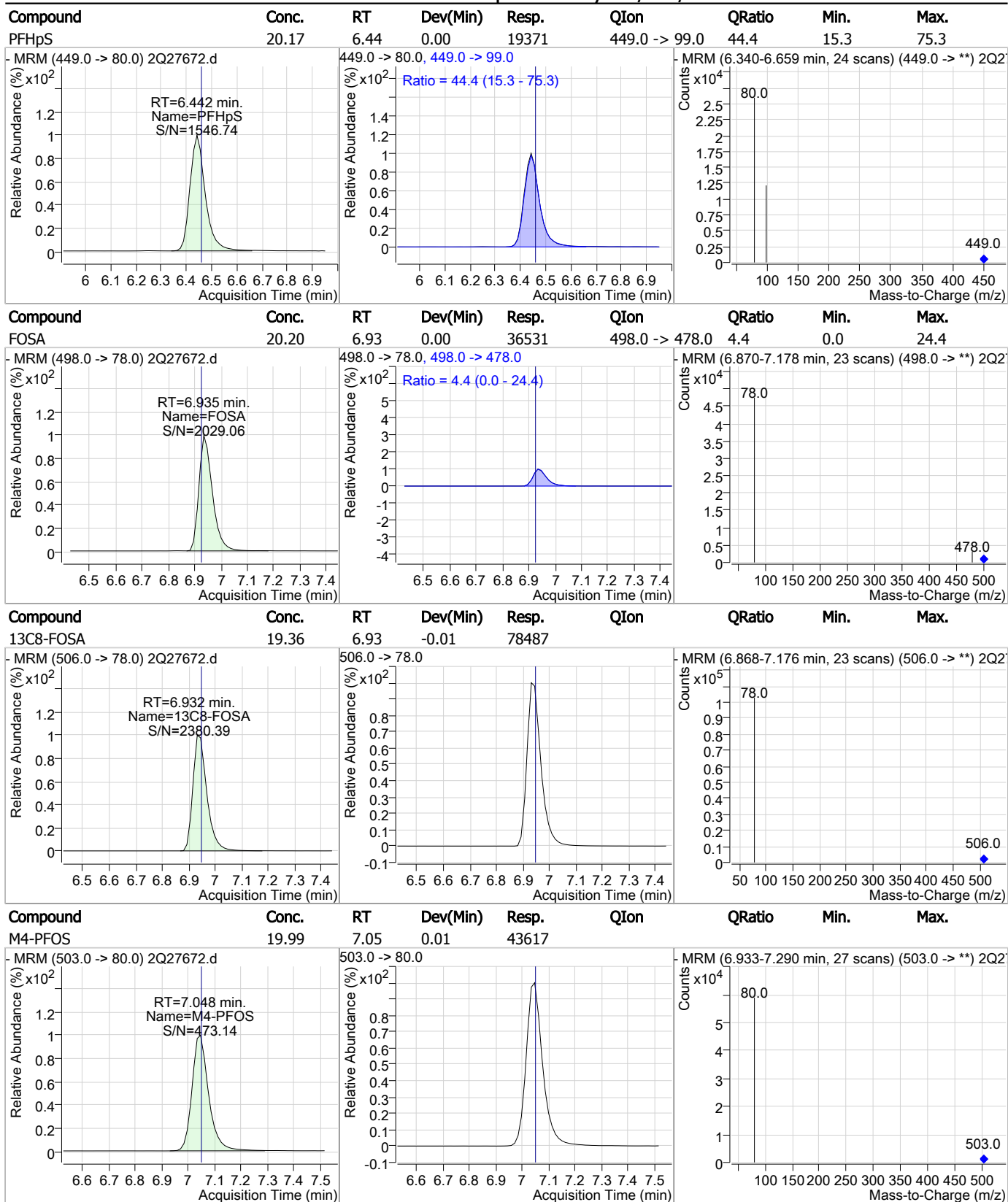
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.01 | 6.44 | 0.00     | 271272 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.66 | 6.44 | 0.00     | 107547 | 413.0 -> 169.0 | 26.7   | 7.3  | 47.3 |



### Perfluorinated Compounds by LC/MS/MS

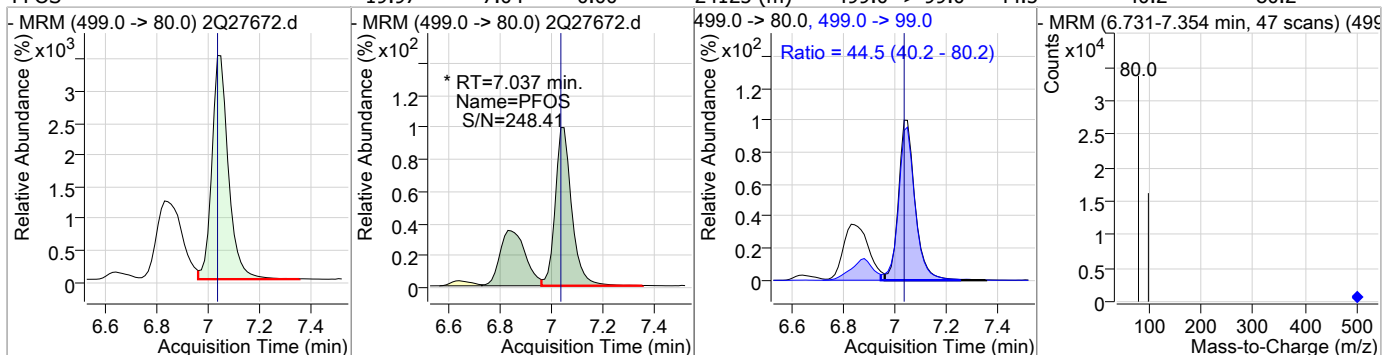


7.6.19

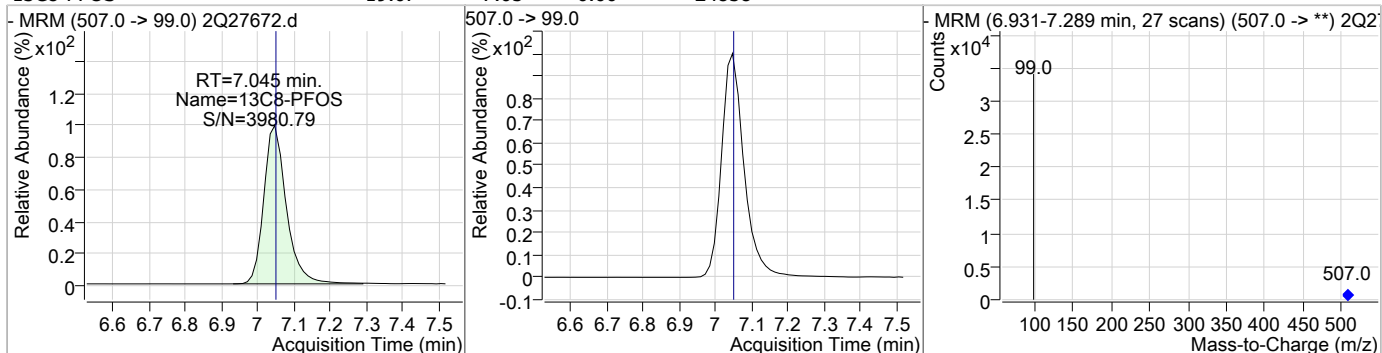
7

### Perfluorinated Compounds by LC/MS/MS

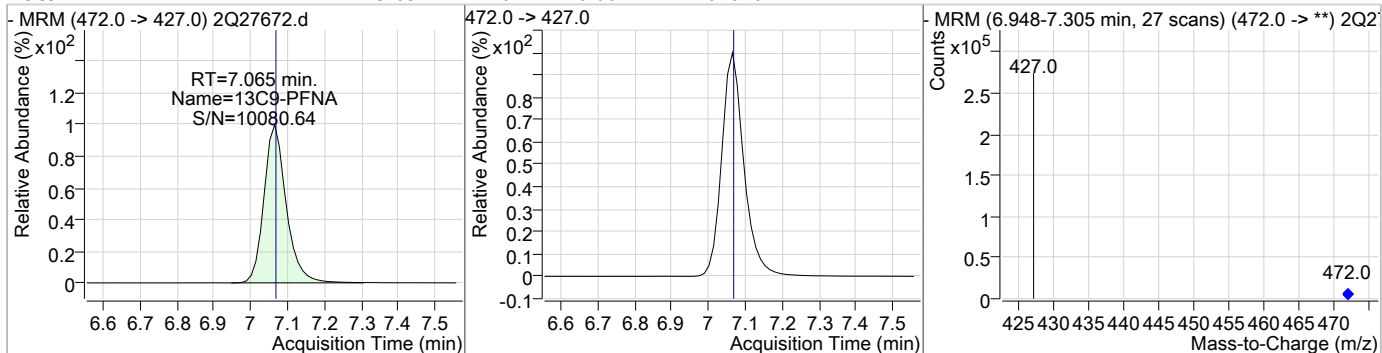
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.97 | 7.04 | 0.00     | 24125 (m) | 499.0 -> 99.0 | 44.5   | 40.2 | 80.2 |



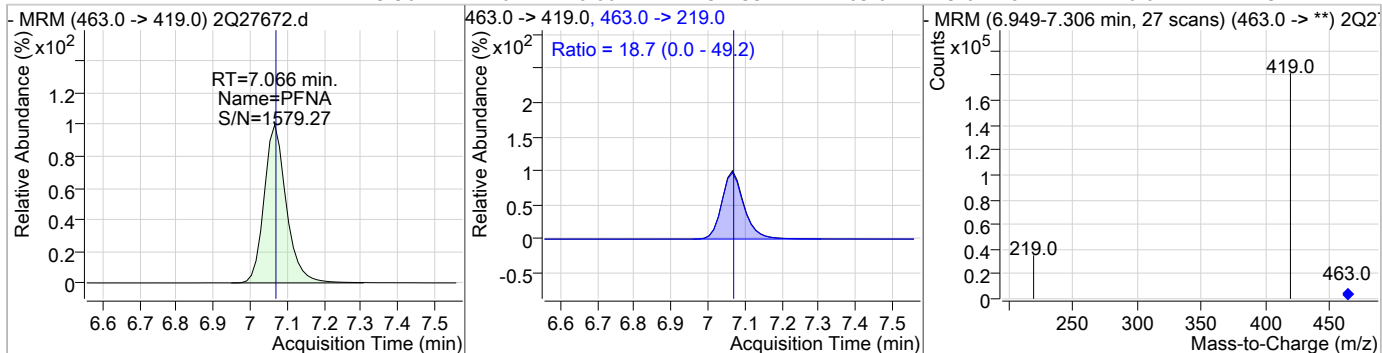
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 19.07 | 7.05 | 0.00     | 24858 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 19.63 | 7.07 | 0.00     | 207826 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 19.90 | 7.07 | 0.00     | 137233 | 463.0 -> 219.0 | 18.7   | 0.0  | 49.2 |



7.6.19  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound                        | Conc. | RT   | Dev(Min)                       | Resp. | QIon           | QRatio   | Min. | Max. |
|---------------------------------|-------|------|--------------------------------|-------|----------------|--|------|------|
| 9CI-PF3ONS                      | 20.09 | 7.32 | 0.00                           | 20261 |                |  |      |      |
| -MRM (531.0 -> 351.0) 2Q27672.d |       |      | 531.0 -> 351.0                 |       |                | -MRM (7.235-7.566 min, 25 scans) (531.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| d3-MeFOSAA                      | 19.50 | 7.45 | 0.00                           | 37380 |                |  |      |      |
| -MRM (573.0 -> 419.0) 2Q27672.d |       |      | 573.0 -> 419.0                 |       |                | -MRM (7.383-7.687 min, 23 scans) (573.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| MeFOSAA                         | 20.16 | 7.45 | -0.01                          | 19229 | 570.0 -> 512.0 | 22.6   | 2.3  | 42.3 |
| -MRM (570.0 -> 419.0) 2Q27672.d |       |      | 570.0 -> 419.0, 570.0 -> 512.0 |       |                | -MRM (7.384-7.675 min, 22 scans) (570.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| PFNS                            | 20.60 | 7.57 | 0.00                           | 17561 | 549.0 -> 99.0  | 51.1   | 28.9 | 68.9 |
| -MRM (549.0 -> 80.0) 2Q27672.d  |       |      | 549.0 -> 80.0, 549.0 -> 99.0   |       |                | -MRM (7.454-7.792 min, 25 scans) (549.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |

7.6.19

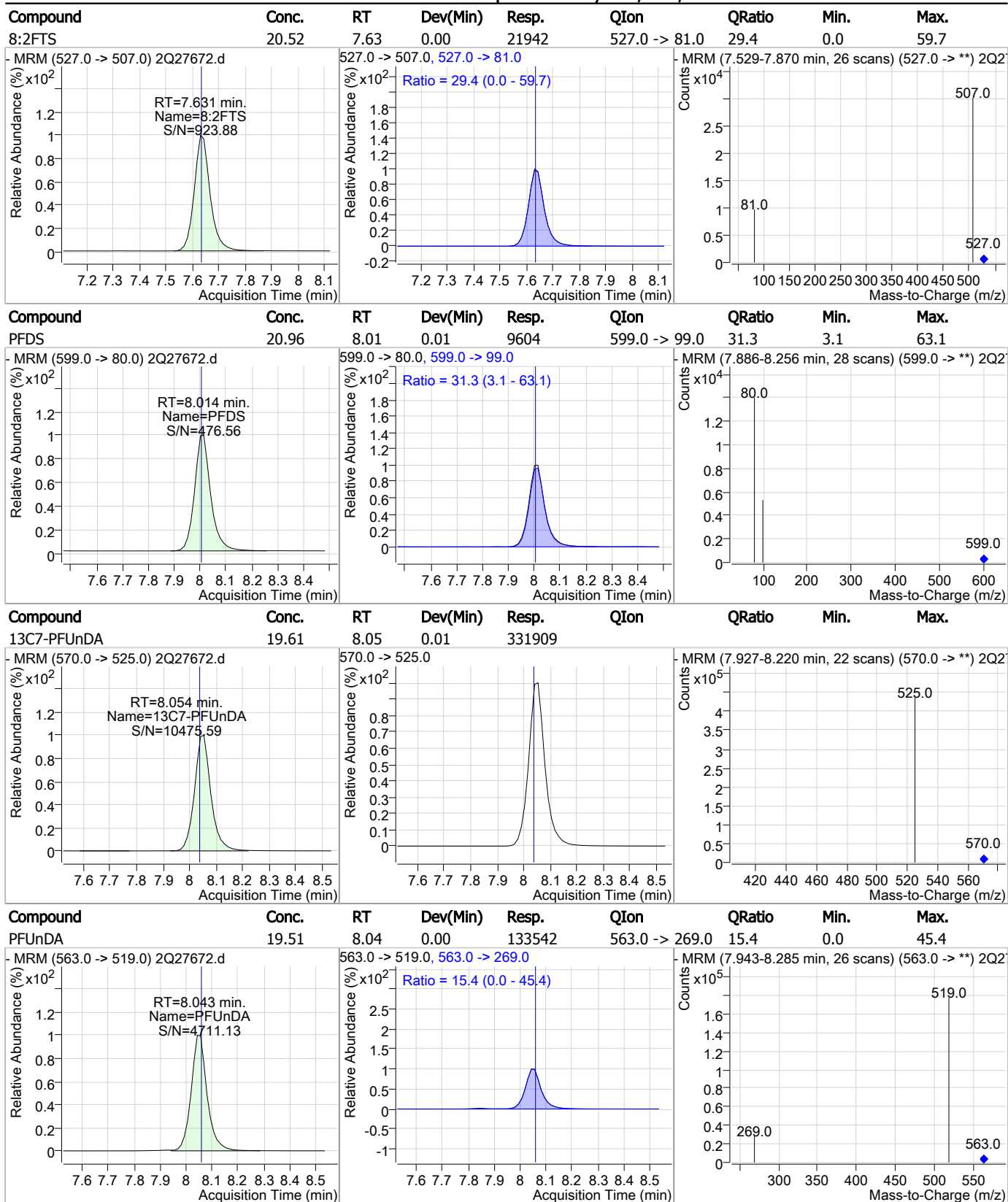
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA   | 19.63 | 7.59 | 0.00     | 267846 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDA        | 19.92 | 7.60 | 0.00     | 116158 | 513.0 -> 219.0 | 17.0   | 0.0  | 46.9 |
|             |       |      |          |        |                |        |      |      |
| EtFOSAA     | 19.90 | 7.60 | 0.00     | 15813  | 584.0 -> 483.0 | 52.1   | 31.7 | 71.7 |
|             |       |      |          |        |                |        |      |      |
| 13C2-8:2FTS | 19.28 | 7.63 | 0.00     | 42748  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |

7.6.19 7

### Perfluorinated Compounds by LC/MS/MS



7.6.19

### Perfluorinated Compounds by LC/MS/MS

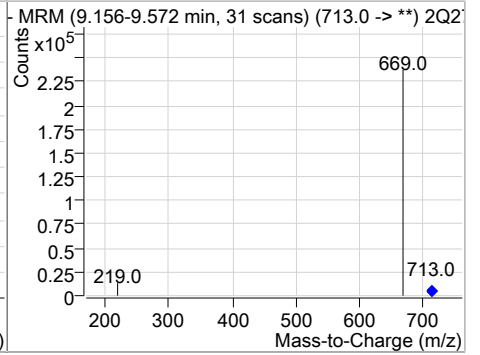
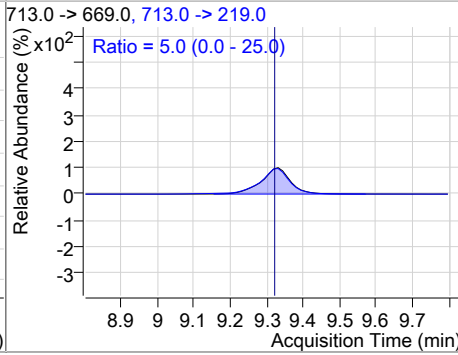
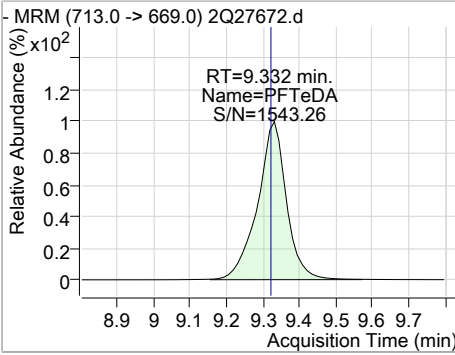
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 20.25 | 8.20 | 0.00     | 102858 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 19.69 | 8.48 | 0.01     | 370400 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 19.99 | 8.48 | 0.01     | 164848 | 613.0 -> 319.0 | 12.3   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 19.78 | 8.92 | 0.00     | 183474 | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.19

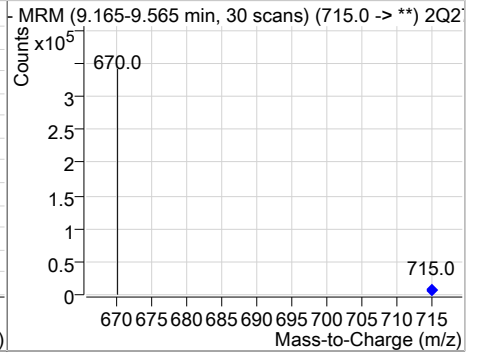
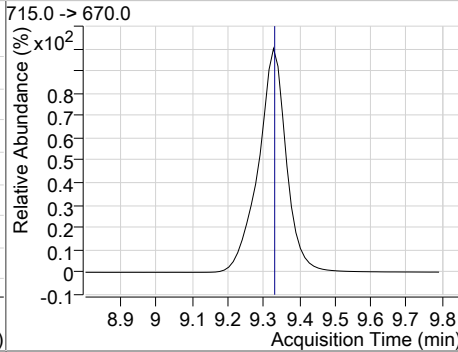
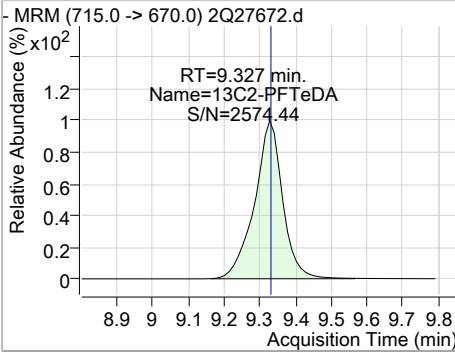
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.85 | 9.33 | 0.01     | 176805 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 19.77 | 9.33 | 0.00     | 253852 |      |        |      |      |



7.6.19  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-ICC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27672.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 09:37      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.19.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27673.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 9:52:58 AM  
 Sample Name : IC442-50  
 Vial : Vial 8  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 267807 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 42745  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 118190 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 100197 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 142950 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 201594 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 201495 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.052                | 472.0 -> 427.0 | 207126 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 267787 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 335531 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 379021 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 260333 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 75823  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 17706  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 19386  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 25394  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 62433  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 66996  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 47709  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 38109  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 149996 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 62375  | 20.98 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 66911  | 20.85 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.2% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 47672  | 21.50 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.5% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 378583 | 20.13 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.6% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 259678 | 20.23 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.1% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 17692  | 19.40 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.0%  |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 19572  | 19.20 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.0%  |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 118033 | 19.68 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.4%  |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 201551 | 19.49 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.4%  |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 142681 | 19.64 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.2%  |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 99771  | 19.63 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 267664 | 19.61 µg/L        | 0.000    |

7.6.20  
7

## Perfluorinated Compounds by LC/MS/MS

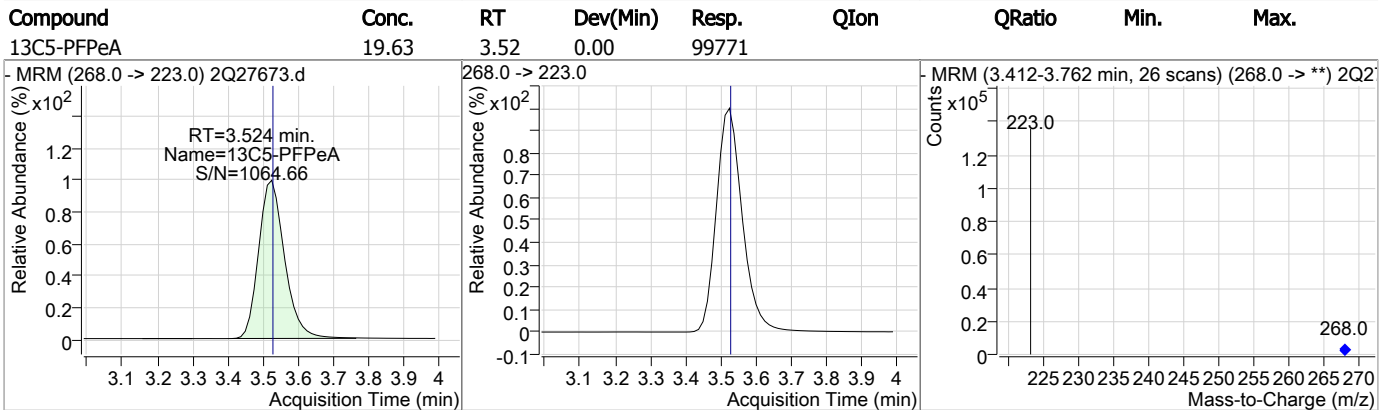
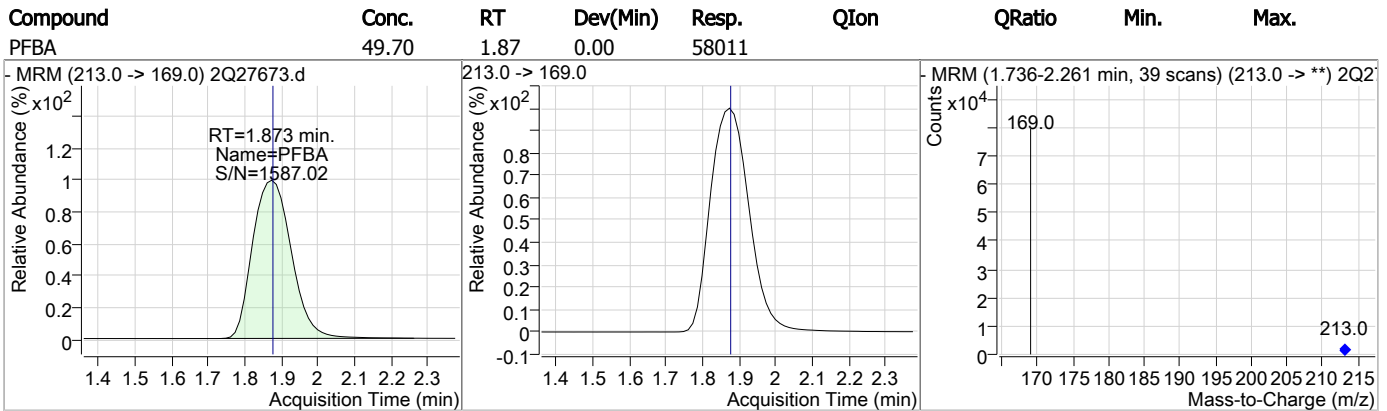
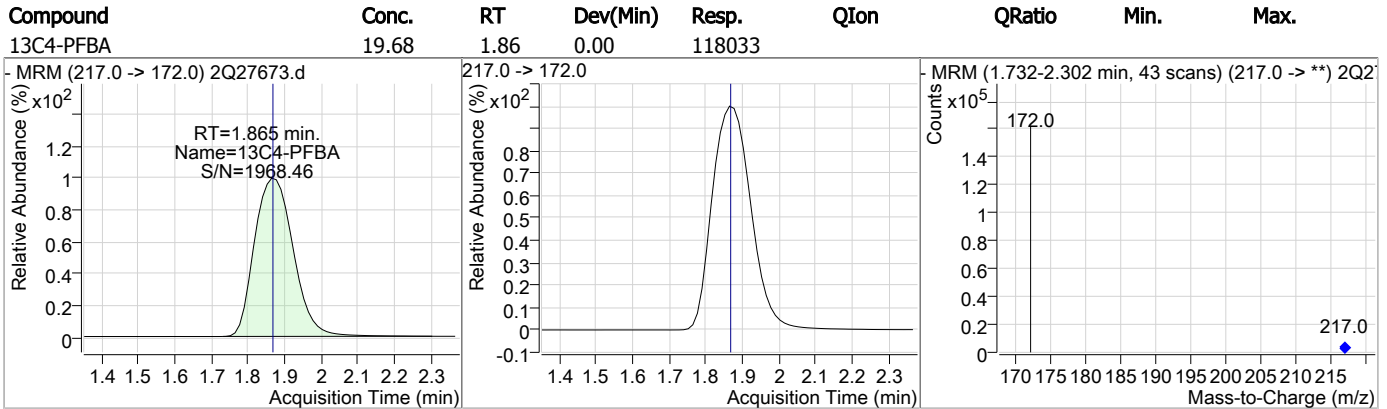
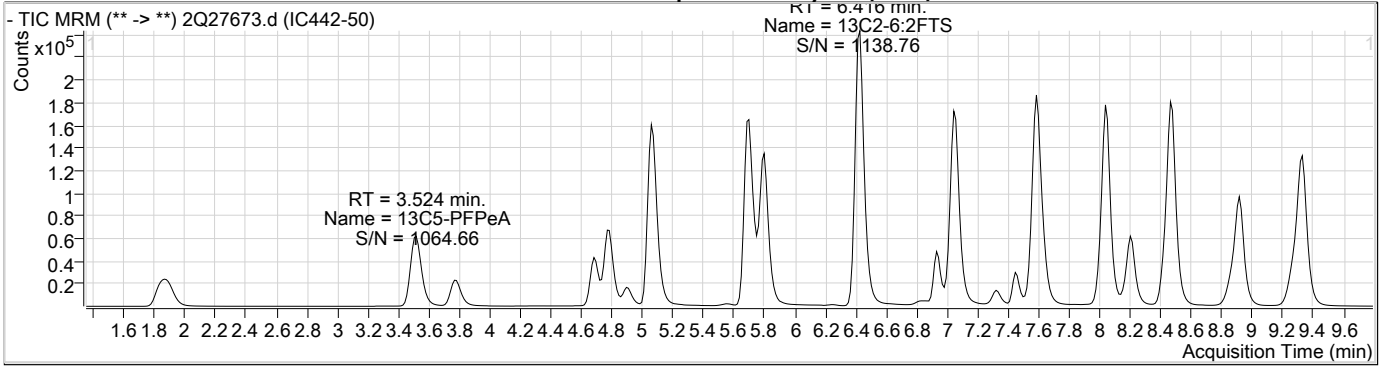
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 335476 | 19.82 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.1%  |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 75885  | 18.71 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.6%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 201354 | 19.30 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.5%  |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 25395  | 19.48 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.4%  |          |
| 13C9-PFNA             | 7.052                | 472.0 -> 427.0 | 207015 | 19.55 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.8%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 38109  | 19.88 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.4%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 268029 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 42821  | 20.03 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 149996 | 93.80 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 93.8%  |          |

## Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 82682  | 48.07 µg/L  | 99     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 76451  | 46.39 µg/L  | 100    |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 56952  | 47.75 µg/L  | 99     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 39986  | 50.20 µg/L  | 98     |
| FOSA             | 6.935 | 498.0 -> 78.0  | 87719  | 49.98 µg/L  | 99     |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 48995  | 49.97 µg/L  | 100    |
| PFBA             | 1.873 | 213.0 -> 169.0 | 58011  | 49.70 µg/L  | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 70446  | 50.11 µg/L  | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 287890 | 49.39 µg/L  | 99     |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 419926 | 49.78 µg/L  | 100    |
| PFDS             | 8.001 | 599.0 -> 80.0  | 23451  | 50.14 µg/L  | 100    |
| PFHpA            | 5.695 | 363.0 -> 319.0 | 435330 | 50.10 µg/L  | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 47897  | 50.92 µg/L  | 98     |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 122366 | 49.71 µg/L  | 100    |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 54243  | 50.62 µg/L  | m 96   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 343142 | 49.95 µg/L  | 100    |
| PFNS             | 7.565 | 549.0 -> 80.0  | 43875  | 50.41 µg/L  | 99     |
| PFOA             | 6.437 | 413.0 -> 369.0 | 267229 | 49.10 µg/L  | 98     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 61125  | 49.56 µg/L  | m 79   |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 216069 | 49.82 µg/L  | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 45369  | 50.42 µg/L  | 96     |
| PFTeDA           | 9.332 | 713.0 -> 669.0 | 451162 | 49.56 µg/L  | 100    |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 473047 | 49.89 µg/L  | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 340357 | 49.17 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 259686 | 50.00 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 51529  | 49.82 µg/L  | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 511194 | 49.96 µg/L  | 100    |
| HFPO-DA          | 5.060 | 329.0 -> 169.0 | 442027 | 248.08 µg/L | 99     |

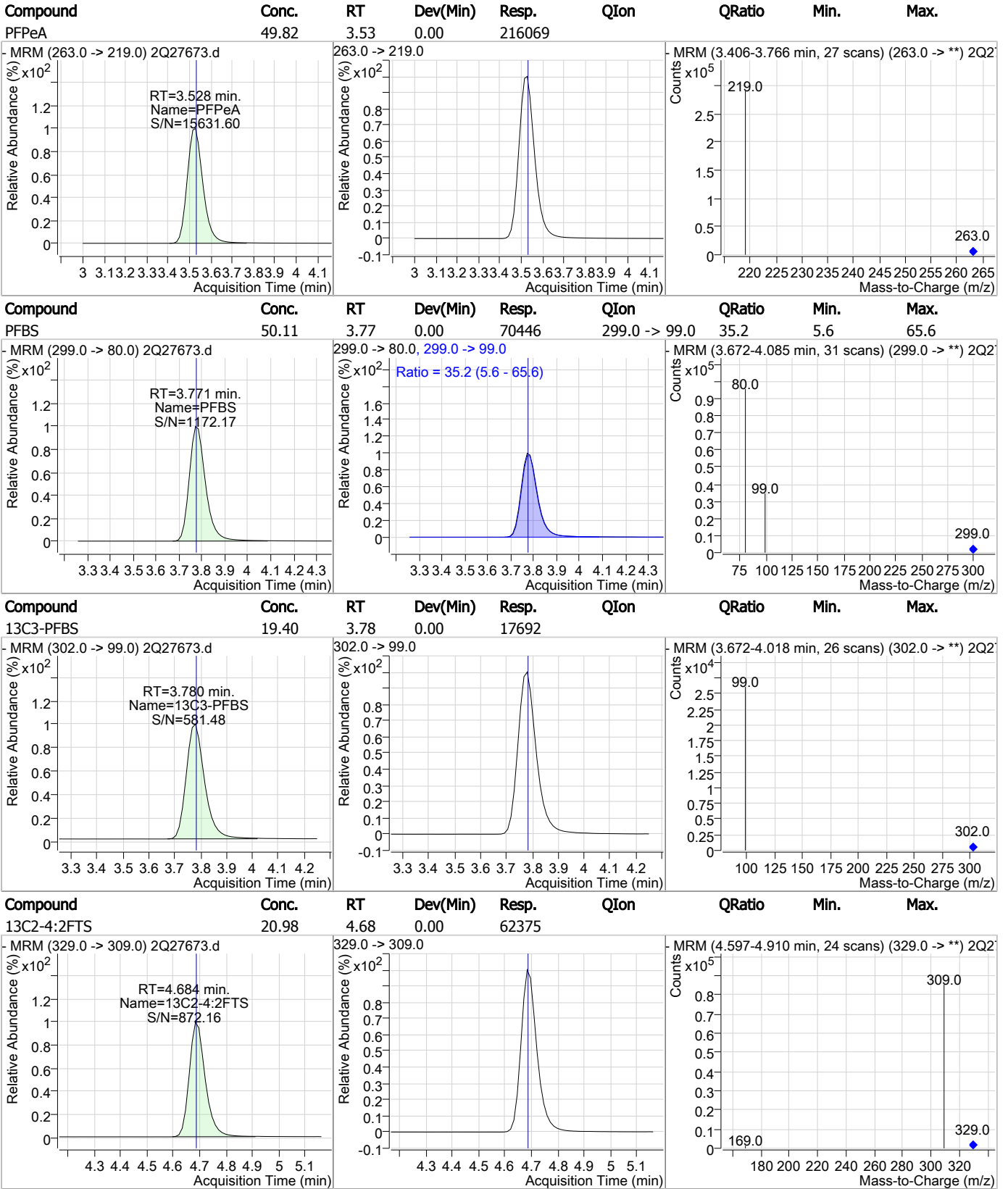
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



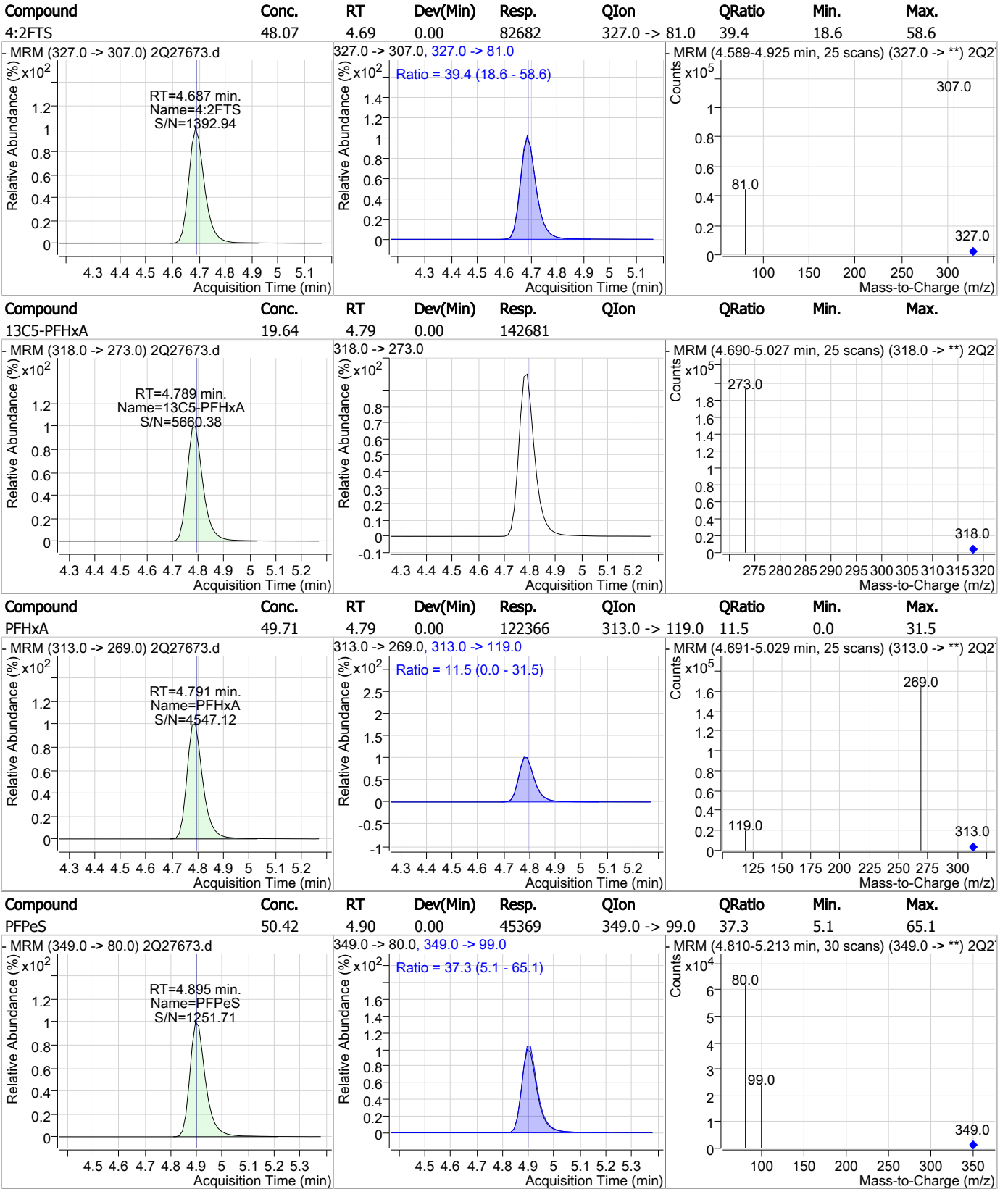
7.6.20  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.20 7

### Perfluorinated Compounds by LC/MS/MS

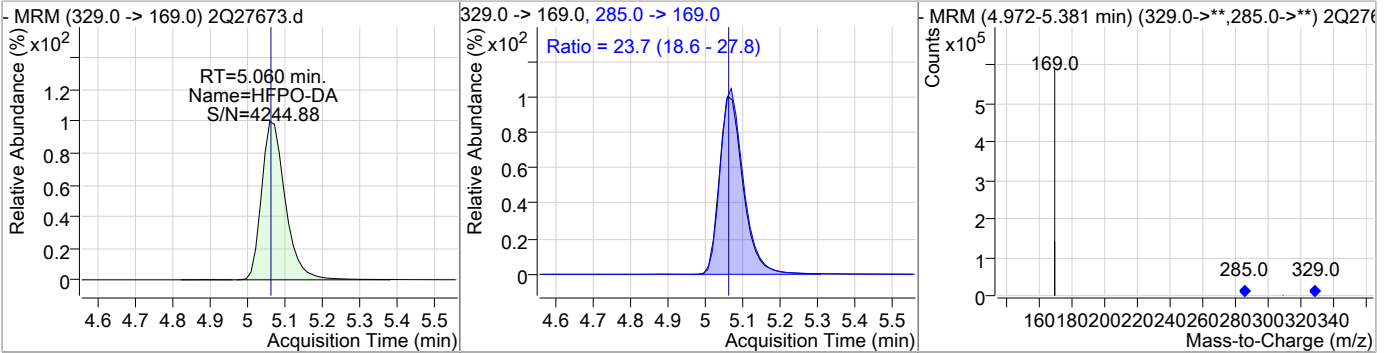


7.6.20

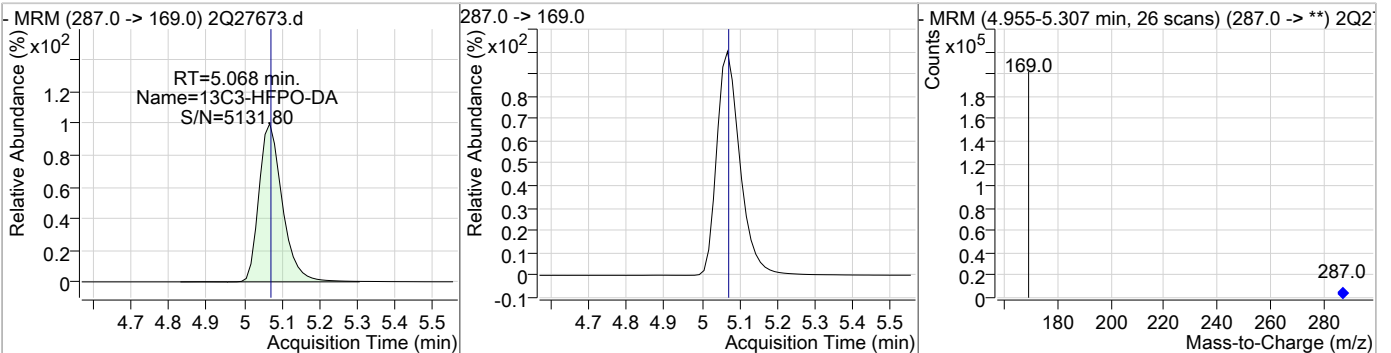
7

### Perfluorinated Compounds by LC/MS/MS

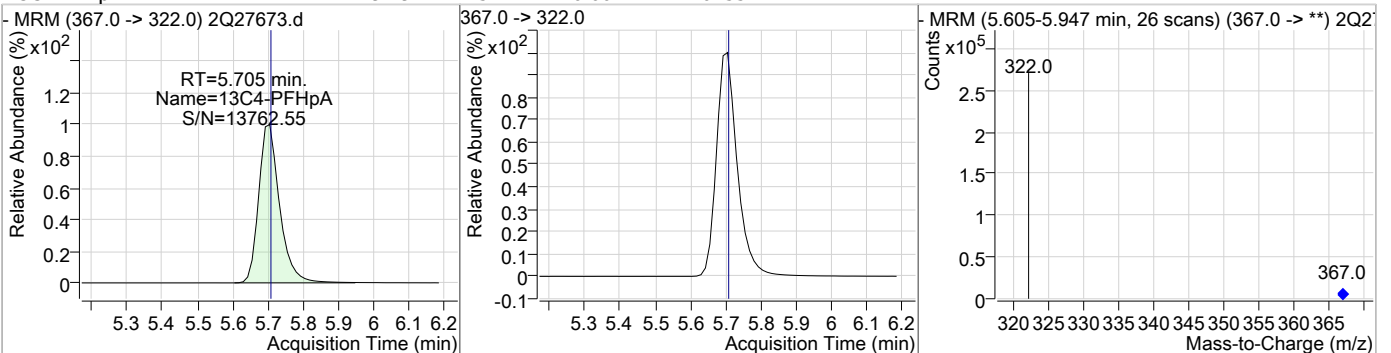
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 248.08 | 5.06 | 0.00     | 442027 | 285.0 -> 169.0 | 23.7   | 18.6 | 27.8 |



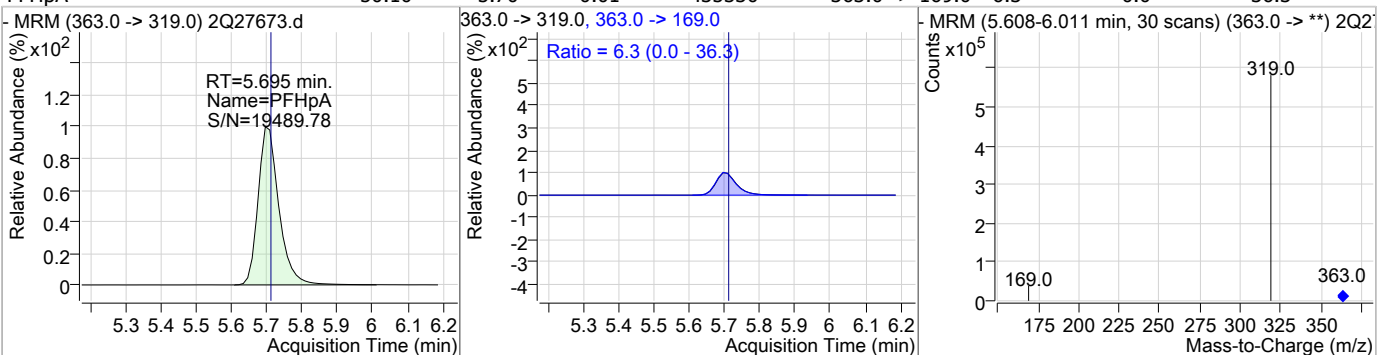
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 93.80 | 5.07 | 0.00     | 149996 |      |        |      |      |



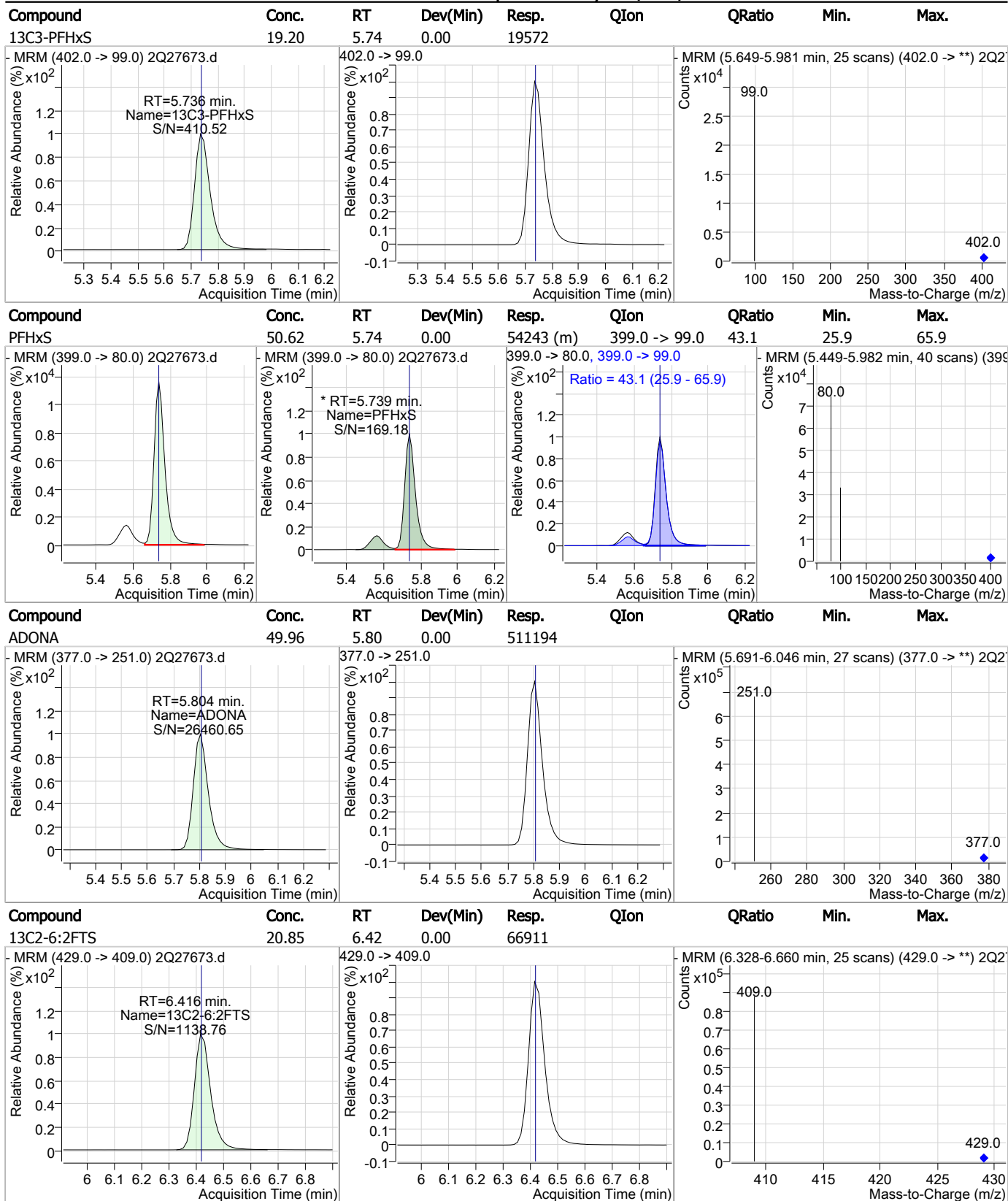
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 19.49 | 5.71 | 0.00     | 201551 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 50.10 | 5.70 | -0.01    | 435330 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

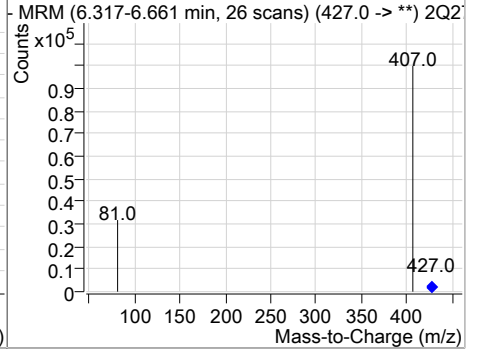
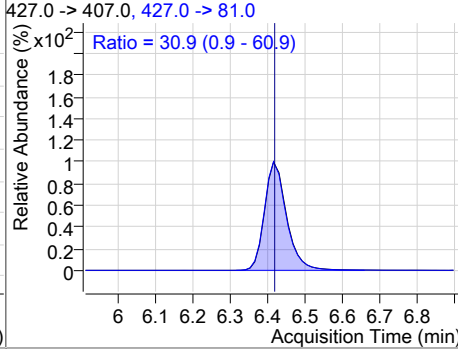
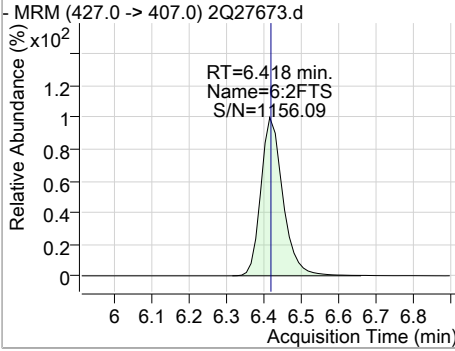


7.6.20  
7

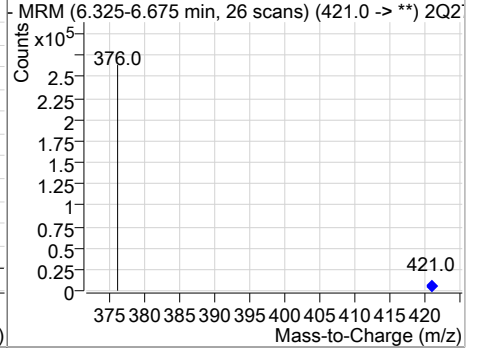
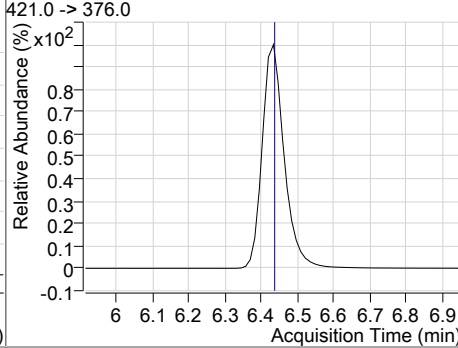
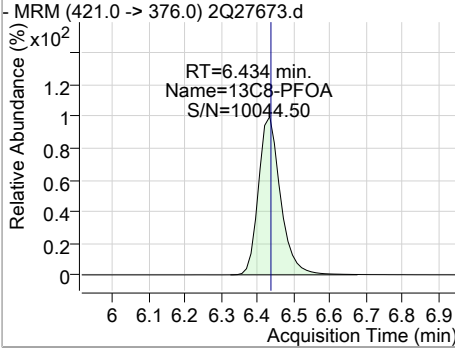


### Perfluorinated Compounds by LC/MS/MS

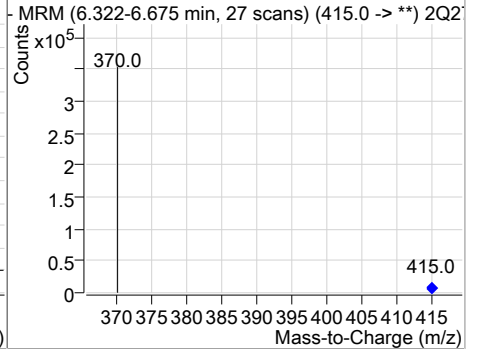
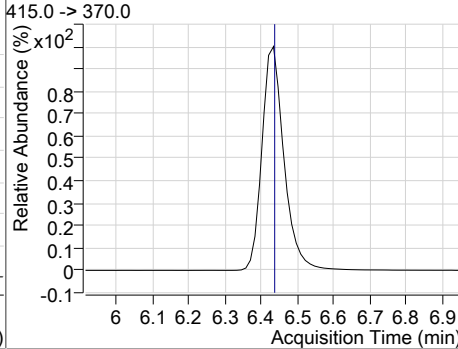
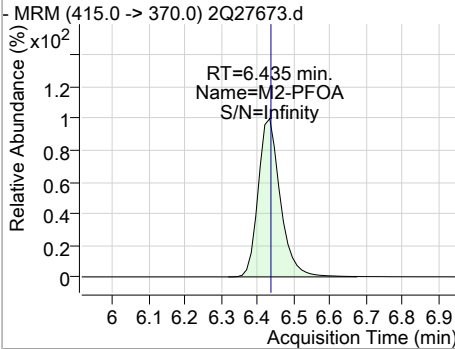
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 46.39 | 6.42 | 0.00     | 76451 | 427.0 -> 81.0 | 30.9   | 0.9  | 60.9 |



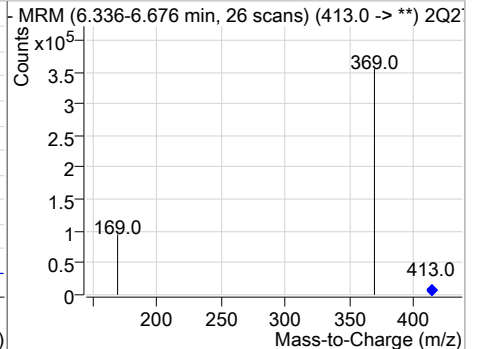
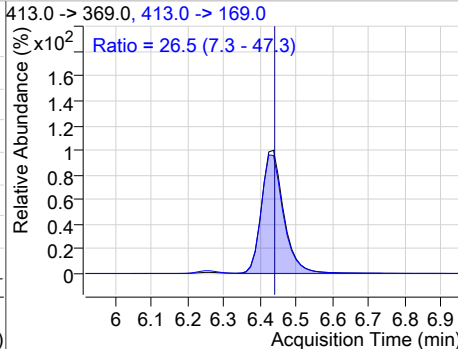
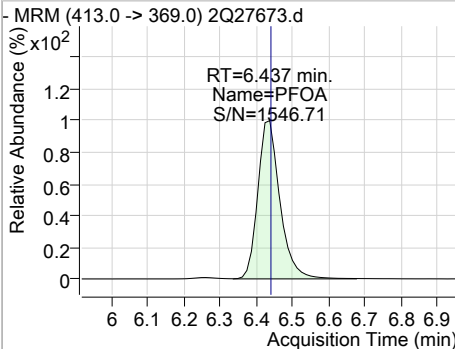
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 19.30 | 6.43 | 0.00     | 201354 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 268029 |      |        |      |      |

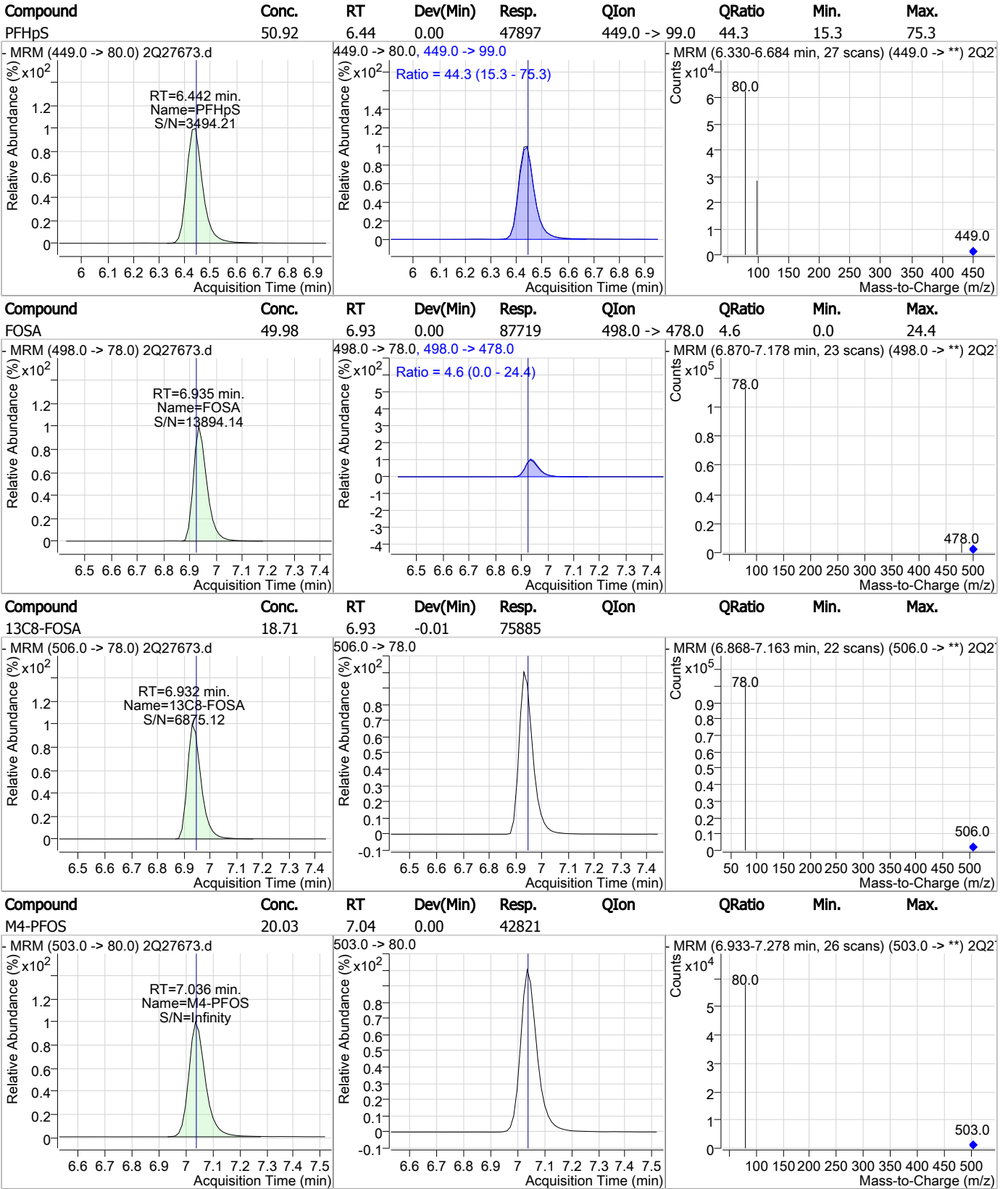


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 49.10 | 6.44 | 0.00     | 267229 | 413.0 -> 169.0 | 26.5   | 7.3  | 47.3 |



7.6.20  
7

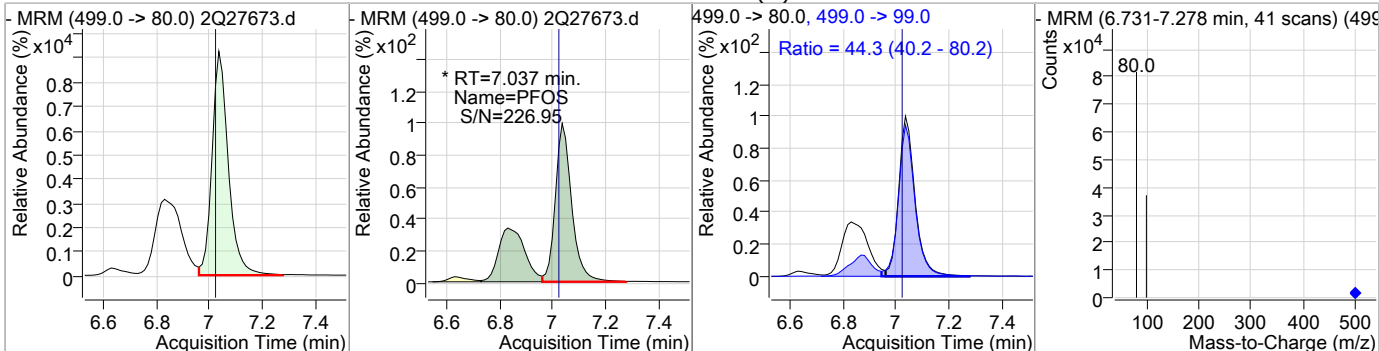
### Perfluorinated Compounds by LC/MS/MS



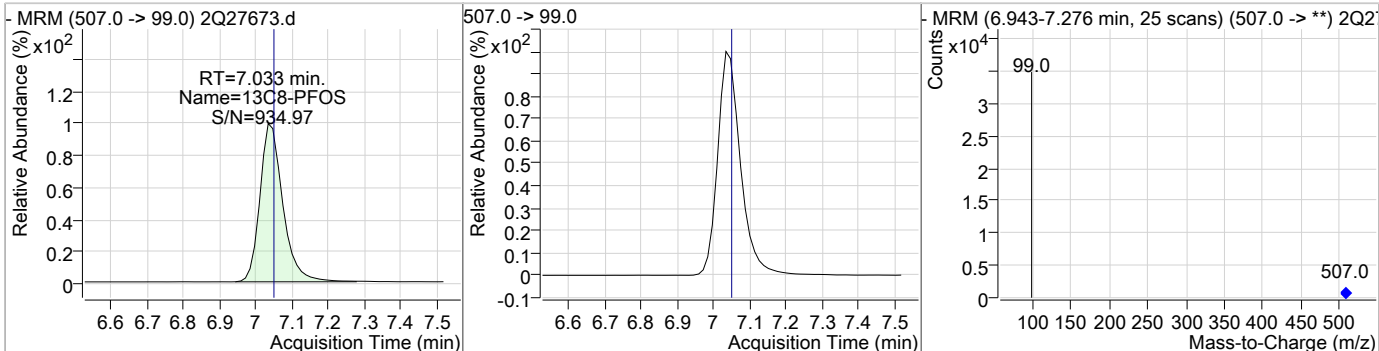
7.6.20 7

### Perfluorinated Compounds by LC/MS/MS

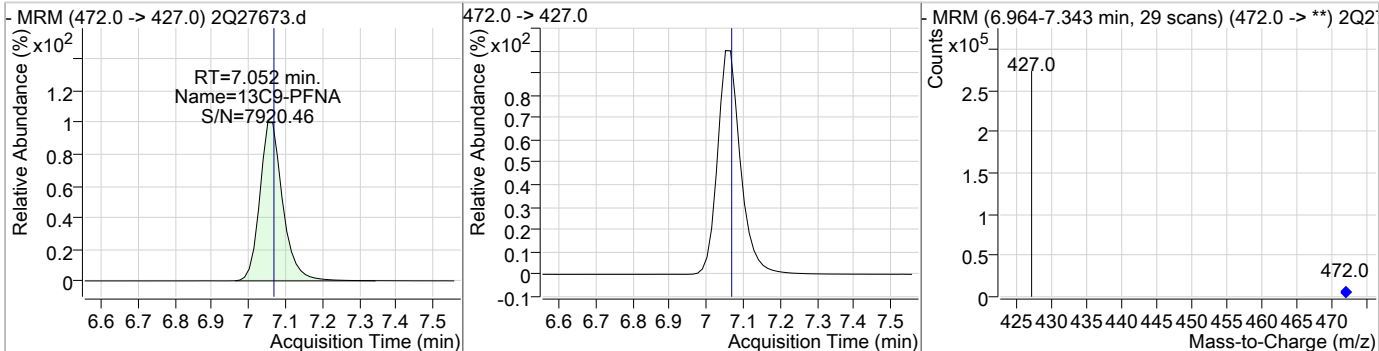
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 49.56 | 7.04 | 0.00     | 61125 (m) | 499.0 -> 99.0 | 44.3   | 40.2 | 80.2 |



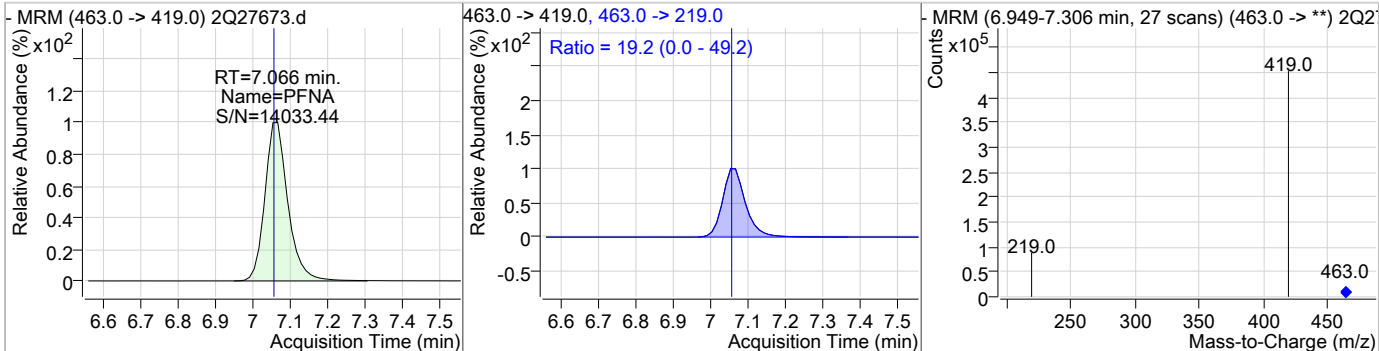
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 19.48 | 7.03 | -0.01    | 25395 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 19.55 | 7.05 | -0.01    | 207015 |      |        |      |      |

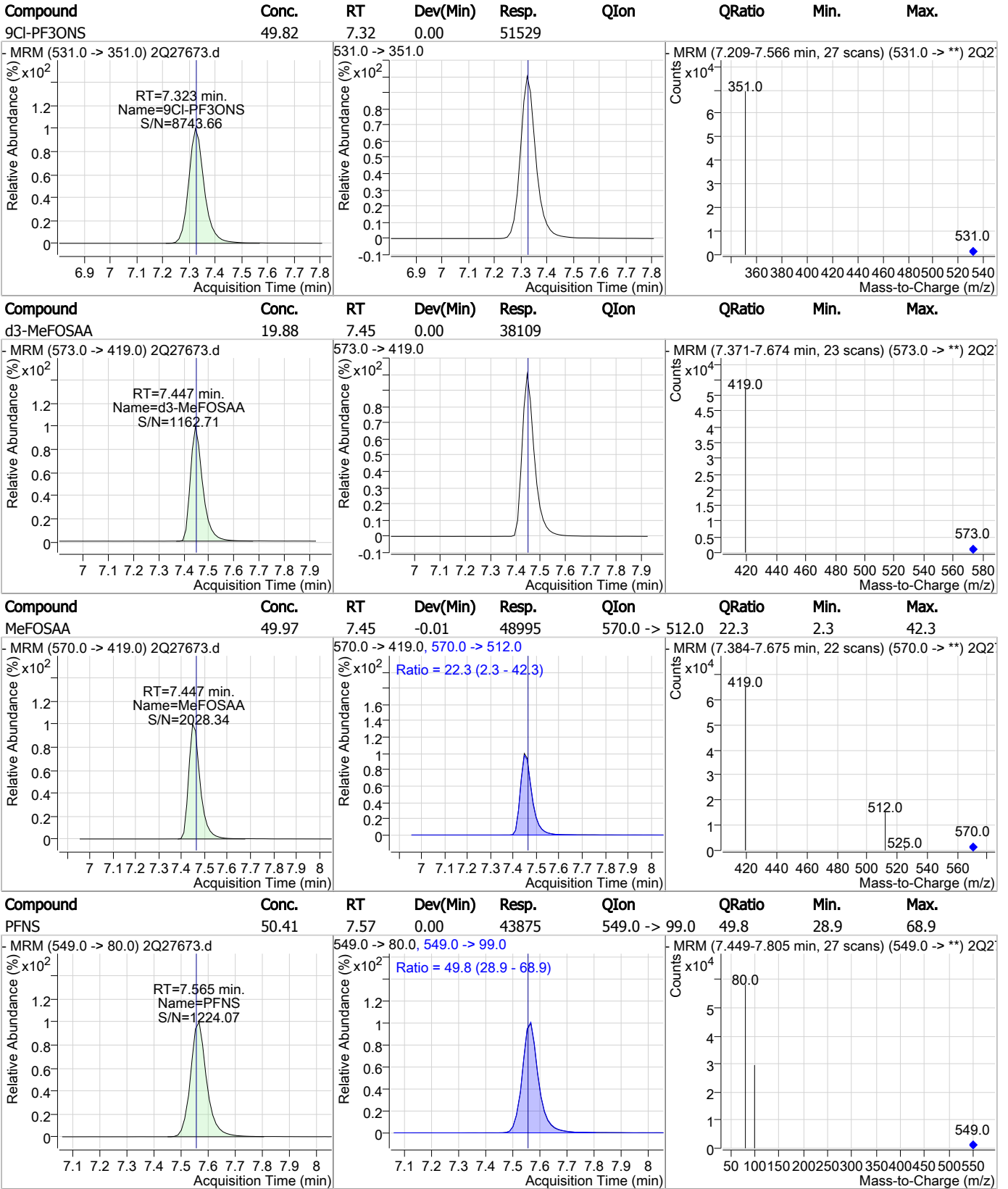


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 49.95 | 7.07 | 0.00     | 343142 | 463.0 -> 219.0 | 19.2   | 0.0  | 49.2 |



7.6.20  
7

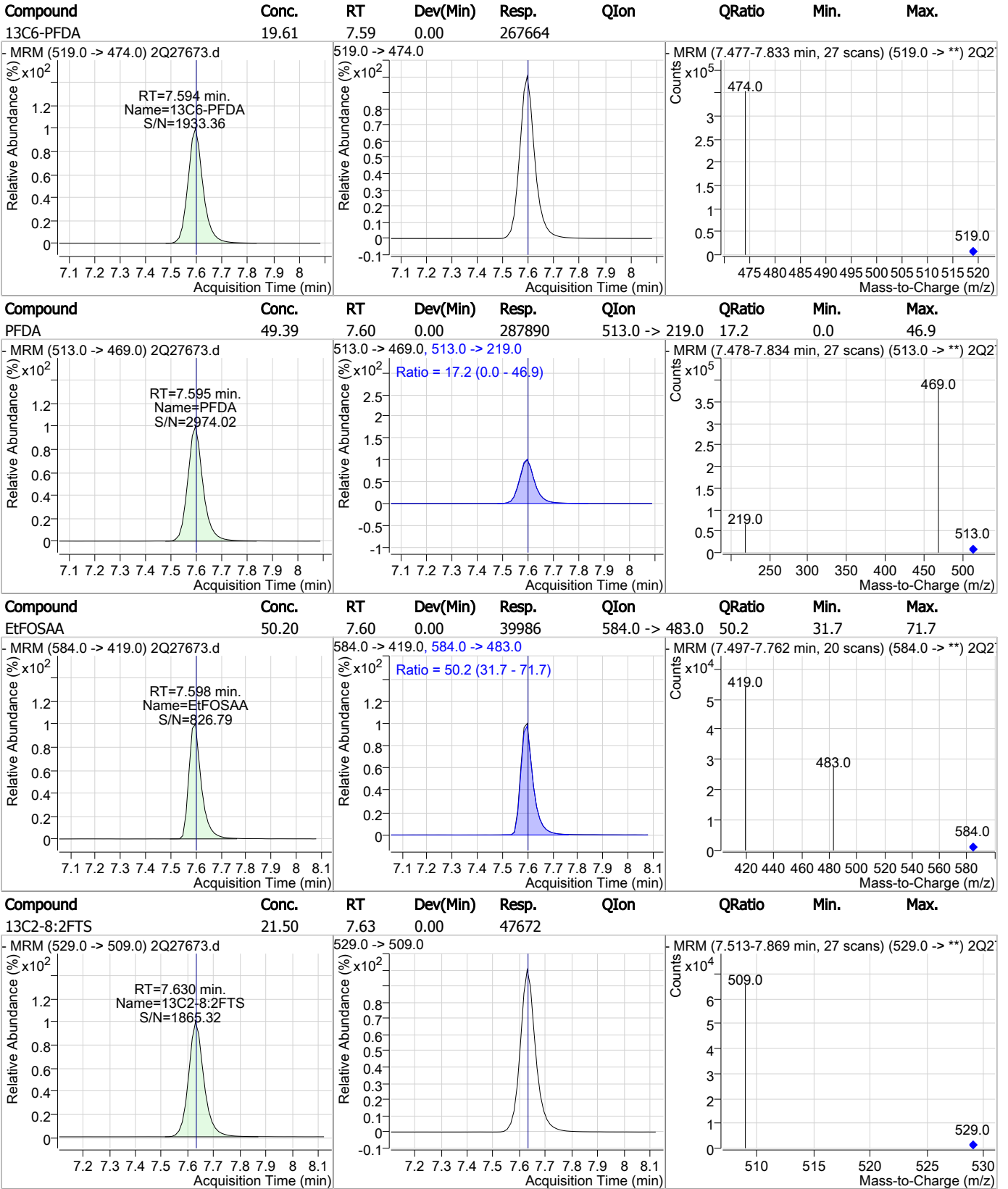
### Perfluorinated Compounds by LC/MS/MS



7.6.20

7

### Perfluorinated Compounds by LC/MS/MS

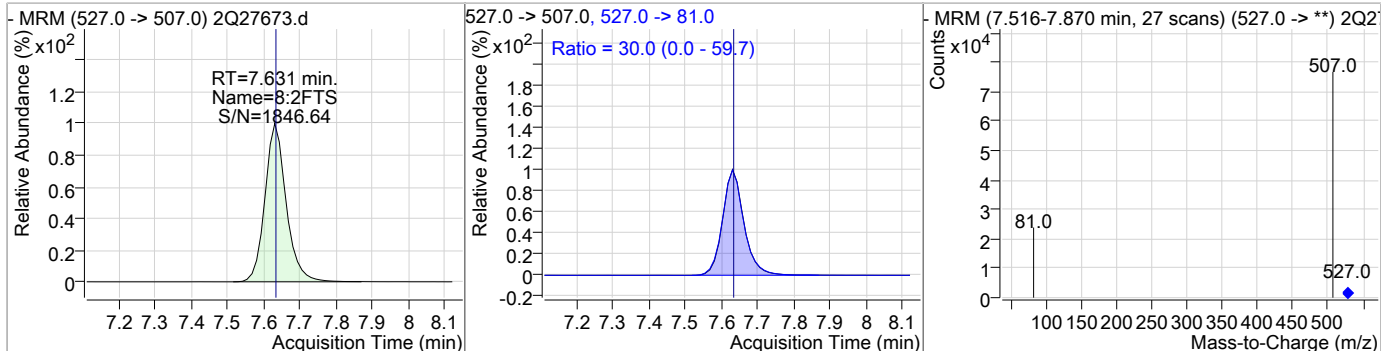


7.6.20 7

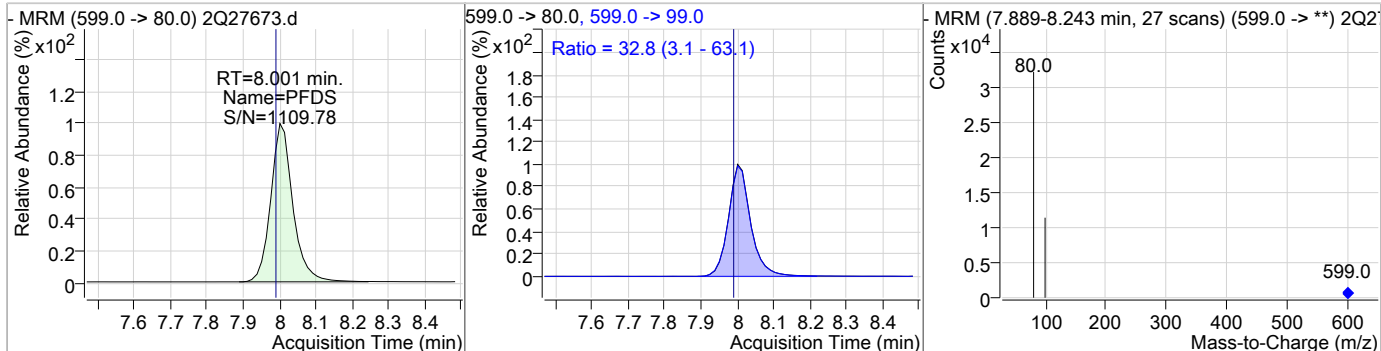


### Perfluorinated Compounds by LC/MS/MS

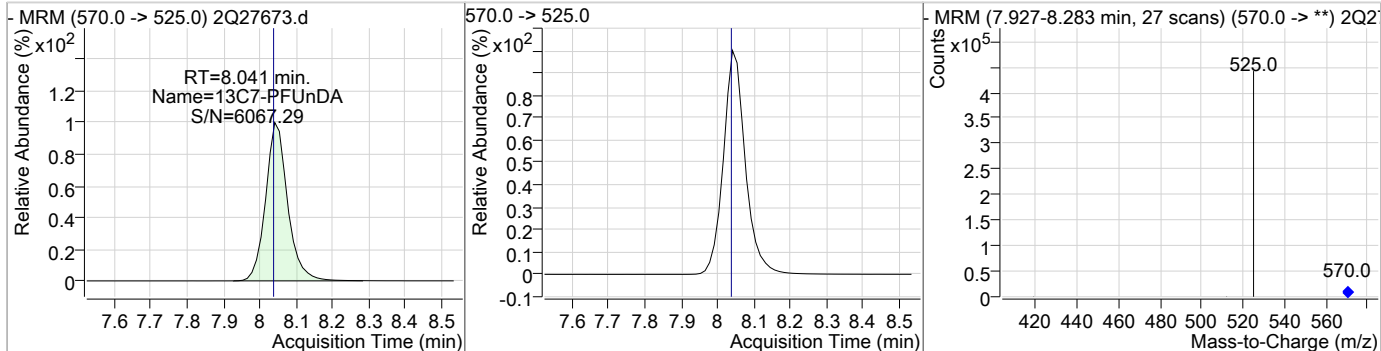
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 47.75 | 7.63 | 0.00     | 56952 | 527.0 -> 81.0 | 30.0   | 0.0  | 59.7 |



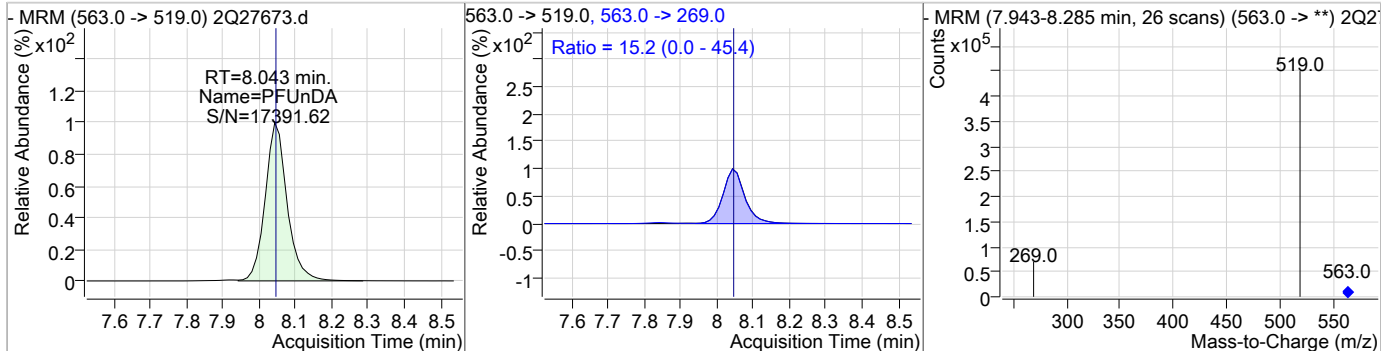
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 50.14 | 8.00 | 0.00     | 23451 | 599.0 -> 99.0 | 32.8   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 19.82 | 8.04 | 0.00     | 335476 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 49.17 | 8.04 | 0.00     | 340357 | 563.0 -> 269.0 | 15.2   | 0.0  | 45.4 |



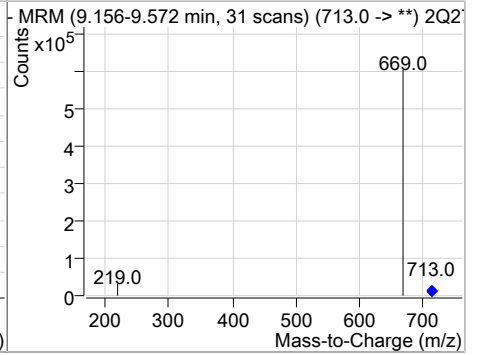
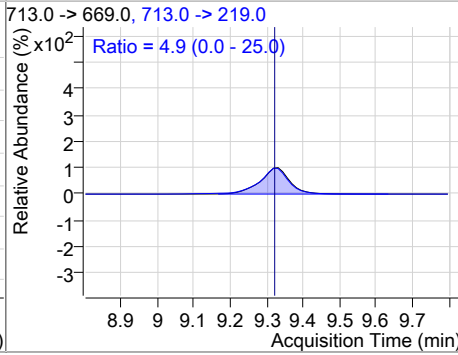
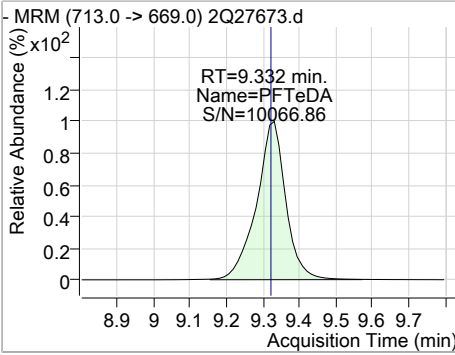
### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 50.00 | 8.20 | 0.00     | 259686 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 20.13 | 8.47 | 0.00     | 378583 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 49.78 | 8.47 | 0.00     | 419926 | 613.0 -> 319.0 | 12.4   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 49.89 | 8.92 | 0.00     | 473047 | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

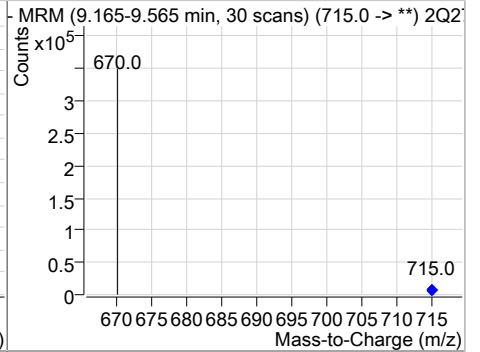
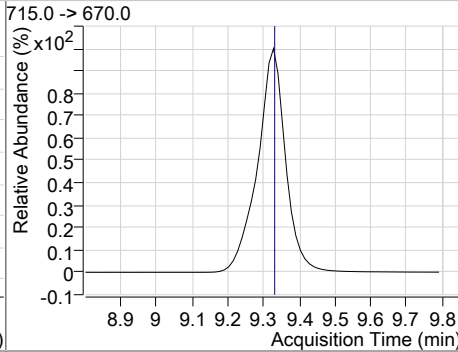
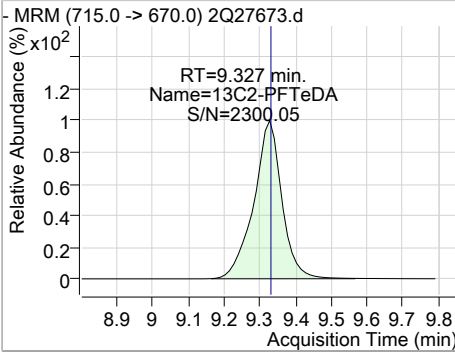
7.6.20  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 49.56 | 9.33 | 0.01     | 451162 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.23 | 9.33 | 0.00     | 259678 |      |        |      |      |



7.6.20  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-IC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27673.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 09:52      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.20.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

**Norman Farmer**  
 03/19/19 16:30

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27674.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 10:08:42 AM  
 Sample Name : IC442-100  
 Vial : Vial 9  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 251965 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 40649  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 111650 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 94549  | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 133388 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 188852 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 183541 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 192126 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 240413 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 306746 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 357119 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.328                | 715.0 -> 670.0 | 246213 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 66335  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 16689  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 18380  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 23384  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 66537  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 67886  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 50842  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 35948  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 133816 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 66577  | 22.39 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 111.9% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 67796  | 21.12 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.6% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 50795  | 22.91 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 114.5% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 356622 | 18.96 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.8%  |          |
| 13C2-PFTeDA                        | 9.328                | 715.0 -> 670.0 | 246090 | 19.17 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.8%  |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 16675  | 18.29 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.4%  |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 18370  | 18.02 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 90.1%  |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 111158 | 18.54 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 92.7%  |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 188604 | 18.24 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.2%  |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 133134 | 18.32 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 91.6%  |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 94548  | 18.60 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.0%  |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 240531 | 17.63 µg/L        | 0.000    |

7.6.21  
7

## Perfluorinated Compounds by LC/MS/MS

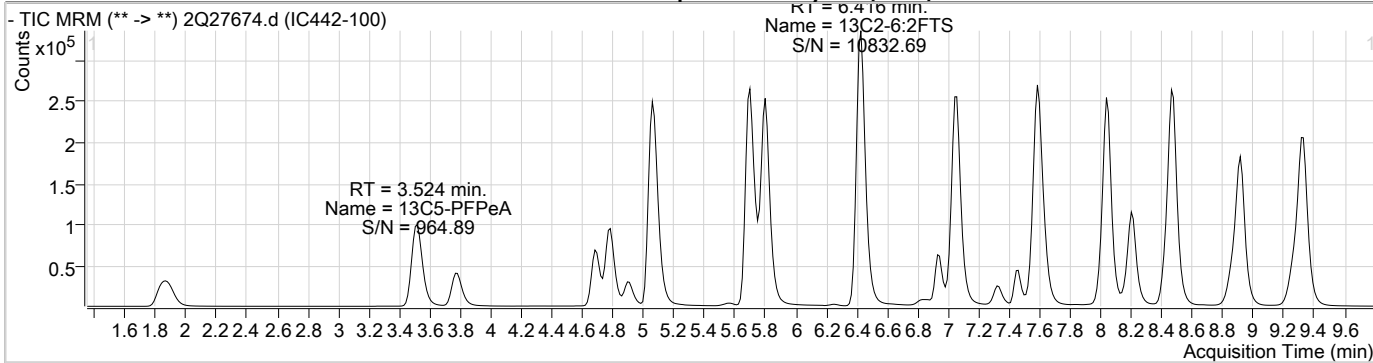
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 88.1%  |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 306593 | 18.12 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.6%  |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 66301  | 16.35 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 81.8%  |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 183371 | 17.58 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 87.9%  |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 23372  | 17.93 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 89.7%  |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 192051 | 18.14 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 90.7%  |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 35954  | 18.76 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.8%  |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 252297 | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 40594  | 19.96 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.8%  |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 133816 | 83.69 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 83.7%  |          |

## Target Compounds

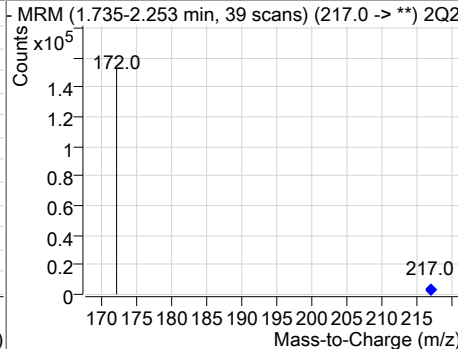
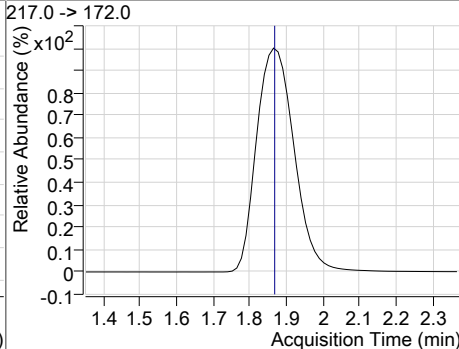
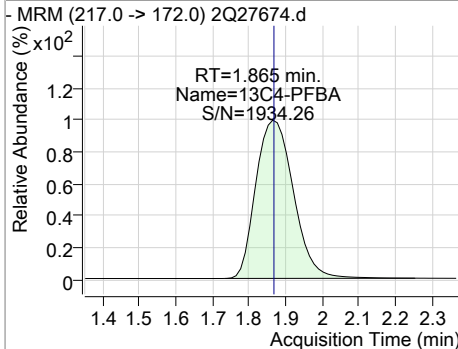
| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 157738 | 86.05 µg/L  | 99     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 140947 | 84.40 µg/L  | 100    |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 105261 | 82.81 µg/L  | 99     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 72994  | 99.95 µg/L  | 100    |
| FOSA             | 6.935 | 498.0 -> 78.0  | 154801 | 100.00 µg/L | 100    |
| MeFOSAA          | 7.460 | 570.0 -> 419.0 | 93766  | 100.00 µg/L | 100    |
| PFBA             | 1.873 | 213.0 -> 169.0 | 110493 | 100.21 µg/L | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 132547 | 100.03 µg/L | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 525118 | 100.34 µg/L | 99     |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 795946 | 100.14 µg/L | 99     |
| PFDS             | 8.001 | 599.0 -> 80.0  | 42947  | 99.72 µg/L  | 99     |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 814006 | 100.00 µg/L | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 88742  | 99.51 µg/L  | 98     |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 230208 | 100.22 µg/L | 100    |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 101428 | 99.83 µg/L  | m 96   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 637554 | 100.06 µg/L | 100    |
| PFNS             | 7.565 | 549.0 -> 80.0  | 79836  | 99.62 µg/L  | 97     |
| PFOA             | 6.437 | 413.0 -> 369.0 | 498604 | 100.57 µg/L | 98     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 113808 | 100.21 µg/L | m 79   |
| PFPeA            | 3.528 | 263.0 -> 219.0 | 409738 | 100.12 µg/L | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 84663  | 99.83 µg/L  | 97     |
| PFTeDA           | 9.319 | 713.0 -> 669.0 | 863382 | 100.27 µg/L | 100    |
| PFTrDA           | 8.919 | 663.0 -> 619.0 | 897897 | 100.12 µg/L | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 636291 | 100.55 µg/L | 99     |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 488215 | 99.76 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 96854  | 100.04 µg/L | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 970224 | 100.01 µg/L | 100    |
| HFPO-DA          | 5.060 | 329.0 -> 169.0 | 796923 | 501.33 µg/L | 99     |

# = Qualifier out of range, m = manually integrated, + = Area summed

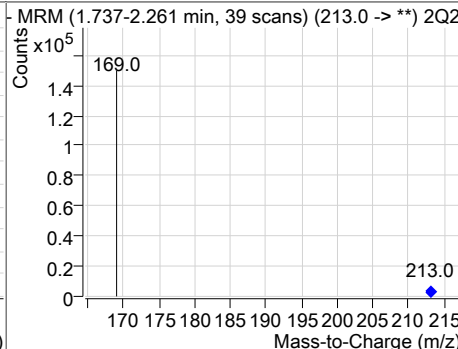
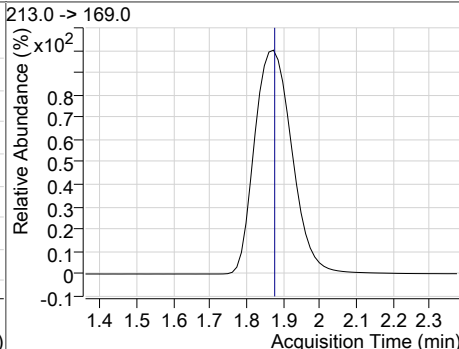
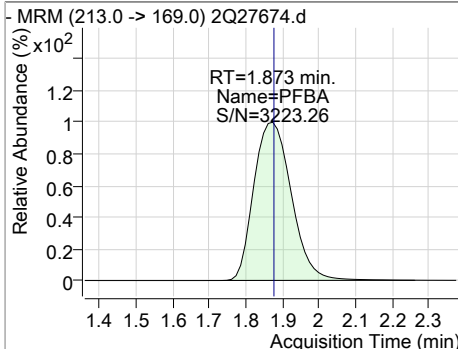
### Perfluorinated Compounds by LC/MS/MS



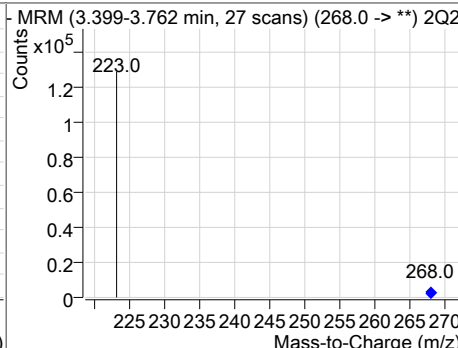
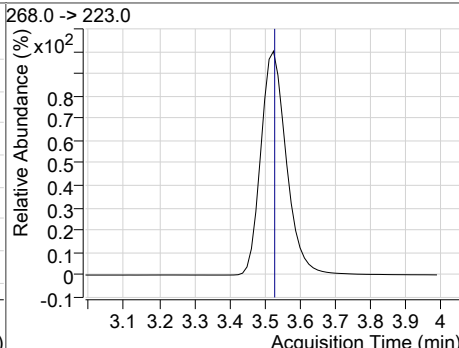
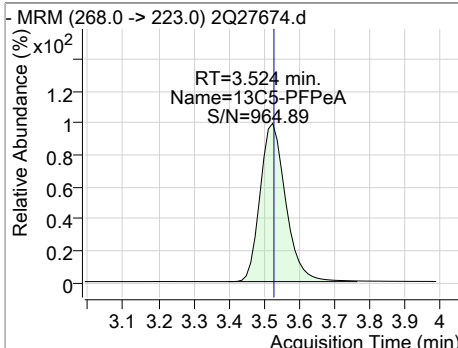
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 18.54 | 1.86 | 0.00     | 111158 |      |        |      |      |



| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|------|--------|------|------|
| PFBA     | 100.21 | 1.87 | 0.00     | 110493 |      |        |      |      |



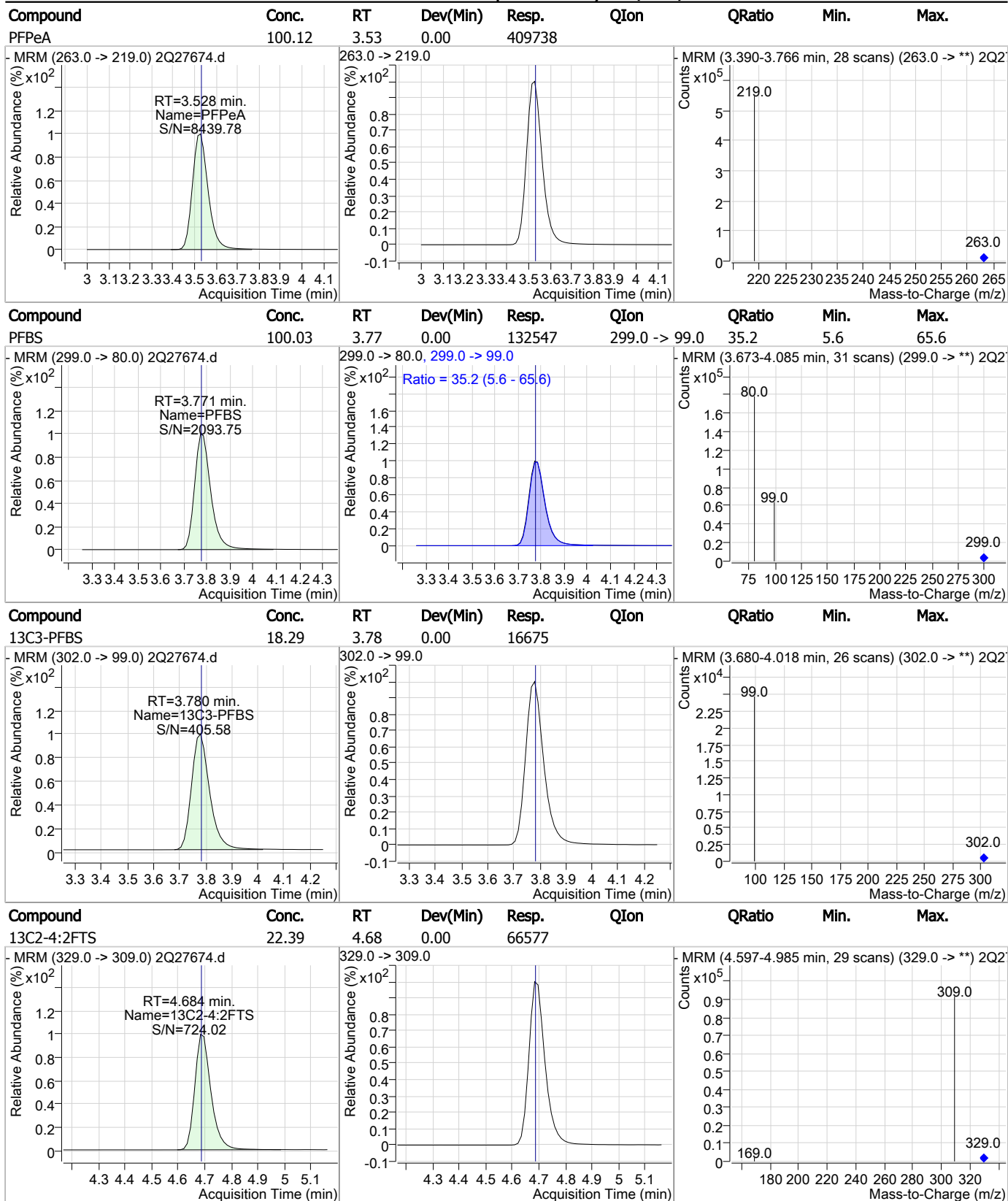
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C5-PFPeA | 18.60 | 3.52 | 0.00     | 94548 |      |        |      |      |



7.6.21  
7

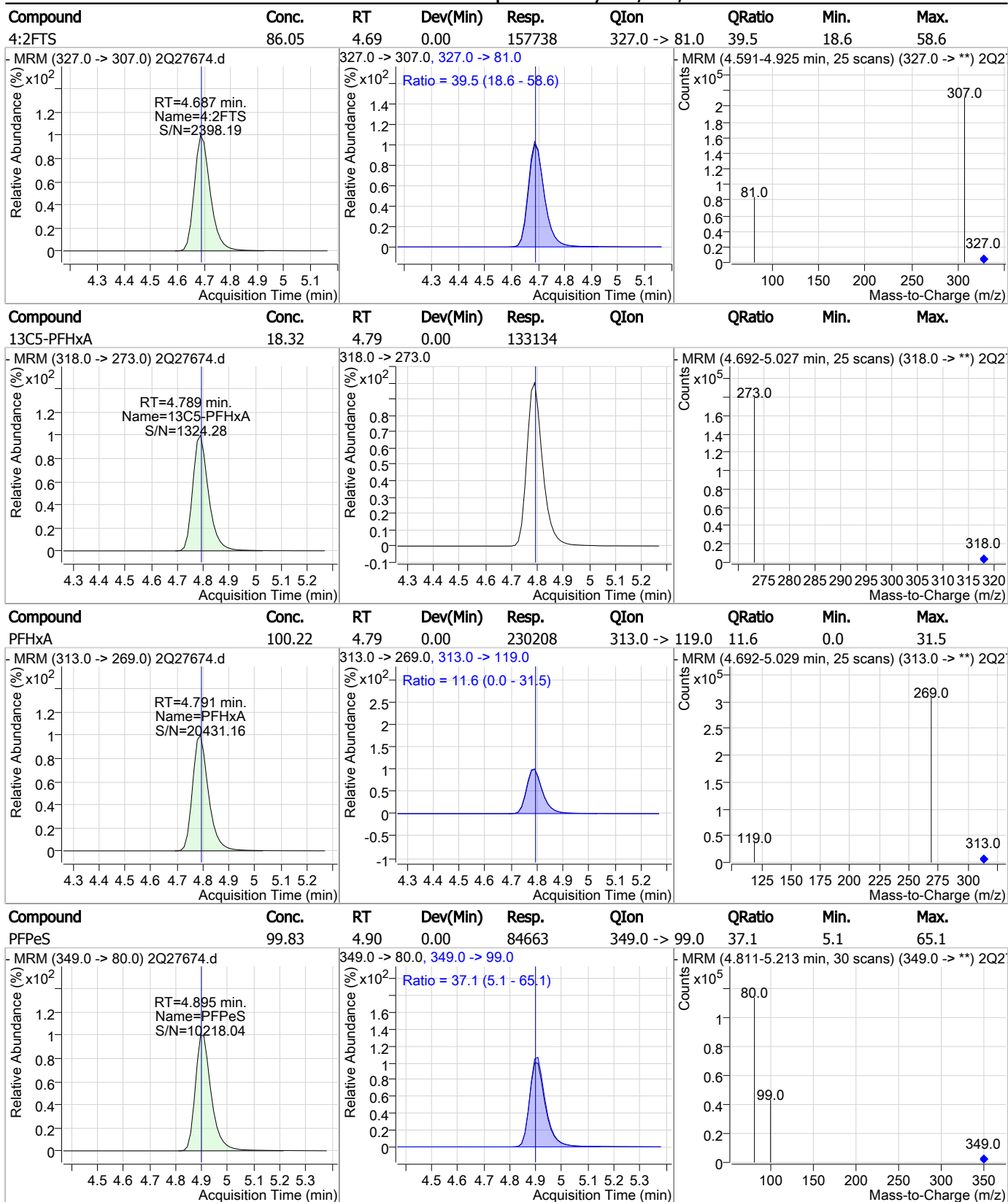


### Perfluorinated Compounds by LC/MS/MS



7.6.21  
7

### Perfluorinated Compounds by LC/MS/MS

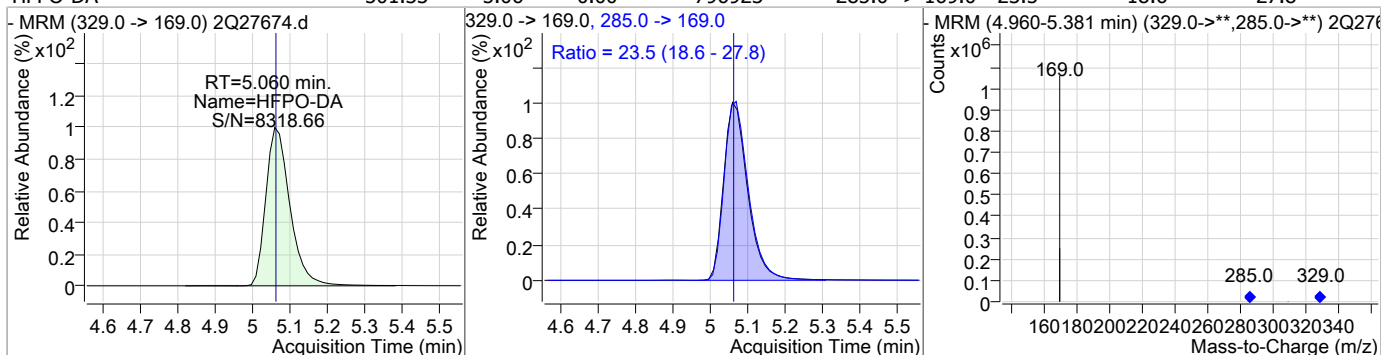


7.6.21

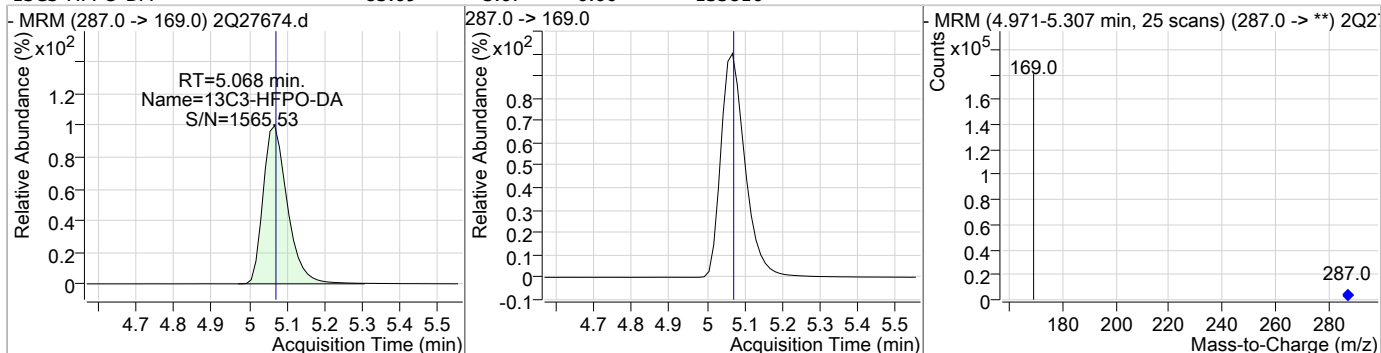
7

### Perfluorinated Compounds by LC/MS/MS

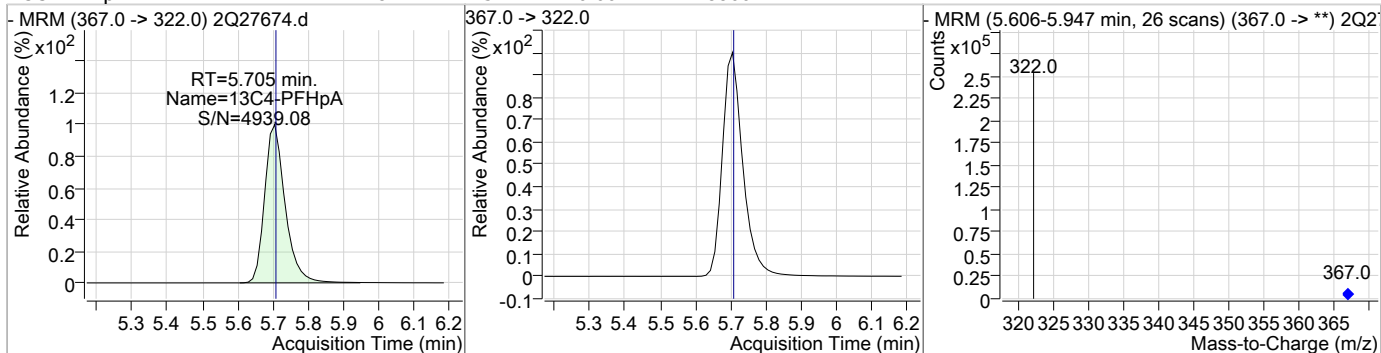
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 501.33 | 5.06 | 0.00     | 796923 | 285.0 -> 169.0 | 23.5   | 18.6 | 27.8 |



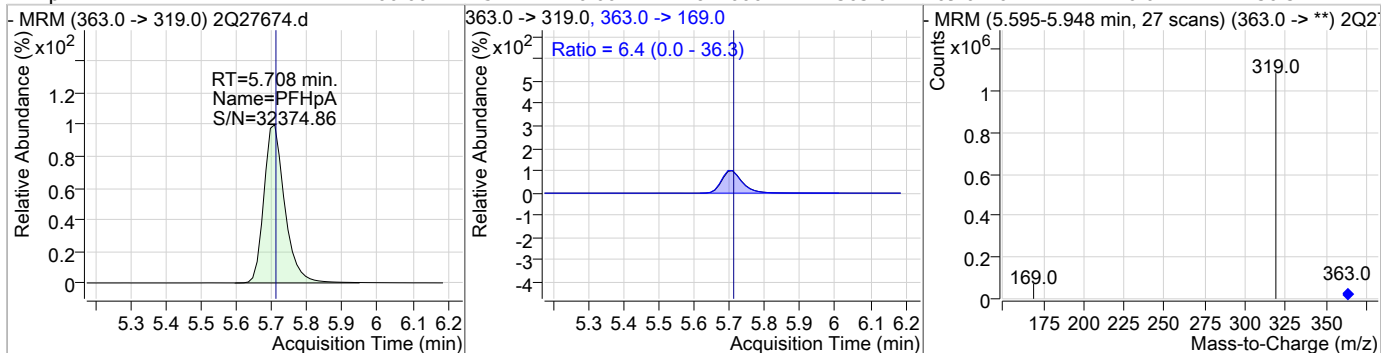
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 83.69 | 5.07 | 0.00     | 133816 |      |        |      |      |



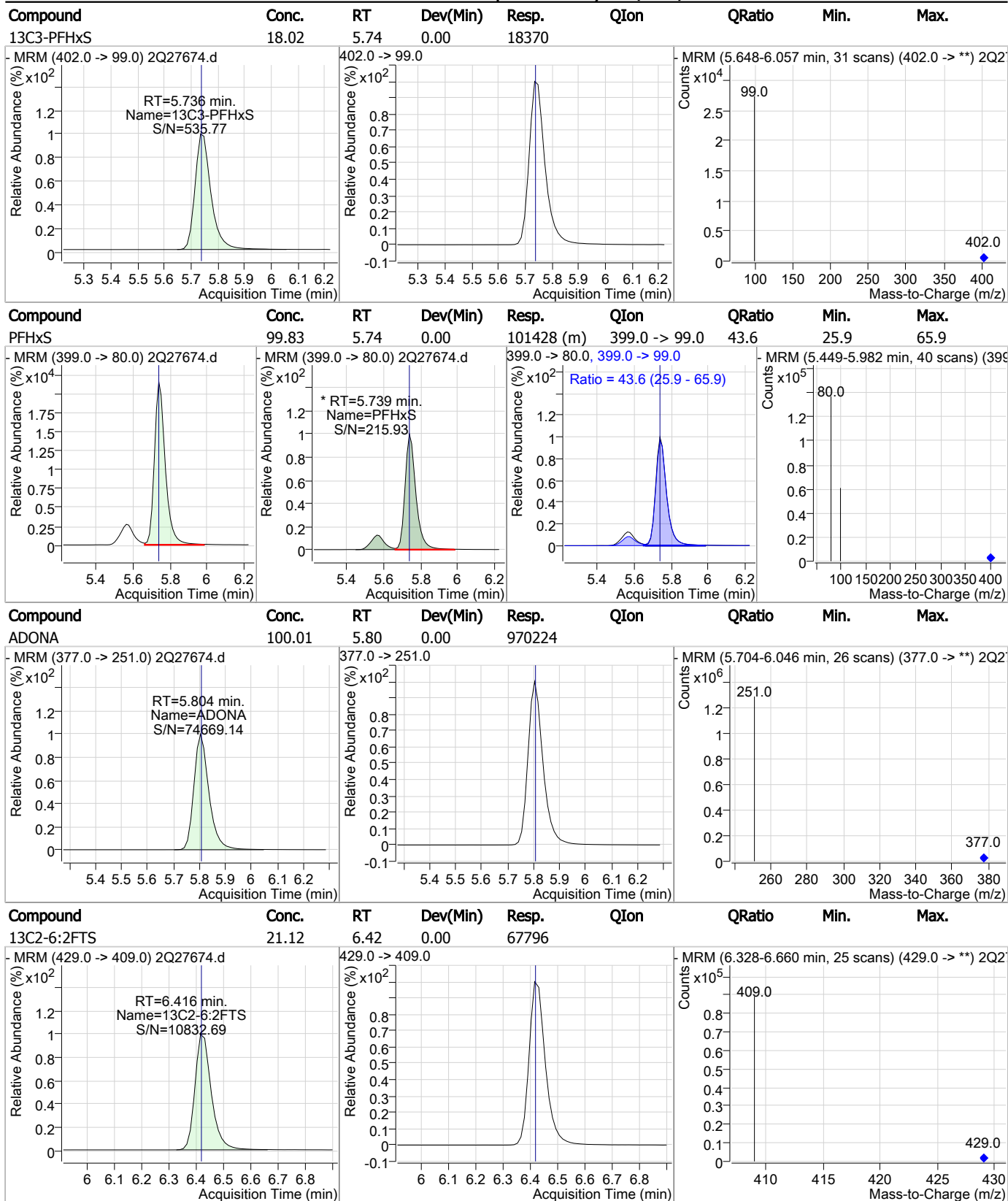
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 18.24 | 5.71 | 0.00     | 188604 |      |        |      |      |



| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 100.00 | 5.71 | 0.00     | 814006 | 363.0 -> 169.0 | 6.4    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

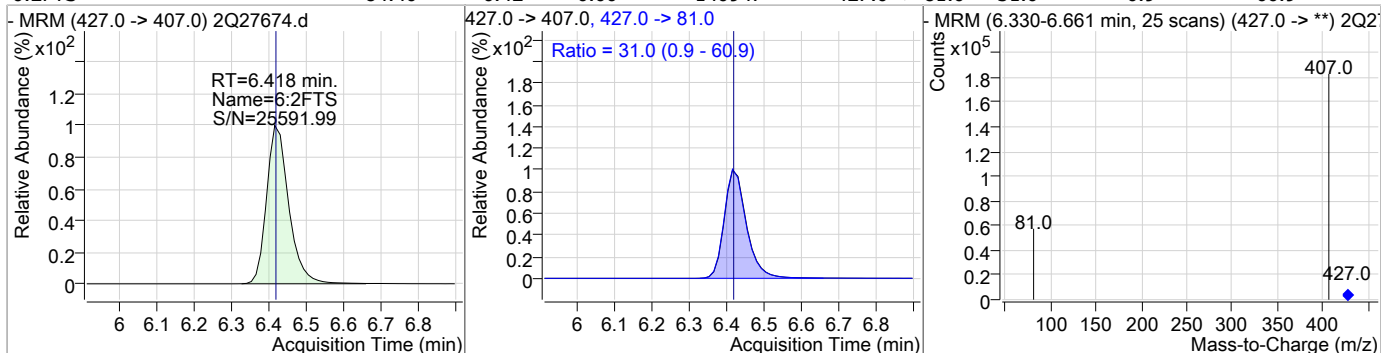


7.6.21  
7

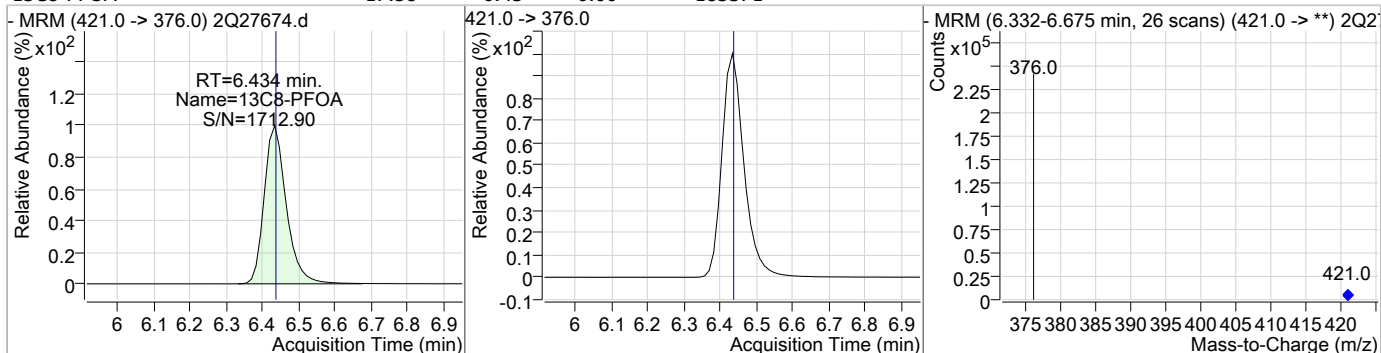


### Perfluorinated Compounds by LC/MS/MS

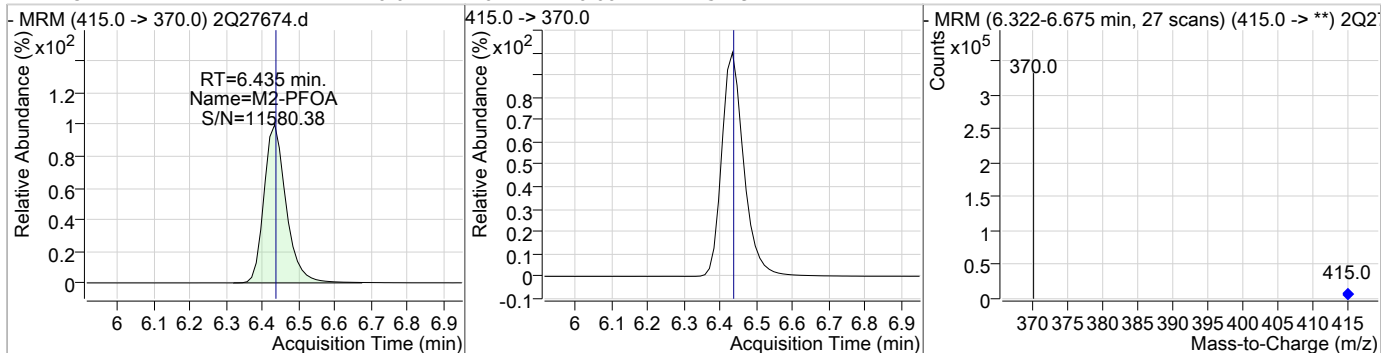
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| 6:2FTS   | 84.40 | 6.42 | 0.00     | 140947 | 427.0 -> 81.0 | 31.0   | 0.9  | 60.9 |



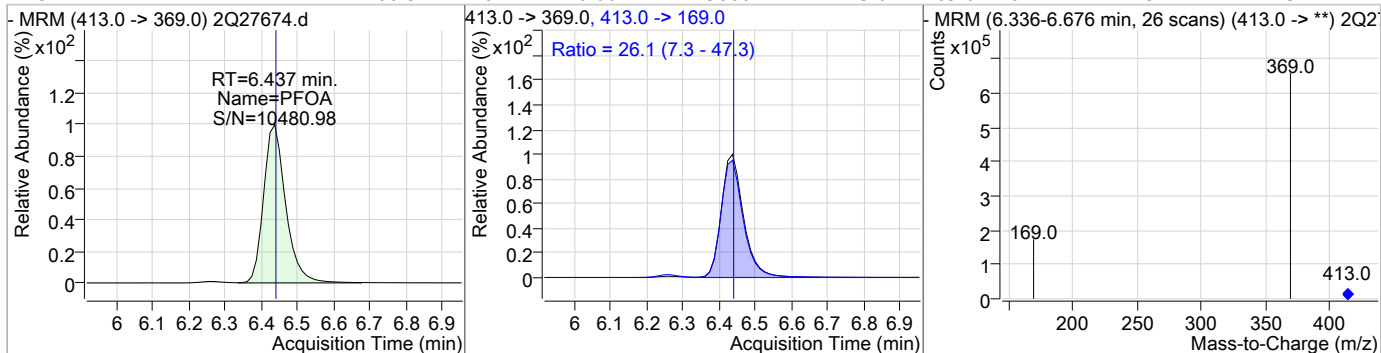
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 17.58 | 6.43 | 0.00     | 183371 |      |        |      |      |



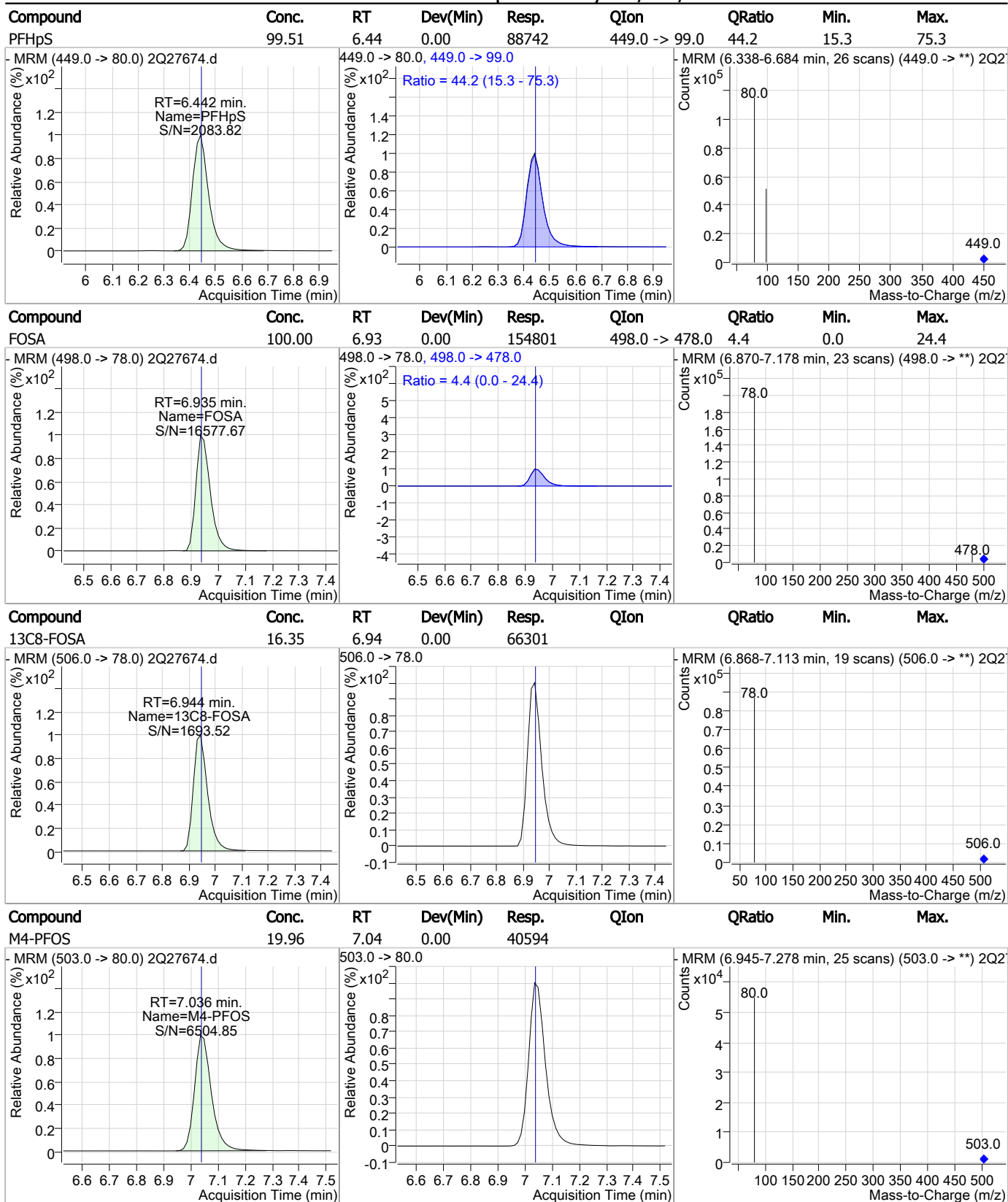
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.01 | 6.44 | 0.00     | 252297 |      |        |      |      |



| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 100.57 | 6.44 | 0.00     | 498604 | 413.0 -> 169.0 | 26.1   | 7.3  | 47.3 |



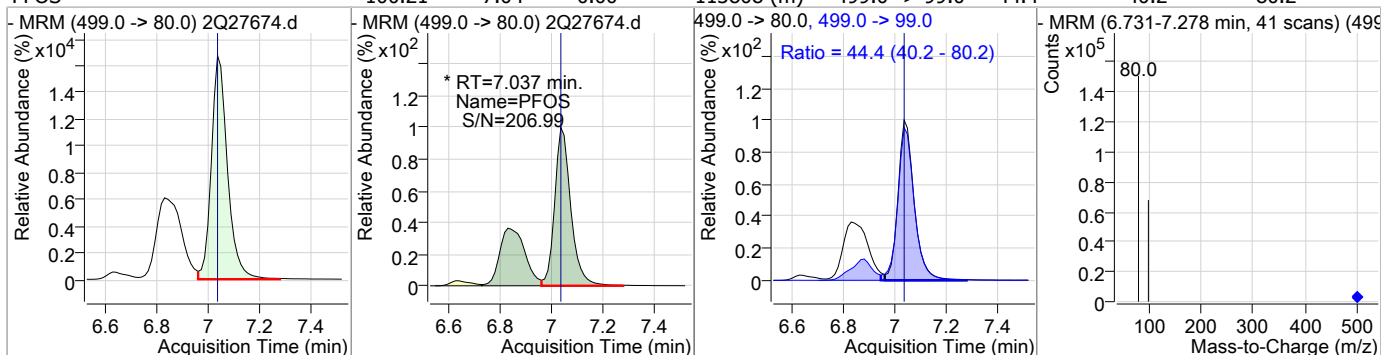
### Perfluorinated Compounds by LC/MS/MS



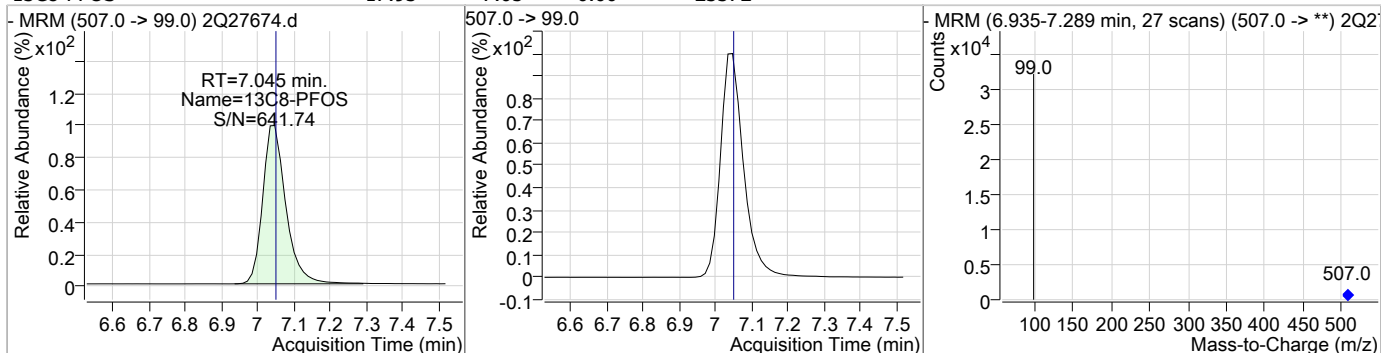
7.6.21

### Perfluorinated Compounds by LC/MS/MS

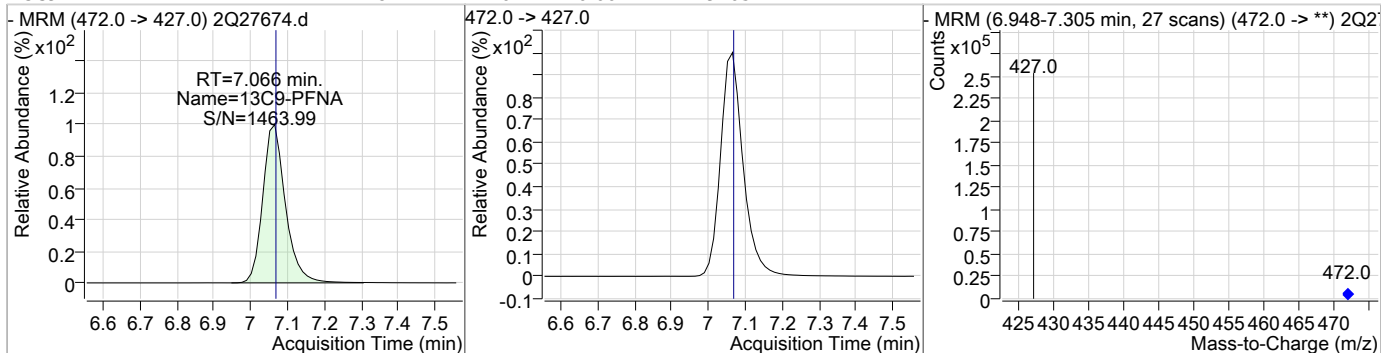
| Compound | Conc.  | RT   | Dev(Min) | Resp.      | QIon          | QRatio | Min. | Max. |
|----------|--------|------|----------|------------|---------------|--------|------|------|
| PFOS     | 100.21 | 7.04 | 0.00     | 113808 (m) | 499.0 -> 99.0 | 44.4   | 40.2 | 80.2 |



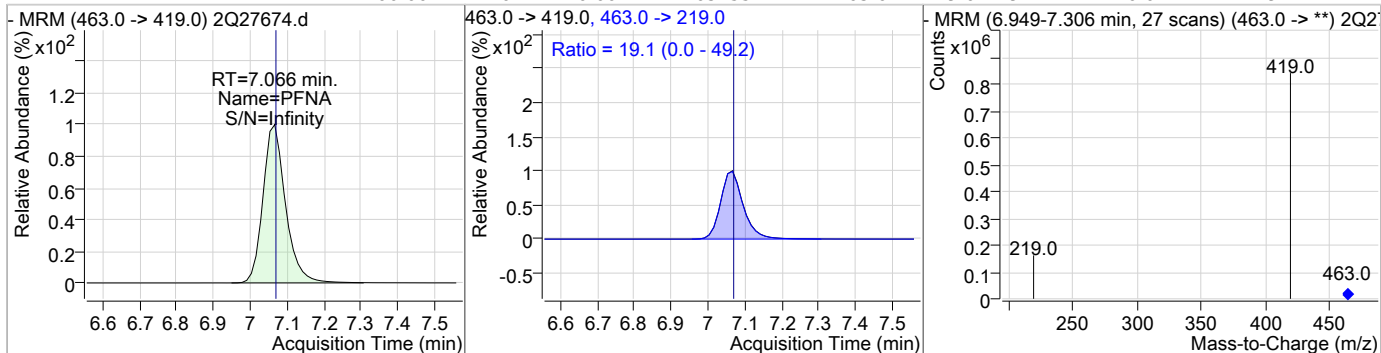
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 17.93 | 7.05 | 0.00     | 23372 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 18.14 | 7.07 | 0.00     | 192051 |      |        |      |      |

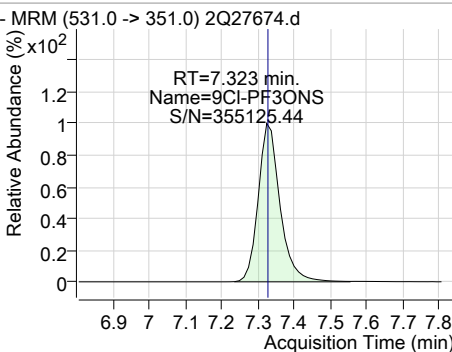
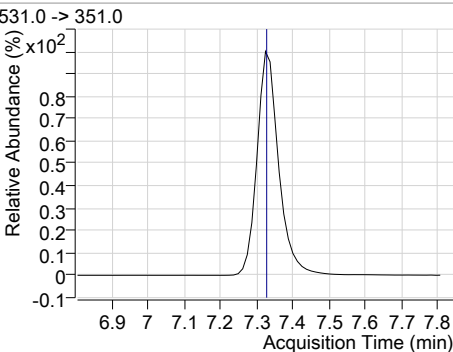
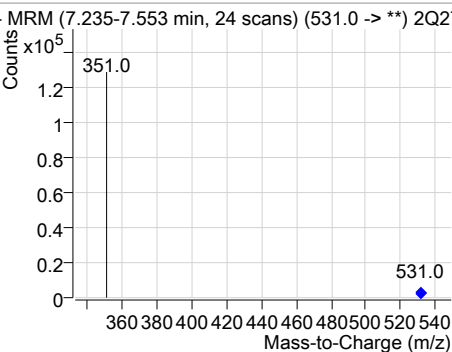
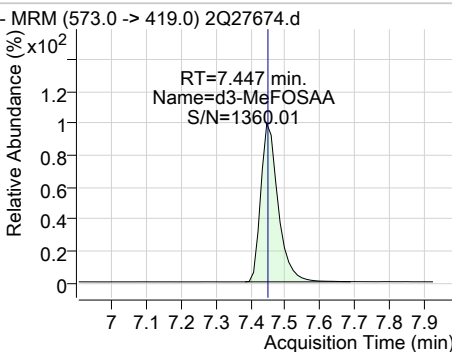
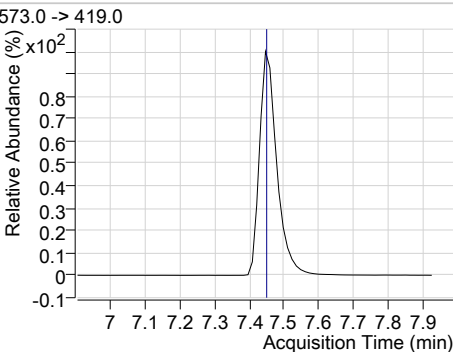
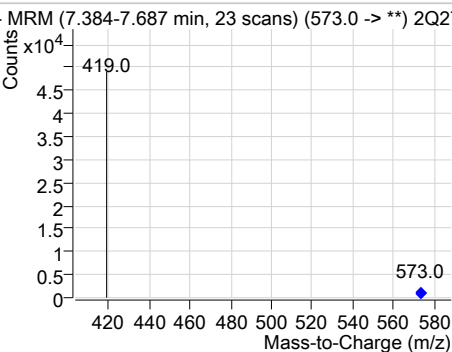
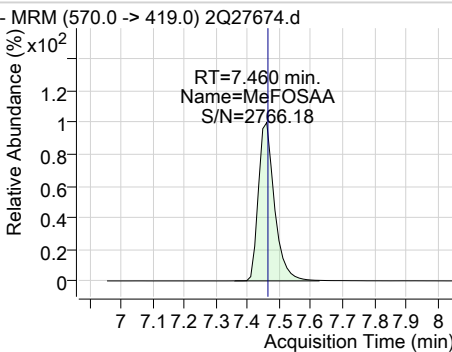
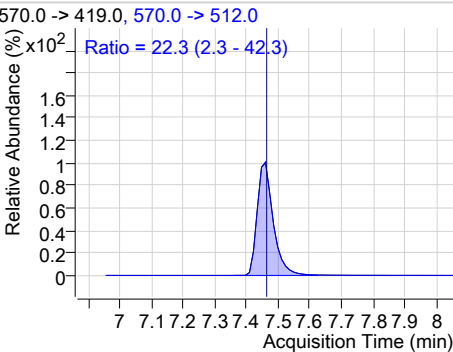
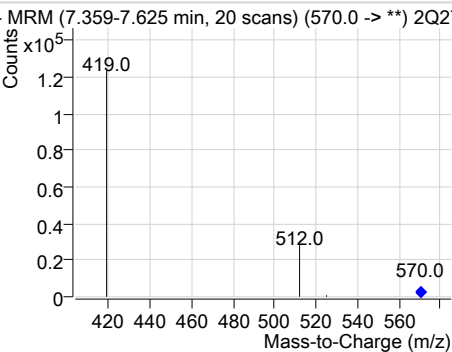
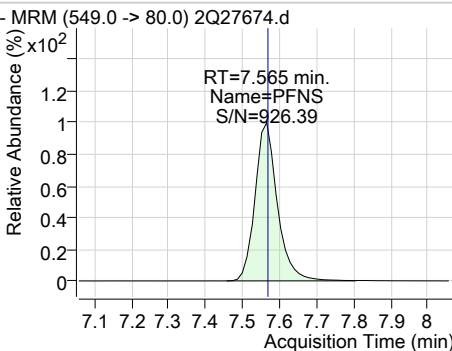
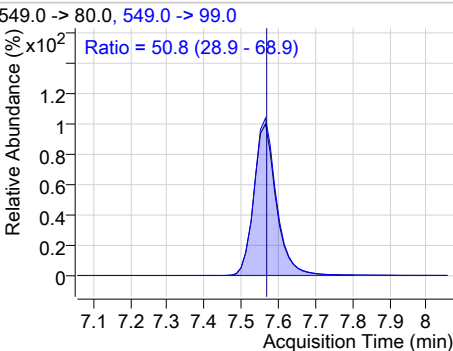
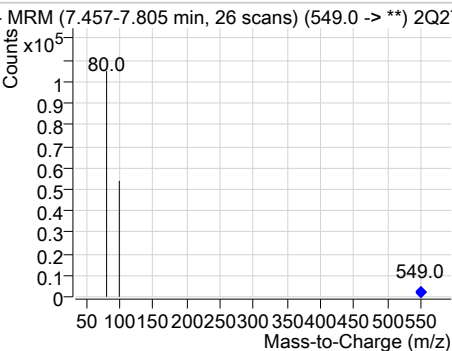


| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 100.06 | 7.07 | 0.00     | 637554 | 463.0 -> 219.0 | 19.1   | 0.0  | 49.2 |



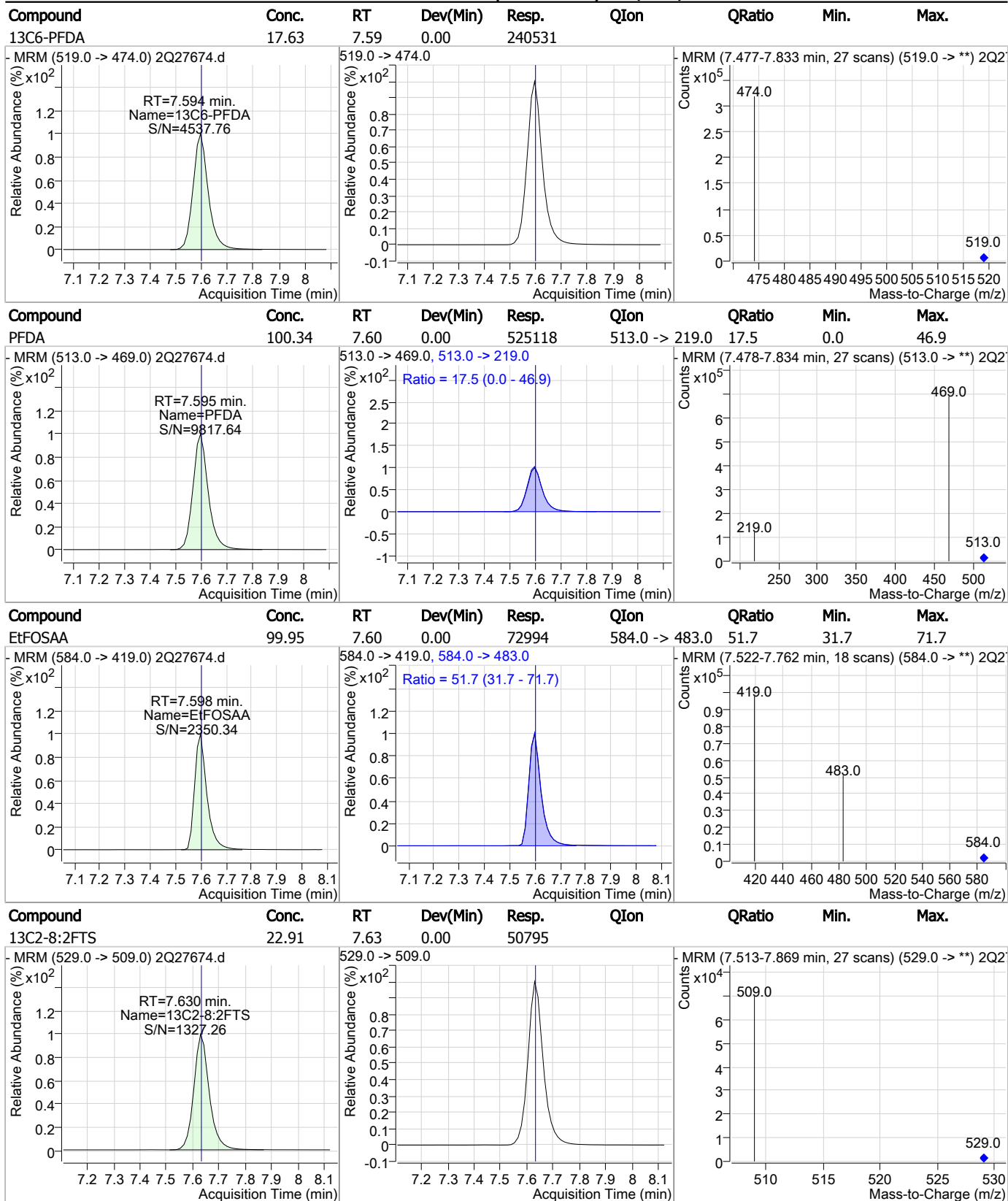
7.6.21  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc.  | RT   | Dev(Min)  | Resp. | QIon           | QRatio  | Min. | Max. |
|--|--------|------|---|-------|----------------|---|------|------|
| 9CI-PF3ONS   | 100.04 | 7.32 | 0.00  | 96854 |                |   |      |      |
|    |        |      |    |       |                |    |      |      |
| d3-MeFOSAA   | 18.76  | 7.45 | 0.00  | 35954 |                |   |      |      |
|    |        |      |    |       |                |    |      |      |
| MeFOSAA  | 100.00 | 7.46 | 0.00  | 93766 | 570.0 -> 512.0 | 22.3  | 2.3  | 42.3 |
|  |        |      |  |       |                |  |      |      |
| PFNS   | 99.62  | 7.57 | 0.00  | 79836 | 549.0 -> 99.0  | 50.8  | 28.9 | 68.9 |
|  |        |      |  |       |                |  |      |      |

7.6.21  
7

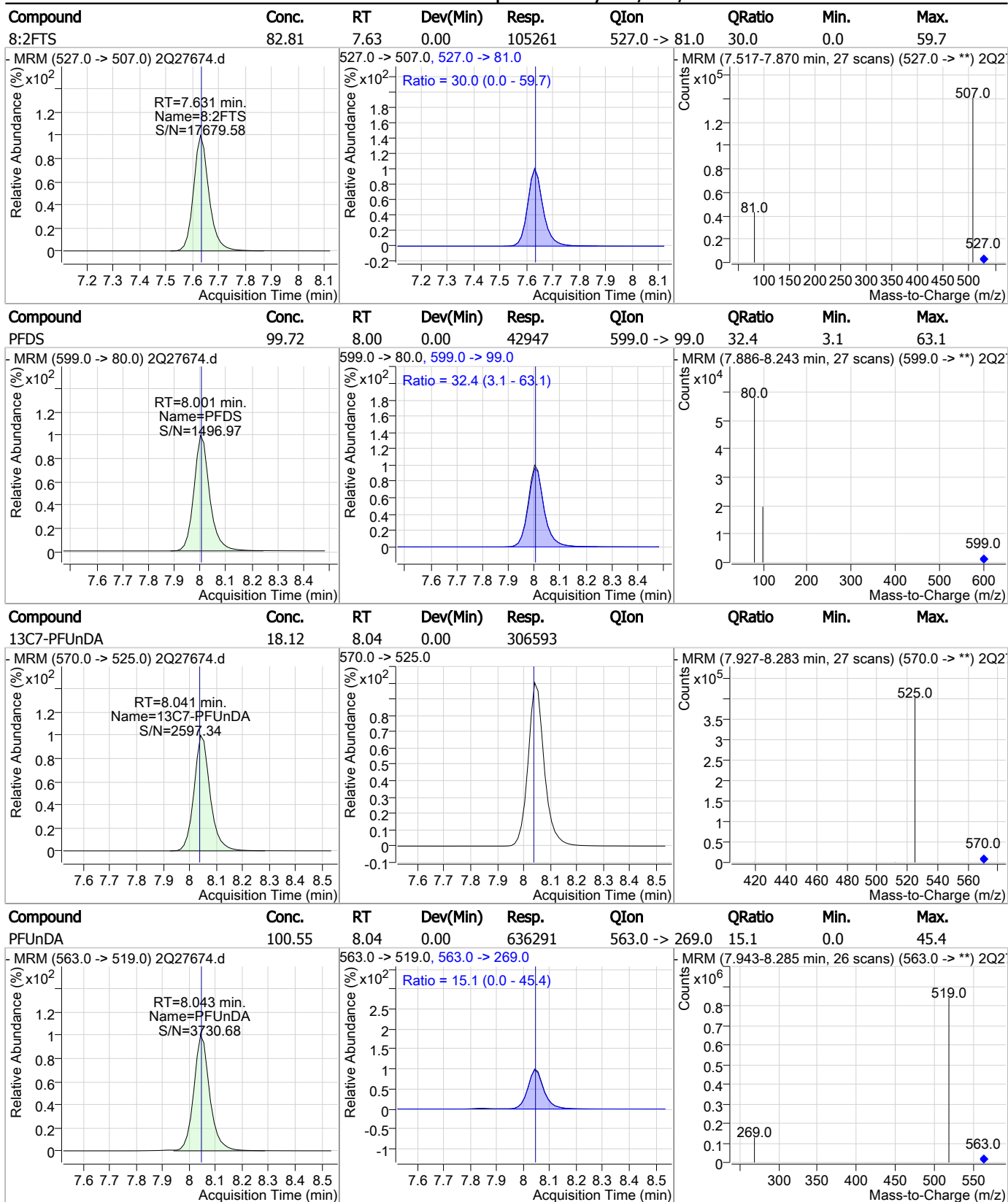
### Perfluorinated Compounds by LC/MS/MS



7.6.21

7

### Perfluorinated Compounds by LC/MS/MS



7.6.21

7

### Perfluorinated Compounds by LC/MS/MS

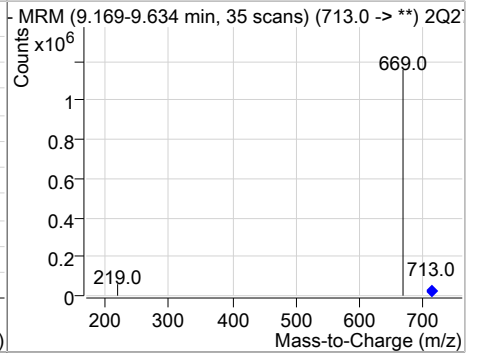
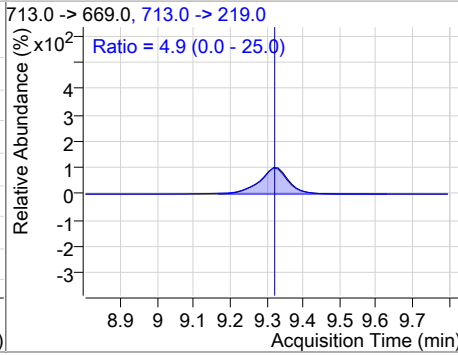
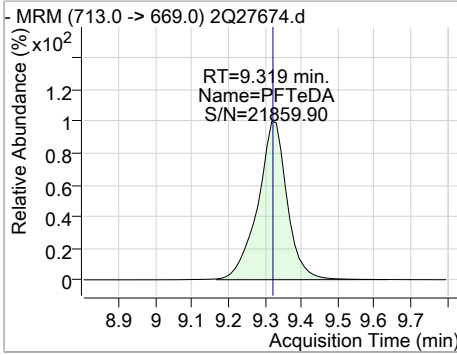
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 99.76  | 8.20 | 0.00     | 488215 |                |        |      |      |
|              |        |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 18.96  | 8.47 | 0.00     | 356622 |                |        |      |      |
|              |        |      |          |        |                |        |      |      |
| PFDoDA       | 100.14 | 8.47 | 0.00     | 795946 | 613.0 -> 319.0 | 12.3   | 0.0  | 42.5 |
|              |        |      |          |        |                |        |      |      |
| PFTTrDA      | 100.12 | 8.92 | 0.00     | 897897 | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|              |        |      |          |        |                |        |      |      |

7.6.21

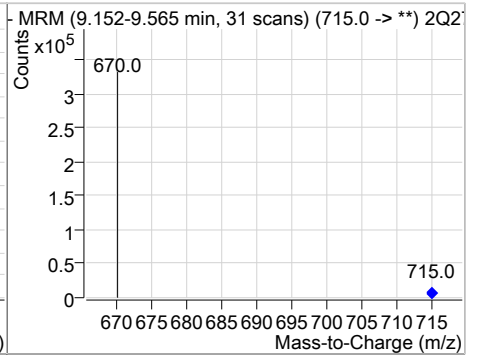
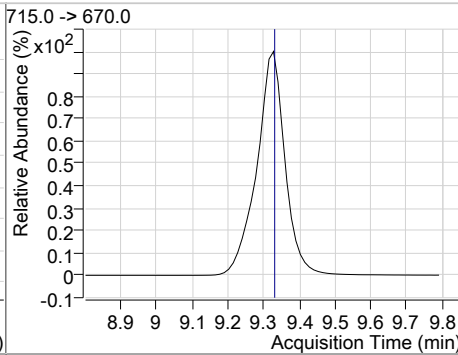
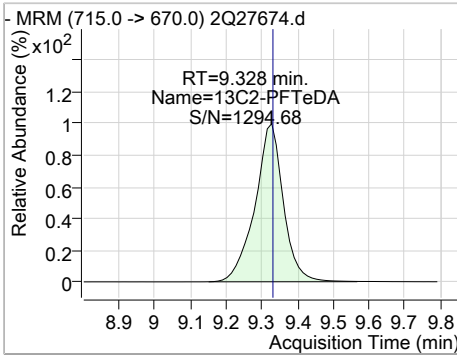
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 100.27 | 9.32 | 0.00     | 863382 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFTeDA | 19.17 | 9.33 | 0.00     | 246090 | 715.0 -> 670.0 |        |      |      |



7.6.21  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-IC442  
**Lab FileID:** 2Q27674.D  
**Injection Time:** 03/18/19 10:08

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.21.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27676.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 11:06:47 AM  
 Sample Name : ICV442-20  
 Vial : Vial 10  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.448                | 415.0 -> 370.0 | 311207 | 20.00 µg/L        | 0.013    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 48553  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.877                | 217.0 -> 172.0 | 123490 | 20.00 µg/L        | 0.013    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 108385 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.801                | 318.0 -> 273.0 | 157631 | 20.00 µg/L        | 0.013    |
| M4-PFHpA                           | 5.718                | 367.0 -> 322.0 | 229138 | 20.00 µg/L        | 0.013    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 230235 | 20.00 µg/L        | 0.013    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 235528 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 315116 | 20.00 µg/L        | 0.013    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 388543 | 20.00 µg/L        | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 461670 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.340                | 715.0 -> 670.0 | 331727 | 20.00 µg/L        | 0.013    |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 91681  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 19213  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 21581  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 27982  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 60195  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 67128  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 48208  | 20.00 µg/L        | 0.013    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 41651  | 20.00 µg/L        | 0.013    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 164905 | 100.00 µg/L       | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 60220  | 20.25 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 67046  | 20.89 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.4% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 48247  | 21.76 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.8% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 461944 | 24.56 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 122.8% |          |
| 13C2-PFTeDA                        | 9.340                | 715.0 -> 670.0 | 330870 | 25.77 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 128.9% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 19084  | 20.93 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.7% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 21543  | 21.13 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.7% |          |
| 13C4-PFBA                          | 1.877                | 217.0 -> 172.0 | 122919 | 20.50 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.5% |          |
| 13C4-PFHpA                         | 5.718                | 367.0 -> 322.0 | 229007 | 22.14 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 110.7% |          |
| 13C5-PFHxA                         | 4.801                | 318.0 -> 273.0 | 157267 | 21.64 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.2% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 108370 | 21.32 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.6% |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 315481 | 23.12 µg/L        | 0.013    |

7.6.22  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 115.6% |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 388238 | 22.94 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 114.7% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 91630  | 22.60 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 113.0% |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 230187 | 22.07 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.3% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 27934  | 21.43 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.2% |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 235100 | 22.21 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 111.0% |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 41630  | 21.72 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.6% |          |
| M2-PFOA               | 6.448                | 415.0 -> 370.0 | 311318 | 19.99 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 48587  | 20.00 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 164905 | 103.13 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 103.1% |          |

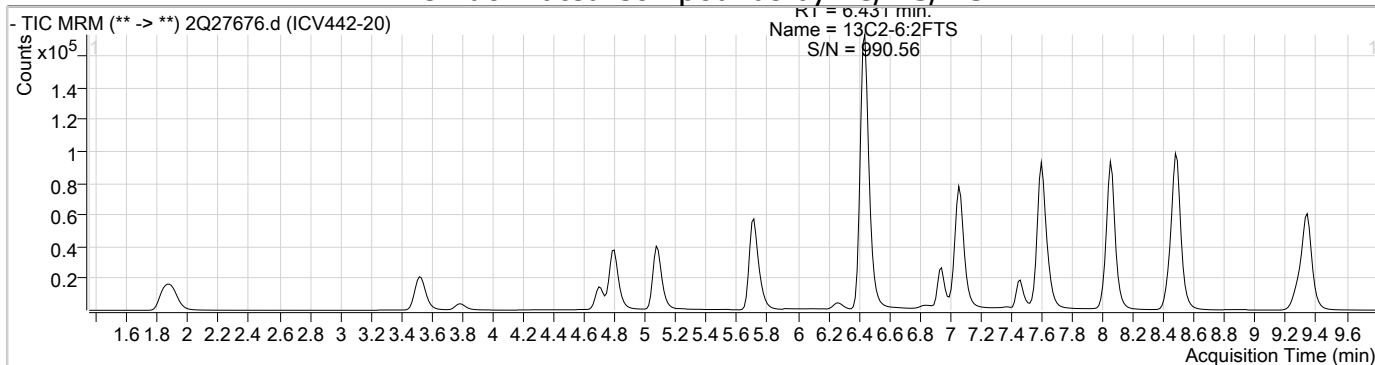
Target Compounds

| Compound     | RT    | QIon           | Resp.  | Conc. Units  | QValue |
|--------------|-------|----------------|--------|--------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -      | N.D.         |        |
| 6:2FTS       | -     | 427.0 -> 407.0 | -      | N.D.         |        |
| 8:2FTS       | -     | 527.0 -> 507.0 | -      | N.D.         |        |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 14125  | 15.92 µg/L m | 96     |
| FOSA         | -     | 498.0 -> 78.0  | -      | N.D.         |        |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 18787  | 17.69 µg/L m | 94     |
| PFBA         | -     | 213.0 -> 169.0 | -      | N.D.         |        |
| PFBS         | -     | 299.0 -> 80.0  | -      | N.D.         |        |
| PFDA         | -     | 513.0 -> 469.0 | -      | N.D.         |        |
| PFDoDA       | -     | 613.0 -> 569.0 | -      | N.D.         |        |
| PFDS         | -     | 599.0 -> 80.0  | -      | N.D.         |        |
| PFHpA        | -     | 363.0 -> 319.0 | -      | N.D.         |        |
| PFHpS        | -     | 449.0 -> 80.0  | -      | N.D.         |        |
| PFHxA        | -     | 313.0 -> 269.0 | -      | N.D.         |        |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 0      | 0.00 µg/L m  | 1      |
| PFNA         | -     | 463.0 -> 419.0 | -      | N.D.         |        |
| PFNS         | -     | 549.0 -> 80.0  | -      | N.D.         |        |
| PFOA         | 6.450 | 413.0 -> 369.0 | 105783 | 17.01 µg/L m | 96     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 27023  | 19.89 µg/L m | 74     |
| PFPeA        | -     | 263.0 -> 219.0 | -      | N.D.         |        |
| PFPeS        | -     | 349.0 -> 80.0  | -      | N.D.         |        |
| PFTeDA       | -     | 713.0 -> 669.0 | -      | N.D.         |        |
| PFTTrDA      | -     | 663.0 -> 619.0 | -      | N.D.         |        |
| PFUnDA       | -     | 563.0 -> 519.0 | -      | N.D.         |        |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.         |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.         |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.         |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.         |        |

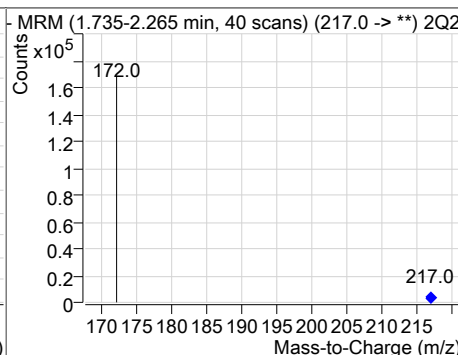
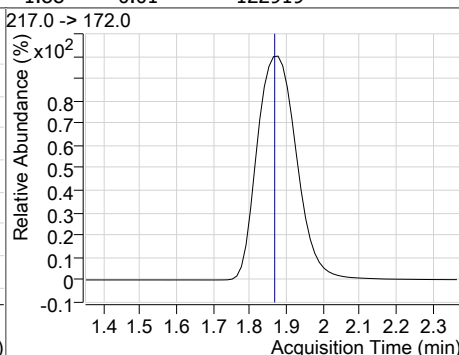
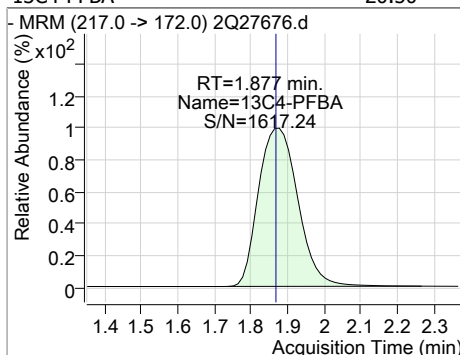
# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.22  
7

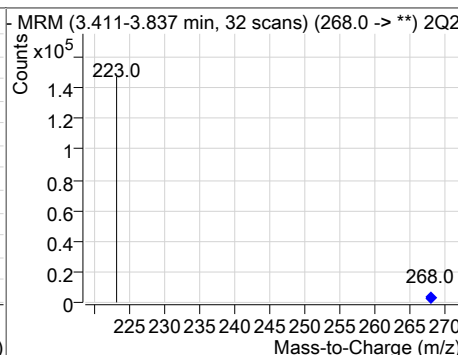
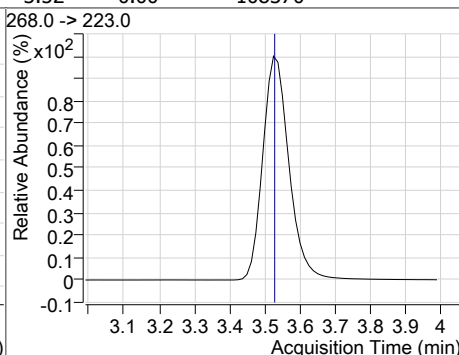
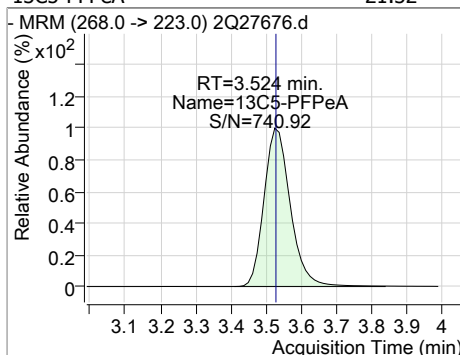
### Perfluorinated Compounds by LC/MS/MS



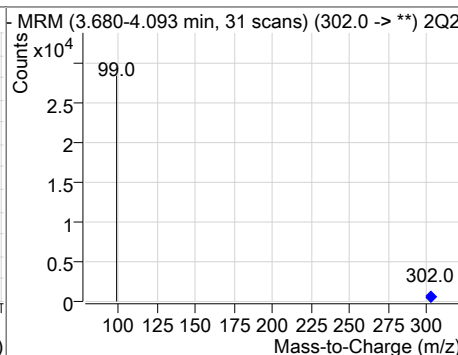
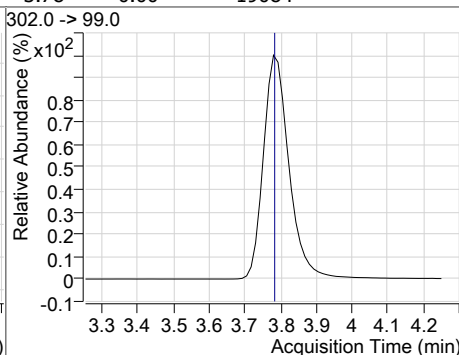
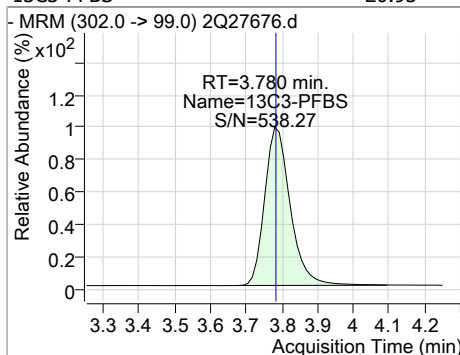
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 20.50 | 1.88 | 0.01     | 122919 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 21.32 | 3.52 | 0.00     | 108370 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFBS | 20.93 | 3.78 | 0.00     | 19084 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc.  | RT   | Dev(Min)                 | Resp.  | QIon | QRatio  | Min. | Max. |
|---|--------|------|--------------------------|--------|------|---|------|------|
| 13C2-4:2FTS   | 20.25  | 4.70 | 0.01                     | 60220  |      |   |      |      |
| <p>MRM (329.0 -&gt; 309.0) 2Q27676.d<br/>                     RT=4.696 min.<br/>                     Name=13C2:4:2FTS<br/>                     S/N=1246.15</p>  |        |      | <p>329.0 -&gt; 309.0</p> |        |      | <p>MRM (4.596-4.935 min, 26 scans) (329.0 -&gt; **) 2Q2</p> |      |      |
| 13C5-PFHxA  | 21.64  | 4.80 | 0.01                     | 157267 |      |   |      |      |
| <p>MRM (318.0 -&gt; 273.0) 2Q27676.d<br/>                     RT=4.801 min.<br/>                     Name=13C5-PFHxA<br/>                     S/N=20087.69</p>  |        |      | <p>318.0 -&gt; 273.0</p> |        |      | <p>MRM (4.703-5.040 min, 25 scans) (318.0 -&gt; **) 2Q2</p> |      |      |
| 13C3-HFPO-DA  | 103.13 | 5.08 | 0.01                     | 164905 |      |   |      |      |
| <p>MRM (287.0 -&gt; 169.0) 2Q27676.d<br/>                     RT=5.081 min.<br/>                     Name=13C3-HFPO-DA<br/>                     S/N=1845.51</p> |        |      | <p>287.0 -&gt; 169.0</p> |        |      | <p>MRM (4.993-5.320 min, 25 scans) (287.0 -&gt; **) 2Q2</p> |      |      |
| 13C4-PFHpA  | 22.14  | 5.72 | 0.01                     | 229007 |      |   |      |      |
| <p>MRM (367.0 -&gt; 322.0) 2Q27676.d<br/>                     RT=5.718 min.<br/>                     Name=13C4-PFHpA<br/>                     S/N=1879.66</p>   |        |      | <p>367.0 -&gt; 322.0</p> |        |      | <p>MRM (5.618-5.959 min, 26 scans) (367.0 -&gt; **) 2Q2</p> |      |      |

7.6.22  
7

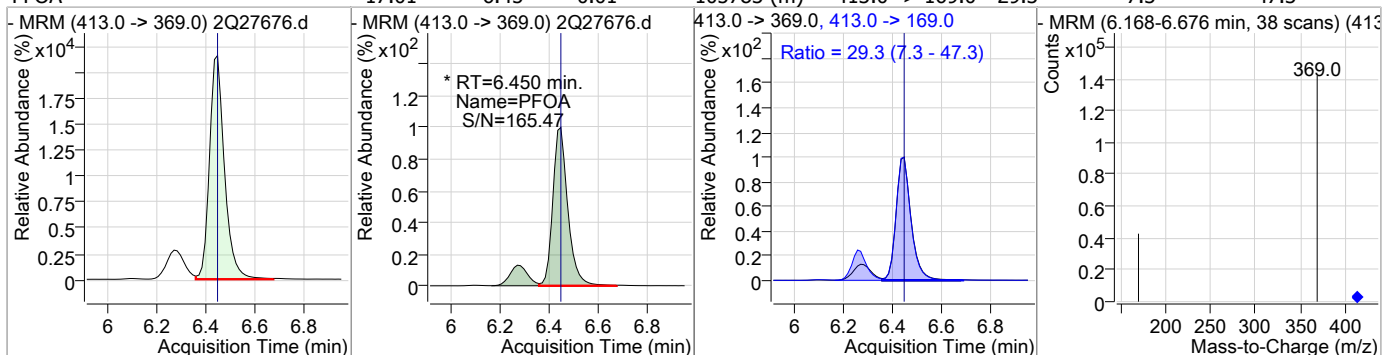
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-PFHxS  | 21.13 | 5.75 | 0.01     | 21543  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C2-6:2FTS | 20.89 | 6.43 | 0.02     | 67046  |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| 13C8-PFOA   | 22.07 | 6.45 | 0.01     | 230187 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |
| M2-PFOA     | 19.99 | 6.45 | 0.01     | 311318 |      |        |      |      |
|             |       |      |          |        |      |        |      |      |

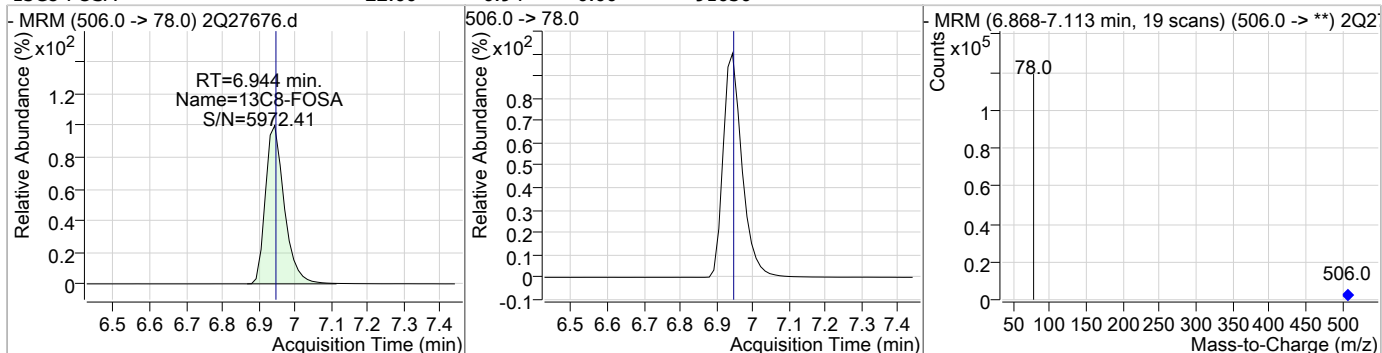
7.6.22  
7

### Perfluorinated Compounds by LC/MS/MS

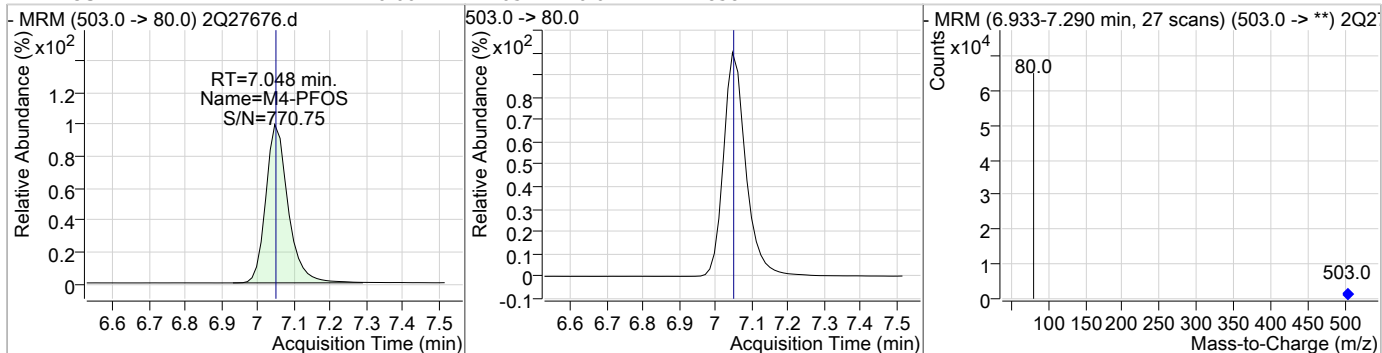
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon               | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|--------------------|--------|------|------|
| PFOA     | 17.01 | 6.45 | 0.01     | 105783 | (m) 413.0 -> 169.0 | 29.3   | 7.3  | 47.3 |



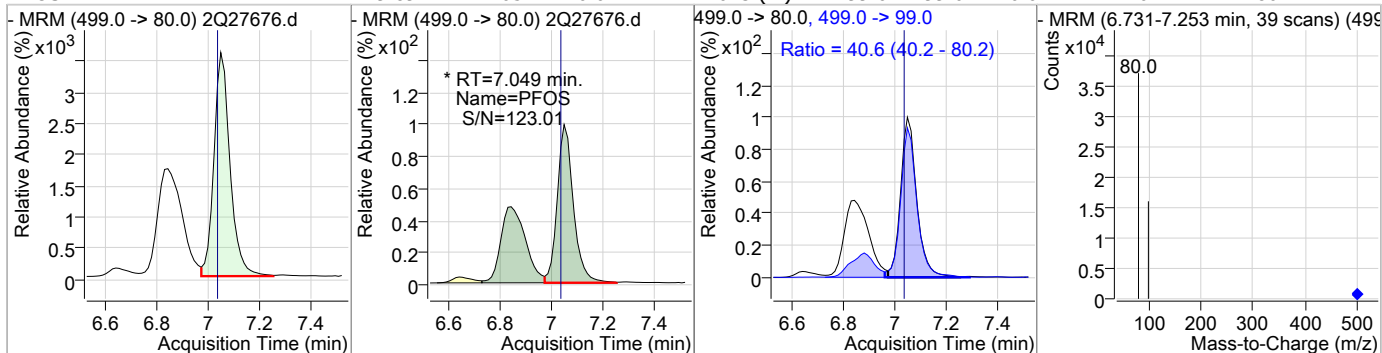
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-FOSA | 22.60 | 6.94 | 0.00     | 91630 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| M4-PFOS  | 20.00 | 7.05 | 0.01     | 48587 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon              | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|-------------------|--------|------|------|
| PFOS     | 19.89 | 7.05 | 0.01     | 27023 | (m) 499.0 -> 99.0 | 40.6   | 40.2 | 80.2 |



7.6.22  
7

### Perfluorinated Compounds by LC/MS/MS

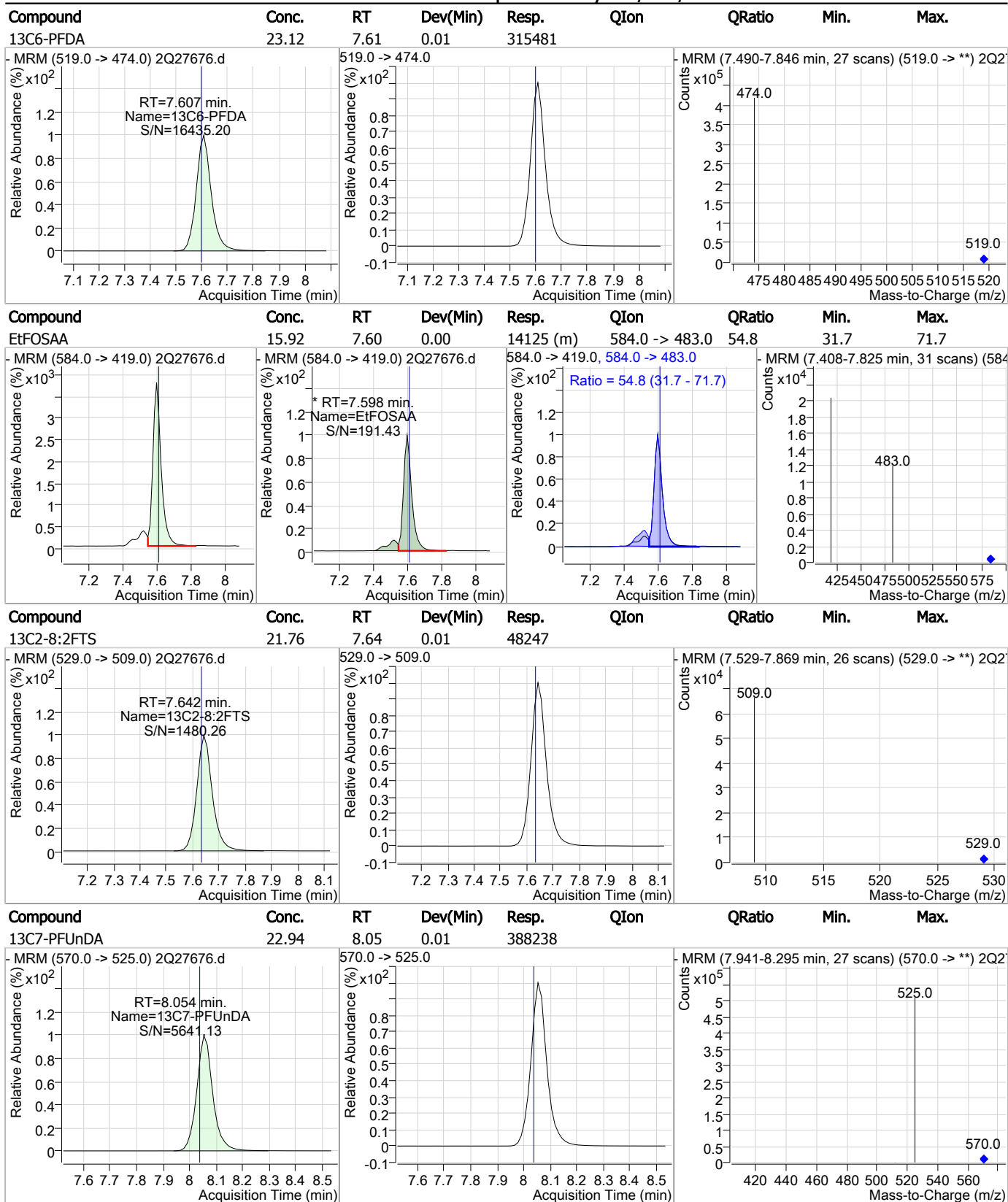
| Compound   | Conc. | RT   | Dev(Min) | Resp.     | QIon           | QRatio | Min. | Max. |  |
|------------|-------|------|----------|-----------|----------------|--------|------|------|--|
| 13C8-PFOS  | 21.43 | 7.05 | 0.00     | 27934     |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
| 13C9-PFNA  | 22.21 | 7.07 | 0.00     | 235100    |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
| d3-MeFOSAA | 21.72 | 7.46 | 0.01     | 41630     |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
| MeFOSAA    | 17.69 | 7.46 | 0.00     | 18787 (m) | 570.0 -> 512.0 | 25.3   | 2.3  | 42.3 |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |
|            |       |      |          |           |                |        |      |      |  |

7.6.22  
7





### Perfluorinated Compounds by LC/MS/MS

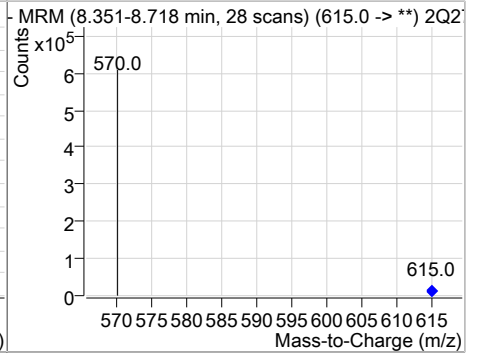
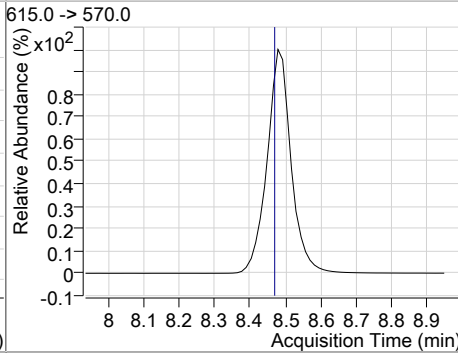
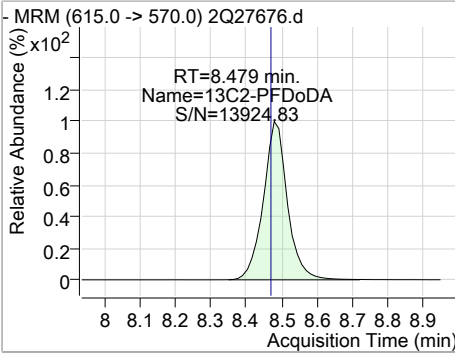


7.6.22

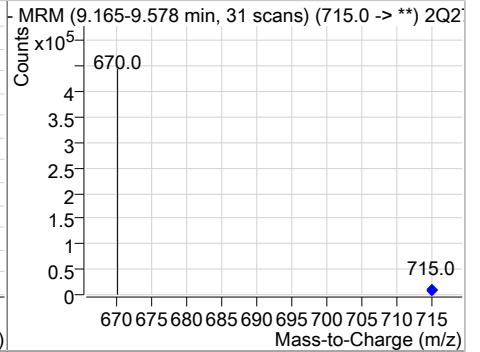
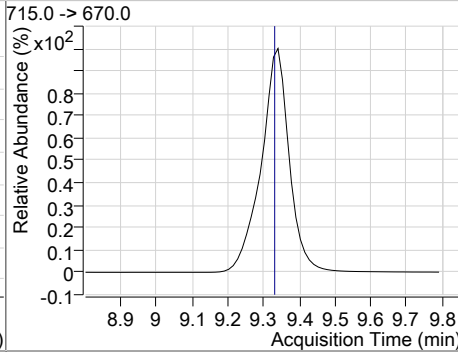
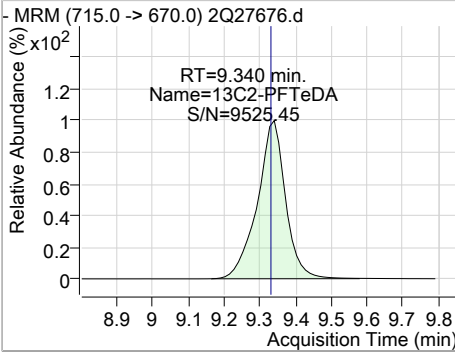
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 24.56 | 8.48 | 0.01     | 461944 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 25.77 | 9.34 | 0.01     | 330870 |      |        |      |      |



7.6.22  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q442-ICV442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27676.D      **Analyst approved:** 03/20/19 07:47 Nancy Saunders  
**Injection Time:** 03/18/19 11:06      **Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T. (min.) | Reason     |
|------------------------------|-----------|------|-------------|------------|
| Perfluorooctanoic acid       | 335-67-1  |      | 6.45        | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05        | Split peak |
| MeFOSAA                      | 2355-31-9 |      | 7.46        | Split peak |
| EtFOSAA                      | 2991-50-6 |      | 7.60        | Split peak |

7.6.22.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27677.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 11:22:29 AM  
 Sample Name : ICV442-20  
 Vial : Vial 11  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 322303 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 50879  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 135367 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 115582 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 166827 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 239018 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 239526 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 245855 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 318355 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 400831 | 20.00 µg/L        | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 446777 | 20.00 µg/L        | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 313655 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 91330  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 20473  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 22654  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 29067  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 67318  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 73289  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 51108  | 20.00 µg/L        | 0.013    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 44701  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 179633 | 100.00 µg/L       | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 67315  | 22.64 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 113.2% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 73233  | 22.82 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 114.1% |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 51075  | 23.03 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 115.2% |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 446552 | 23.74 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 118.7% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 312474 | 24.34 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 121.7% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 20391  | 22.36 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 111.8% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 22692  | 22.26 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 111.3% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 134660 | 22.46 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 112.3% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 238651 | 23.07 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 115.4% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 166509 | 22.92 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 114.6% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 115590 | 22.74 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 113.7% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 318208 | 23.32 µg/L        | 0.000    |

7.6.23  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 116.6% |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 401054 | 23.70 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 118.5% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 91366  | 22.53 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 112.7% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 242186 | 23.22 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 116.1% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 29006  | 22.25 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 111.3% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 245497 | 23.19 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 115.9% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 44737  | 23.34 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 116.7% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 322686 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 50954  | 20.02 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 179633 | 112.34 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 112.3% |          |

7.6.23  
7

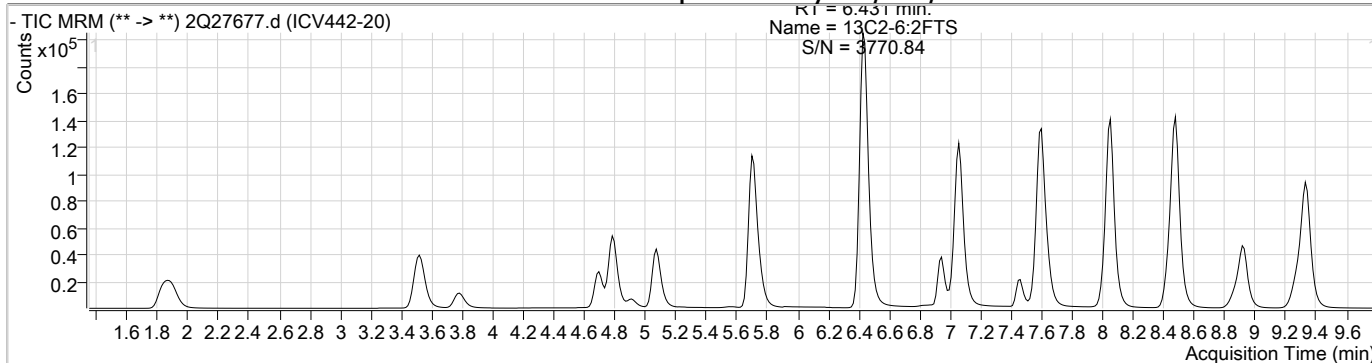
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.699 | 327.0 -> 307.0 | 32810  | 17.69 µg/L  | 98     |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 32718  | 18.15 µg/L  | 99     |
| 8:2FTS       | 7.643 | 527.0 -> 507.0 | 23784  | 18.61 µg/L  | 99     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 17470  | 18.37 µg/L  | 97     |
| FOSA         | 6.947 | 498.0 -> 78.0  | 40441  | 19.23 µg/L  | 100    |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 21751  | 19.08 µg/L  | 100    |
| PFBA         | 1.873 | 213.0 -> 169.0 | 24878  | 18.61 µg/L  | 100    |
| PFBS         | 3.783 | 299.0 -> 80.0  | 25818  | 15.88 µg/L  | 99     |
| PFDA         | 7.595 | 513.0 -> 469.0 | 121190 | 17.49 µg/L  | 100    |
| PFDoDA       | 8.480 | 613.0 -> 569.0 | 195012 | 19.61 µg/L  | 100    |
| PFDS         | 8.014 | 599.0 -> 80.0  | 9657   | 18.04 µg/L  | 98     |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 201146 | 19.52 µg/L  | 100    |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 20329  | 18.49 µg/L  | 99     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 48079  | 16.74 µg/L  | 99     |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 20467  | 16.34 µg/L  | m 99   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 142209 | 17.44 µg/L  | 99     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 18460  | 18.53 µg/L  | 98     |
| PFOA         | 6.437 | 413.0 -> 369.0 | 121734 | 18.82 µg/L  | 98     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 26453  | 18.74 µg/L  | m 85   |
| PFPeA        | 3.528 | 263.0 -> 219.0 | 89783  | 17.95 µg/L  | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 16405  | 15.77 µg/L  | 95     |
| PFTeDA       | 9.332 | 713.0 -> 669.0 | 187840 | 17.12 µg/L  | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 228315 | 19.99 µg/L  | 100    |
| PFUnDA       | 8.056 | 563.0 -> 519.0 | 158333 | 19.15 µg/L  | 100    |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |        |

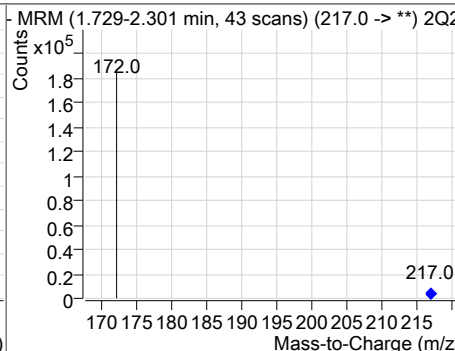
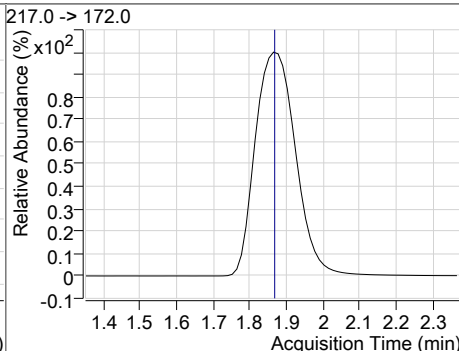
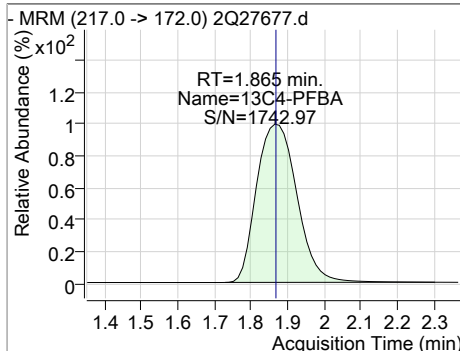
# = Qualifier out of range, m = manually integrated, + = Area summed



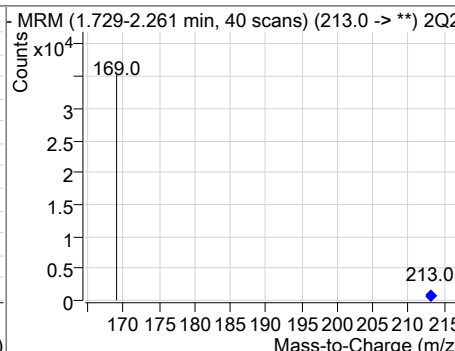
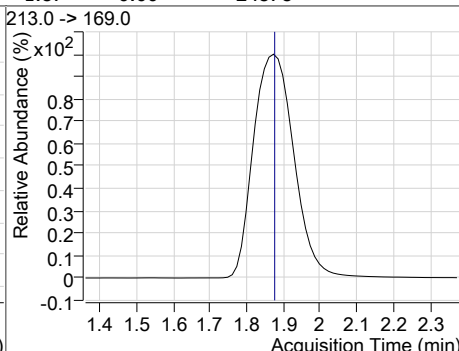
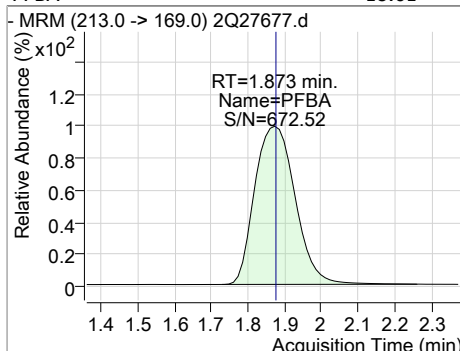
### Perfluorinated Compounds by LC/MS/MS



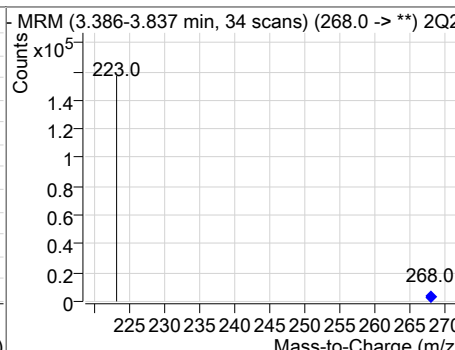
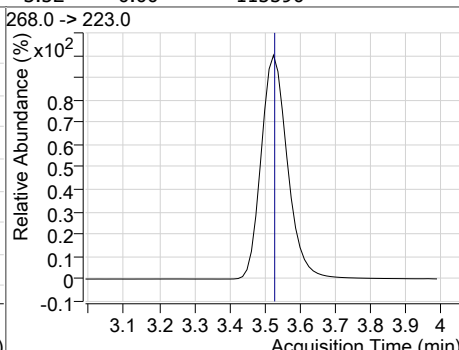
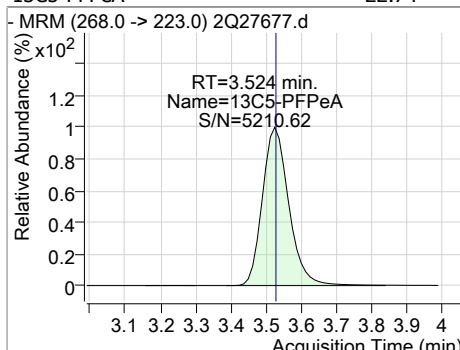
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 22.46 | 1.86 | 0.00     | 134660 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 18.61 | 1.87 | 0.00     | 24878 |      |        |      |      |

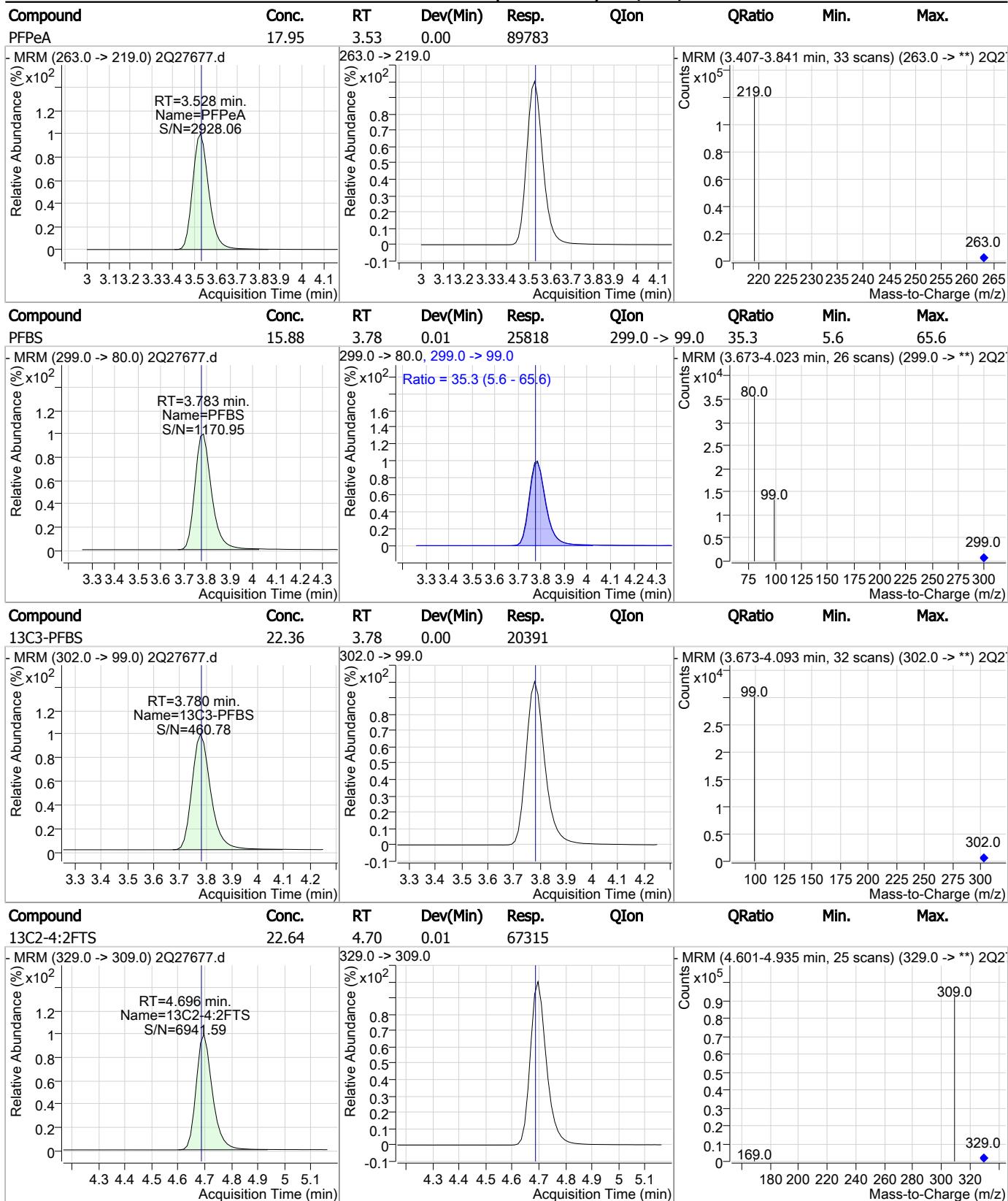


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 22.74 | 3.52 | 0.00     | 115590 |      |        |      |      |



7.6.23  
7

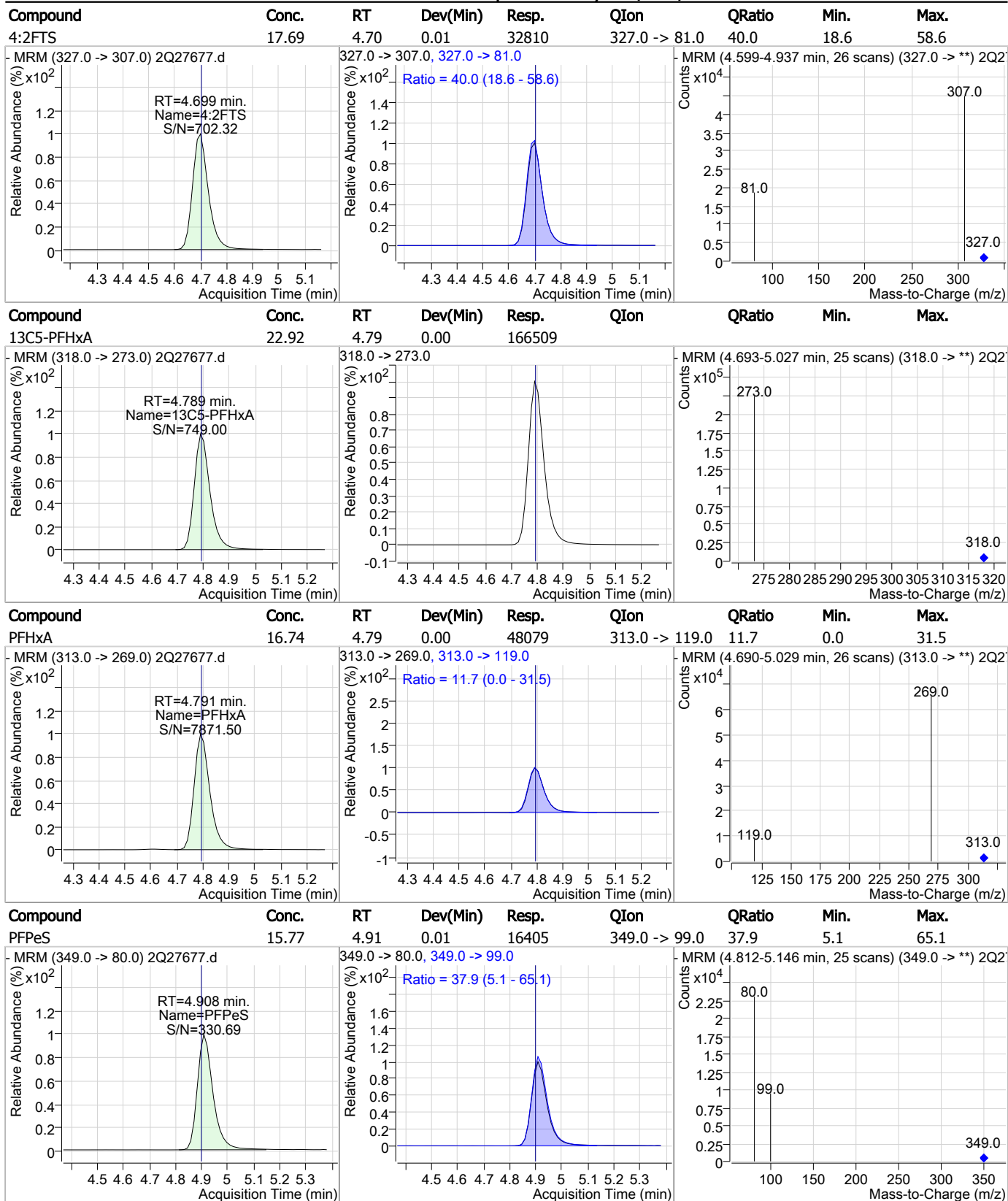
### Perfluorinated Compounds by LC/MS/MS



7.6.23

7

### Perfluorinated Compounds by LC/MS/MS

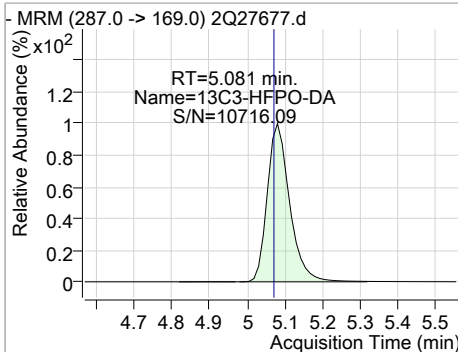
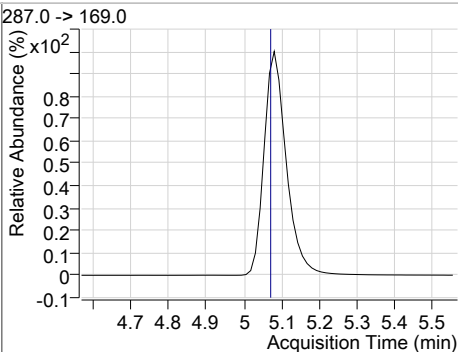
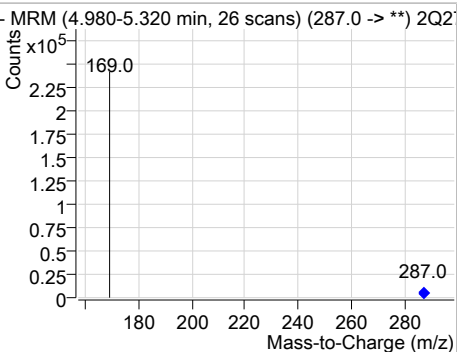
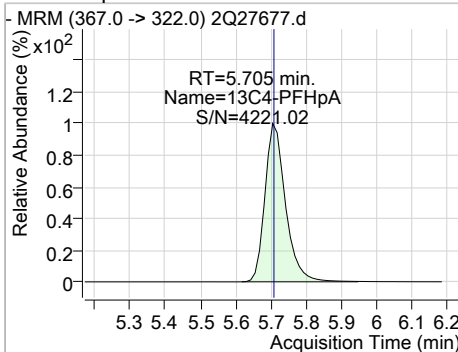
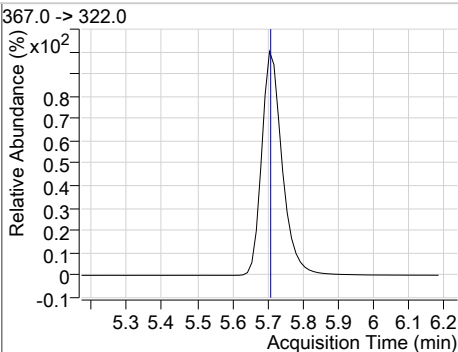
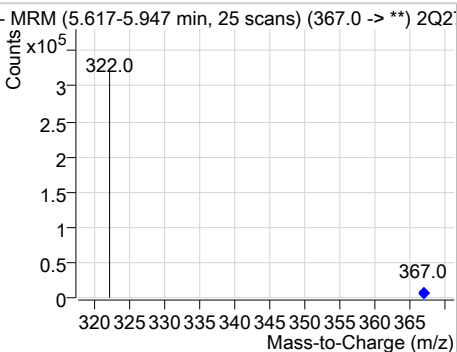
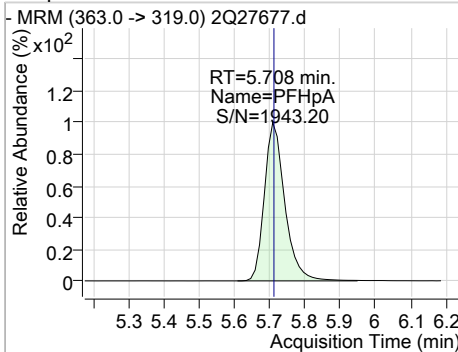
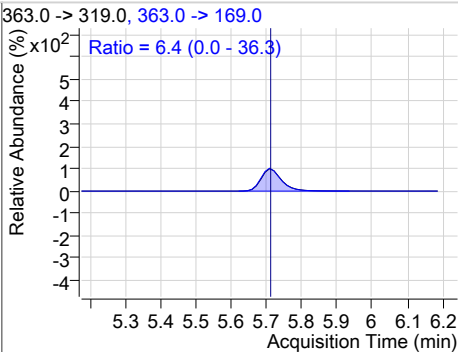
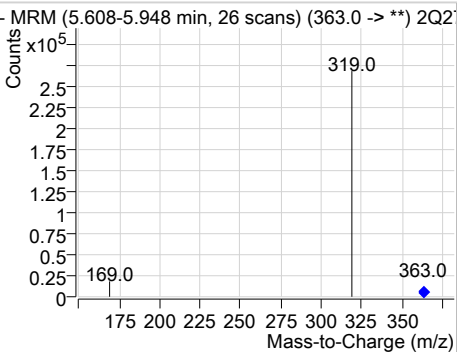
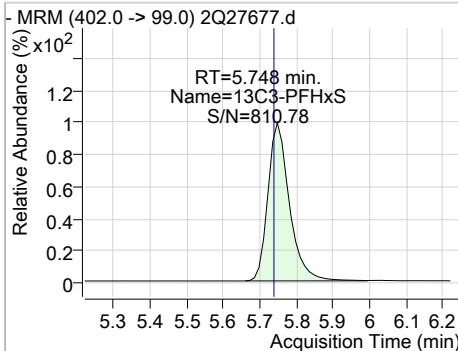
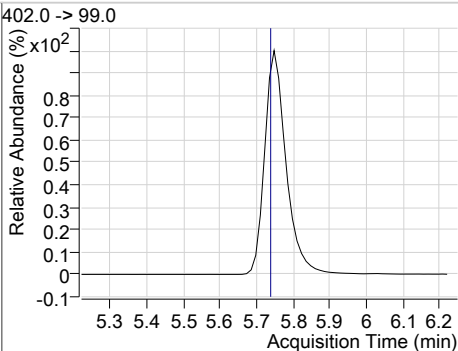
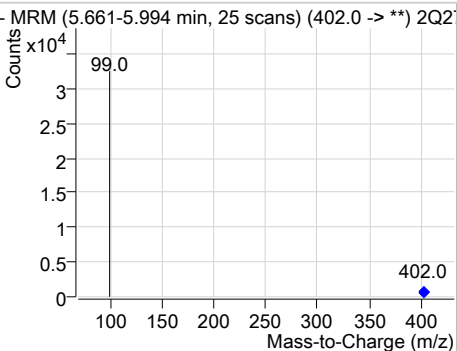


7.6.23

7



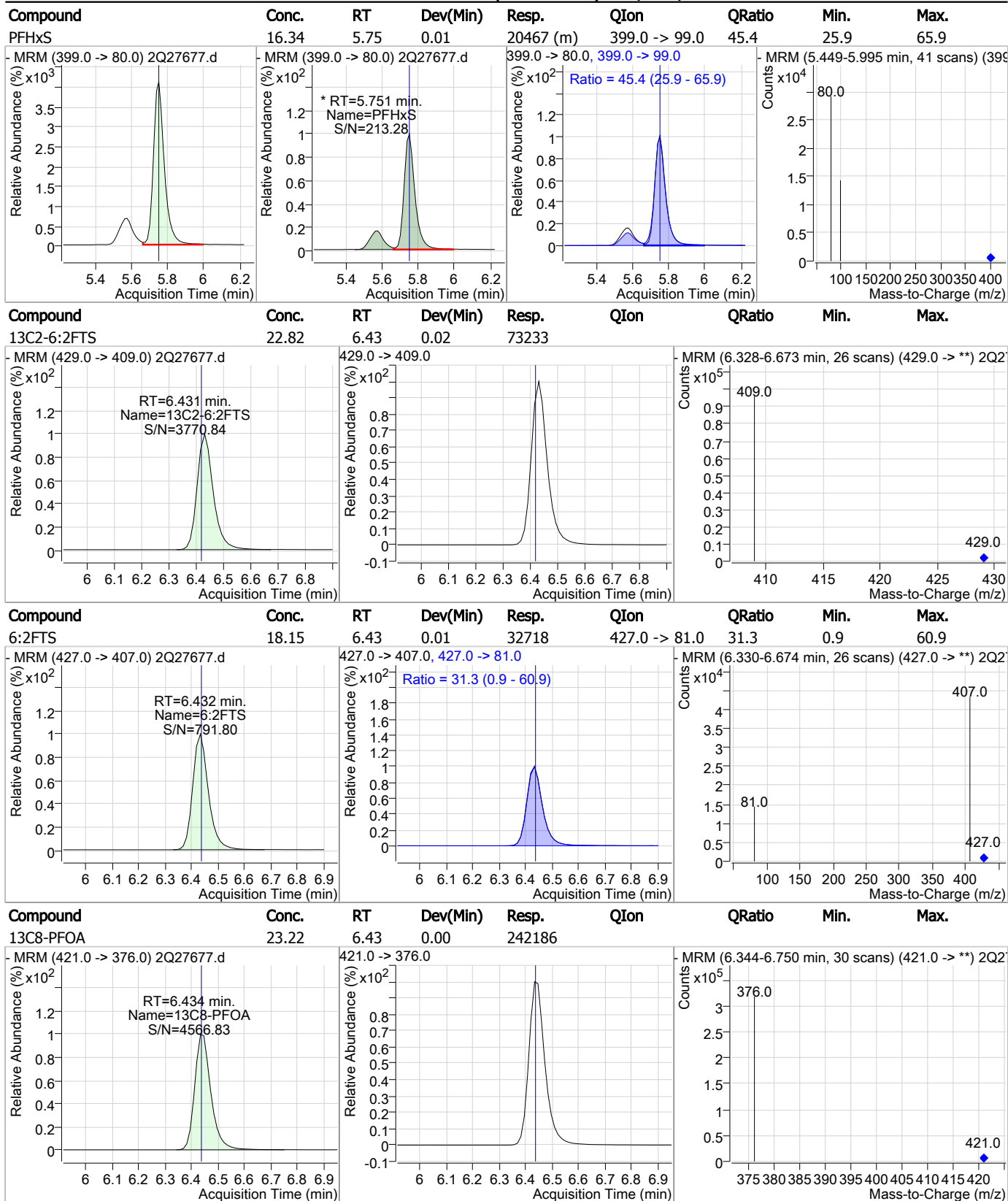
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc.  | RT   | Dev(Min)  | Resp.  | QIon           | QRatio  | Min. | Max. |
|--|--------|------|---|--------|----------------|---|------|------|
| 13C3-HFPO-DA   | 112.34 | 5.08 | 0.01  | 179633 |                |   |      |      |
|    |        |      |    |        |                |    |      |      |
| 13C4-PFHpA   | 23.07  | 5.71 | 0.00  | 238651 |                |   |      |      |
|    |        |      |    |        |                |    |      |      |
| PFHpA  | 19.52  | 5.71 | 0.00  | 201146 | 363.0 -> 169.0 | 6.4   | 0.0  | 36.3 |
|  |        |      |  |        |                |  |      |      |
| 13C3-PFHxS   | 22.26  | 5.75 | 0.01  | 22692  |                |   |      |      |
|  |        |      |  |        |                |  |      |      |

7.6.23

7

### Perfluorinated Compounds by LC/MS/MS



7.6.23

7

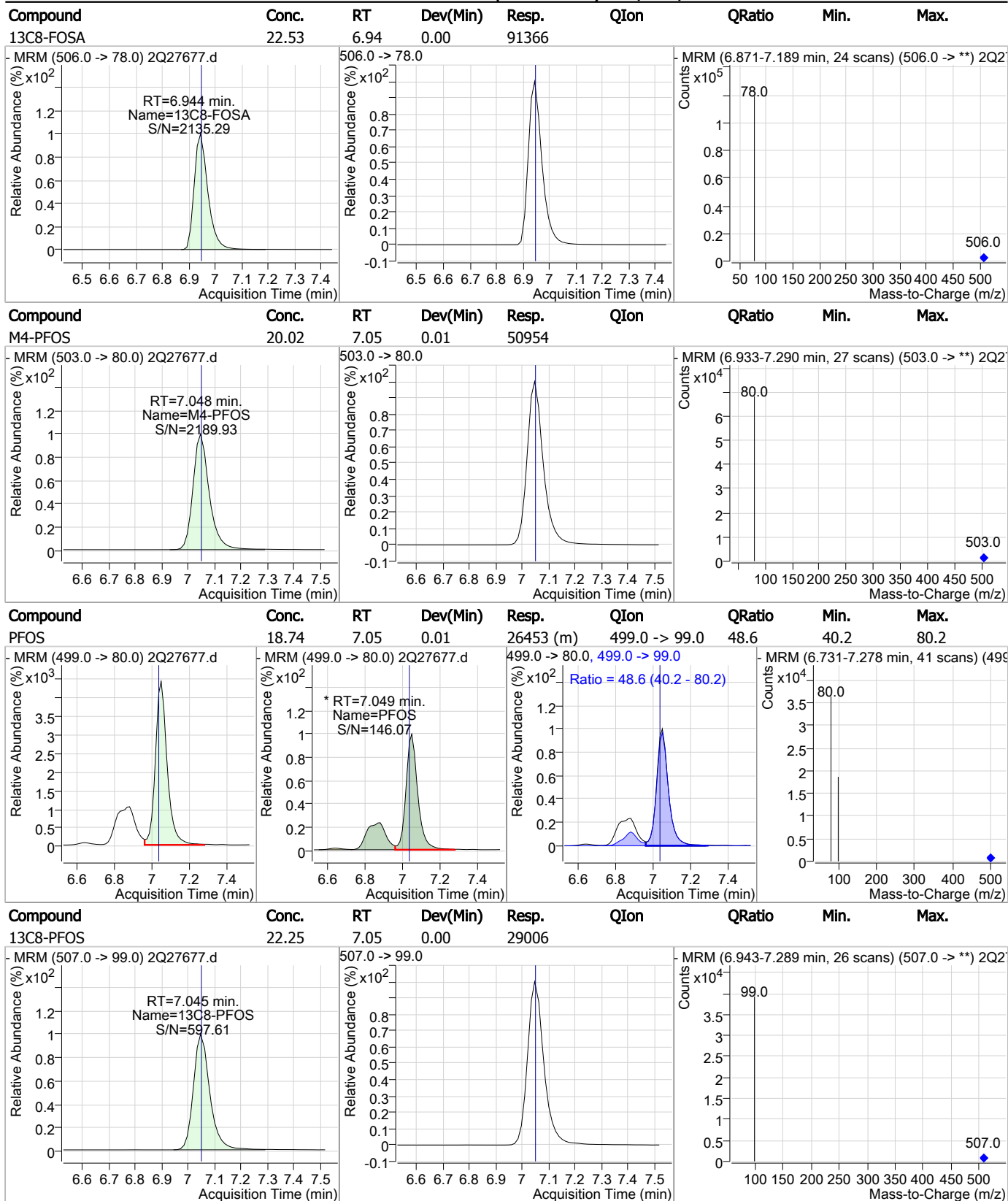
### Perfluorinated Compounds by LC/MS/MS

| Compound                        | Conc. | RT   | Dev(Min)                       | Resp.  | QIon     | QRatio   | Min. | Max. |
|---------------------------------|-------|------|--------------------------------|--------|----------|--|------|------|
| M2-PFOA                         | 20.00 | 6.44 | 0.00                           | 322686 |          |  |      |      |
| -MRM (415.0 -> 370.0) 2Q27677.d |       |      | 415.0 -> 370.0                 |        |          | -MRM (6.347-6.675 min, 25 scans) (415.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |        |          |  |      |      |
| PFOA                            | 18.82 | 6.44 | 0.00                           | 121734 | 413.0 -> | 169.0 26.3   | 7.3  | 47.3 |
| -MRM (413.0 -> 369.0) 2Q27677.d |       |      | 413.0 -> 369.0, 413.0 -> 169.0 |        |          | -MRM (6.349-6.676 min, 25 scans) (413.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |        |          |  |      |      |
| PFHpS                           | 18.49 | 6.44 | 0.00                           | 20329  | 449.0 -> | 99.0 44.7  | 15.3 | 75.3 |
| -MRM (449.0 -> 80.0) 2Q27677.d  |       |      | 449.0 -> 80.0, 449.0 -> 99.0   |        |          | -MRM (6.351-6.684 min, 25 scans) (449.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |        |          |  |      |      |
| FOSA                            | 19.23 | 6.95 | 0.01                           | 40441  | 498.0 -> | 478.0 4.5  | 0.0  | 24.4 |
| -MRM (498.0 -> 78.0) 2Q27677.d  |       |      | 498.0 -> 78.0, 498.0 -> 478.0  |        |          | -MRM (6.870-7.115 min, 19 scans) (498.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |        |          |  |      |      |

7.6.23

7

### Perfluorinated Compounds by LC/MS/MS

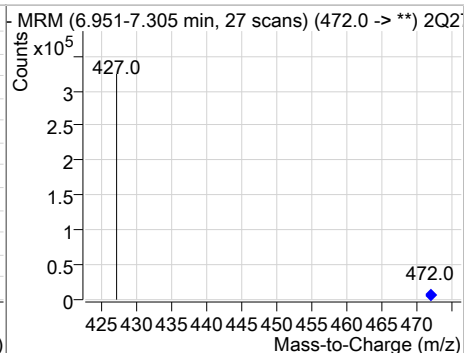
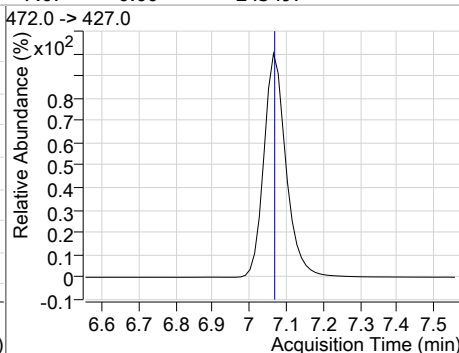
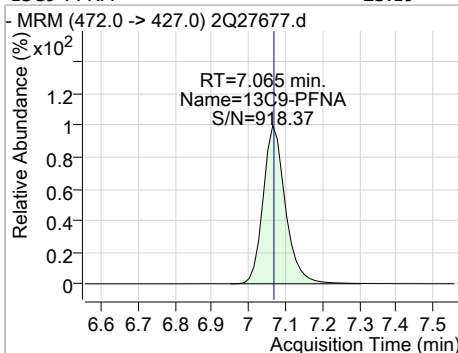


7.6.23

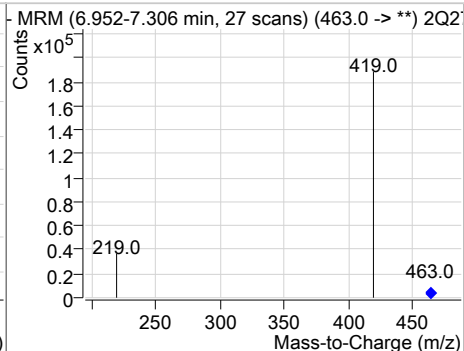
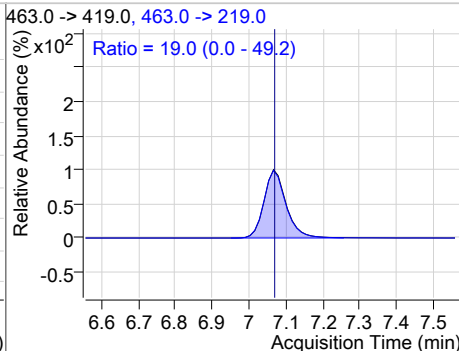
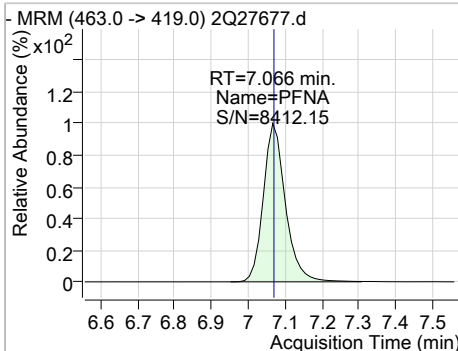
7

### Perfluorinated Compounds by LC/MS/MS

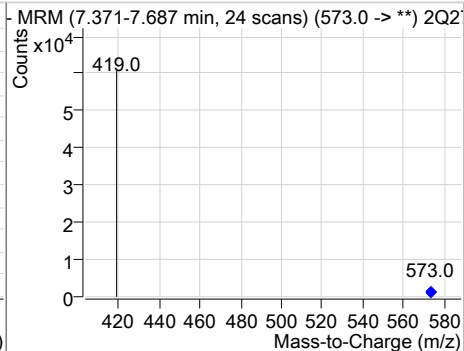
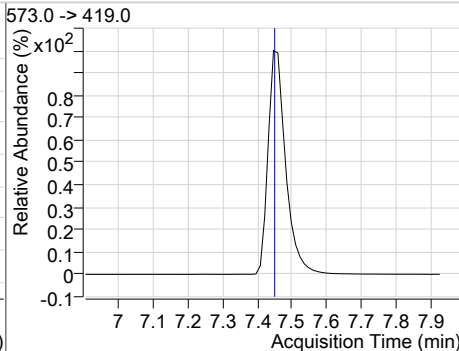
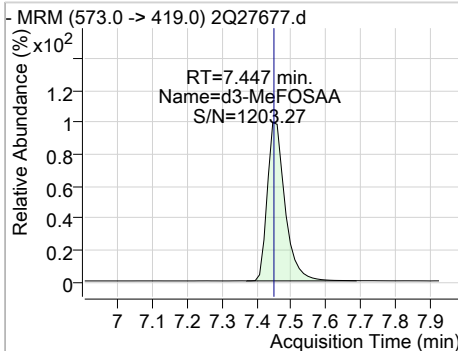
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 23.19 | 7.07 | 0.00     | 245497 |      |        |      |      |



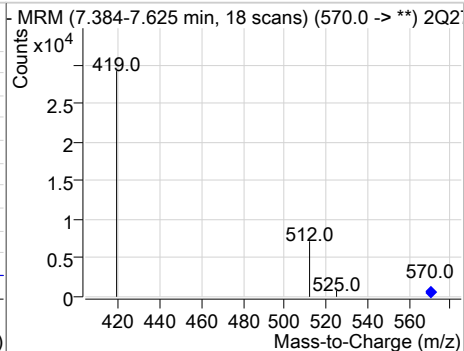
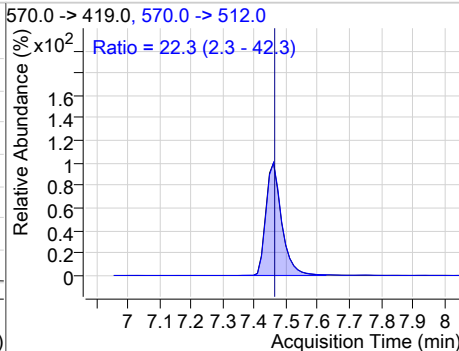
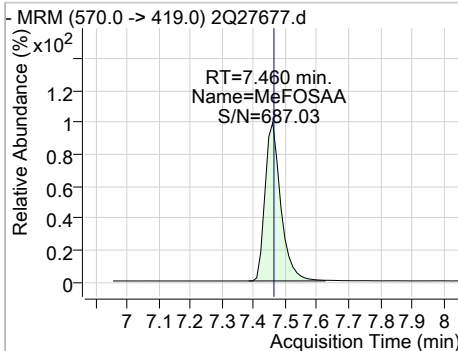
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 17.44 | 7.07 | 0.00     | 142209 | 463.0 -> 219.0 | 19.0   | 0.0  | 49.2 |



| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 23.34 | 7.45 | 0.00     | 44737 |      |        |      |      |

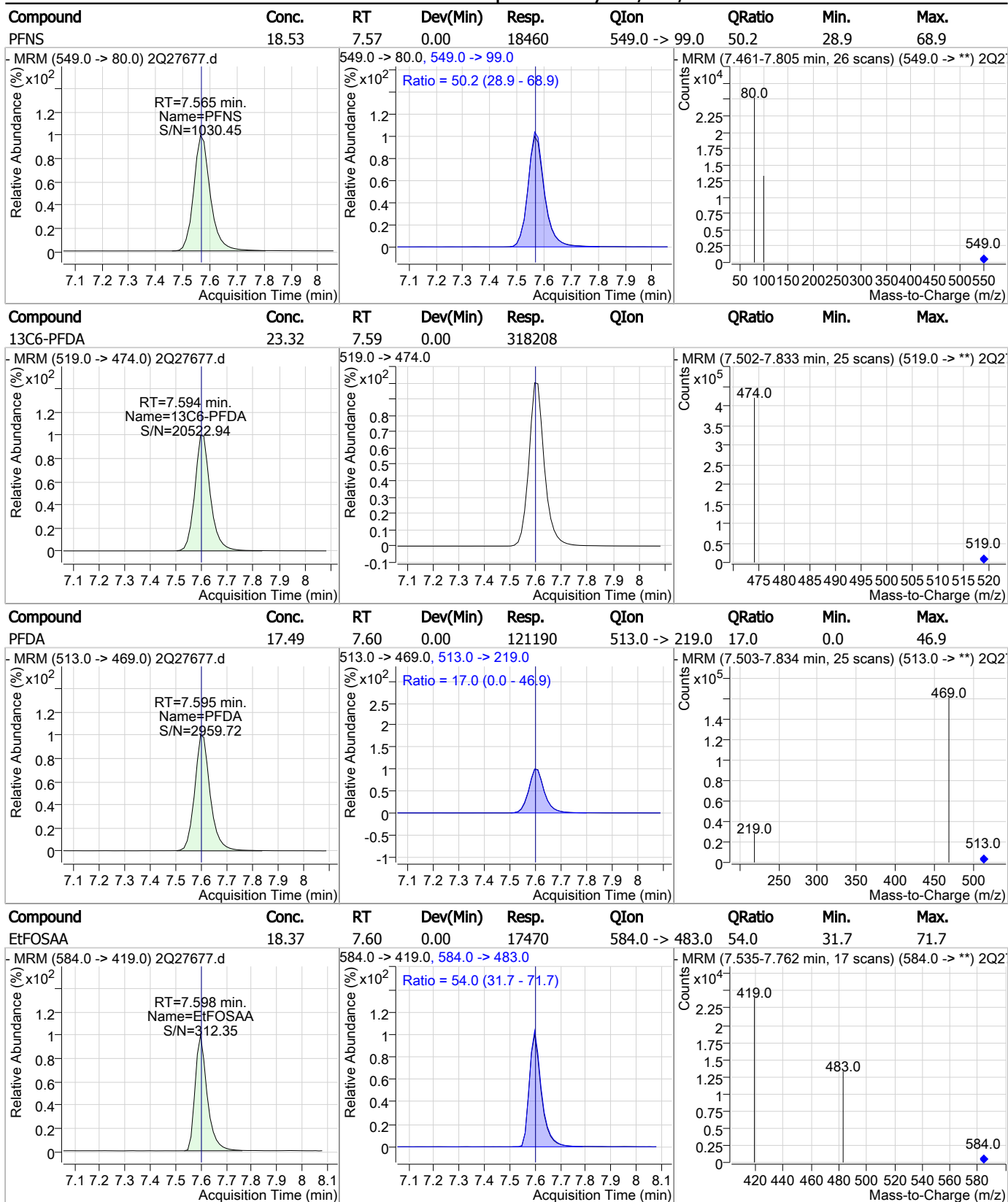


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| MeFOSAA  | 19.08 | 7.46 | 0.00     | 21751 | 570.0 -> 512.0 | 22.3   | 2.3  | 42.3 |



7.6.23  
7

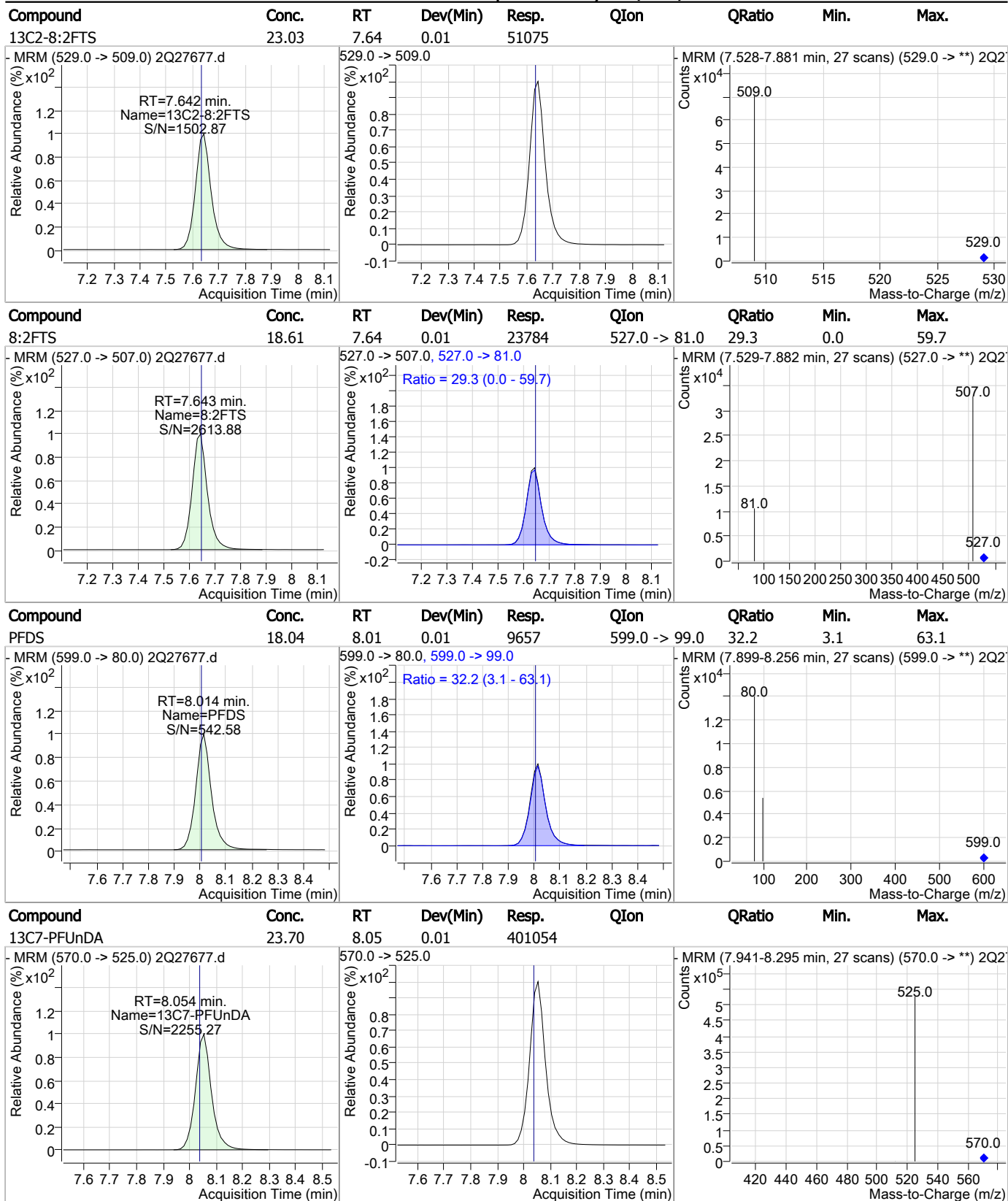
### Perfluorinated Compounds by LC/MS/MS



7.6.23

7

### Perfluorinated Compounds by LC/MS/MS



7.6.23

7



### Perfluorinated Compounds by LC/MS/MS

| Compound                         | Conc. | RT   | Dev(Min)                       | Resp.  | QIon  | QRatio | Min. | Max. |
|----------------------------------|-------|------|--------------------------------|--------|---|--------|------|------|
| PFUnDA                           | 19.15 | 8.06 | 0.01                           | 158333 | 563.0 -> 269.0                                      | 15.4   | 0.0  | 45.4 |
| - MRM (563.0 -> 519.0) 2Q27677.d |       |      | 563.0 -> 519.0, 563.0 -> 269.0 |        | - MRM (7.943-8.298 min, 27 scans) (563.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |
| 13C2-PFDoDA                      | 23.74 | 8.48 | 0.01                           | 446552 |   |        |      |      |
| - MRM (615.0 -> 570.0) 2Q27677.d |       |      | 615.0 -> 570.0                 |        | - MRM (8.351-8.718 min, 28 scans) (615.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |
| PFDoDA                           | 19.61 | 8.48 | 0.01                           | 195012 | 613.0 -> 319.0                                      | 12.3   | 0.0  | 42.5 |
| - MRM (613.0 -> 569.0) 2Q27677.d |       |      | 613.0 -> 569.0, 613.0 -> 319.0 |        | - MRM (8.341-8.722 min, 29 scans) (613.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |
| PFTTrDA                          | 19.99 | 8.92 | 0.00                           | 228315 | 663.0 -> 369.0                                      | 6.7    | 0.0  | 36.6 |
| - MRM (663.0 -> 619.0) 2Q27677.d |       |      | 663.0 -> 619.0, 663.0 -> 369.0 |        | - MRM (8.764-9.161 min, 30 scans) (663.0 -> **) 2Q2 |        |      |      |
|                                  |       |      |                                |        |   |        |      |      |

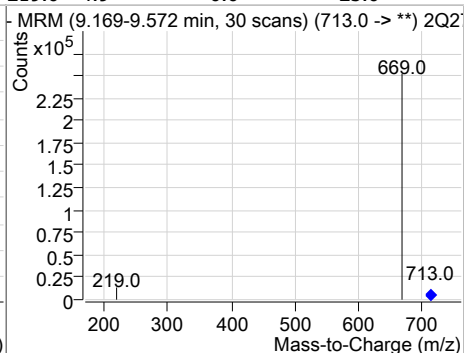
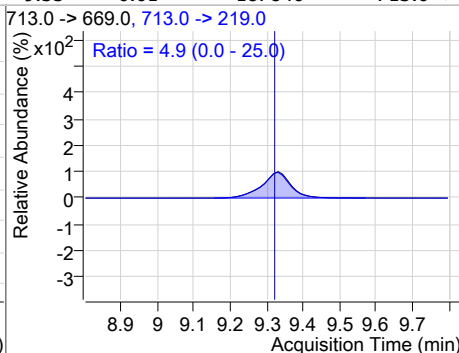
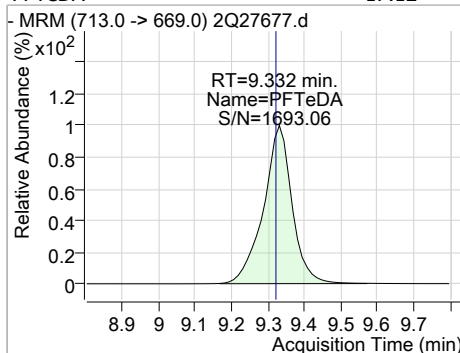
7.6.23

7

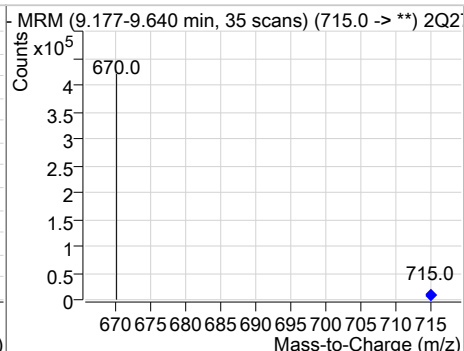
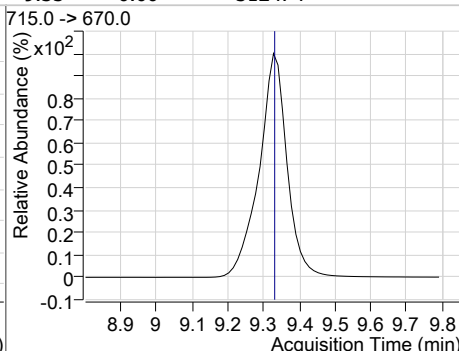
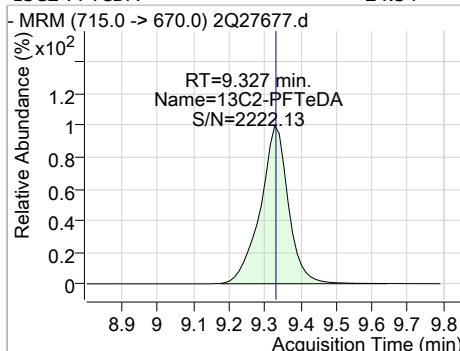


### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 17.12 | 9.33 | 0.01     | 187840 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 24.34 | 9.33 | 0.00     | 312474 |      |        |      |      |



7.6.23  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q442-ICV442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27677.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 11:22      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.6.23.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27678.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 11:38:13 AM  
 Sample Name : ICV442-20  
 Vial : Vial 12  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 304518            | 20.00 µg/L  | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 46084             | 20.00 µg/L  | 0.013    |
| M4-PFBA                            | 1.877                | 217.0 -> 172.0 | 125794            | 20.00 µg/L  | 0.013    |
| M5-PFPeA                           | 3.537                | 268.0 -> 223.0 | 108189            | 20.00 µg/L  | 0.013    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 153924            | 20.00 µg/L  | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 223093            | 20.00 µg/L  | 0.000    |
| M8-PFOA                            | 6.446                | 421.0 -> 376.0 | 228128            | 20.00 µg/L  | 0.013    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 230745            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.607                | 519.0 -> 474.0 | 302980            | 20.00 µg/L  | 0.013    |
| M7-PFUnDA                          | 8.054                | 570.0 -> 525.0 | 371710            | 20.00 µg/L  | 0.013    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 414098            | 20.00 µg/L  | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 284058            | 20.00 µg/L  | 0.000    |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 89366             | 20.00 µg/L  | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 18978             | 20.00 µg/L  | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 21149             | 20.00 µg/L  | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 27483             | 20.00 µg/L  | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 59546             | 20.00 µg/L  | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 65535             | 20.00 µg/L  | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 44967             | 20.00 µg/L  | 0.013    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 41018             | 20.00 µg/L  | 0.000    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 165189            | 100.00 µg/L | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 59320             | 19.95 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 99.7%  |             |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 65468             | 20.40 µg/L  | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.0% |             |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 44965             | 20.28 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 101.4% |             |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 413878            | 22.00 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 110.0% |             |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 283027            | 22.05 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 110.2% |             |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 18881             | 20.71 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.5% |             |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 21064             | 20.66 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 103.3% |             |          |
| 13C4-PFBA                          | 1.877                | 217.0 -> 172.0 | 125238            | 20.89 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 104.4% |             |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 222914            | 21.55 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 107.8% |             |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 153540            | 21.13 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 105.7% |             |          |
| 13C5-PFPeA                         | 3.537                | 268.0 -> 223.0 | 107689            | 21.18 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 105.9% |             |          |
| 13C6-PFDA                          | 7.607                | 519.0 -> 474.0 | 302765            | 22.19 µg/L  | 0.013    |

7.6.24  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.9% |          |
| 13C7-PFUnDA           | 8.054                | 570.0 -> 525.0 | 371395 | 21.95 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.7% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 89351  | 22.04 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.2% |          |
| 13C8-PFOA             | 6.446                | 421.0 -> 376.0 | 228072 | 21.86 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.3% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 27415  | 21.03 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.2% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 230591 | 21.78 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.9% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 41031  | 21.40 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.0% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 304563 | 19.98 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 46122  | 20.01 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 165189 | 103.31 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 103.3% |          |

7.6.24  
7

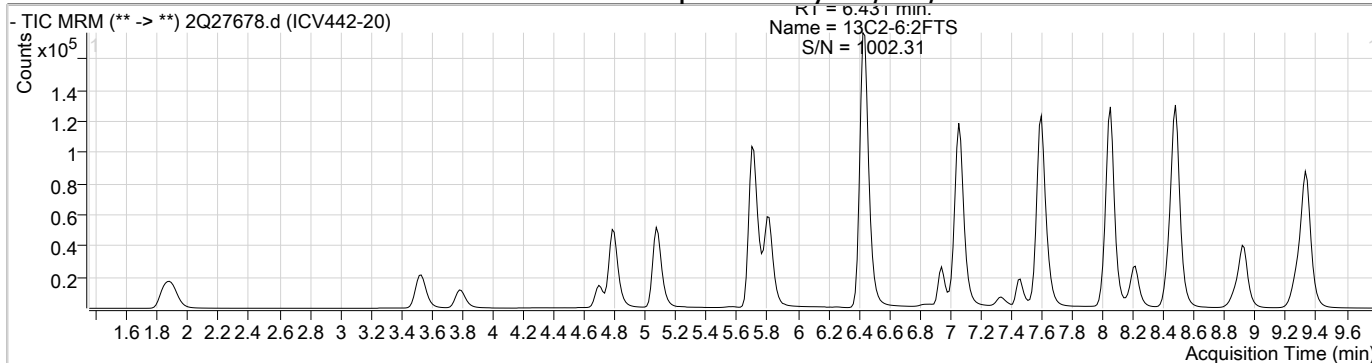
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units  | QValue |
|--------------|-------|----------------|--------|--------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -      | N.D.         |        |
| 6:2FTS       | -     | 427.0 -> 407.0 | -      | N.D.         |        |
| 8:2FTS       | -     | 527.0 -> 507.0 | -      | N.D.         |        |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 15500  | 17.75 µg/L m | 94     |
| FOSA         | -     | 498.0 -> 78.0  | -      | N.D.         |        |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 18529  | 17.72 µg/L m | 96     |
| PFBA         | -     | 213.0 -> 169.0 | -      | N.D.         |        |
| PFBS         | 3.783 | 299.0 -> 80.0  | 27998  | 18.58 µg/L   | 100    |
| PFDA         | 7.608 | 513.0 -> 469.0 | 125078 | 18.97 µg/L   | 100    |
| PFDoDA       | 8.480 | 613.0 -> 569.0 | 173345 | 18.81 µg/L   | 100    |
| PFDS         | -     | 599.0 -> 80.0  | -      | N.D.         |        |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 181435 | 18.87 µg/L   | 100    |
| PFHpS        | -     | 449.0 -> 80.0  | -      | N.D.         |        |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 49730  | 18.76 µg/L   | 99     |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 22370  | 19.13 µg/L m | 96     |
| PFNA         | 7.066 | 463.0 -> 419.0 | 149654 | 19.56 µg/L   | 99     |
| PFNS         | -     | 549.0 -> 80.0  | -      | N.D.         |        |
| PFOA         | 6.437 | 413.0 -> 369.0 | 117997 | 19.15 µg/L   | 97     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 24372  | 18.26 µg/L m | 81     |
| PFPeA        | -     | 263.0 -> 219.0 | -      | N.D.         |        |
| PFPeS        | -     | 349.0 -> 80.0  | -      | N.D.         |        |
| PFTeDA       | 9.332 | 713.0 -> 669.0 | 187748 | 18.90 µg/L   | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 197588 | 19.10 µg/L   | 100    |
| PFUnDA       | 8.056 | 563.0 -> 519.0 | 146984 | 19.17 µg/L   | 99     |
| 11Cl-PF3OUdS | 8.212 | 631.0 -> 451.0 | 112967 | 19.91 µg/L   | 100    |
| 9Cl-PF3ONS   | 7.335 | 531.0 -> 351.0 | 22440  | 19.68 µg/L   | 100    |
| ADONA        | 5.817 | 377.0 -> 251.0 | 219218 | 19.41 µg/L   | 100    |
| HFPO-DA      | 5.085 | 329.0 -> 169.0 | 39194  | 19.97 µg/L   | 100    |

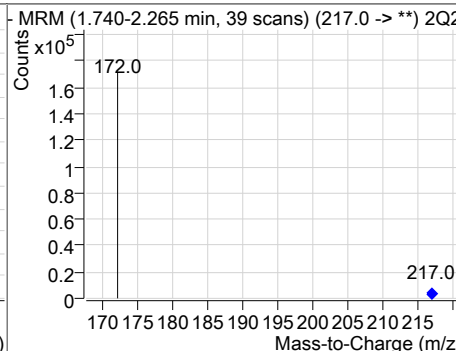
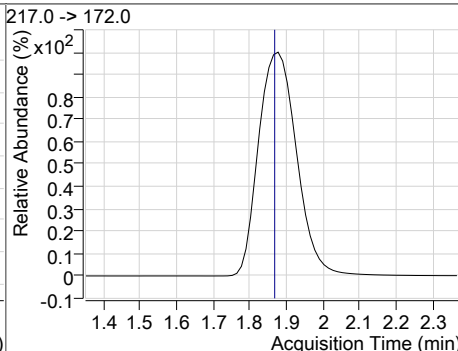
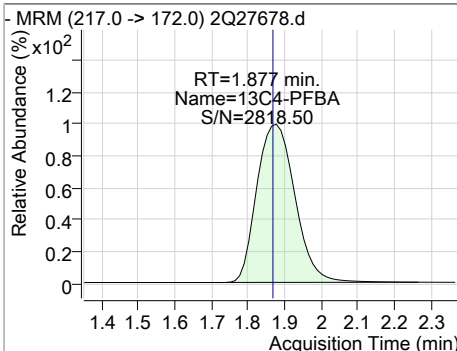
# = Qualifier out of range, m = manually integrated, + = Area summed



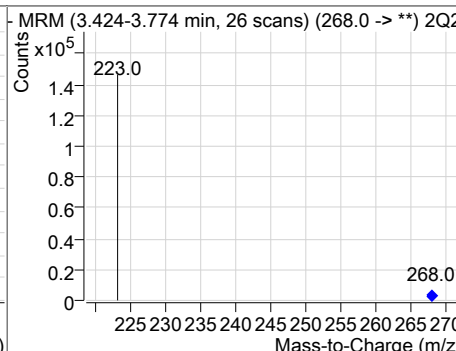
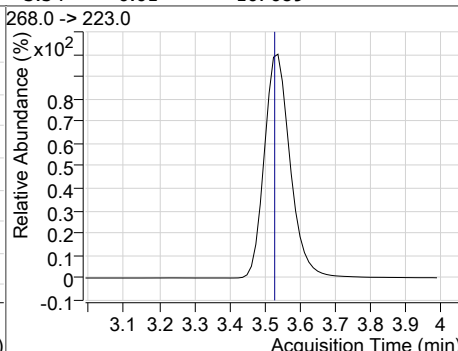
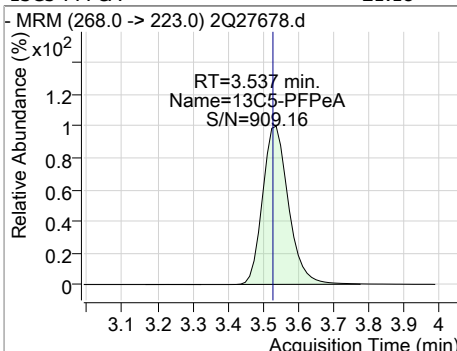
### Perfluorinated Compounds by LC/MS/MS



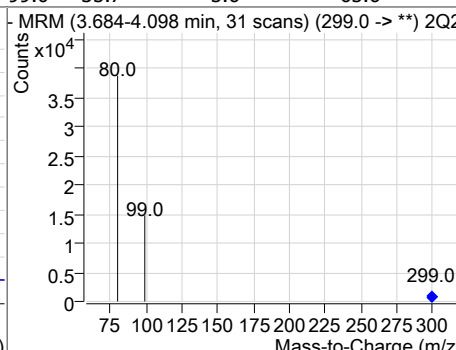
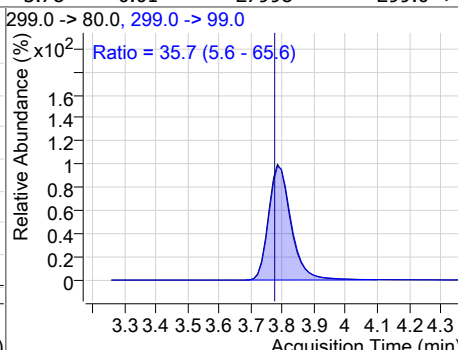
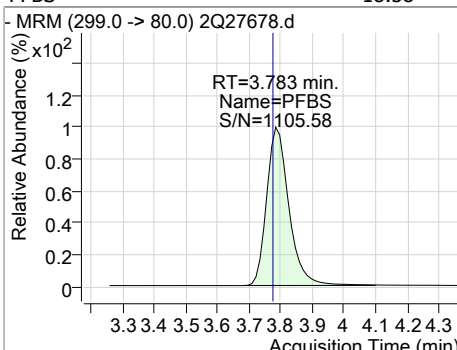
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 20.89 | 1.88 | 0.01     | 125238 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 21.18 | 3.54 | 0.01     | 107689 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFBS     | 18.58 | 3.78 | 0.01     | 27998 | 299.0 -> 99.0 | 35.7   | 5.6  | 65.6 |



### Perfluorinated Compounds by LC/MS/MS

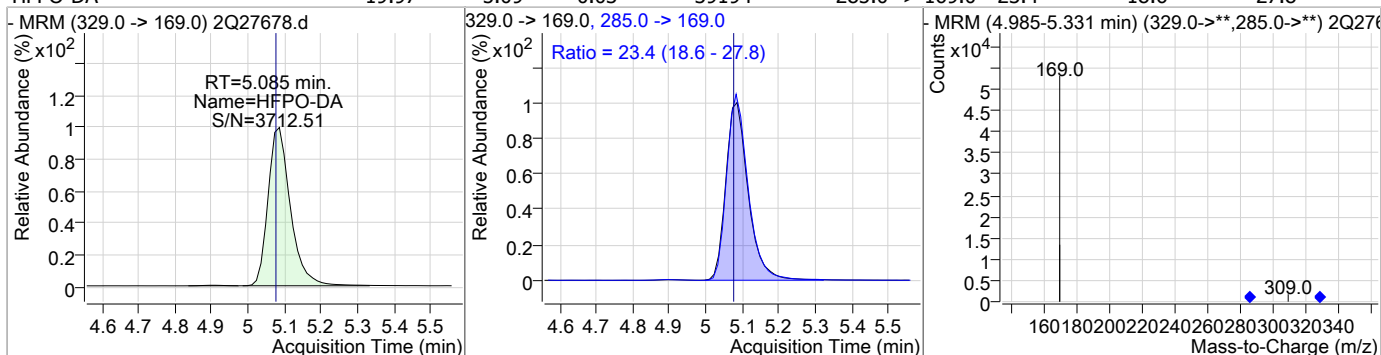
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C3-PFBS   | 20.71 | 3.78 | 0.00     | 18881  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| 13C2-4:2FTS | 19.95 | 4.70 | 0.01     | 59320  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| 13C5-PFHxA  | 21.13 | 4.79 | 0.00     | 153540 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFHxA       | 18.76 | 4.79 | 0.00     | 49730  | 313.0 -> 119.0 | 11.9   | 0.0  | 31.5 |
|             |       |      |          |        |                |        |      |      |

7.6.24

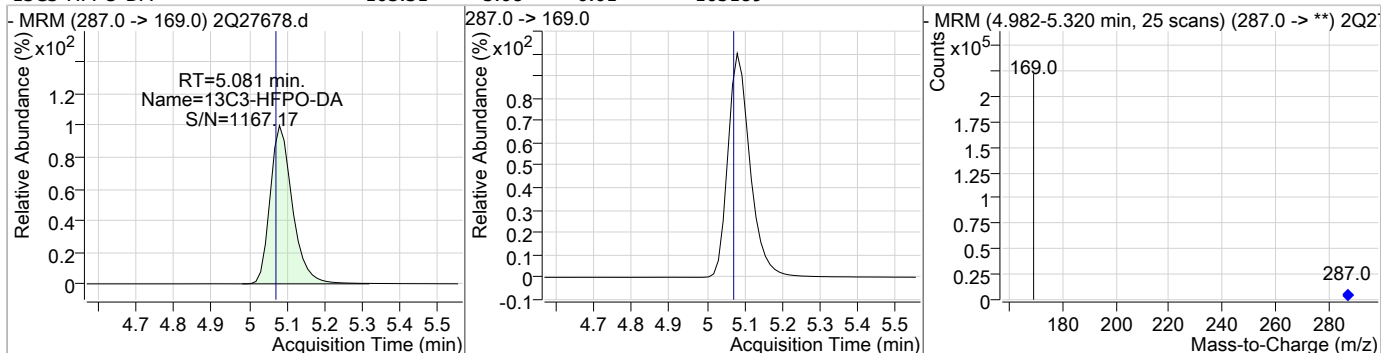
7

### Perfluorinated Compounds by LC/MS/MS

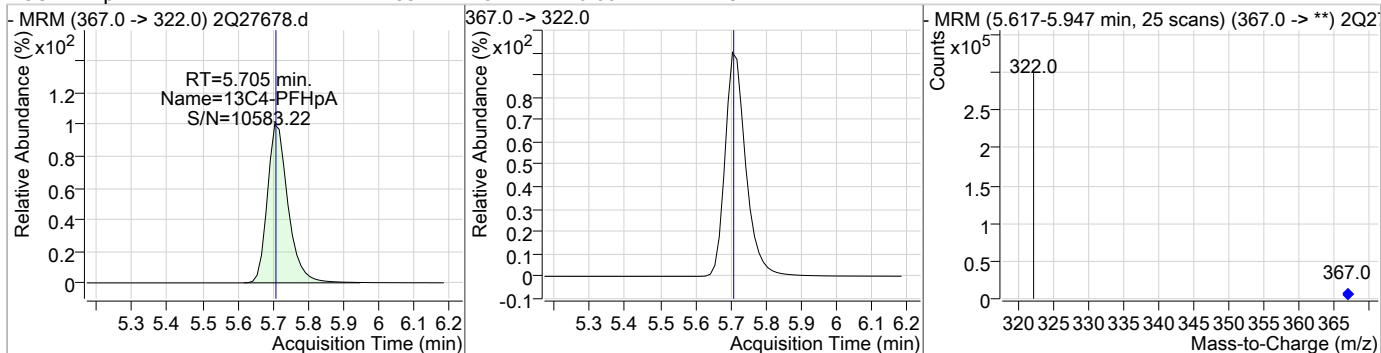
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 19.97 | 5.09 | 0.03     | 39194 | 285.0 -> 169.0 | 23.4   | 18.6 | 27.8 |



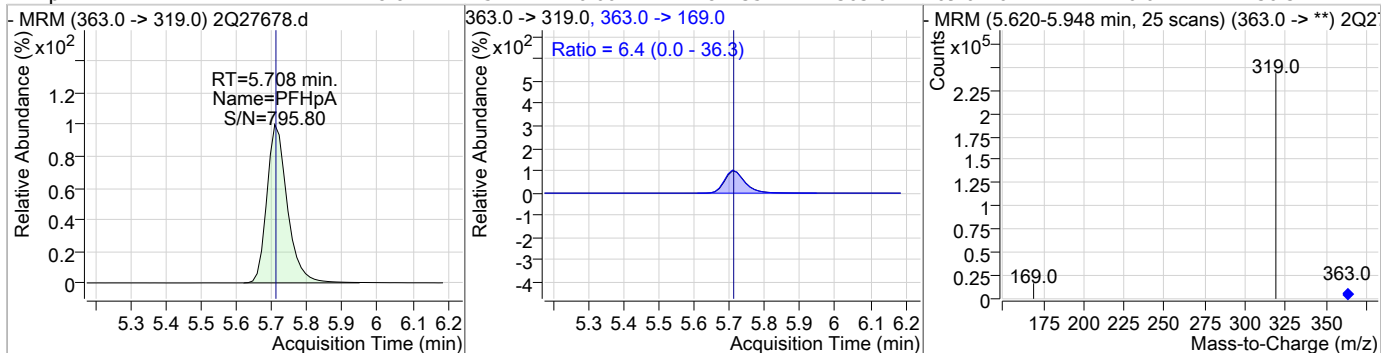
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 103.31 | 5.08 | 0.01     | 165189 |      |        |      |      |



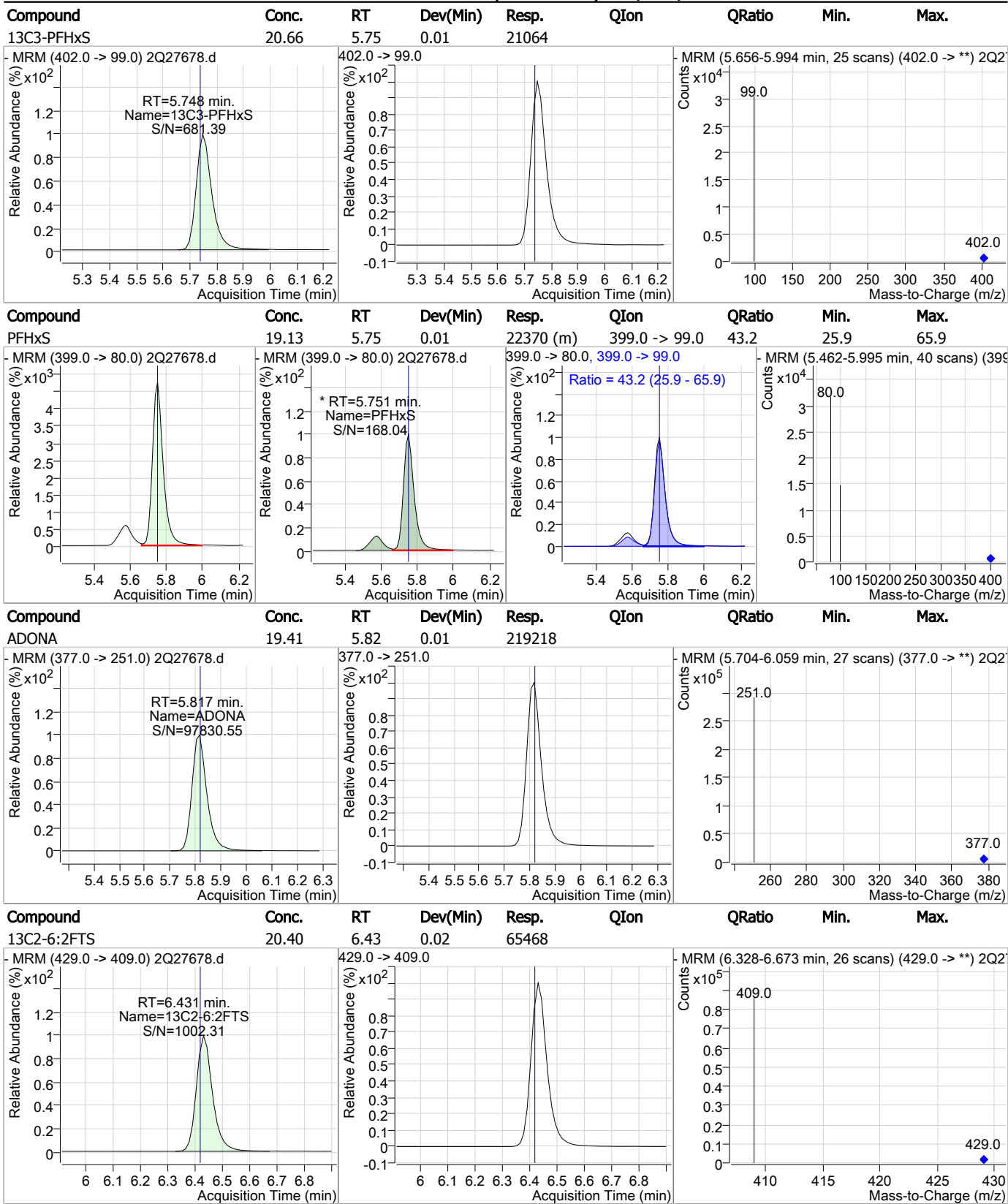
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 21.55 | 5.71 | 0.00     | 222914 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 18.87 | 5.71 | 0.00     | 181435 | 363.0 -> 169.0 | 6.4    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS



7.6.24  
7

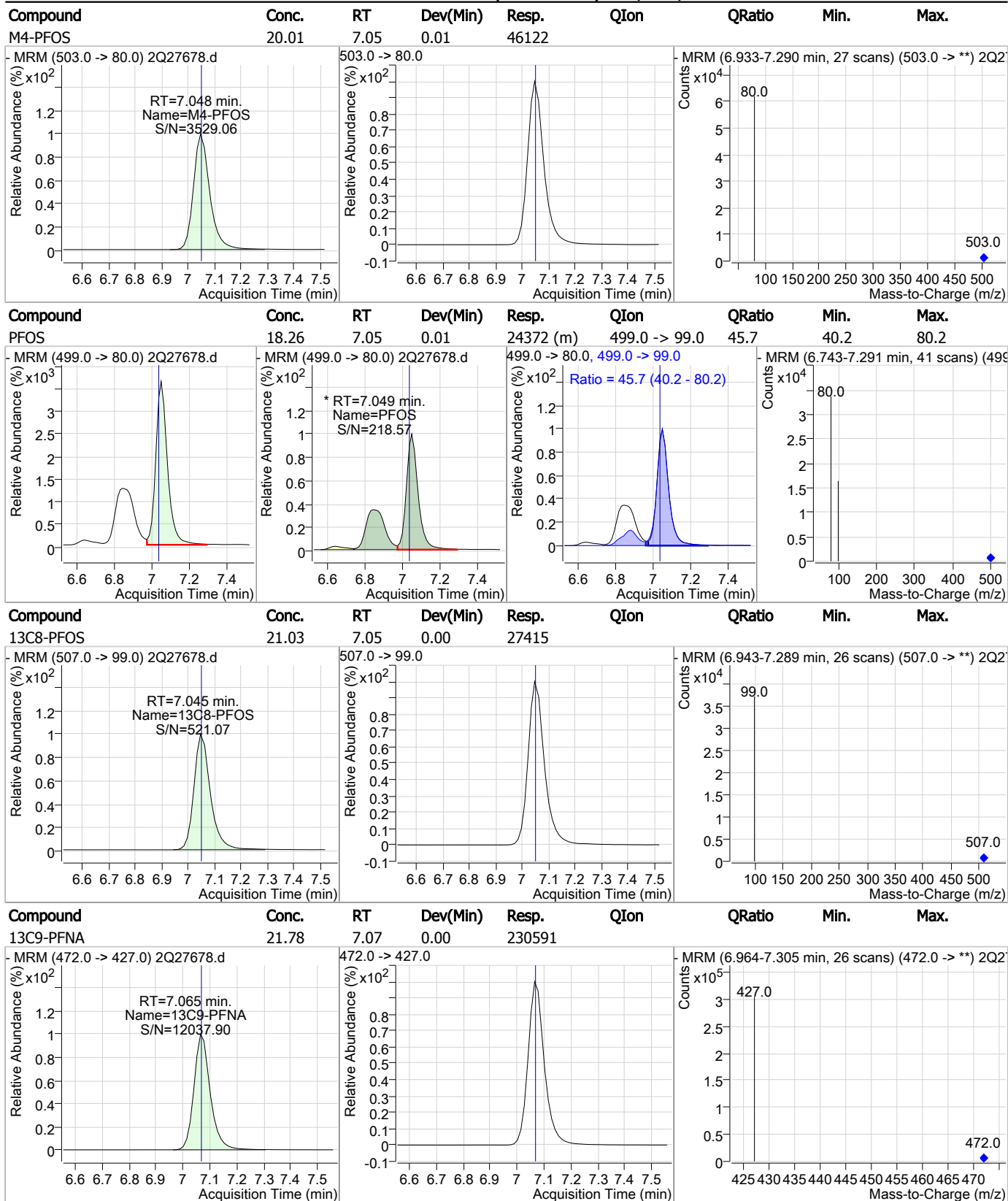


### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min)   | Resp.  | QIon           | QRatio  | Min. | Max. |
|---|-------|------|--|--------|----------------|---|------|------|
| 13C8-PFOA   | 21.86 | 6.45 | 0.01   | 228072 |                |   |      |      |
| <p>MRM (421.0 -&gt; 376.0) 2Q27678.d<br/>                     RT=6.446 min.<br/>                     Name=13C8-PFOA<br/>                     S/N=19645.90</p> |       |      | <p>421.0 -&gt; 376.0</p>   |        |                | <p>MRM (6.336-6.687 min, 26 scans) (421.0 -&gt; **) 2Q2</p> |      |      |
| M2-PFOA   | 19.98 | 6.44 | 0.00   | 304563 |                |   |      |      |
| <p>MRM (415.0 -&gt; 370.0) 2Q27678.d<br/>                     RT=6.435 min.<br/>                     Name=M2-PFOA<br/>                     S/N=14515.17</p>   |       |      | <p>415.0 -&gt; 370.0</p>   |        |                | <p>MRM (6.347-6.751 min, 30 scans) (415.0 -&gt; **) 2Q2</p> |      |      |
| PFOA  | 19.15 | 6.44 | 0.00   | 117997 | 413.0 -> 169.0 | 25.8  | 7.3  | 47.3 |
| <p>MRM (413.0 -&gt; 369.0) 2Q27678.d<br/>                     RT=6.437 min.<br/>                     Name=PFOA<br/>                     S/N=3171.45</p>       |       |      | <p>413.0 -&gt; 369.0, 413.0 -&gt; 169.0<br/>                     Ratio = 25.8 (7.3 - 47.3)</p> |        |                | <p>MRM (6.349-6.752 min, 30 scans) (413.0 -&gt; **) 2Q2</p> |      |      |
| 13C8-FOSA   | 22.04 | 6.94 | 0.00   | 89351  |                |   |      |      |
| <p>MRM (506.0 -&gt; 78.0) 2Q27678.d<br/>                     RT=6.944 min.<br/>                     Name=13C8-FOSA<br/>                     S/N=2392.61</p>   |       |      | <p>506.0 -&gt; 78.0</p>  |        |                | <p>MRM (6.869-7.176 min, 23 scans) (506.0 -&gt; **) 2Q2</p> |      |      |

7.6.24  
7

### Perfluorinated Compounds by LC/MS/MS

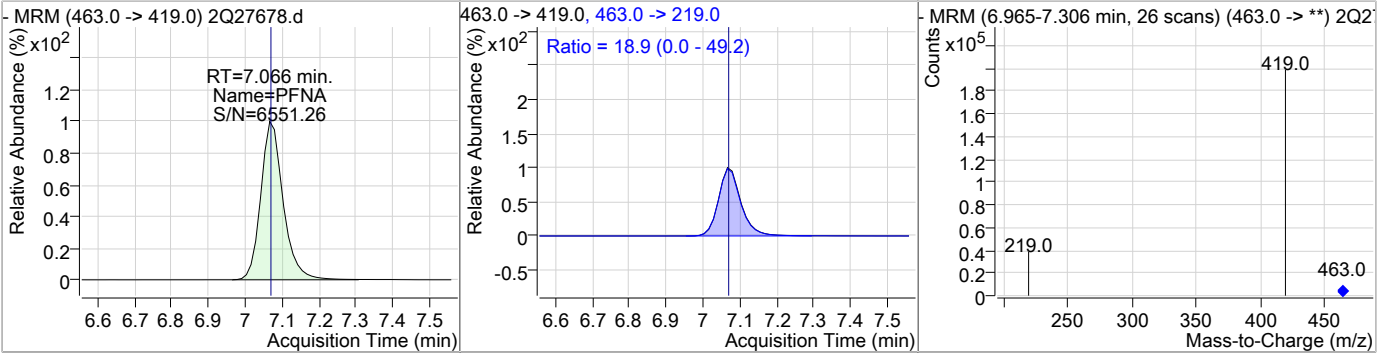


7.6.24

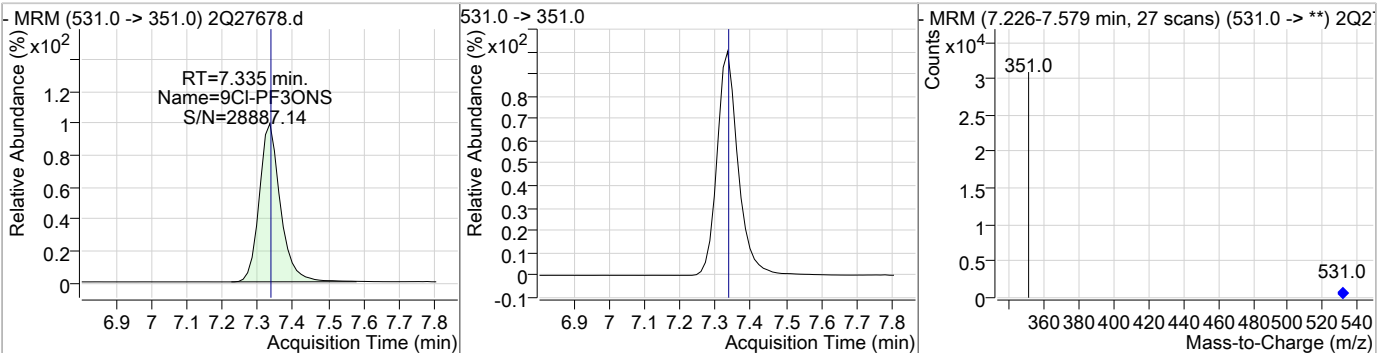
7

### Perfluorinated Compounds by LC/MS/MS

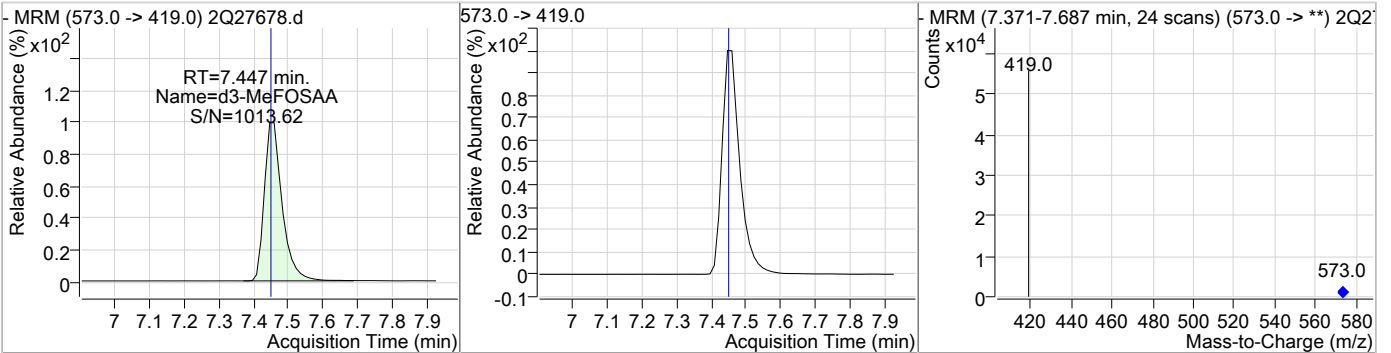
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 19.56 | 7.07 | 0.00     | 149654 | 463.0 -> 219.0 | 18.9   | 0.0  | 49.2 |



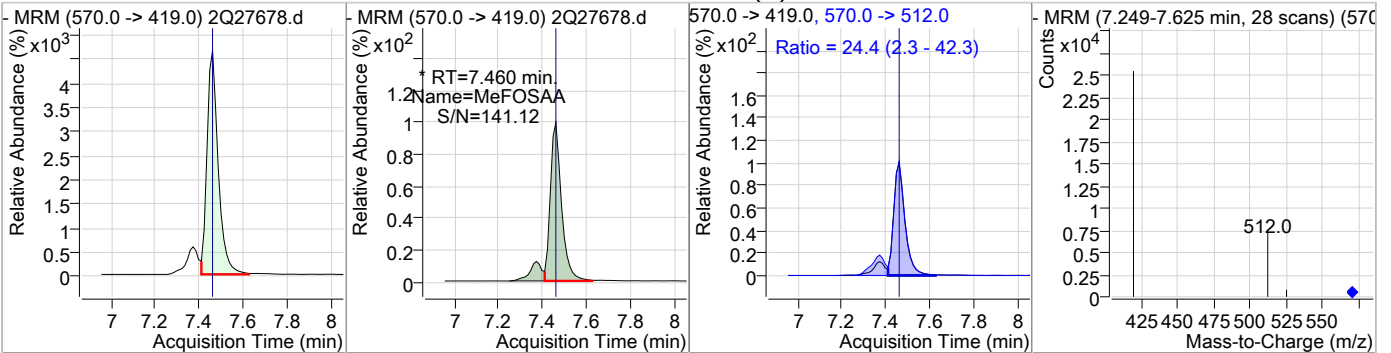
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 9CI-PF3ONS | 19.68 | 7.34 | 0.01     | 22440 |      |        |      |      |



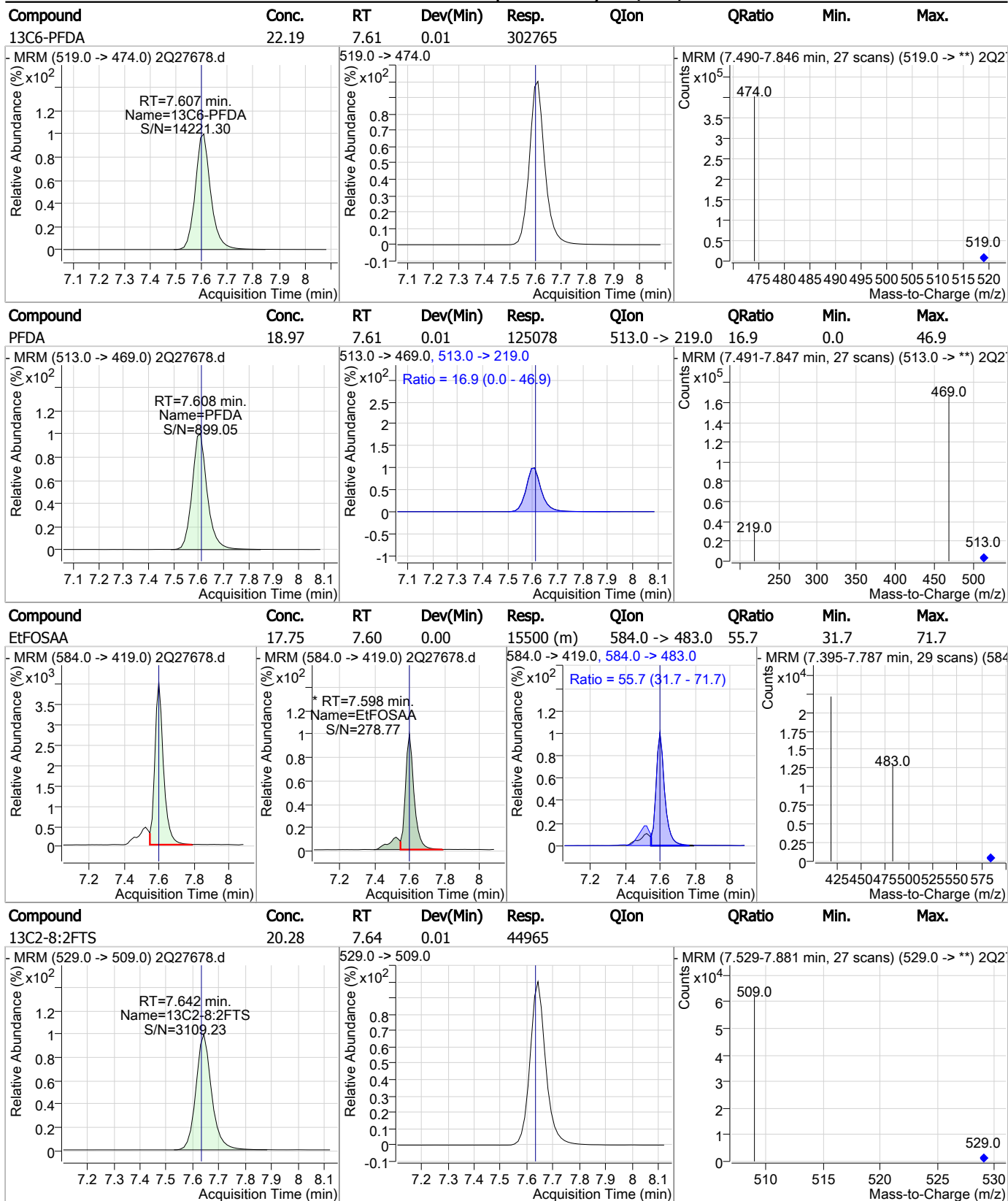
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| d3-MeFOSAA | 21.40 | 7.45 | 0.00     | 41031 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|----------------|--------|------|------|
| MeFOSAA  | 17.72 | 7.46 | 0.00     | 18529 (m) | 570.0 -> 512.0 | 24.4   | 2.3  | 42.3 |



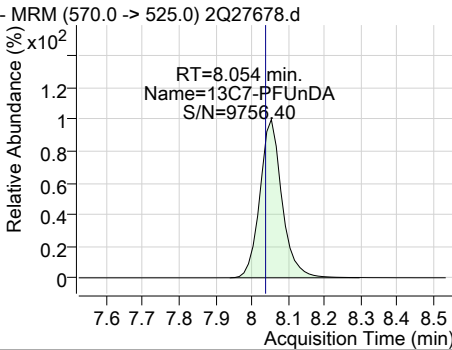
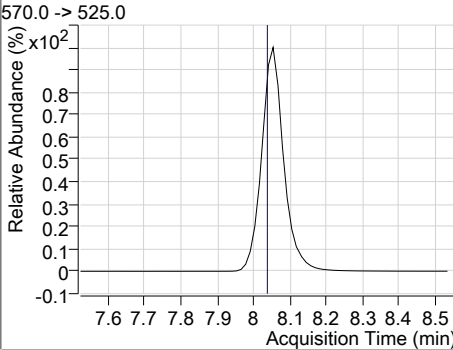
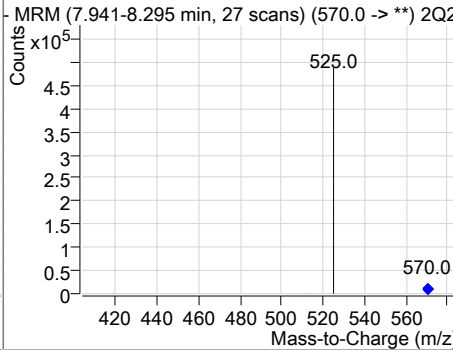
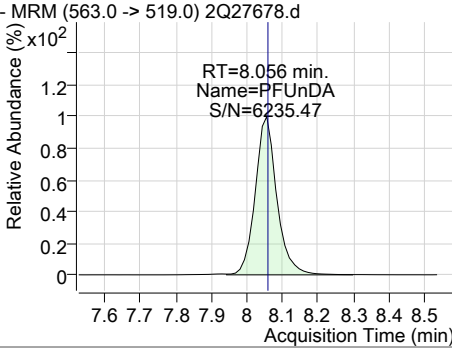
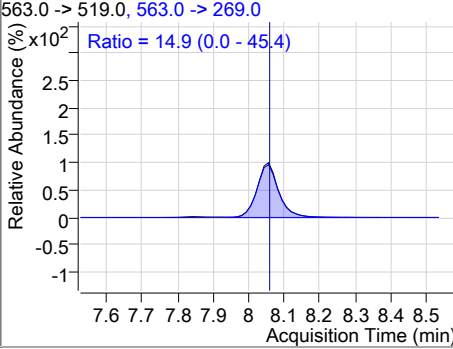
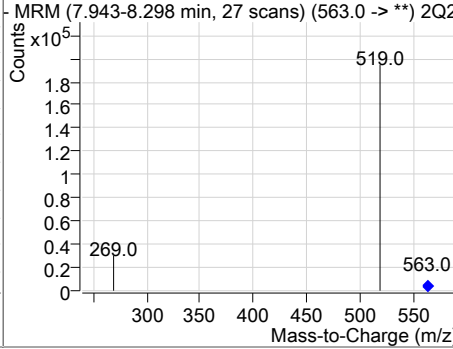
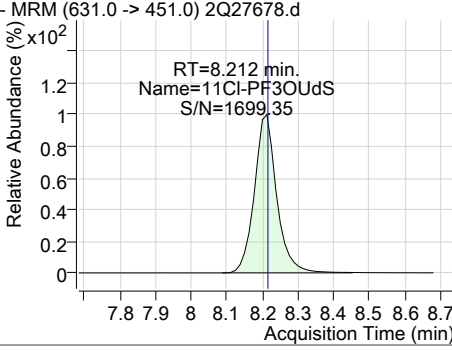
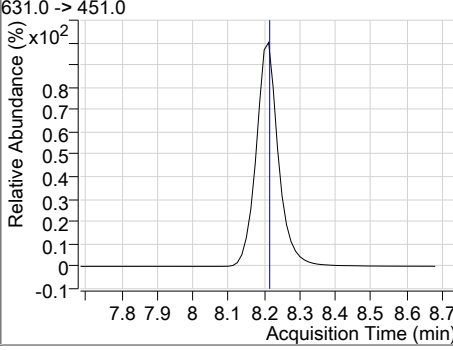
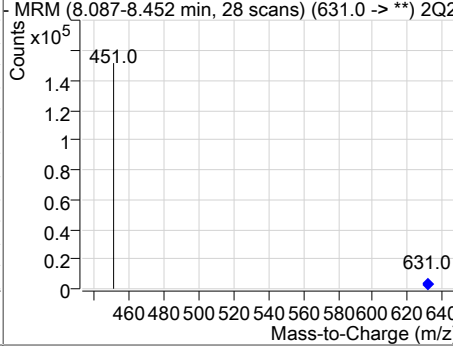
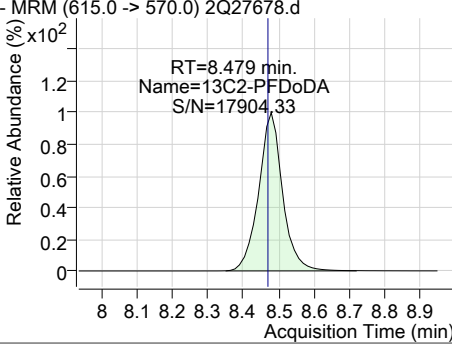
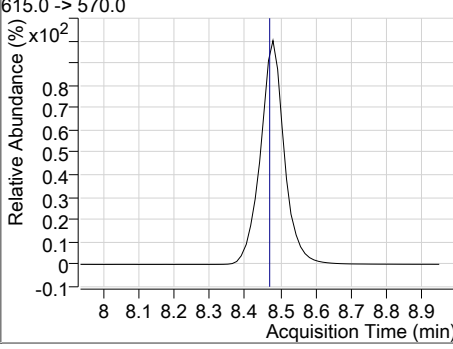
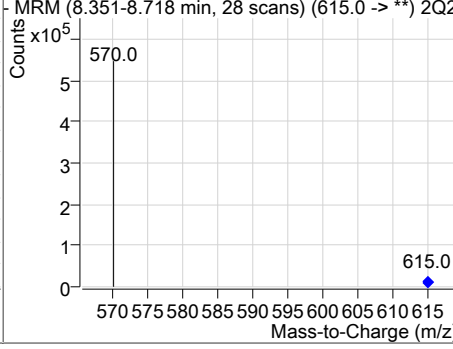
### Perfluorinated Compounds by LC/MS/MS



7.6.24  
7



### Perfluorinated Compounds by LC/MS/MS

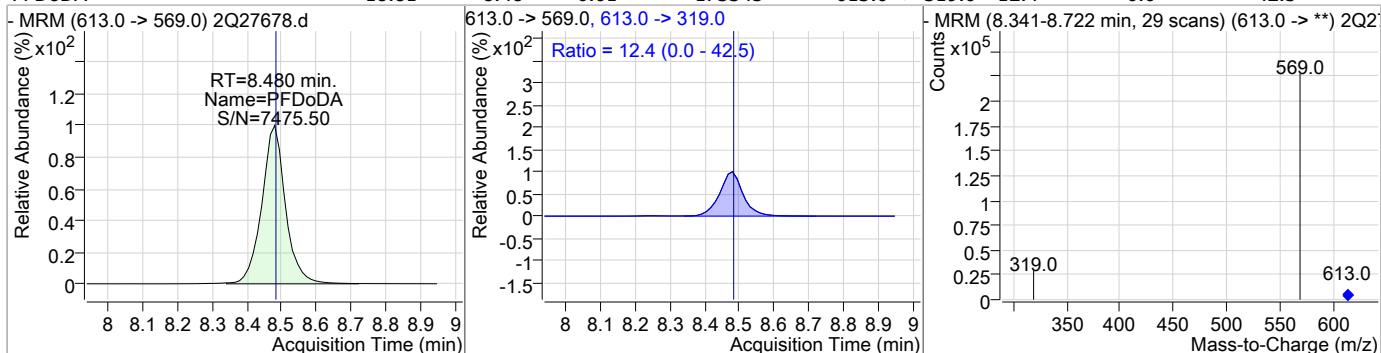
| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon           | QRatio   | Min. | Max. |
|--|-------|------|---|--------|----------------|--|------|------|
| 13C7-PFUnDA  | 21.95 | 8.05 | 0.01  | 371395 |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| PFUnDA   | 19.17 | 8.06 | 0.01  | 146984 | 563.0 -> 269.0 | 14.9   | 0.0  | 45.4 |
|    |       |      |    |        |                |    |      |      |
| 11Cl-PF3OUdS   | 19.91 | 8.21 | 0.01  | 112967 |                |  |      |      |
|  |       |      |  |        |                |  |      |      |
| 13C2-PFDoDA  | 22.00 | 8.48 | 0.01  | 413878 |                |  |      |      |
|  |       |      |  |        |                |  |      |      |

7.6.24

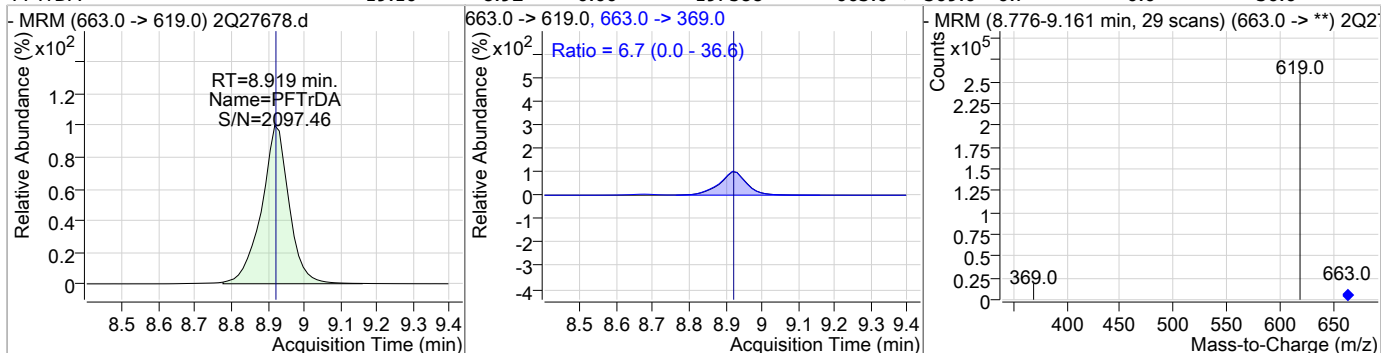
7

### Perfluorinated Compounds by LC/MS/MS

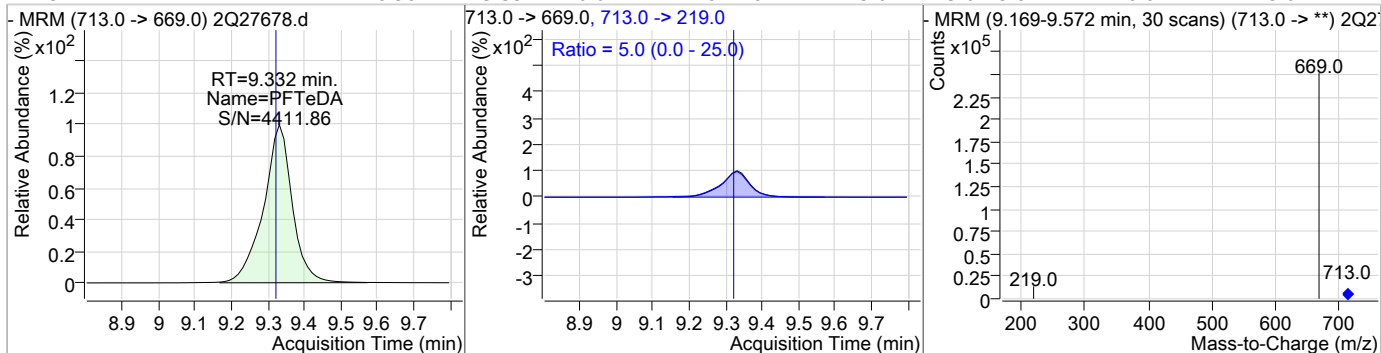
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFDODA   | 18.81 | 8.48 | 0.01     | 173345 | 613.0 -> 319.0 | 12.4   | 0.0  | 42.5 |



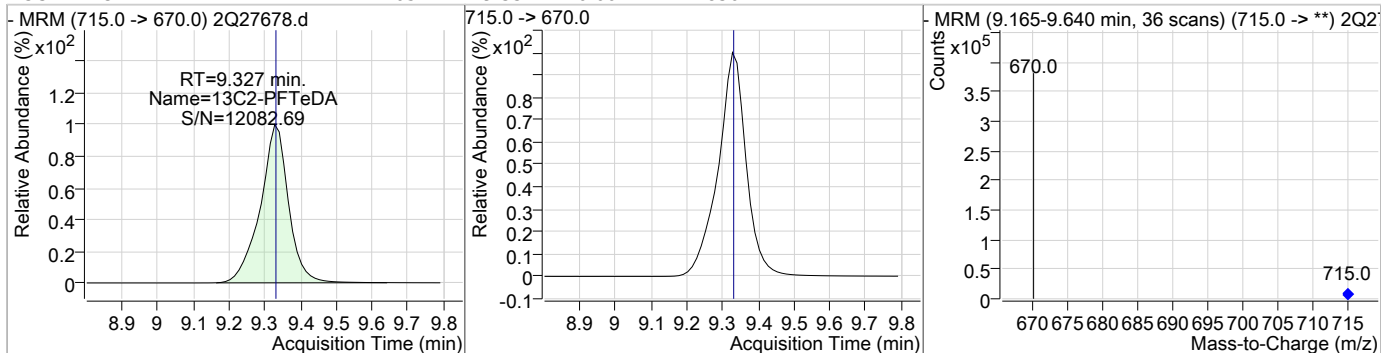
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTrDA   | 19.10 | 8.92 | 0.00     | 197588 | 663.0 -> 369.0 | 6.7    | 0.0  | 36.6 |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 18.90 | 9.33 | 0.01     | 187748 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFTeDA | 22.05 | 9.33 | 0.00     | 283027 | 715.0 -> 670.0 |        |      |      |



# Manual Integration Approval Summary

**Sample Number:** S2Q442-ICV442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27678.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 11:38      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T. (min.) | Reason     |
|------------------------------|-----------|------|-------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75        | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05        | Split peak |
| MeFOSAA                      | 2355-31-9 |      | 7.46        | Split peak |
| EtFOSAA                      | 2991-50-6 |      | 7.60        | Split peak |

7.6.24.1  
7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27688.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 2:57:15 PM  
 Sample Name : CC442-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 303819 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 46779  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 127122 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 108658 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 154708 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 227210 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 230270 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 239153 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 313315 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 400747 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 468278 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 335310 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 88914  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 18688  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 21252  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 27715  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 62381  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 70324  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 52048  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 42267  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 164271 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 62311  | 20.95 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.8% |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 70271  | 21.89 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 109.5% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 52036  | 23.47 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 117.3% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 467670 | 24.86 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 124.3% |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 334823 | 26.08 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 130.4% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 18597  | 20.40 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.0% |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 21201  | 20.80 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 126571 | 21.11 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.5% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 226873 | 21.94 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 109.7% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 154430 | 21.25 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.3% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 108670 | 21.38 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.9% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 313289 | 22.96 µg/L        | 0.000    |

7.6.25  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 114.8% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 400632 | 23.67 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 118.4% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 89076  | 21.97 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.8% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 230243 | 22.07 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.4% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 27709  | 21.26 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.3% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 239150 | 22.59 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 112.9% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 42263  | 22.05 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.2% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 304135 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 46848  | 20.02 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 164271 | 102.73 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 102.7% |          |

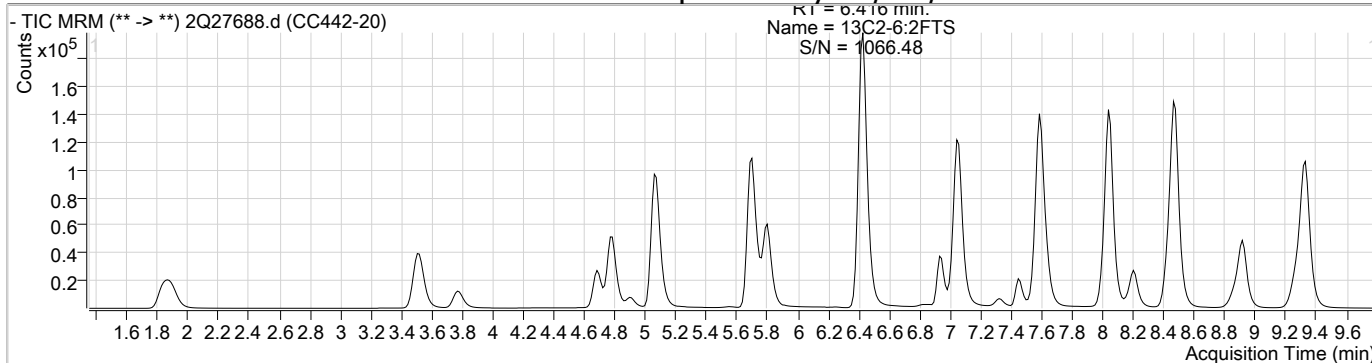
7.6.25  
7

**Target Compounds**

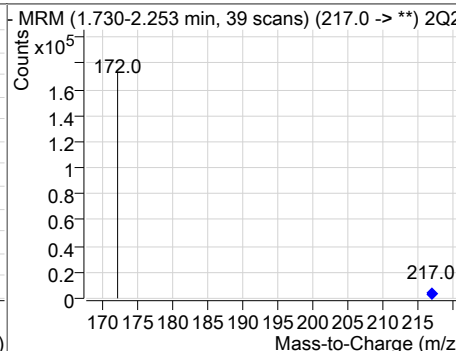
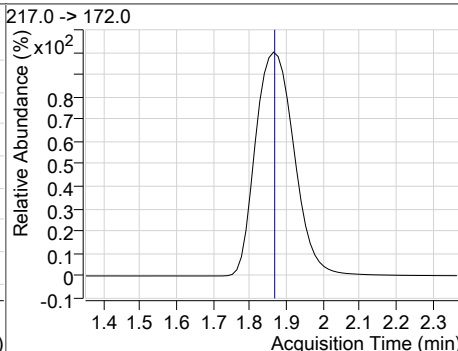
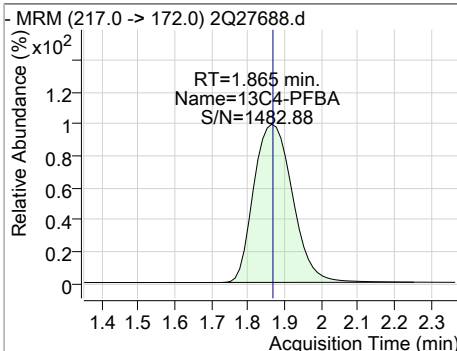
| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.687 | 327.0 -> 307.0 | 35293  | 20.54 µg/L  | 99     |
| 6:2FTS       | 6.418 | 427.0 -> 407.0 | 34359  | 19.86 µg/L  | 99     |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 26442  | 20.32 µg/L  | 99     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 18199  | 20.26 µg/L  | 98     |
| FOSA         | 6.935 | 498.0 -> 78.0  | 40466  | 19.76 µg/L  | 99     |
| MeFOSAA      | 7.447 | 570.0 -> 419.0 | 21404  | 19.85 µg/L  | 97     |
| PFBA         | 1.873 | 213.0 -> 169.0 | 24716  | 19.69 µg/L  | 100    |
| PFBS         | 3.771 | 299.0 -> 80.0  | 29612  | 19.96 µg/L  | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 136979 | 20.08 µg/L  | 99     |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 207505 | 19.91 µg/L  | 100    |
| PFDS         | 8.001 | 599.0 -> 80.0  | 10318  | 20.21 µg/L  | 97     |
| PFHpA        | 5.695 | 363.0 -> 319.0 | 193120 | 19.72 µg/L  | 100    |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 20983  | 20.35 µg/L  | 99     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 53213  | 19.97 µg/L  | 100    |
| PFHxS        | 5.739 | 399.0 -> 80.0  | 23122  | 19.68 µg/L  | m 96   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 157212 | 19.82 µg/L  | 99     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 19811  | 20.86 µg/L  | 100    |
| PFOA         | 6.437 | 413.0 -> 369.0 | 120588 | 19.39 µg/L  | 98     |
| PFOS         | 7.037 | 499.0 -> 80.0  | 25890  | 19.23 µg/L  | m 80   |
| PFPeA        | 3.515 | 263.0 -> 219.0 | 93237  | 19.82 µg/L  | 100    |
| PFPeS        | 4.895 | 349.0 -> 80.0  | 19713  | 20.76 µg/L  | 98     |
| PFTeDA       | 9.332 | 713.0 -> 669.0 | 231126 | 19.71 µg/L  | 100    |
| PFTrDA       | 8.919 | 663.0 -> 619.0 | 237021 | 19.41 µg/L  | 100    |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 163998 | 19.84 µg/L  | 99     |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 111371 | 17.35 µg/L  | 100    |
| 9Cl-PF3ONS   | 7.323 | 531.0 -> 351.0 | 22382  | 18.99 µg/L  | 100    |
| ADONA        | 5.804 | 377.0 -> 251.0 | 222410 | 19.51 µg/L  | 100    |
| HFPO-DA      | 5.073 | 329.0 -> 169.0 | 200110 | 102.55 µg/L | 100    |

# = Qualifier out of range, m = manually integrated, + = Area summed

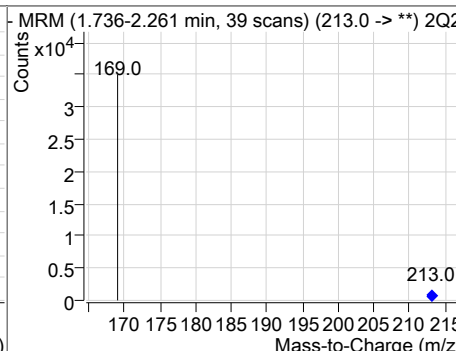
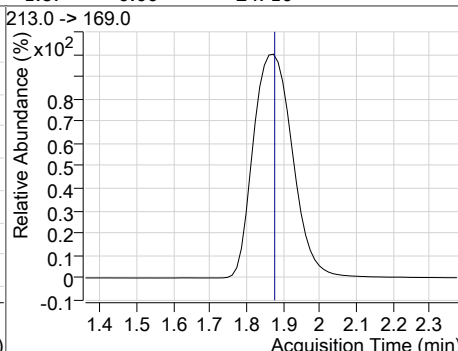
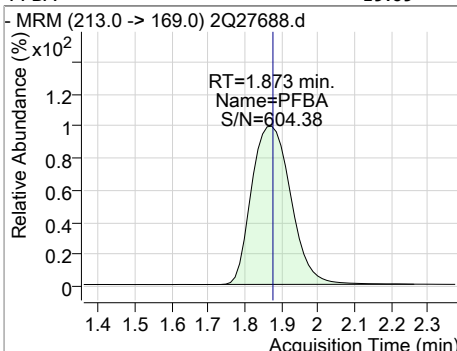
### Perfluorinated Compounds by LC/MS/MS



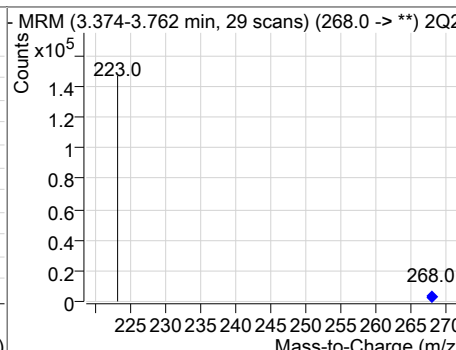
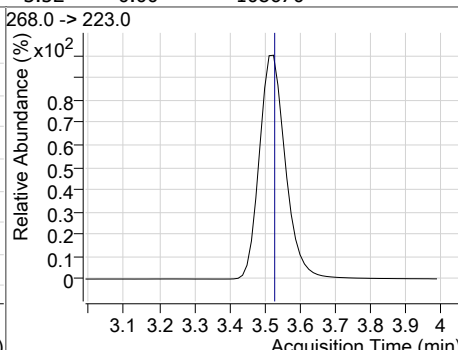
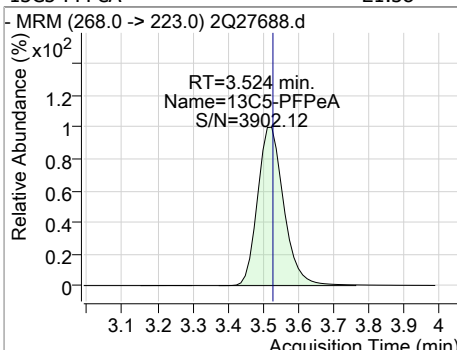
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 21.11 | 1.86 | 0.00     | 126571 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 19.69 | 1.87 | 0.00     | 24716 |      |        |      |      |

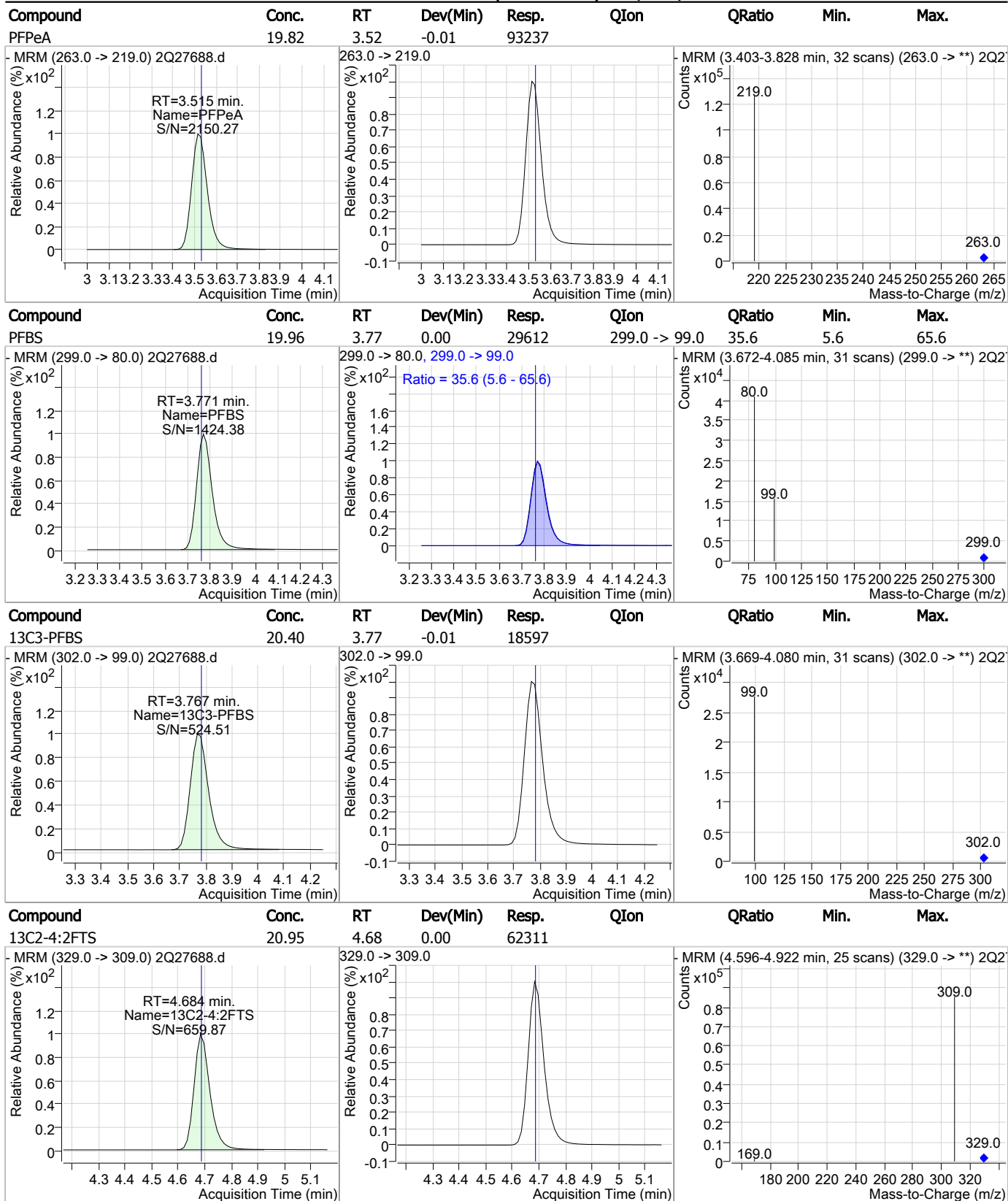


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 21.38 | 3.52 | 0.00     | 108670 |      |        |      |      |



7.6.25  
7

### Perfluorinated Compounds by LC/MS/MS

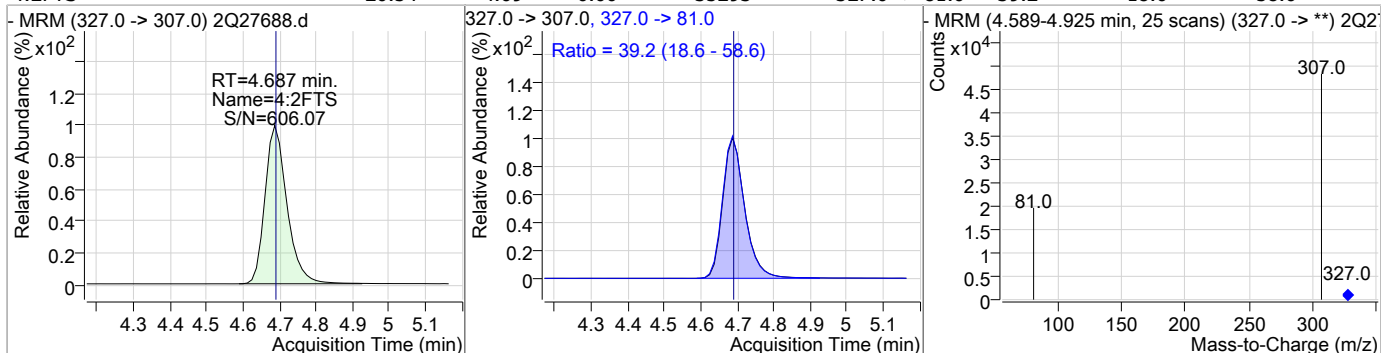


7.6.25

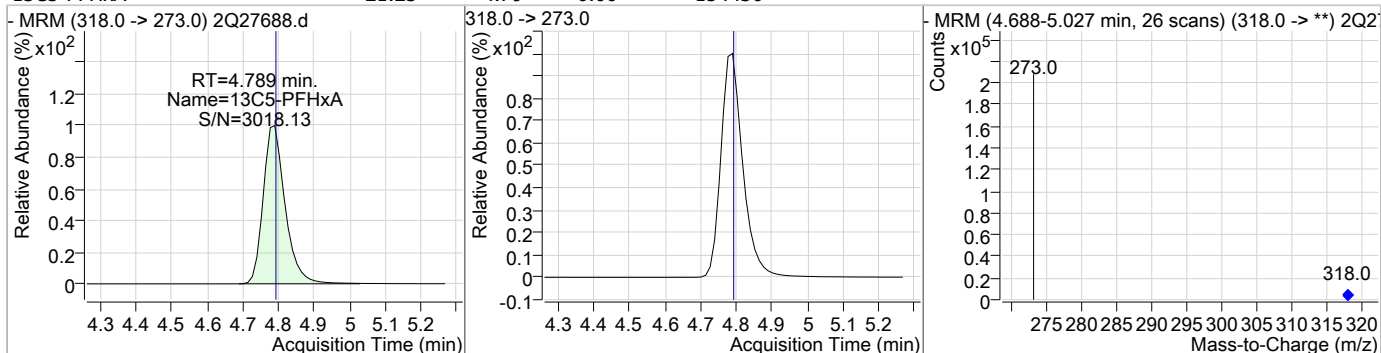
7

### Perfluorinated Compounds by LC/MS/MS

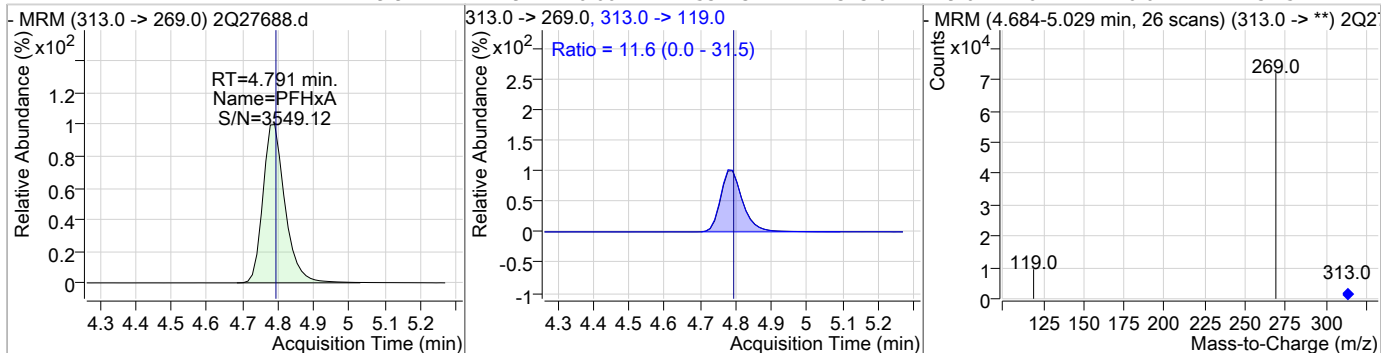
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 20.54 | 4.69 | 0.00     | 35293 | 327.0 -> 81.0 | 39.2   | 18.6 | 58.6 |



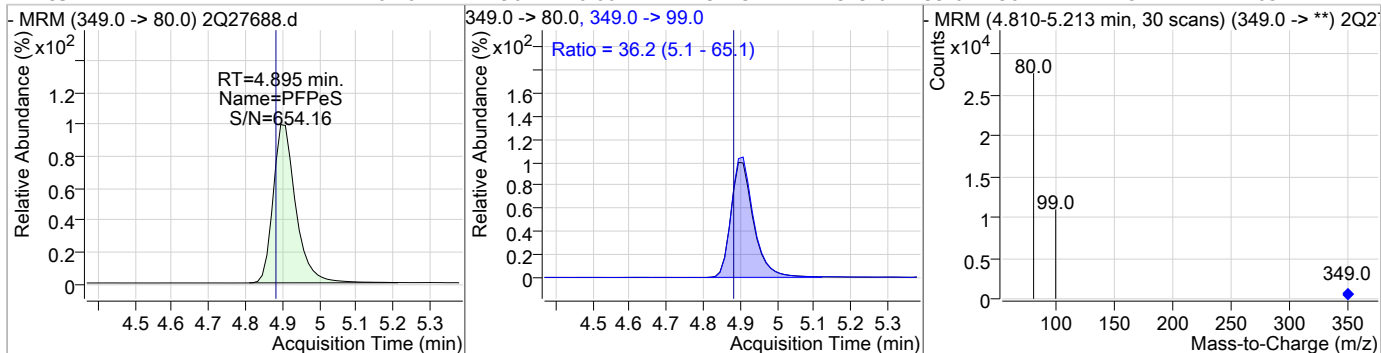
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C5-PFHxA | 21.25 | 4.79 | 0.00     | 154430 | 318.0 -> 273.0 | 11.6   | 0.0  | 31.5 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 19.97 | 4.79 | 0.00     | 53213 | 313.0 -> 119.0 | 36.2   | 5.1  | 65.1 |

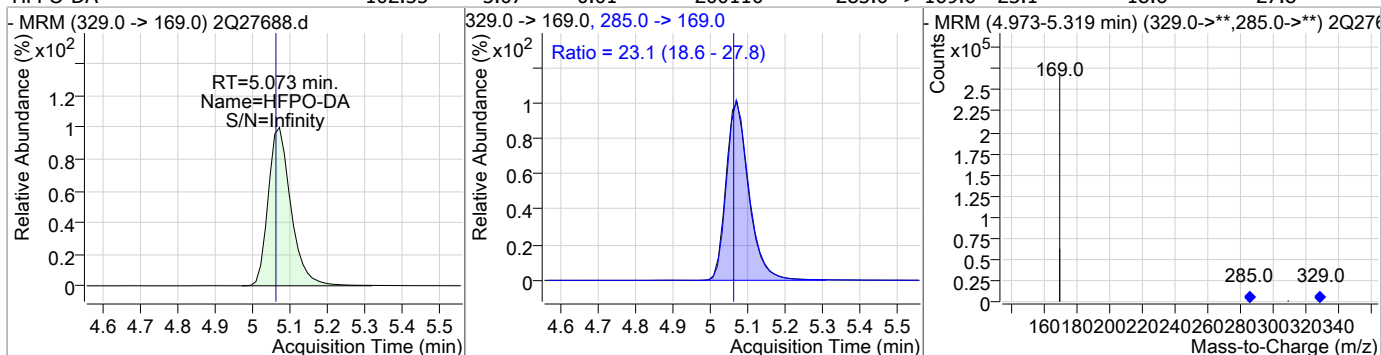


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 20.76 | 4.90 | 0.00     | 19713 | 349.0 -> 99.0 | 36.2   | 5.1  | 65.1 |

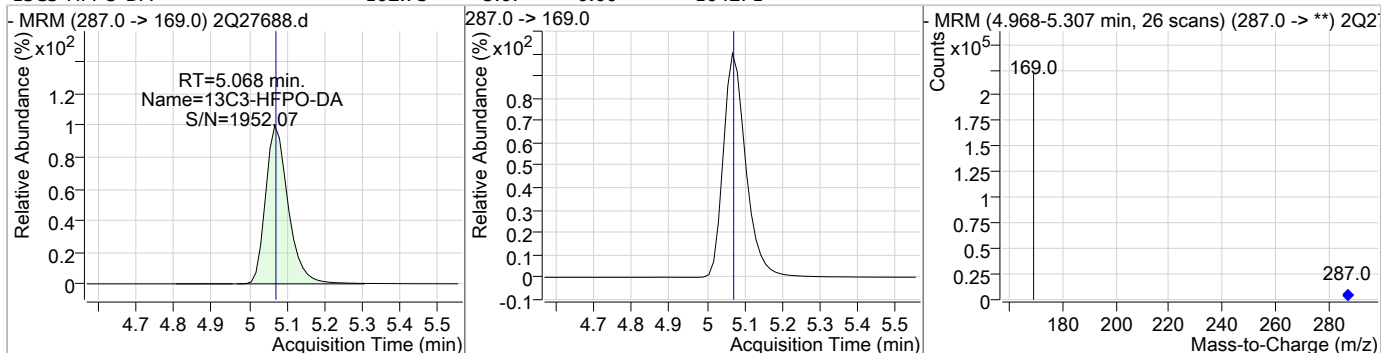


### Perfluorinated Compounds by LC/MS/MS

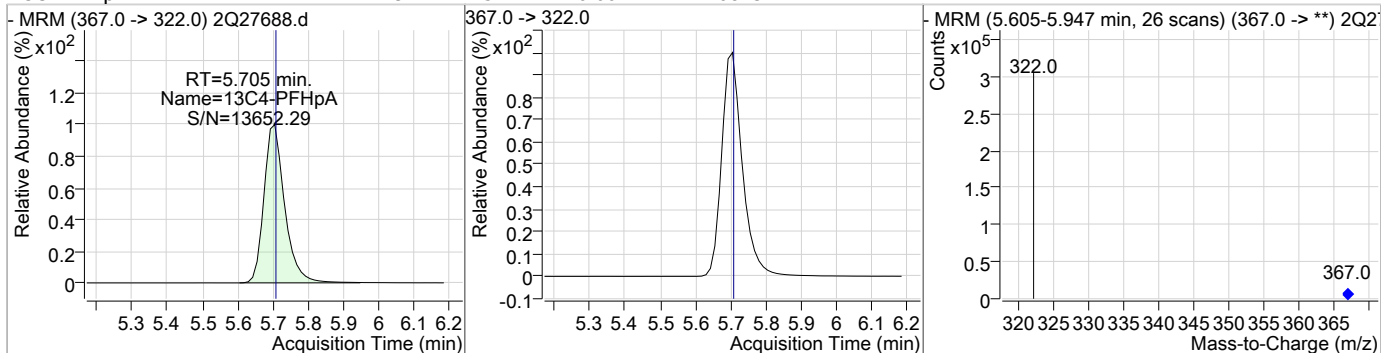
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 102.55 | 5.07 | 0.01     | 200110 | 285.0 -> 169.0 | 23.1   | 18.6 | 27.8 |



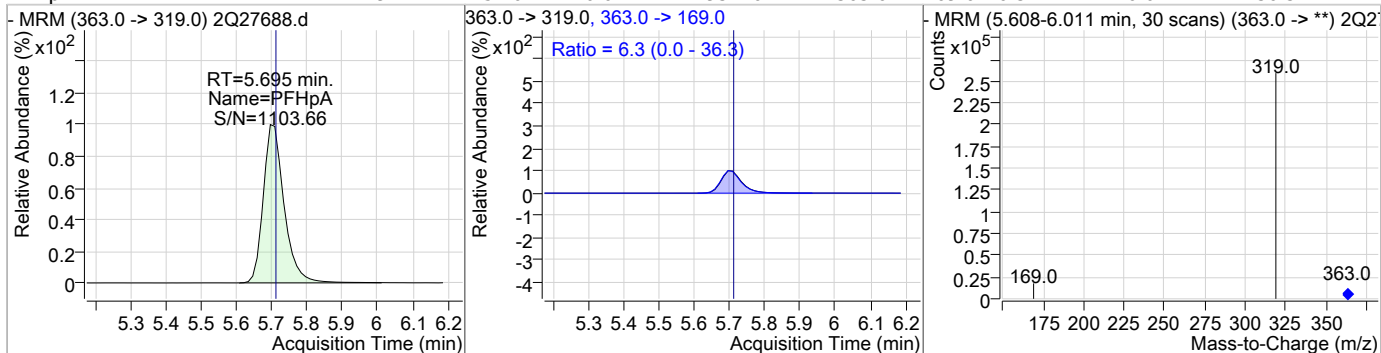
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 102.73 | 5.07 | 0.00     | 164271 |      |        |      |      |



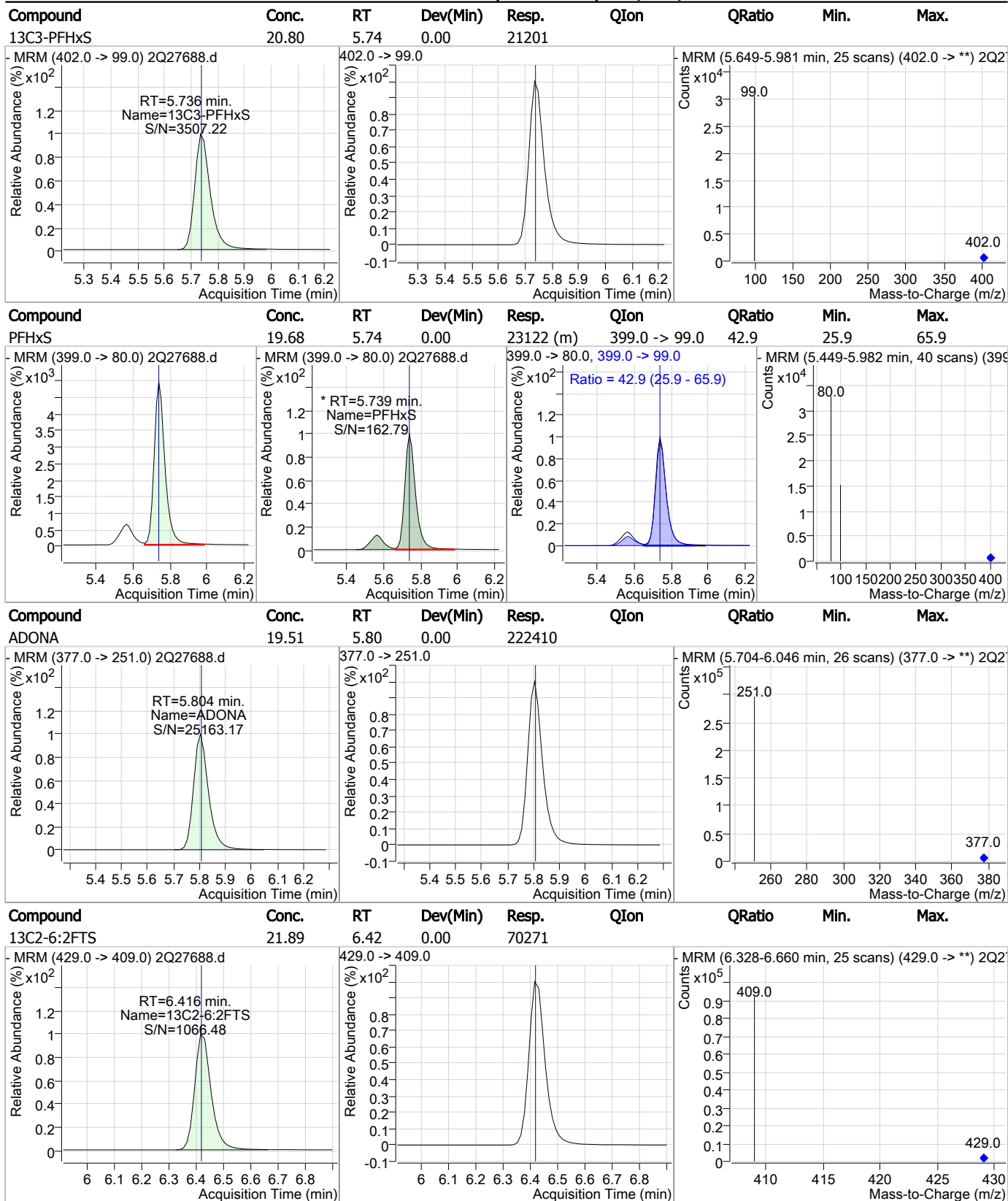
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 21.94 | 5.71 | 0.00     | 226873 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.72 | 5.70 | -0.01    | 193120 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

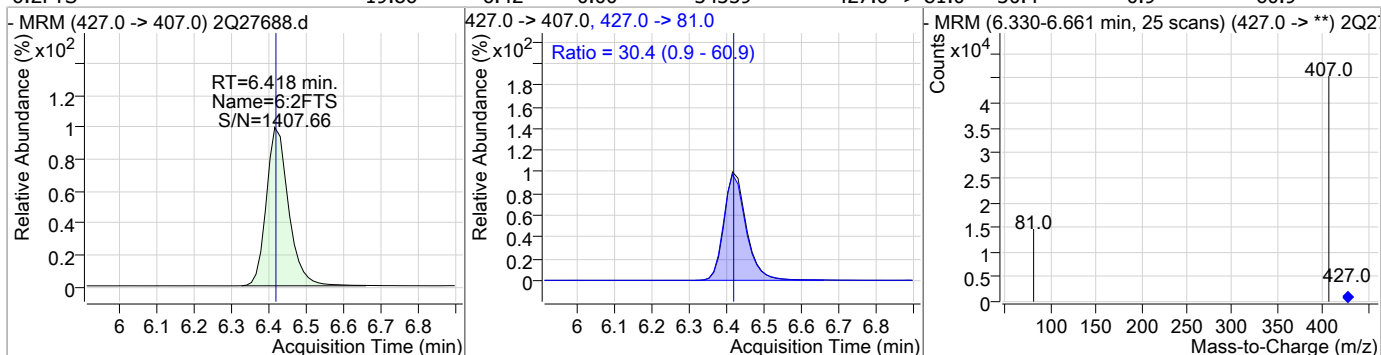


7.6.25

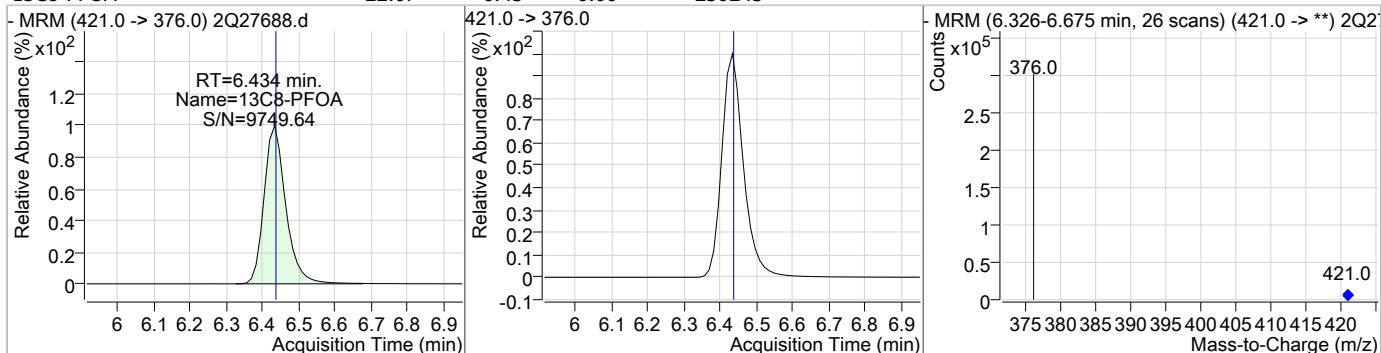
7

### Perfluorinated Compounds by LC/MS/MS

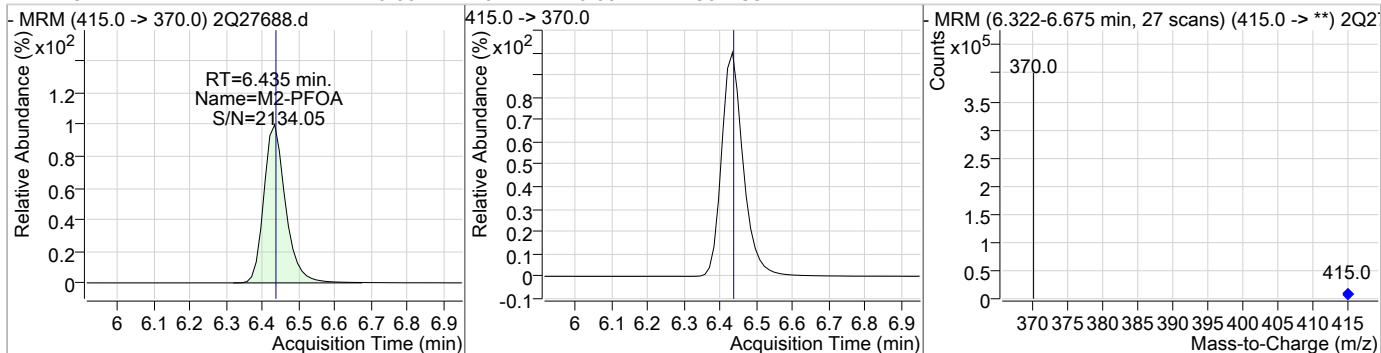
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 19.86 | 6.42 | 0.00     | 34359 | 427.0 -> 81.0 | 30.4   | 0.9  | 60.9 |



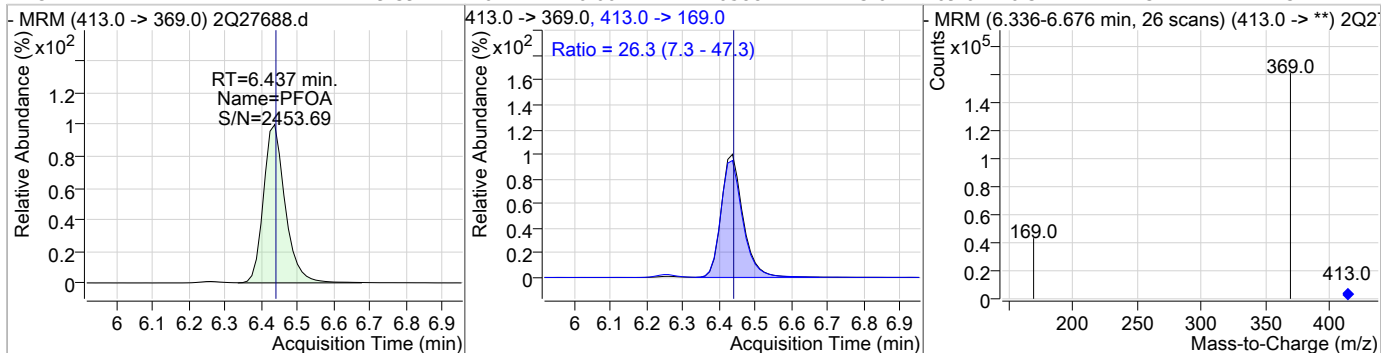
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 22.07 | 6.43 | 0.00     | 230243 |      |        |      |      |



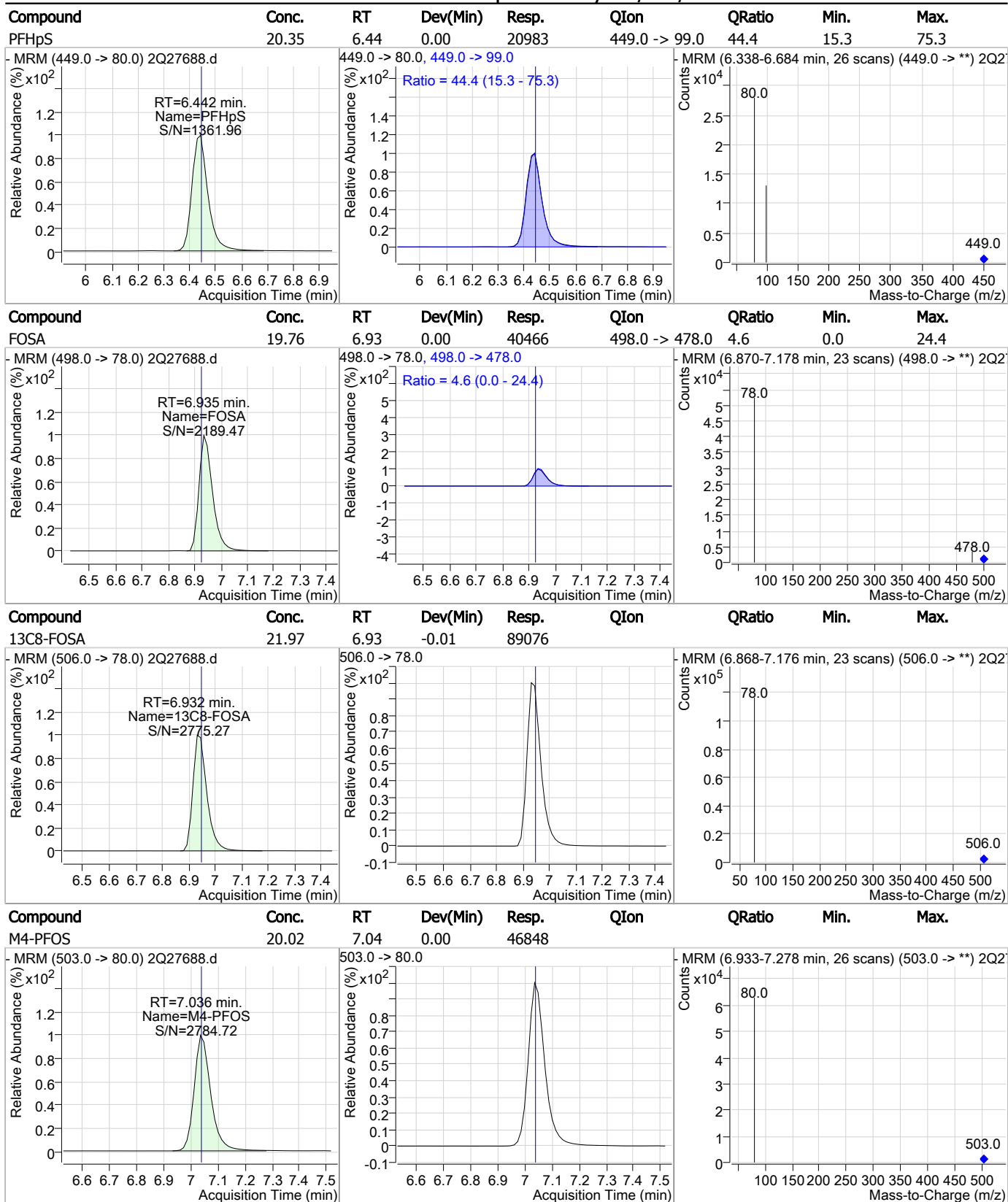
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 304135 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.39 | 6.44 | 0.00     | 120588 | 413.0 -> 169.0 | 26.3   | 7.3  | 47.3 |



### Perfluorinated Compounds by LC/MS/MS



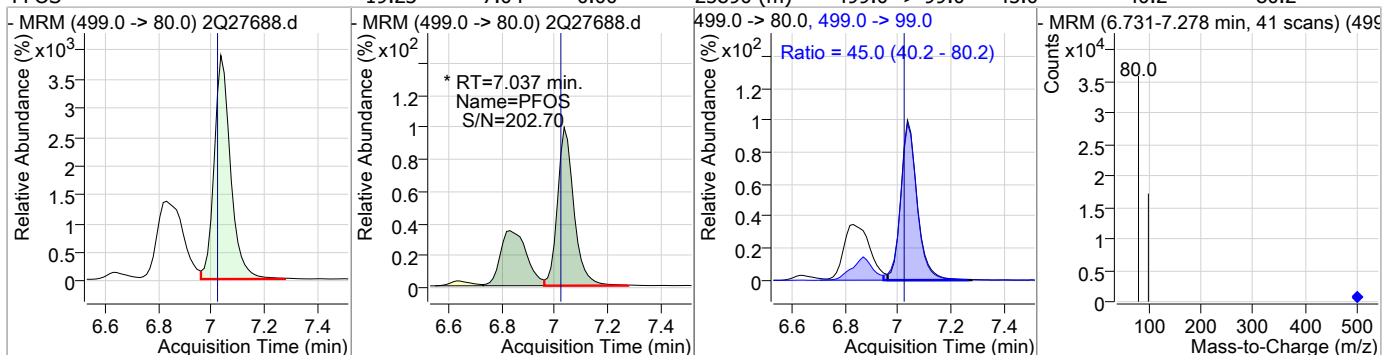
7.6.25

7

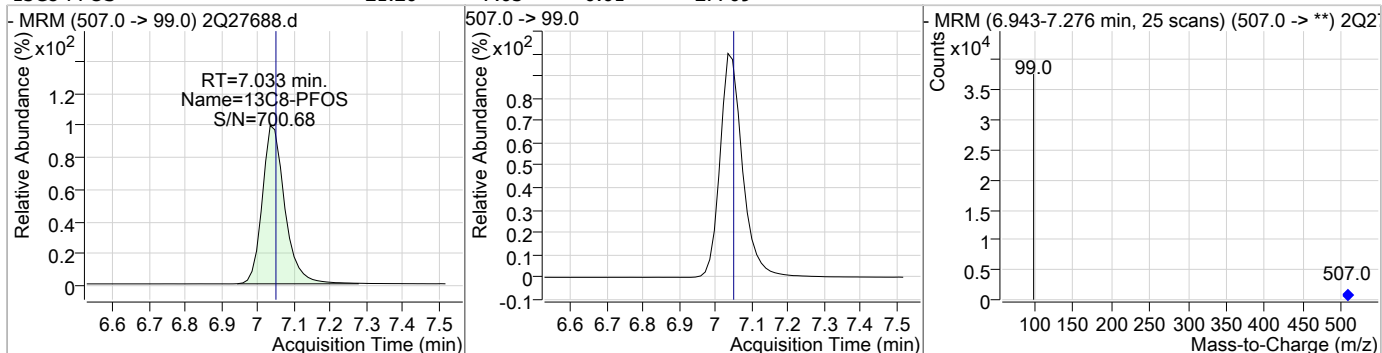


### Perfluorinated Compounds by LC/MS/MS

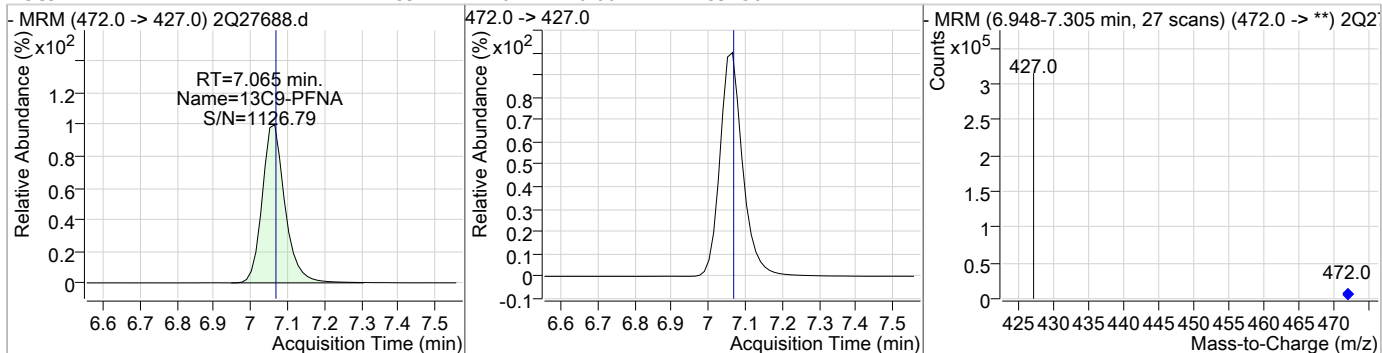
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.23 | 7.04 | 0.00     | 25890 (m) | 499.0 -> 99.0 | 45.0   | 40.2 | 80.2 |



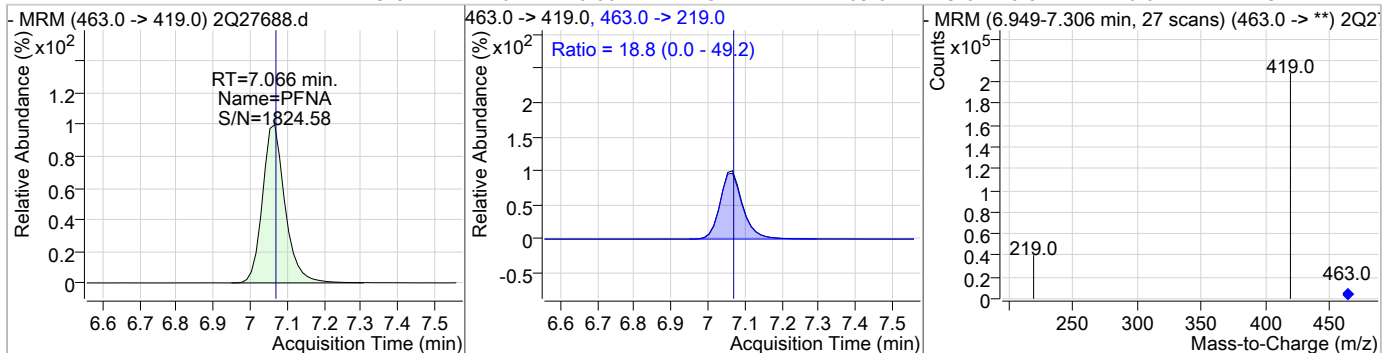
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 21.26 | 7.03 | -0.01    | 27709 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 22.59 | 7.07 | 0.00     | 239150 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 19.82 | 7.07 | 0.00     | 157212 | 463.0 -> 219.0 | 18.8   | 0.0  | 49.2 |



7.6.25  
7

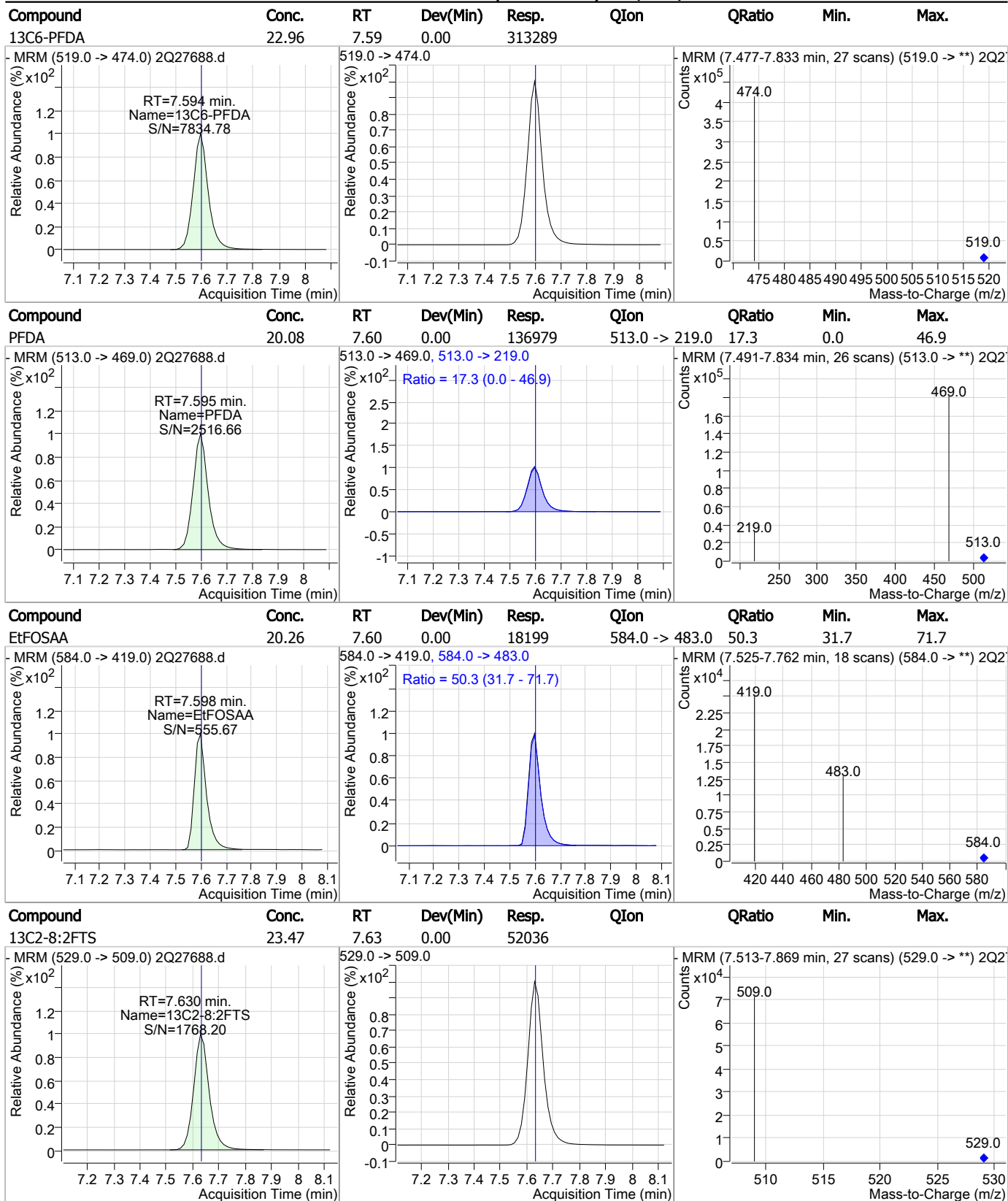
### Perfluorinated Compounds by LC/MS/MS

| Compound                        | Conc. | RT   | Dev(Min)                       | Resp. | QIon           | QRatio   | Min. | Max. |
|---------------------------------|-------|------|--------------------------------|-------|----------------|--|------|------|
| 9CI-PF3ONS                      | 18.99 | 7.32 | 0.00                           | 22382 |                |  |      |      |
| -MRM (531.0 -> 351.0) 2Q27688.d |       |      | 531.0 -> 351.0                 |       |                | -MRM (7.222-7.566 min, 26 scans) (531.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| d3-MeFOSAA                      | 22.05 | 7.45 | 0.00                           | 42263 |                |  |      |      |
| -MRM (573.0 -> 419.0) 2Q27688.d |       |      | 573.0 -> 419.0                 |       |                | -MRM (7.374-7.687 min, 24 scans) (573.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| MeFOSAA                         | 19.85 | 7.45 | -0.01                          | 21404 | 570.0 -> 512.0 | 23.5   | 2.3  | 42.3 |
| -MRM (570.0 -> 419.0) 2Q27688.d |       |      | 570.0 -> 419.0, 570.0 -> 512.0 |       |                | -MRM (7.384-7.688 min, 23 scans) (570.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| PFNS                            | 20.86 | 7.57 | 0.00                           | 19811 | 549.0 -> 99.0  | 49.1   | 28.9 | 68.9 |
| -MRM (549.0 -> 80.0) 2Q27688.d  |       |      | 549.0 -> 80.0, 549.0 -> 99.0   |       |                | -MRM (7.451-7.805 min, 27 scans) (549.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |

7.6.25

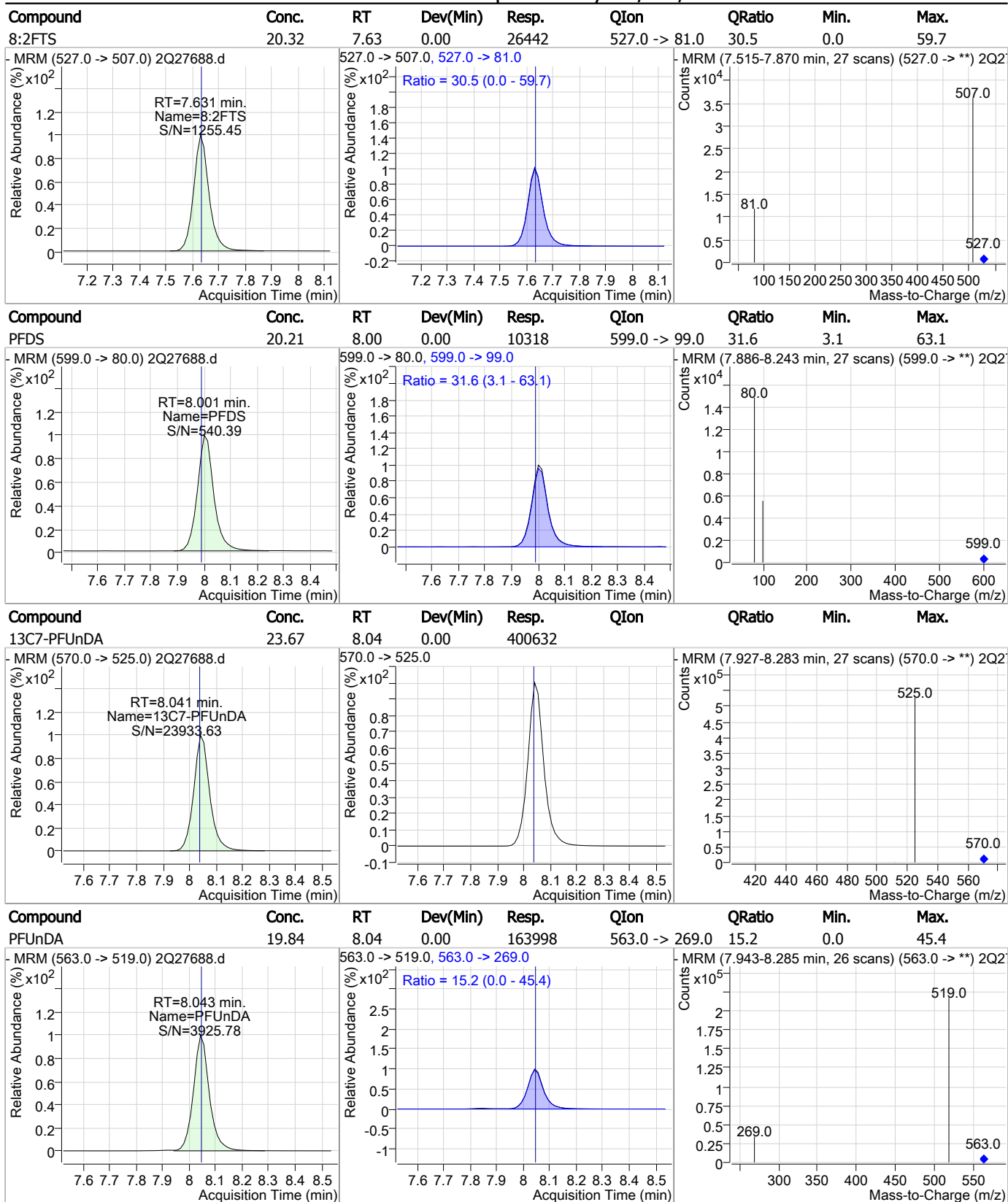
7

### Perfluorinated Compounds by LC/MS/MS



7.6.25  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.25

7

### Perfluorinated Compounds by LC/MS/MS

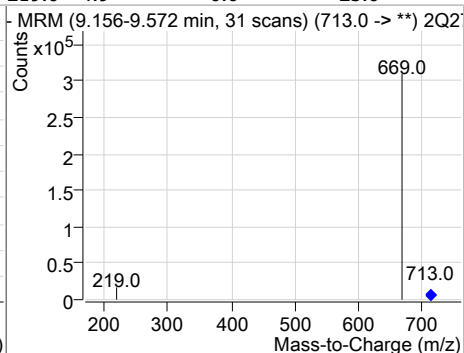
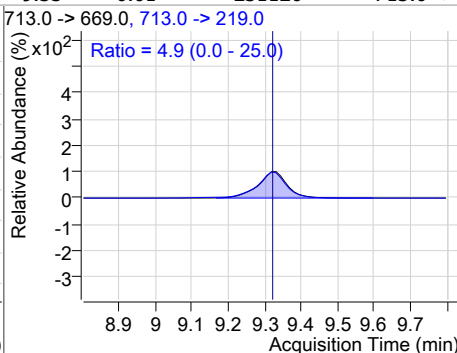
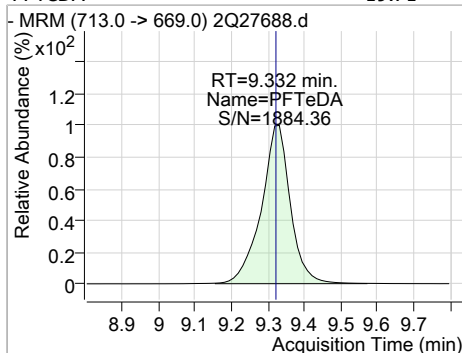
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 17.35 | 8.20 | 0.00     | 111371 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 24.86 | 8.47 | 0.00     | 467670 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 19.91 | 8.47 | 0.00     | 207505 | 613.0 -> 319.0 | 12.3   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 19.41 | 8.92 | 0.00     | 237021 | 663.0 -> 369.0 | 6.7    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.25

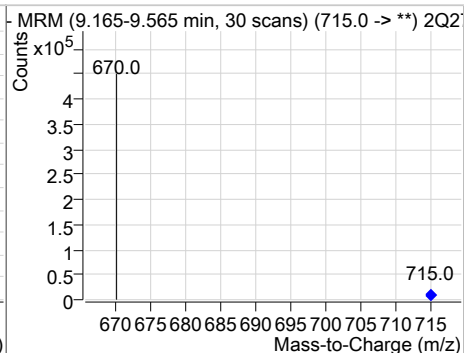
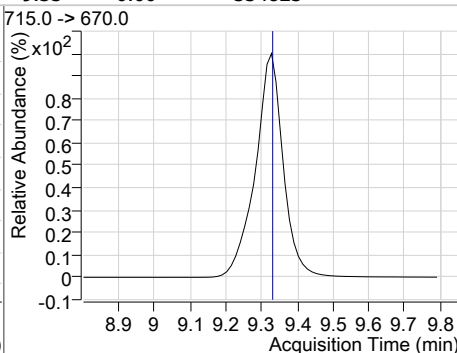
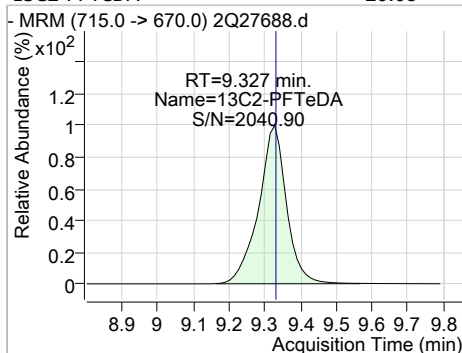
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.71 | 9.33 | 0.01     | 231126 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 26.08 | 9.33 | 0.00     | 334823 |      |        |      |      |



7.6.25

7

# Manual Integration Approval Summary

**Sample Number:** S2Q442-CC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27688.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 14:57      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.25.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27690.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 3:29:45 PM  
 Sample Name : CC442-1.0  
 Vial : Vial 3  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 335415            | 20.00 µg/L  | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 50410             | 20.00 µg/L  | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 135580            | 20.00 µg/L  | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 116096            | 20.00 µg/L  | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 167087            | 20.00 µg/L  | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 243500            | 20.00 µg/L  | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 251546            | 20.00 µg/L  | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 261149            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 342862            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 432657            | 20.00 µg/L  | 0.000    |
| M2-PFDoDA                          | 8.479                | 615.0 -> 570.0 | 489323            | 20.00 µg/L  | 0.013    |
| M2-PFTeDA                          | 9.327                | 715.0 -> 670.0 | 357691            | 20.00 µg/L  | 0.000    |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 97132             | 20.00 µg/L  | 0.000    |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 19954             | 20.00 µg/L  | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 22502             | 20.00 µg/L  | 0.000    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 28652             | 20.00 µg/L  | 0.000    |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 63743             | 20.00 µg/L  | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 72469             | 20.00 µg/L  | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 51378             | 20.00 µg/L  | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 45706             | 20.00 µg/L  | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 185159            | 100.00 µg/L | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 63718             | 21.43 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 107.1% |             |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 72419             | 22.56 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 112.8% |             |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 51419             | 23.19 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 115.9% |             |          |
| 13C2-PFDoDA                        | 8.479                | 615.0 -> 570.0 | 488909            | 25.99 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 130.0% |             |          |
| 13C2-PFTeDA                        | 9.327                | 715.0 -> 670.0 | 356595            | 27.78 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 138.9% |             |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 19919             | 21.85 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 109.2% |             |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 22481             | 22.05 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 110.3% |             |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 134839            | 22.49 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 112.4% |             |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 243384            | 23.53 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 117.7% |             |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 166795            | 22.95 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 114.8% |             |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 116327            | 22.88 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 114.4% |             |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 342714            | 25.11 µg/L  | 0.000    |

7.6.26  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 125.6% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 432513 | 25.56 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 127.8% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 97131  | 23.95 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 119.8% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 251411 | 24.10 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 120.5% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 28624  | 21.96 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.8% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 261055 | 24.66 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 123.3% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 45686  | 23.83 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 119.2% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 335615 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 50554  | 20.05 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.2% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 185159 | 115.79 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 115.8% |          |

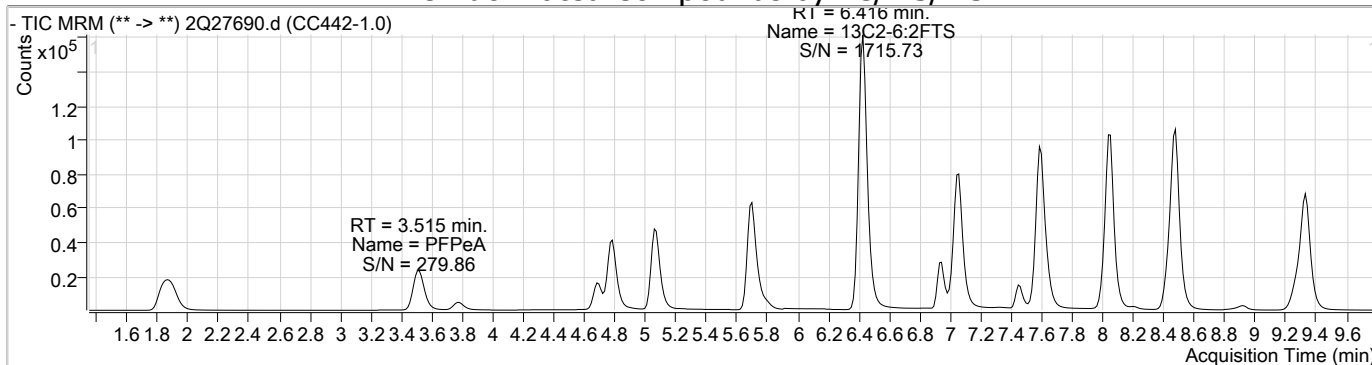
Target Compounds

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 1737  | 0.99 µg/L   | 97     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 1772  | 0.99 µg/L   | 98     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 1268  | 0.99 µg/L   | 95     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 943   | 0.96 µg/L   | 99     |
| FOSA             | 6.935 | 498.0 -> 78.0  | 2263  | 1.01 µg/L   | 100    |
| MeFOSAA          | 7.460 | 570.0 -> 419.0 | 1174  | 1.01 µg/L   | 86     |
| PFBA             | 1.860 | 213.0 -> 169.0 | 1322  | 0.99 µg/L   | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 1537  | 0.97 µg/L   | 98     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 7365  | 0.99 µg/L   | 98     |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 10644 | 0.98 µg/L   | 99     |
| PFDS             | 8.014 | 599.0 -> 80.0  | 467   | 0.89 µg/L   | 84     |
| PFHpA            | 5.695 | 363.0 -> 319.0 | 9813  | 0.93 µg/L   | 99     |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 1067  | 0.98 µg/L   | 93     |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 2789  | 0.97 µg/L   | 97     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 1194  | 0.96 µg/L   | m 96   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 8087  | 0.93 µg/L   | 99     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 1063  | 1.08 µg/L   | 100    |
| PFOA             | 6.437 | 413.0 -> 369.0 | 6334  | 0.93 µg/L   | 98     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 1447  | 1.04 µg/L   | m 79   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 4893  | 0.97 µg/L   | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 1055  | 1.04 µg/L   | 98     |
| PFTeDA           | 9.332 | 713.0 -> 669.0 | 11798 | 0.94 µg/L   | 99     |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 11692 | 0.90 µg/L   | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 8360  | 0.94 µg/L   | 100    |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 5749  | 0.86 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 1252  | 0.99 µg/L   | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 11131 | 0.91 µg/L   | 100    |
| HFPO-DA          | 5.073 | 329.0 -> 169.0 | 10513 | 4.78 µg/L   | 97     |

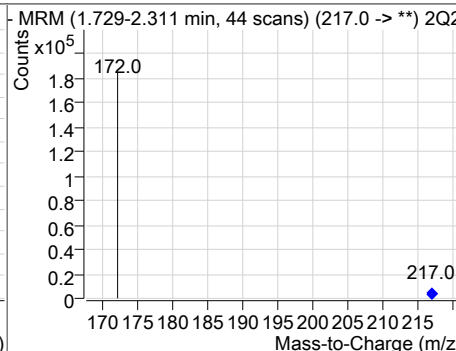
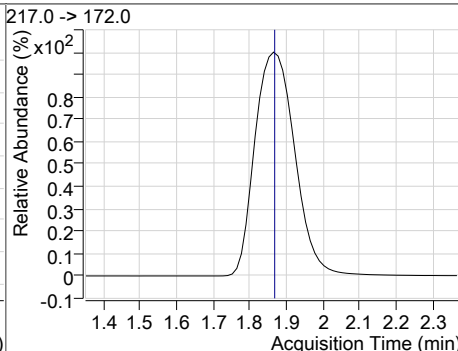
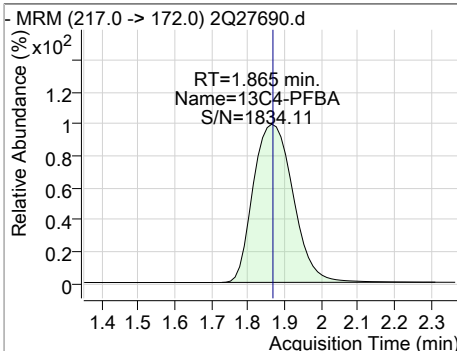
# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.26  
7

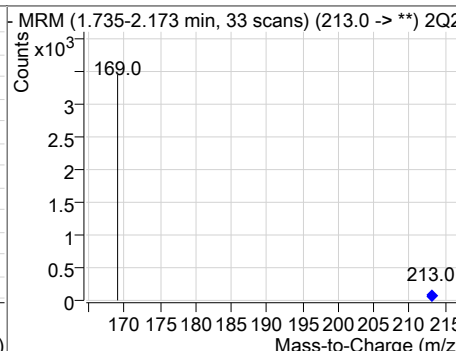
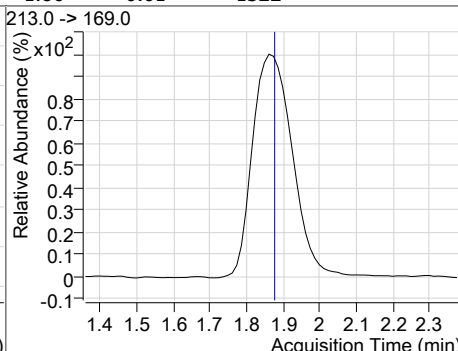
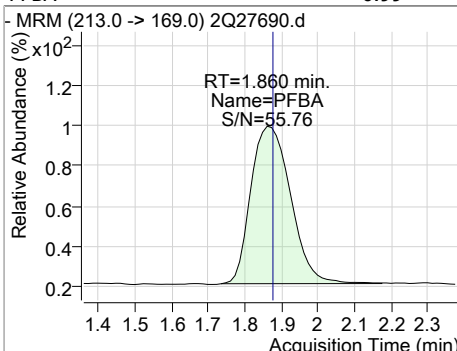
### Perfluorinated Compounds by LC/MS/MS



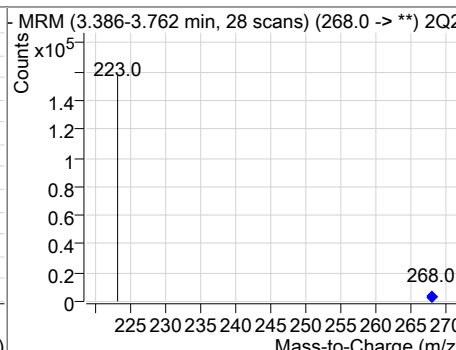
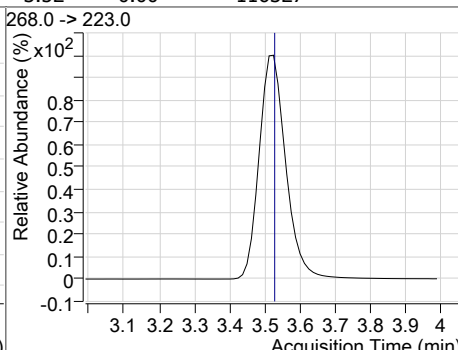
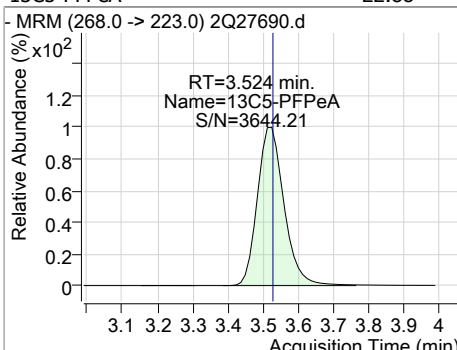
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 22.49 | 1.86 | 0.00     | 134839 |      |        |      |      |



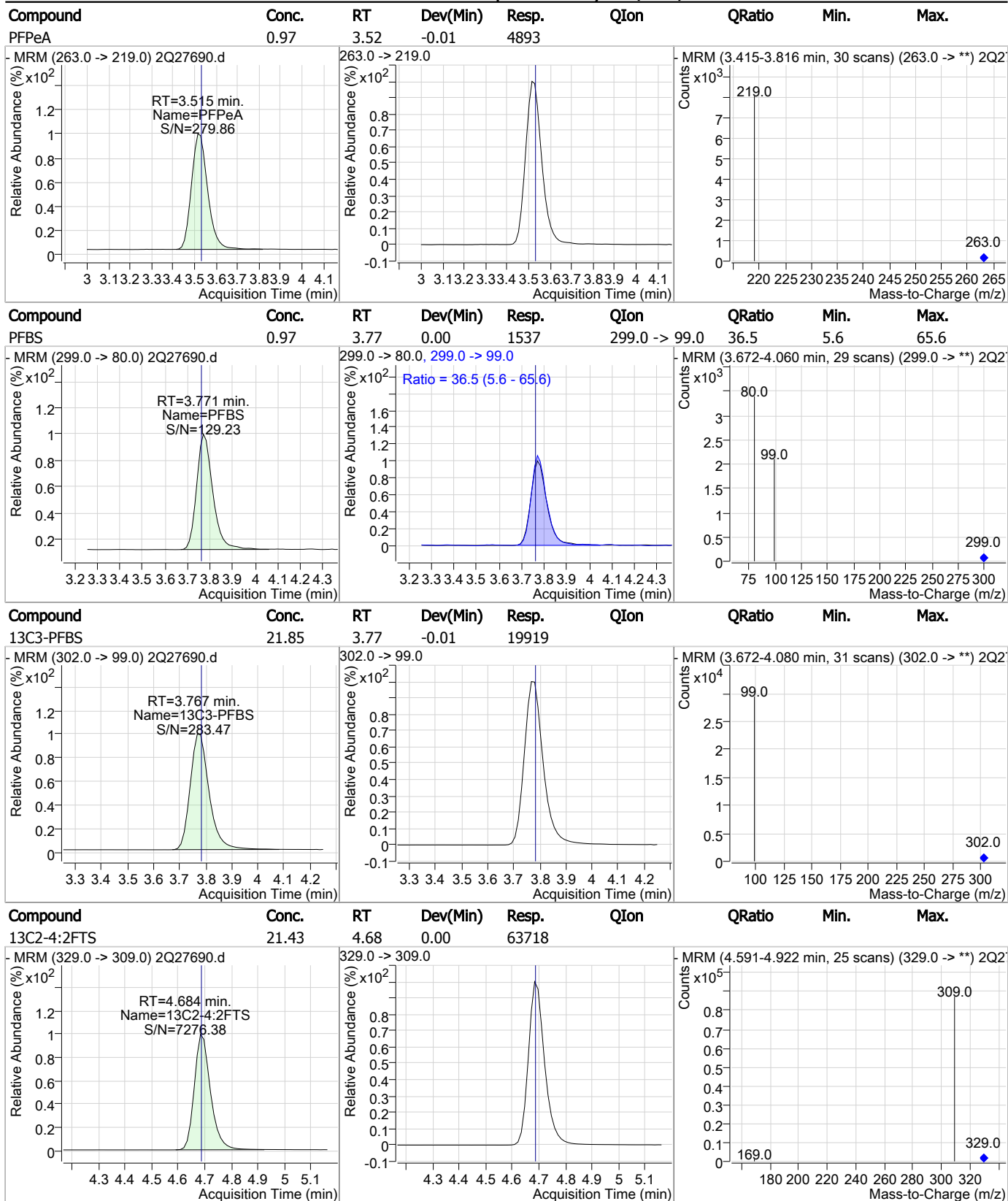
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 0.99  | 1.86 | -0.01    | 1322  |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 22.88 | 3.52 | 0.00     | 116327 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS



7.6.26  
7



### Perfluorinated Compounds by LC/MS/MS

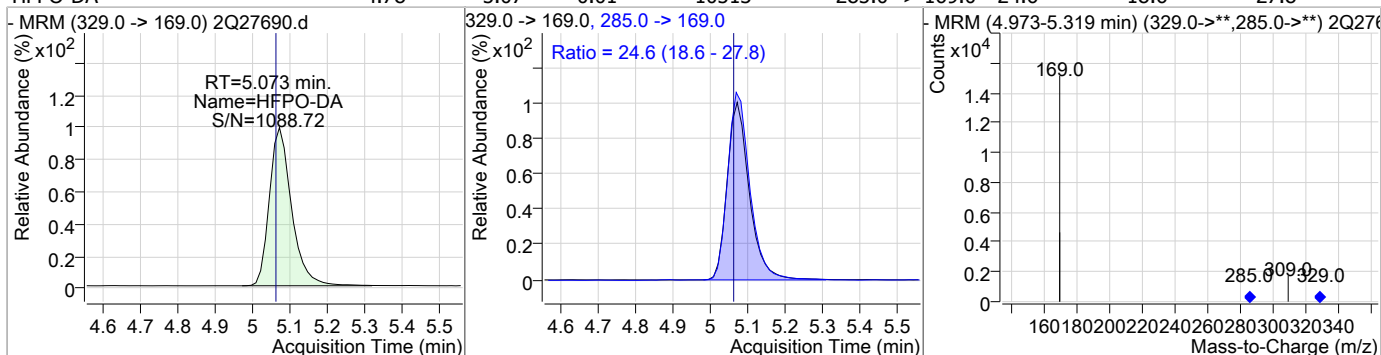
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 4:2FTS     | 0.99  | 4.69 | 0.00     | 1737   | 327.0 -> 81.0  | 40.4   | 18.6 | 58.6 |
|            |       |      |          |        |                |        |      |      |
| 13C5-PFHxA | 22.95 | 4.79 | 0.00     | 166795 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFHxA      | 0.97  | 4.79 | 0.00     | 2789   | 313.0 -> 119.0 | 12.5   | 0.0  | 31.5 |
|            |       |      |          |        |                |        |      |      |
| PFPeS      | 1.04  | 4.91 | 0.01     | 1055   | 349.0 -> 99.0  | 36.3   | 5.1  | 65.1 |
|            |       |      |          |        |                |        |      |      |

7.6.26

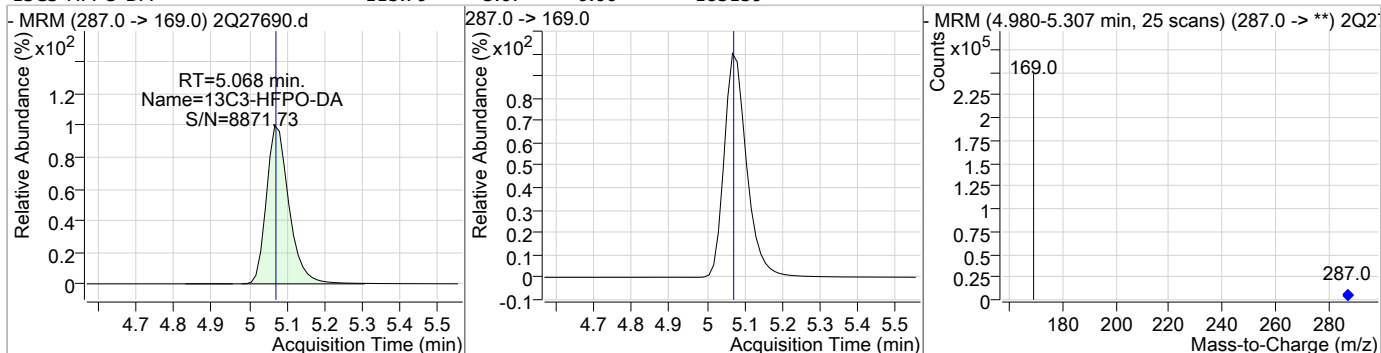
7

### Perfluorinated Compounds by LC/MS/MS

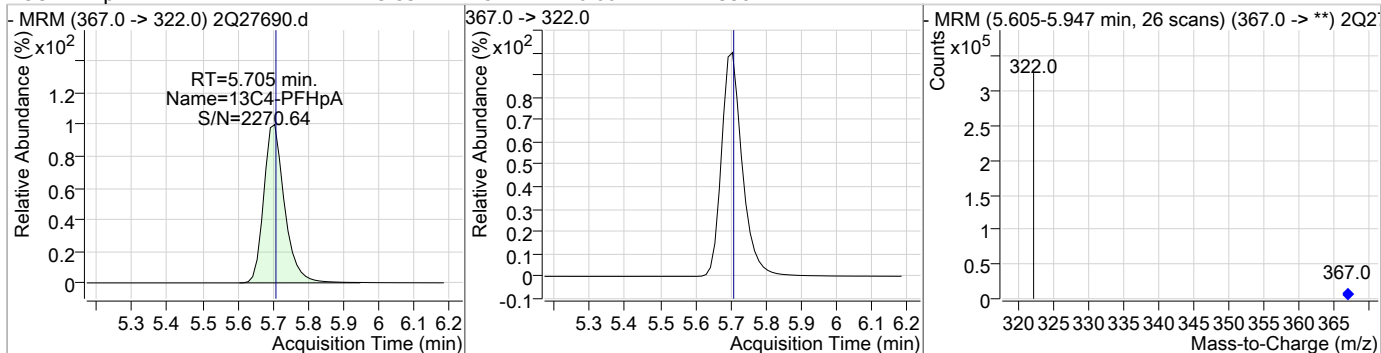
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 4.78  | 5.07 | 0.01     | 10513 | 285.0 -> 169.0 | 24.6   | 18.6 | 27.8 |



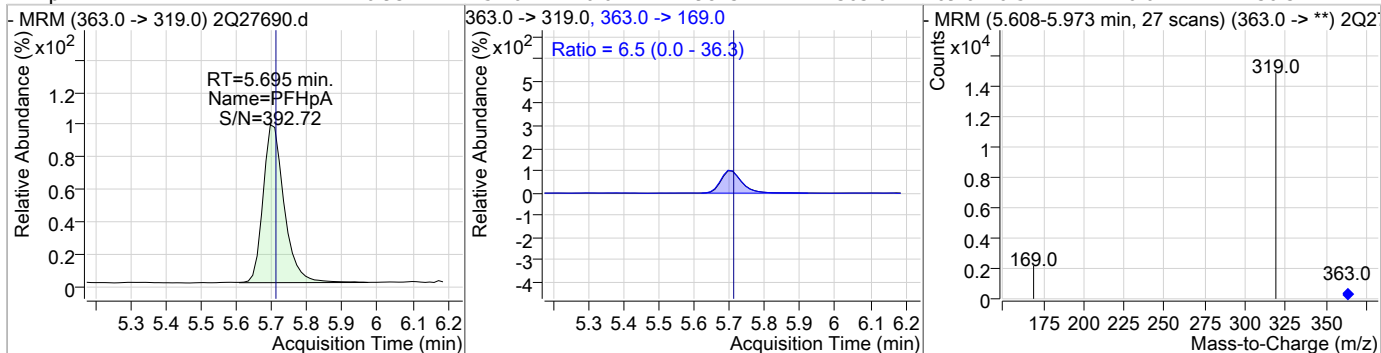
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 115.79 | 5.07 | 0.00     | 185159 |      |        |      |      |



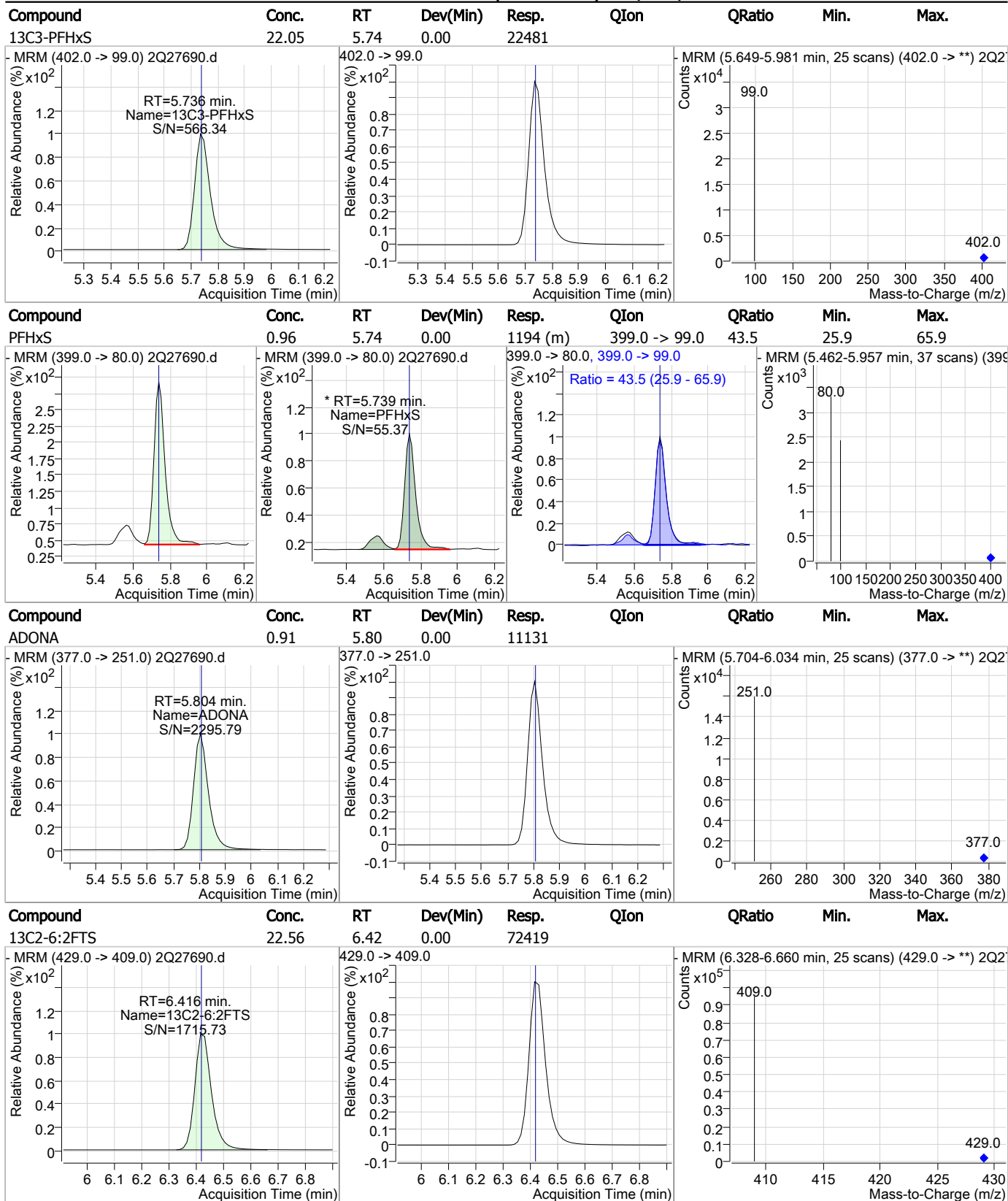
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 23.53 | 5.71 | 0.00     | 243384 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 0.93  | 5.70 | -0.01    | 9813  | 363.0 -> 169.0 | 6.5    | 0.0  | 36.3 |



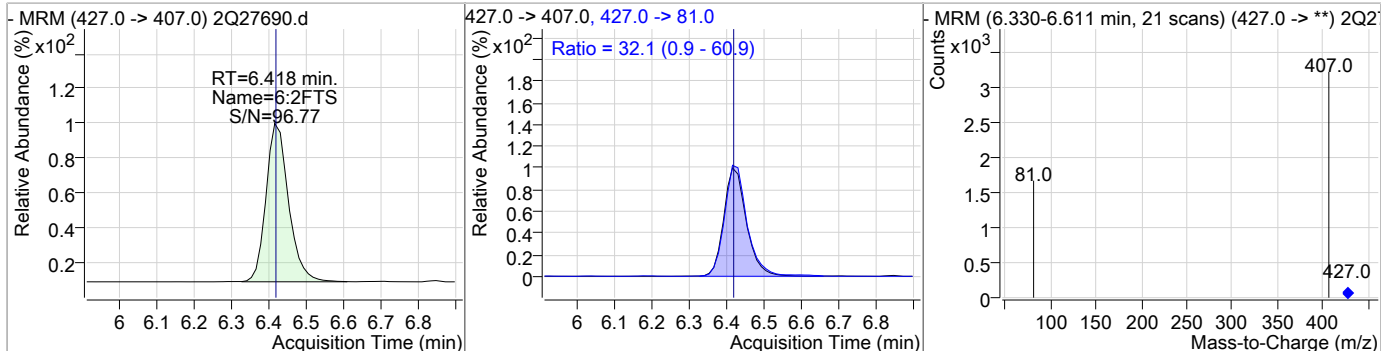
### Perfluorinated Compounds by LC/MS/MS



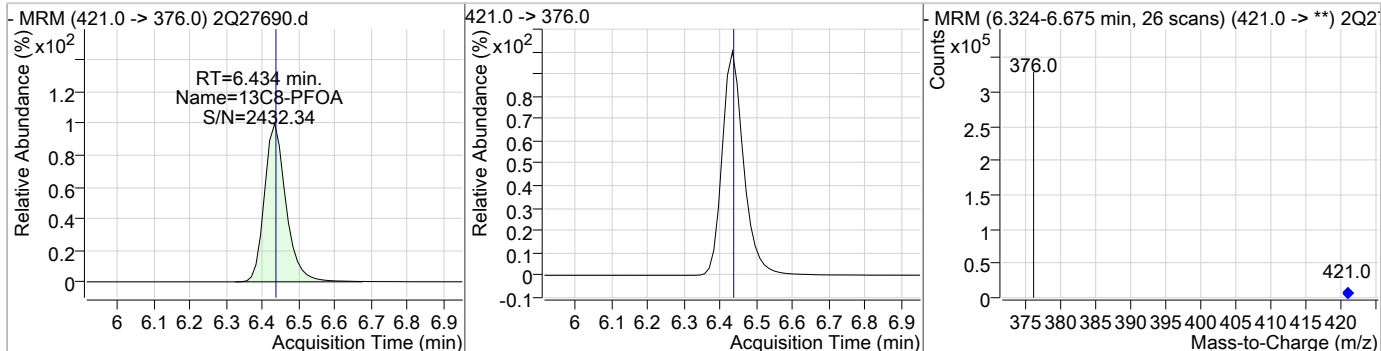
7.6.26  
7

### Perfluorinated Compounds by LC/MS/MS

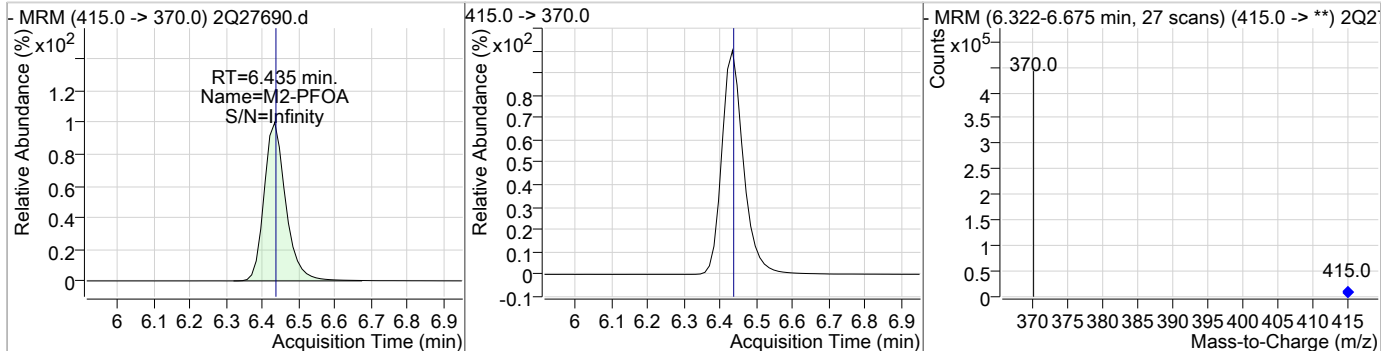
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 0.99  | 6.42 | 0.00     | 1772  | 427.0 -> 81.0 | 32.1   | 0.9  | 60.9 |



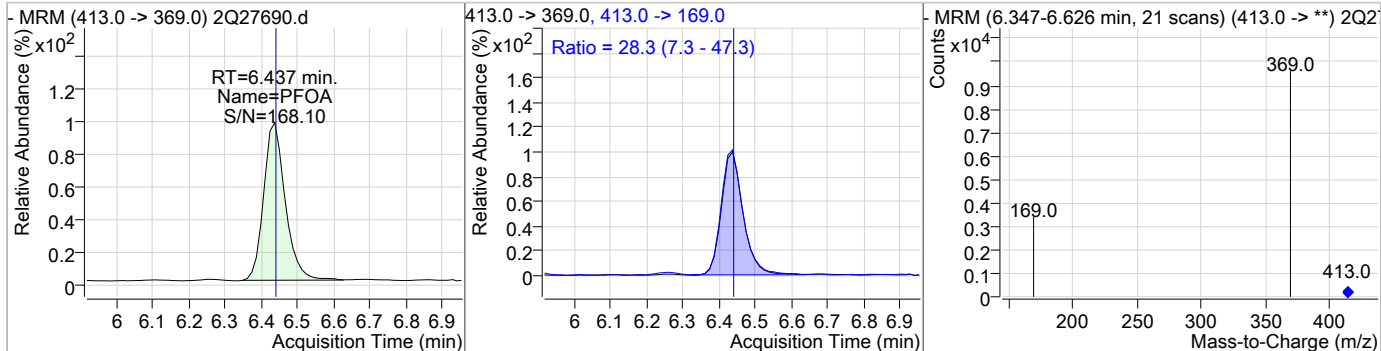
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 24.10 | 6.43 | 0.00     | 251411 |      |        |      |      |



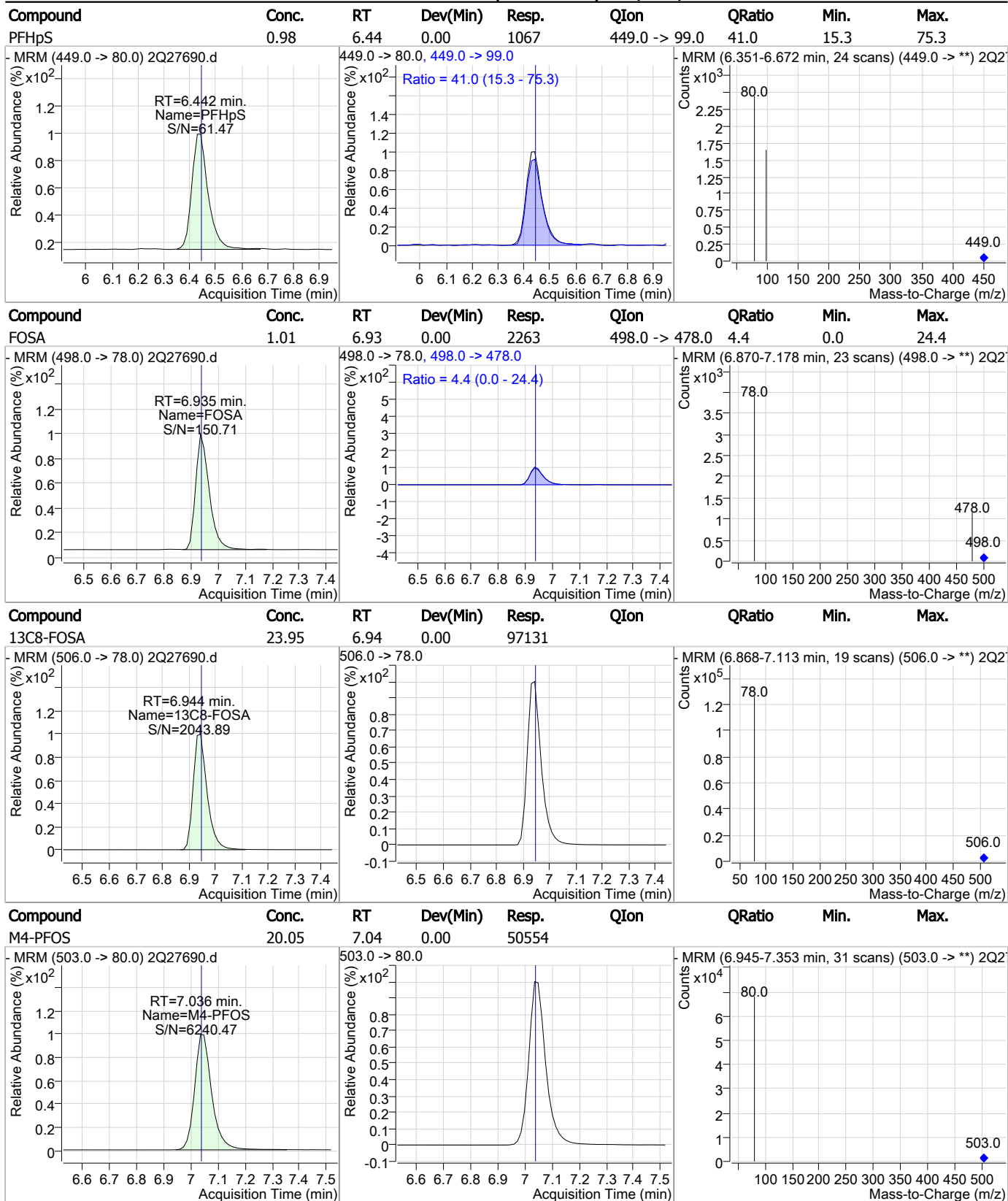
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.99 | 6.44 | 0.00     | 335615 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 0.93  | 6.44 | 0.00     | 6334  | 413.0 -> 169.0 | 28.3   | 7.3  | 47.3 |



### Perfluorinated Compounds by LC/MS/MS

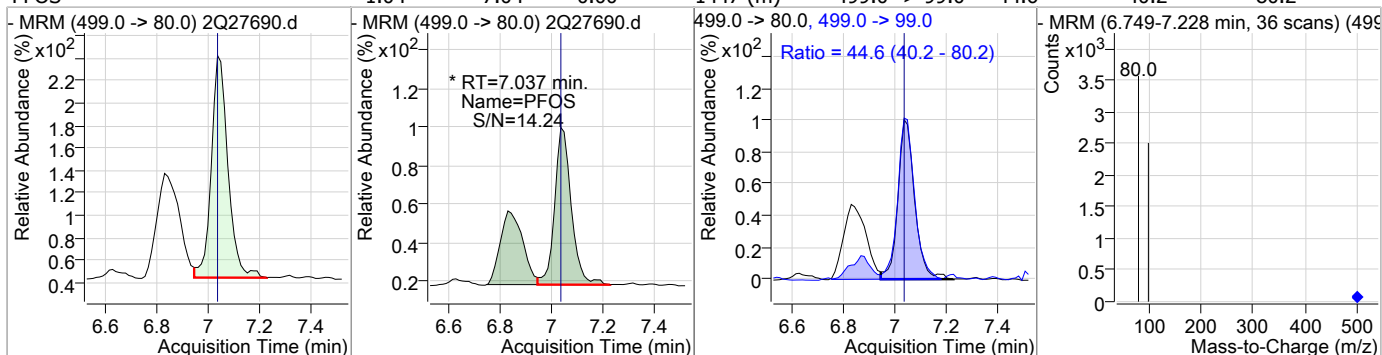


7.6.26  
7

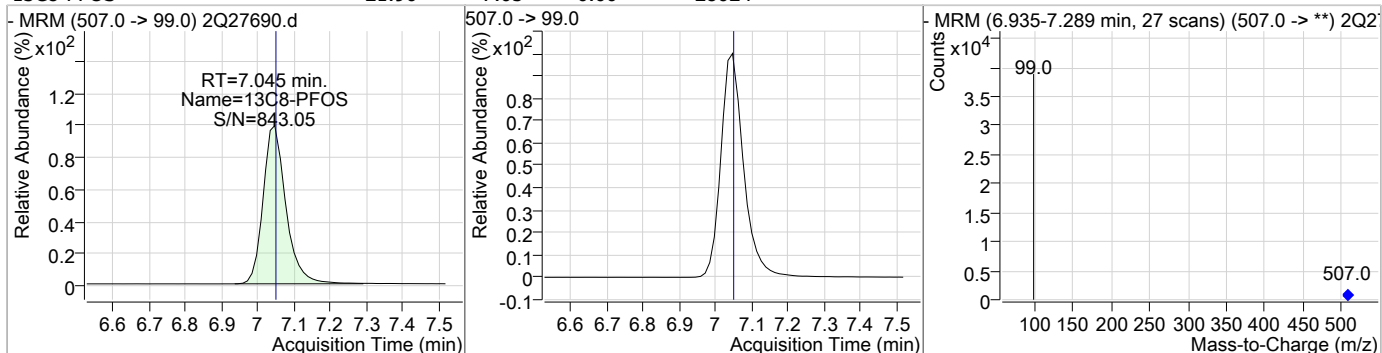


### Perfluorinated Compounds by LC/MS/MS

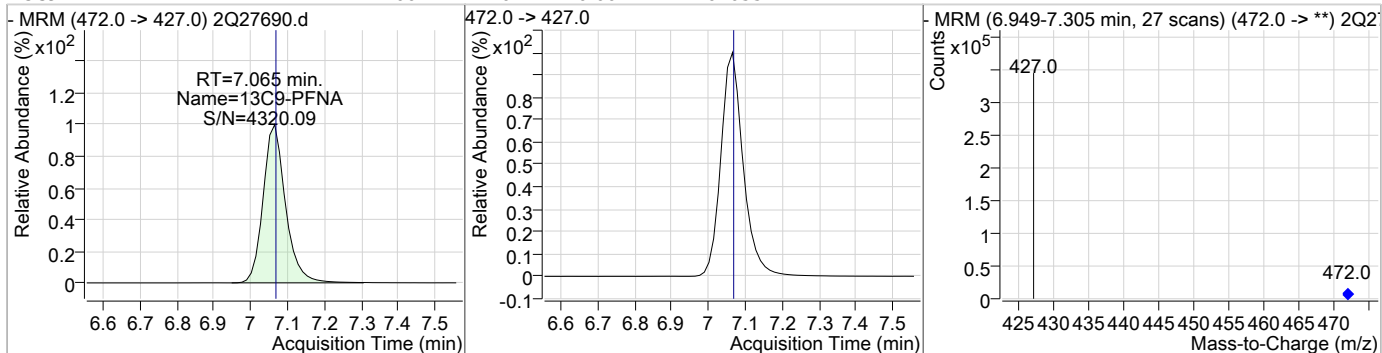
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFOS     | 1.04  | 7.04 | 0.00     | 1447 (m) | 499.0 -> 99.0 | 44.6   | 40.2 | 80.2 |



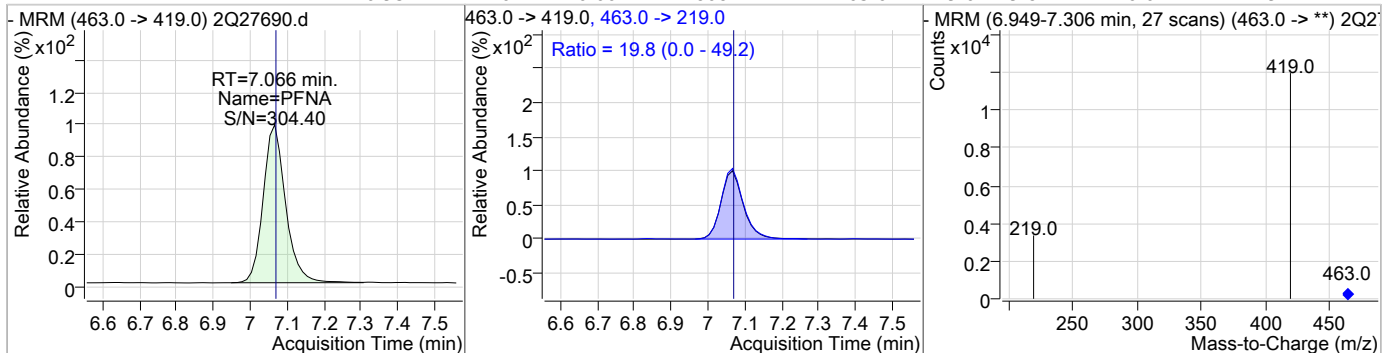
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 21.96 | 7.05 | 0.00     | 28624 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 24.66 | 7.07 | 0.00     | 261055 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFNA     | 0.93  | 7.07 | 0.00     | 8087  | 463.0 -> 219.0 | 19.8   | 0.0  | 49.2 |



7.6.26  
7

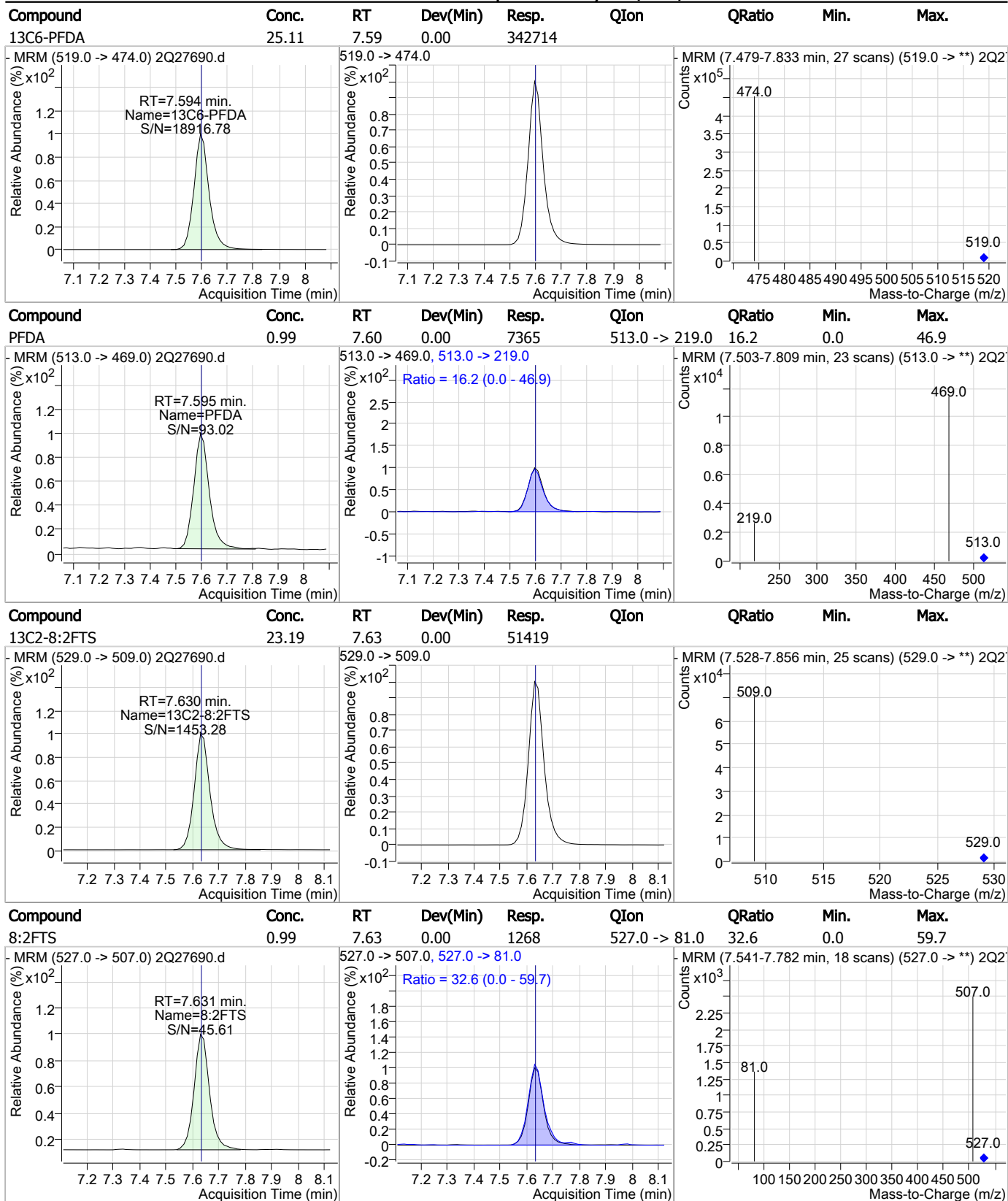
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 0.99  | 7.32 | 0.00     | 1252  |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 23.83 | 7.45 | 0.00     | 45686 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 1.01  | 7.46 | 0.00     | 1174  | 570.0 -> 512.0 | 29.1   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 1.08  | 7.57 | 0.00     | 1063  | 549.0 -> 99.0  | 49.1   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

7.6.26

7

### Perfluorinated Compounds by LC/MS/MS

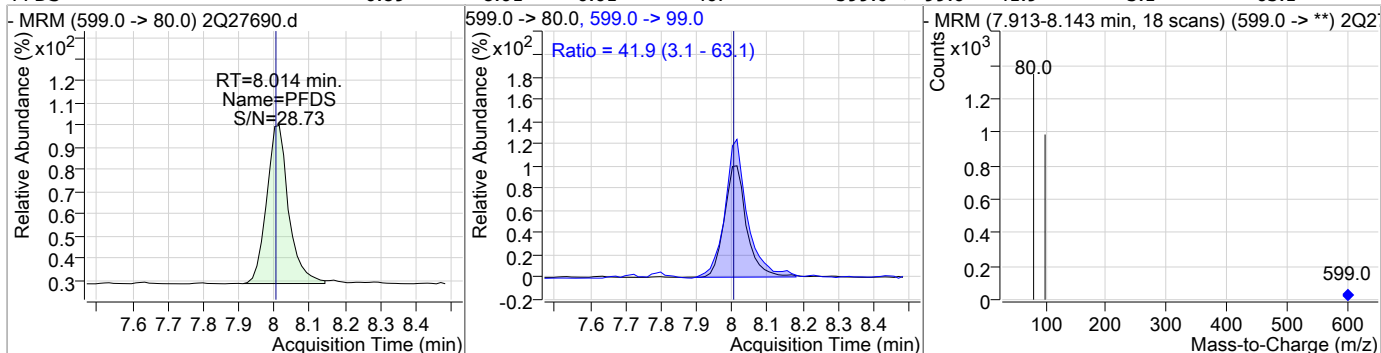


7.6.26

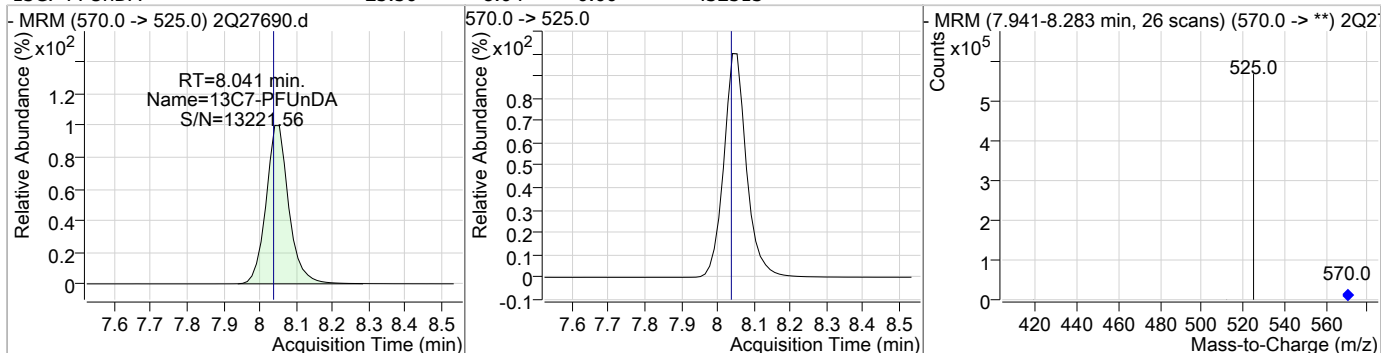
7

### Perfluorinated Compounds by LC/MS/MS

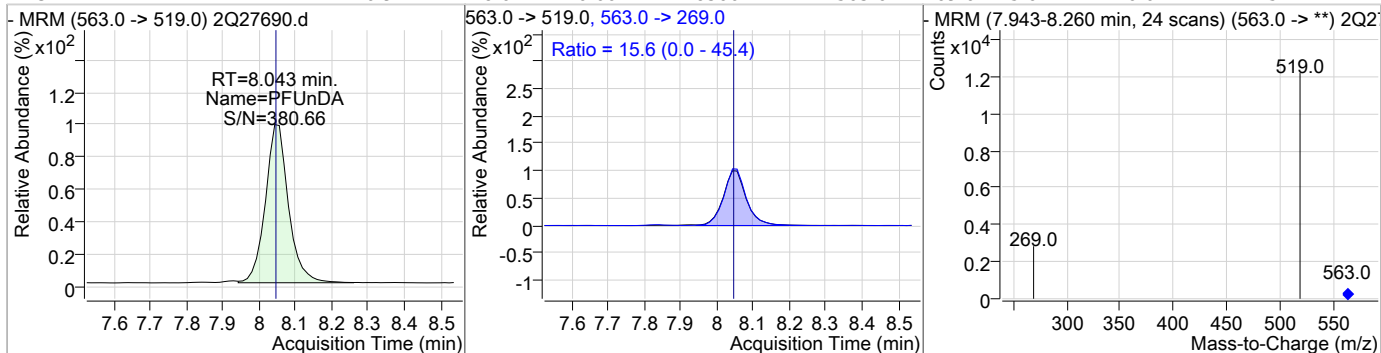
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 0.89  | 8.01 | 0.01     | 467   | 599.0 -> 99.0 | 41.9   | 3.1  | 63.1 |



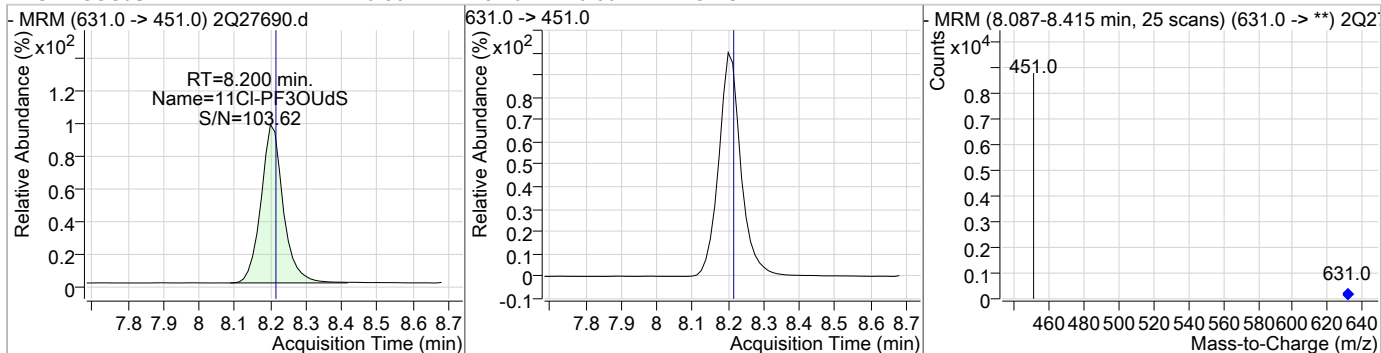
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 25.56 | 8.04 | 0.00     | 432513 |      |        |      |      |



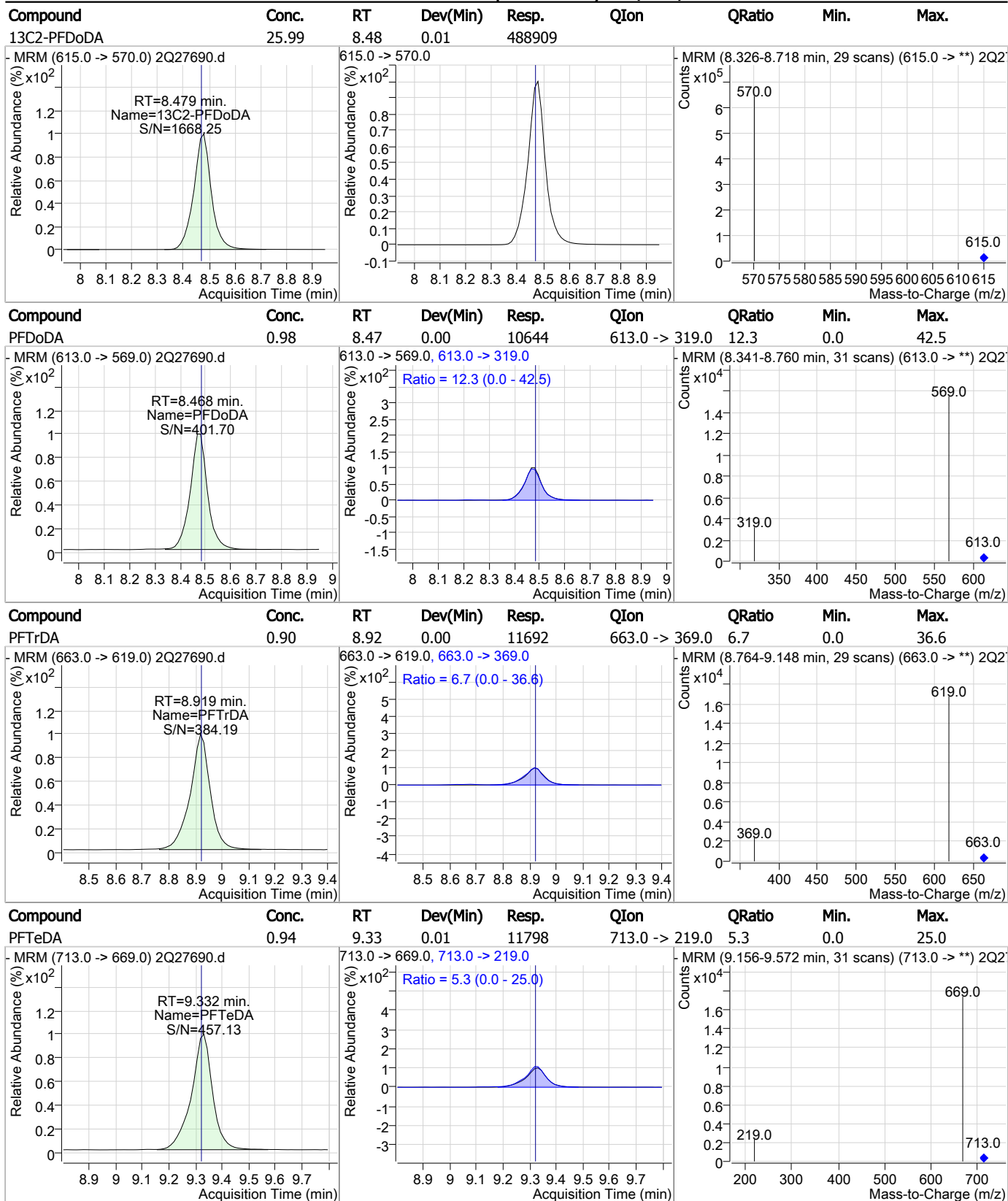
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFUnDA   | 0.94  | 8.04 | 0.00     | 8360  | 563.0 -> 269.0 | 15.6   | 0.0  | 45.4 |



| Compound     | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|-------|------|--------|------|------|
| 11Cl-PF3OUdS | 0.86  | 8.20 | 0.00     | 5749  |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS

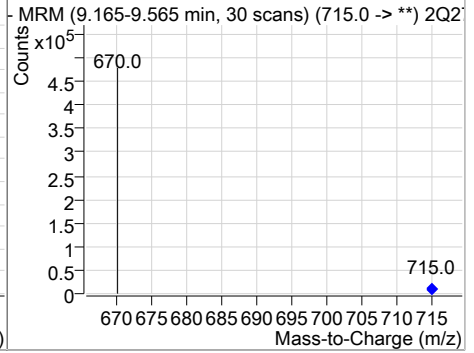
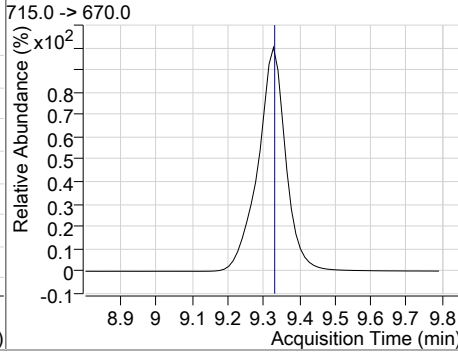
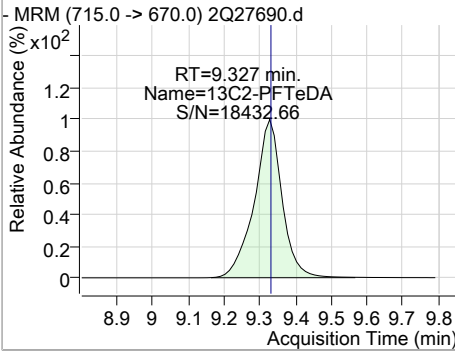


7.6.26

7

Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 27.78 | 9.33 | 0.00     | 356595 |      |        |      |      |



7.6.26  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q442-CC442  
**Lab FileID:** 2Q27690.D  
**Injection Time:** 03/18/19 15:29

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.26.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27701.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 6:22:45 PM  
 Sample Name : CC442-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT    | QIon                 | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|-------|----------------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |       |                      |        |                   |          |
| 13C2-PFOA                          | 6.435 | 415.0 -> 370.0       | 315380 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.036 | 503.0 -> 80.0        | 47865  | 20.00 µg/L        | 0.000    |
| M4-PFBA                            | 1.865 | 217.0 -> 172.0       | 132200 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.511 | 268.0 -> 223.0       | 114555 | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.789 | 318.0 -> 273.0       | 162450 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705 | 367.0 -> 322.0       | 235875 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434 | 421.0 -> 376.0       | 239280 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.052 | 472.0 -> 427.0       | 247899 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.594 | 519.0 -> 474.0       | 329924 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041 | 570.0 -> 525.0       | 412050 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466 | 615.0 -> 570.0       | 470910 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.315 | 715.0 -> 670.0       | 336611 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 6.932 | 506.0 -> 78.0        | 92288  | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.767 | 302.0 -> 99.0        | 19225  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.736 | 402.0 -> 99.0        | 21699  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.033 | 507.0 -> 99.0        | 27938  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.684 | 329.0 -> 309.0       | 65857  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.416 | 429.0 -> 409.0       | 71603  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.630 | 529.0 -> 509.0       | 52105  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447 | 573.0 -> 419.0       | 43296  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068 | 287.0 -> 169.0       | 169718 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |       |                      |        |                   |          |
| 13C2-4:2FTS                        | 4.684 | 329.0 -> 309.0       | 65693  | 22.09 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 110.5% |          |
| 13C2-6:2FTS                        | 6.416 | 429.0 -> 409.0       | 71724  | 22.35 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 111.7% |          |
| 13C2-8:2FTS                        | 7.630 | 529.0 -> 509.0       | 52115  | 23.50 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 117.5% |          |
| 13C2-PFDoDA                        | 8.466 | 615.0 -> 570.0       | 470283 | 25.00 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 125.0% |          |
| 13C2-PFTeDA                        | 9.315 | 715.0 -> 670.0       | 335385 | 26.12 µg/L        | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 130.6% |          |
| 13C3-PFBS                          | 3.767 | 302.0 -> 99.0        | 19251  | 21.11 µg/L        | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 105.6% |          |
| 13C3-PFHxS                         | 5.736 | 402.0 -> 99.0        | 21643  | 21.23 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 106.2% |          |
| 13C4-PFBA                          | 1.865 | 217.0 -> 172.0       | 131650 | 21.95 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 109.8% |          |
| 13C4-PFHpA                         | 5.705 | 367.0 -> 322.0       | 235479 | 22.77 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 113.8% |          |
| 13C5-PFHxA                         | 4.789 | 318.0 -> 273.0       | 162301 | 22.34 µg/L        | 0.000    |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 111.7% |          |
| 13C5-PFPeA                         | 3.511 | 268.0 -> 223.0       | 114550 | 22.53 µg/L        | -0.013   |
| Spiked Amount: 20.00               |       | Range: 50.0 - 150.0% |        | Recovery = 112.7% |          |
| 13C6-PFDA                          | 7.594 | 519.0 -> 474.0       | 329721 | 24.16 µg/L        | 0.000    |

7.6.27  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 120.8% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 411639 | 24.32 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 121.6% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 92202  | 22.74 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 113.7% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 239204 | 22.93 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 114.7% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 27924  | 21.42 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.1% |          |
| 13C9-PFNA             | 7.052                | 472.0 -> 427.0 | 247899 | 23.41 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 117.1% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 43289  | 22.58 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 112.9% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 315586 | 19.99 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 47974  | 20.04 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.2% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 169718 | 106.14 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 106.1% |          |

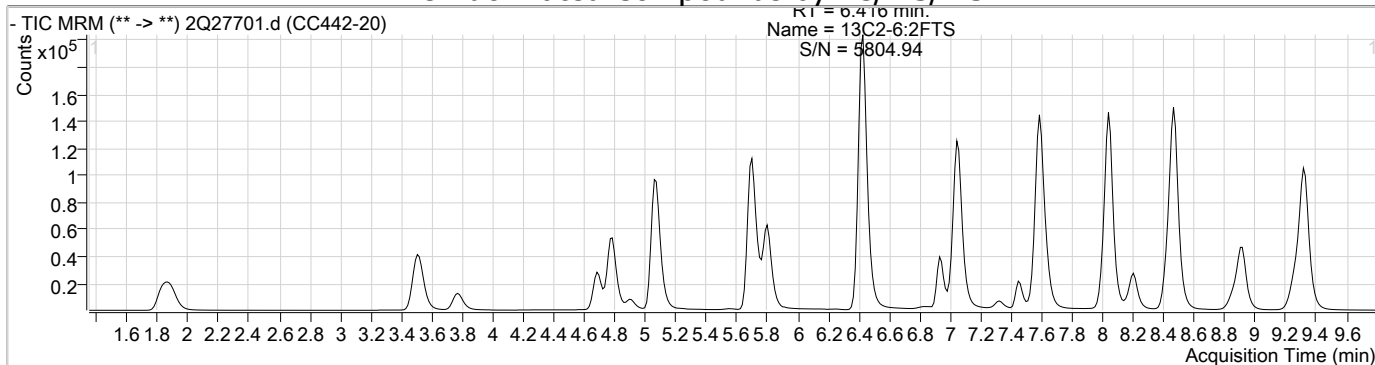
Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 36693  | 20.22 µg/L  | 99     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 35807  | 20.33 µg/L  | 99     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 26619  | 20.43 µg/L  | 99     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 18927  | 20.57 µg/L  | 97     |
| FOSA             | 6.935 | 498.0 -> 78.0  | 42653  | 20.07 µg/L  | 100    |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 21984  | 19.90 µg/L  | 98     |
| PFBA             | 1.860 | 213.0 -> 169.0 | 25308  | 19.38 µg/L  | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 30591  | 20.04 µg/L  | 99     |
| PFDA             | 7.595 | 513.0 -> 469.0 | 141738 | 19.74 µg/L  | 100    |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 209544 | 19.99 µg/L  | 99     |
| PFDS             | 8.001 | 599.0 -> 80.0  | 10193  | 19.81 µg/L  | 97     |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 200296 | 19.70 µg/L  | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 21721  | 20.63 µg/L  | 97     |
| PFHxA            | 4.791 | 313.0 -> 269.0 | 54998  | 19.66 µg/L  | 99     |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 23723  | 19.78 µg/L  | m 96   |
| PFNA             | 7.053 | 463.0 -> 419.0 | 161666 | 19.66 µg/L  | 99     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 20278  | 21.18 µg/L  | 100    |
| PFOA             | 6.437 | 413.0 -> 369.0 | 125394 | 19.40 µg/L  | 98     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 26330  | 19.41 µg/L  | m 80   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 97815  | 19.73 µg/L  | 100    |
| PFPeS            | 4.908 | 349.0 -> 80.0  | 20305  | 20.78 µg/L  | 96     |
| PFTeDA           | 9.319 | 713.0 -> 669.0 | 228501 | 19.41 µg/L  | 100    |
| PFTTrDA          | 8.919 | 663.0 -> 619.0 | 235558 | 19.21 µg/L  | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 167399 | 19.69 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 112723 | 17.47 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 22591  | 18.22 µg/L  | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 231118 | 19.51 µg/L  | 100    |
| HFPO-DA          | 5.073 | 329.0 -> 169.0 | 200690 | 99.54 µg/L  | 99     |

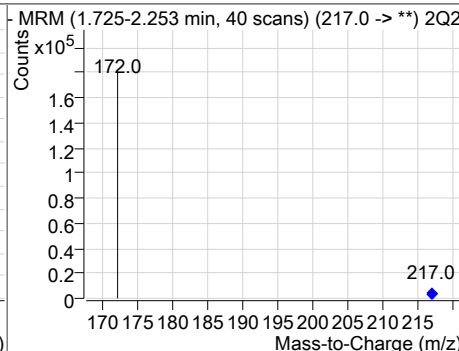
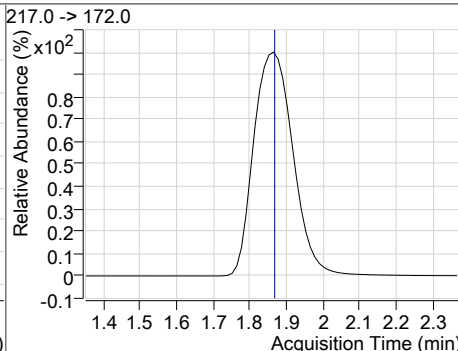
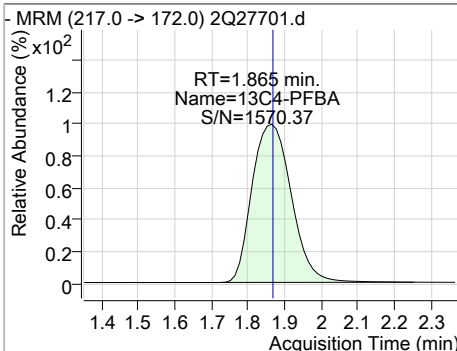
# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.27  
7

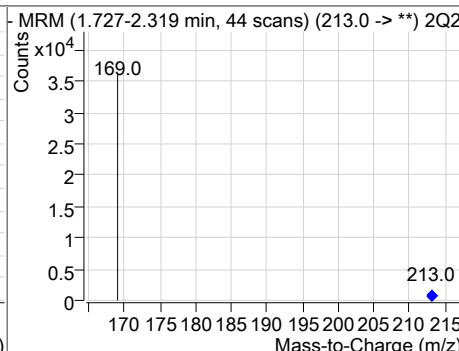
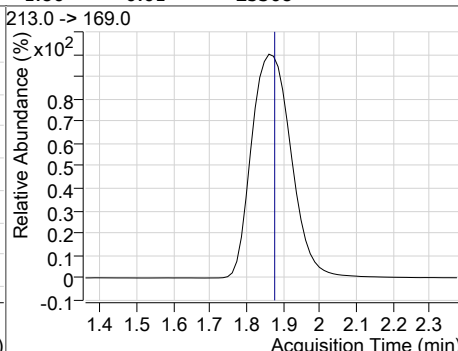
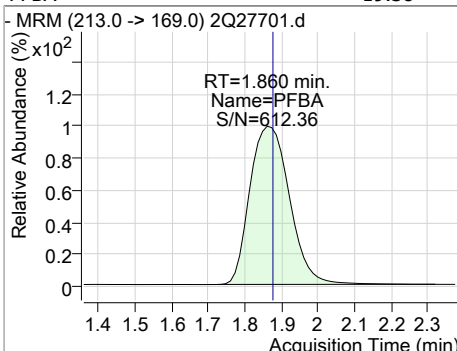
### Perfluorinated Compounds by LC/MS/MS



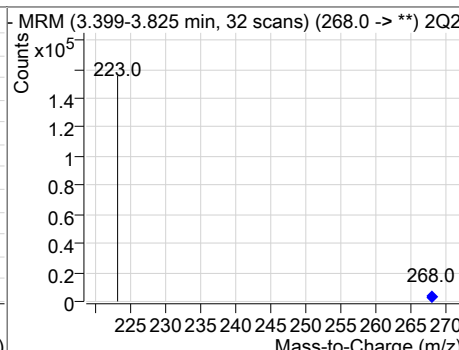
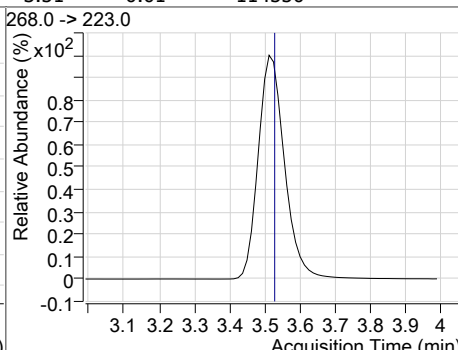
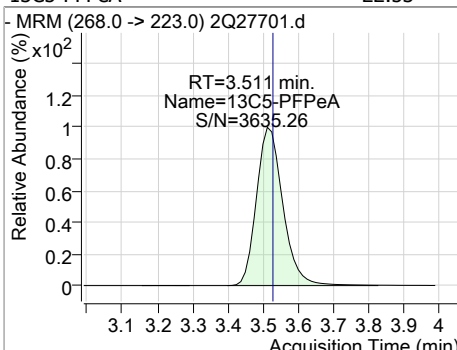
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 21.95 | 1.86 | 0.00     | 131650 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 19.38 | 1.86 | -0.01    | 25308 |      |        |      |      |

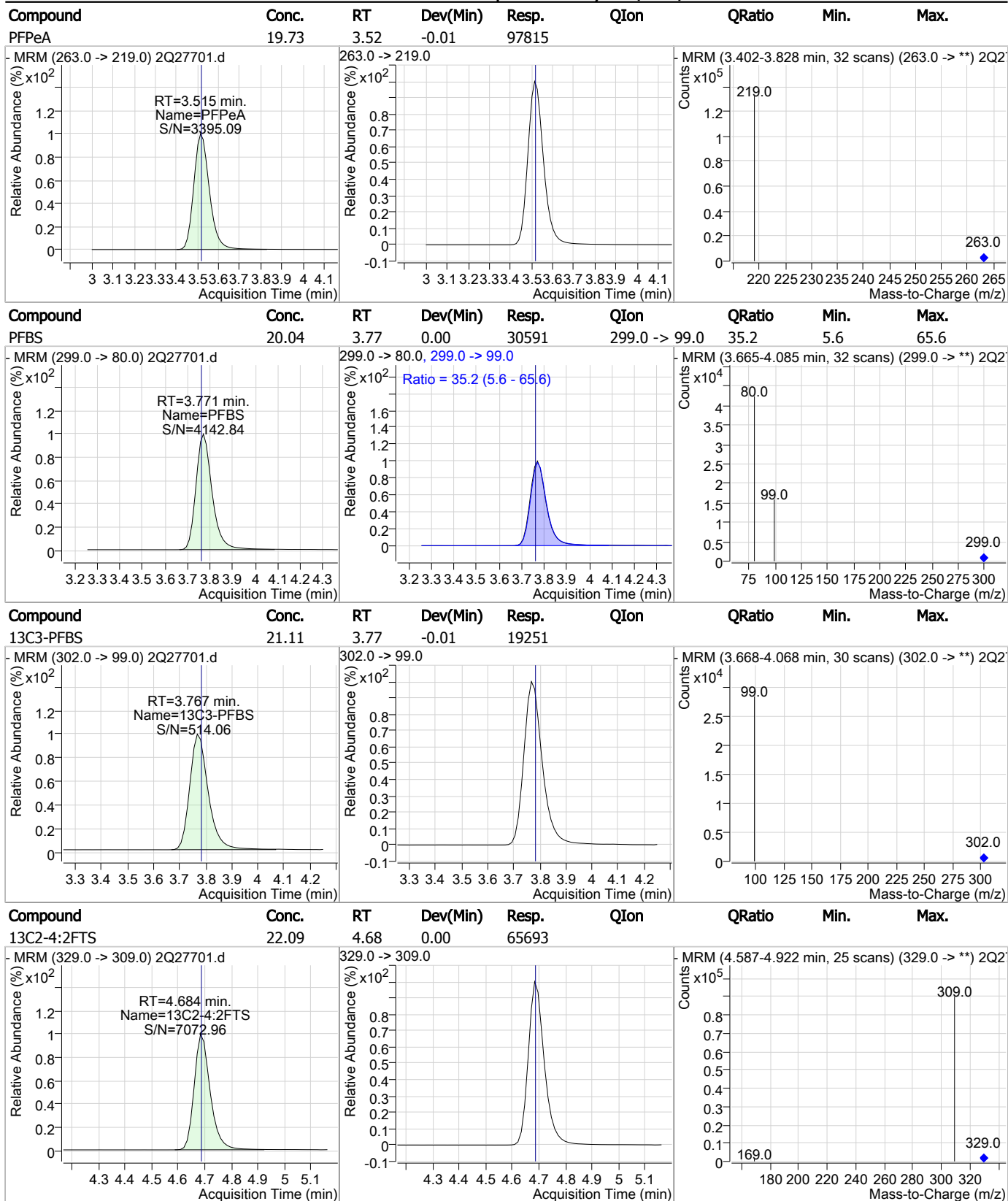


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 22.53 | 3.51 | -0.01    | 114550 |      |        |      |      |



7.6.27  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.27  
7

### Perfluorinated Compounds by LC/MS/MS

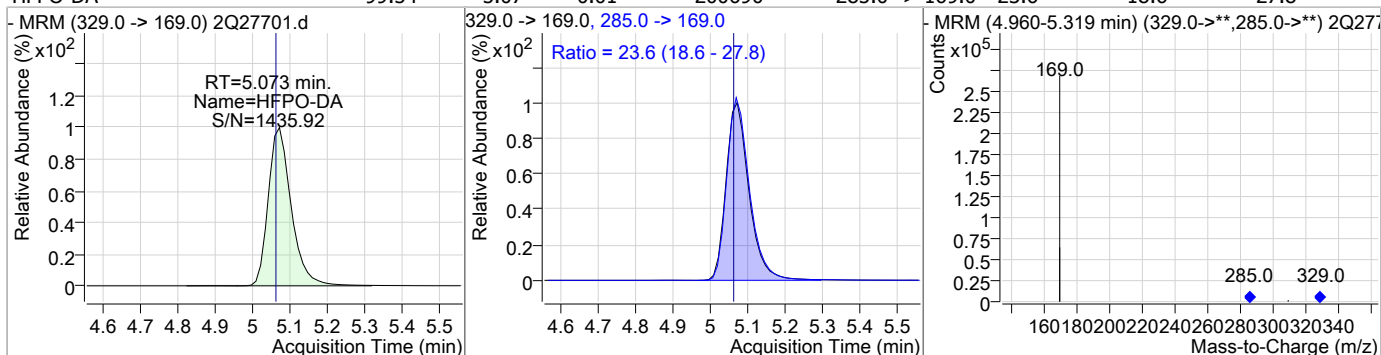
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 4:2FTS     | 20.22 | 4.69 | 0.00     | 36693  | 327.0 -> 81.0  | 39.1   | 18.6 | 58.6 |
|            |       |      |          |        |                |        |      |      |
| 13C5-PFHxA | 22.34 | 4.79 | 0.00     | 162301 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFHxA      | 19.66 | 4.79 | 0.00     | 54998  | 313.0 -> 119.0 | 11.8   | 0.0  | 31.5 |
|            |       |      |          |        |                |        |      |      |
| PFPeS      | 20.78 | 4.91 | 0.01     | 20305  | 349.0 -> 99.0  | 37.4   | 5.1  | 65.1 |
|            |       |      |          |        |                |        |      |      |

7.6.27

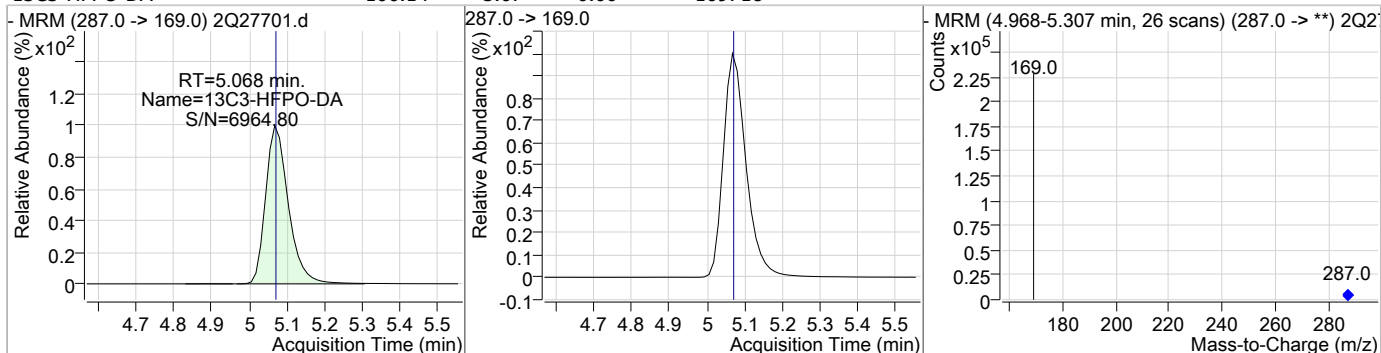
7

### Perfluorinated Compounds by LC/MS/MS

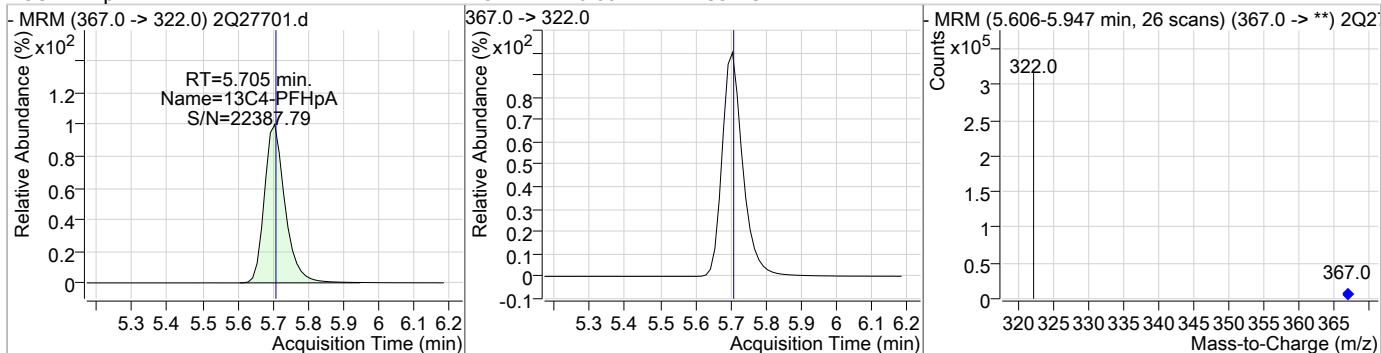
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 99.54 | 5.07 | 0.01     | 200690 | 285.0 -> 169.0 | 23.6   | 18.6 | 27.8 |



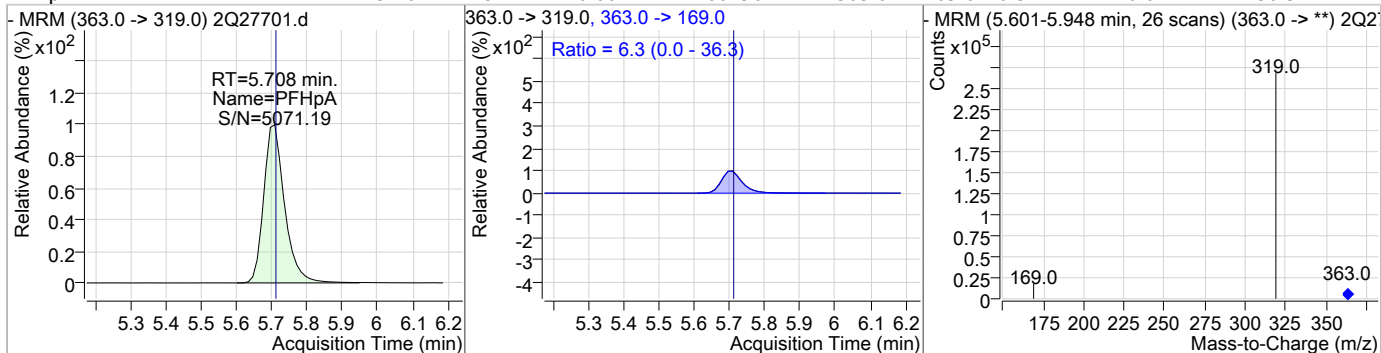
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 106.14 | 5.07 | 0.00     | 169718 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 22.77 | 5.71 | 0.00     | 235479 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.70 | 5.71 | 0.00     | 200296 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



7.6.27  
7

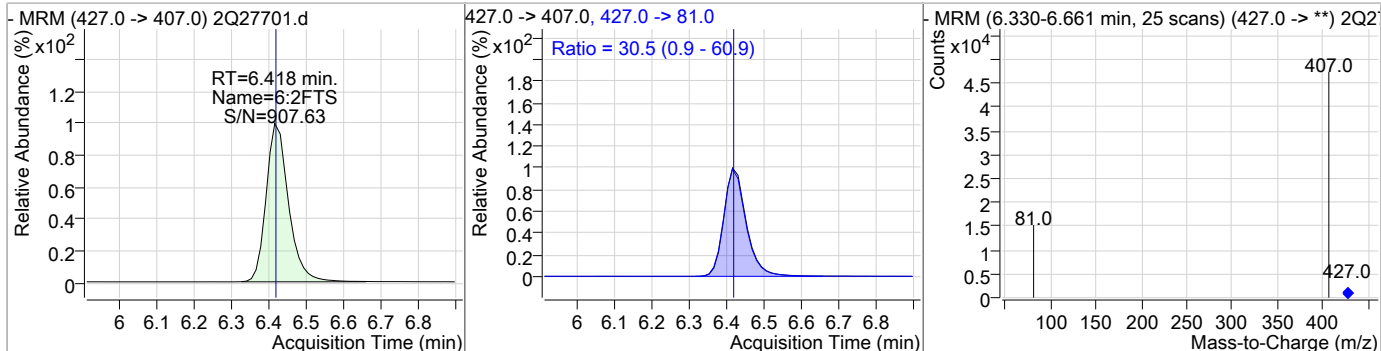
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|-----------|---------------|--------|------|------|
| 13C3-PFHxS  | 21.23 | 5.74 | 0.00     | 21643     |               |        |      |      |
|             |       |      |          |           |               |        |      |      |
| PFHxS       | 19.78 | 5.74 | 0.00     | 23723 (m) | 399.0 -> 99.0 | 43.2   | 25.9 | 65.9 |
|             |       |      |          |           |               |        |      |      |
| ADONA       | 19.51 | 5.80 | 0.00     | 231118    |               |        |      |      |
|             |       |      |          |           |               |        |      |      |
| 13C2-6:2FTS | 22.35 | 6.42 | 0.00     | 71724     |               |        |      |      |
|             |       |      |          |           |               |        |      |      |

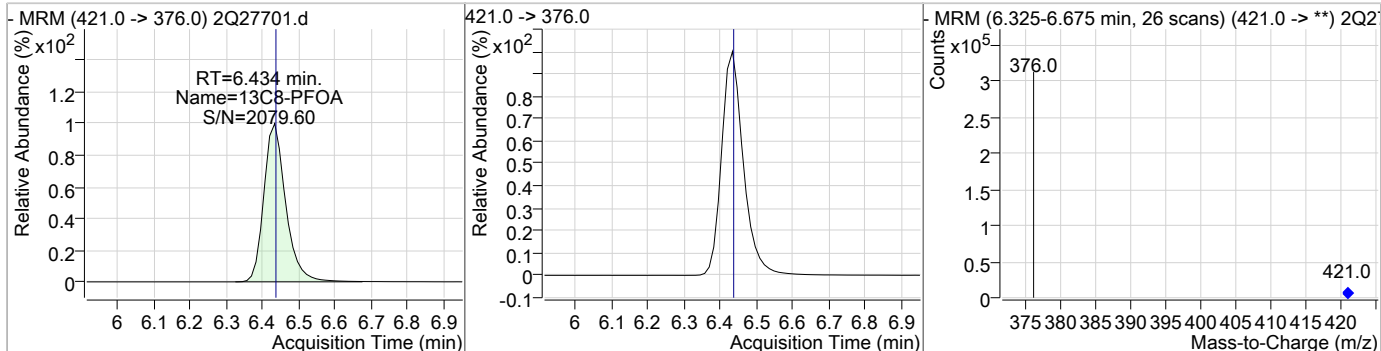
7.6.27  
7

### Perfluorinated Compounds by LC/MS/MS

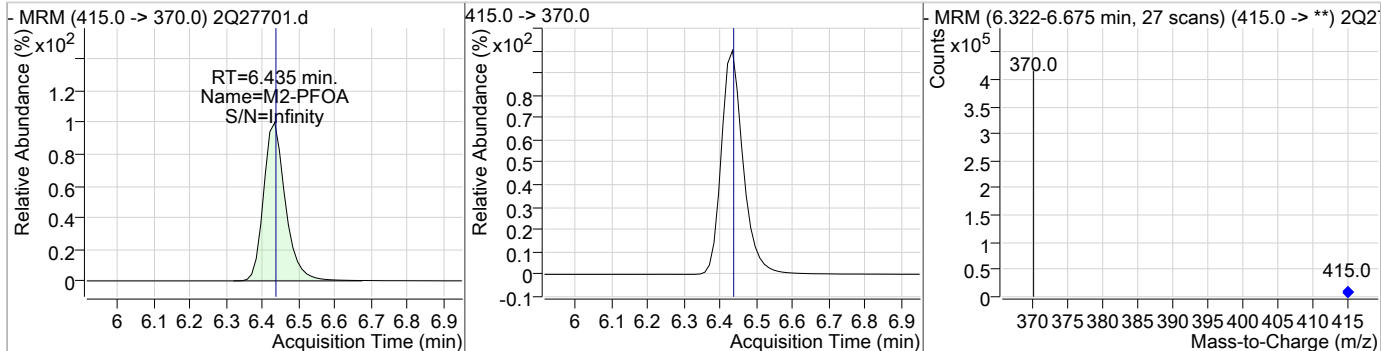
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 20.33 | 6.42 | 0.00     | 35807 | 427.0 -> 81.0 | 30.5   | 0.9  | 60.9 |



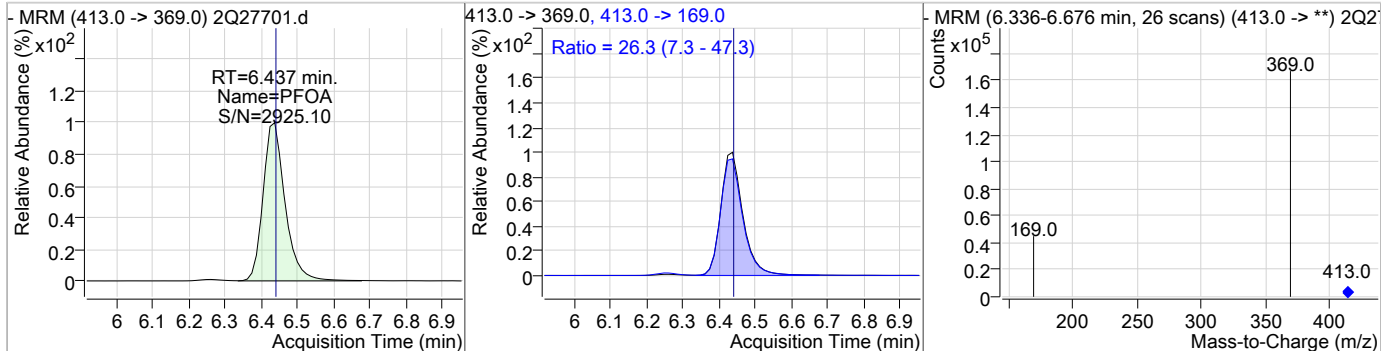
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 22.93 | 6.43 | 0.00     | 239204 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 19.99 | 6.44 | 0.00     | 315586 |      |        |      |      |



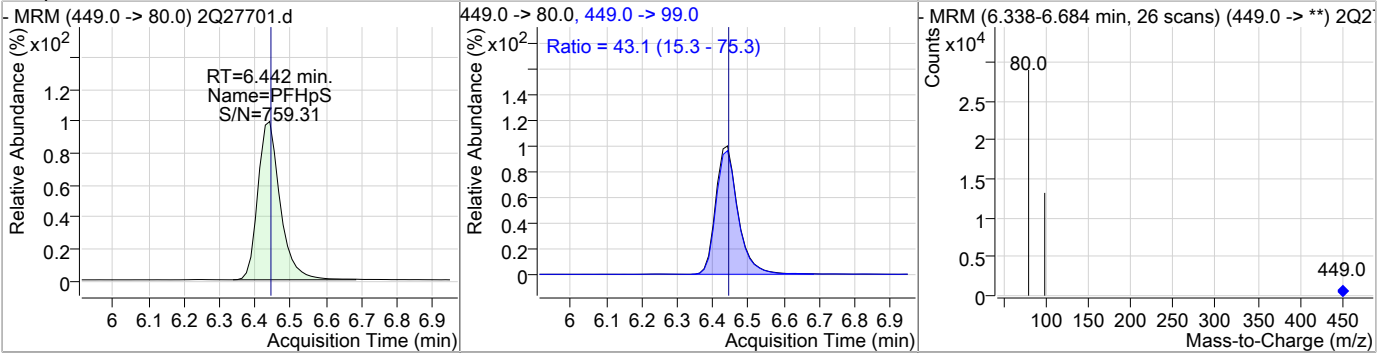
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.40 | 6.44 | 0.00     | 125394 | 413.0 -> 169.0 | 26.3   | 7.3  | 47.3 |



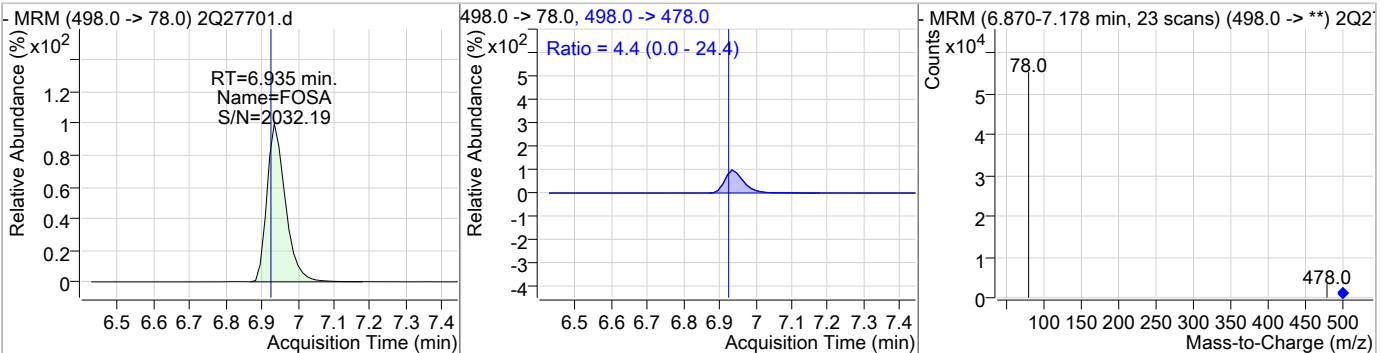
7.6.27  
7

### Perfluorinated Compounds by LC/MS/MS

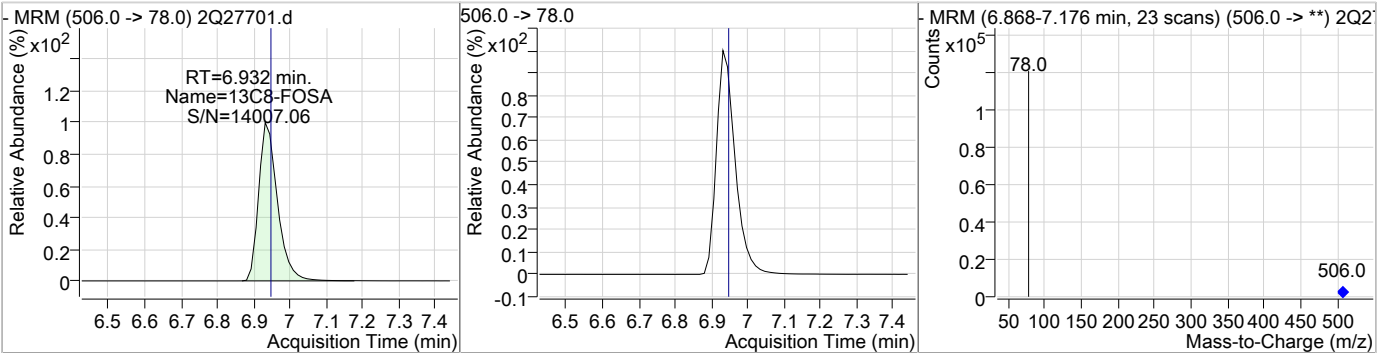
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 20.63 | 6.44 | 0.00     | 21721 | 449.0 -> 99.0 | 43.1   | 15.3 | 75.3 |



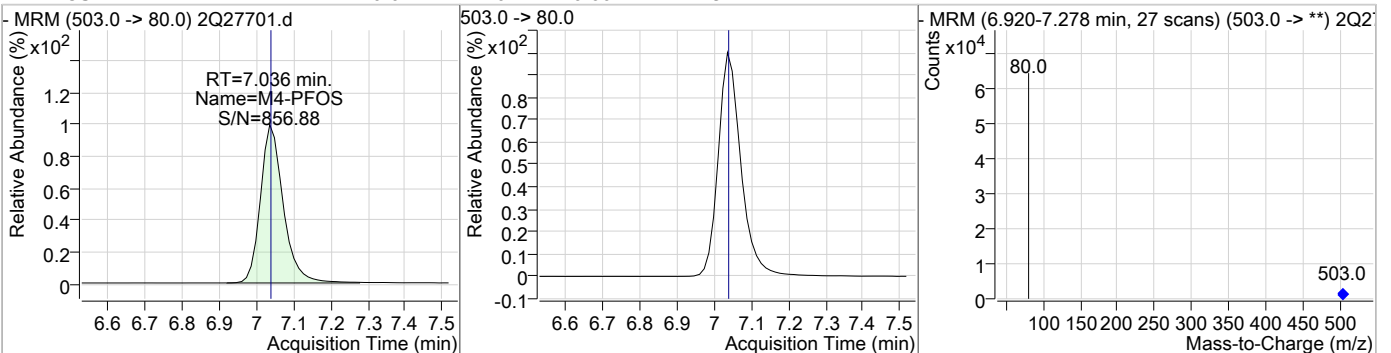
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 20.07 | 6.93 | 0.00     | 42653 | 498.0 -> 478.0 | 4.4    | 0.0  | 24.4 |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-FOSA | 22.74 | 6.93 | -0.01    | 92202 | 506.0 -> 78.0 |        |      |      |



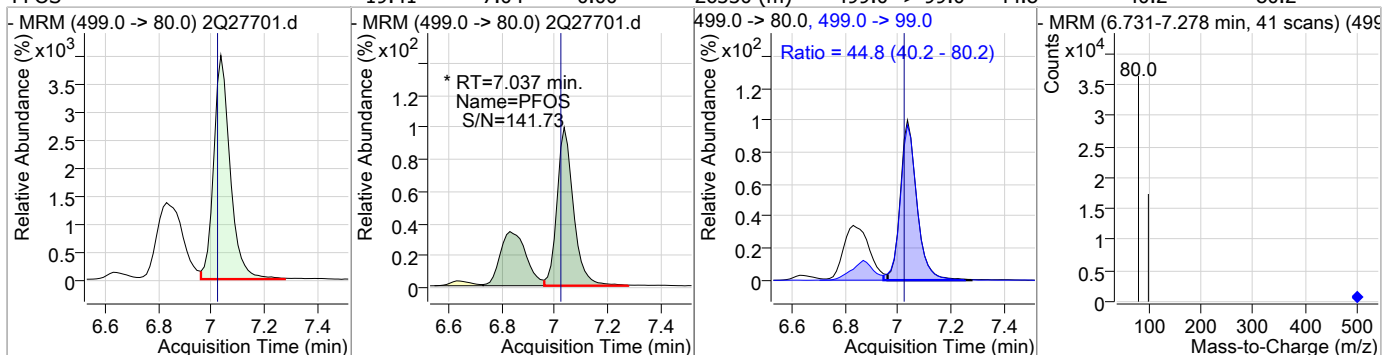
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| M4-PFOS  | 20.04 | 7.04 | 0.00     | 47974 | 503.0 -> 80.0 |        |      |      |



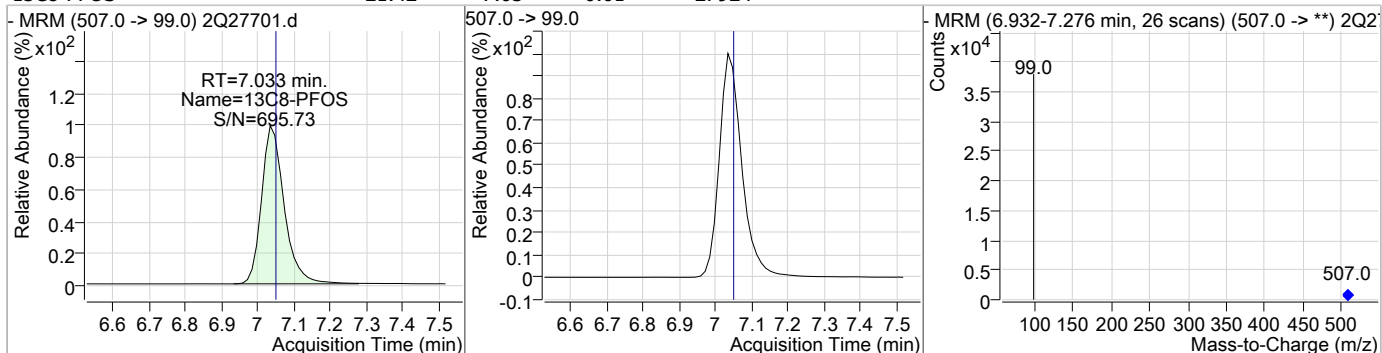


### Perfluorinated Compounds by LC/MS/MS

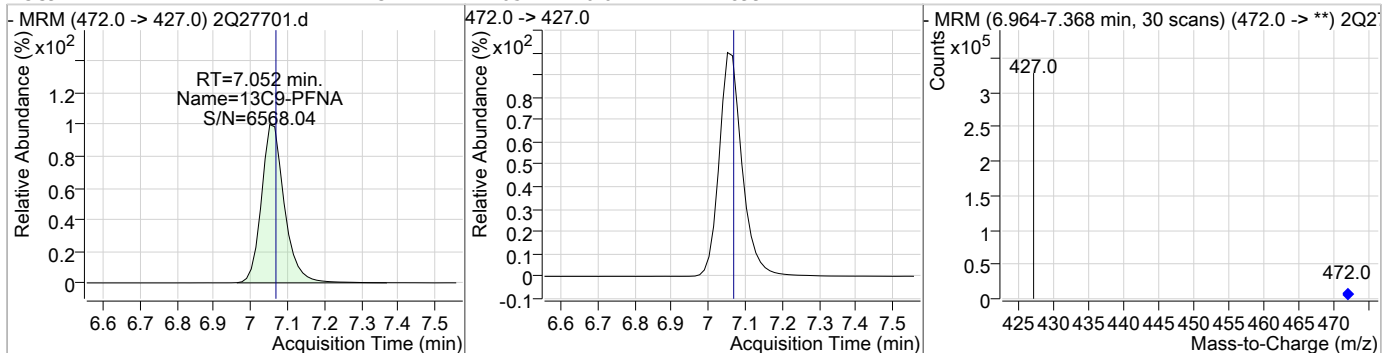
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.41 | 7.04 | 0.00     | 26330 (m) | 499.0 -> 99.0 | 44.8   | 40.2 | 80.2 |



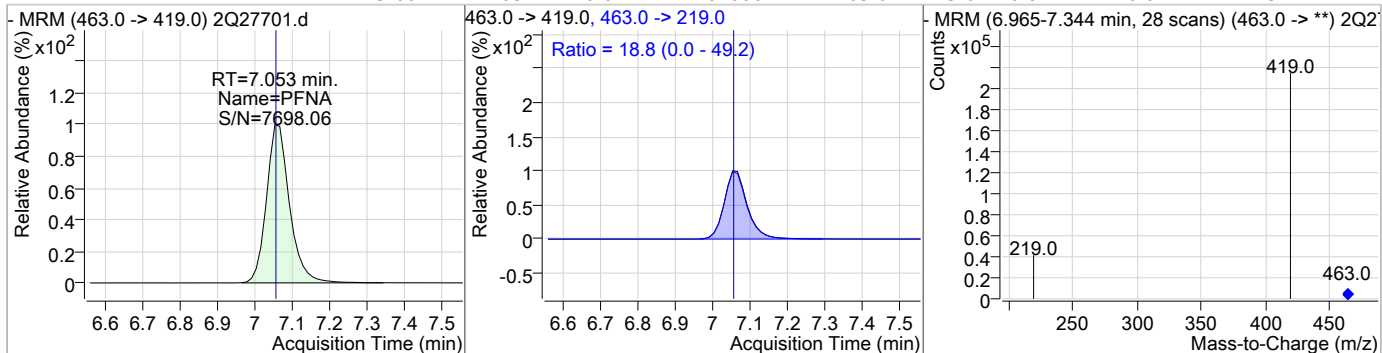
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 21.42 | 7.03 | -0.01    | 27924 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 23.41 | 7.05 | -0.01    | 247899 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 19.66 | 7.05 | -0.01    | 161666 | 463.0 -> 219.0 | 18.8   | 0.0  | 49.2 |



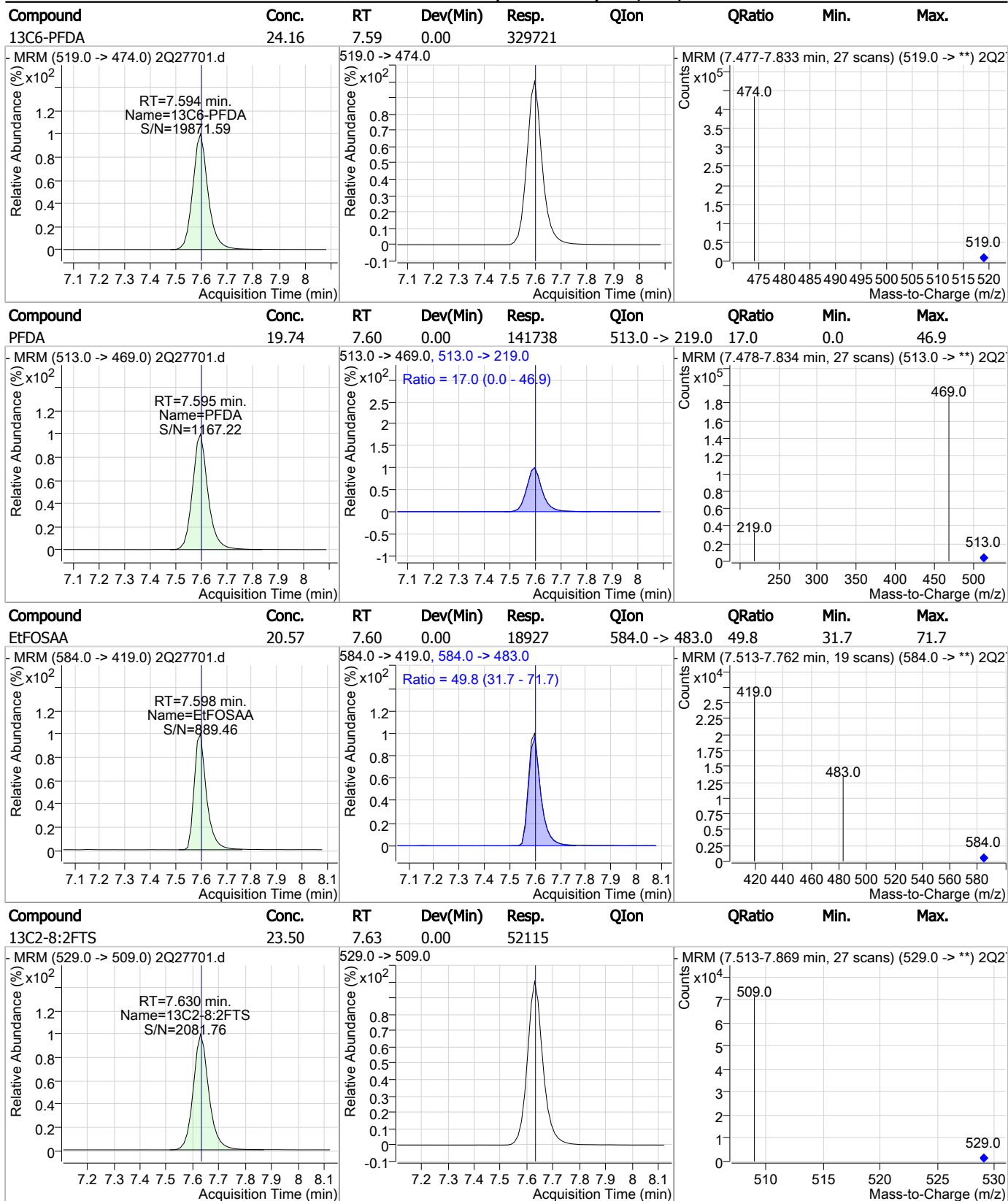
7.6.27  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound                        | Conc. | RT   | Dev(Min)                       | Resp. | QIon           | QRatio   | Min. | Max. |
|---------------------------------|-------|------|--------------------------------|-------|----------------|--|------|------|
| 9CI-PF3ONS                      | 18.22 | 7.32 | 0.00                           | 22591 |                |  |      |      |
| -MRM (531.0 -> 351.0) 2Q27701.d |       |      | 531.0 -> 351.0                 |       |                | -MRM (7.219-7.566 min, 26 scans) (531.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| d3-MeFOSAA                      | 22.58 | 7.45 | 0.00                           | 43289 |                |  |      |      |
| -MRM (573.0 -> 419.0) 2Q27701.d |       |      | 573.0 -> 419.0                 |       |                | -MRM (7.384-7.687 min, 23 scans) (573.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| MeFOSAA                         | 19.90 | 7.45 | -0.01                          | 21984 | 570.0 -> 512.0 | 23.3   | 2.3  | 42.3 |
| -MRM (570.0 -> 419.0) 2Q27701.d |       |      | 570.0 -> 419.0, 570.0 -> 512.0 |       |                | -MRM (7.385-7.650 min, 20 scans) (570.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| PFNS                            | 21.18 | 7.57 | 0.00                           | 20278 | 549.0 -> 99.0  | 48.7   | 28.9 | 68.9 |
| -MRM (549.0 -> 80.0) 2Q27701.d  |       |      | 549.0 -> 80.0, 549.0 -> 99.0   |       |                | -MRM (7.452-7.805 min, 27 scans) (549.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |

7.6.27  
7

### Perfluorinated Compounds by LC/MS/MS

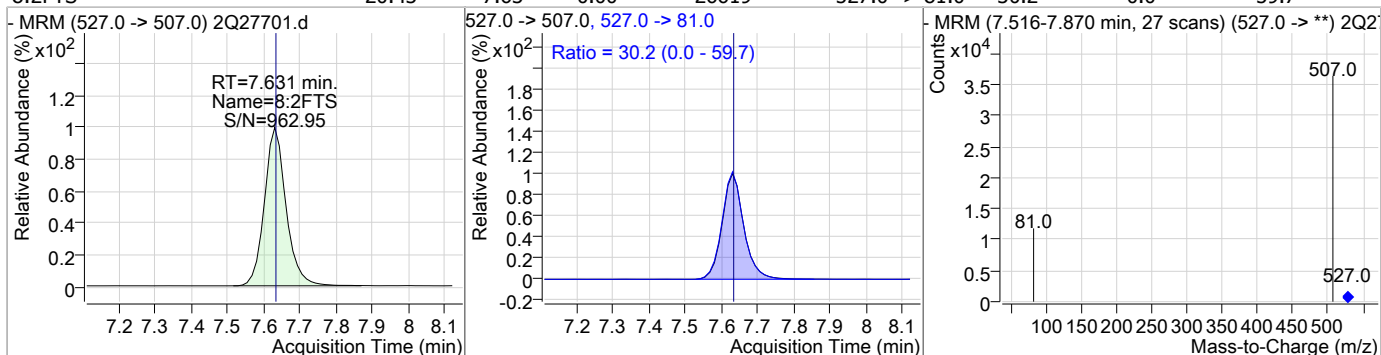


7.6.27  
7

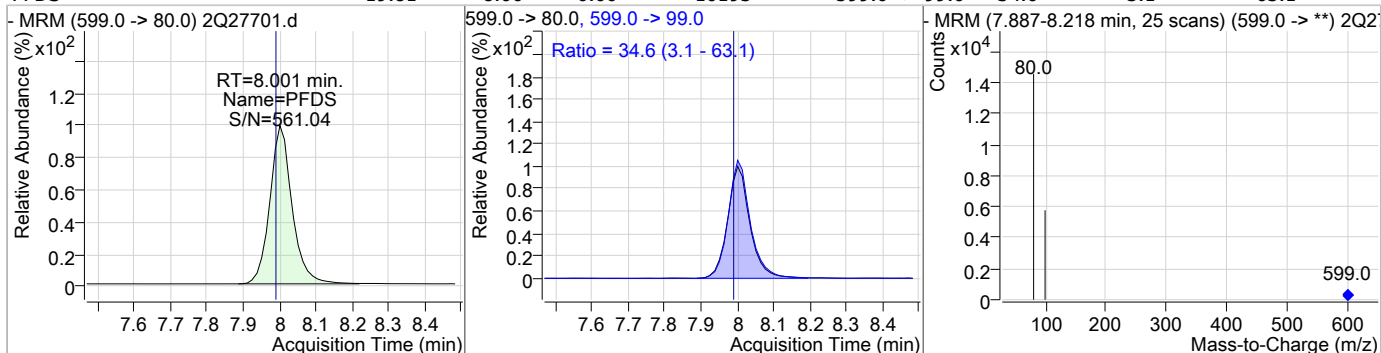


### Perfluorinated Compounds by LC/MS/MS

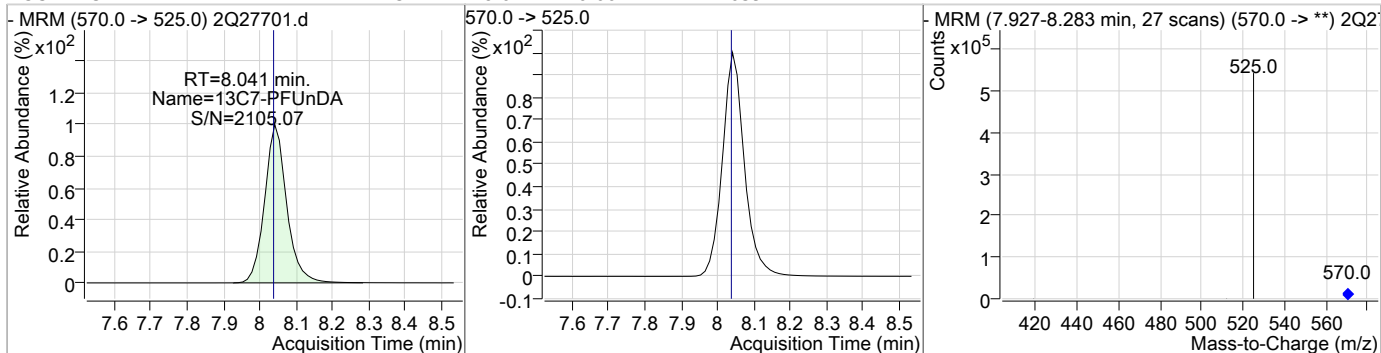
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 20.43 | 7.63 | 0.00     | 26619 | 527.0 -> 81.0 | 30.2   | 0.0  | 59.7 |



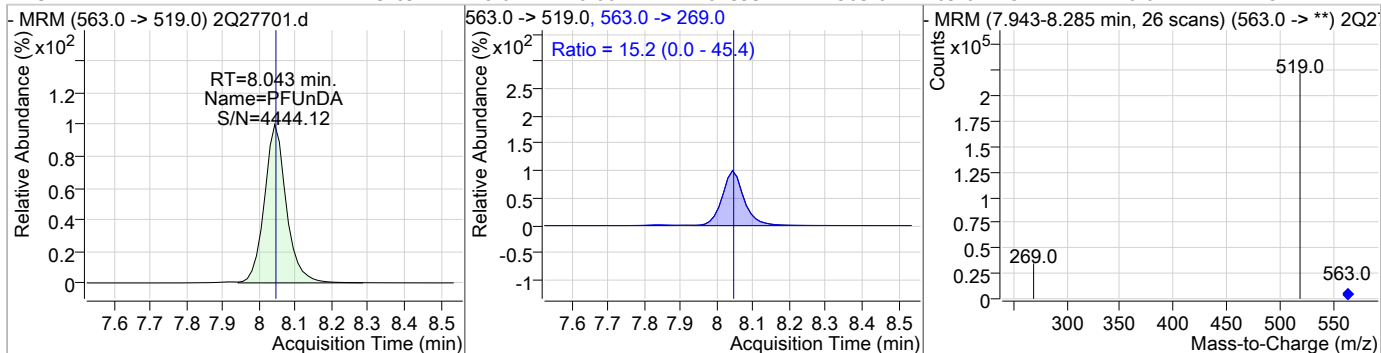
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 19.81 | 8.00 | 0.00     | 10193 | 599.0 -> 99.0 | 34.6   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 24.32 | 8.04 | 0.00     | 411639 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 19.69 | 8.04 | 0.00     | 167399 | 563.0 -> 269.0 | 15.2   | 0.0  | 45.4 |



7.6.27  
7

### Perfluorinated Compounds by LC/MS/MS

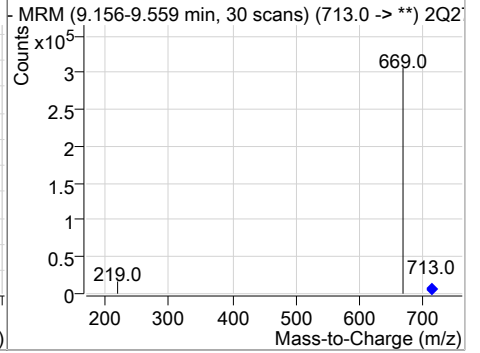
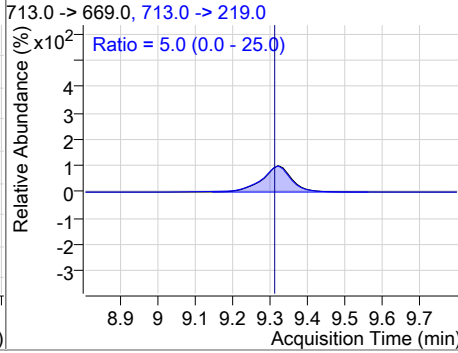
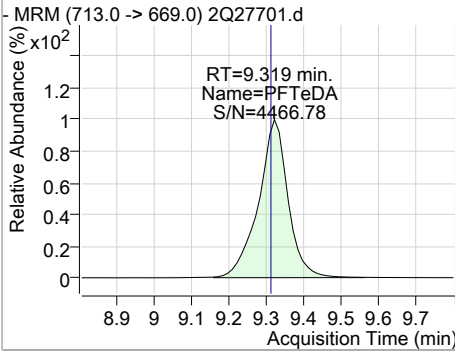
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 17.47 | 8.20 | 0.00     | 112723 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 25.00 | 8.47 | 0.00     | 470283 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 19.99 | 8.47 | 0.00     | 209544 | 613.0 -> 319.0 | 12.3   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTrDA       | 19.21 | 8.92 | 0.00     | 235558 | 663.0 -> 369.0 | 6.7    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.27

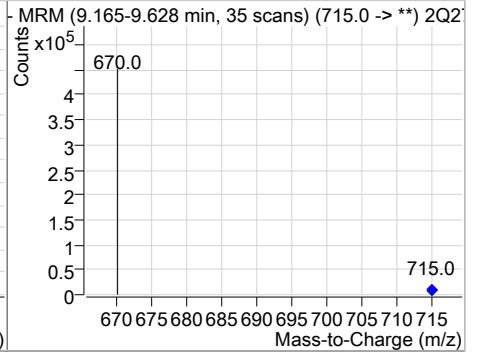
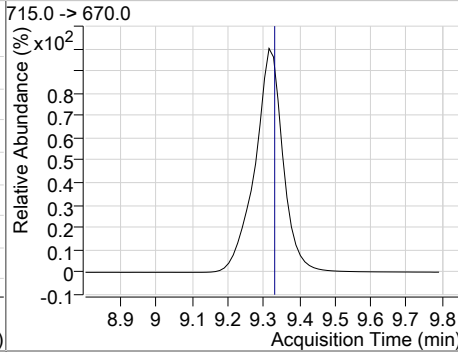
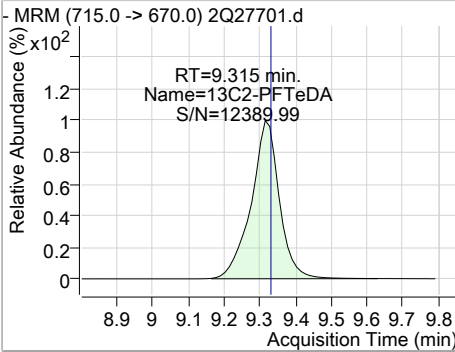
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.41 | 9.32 | 0.00     | 228501 | 713.0 -> 219.0 | 5.0    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 26.12 | 9.31 | -0.01    | 335385 |      |        |      |      |



7.6.27  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-CC442  
**Lab FileID:** 2Q27701.D  
**Injection Time:** 03/18/19 18:22

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.27.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27713.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 9:31:34 PM  
 Sample Name : CC442-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 304907 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 45909  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 126702 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.511                | 268.0 -> 223.0 | 109429 | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 156466 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 228857 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 231593 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 245077 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 319409 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 401550 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 453880 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 324043 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 88242  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 18585  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 20507  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 26152  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 63073  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 70235  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 51099  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 43321  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 159261 | 100.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 62910  | 21.16 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.8% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 70234  | 21.88 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 109.4% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 51101  | 23.05 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 115.2% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 453730 | 24.12 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 120.6% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 322875 | 25.15 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 125.7% |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 18470  | 20.26 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 20687  | 20.29 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 126193 | 21.04 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.2% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 228552 | 22.10 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 110.5% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 156169 | 21.49 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.5% |          |
| 13C5-PFPeA                         | 3.511                | 268.0 -> 223.0 | 109641 | 21.57 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.8% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 319409 | 23.41 µg/L        | 0.000    |

7.6.28  
7





### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 117.0% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 401349 | 23.72 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 118.6% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 88251  | 21.76 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.8% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 231367 | 22.18 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.9% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 26077  | 20.01 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 244839 | 23.12 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 115.6% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 43338  | 22.61 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 113.0% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 305226 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 45938  | 20.00 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 159261 | 99.60 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 99.6%  |          |

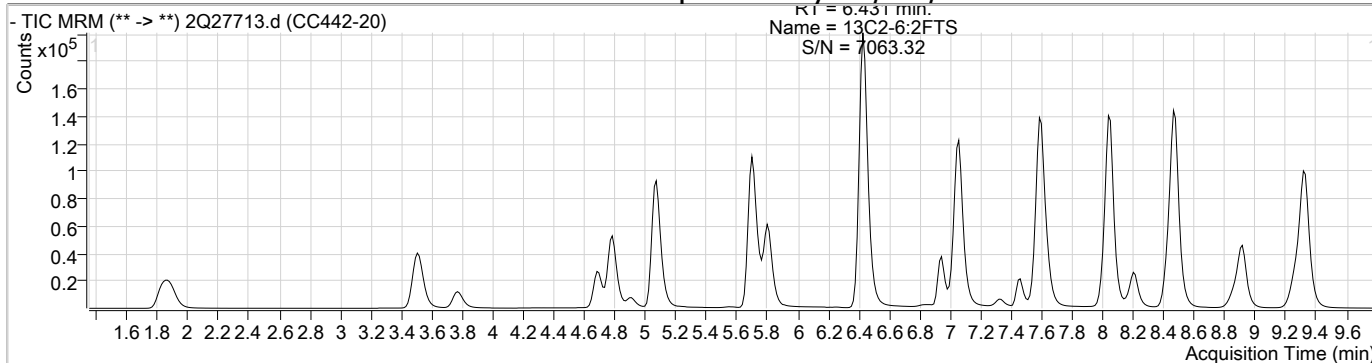
7.6.28  
7

**Target Compounds**

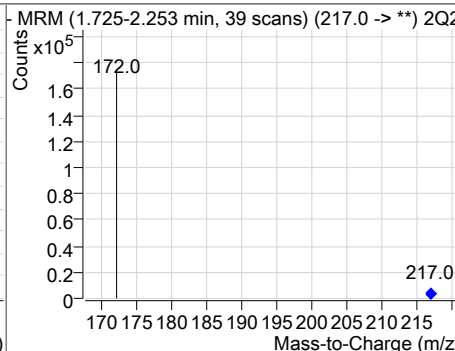
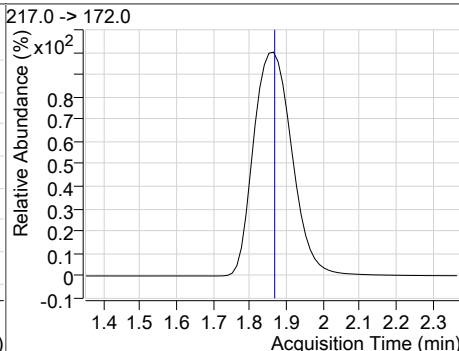
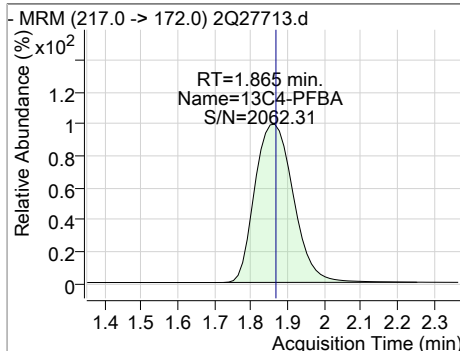
| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.687 | 327.0 -> 307.0 | 35321  | 20.33 µg/L  | 99     |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 34784  | 20.13 µg/L  | 99     |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 26049  | 20.39 µg/L  | 99     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 18503  | 20.09 µg/L  | 99     |
| FOSA         | 6.947 | 498.0 -> 78.0  | 40632  | 19.99 µg/L  | 100    |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 22375  | 20.24 µg/L  | 98     |
| PFBA         | 1.860 | 213.0 -> 169.0 | 24082  | 19.25 µg/L  | 100    |
| PFBS         | 3.771 | 299.0 -> 80.0  | 28953  | 19.62 µg/L  | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 138596 | 19.93 µg/L  | 100    |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 203214 | 20.12 µg/L  | 99     |
| PFDS         | 8.001 | 599.0 -> 80.0  | 10108  | 20.99 µg/L  | 97     |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 194843 | 19.75 µg/L  | 100    |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 20534  | 20.64 µg/L  | 99     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 52992  | 19.67 µg/L  | 99     |
| PFHxS        | 5.739 | 399.0 -> 80.0  | 22728  | 20.05 µg/L  | m 95   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 156407 | 19.24 µg/L  | 99     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 19504  | 21.76 µg/L  | 99     |
| PFOA         | 6.437 | 413.0 -> 369.0 | 120926 | 19.33 µg/L  | 98     |
| PFOS         | 7.037 | 499.0 -> 80.0  | 25307  | 19.92 µg/L  | m 79   |
| PFPeA        | 3.515 | 263.0 -> 219.0 | 93909  | 19.83 µg/L  | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 19666  | 20.82 µg/L  | 98     |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 220004 | 19.41 µg/L  | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 226171 | 19.16 µg/L  | 100    |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 162726 | 19.64 µg/L  | 99     |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 107337 | 17.26 µg/L  | 100    |
| 9Cl-PF3ONS   | 7.323 | 531.0 -> 351.0 | 21713  | 18.09 µg/L  | 100    |
| ADONA        | 5.804 | 377.0 -> 251.0 | 222026 | 19.36 µg/L  | 100    |
| HFPO-DA      | 5.073 | 329.0 -> 169.0 | 188935 | 99.87 µg/L  | 98     |

# = Qualifier out of range, m = manually integrated, + = Area summed

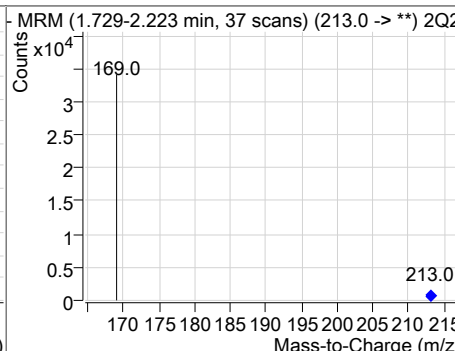
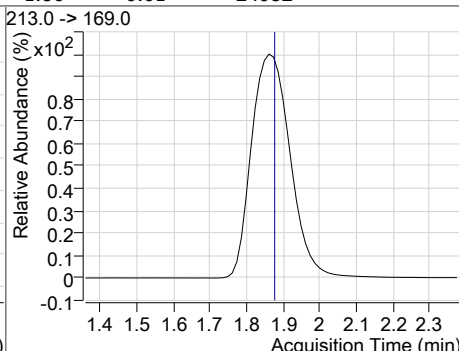
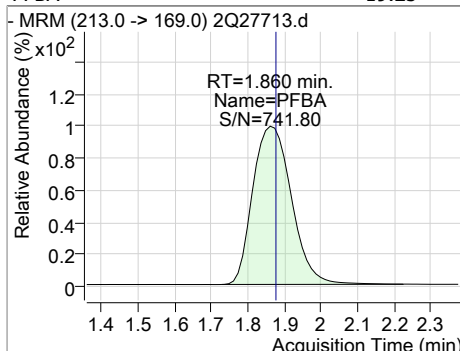
### Perfluorinated Compounds by LC/MS/MS



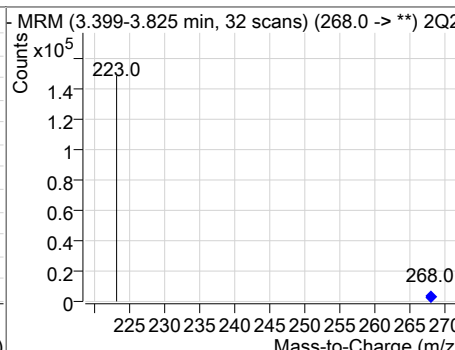
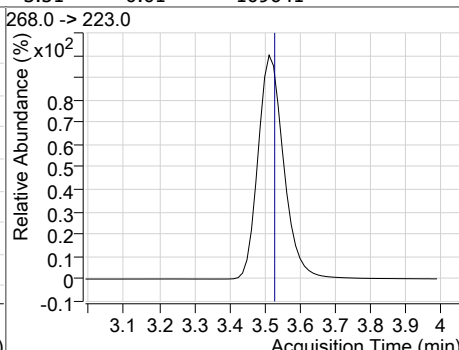
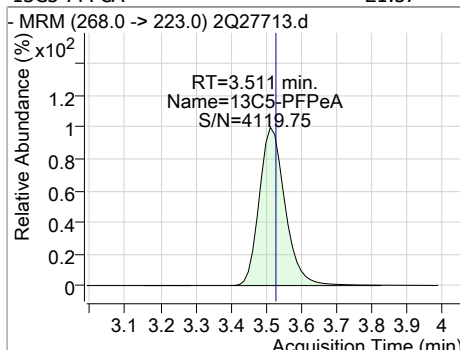
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 21.04 | 1.86 | 0.00     | 126193 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 19.25 | 1.86 | -0.01    | 24082 |      |        |      |      |

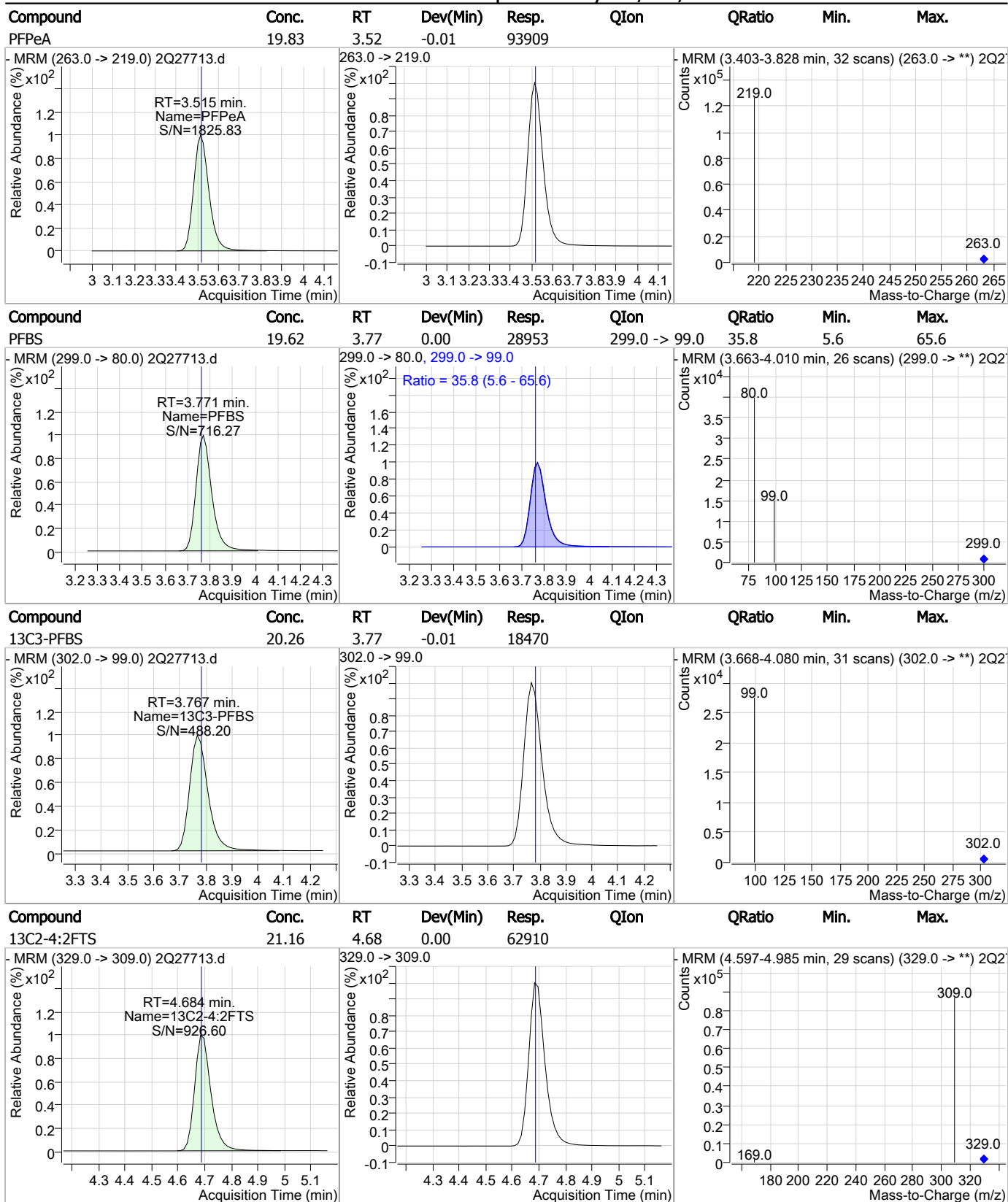


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 21.57 | 3.51 | -0.01    | 109641 |      |        |      |      |



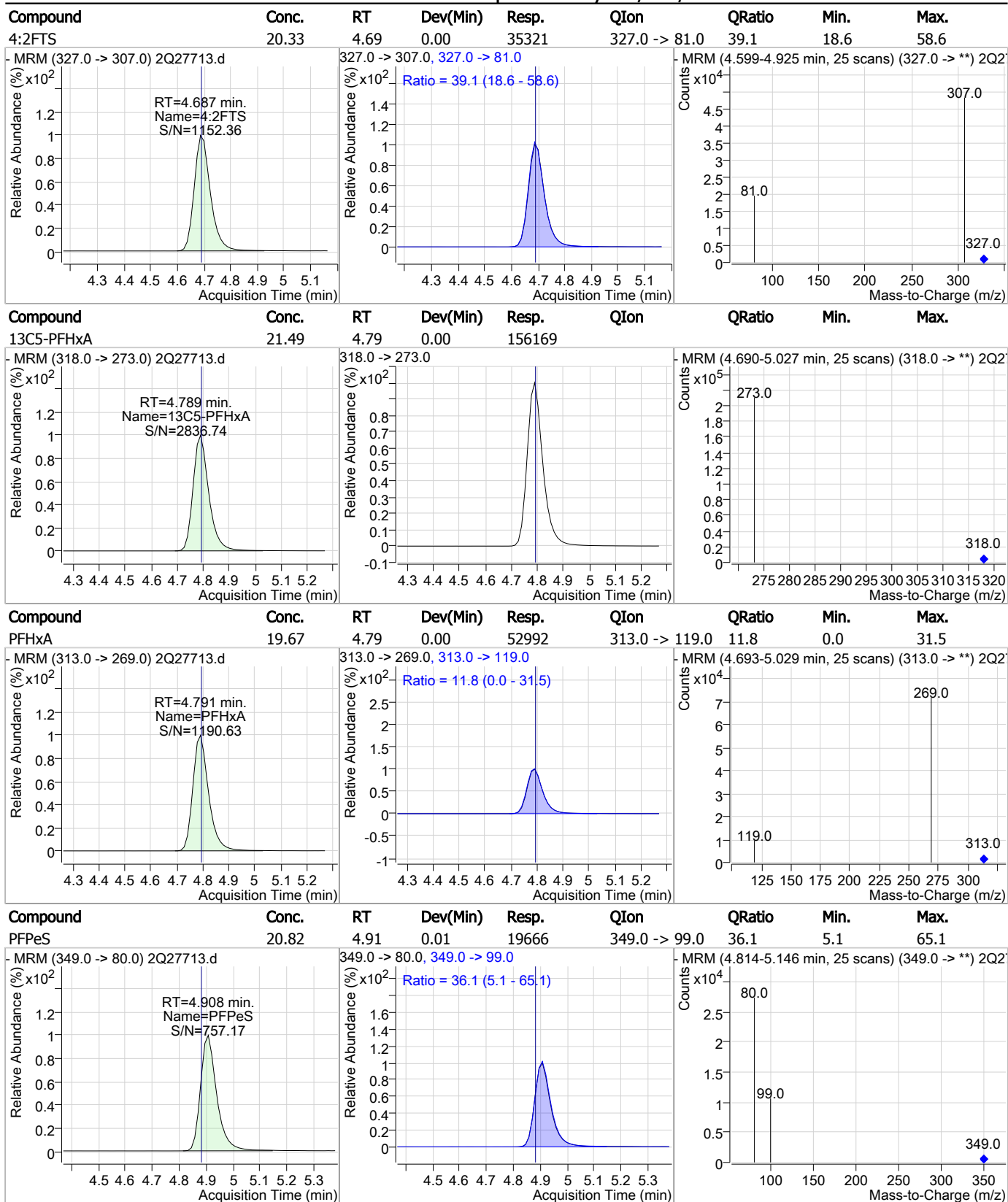
7.6.28  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.28  
7

### Perfluorinated Compounds by LC/MS/MS

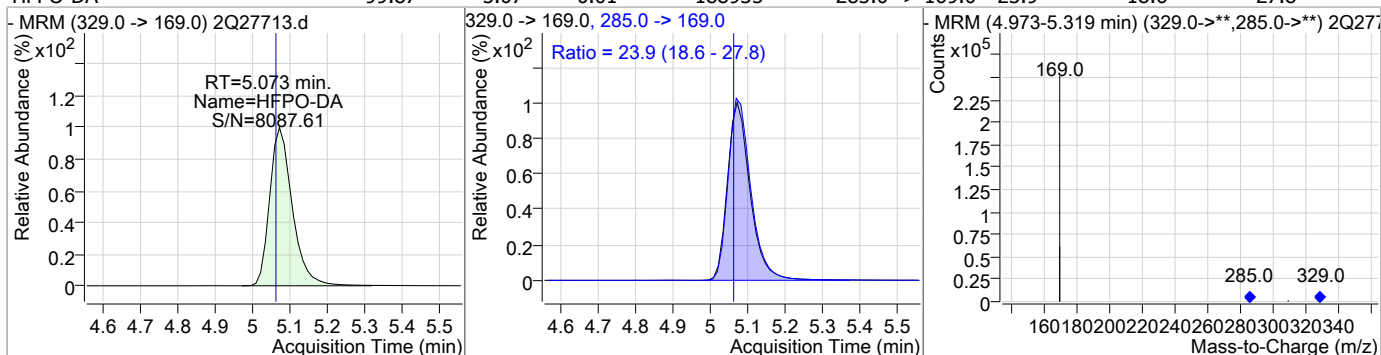


7.6.28

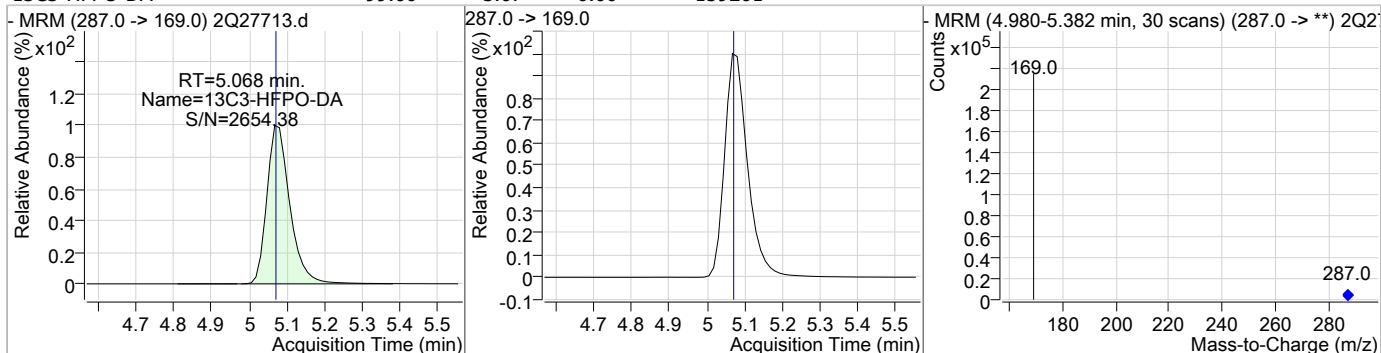
7

### Perfluorinated Compounds by LC/MS/MS

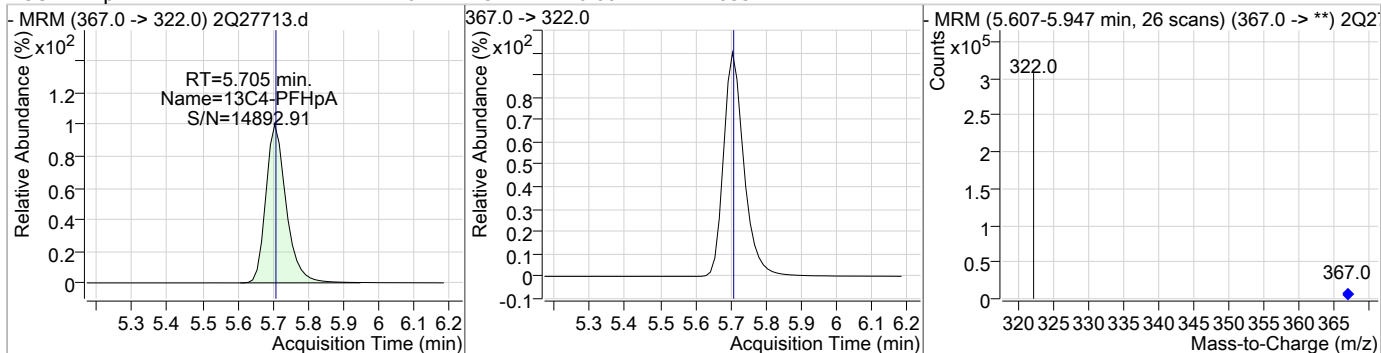
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 99.87 | 5.07 | 0.01     | 188935 | 285.0 -> 169.0 | 23.9   | 18.6 | 27.8 |



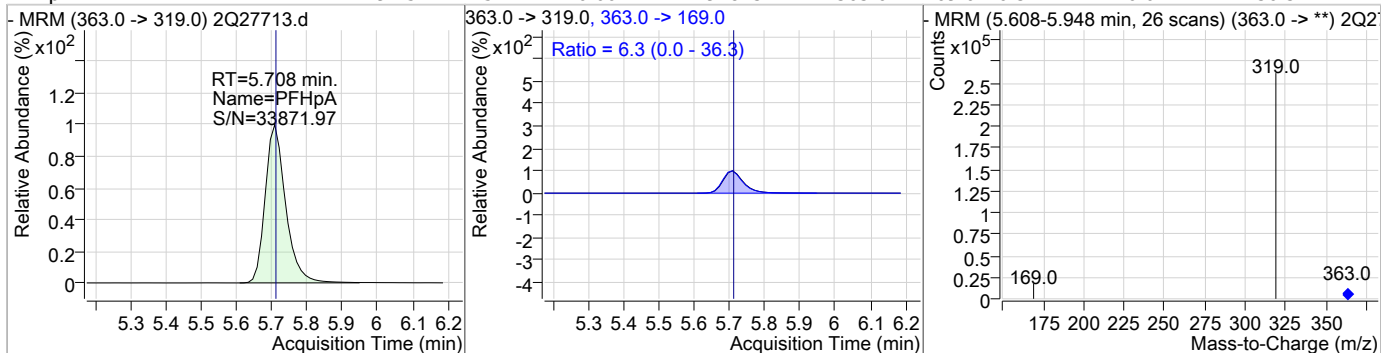
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 99.60 | 5.07 | 0.00     | 159261 |      |        |      |      |



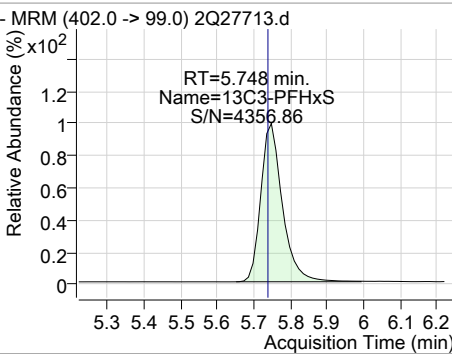
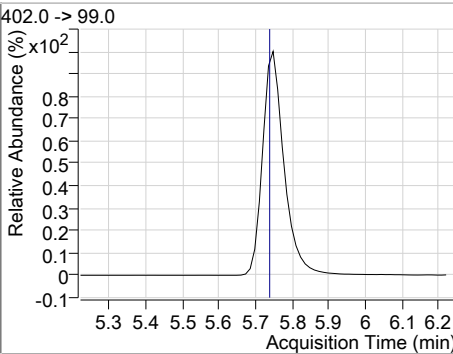
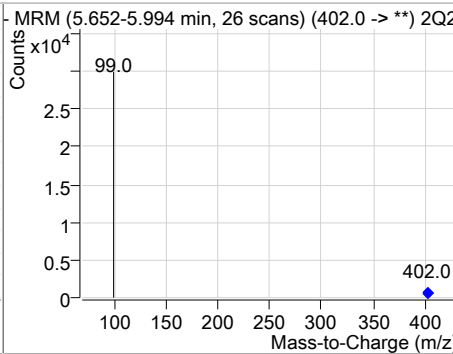
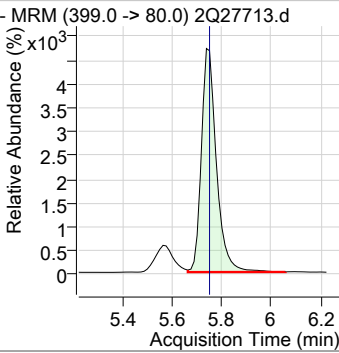
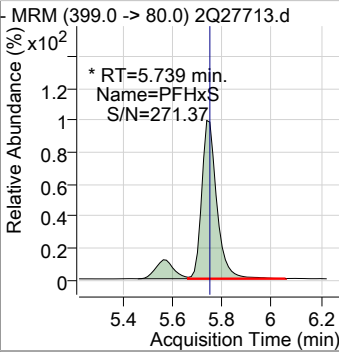
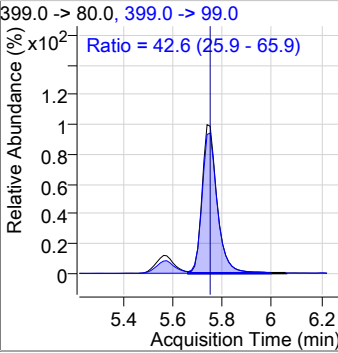
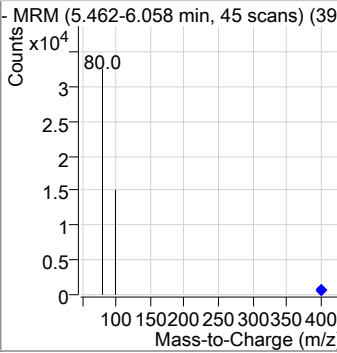
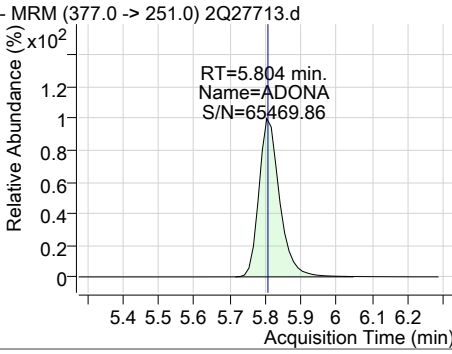
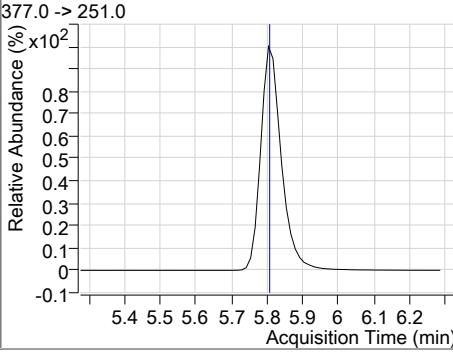
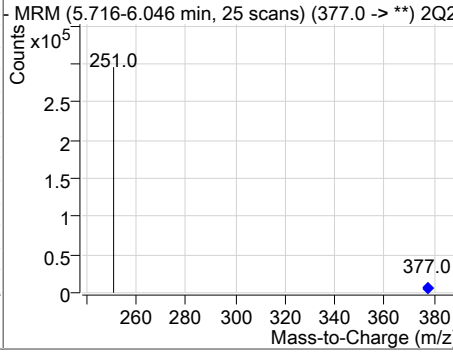
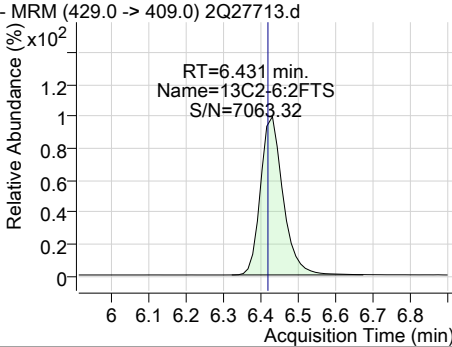
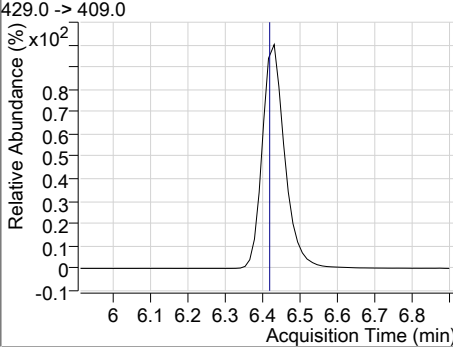
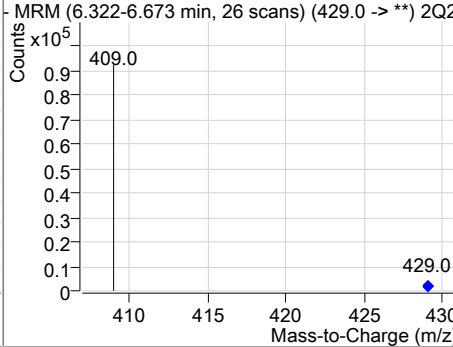
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 22.10 | 5.71 | 0.00     | 228552 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.75 | 5.71 | 0.00     | 194843 | 363.0 -> 169.0 | 6.3    | 0.0  | 36.3 |



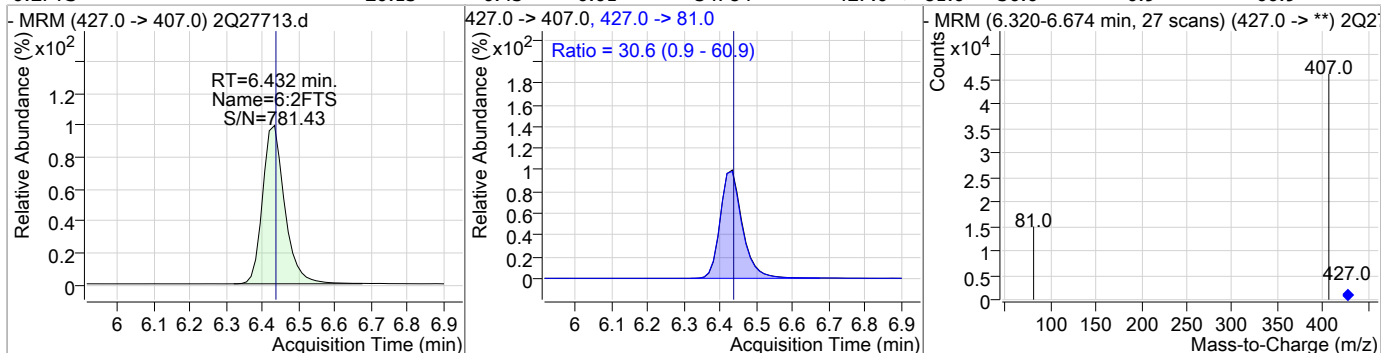
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT  | Dev(Min) | Resp.  | QIon          | QRatio  | Min. | Max. |
|--|-------|---|----------|--|---------------|---|------|------|
| 13C3-PFHxS   | 20.29 | 5.75  | 0.01     | 20687  |               |   |      |      |
|    |       |    |          |    |               |   |      |      |
| PFHxS  | 20.05 | 5.74  | 0.00     | 22728 (m)  | 399.0 -> 99.0 | 42.6  | 25.9 | 65.9 |
|    |       |    |          |    |               |  |      |      |
| ADONA  | 19.36 | 5.80  | 0.00     | 222026   |               |   |      |      |
|  |       |  |          |  |               |   |      |      |
| 13C2-6:2FTS  | 21.88 | 6.43  | 0.02     | 70234  |               |   |      |      |
|  |       |  |          |  |               |   |      |      |

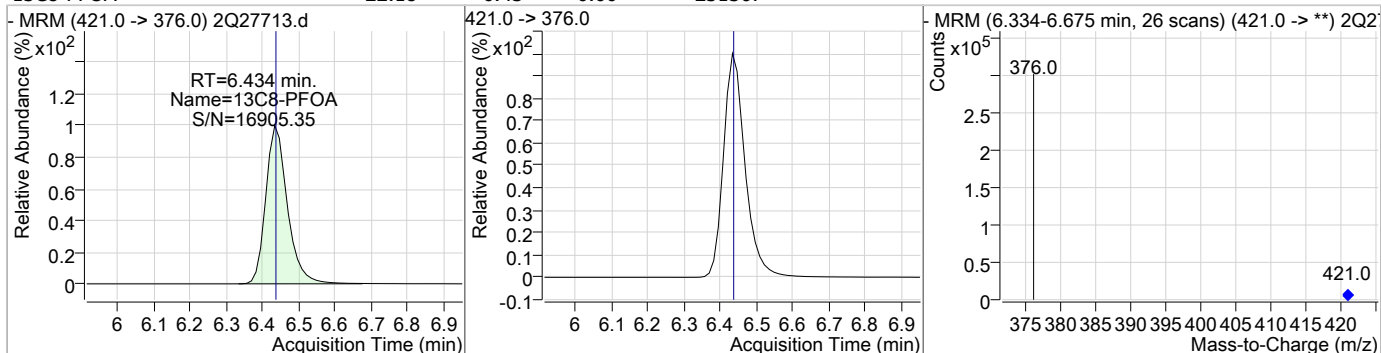
7.6.28  
7

### Perfluorinated Compounds by LC/MS/MS

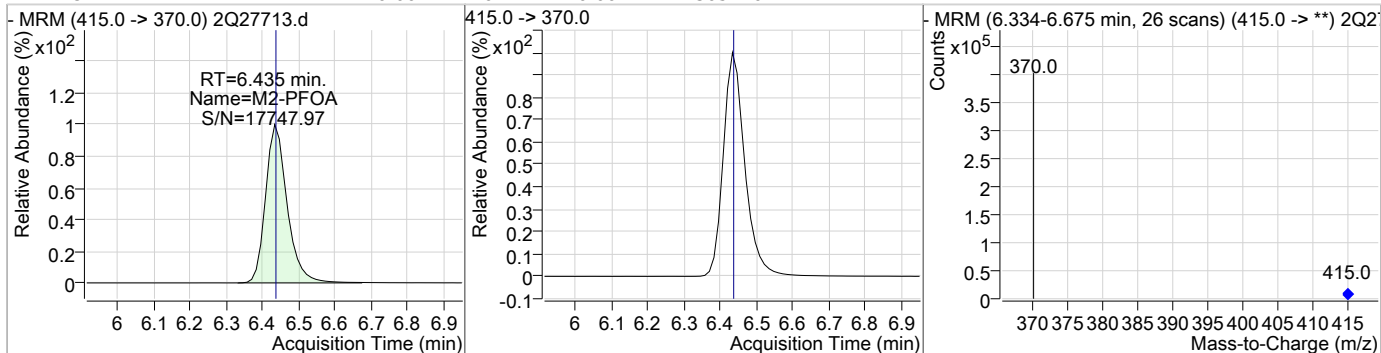
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 20.13 | 6.43 | 0.01     | 34784 | 427.0 -> 81.0 | 30.6   | 0.9  | 60.9 |



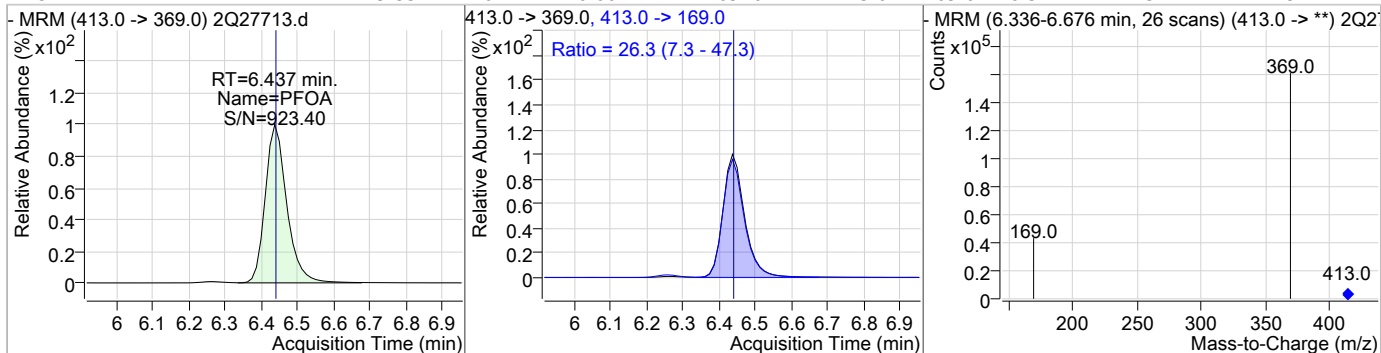
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 22.18 | 6.43 | 0.00     | 231367 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 305226 |      |        |      |      |

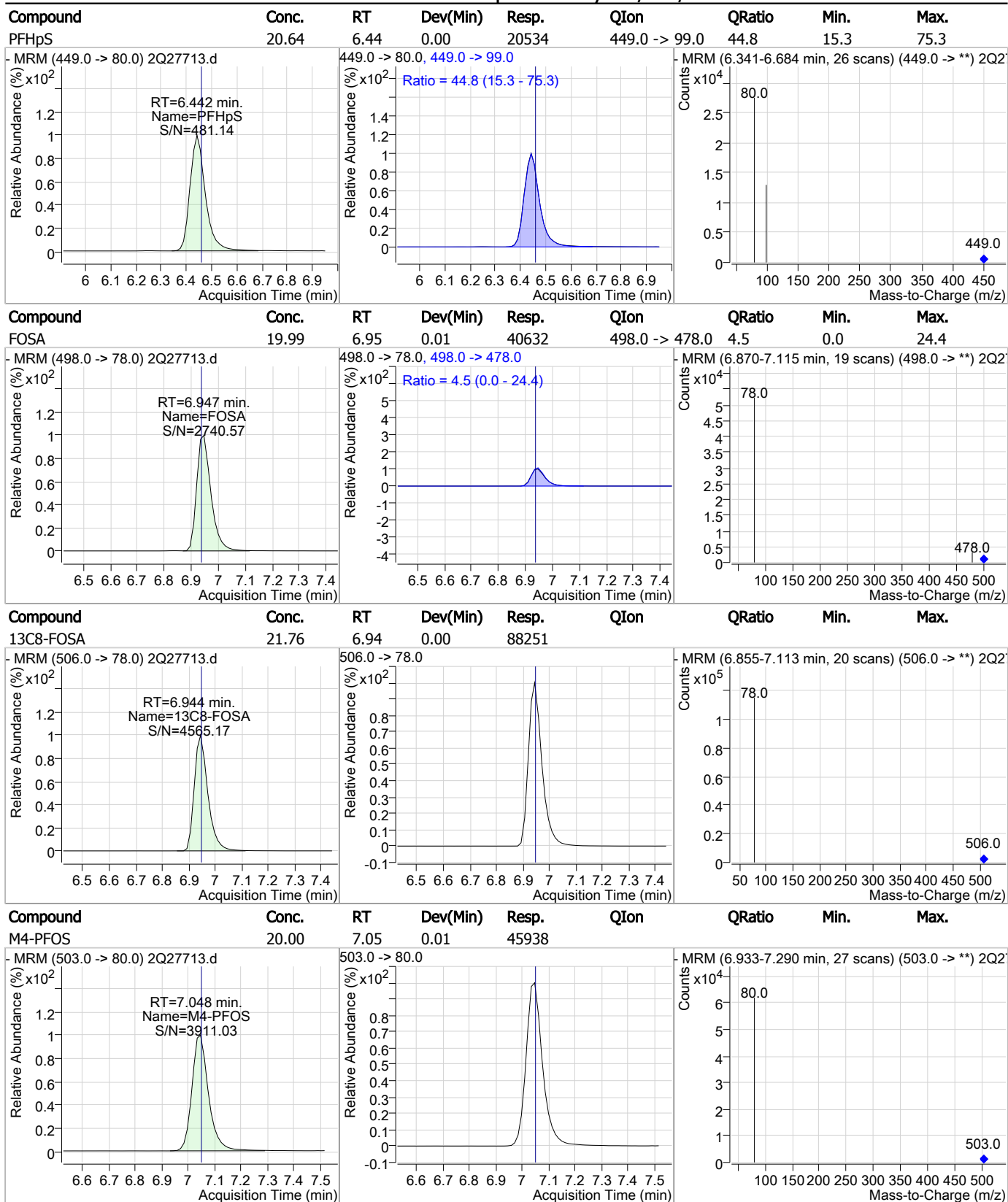


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.33 | 6.44 | 0.00     | 120926 | 413.0 -> 169.0 | 26.3   | 7.3  | 47.3 |



7.6.28  
7

### Perfluorinated Compounds by LC/MS/MS



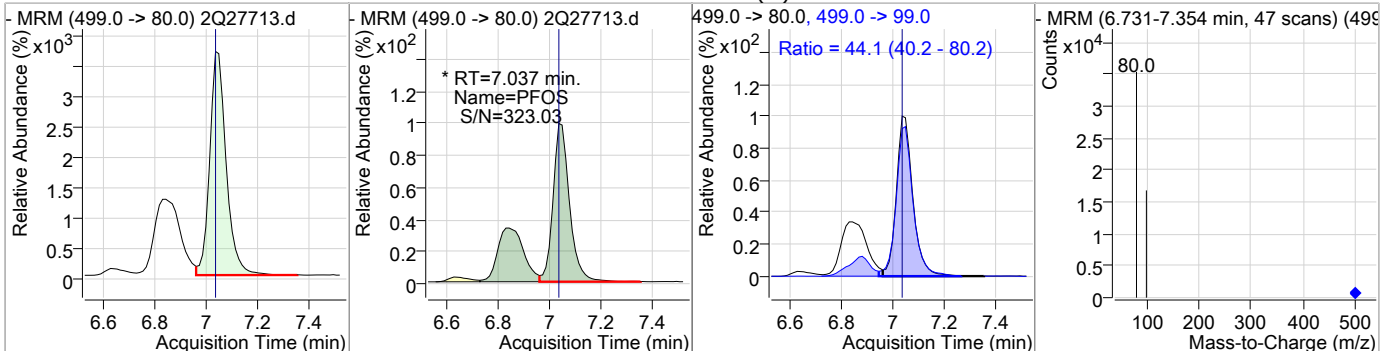
7.6.28

7

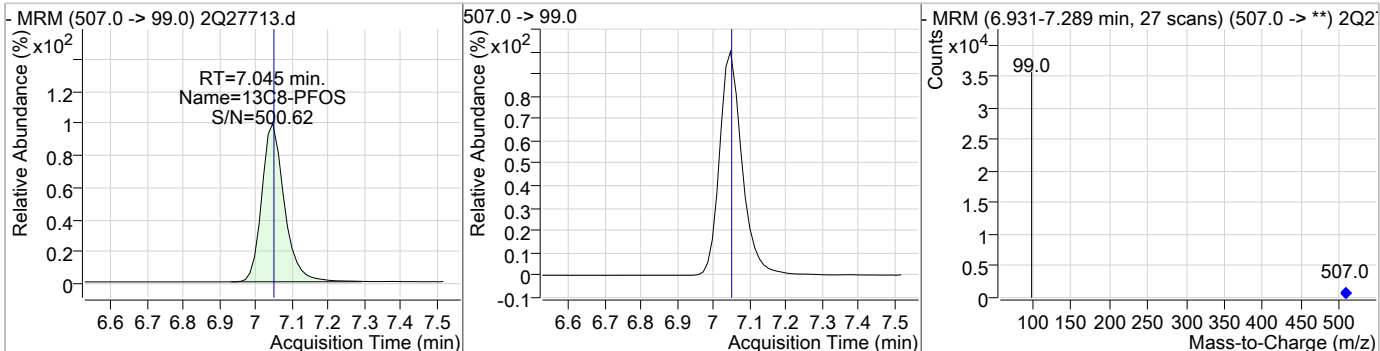


### Perfluorinated Compounds by LC/MS/MS

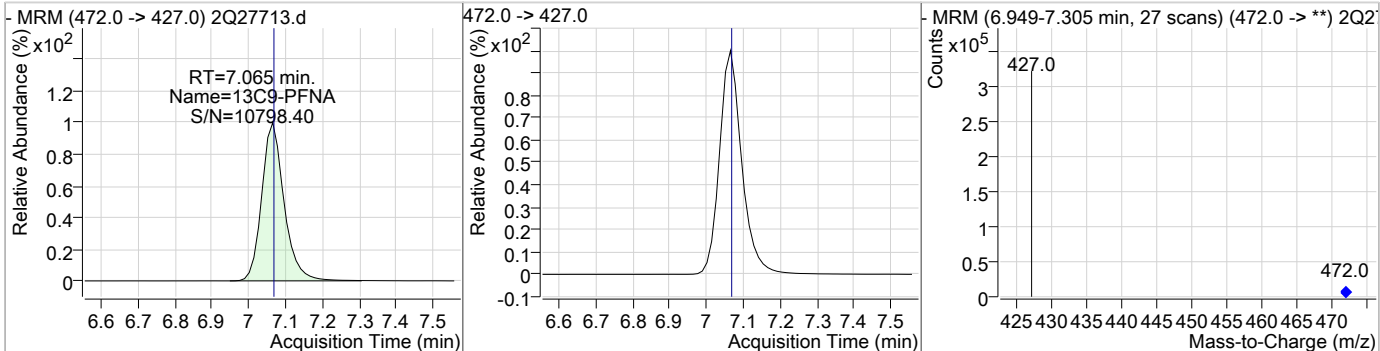
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.92 | 7.04 | 0.00     | 25307 (m) | 499.0 -> 99.0 | 44.1   | 40.2 | 80.2 |



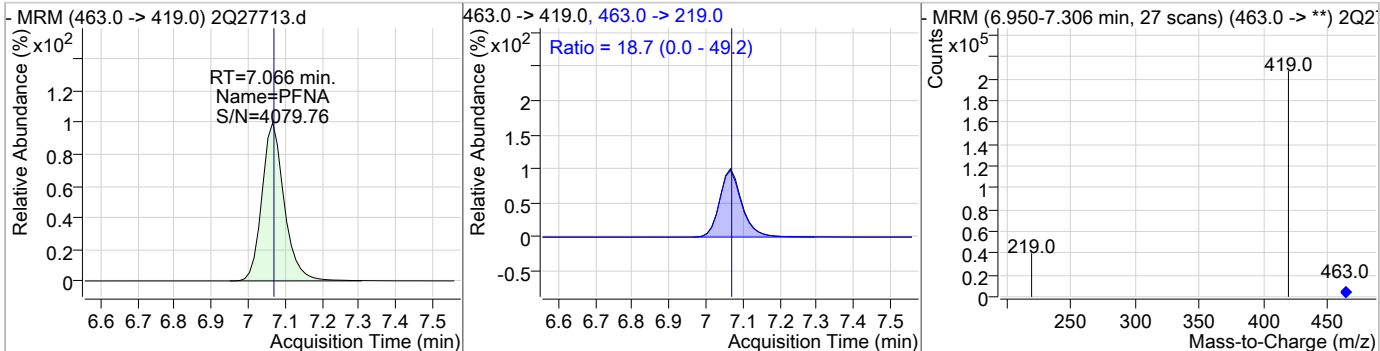
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.01 | 7.05 | 0.00     | 26077 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 23.12 | 7.07 | 0.00     | 244839 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 19.24 | 7.07 | 0.00     | 156407 | 463.0 -> 219.0 | 18.7   | 0.0  | 49.2 |



7.6.28  
7



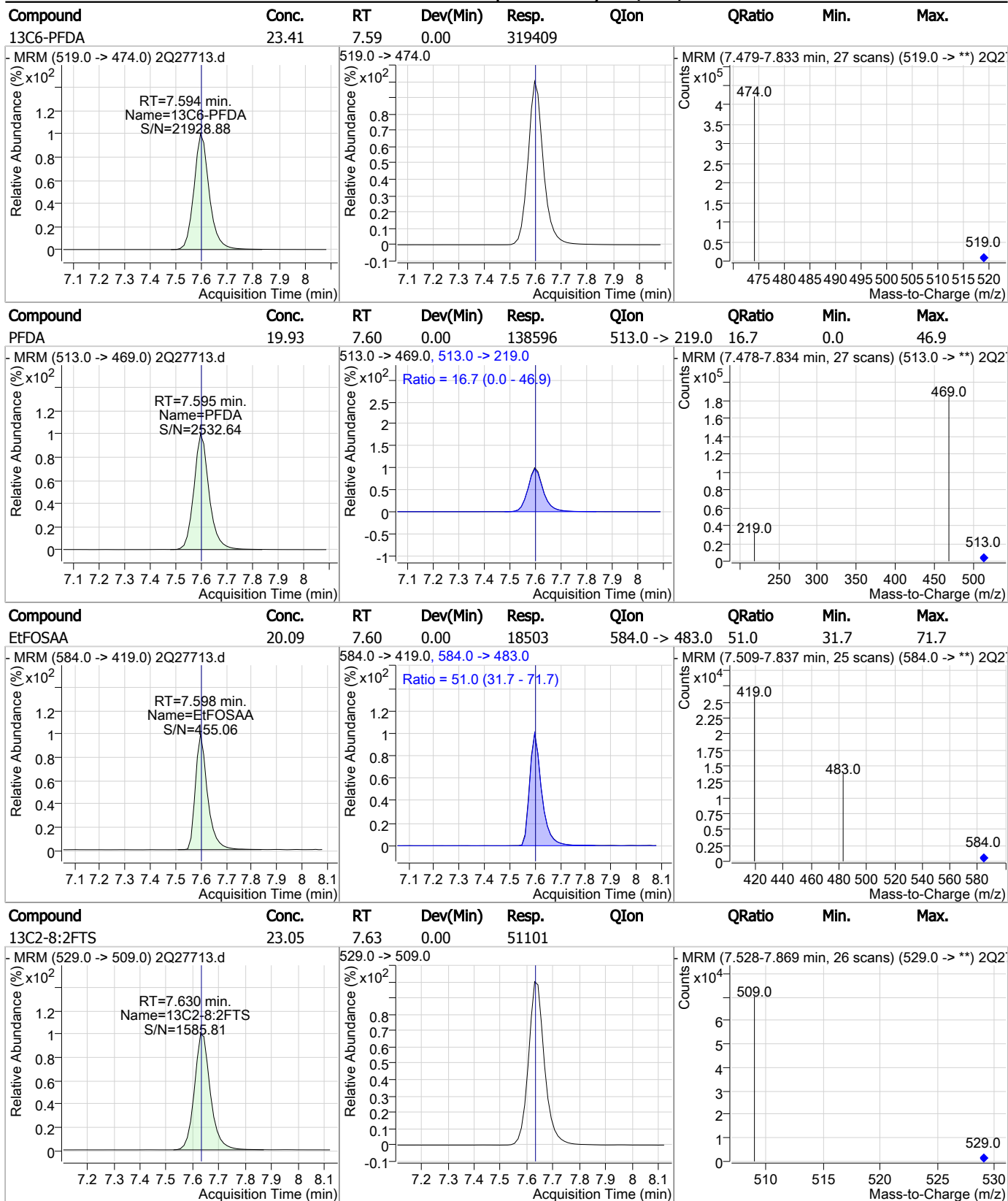
### Perfluorinated Compounds by LC/MS/MS

| Compound                        | Conc. | RT   | Dev(Min)                       | Resp. | QIon           | QRatio   | Min. | Max. |
|---------------------------------|-------|------|--------------------------------|-------|----------------|--|------|------|
| 9Cl-PF3ONS                      | 18.09 | 7.32 | 0.00                           | 21713 |                |  |      |      |
| -MRM (531.0 -> 351.0) 2Q27713.d |       |      | 531.0 -> 351.0                 |       |                | -MRM (7.235-7.566 min, 25 scans) (531.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| d3-MeFOSAA                      | 22.61 | 7.45 | 0.00                           | 43338 |                |  |      |      |
| -MRM (573.0 -> 419.0) 2Q27713.d |       |      | 573.0 -> 419.0                 |       |                | -MRM (7.384-7.687 min, 23 scans) (573.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| MeFOSAA                         | 20.24 | 7.46 | 0.00                           | 22375 | 570.0 -> 512.0 | 23.1   | 2.3  | 42.3 |
| -MRM (570.0 -> 419.0) 2Q27713.d |       |      | 570.0 -> 419.0, 570.0 -> 512.0 |       |                | -MRM (7.397-7.625 min, 17 scans) (570.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |
| PFNS                            | 21.76 | 7.57 | 0.00                           | 19504 | 549.0 -> 99.0  | 48.5   | 28.9 | 68.9 |
| -MRM (549.0 -> 80.0) 2Q27713.d  |       |      | 549.0 -> 80.0, 549.0 -> 99.0   |       |                | -MRM (7.461-7.805 min, 26 scans) (549.0 -> **) 2Q2 |      |      |
|                                 |       |      |                                |       |                |  |      |      |

7.6.28

7

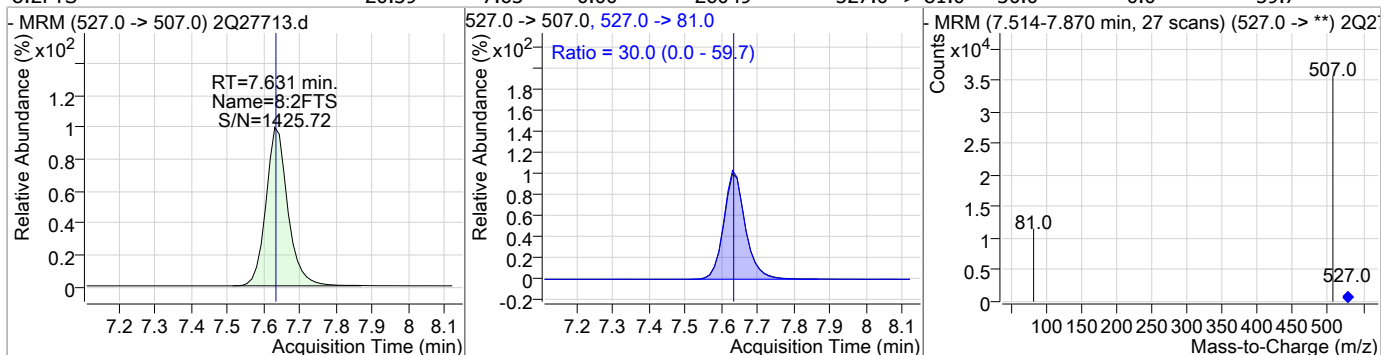
### Perfluorinated Compounds by LC/MS/MS



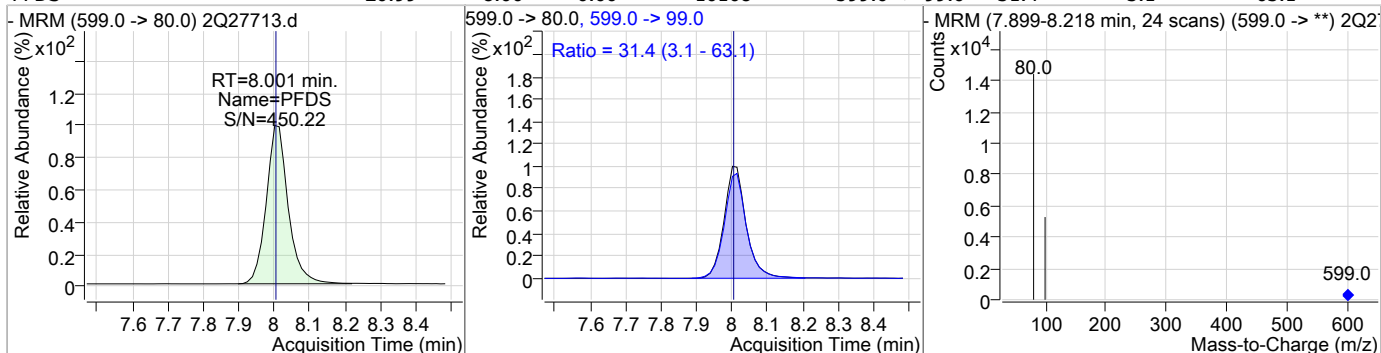
7.6.28  
7

### Perfluorinated Compounds by LC/MS/MS

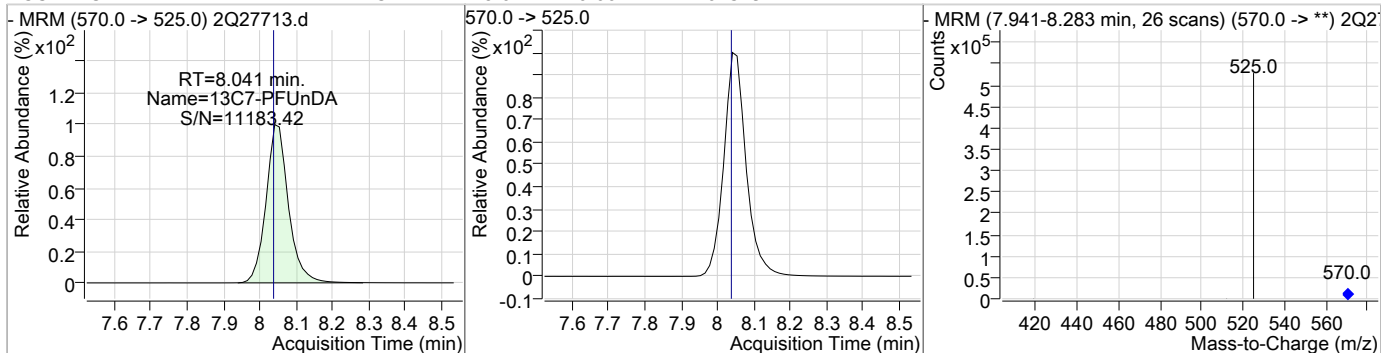
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 20.39 | 7.63 | 0.00     | 26049 | 527.0 -> 81.0 | 30.0   | 0.0  | 59.7 |



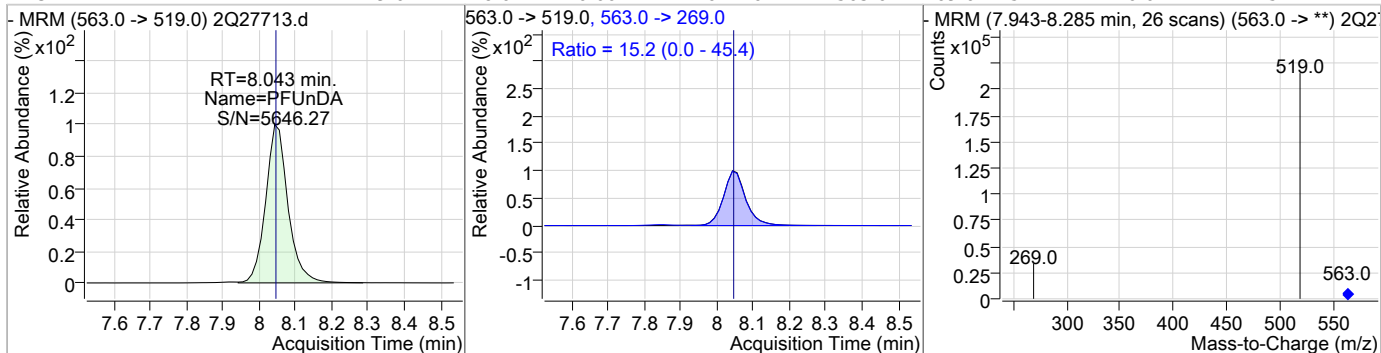
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 20.99 | 8.00 | 0.00     | 10108 | 599.0 -> 99.0 | 31.4   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 23.72 | 8.04 | 0.00     | 401349 | 570.0 -> 525.0 | 15.2   | 0.0  | 45.4 |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 19.64 | 8.04 | 0.00     | 162726 | 563.0 -> 269.0 | 15.2   | 0.0  | 45.4 |



7.6.28  
7

### Perfluorinated Compounds by LC/MS/MS

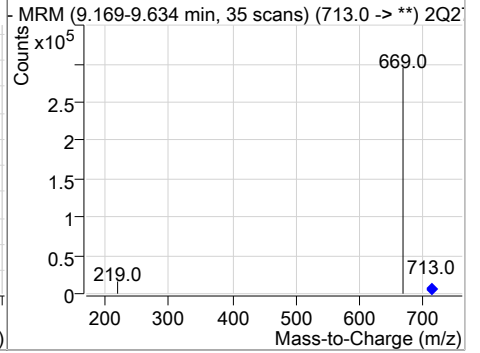
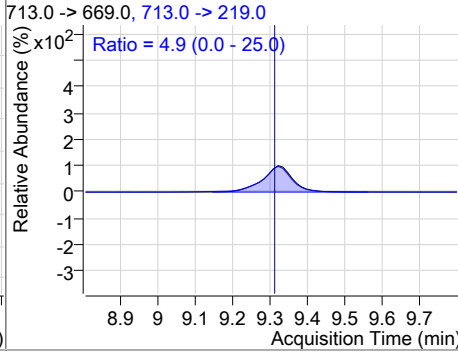
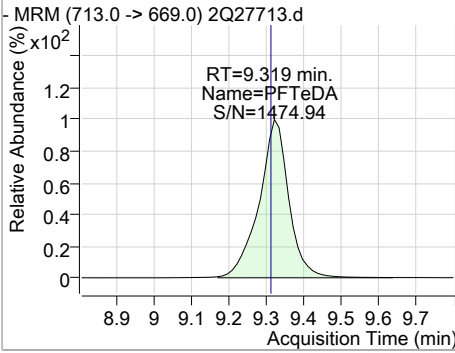
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 17.26 | 8.20 | 0.00     | 107337 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 24.12 | 8.47 | 0.00     | 453730 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 20.12 | 8.47 | 0.00     | 203214 | 613.0 -> 319.0 | 12.1   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTrDA       | 19.16 | 8.92 | 0.00     | 226171 | 663.0 -> 369.0 | 6.7    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.28  
7

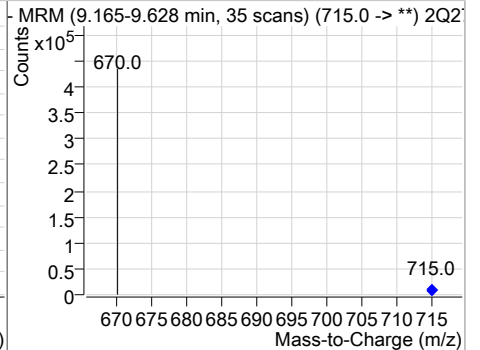
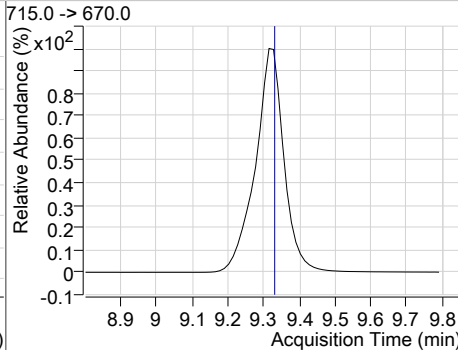
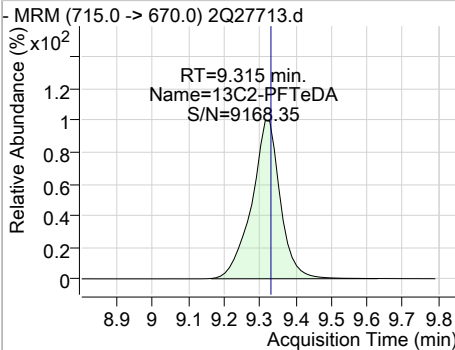


### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.41 | 9.32 | 0.00     | 220004 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 25.15 | 9.31 | -0.01    | 322875 |      |        |      |      |



7.6.28  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q442-CC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27713.D      **Analyst approved:** 03/20/19 07:47 Nancy Saunders  
**Injection Time:** 03/18/19 21:31      **Supervisor approved:** 03/20/19 09:24 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.28.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27719.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/18/2019 11:05:56 PM  
 Sample Name : ECC442-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q442.batch.bin  
 Sample Information : op74164,S2Q442,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 310379            | 20.00 µg/L  | 0.000    |
| 13C4-PFOS                          | 7.036                | 503.0 -> 80.0  | 46264             | 20.00 µg/L  | 0.000    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 129823            | 20.00 µg/L  | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 111844            | 20.00 µg/L  | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 157331            | 20.00 µg/L  | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 232163            | 20.00 µg/L  | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 235648            | 20.00 µg/L  | 0.000    |
| M9-PFNA                            | 7.052                | 472.0 -> 427.0 | 247997            | 20.00 µg/L  | -0.013   |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 327409            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 409858            | 20.00 µg/L  | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 470197            | 20.00 µg/L  | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 337973            | 20.00 µg/L  | -0.013   |
| M8-FOSA                            | 6.932                | 506.0 -> 78.0  | 89822             | 20.00 µg/L  | -0.013   |
| M3-PFBS                            | 3.767                | 302.0 -> 99.0  | 18746             | 20.00 µg/L  | -0.013   |
| M3-PFHxS                           | 5.736                | 402.0 -> 99.0  | 21284             | 20.00 µg/L  | 0.000    |
| M8-PFOS                            | 7.033                | 507.0 -> 99.0  | 27177             | 20.00 µg/L  | -0.013   |
| M2-4:2FTS                          | 4.684                | 329.0 -> 309.0 | 63887             | 20.00 µg/L  | 0.000    |
| M2-6:2FTS                          | 6.416                | 429.0 -> 409.0 | 71445             | 20.00 µg/L  | 0.000    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 52415             | 20.00 µg/L  | 0.000    |
| M3-MeFOSAA                         | 7.447                | 573.0 -> 419.0 | 45176             | 20.00 µg/L  | 0.000    |
| M3-HFPO-DA                         | 5.068                | 287.0 -> 169.0 | 162556            | 100.00 µg/L | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 4.684                | 329.0 -> 309.0 | 63708             | 21.42 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 107.1% |             |          |
| 13C2-6:2FTS                        | 6.416                | 429.0 -> 409.0 | 71382             | 22.24 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 111.2% |             |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 52435             | 23.65 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 118.2% |             |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 469649            | 24.97 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 124.8% |             |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 336992            | 26.25 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 131.2% |             |          |
| 13C3-PFBS                          | 3.767                | 302.0 -> 99.0  | 18667             | 20.47 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.4% |             |          |
| 13C3-PFHxS                         | 5.736                | 402.0 -> 99.0  | 21226             | 20.82 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 104.1% |             |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 129251            | 21.55 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 107.8% |             |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 231872            | 22.42 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 112.1% |             |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 157006            | 21.61 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 108.0% |             |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 112075            | 22.05 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 110.2% |             |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 327209            | 23.98 µg/L  | 0.000    |

7.6.29  
7



Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 119.9% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 409476 | 24.20 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 121.0% |          |
| 13C8-FOSA             | 6.932                | 506.0 -> 78.0  | 89814  | 22.15 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 110.7% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 235586 | 22.58 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 112.9% |          |
| 13C8-PFOS             | 7.033                | 507.0 -> 99.0  | 27120  | 20.81 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |          |
| 13C9-PFNA             | 7.052                | 472.0 -> 427.0 | 247893 | 23.41 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 117.1% |          |
| d3-MeFOSAA            | 7.447                | 573.0 -> 419.0 | 45170  | 23.56 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 117.8% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 310709 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.036                | 503.0 -> 80.0  | 46345  | 20.03 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.068                | 287.0 -> 169.0 | 162556 | 101.66 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 101.7% |          |

7.6.29  
7

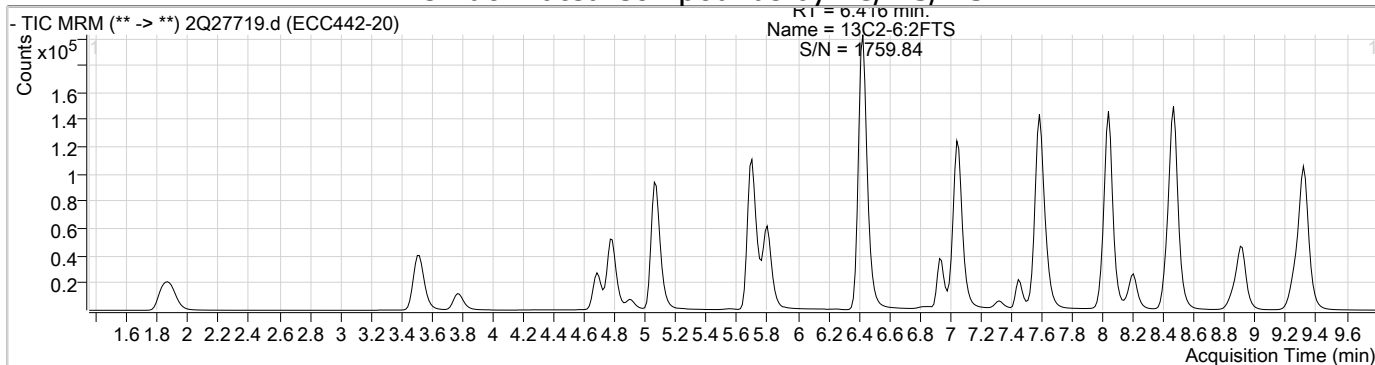
Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.687 | 327.0 -> 307.0 | 35801  | 20.34 µg/L  | 98     |
| 6:2FTS           | 6.418 | 427.0 -> 407.0 | 35260  | 20.06 µg/L  | 99     |
| 8:2FTS           | 7.631 | 527.0 -> 507.0 | 26602  | 20.30 µg/L  | 99     |
| EtFOSAA          | 7.598 | 584.0 -> 419.0 | 18805  | 19.58 µg/L  | 100    |
| FOSA             | 6.935 | 498.0 -> 78.0  | 41461  | 20.04 µg/L  | 100    |
| MeFOSAA          | 7.447 | 570.0 -> 419.0 | 22452  | 19.48 µg/L  | 98     |
| PFBA             | 1.860 | 213.0 -> 169.0 | 24764  | 19.31 µg/L  | 100    |
| PFBS             | 3.771 | 299.0 -> 80.0  | 29663  | 19.93 µg/L  | 100    |
| PFDA             | 7.595 | 513.0 -> 469.0 | 141466 | 19.85 µg/L  | 100    |
| PFDoDA           | 8.468 | 613.0 -> 569.0 | 208729 | 19.95 µg/L  | 100    |
| PFDS             | 8.001 | 599.0 -> 80.0  | 10114  | 20.21 µg/L  | 100    |
| PFHpA            | 5.708 | 363.0 -> 319.0 | 197565 | 19.74 µg/L  | 100    |
| PFHpS            | 6.442 | 449.0 -> 80.0  | 20809  | 20.15 µg/L  | 98     |
| PFHxA            | 4.778 | 313.0 -> 269.0 | 53391  | 19.71 µg/L  | 100    |
| PFHxS            | 5.739 | 399.0 -> 80.0  | 23119  | 19.65 µg/L  | m 97   |
| PFNA             | 7.066 | 463.0 -> 419.0 | 160003 | 19.45 µg/L  | 99     |
| PFNS             | 7.565 | 549.0 -> 80.0  | 19938  | 21.41 µg/L  | 99     |
| PFOA             | 6.437 | 413.0 -> 369.0 | 123279 | 19.37 µg/L  | 98     |
| PFOS             | 7.037 | 499.0 -> 80.0  | 25409  | 19.25 µg/L  | m 82   |
| PFPeA            | 3.515 | 263.0 -> 219.0 | 95630  | 19.75 µg/L  | 100    |
| PFPeS            | 4.895 | 349.0 -> 80.0  | 19942  | 20.93 µg/L  | 97     |
| PFTeDA           | 9.319 | 713.0 -> 669.0 | 229749 | 19.44 µg/L  | 100    |
| PFTrDA           | 8.907 | 663.0 -> 619.0 | 237342 | 19.28 µg/L  | 100    |
| PFUnDA           | 8.043 | 563.0 -> 519.0 | 166967 | 19.75 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.200 | 631.0 -> 451.0 | 110908 | 17.21 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.323 | 531.0 -> 351.0 | 22067  | 17.93 µg/L  | 100    |
| ADONA            | 5.804 | 377.0 -> 251.0 | 226205 | 19.39 µg/L  | 100    |
| HFPO-DA          | 5.073 | 329.0 -> 169.0 | 191258 | 99.04 µg/L  | 99     |

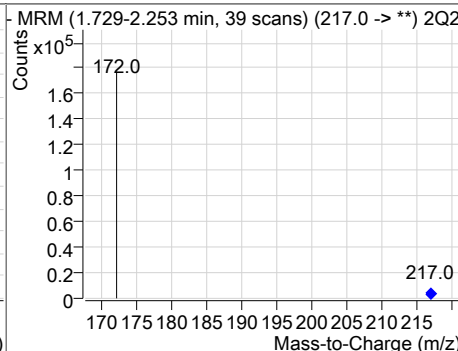
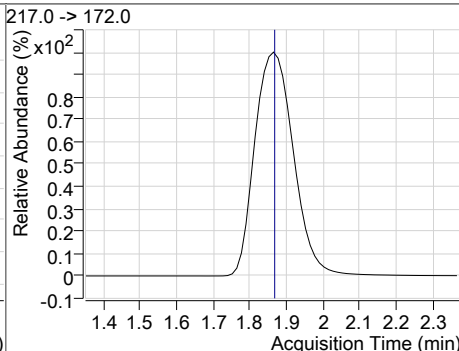
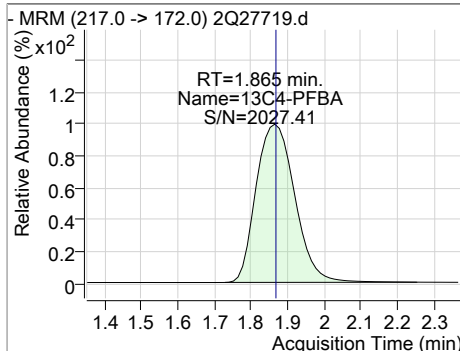
# = Qualifier out of range, m = manually integrated, + = Area summed



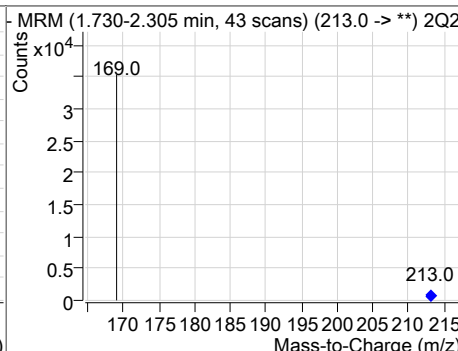
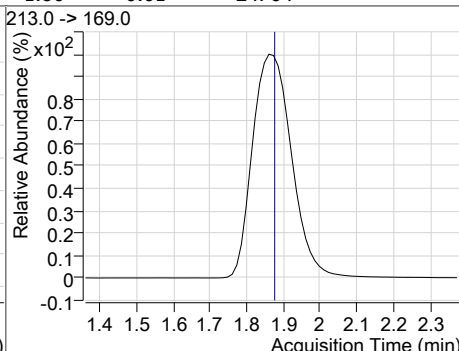
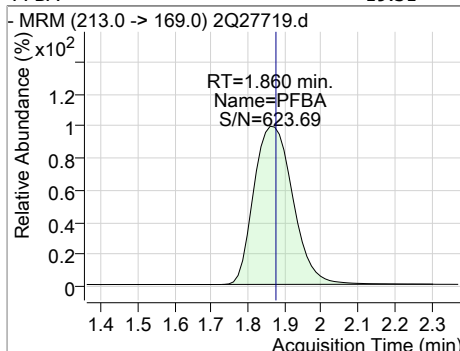
### Perfluorinated Compounds by LC/MS/MS



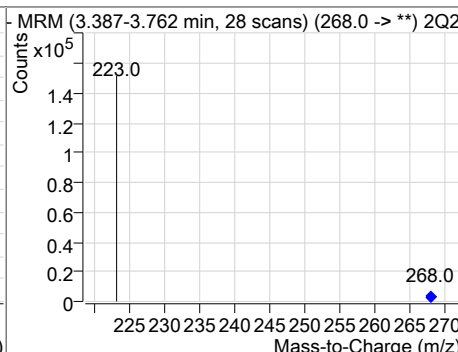
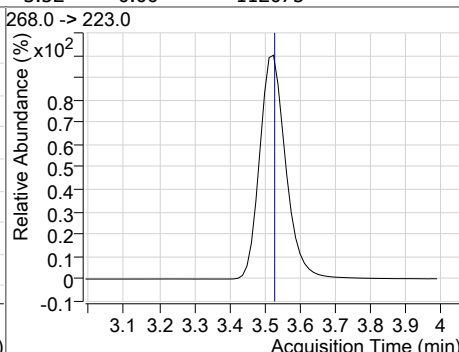
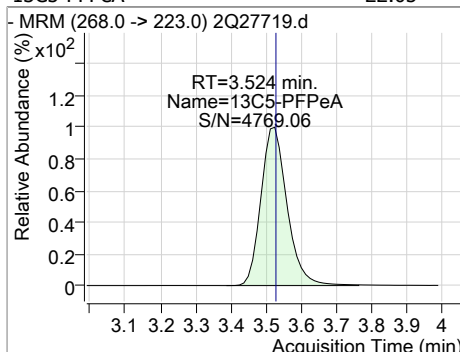
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 21.55 | 1.86 | 0.00     | 129251 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 19.31 | 1.86 | -0.01    | 24764 |      |        |      |      |

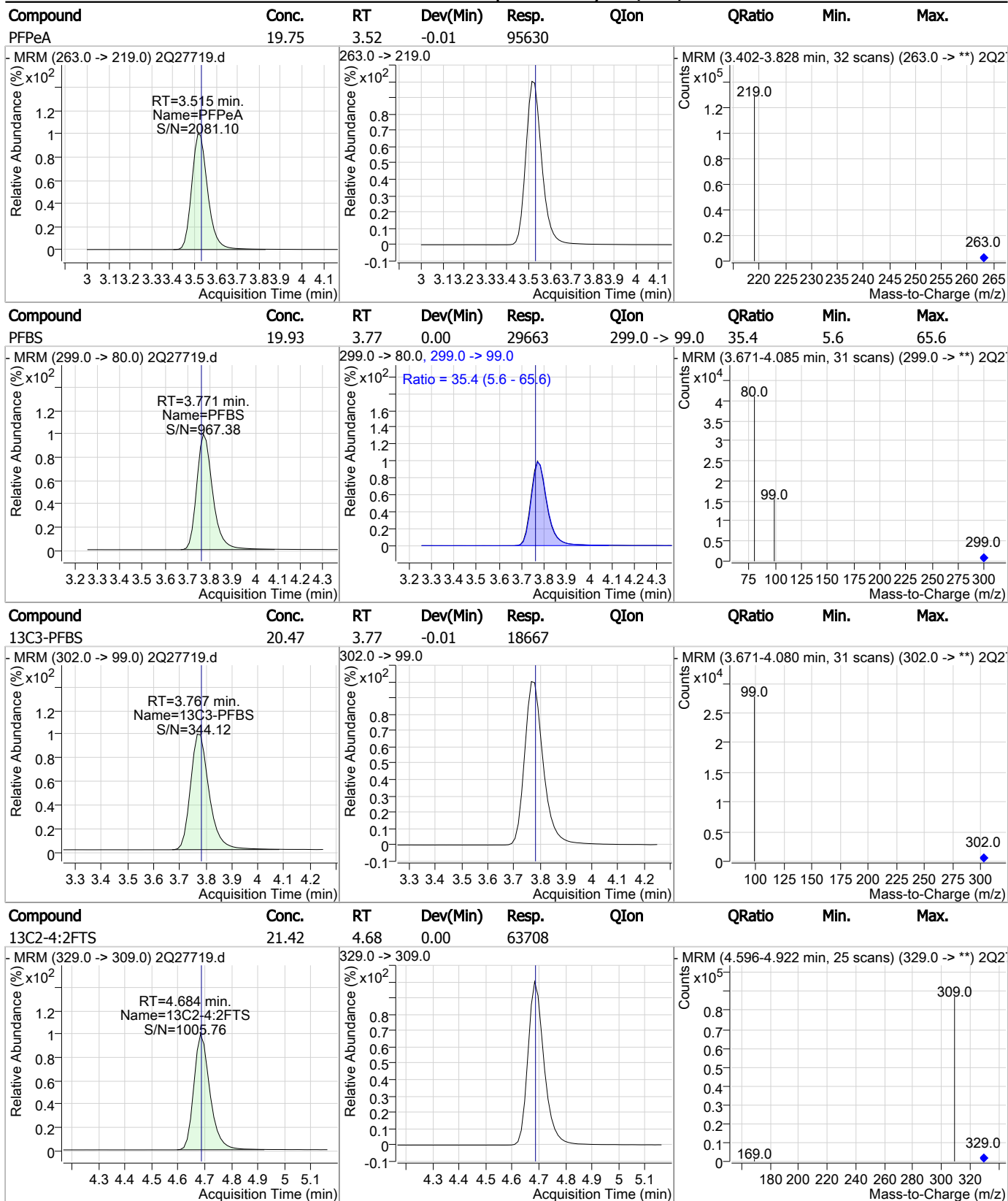


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 22.05 | 3.52 | 0.00     | 112075 |      |        |      |      |



7.6.29  
7

### Perfluorinated Compounds by LC/MS/MS

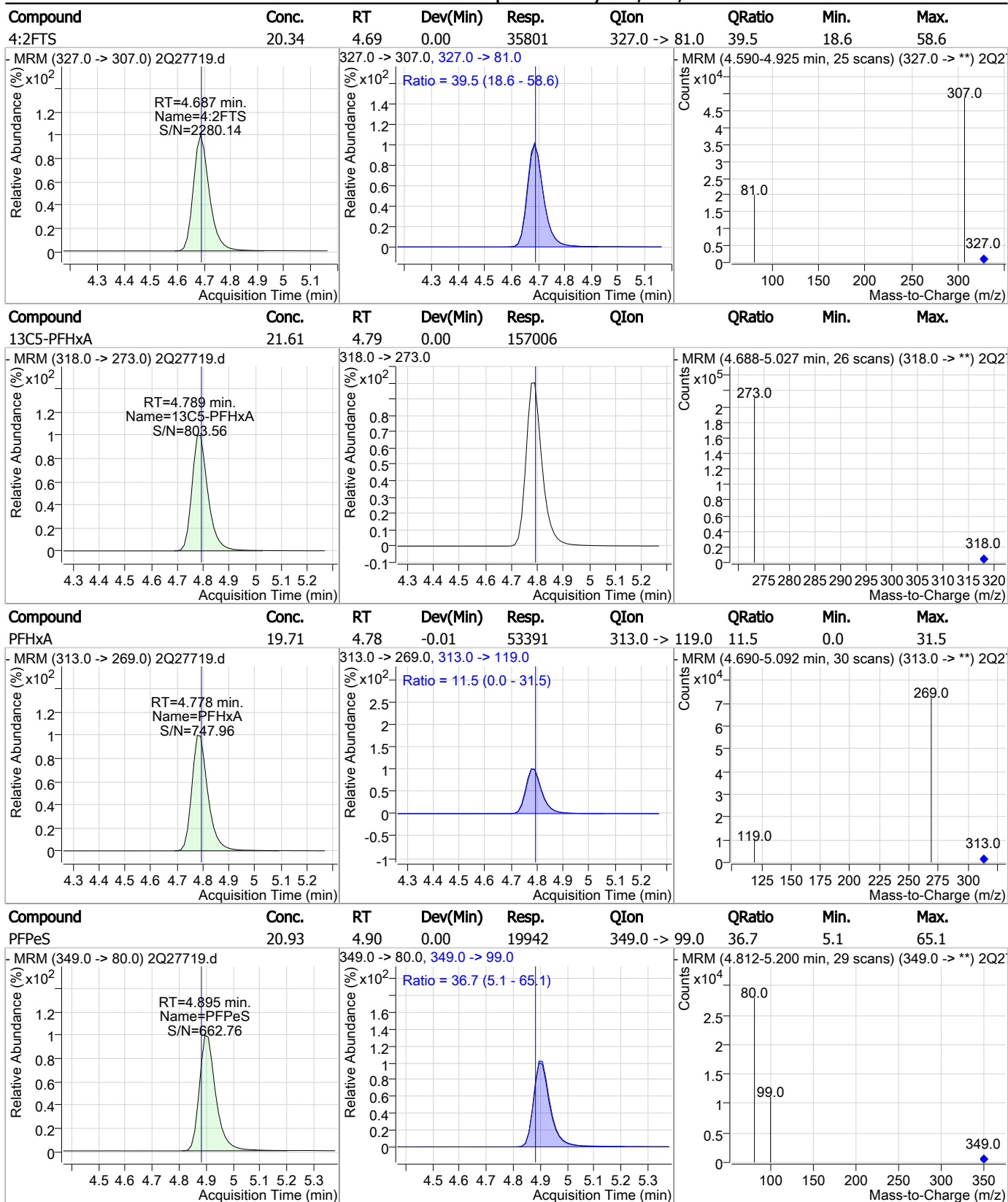


7.6.29

7



### Perfluorinated Compounds by LC/MS/MS

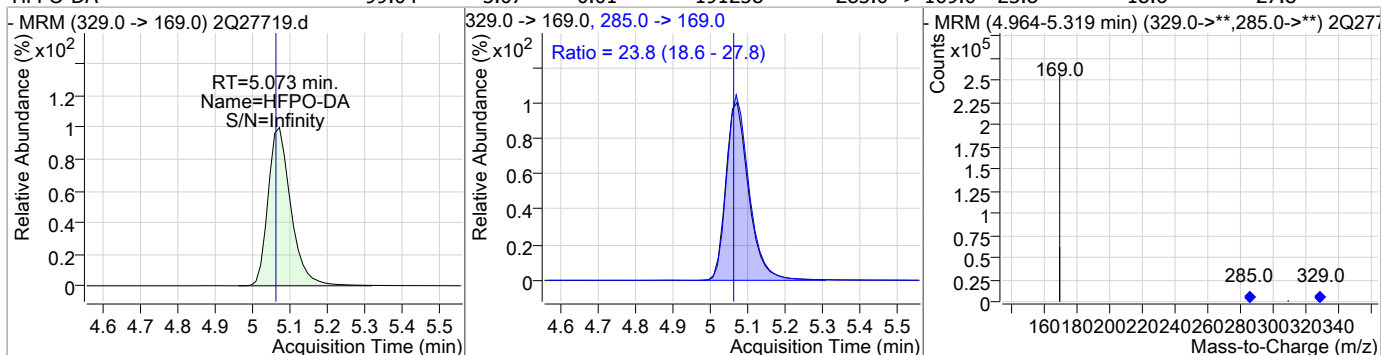


7.6.29

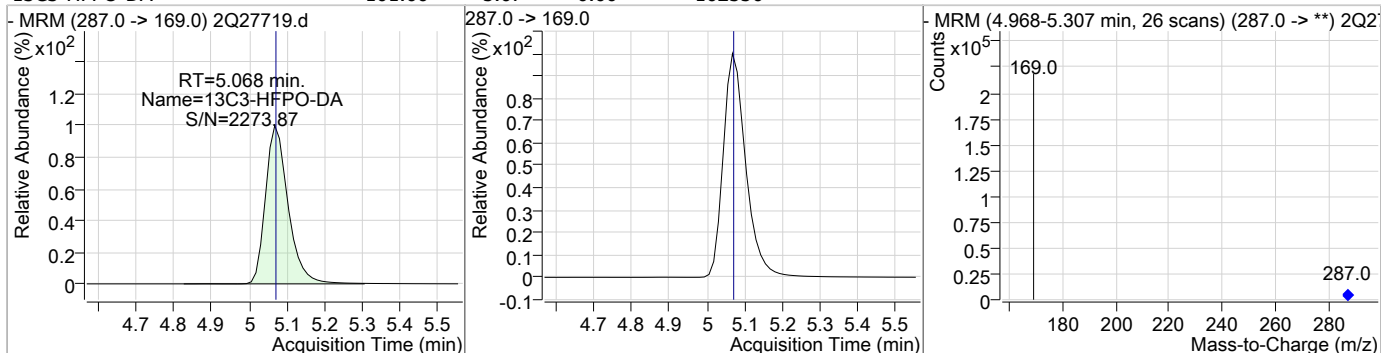
7

### Perfluorinated Compounds by LC/MS/MS

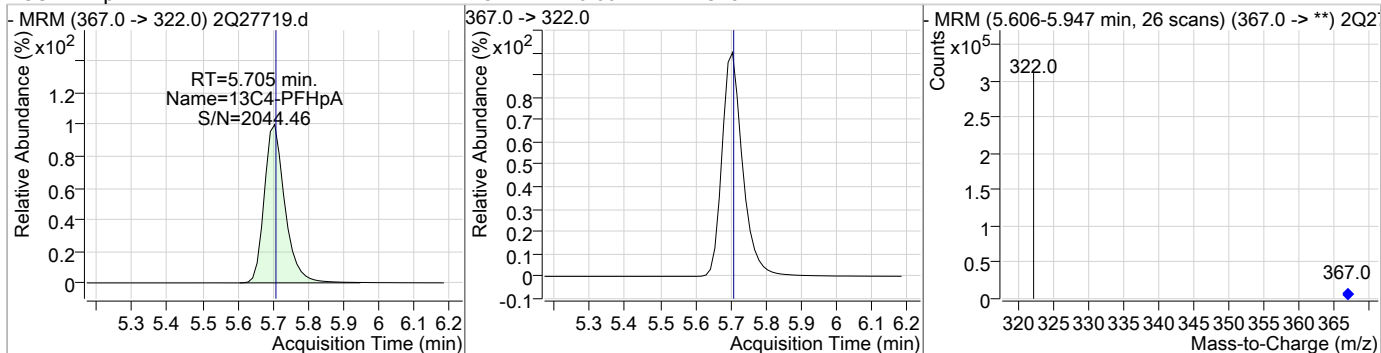
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 99.04 | 5.07 | 0.01     | 191258 | 285.0 -> 169.0 | 23.8   | 18.6 | 27.8 |



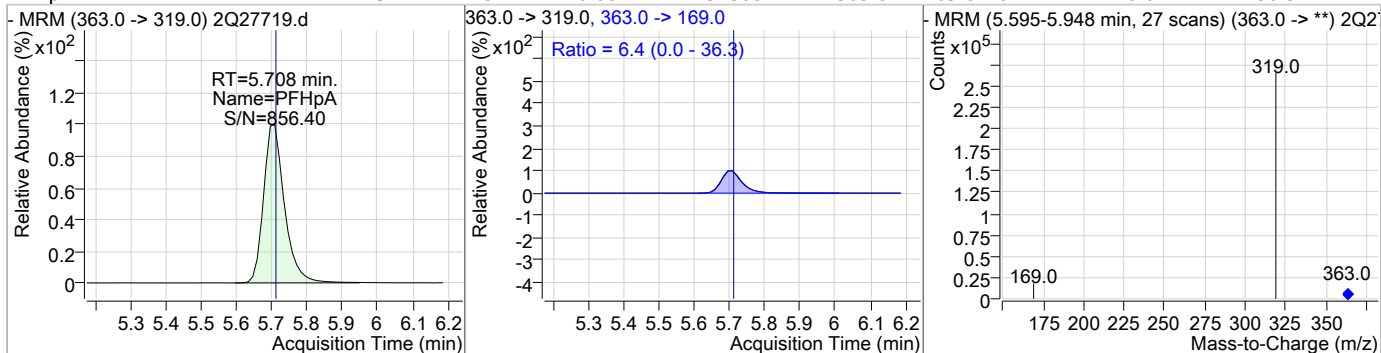
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 101.66 | 5.07 | 0.00     | 162556 |      |        |      |      |



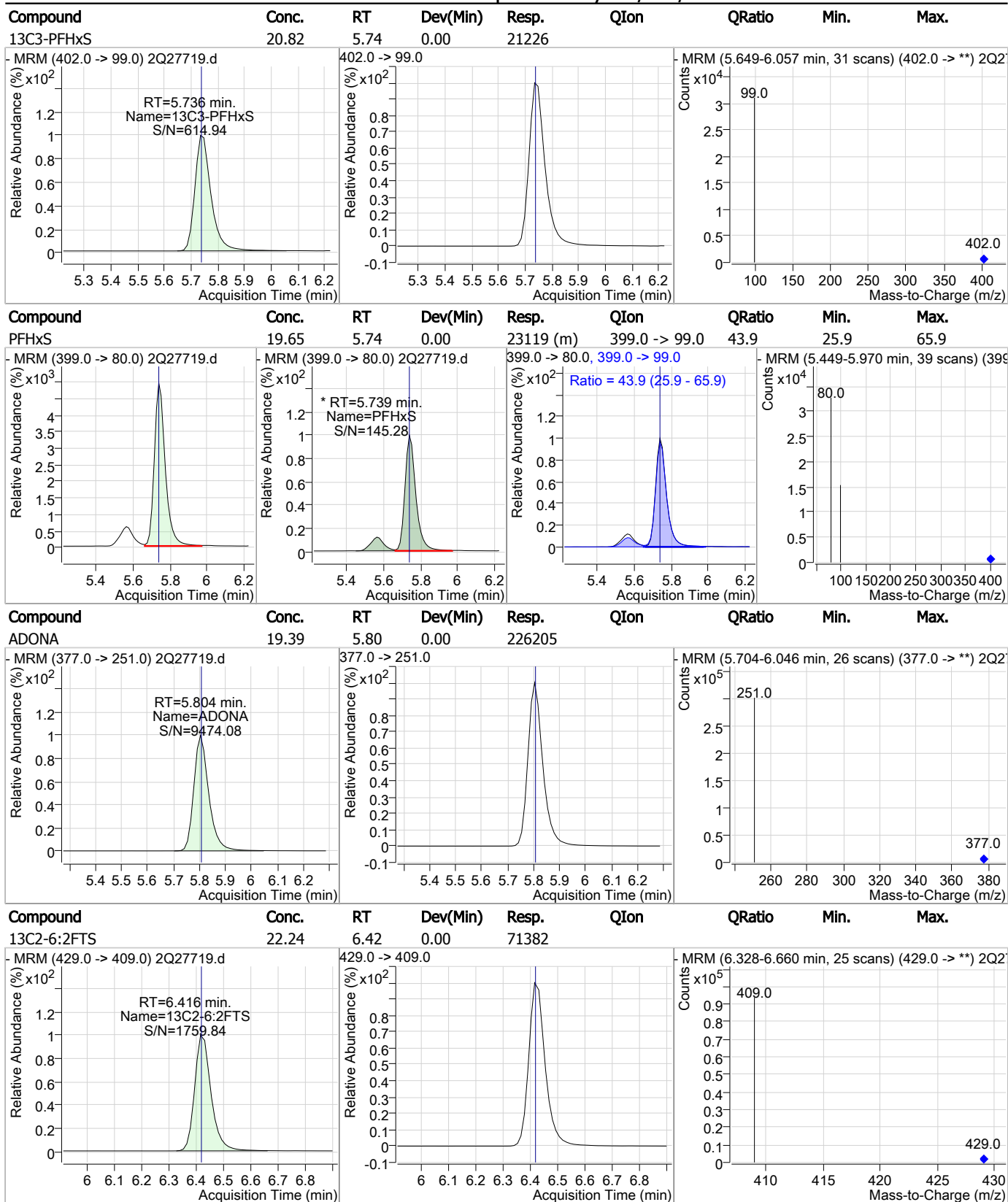
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 22.42 | 5.71 | 0.00     | 231872 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.74 | 5.71 | 0.00     | 197565 | 363.0 -> 169.0 | 6.4    | 0.0  | 36.3 |



### Perfluorinated Compounds by LC/MS/MS

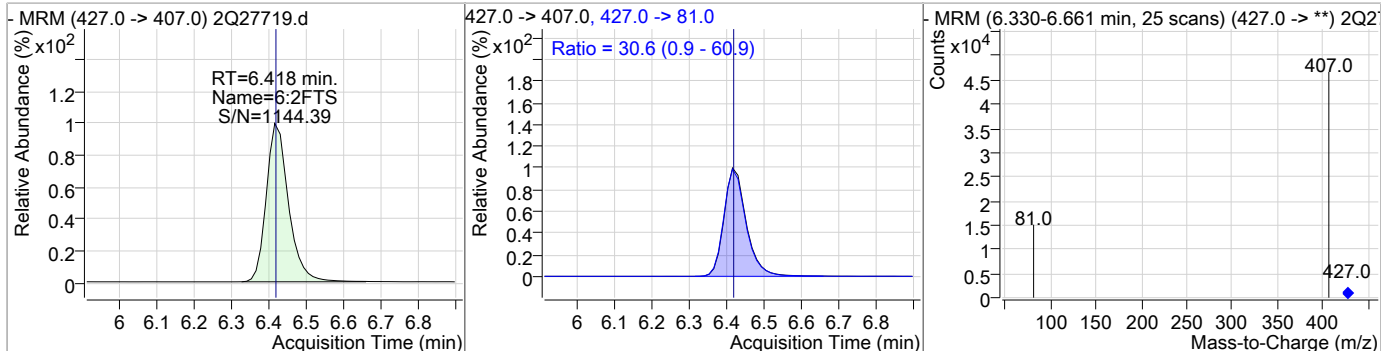


7.6.29

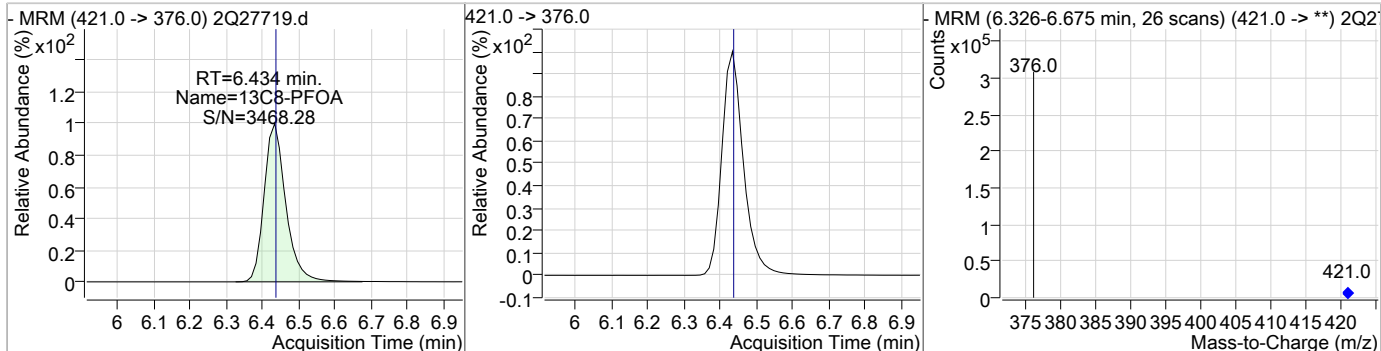
7

### Perfluorinated Compounds by LC/MS/MS

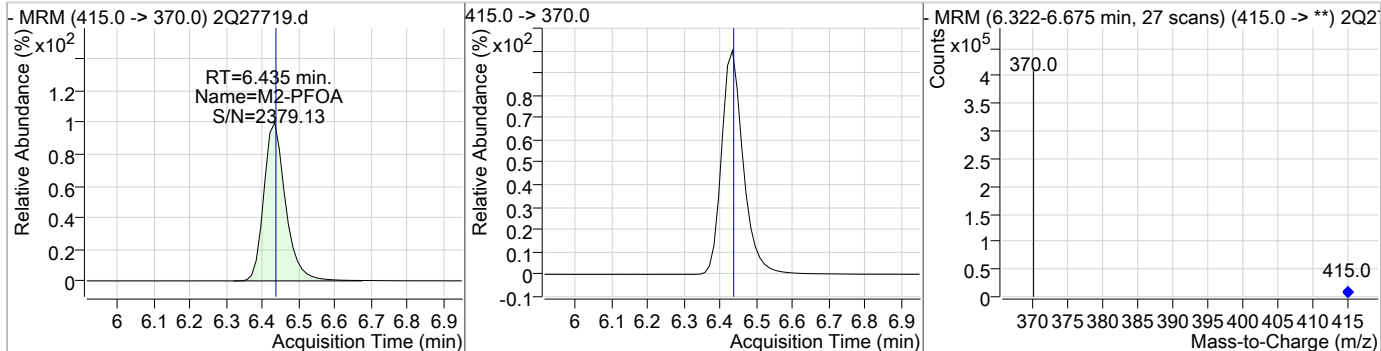
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 20.06 | 6.42 | 0.00     | 35260 | 427.0 -> 81.0 | 30.6   | 0.9  | 60.9 |



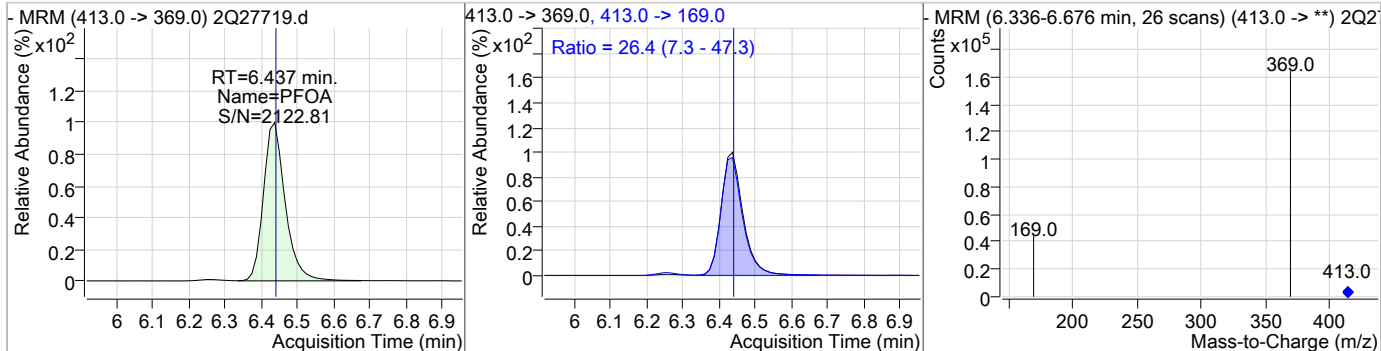
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 22.58 | 6.43 | 0.00     | 235586 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 310709 |      |        |      |      |

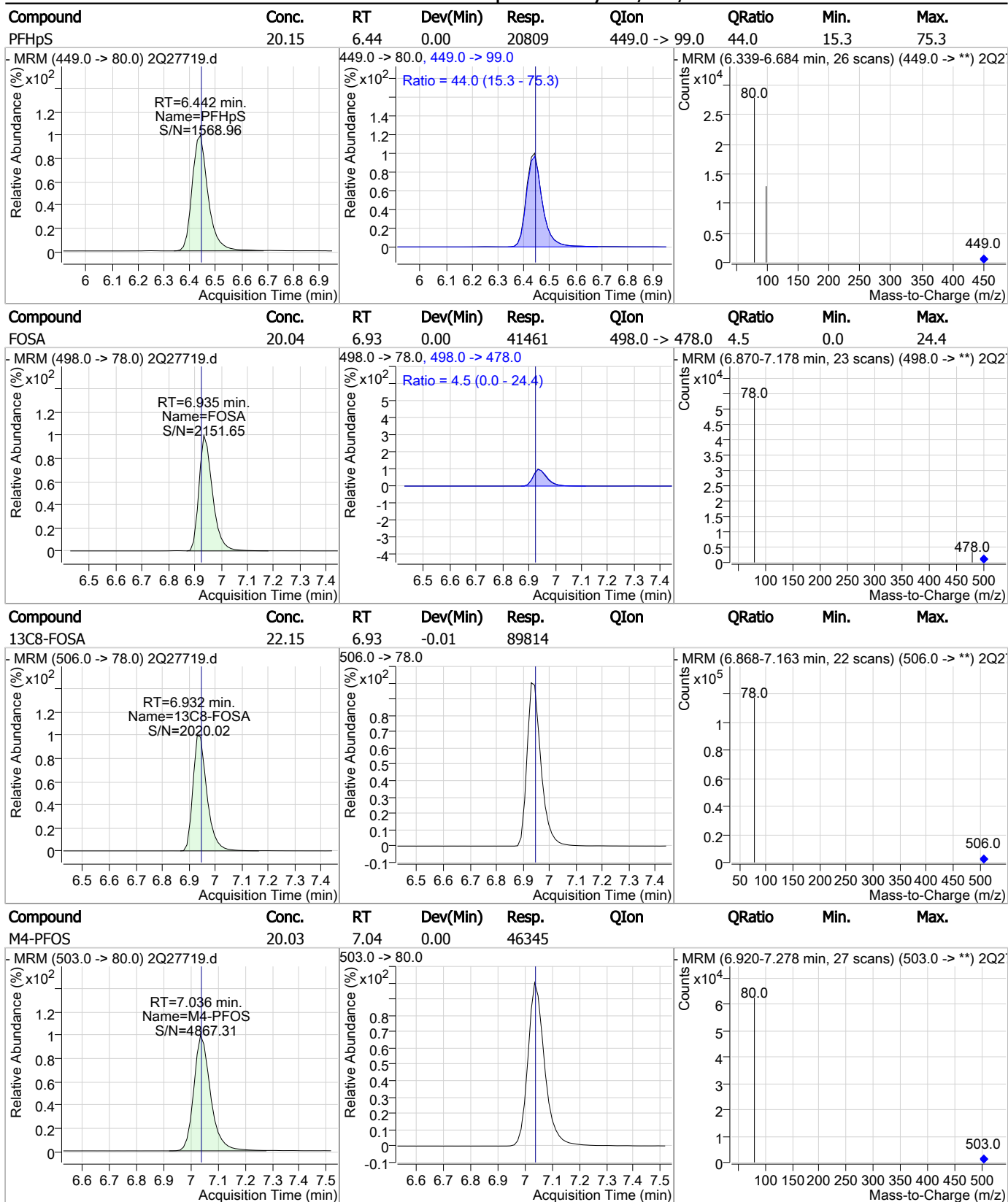


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.37 | 6.44 | 0.00     | 123279 | 413.0 -> 169.0 | 26.4   | 7.3  | 47.3 |



7.6.29  
7

### Perfluorinated Compounds by LC/MS/MS



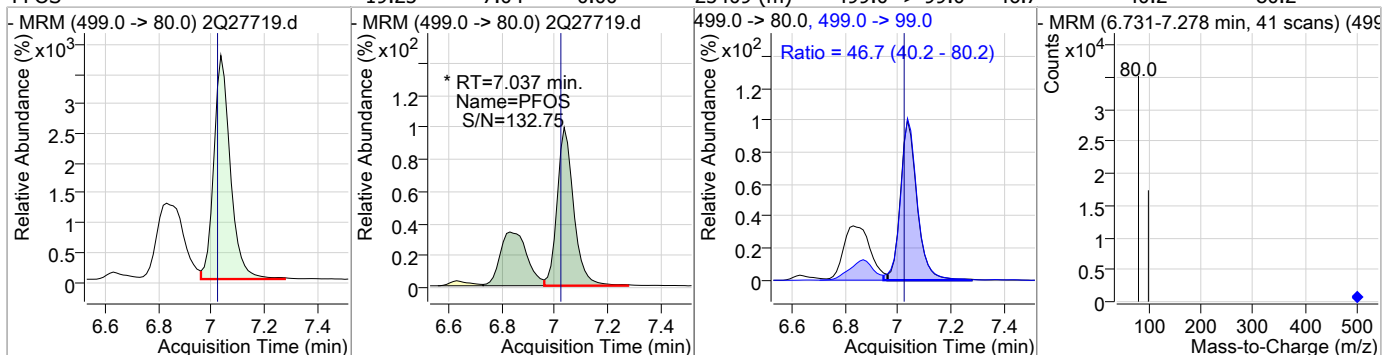
7.6.29

7

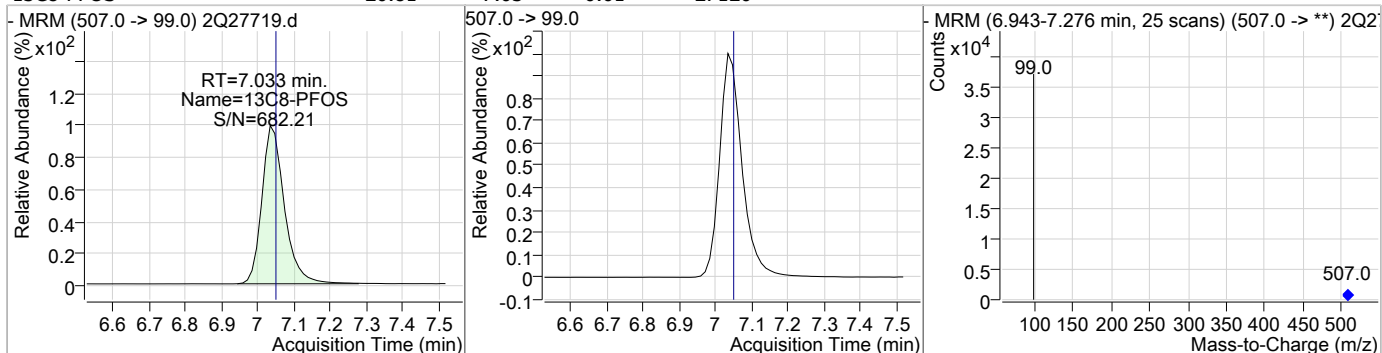


### Perfluorinated Compounds by LC/MS/MS

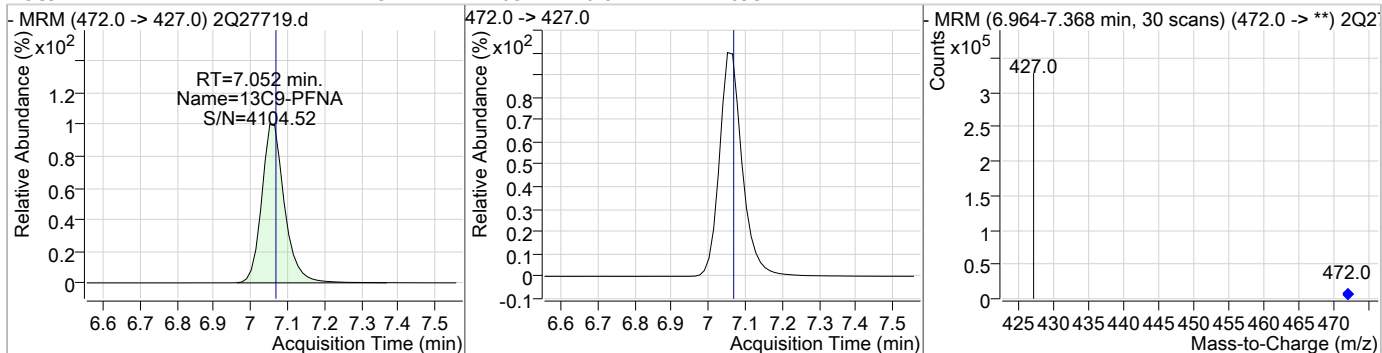
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.25 | 7.04 | 0.00     | 25409 (m) | 499.0 -> 99.0 | 46.7   | 40.2 | 80.2 |



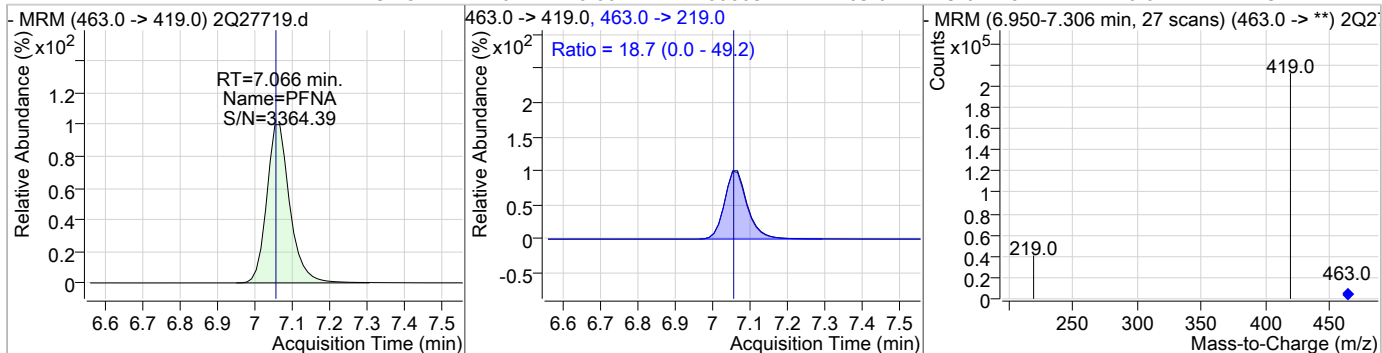
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.81 | 7.03 | -0.01    | 27120 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 23.41 | 7.05 | -0.01    | 247893 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 19.45 | 7.07 | 0.00     | 160003 | 463.0 -> 219.0 | 18.7   | 0.0  | 49.2 |



### Perfluorinated Compounds by LC/MS/MS

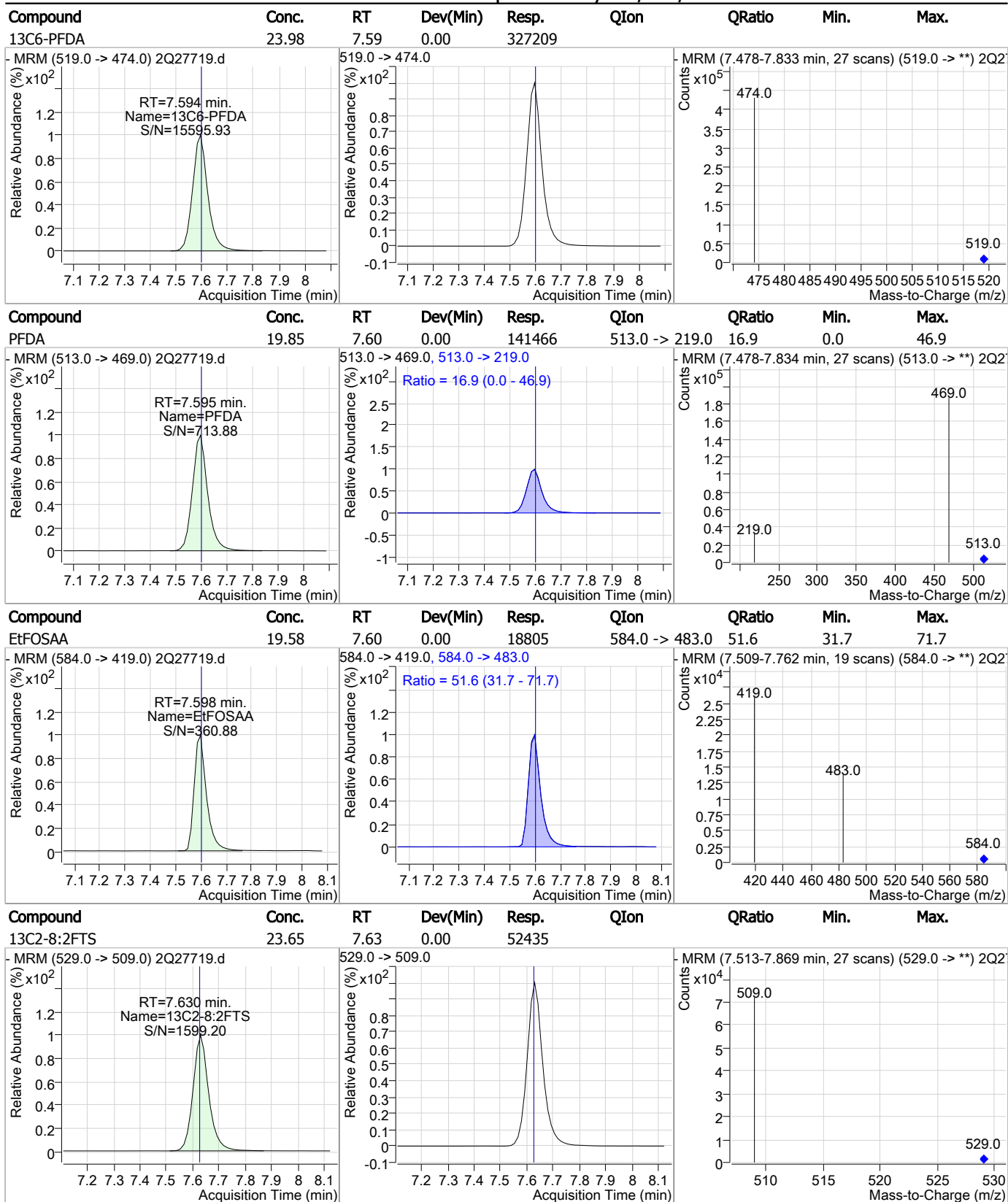
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|----------------|--------|------|------|
| 9CI-PF3ONS | 17.93 | 7.32 | 0.00     | 22067 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| d3-MeFOSAA | 23.56 | 7.45 | 0.00     | 45170 |                |        |      |      |
|            |       |      |          |       |                |        |      |      |
| MeFOSAA    | 19.48 | 7.45 | -0.01    | 22452 | 570.0 -> 512.0 | 23.1   | 2.3  | 42.3 |
|            |       |      |          |       |                |        |      |      |
| PFNS       | 21.41 | 7.57 | 0.00     | 19938 | 549.0 -> 99.0  | 49.6   | 28.9 | 68.9 |
|            |       |      |          |       |                |        |      |      |

7.6.29

7



### Perfluorinated Compounds by LC/MS/MS

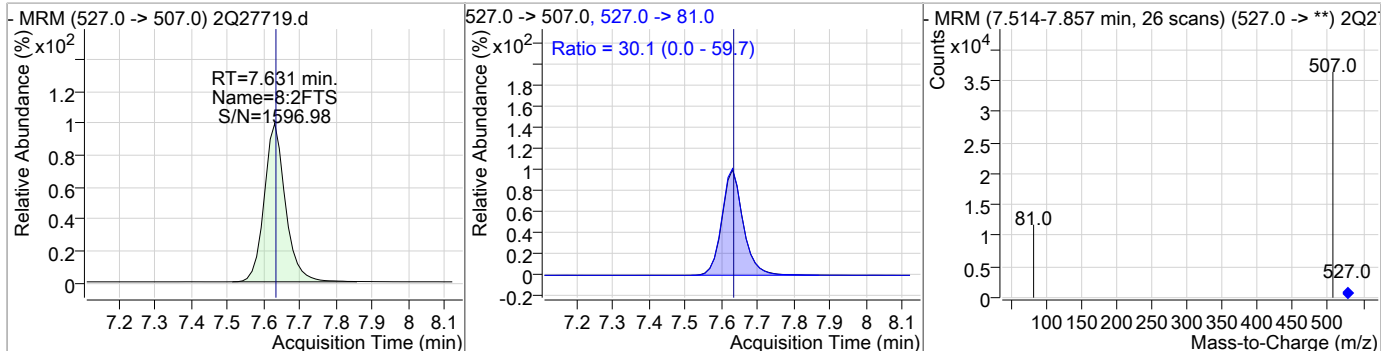


7.6.29

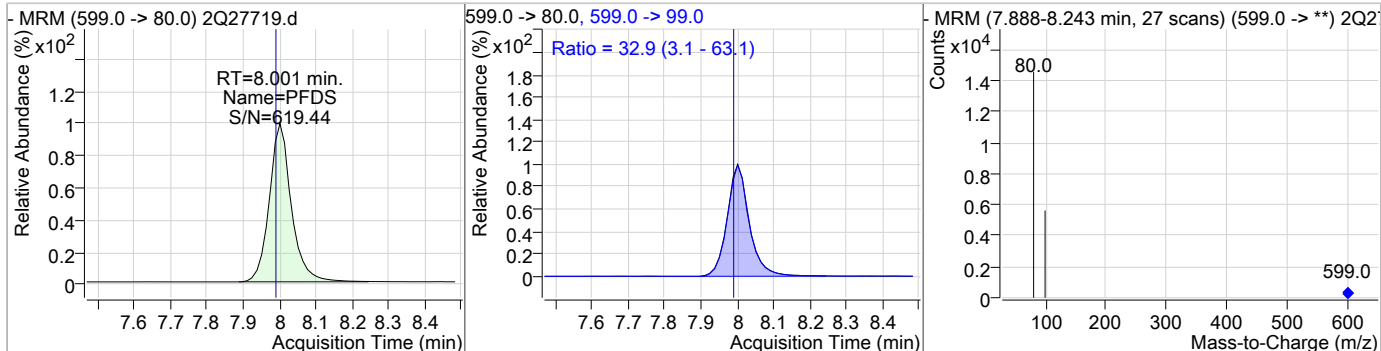
7

### Perfluorinated Compounds by LC/MS/MS

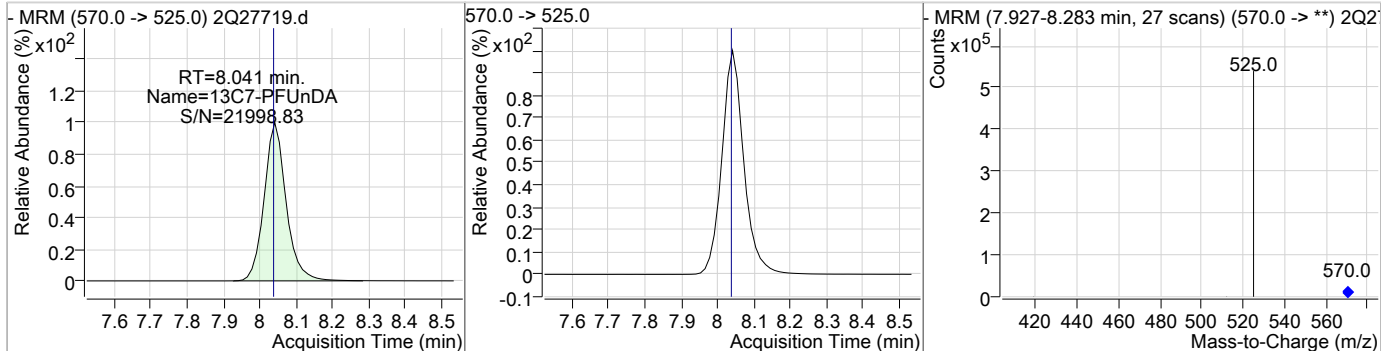
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 20.30 | 7.63 | 0.00     | 26602 | 527.0 -> 81.0 | 30.1   | 0.0  | 59.7 |



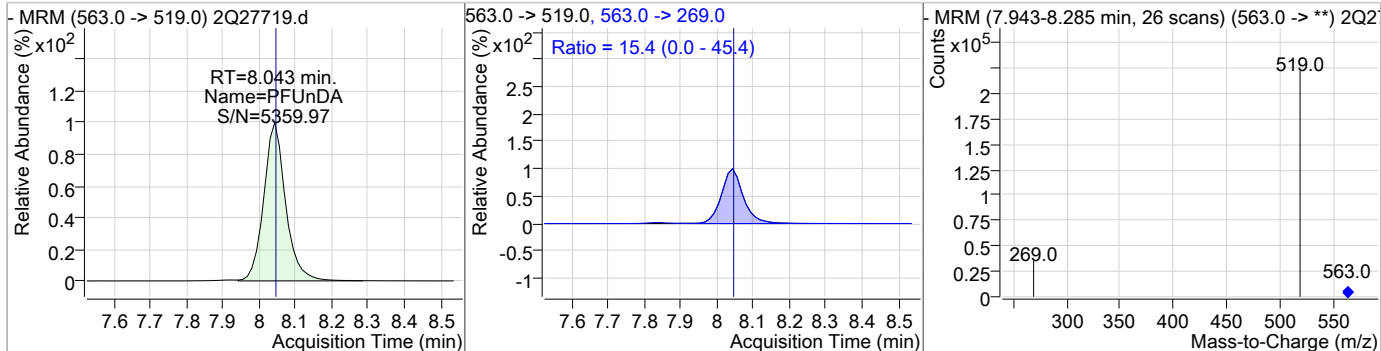
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 20.21 | 8.00 | 0.00     | 10114 | 599.0 -> 99.0 | 32.9   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 24.20 | 8.04 | 0.00     | 409476 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 19.75 | 8.04 | 0.00     | 166967 | 563.0 -> 269.0 | 15.4   | 0.0  | 45.4 |



### Perfluorinated Compounds by LC/MS/MS

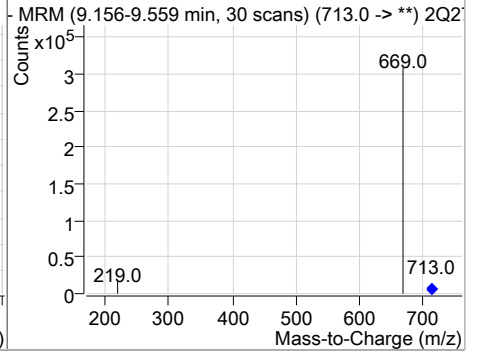
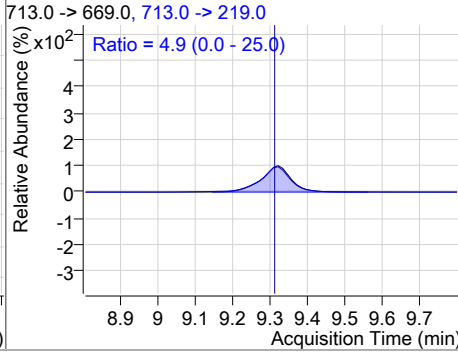
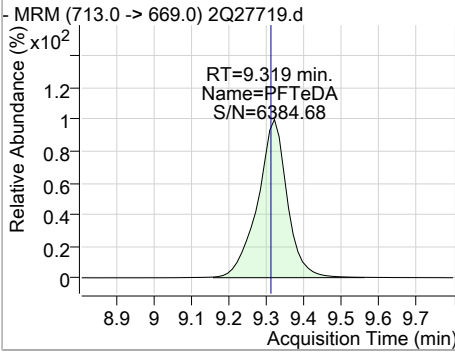
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 17.21 | 8.20 | 0.00     | 110908 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 24.97 | 8.47 | 0.00     | 469649 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 19.95 | 8.47 | 0.00     | 208729 | 613.0 -> 319.0 | 12.5   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 19.28 | 8.91 | -0.01    | 237342 | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.29

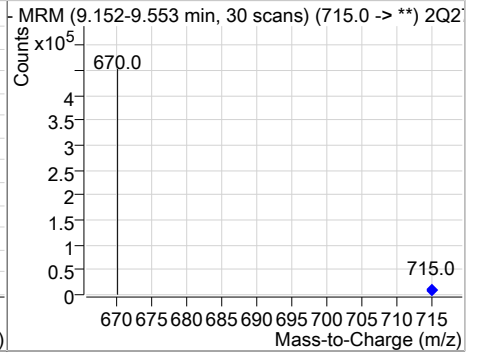
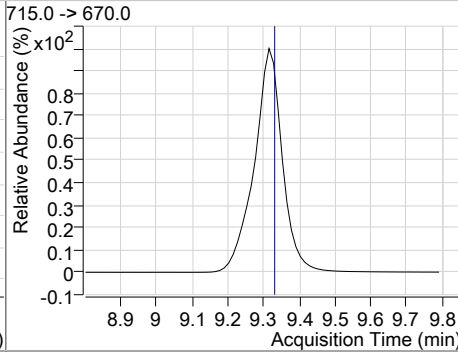
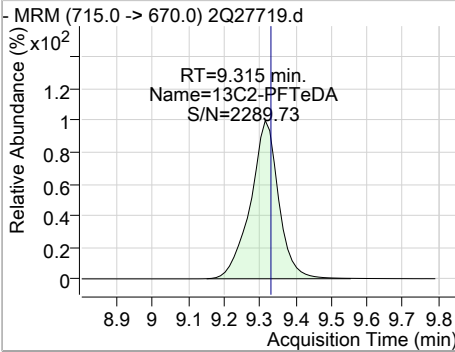
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.44 | 9.32 | 0.00     | 229749 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 26.25 | 9.31 | -0.01    | 336992 |      |        |      |      |



7.6.29  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q442-ECC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27719.D      **Analyst approved:** 03/19/19 09:45 Nancy Saunders  
**Injection Time:** 03/18/19 23:05      **Supervisor approved:** 03/19/19 16:30 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.29.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27742.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/19/2019 3:15:35 PM  
 Sample Name : CC442-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q443.batch.bin  
 Sample Information : op74164,S2Q443,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 302137 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 46798  | 20.00 µg/L        | 0.013    |
| M4-PFBA                            | 1.865                | 217.0 -> 172.0 | 125914 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 108927 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 154263 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 223528 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 226090 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.066                | 472.0 -> 427.0 | 235209 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 308903 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 391385 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 441521 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 309583 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 87177  | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 18846  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 20972  | 20.00 µg/L        | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 27686  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 62522  | 20.00 µg/L        | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 69370  | 20.00 µg/L        | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 50358  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 41640  | 20.00 µg/L        | 0.013    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 183792 | 100.00 µg/L       | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 62210  | 20.92 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.6% |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 69333  | 21.60 µg/L        | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.0% |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 50305  | 22.69 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 113.4% |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 441559 | 23.48 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 117.4% |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 308463 | 24.03 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 120.1% |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 18818  | 20.64 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 21038  | 20.64 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| 13C4-PFBA                          | 1.865                | 217.0 -> 172.0 | 125279 | 20.89 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.5% |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 223340 | 21.59 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 108.0% |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 154202 | 21.22 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.1% |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 108946 | 21.43 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 107.2% |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 308831 | 22.63 µg/L        | 0.000    |

7.6.30  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 113.2% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 391007 | 23.10 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 115.5% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 87182  | 21.50 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.5% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 225967 | 21.66 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.3% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 27619  | 21.19 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.9% |          |
| 13C9-PFNA             | 7.066                | 472.0 -> 427.0 | 235077 | 22.20 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 111.0% |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 41656  | 21.73 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.7% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 302389 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 46890  | 20.03 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 183792 | 114.94 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 114.9% |          |

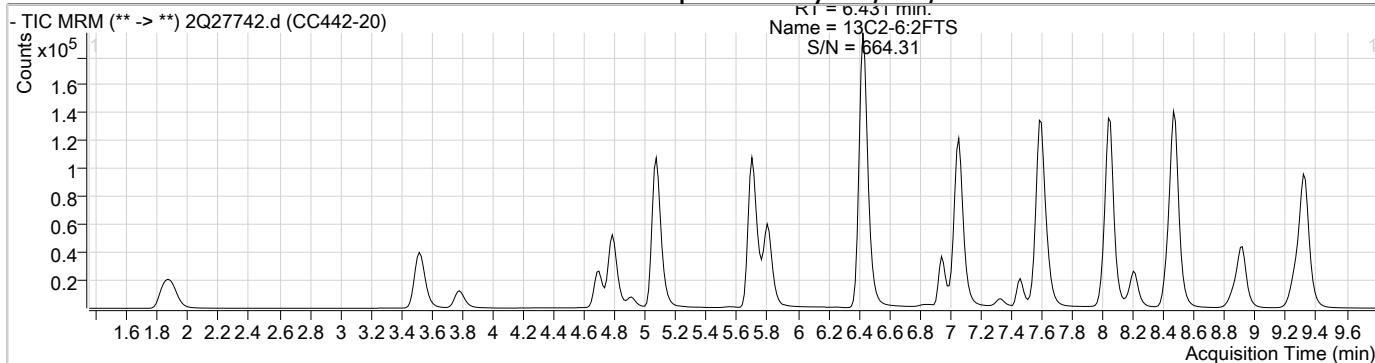
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.699 | 327.0 -> 307.0 | 35212  | 20.44 µg/L  | 100    |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 33953  | 19.90 µg/L  | 100    |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 25931  | 20.60 µg/L  | 99     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 18346  | 20.74 µg/L  | 99     |
| FOSA         | 6.947 | 498.0 -> 78.0  | 39587  | 19.72 µg/L  | 99     |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 21951  | 20.66 µg/L  | 99     |
| PFBA         | 1.873 | 213.0 -> 169.0 | 24393  | 19.62 µg/L  | 100    |
| PFBS         | 3.783 | 299.0 -> 80.0  | 29786  | 19.91 µg/L  | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 136305 | 20.27 µg/L  | 100    |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 196982 | 20.05 µg/L  | 99     |
| PFDS         | 8.014 | 599.0 -> 80.0  | 10033  | 19.68 µg/L  | 100    |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 189721 | 19.69 µg/L  | 100    |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 20590  | 20.23 µg/L  | 99     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 53524  | 20.15 µg/L  | 100    |
| PFHxS        | 5.739 | 399.0 -> 80.0  | 23114  | 19.94 µg/L  | m 96   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 155991 | 20.00 µg/L  | 100    |
| PFNS         | 7.565 | 549.0 -> 80.0  | 19213  | 20.25 µg/L  | 95     |
| PFOA         | 6.437 | 413.0 -> 369.0 | 119762 | 19.61 µg/L  | 98     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 25857  | 19.23 µg/L  | m 81   |
| PFPeA        | 3.528 | 263.0 -> 219.0 | 92300  | 19.58 µg/L  | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 19779  | 20.65 µg/L  | 96     |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 211996 | 19.58 µg/L  | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 221716 | 19.66 µg/L  | 100    |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 158511 | 19.63 µg/L  | 99     |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 109106 | 18.03 µg/L  | 100    |
| 9Cl-PF3ONS   | 7.335 | 531.0 -> 351.0 | 22090  | 19.01 µg/L  | 100    |
| ADONA        | 5.804 | 377.0 -> 251.0 | 219330 | 19.59 µg/L  | 100    |
| HFPO-DA      | 5.073 | 329.0 -> 169.0 | 217272 | 99.52 µg/L  | 99     |

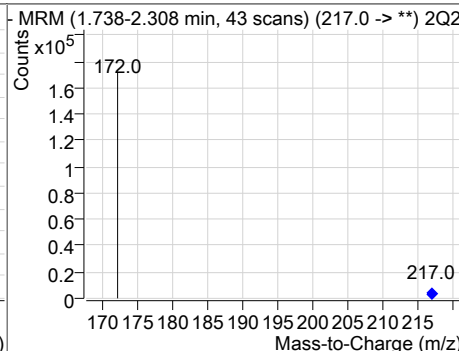
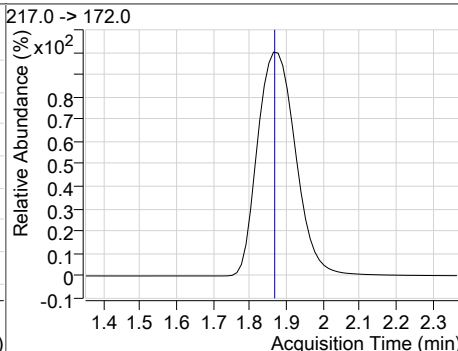
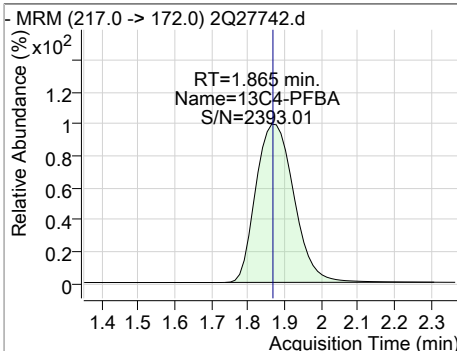
# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.30  
7

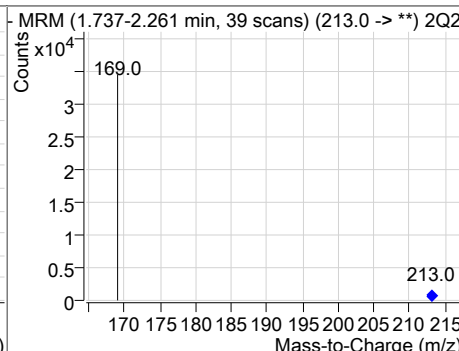
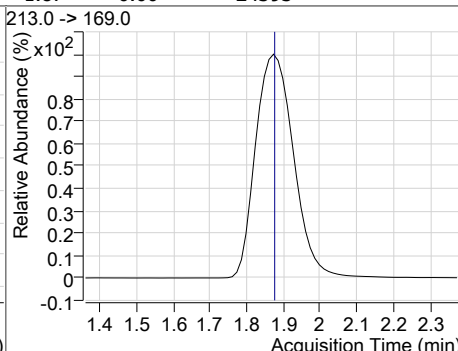
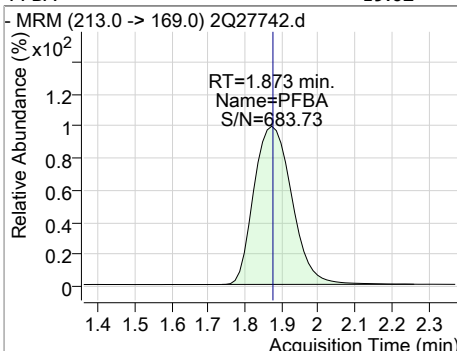
### Perfluorinated Compounds by LC/MS/MS



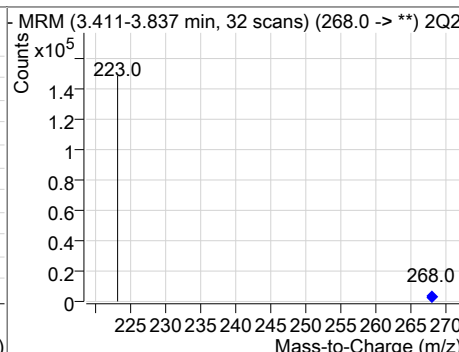
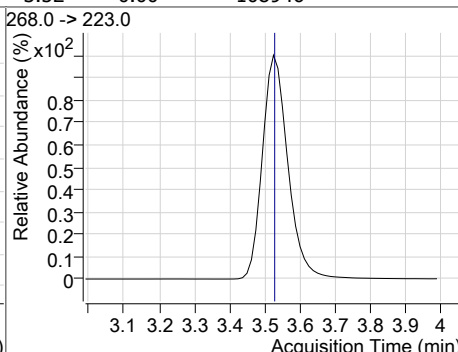
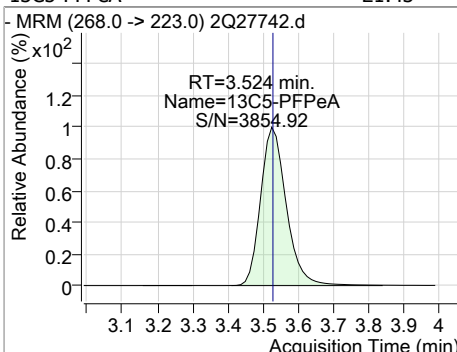
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 20.89 | 1.86 | 0.00     | 125279 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 19.62 | 1.87 | 0.00     | 24393 |      |        |      |      |

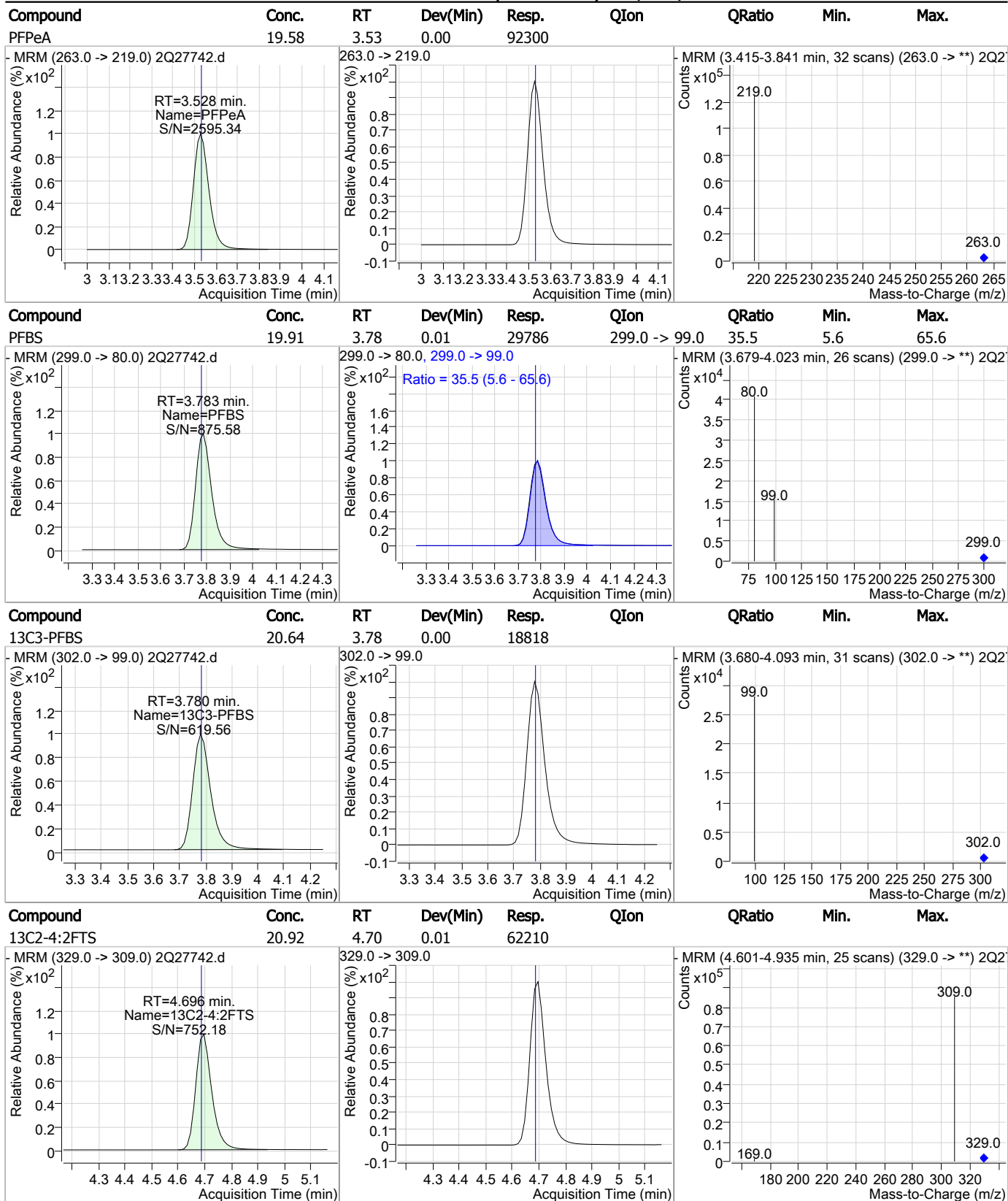


| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 21.43 | 3.52 | 0.00     | 108946 |      |        |      |      |



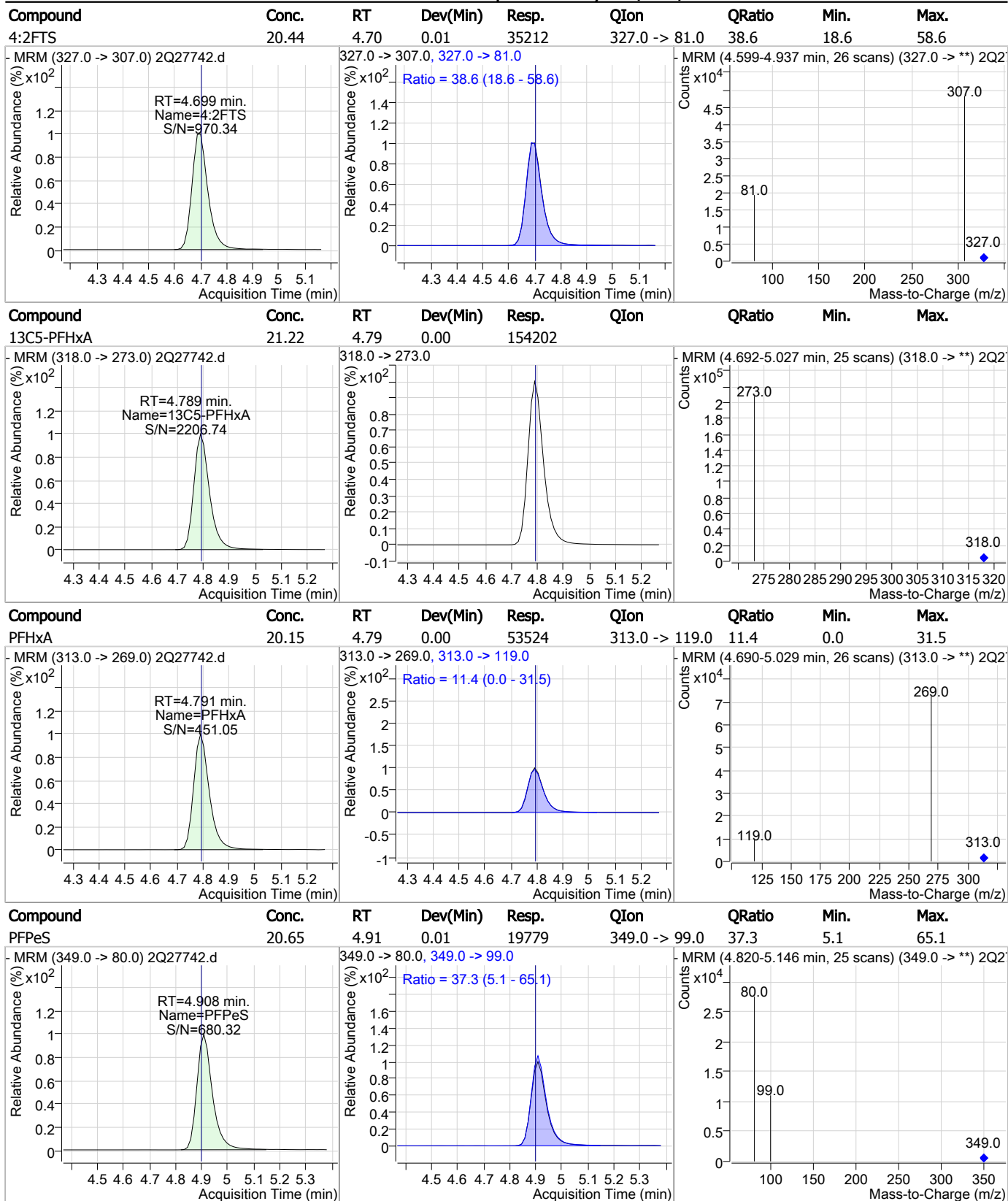
7.6:30  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.30  
7

### Perfluorinated Compounds by LC/MS/MS

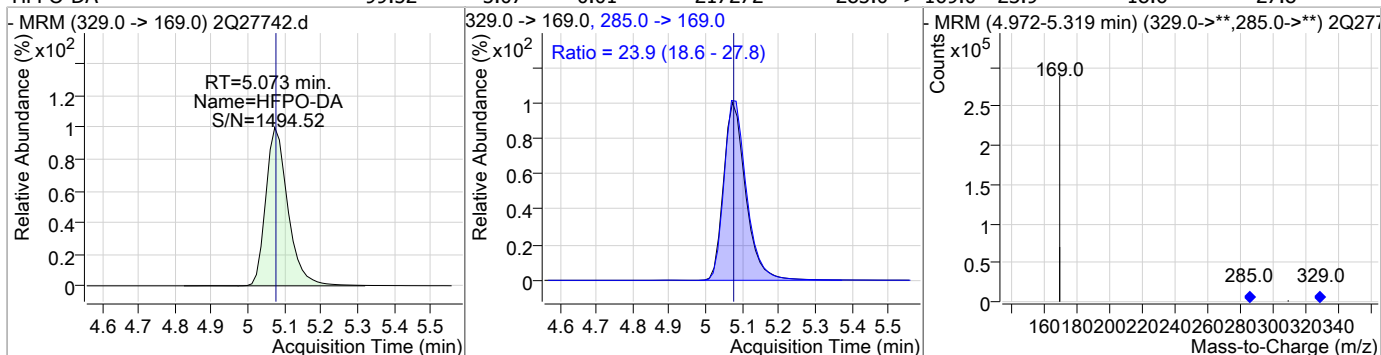


7.6:30

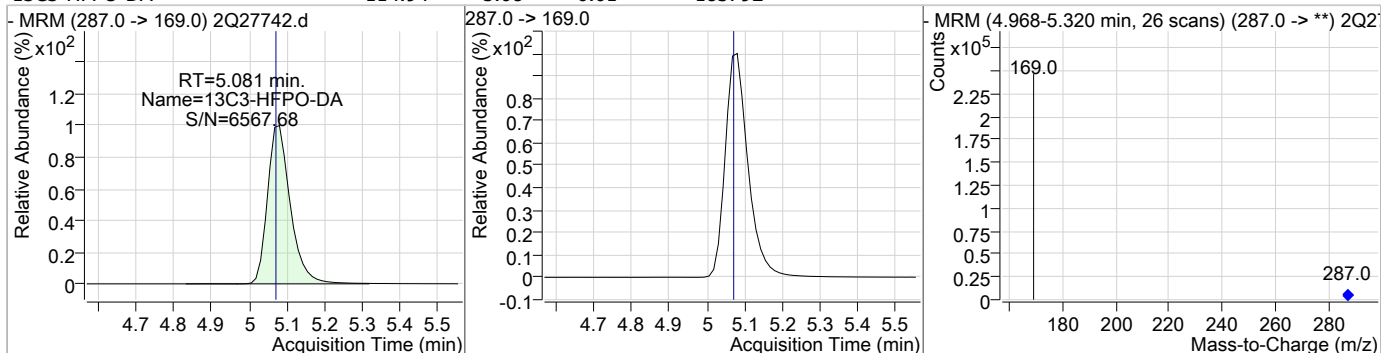
7

### Perfluorinated Compounds by LC/MS/MS

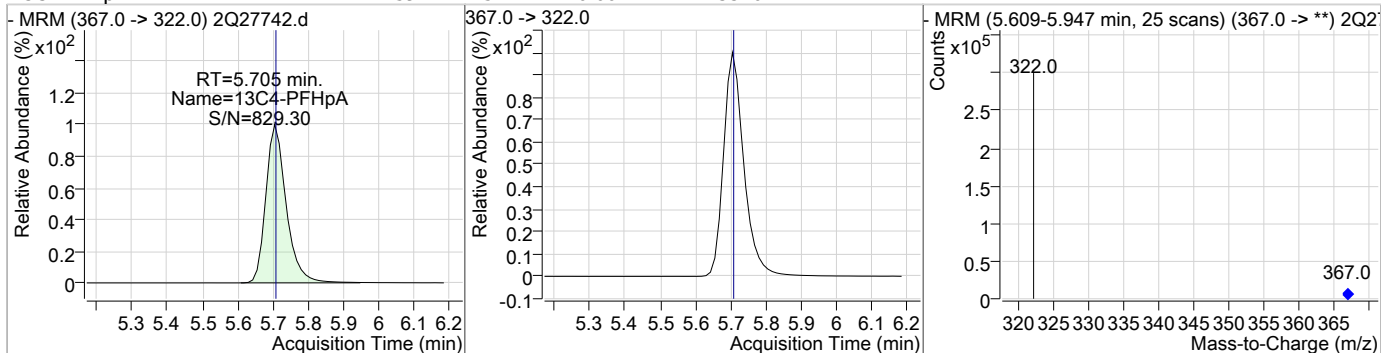
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 99.52 | 5.07 | 0.01     | 217272 | 285.0 -> 169.0 | 23.9   | 18.6 | 27.8 |



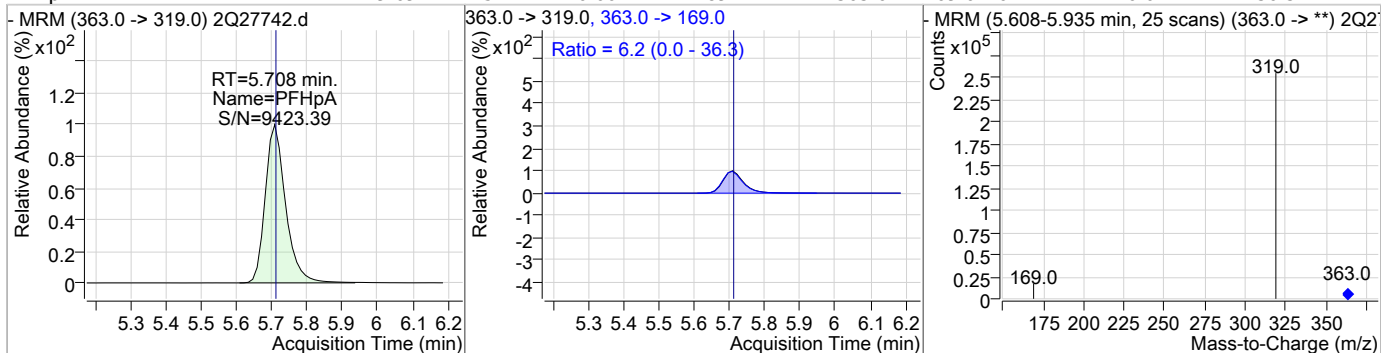
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 114.94 | 5.08 | 0.01     | 183792 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 21.59 | 5.71 | 0.00     | 223340 |      |        |      |      |

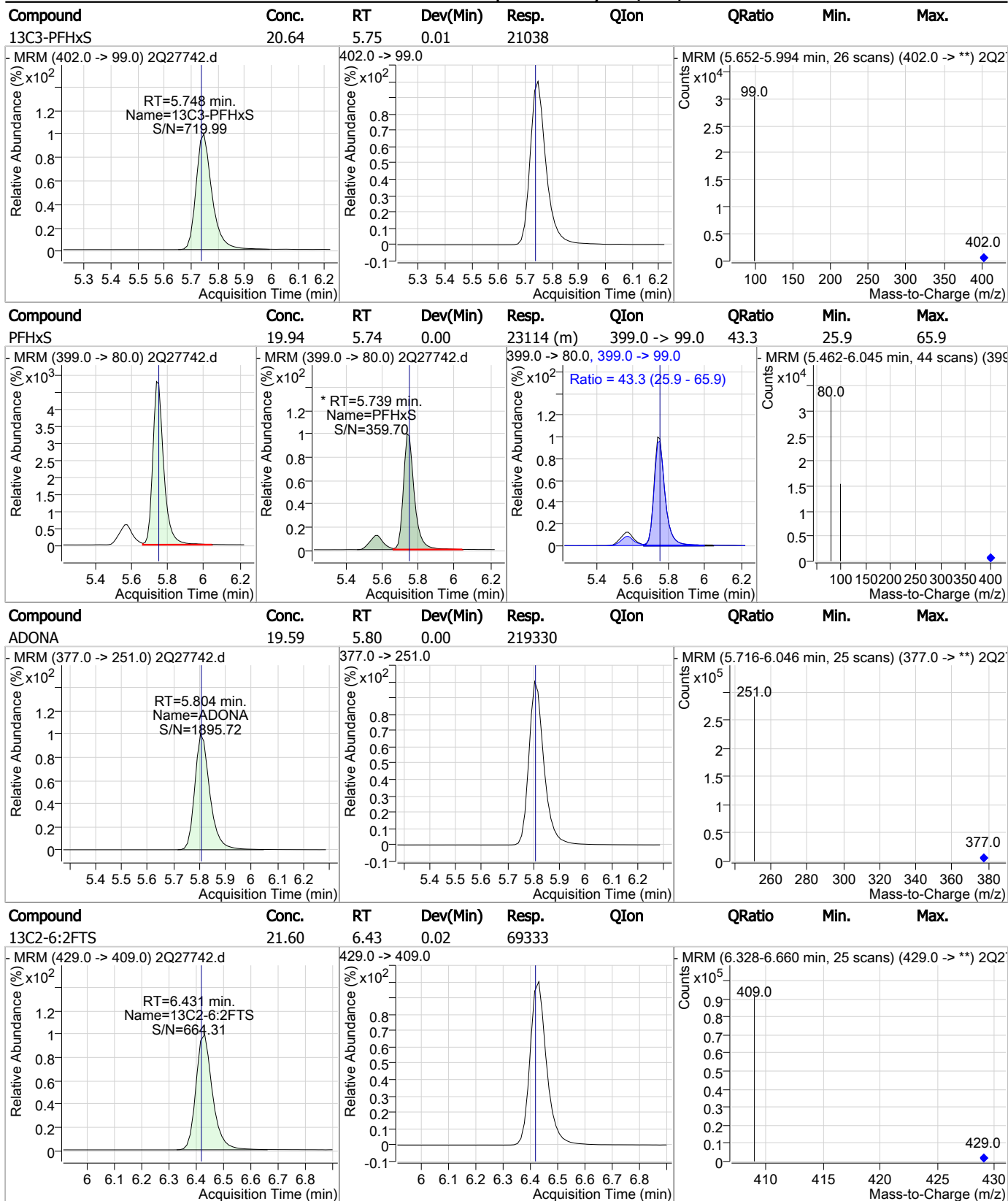


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.69 | 5.71 | 0.00     | 189721 | 363.0 -> 169.0 | 6.2    | 0.0  | 36.3 |



7.6.30  
7

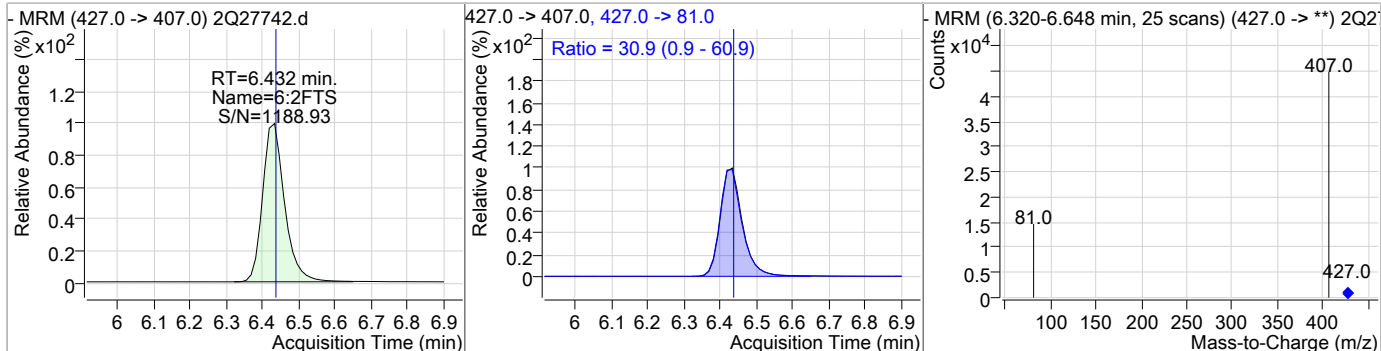
### Perfluorinated Compounds by LC/MS/MS



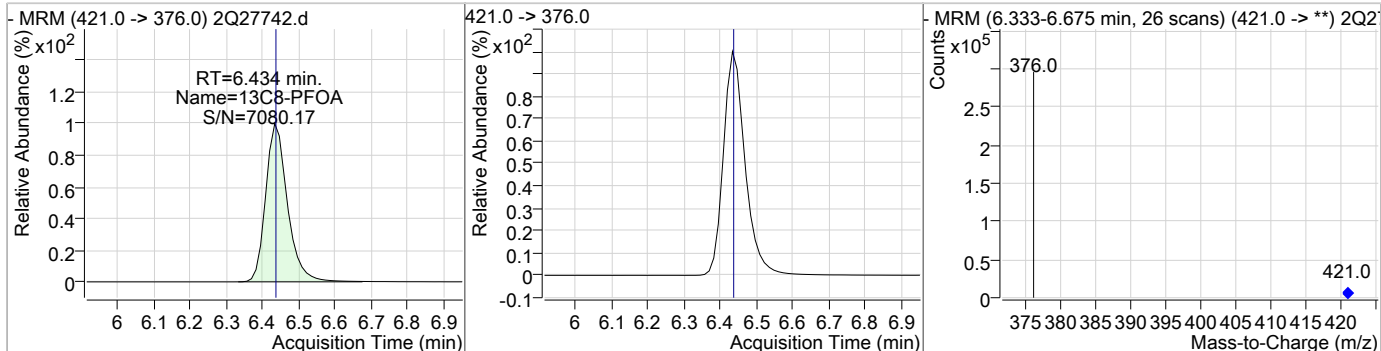
7.6:30  
7

### Perfluorinated Compounds by LC/MS/MS

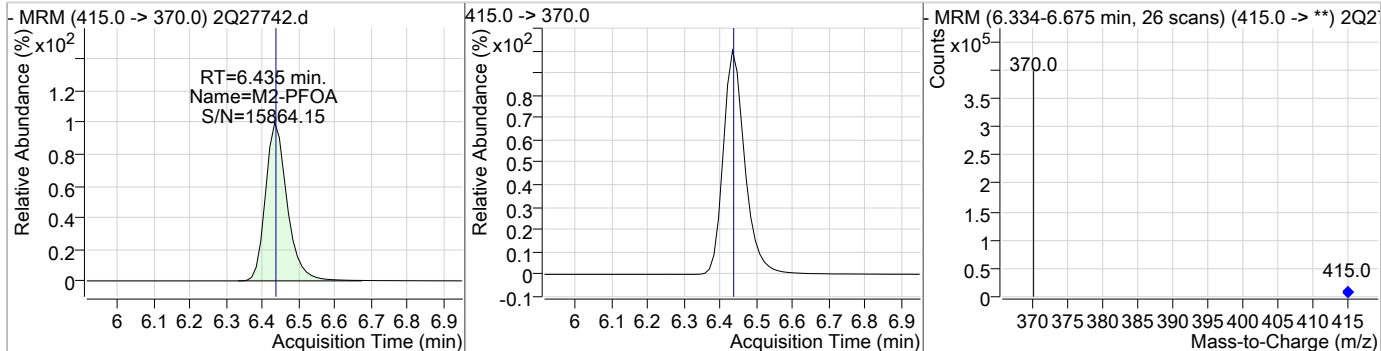
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 19.90 | 6.43 | 0.01     | 33953 | 427.0 -> 81.0 | 30.9   | 0.9  | 60.9 |



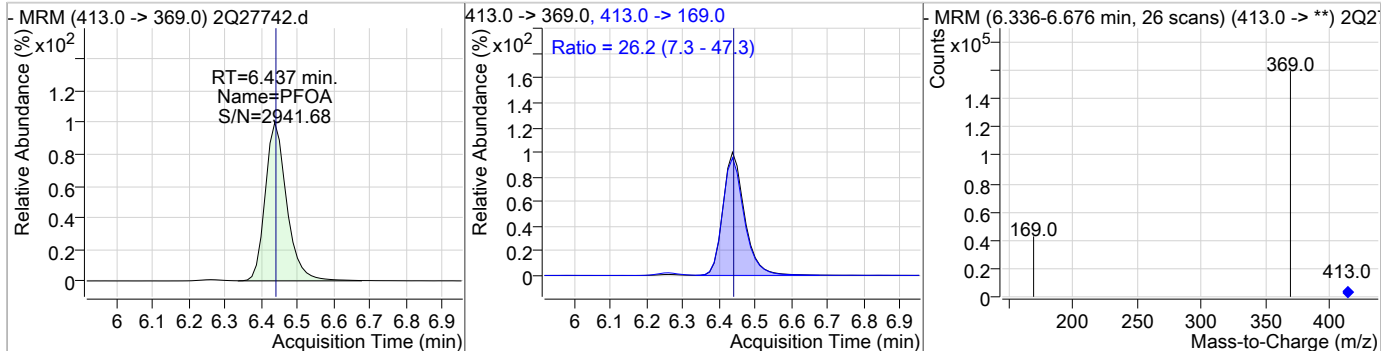
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 21.66 | 6.43 | 0.00     | 225967 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 302389 |      |        |      |      |



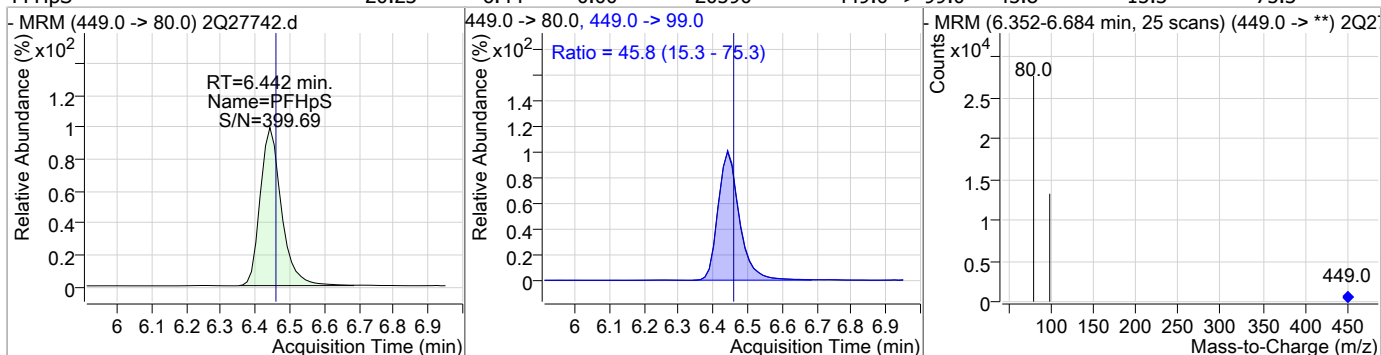
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.61 | 6.44 | 0.00     | 119762 | 413.0 -> 169.0 | 26.2   | 7.3  | 47.3 |



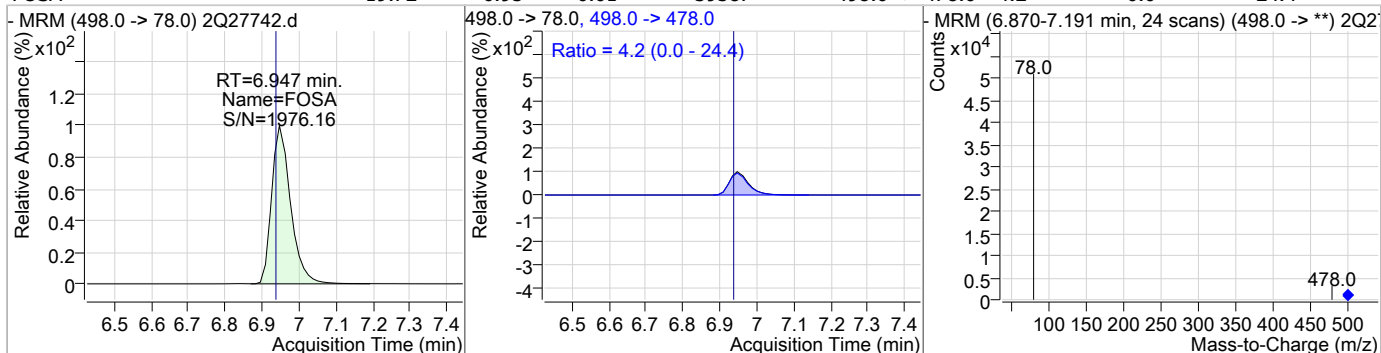
7.6.30  
7

### Perfluorinated Compounds by LC/MS/MS

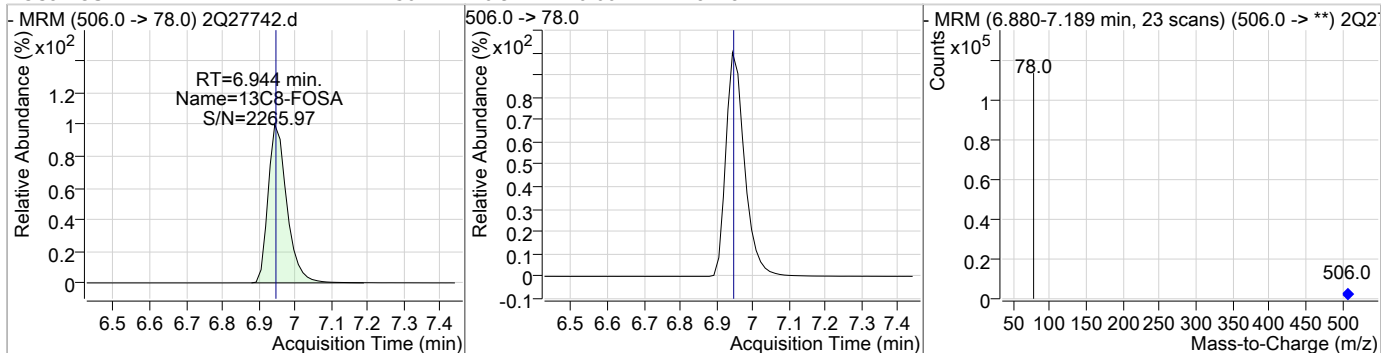
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 20.23 | 6.44 | 0.00     | 20590 | 449.0 -> 99.0 | 45.8   | 15.3 | 75.3 |



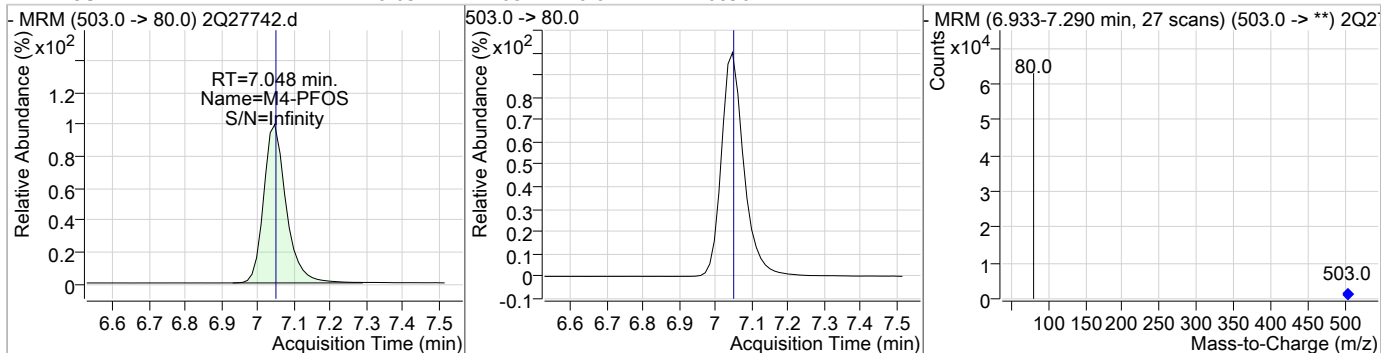
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 19.72 | 6.95 | 0.01     | 39587 | 498.0 -> 478.0 | 4.2    | 0.0  | 24.4 |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-FOSA | 21.50 | 6.94 | 0.00     | 87182 | 506.0 -> 78.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| M4-PFOS  | 20.03 | 7.05 | 0.01     | 46890 | 503.0 -> 80.0 |        |      |      |

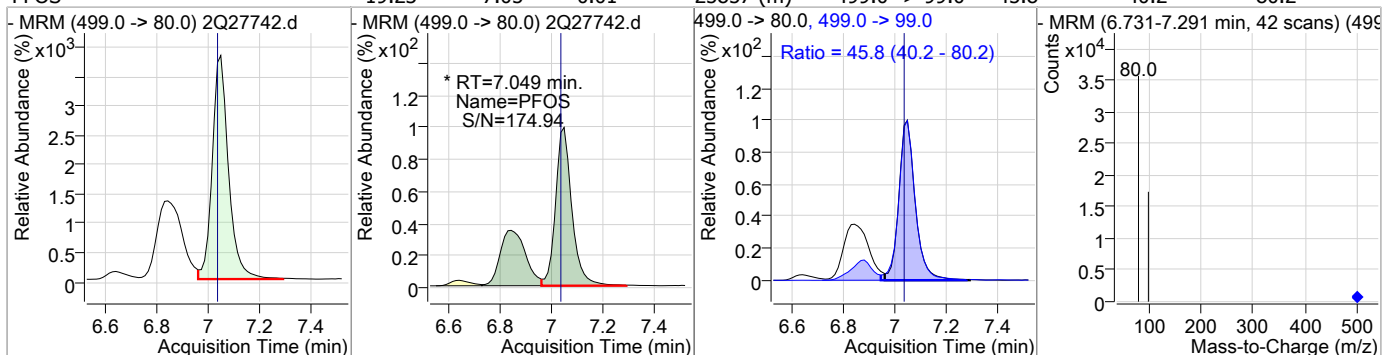


7.6.30  
7

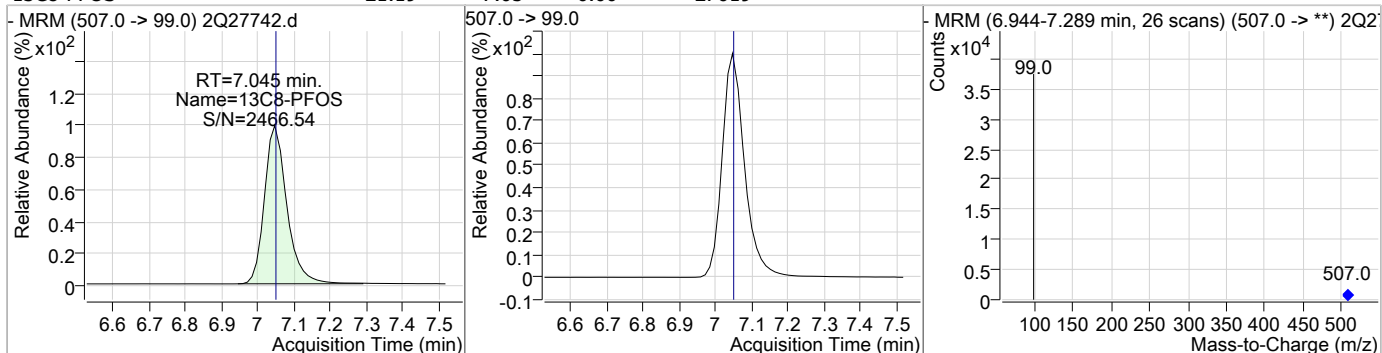


### Perfluorinated Compounds by LC/MS/MS

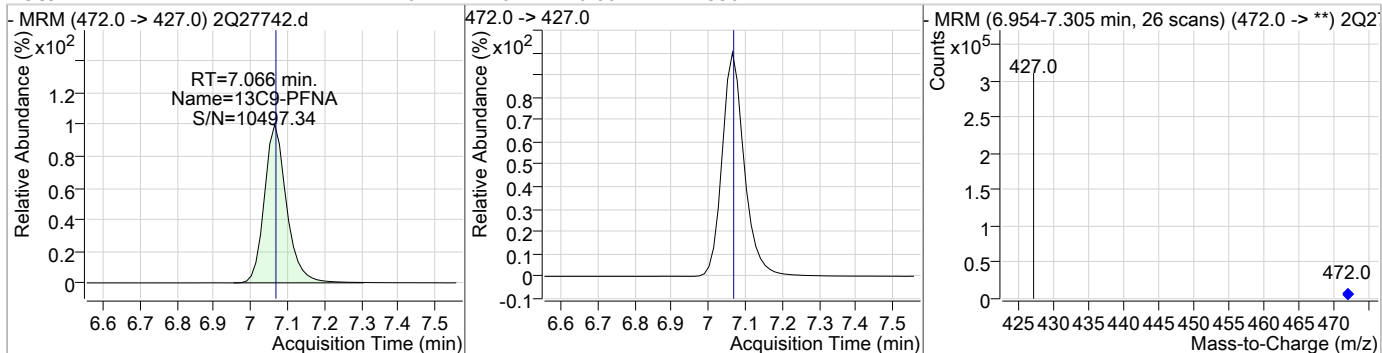
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.23 | 7.05 | 0.01     | 25857 (m) | 499.0 -> 99.0 | 45.8   | 40.2 | 80.2 |



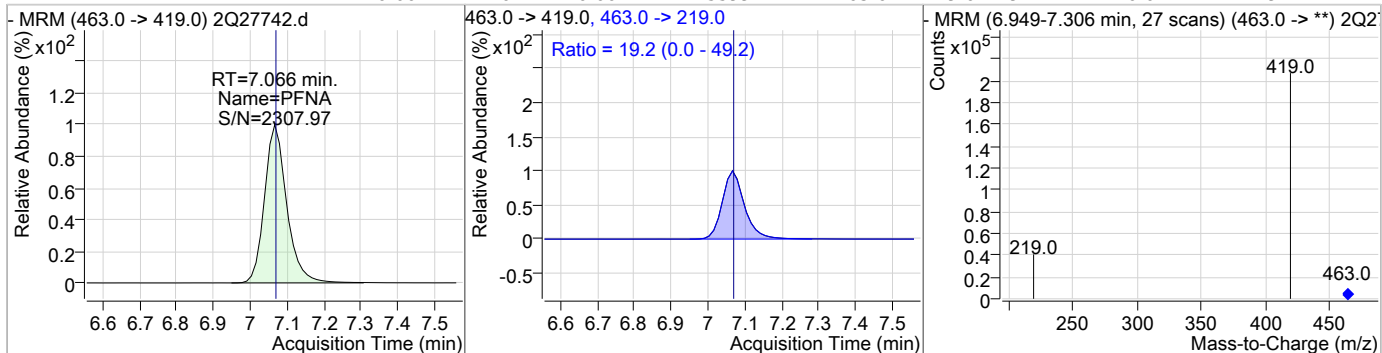
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 21.19 | 7.05 | 0.00     | 27619 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 22.20 | 7.07 | 0.00     | 235077 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 20.00 | 7.07 | 0.00     | 155991 | 463.0 -> 219.0 | 19.2   | 0.0  | 49.2 |



7.6:30  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound                         | Conc. | RT   | Dev(Min)                       | Resp. | QIon           | QRatio  | Min. | Max. |
|----------------------------------|-------|------|--------------------------------|-------|----------------|---|------|------|
| 9CI-PF3ONS                       | 19.01 | 7.34 | 0.01                           | 22090 |                |   |      |      |
| - MRM (531.0 -> 351.0) 2Q27742.d |       |      | 531.0 -> 351.0                 |       |                | - MRM (7.222-7.566 min, 26 scans) (531.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| d3-MeFOSAA                       | 21.73 | 7.46 | 0.01                           | 41656 |                |   |      |      |
| - MRM (573.0 -> 419.0) 2Q27742.d |       |      | 573.0 -> 419.0                 |       |                | - MRM (7.383-7.624 min, 18 scans) (573.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| MeFOSAA                          | 20.66 | 7.46 | 0.00                           | 21951 | 570.0 -> 512.0 | 22.9  | 2.3  | 42.3 |
| - MRM (570.0 -> 419.0) 2Q27742.d |       |      | 570.0 -> 419.0, 570.0 -> 512.0 |       |                | - MRM (7.397-7.701 min, 23 scans) (570.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| PFNS                             | 20.25 | 7.57 | 0.00                           | 19213 | 549.0 -> 99.0  | 52.2  | 28.9 | 68.9 |
| - MRM (549.0 -> 80.0) 2Q27742.d  |       |      | 549.0 -> 80.0, 549.0 -> 99.0   |       |                | - MRM (7.450-7.805 min, 27 scans) (549.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |

7.6.30  
7

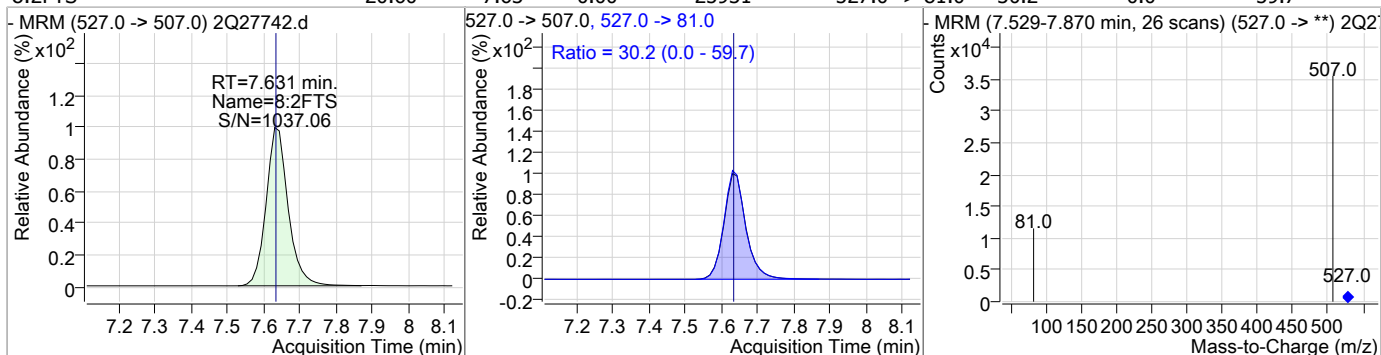
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA   | 22.63 | 7.59 | 0.00     | 308831 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDA        | 20.27 | 7.60 | 0.00     | 136305 | 513.0 -> 219.0 | 17.0   | 0.0  | 46.9 |
|             |       |      |          |        |                |        |      |      |
| EtFOSAA     | 20.74 | 7.60 | 0.00     | 18346  | 584.0 -> 483.0 | 52.7   | 31.7 | 71.7 |
|             |       |      |          |        |                |        |      |      |
| 13C2-8:2FTS | 22.69 | 7.63 | 0.00     | 50305  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |

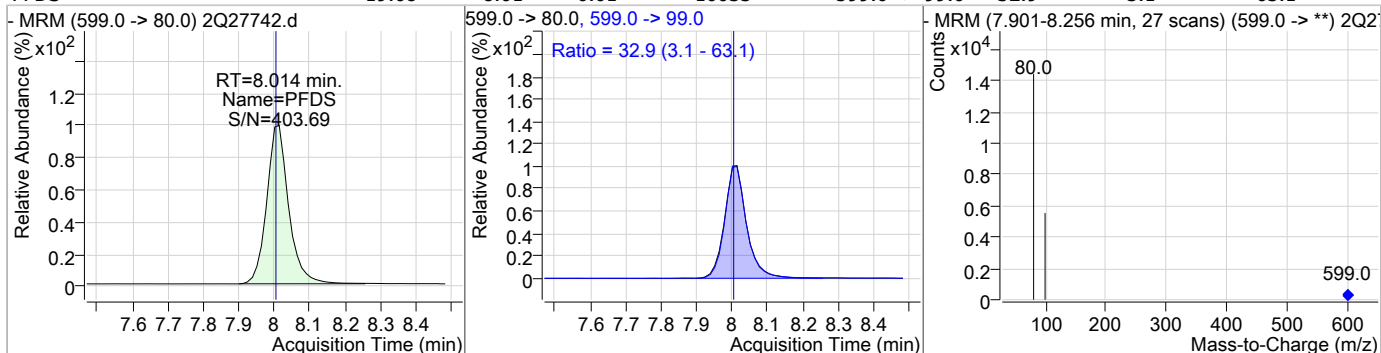
7.6.30  
7

### Perfluorinated Compounds by LC/MS/MS

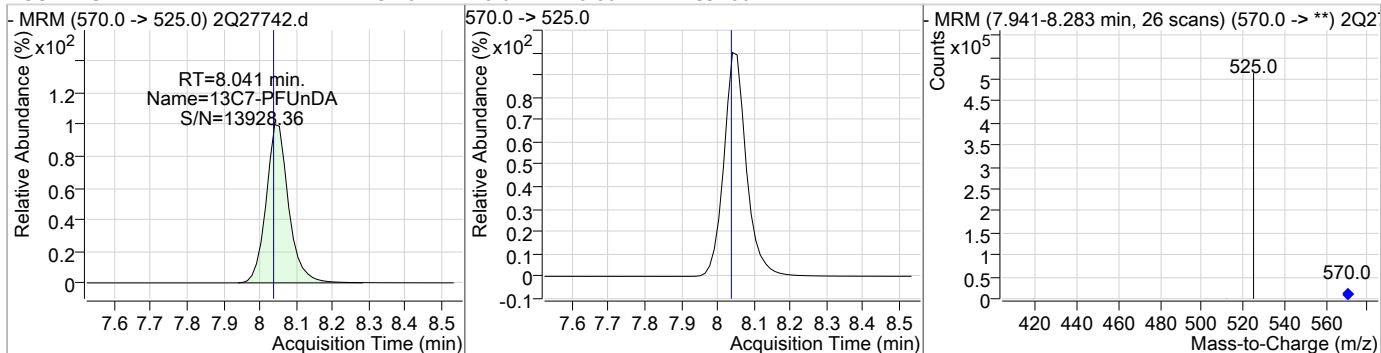
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 20.60 | 7.63 | 0.00     | 25931 | 527.0 -> 81.0 | 30.2   | 0.0  | 59.7 |



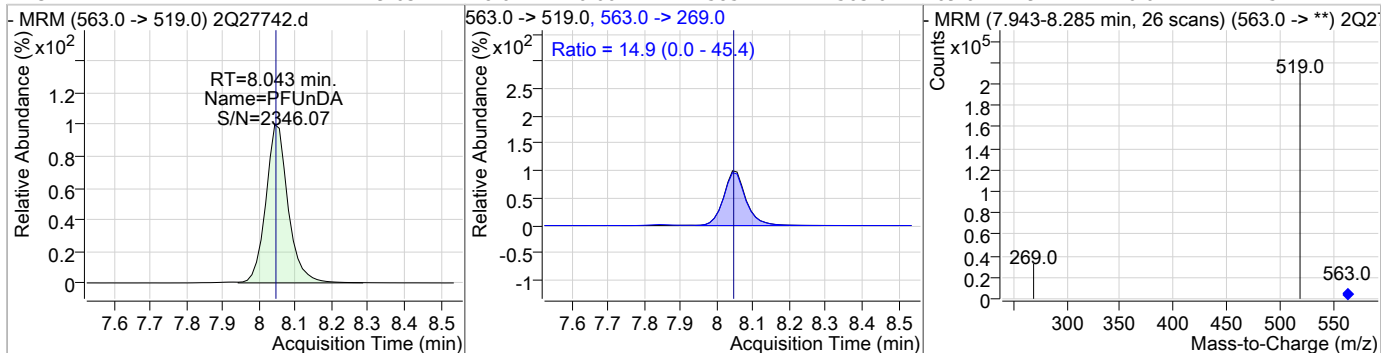
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 19.68 | 8.01 | 0.01     | 10033 | 599.0 -> 99.0 | 32.9   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 23.10 | 8.04 | 0.00     | 391007 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 19.63 | 8.04 | 0.00     | 158511 | 563.0 -> 269.0 | 14.9   | 0.0  | 45.4 |



### Perfluorinated Compounds by LC/MS/MS

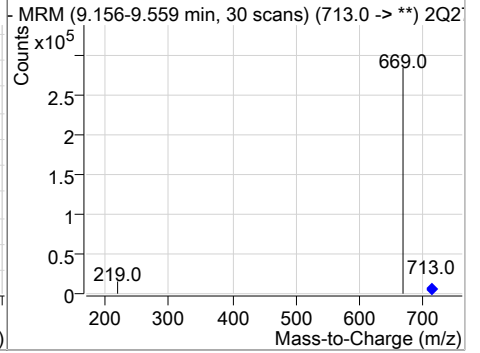
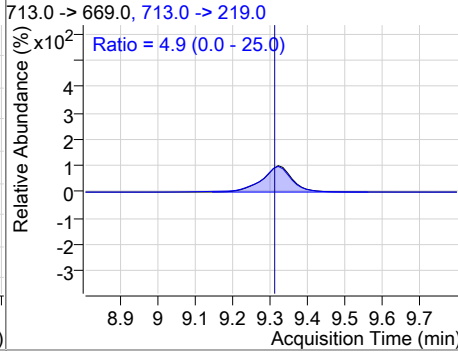
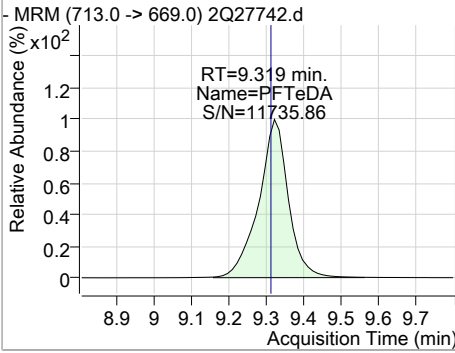
| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| 11Cl-PF3OUdS | 18.03 | 8.20 | 0.00     | 109106 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| 13C2-PFDoDA  | 23.48 | 8.47 | 0.00     | 441559 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFDoDA       | 20.05 | 8.47 | 0.00     | 196982 | 613.0 -> 319.0 | 12.3   | 0.0  | 42.5 |
|              |       |      |          |        |                |        |      |      |
| PFTTrDA      | 19.66 | 8.92 | 0.00     | 221716 | 663.0 -> 369.0 | 6.6    | 0.0  | 36.6 |
|              |       |      |          |        |                |        |      |      |

7.6.30  
7

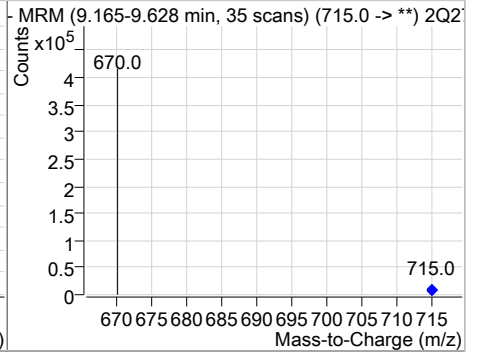
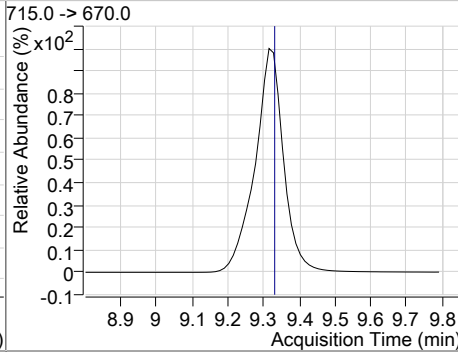
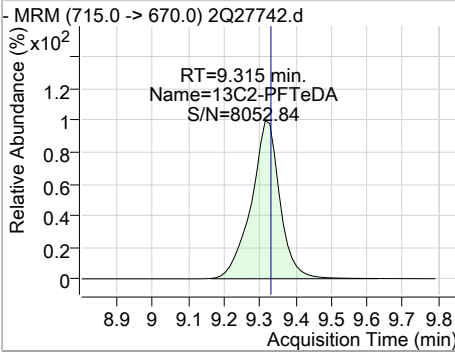


### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.58 | 9.32 | 0.00     | 211996 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 24.03 | 9.31 | -0.01    | 308463 |      |        |      |      |



7.6.30  
7



# Manual Integration Approval Summary

**Sample Number:** S2Q443-CC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27742.D      **Analyst approved:** 03/20/19 08:53 Nancy Saunders  
**Injection Time:** 03/19/19 15:15      **Supervisor approved:** 03/20/19 09:31 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.74           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.6.30.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27744.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/19/2019 3:47:02 PM  
 Sample Name : CC442-1.0  
 Vial : Vial 3  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q443.batch.bin  
 Sample Information : op74164,S2Q443,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 333126            | 20.00 µg/L  | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 50766             | 20.00 µg/L  | 0.013    |
| M4-PFBA                            | 1.877                | 217.0 -> 172.0 | 135594            | 20.00 µg/L  | 0.013    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 116997            | 20.00 µg/L  | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 167153            | 20.00 µg/L  | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 244655            | 20.00 µg/L  | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 250799            | 20.00 µg/L  | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 261152            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 347351            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 431578            | 20.00 µg/L  | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 475896            | 20.00 µg/L  | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 331850            | 20.00 µg/L  | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 97059             | 20.00 µg/L  | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 20373             | 20.00 µg/L  | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 22490             | 20.00 µg/L  | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 29492             | 20.00 µg/L  | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 63429             | 20.00 µg/L  | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 72261             | 20.00 µg/L  | 0.015    |
| M2-8:2FTS                          | 7.630                | 529.0 -> 509.0 | 51599             | 20.00 µg/L  | 0.000    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 45534             | 20.00 µg/L  | 0.013    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 199286            | 100.00 µg/L | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 63233             | 21.27 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 106.3% |             |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 72266             | 22.52 µg/L  | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 112.6% |             |          |
| 13C2-8:2FTS                        | 7.630                | 529.0 -> 509.0 | 51526             | 23.24 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 116.2% |             |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 475665            | 25.29 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 126.4% |             |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 332078            | 25.87 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 129.3% |             |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 20337             | 22.30 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 111.5% |             |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 22497             | 22.07 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 110.3% |             |          |
| 13C4-PFBA                          | 1.877                | 217.0 -> 172.0 | 134959            | 22.51 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 112.5% |             |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 244380            | 23.63 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 118.1% |             |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 166910            | 22.97 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 114.9% |             |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 116992            | 23.01 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 115.1% |             |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 347099            | 25.44 µg/L  | 0.000    |

7.6.31  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 127.2% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 431189 | 25.48 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 127.4% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 97025  | 23.93 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 119.6% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 250761 | 24.04 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 120.2% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 29504  | 22.63 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 113.2% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 261059 | 24.66 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 123.3% |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 45495  | 23.73 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 118.7% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 333473 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 50847  | 20.02 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 199286 | 124.63 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 124.6% |          |

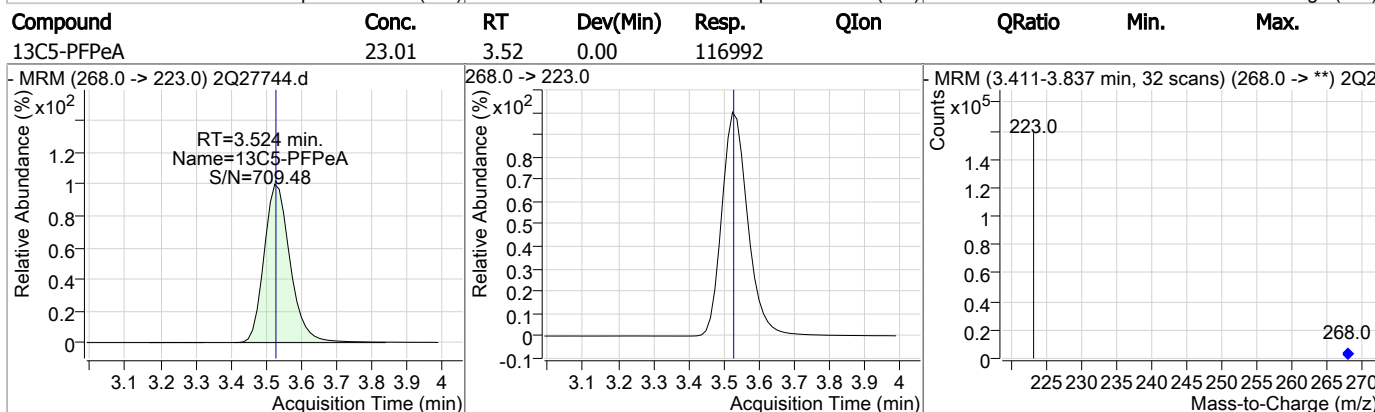
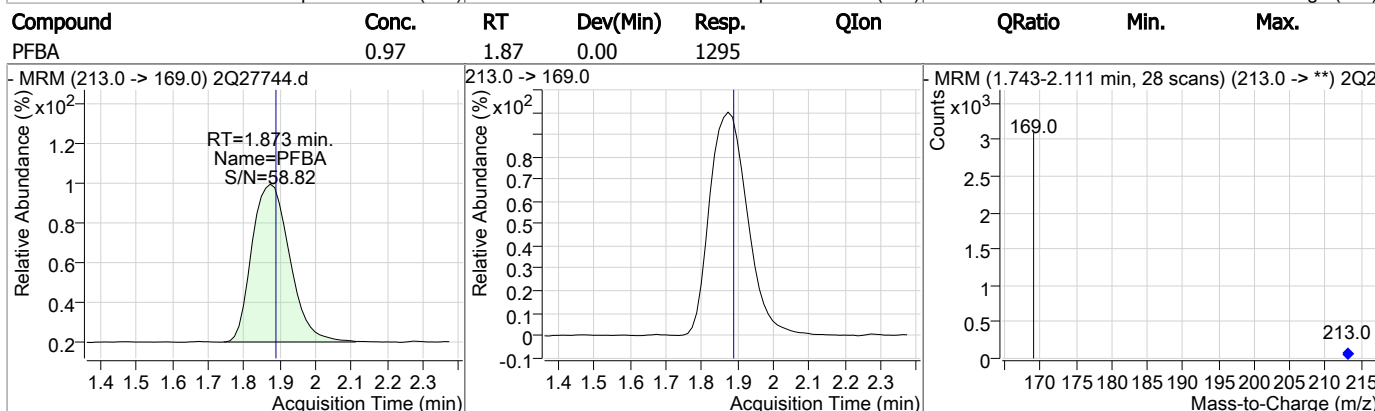
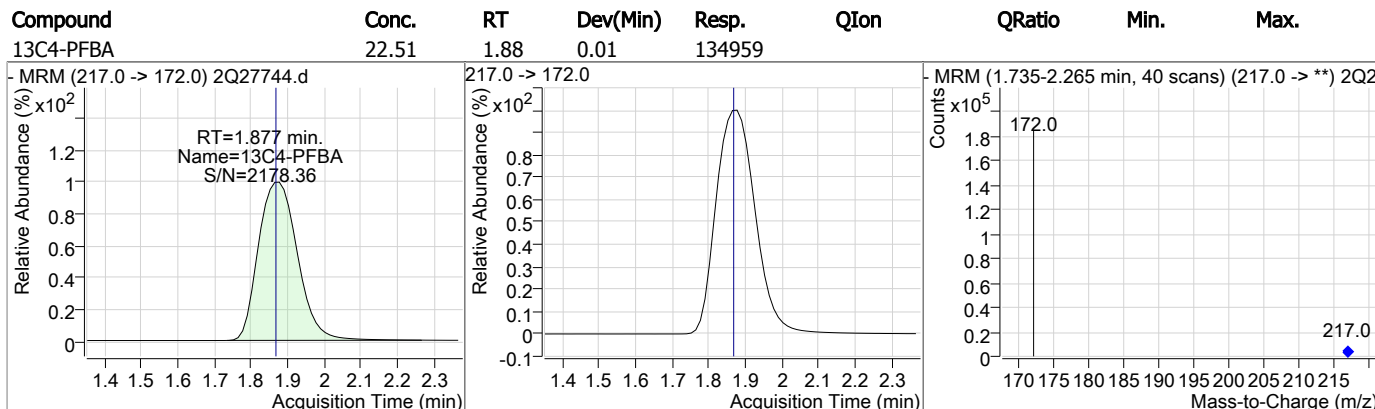
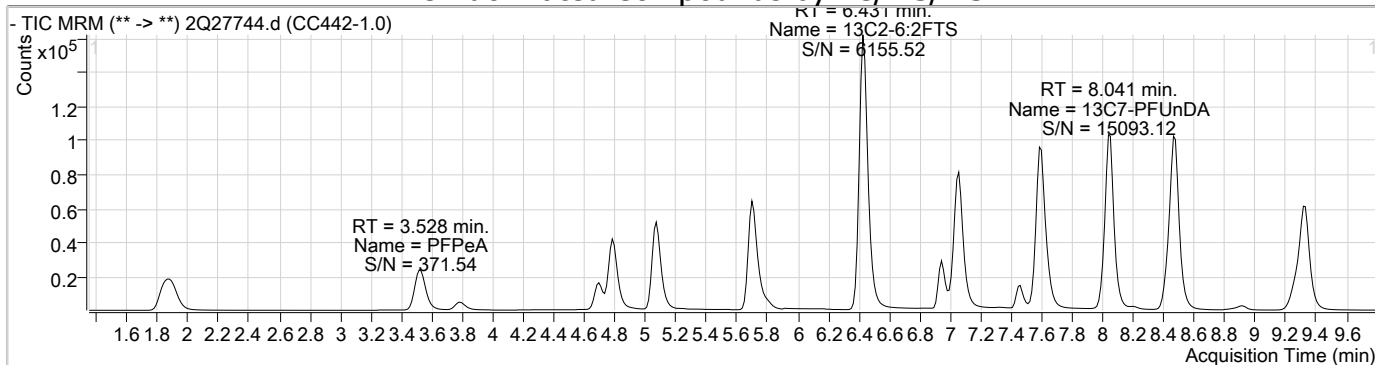
7.6.31  
7

**Target Compounds**

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | 4.699 | 327.0 -> 307.0 | 1807  | 1.03 µg/L   | 94     |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 1966  | 1.11 µg/L   | 98     |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 1375  | 1.07 µg/L   | 96     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 1044  | 1.07 µg/L   | 92     |
| FOSA         | 6.947 | 498.0 -> 78.0  | 2098  | 0.94 µg/L   | 97     |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 1114  | 0.96 µg/L   | 96     |
| PFBA         | 1.873 | 213.0 -> 169.0 | 1295  | 0.97 µg/L   | 100    |
| PFBS         | 3.783 | 299.0 -> 80.0  | 1561  | 0.96 µg/L   | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 7328  | 0.97 µg/L   | 100    |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 10239 | 0.97 µg/L   | 100    |
| PFDS         | 8.001 | 599.0 -> 80.0  | 562   | 1.04 µg/L   | 95     |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 9824  | 0.93 µg/L   | 99     |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 1068  | 0.98 µg/L   | 97     |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 2893  | 1.00 µg/L   | 99     |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 1214  | 0.98 µg/L   | m 99   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 7805  | 0.90 µg/L   | 94     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 1036  | 1.02 µg/L   | 93     |
| PFOA         | 6.437 | 413.0 -> 369.0 | 6619  | 0.98 µg/L   | 98     |
| PFOS         | 7.037 | 499.0 -> 80.0  | 1425  | 0.99 µg/L   | m 79   |
| PFPeA        | 3.528 | 263.0 -> 219.0 | 4951  | 0.98 µg/L   | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 1016  | 0.98 µg/L   | 95     |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 11093 | 0.96 µg/L   | 99     |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 11319 | 0.94 µg/L   | 99     |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 8382  | 0.94 µg/L   | 99     |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 5733  | 0.88 µg/L   | 100    |
| 9Cl-PF3ONS   | 7.323 | 531.0 -> 351.0 | 1351  | 1.05 µg/L   | 100    |
| ADONA        | 5.804 | 377.0 -> 251.0 | 11332 | 0.93 µg/L   | 100    |
| HFPO-DA      | 5.073 | 329.0 -> 169.0 | 11348 | 4.79 µg/L   | 99     |

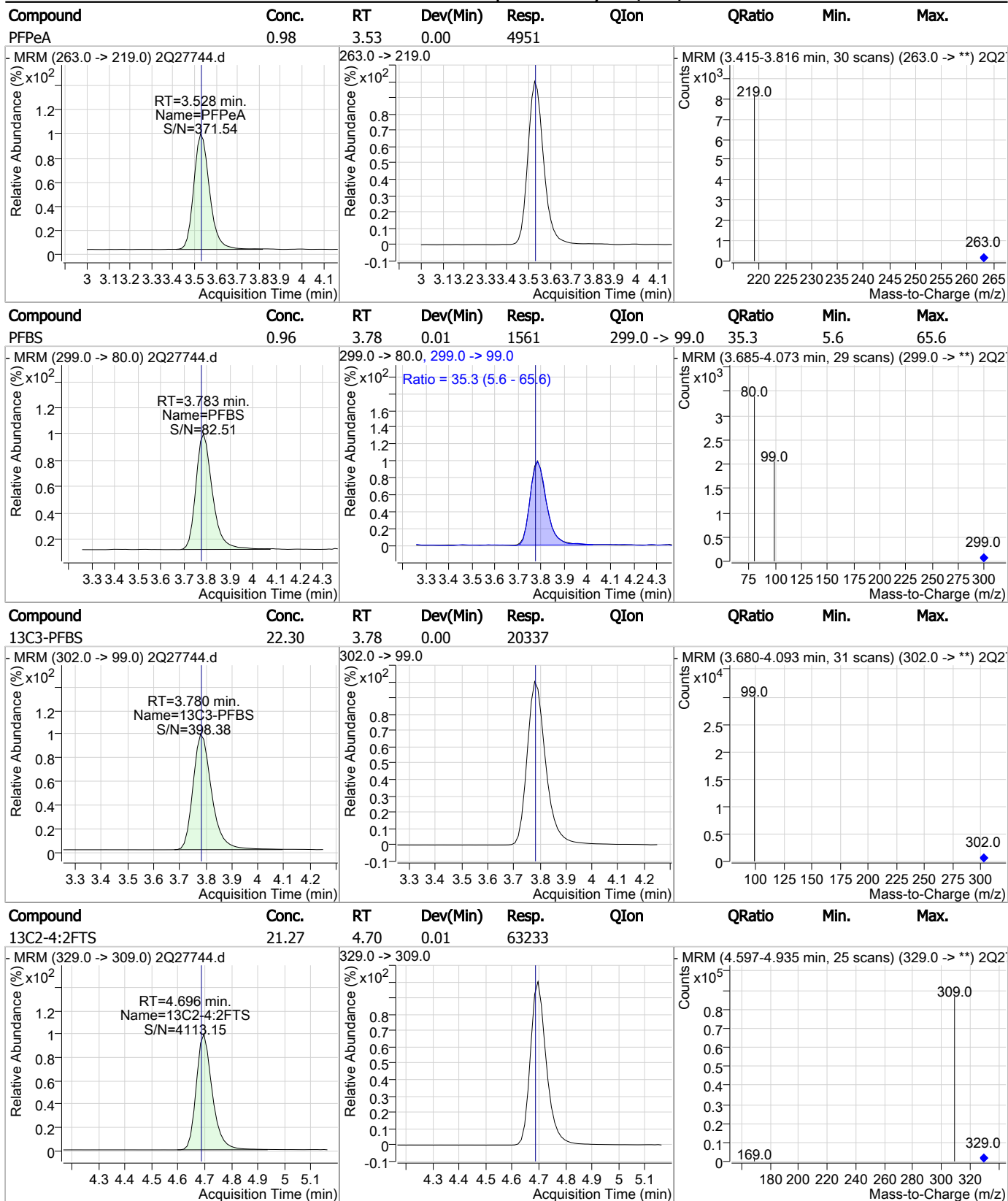
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



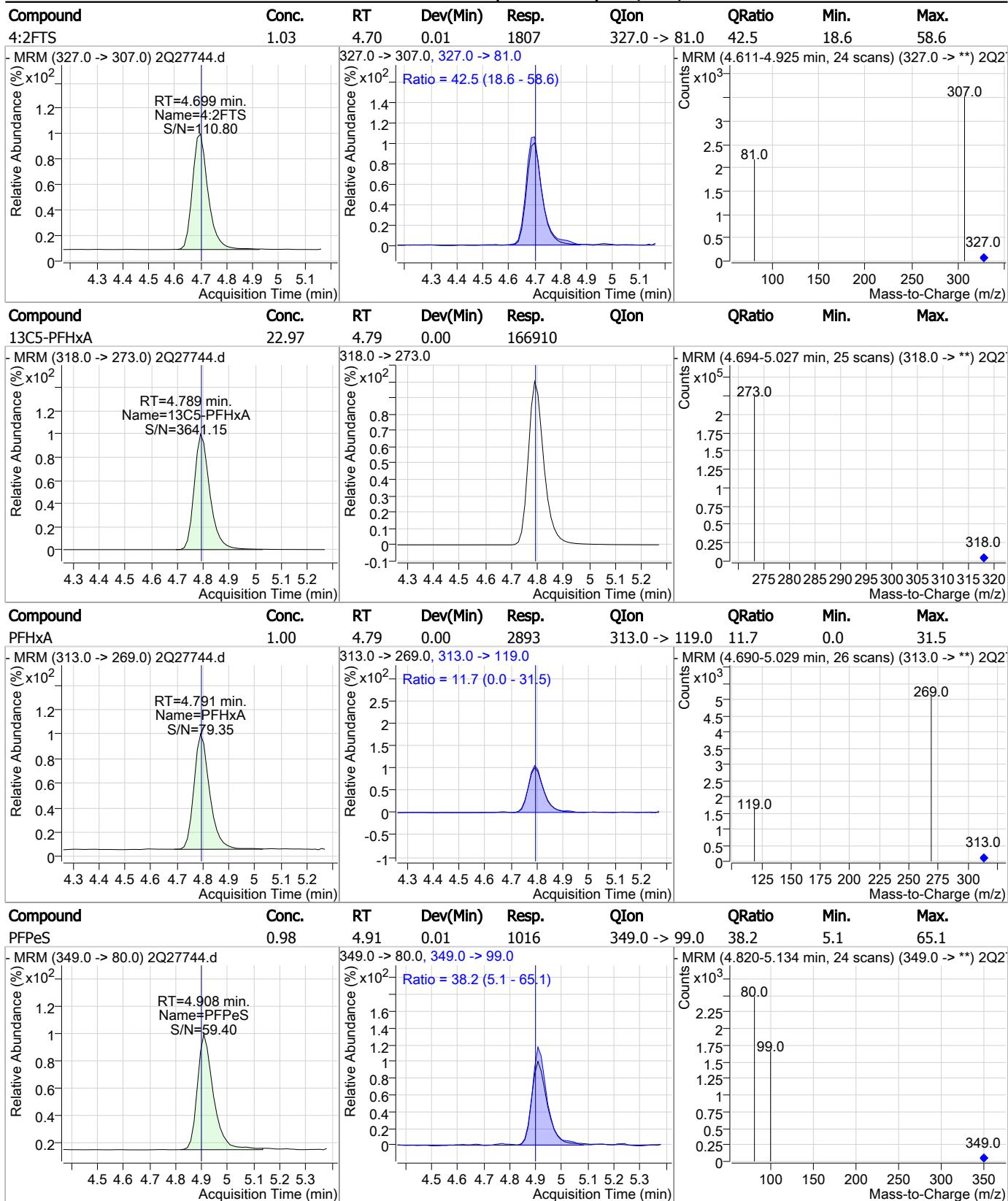
7.6.31  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.31  
7

### Perfluorinated Compounds by LC/MS/MS

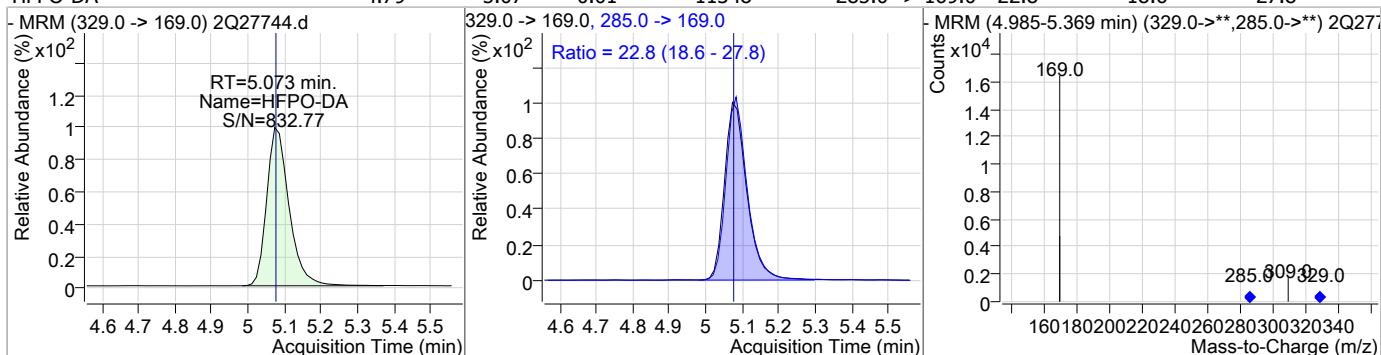


7.6.31

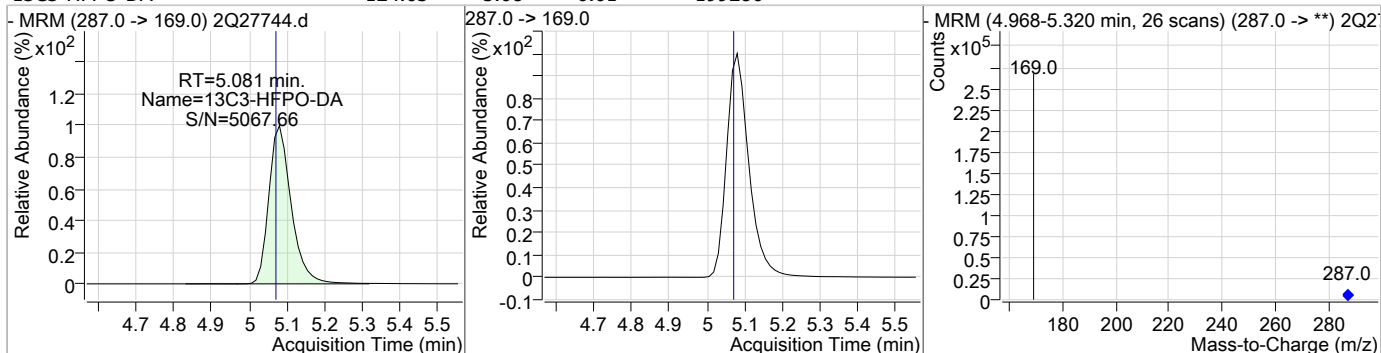
7

### Perfluorinated Compounds by LC/MS/MS

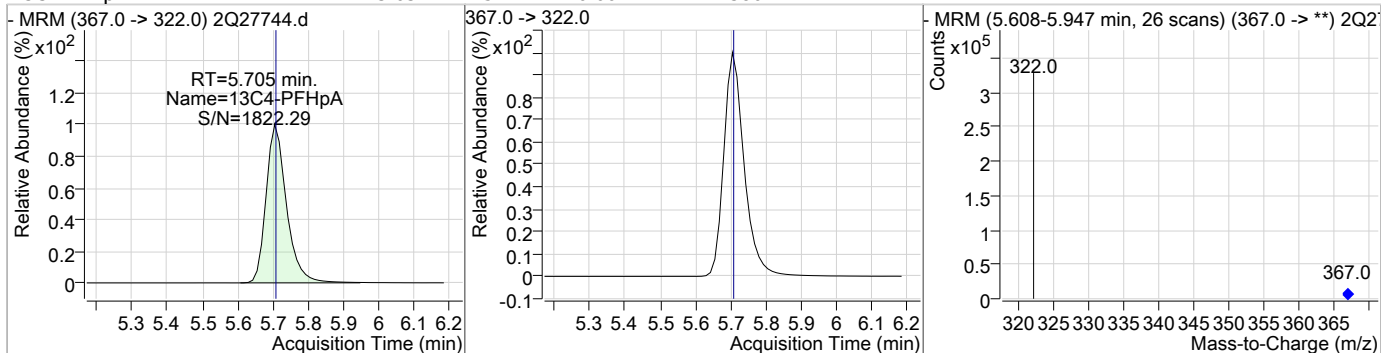
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 4.79  | 5.07 | 0.01     | 11348 | 285.0 -> 169.0 | 22.8   | 18.6 | 27.8 |



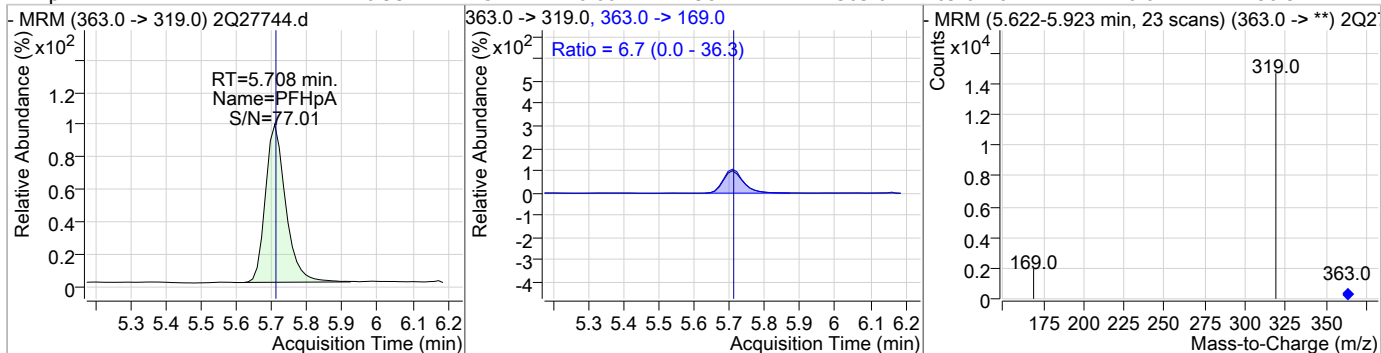
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 124.63 | 5.08 | 0.01     | 199286 |      |        |      |      |



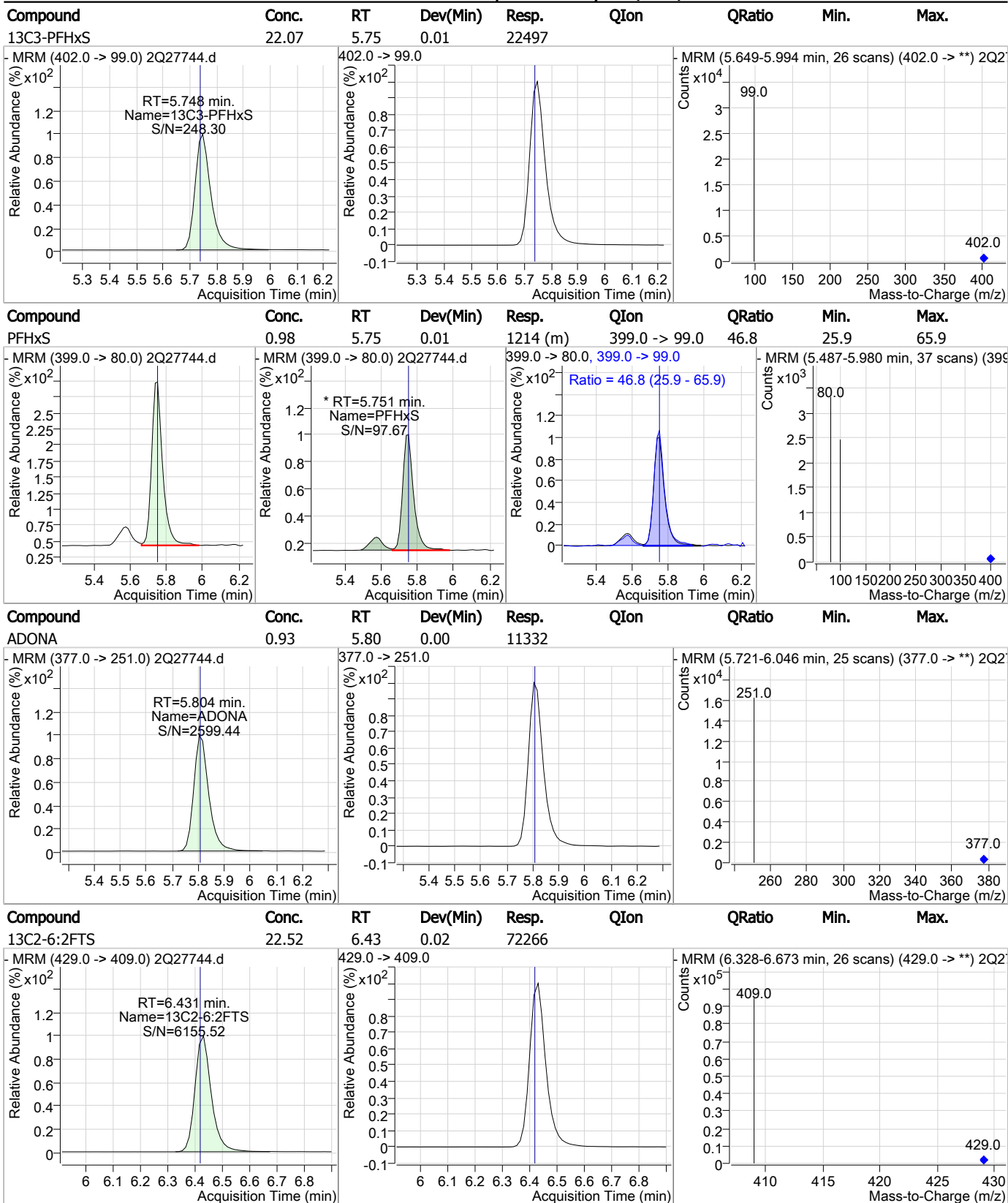
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 23.63 | 5.71 | 0.00     | 244380 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHpA    | 0.93  | 5.71 | 0.00     | 9824  | 363.0 -> 169.0 | 6.7    | 0.0  | 36.3 |



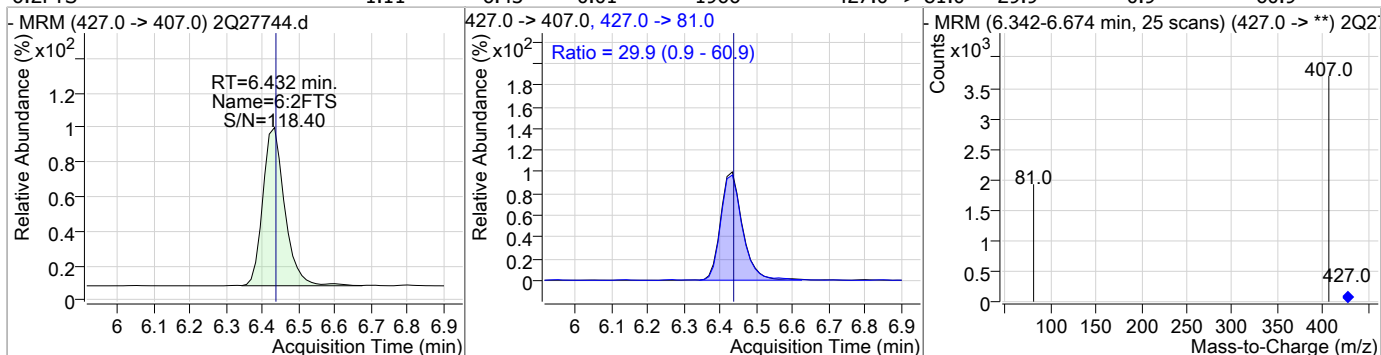
### Perfluorinated Compounds by LC/MS/MS



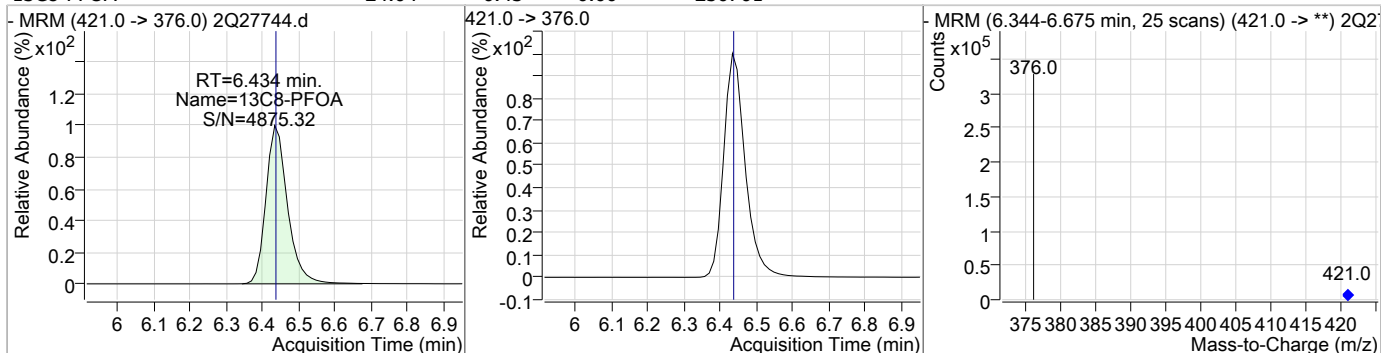
7.6.31  
7

### Perfluorinated Compounds by LC/MS/MS

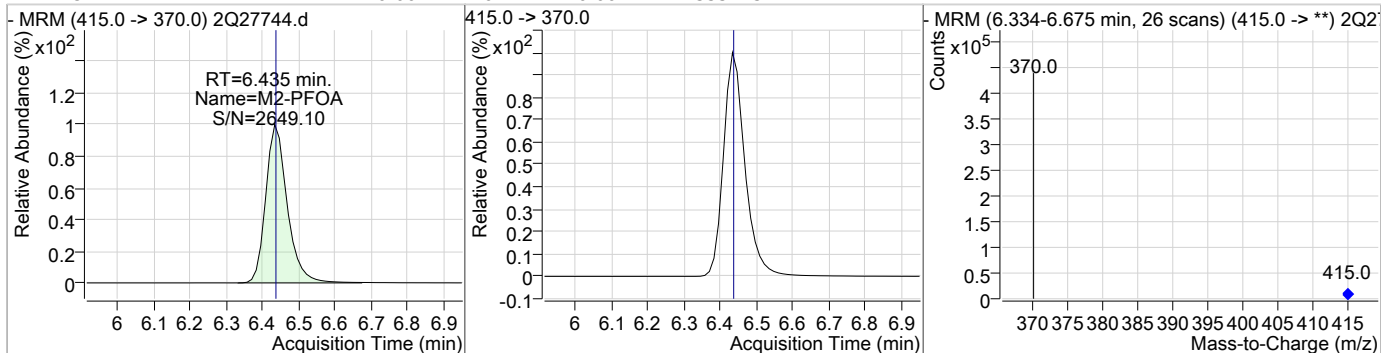
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 1.11  | 6.43 | 0.01     | 1966  | 427.0 -> 81.0 | 29.9   | 0.9  | 60.9 |



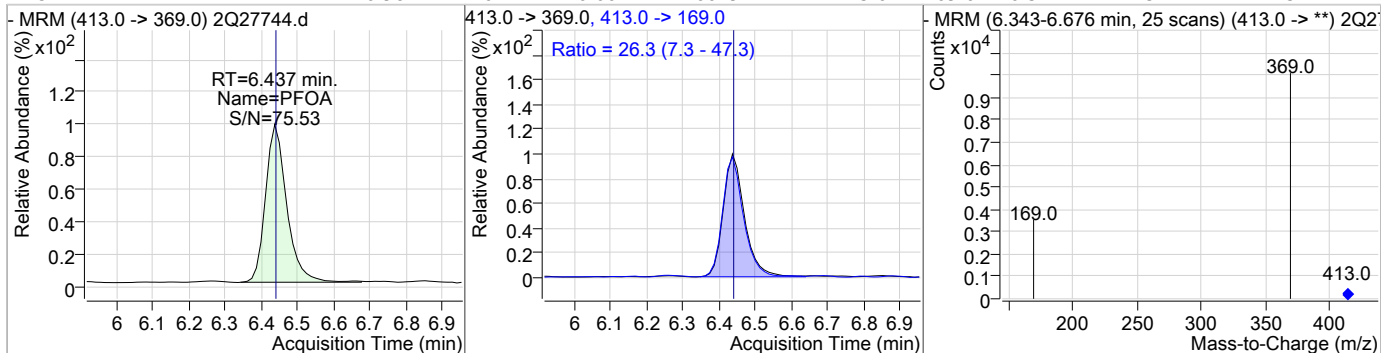
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 24.04 | 6.43 | 0.00     | 250761 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 333473 |      |        |      |      |

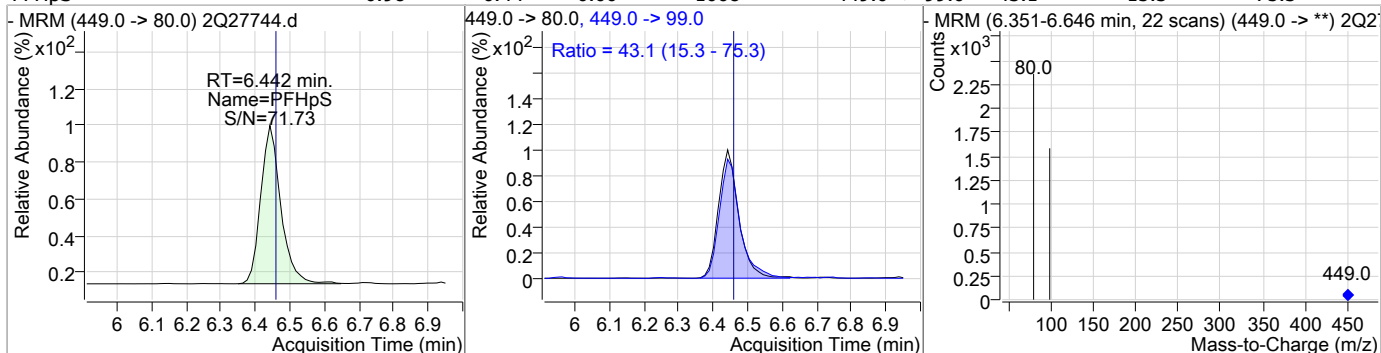


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 0.98  | 6.44 | 0.00     | 6619  | 413.0 -> 169.0 | 26.3   | 7.3  | 47.3 |

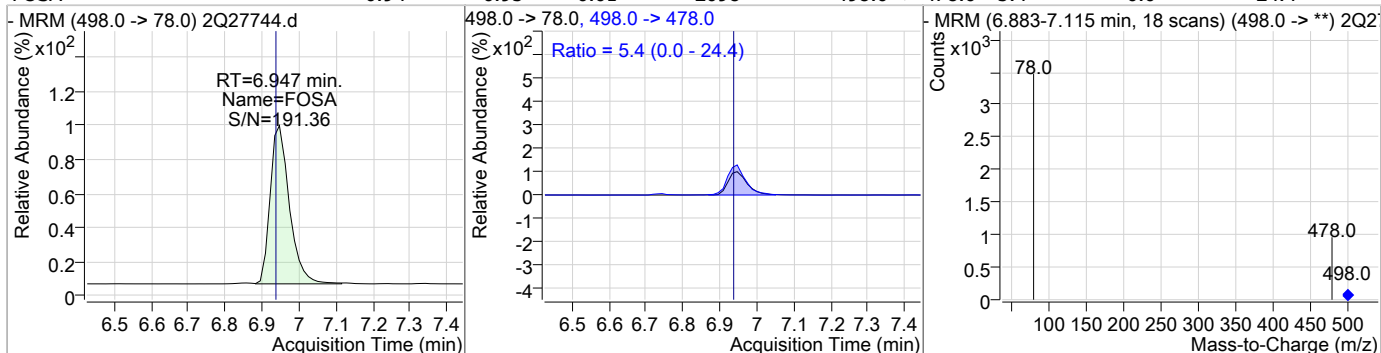


### Perfluorinated Compounds by LC/MS/MS

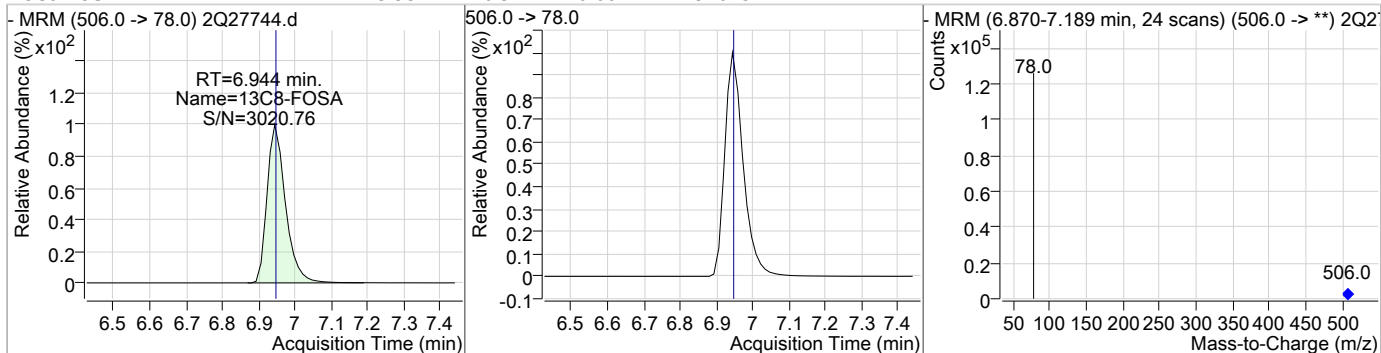
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 0.98  | 6.44 | 0.00     | 1068  | 449.0 -> 99.0 | 43.1   | 15.3 | 75.3 |



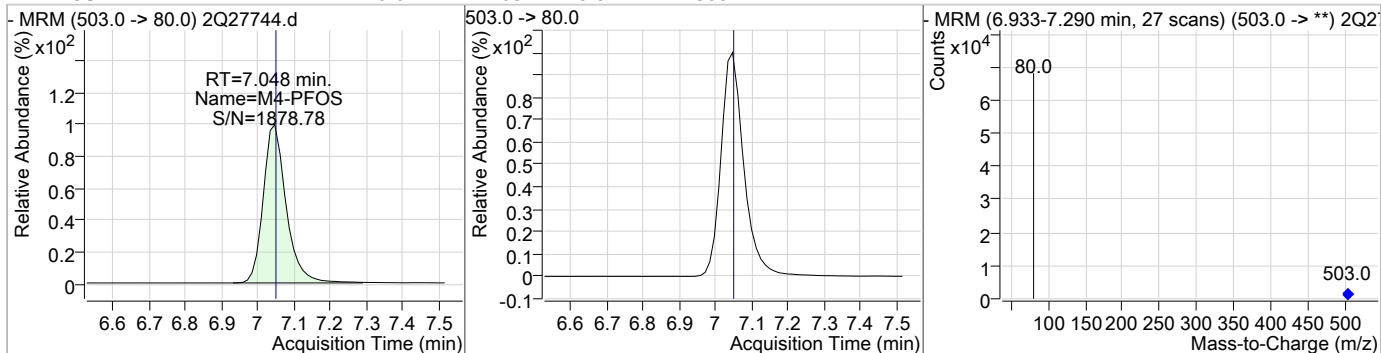
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| FOSA     | 0.94  | 6.95 | 0.01     | 2098  | 498.0 -> 478.0 | 5.4    | 0.0  | 24.4 |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|---------------|--------|------|------|
| 13C8-FOSA | 23.93 | 6.94 | 0.00     | 97025 | 506.0 -> 78.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| M4-PFOS  | 20.02 | 7.05 | 0.01     | 50847 | 503.0 -> 80.0 |        |      |      |

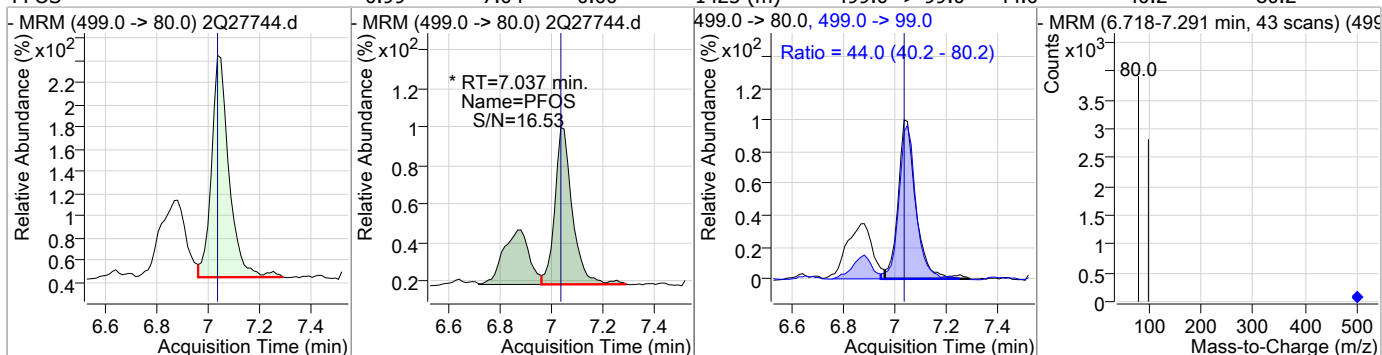


7.6.31  
7

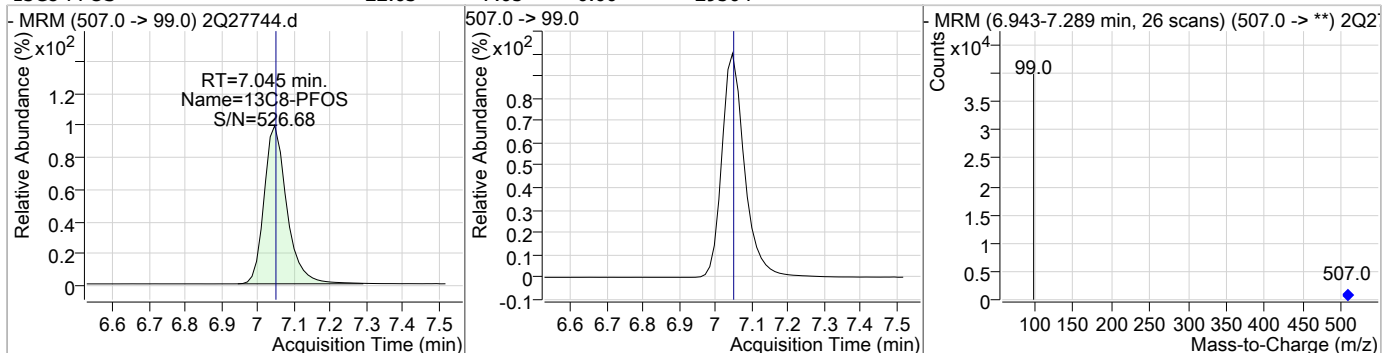


### Perfluorinated Compounds by LC/MS/MS

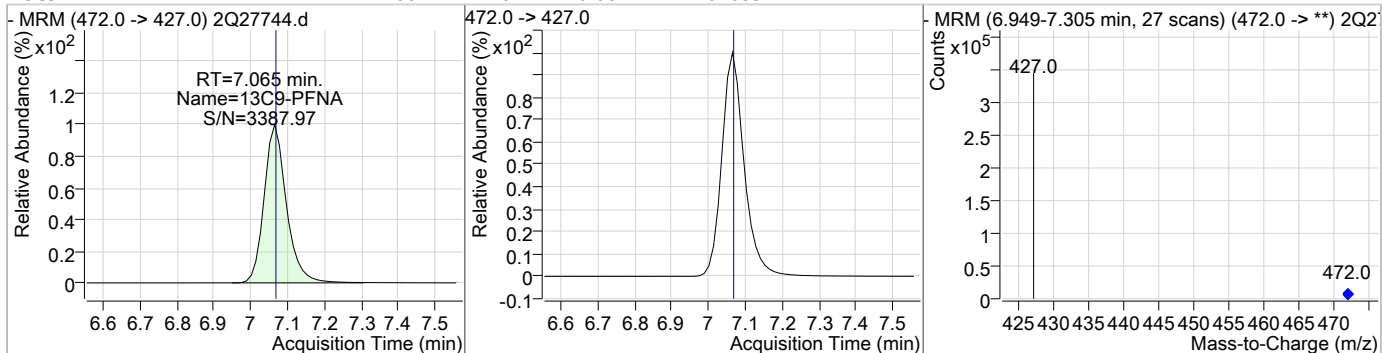
| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFOS     | 0.99  | 7.04 | 0.00     | 1425 (m) | 499.0 -> 99.0 | 44.0   | 40.2 | 80.2 |



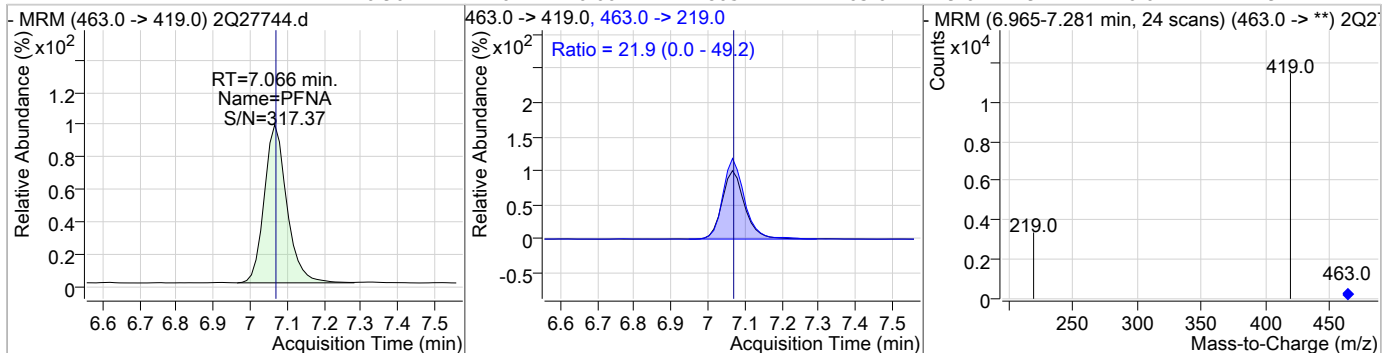
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 22.63 | 7.05 | 0.00     | 29504 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 24.66 | 7.07 | 0.00     | 261059 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFNA     | 0.90  | 7.07 | 0.00     | 7805  | 463.0 -> 219.0 | 21.9   | 0.0  | 49.2 |



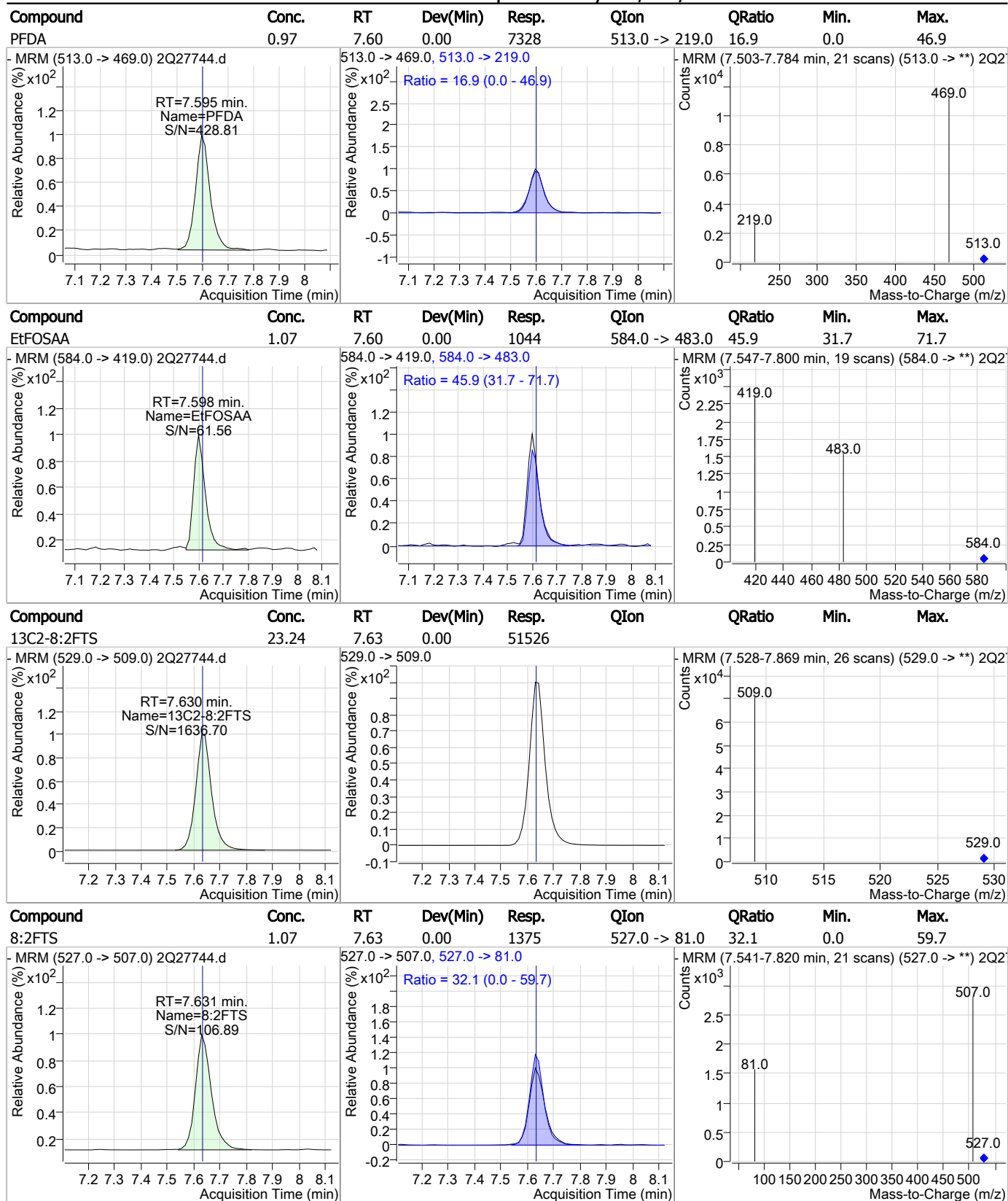
### Perfluorinated Compounds by LC/MS/MS

| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|---------------|--------|------|------|
| 9Cl-PF3ONS | 1.05  | 7.32 | 0.00     | 1351   |               |        |      |      |
|            |       |      |          |        |               |        |      |      |
| d3-MeFOSAA | 23.73 | 7.46 | 0.01     | 45495  |               |        |      |      |
|            |       |      |          |        |               |        |      |      |
| PFNS       | 1.02  | 7.57 | 0.00     | 1036   | 549.0 -> 99.0 | 53.8   | 28.9 | 68.9 |
|            |       |      |          |        |               |        |      |      |
| 13C6-PFDA  | 25.44 | 7.59 | 0.00     | 347099 |               |        |      |      |
|            |       |      |          |        |               |        |      |      |

7.6.31

7

### Perfluorinated Compounds by LC/MS/MS



7.6.31

7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------------|--------|------|------|
| PFDS         | 1.04  | 8.00 | 0.00     | 562    | 599.0 -> 99.0  | 36.2   | 3.1  | 63.1 |
|              |       |      |          |        |                |        |      |      |
| 13C7-PFUnDA  | 25.48 | 8.04 | 0.00     | 431189 |                |        |      |      |
|              |       |      |          |        |                |        |      |      |
| PFUnDA       | 0.94  | 8.04 | 0.00     | 8382   | 563.0 -> 269.0 | 15.8   | 0.0  | 45.4 |
|              |       |      |          |        |                |        |      |      |
| 11Cl-PF3OUdS | 0.88  | 8.20 | 0.00     | 5733   |                |        |      |      |
|              |       |      |          |        |                |        |      |      |

7.6.31

7

### Perfluorinated Compounds by LC/MS/MS

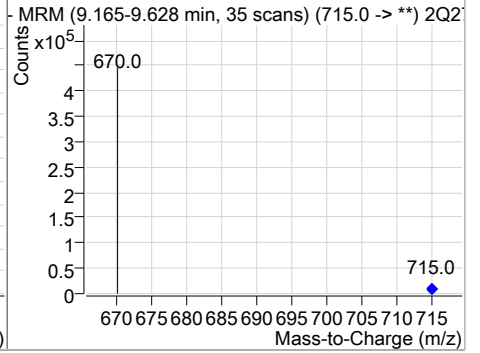
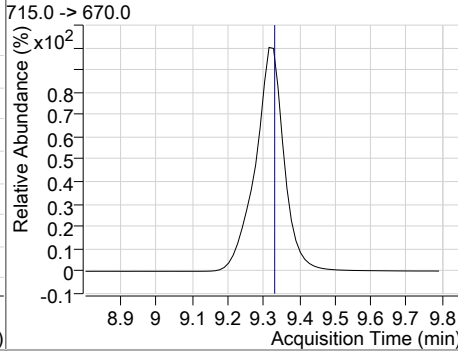
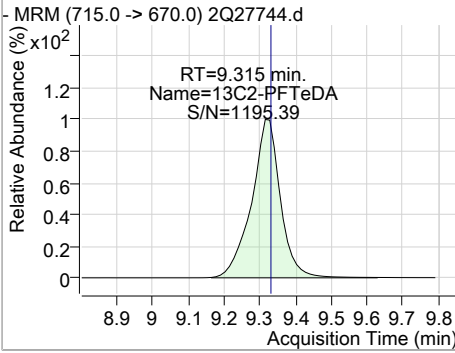
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFDoDA | 25.29 | 8.47 | 0.00     | 475665 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDoDA      | 0.97  | 8.47 | 0.00     | 10239  | 613.0 -> 319.0 | 12.6   | 0.0  | 42.5 |
|             |       |      |          |        |                |        |      |      |
| PFTTrDA     | 0.94  | 8.92 | 0.00     | 11319  | 663.0 -> 369.0 | 6.4    | 0.0  | 36.6 |
|             |       |      |          |        |                |        |      |      |
| PFTeDA      | 0.96  | 9.32 | 0.00     | 11093  | 713.0 -> 219.0 | 5.3    | 0.0  | 25.0 |
|             |       |      |          |        |                |        |      |      |

7.6.31

7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 25.87 | 9.31 | -0.01    | 332078 |      |        |      |      |



7.6.31

7



# Manual Integration Approval Summary

**Sample Number:** S2Q443-CC442  
**Lab FileID:** 2Q27744.D  
**Injection Time:** 03/19/19 15:47

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/20/19 08:53 Nancy Saunders  
**Supervisor approved:** 03/20/19 09:31 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.04           | Split peak |

7.6.31.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 2Q27753.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/19/2019 6:08:38 PM  
 Sample Name : ECC442-20  
 Vial : Vial 7  
 DA Method File : ID\_GENX\_031819\_S2Q442.quantmethod.xml  
 Batch Name : S2Q443.batch.bin  
 Sample Information : op74164,S2Q443,250,,,,1.0,1,water

| Compound                           | RT                   | QIon           | Resp.             | Conc. Units | Dev(Min) |
|------------------------------------|----------------------|----------------|-------------------|-------------|----------|
| <b>Internal Standards</b>          |                      |                |                   |             |          |
| 13C2-PFOA                          | 6.435                | 415.0 -> 370.0 | 303791            | 20.00 µg/L  | 0.000    |
| 13C4-PFOS                          | 7.048                | 503.0 -> 80.0  | 46509             | 20.00 µg/L  | 0.013    |
| M4-PFBA                            | 1.877                | 217.0 -> 172.0 | 126666            | 20.00 µg/L  | 0.013    |
| M5-PFPeA                           | 3.524                | 268.0 -> 223.0 | 109999            | 20.00 µg/L  | 0.000    |
| M5-PFHxA                           | 4.789                | 318.0 -> 273.0 | 155368            | 20.00 µg/L  | 0.000    |
| M4-PFHpA                           | 5.705                | 367.0 -> 322.0 | 226399            | 20.00 µg/L  | 0.000    |
| M8-PFOA                            | 6.434                | 421.0 -> 376.0 | 228711            | 20.00 µg/L  | 0.000    |
| M9-PFNA                            | 7.065                | 472.0 -> 427.0 | 236540            | 20.00 µg/L  | 0.000    |
| M6-PFDA                            | 7.594                | 519.0 -> 474.0 | 315256            | 20.00 µg/L  | 0.000    |
| M7-PFUnDA                          | 8.041                | 570.0 -> 525.0 | 395690            | 20.00 µg/L  | 0.000    |
| M2-PFDoDA                          | 8.466                | 615.0 -> 570.0 | 440339            | 20.00 µg/L  | 0.000    |
| M2-PFTeDA                          | 9.315                | 715.0 -> 670.0 | 307626            | 20.00 µg/L  | -0.013   |
| M8-FOSA                            | 6.944                | 506.0 -> 78.0  | 87997             | 20.00 µg/L  | 0.000    |
| M3-PFBS                            | 3.780                | 302.0 -> 99.0  | 18653             | 20.00 µg/L  | 0.000    |
| M3-PFHxS                           | 5.748                | 402.0 -> 99.0  | 20631             | 20.00 µg/L  | 0.013    |
| M8-PFOS                            | 7.045                | 507.0 -> 99.0  | 27152             | 20.00 µg/L  | 0.000    |
| M2-4:2FTS                          | 4.696                | 329.0 -> 309.0 | 62020             | 20.00 µg/L  | 0.013    |
| M2-6:2FTS                          | 6.431                | 429.0 -> 409.0 | 70063             | 20.00 µg/L  | 0.015    |
| M2-8:2FTS                          | 7.642                | 529.0 -> 509.0 | 51458             | 20.00 µg/L  | 0.013    |
| M3-MeFOSAA                         | 7.459                | 573.0 -> 419.0 | 43391             | 20.00 µg/L  | 0.013    |
| M3-HFPO-DA                         | 5.081                | 287.0 -> 169.0 | 171054            | 100.00 µg/L | 0.013    |
| <b>System Monitoring Compounds</b> |                      |                |                   |             |          |
| 13C2-4:2FTS                        | 4.696                | 329.0 -> 309.0 | 61941             | 20.83 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 104.2% |             |          |
| 13C2-6:2FTS                        | 6.431                | 429.0 -> 409.0 | 70160             | 21.86 µg/L  | 0.015    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 109.3% |             |          |
| 13C2-8:2FTS                        | 7.642                | 529.0 -> 509.0 | 51449             | 23.20 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 116.0% |             |          |
| 13C2-PFDoDA                        | 8.466                | 615.0 -> 570.0 | 440249            | 23.41 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 117.0% |             |          |
| 13C2-PFTeDA                        | 9.315                | 715.0 -> 670.0 | 306579            | 23.88 µg/L  | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 119.4% |             |          |
| 13C3-PFBS                          | 3.780                | 302.0 -> 99.0  | 18654             | 20.46 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 102.3% |             |          |
| 13C3-PFHxS                         | 5.748                | 402.0 -> 99.0  | 20714             | 20.32 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 101.6% |             |          |
| 13C4-PFBA                          | 1.877                | 217.0 -> 172.0 | 126126            | 21.03 µg/L  | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 105.2% |             |          |
| 13C4-PFHpA                         | 5.705                | 367.0 -> 322.0 | 226331            | 21.88 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 109.4% |             |          |
| 13C5-PFHxA                         | 4.789                | 318.0 -> 273.0 | 155150            | 21.35 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 106.8% |             |          |
| 13C5-PFPeA                         | 3.524                | 268.0 -> 223.0 | 109994            | 21.64 µg/L  | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                | Recovery = 108.2% |             |          |
| 13C6-PFDA                          | 7.594                | 519.0 -> 474.0 | 315198            | 23.10 µg/L  | 0.000    |

7.6.32  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 115.5% |          |
| 13C7-PFUnDA           | 8.041                | 570.0 -> 525.0 | 395325 | 23.36 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 116.8% |          |
| 13C8-FOSA             | 6.944                | 506.0 -> 78.0  | 87888  | 21.67 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 108.4% |          |
| 13C8-PFOA             | 6.434                | 421.0 -> 376.0 | 228643 | 21.92 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 109.6% |          |
| 13C8-PFOS             | 7.045                | 507.0 -> 99.0  | 27178  | 20.85 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.3% |          |
| 13C9-PFNA             | 7.065                | 472.0 -> 427.0 | 236515 | 22.34 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 111.7% |          |
| d3-MeFOSAA            | 7.459                | 573.0 -> 419.0 | 43337  | 22.61 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 113.0% |          |
| M2-PFOA               | 6.435                | 415.0 -> 370.0 | 304032 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.048                | 503.0 -> 80.0  | 46481  | 19.98 µg/L        | 0.013    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C3-HFPO-DA          | 5.081                | 287.0 -> 169.0 | 171054 | 106.97 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 107.0% |          |

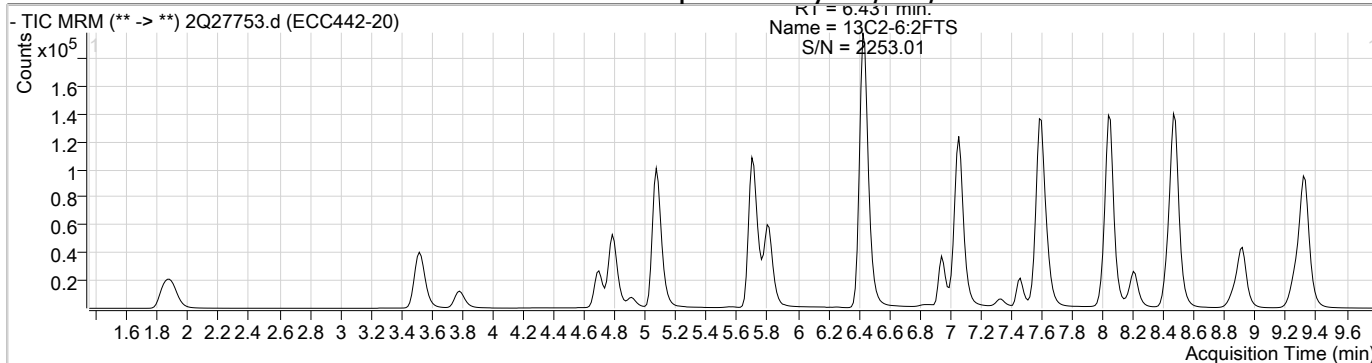
7.6.32  
7

**Target Compounds**

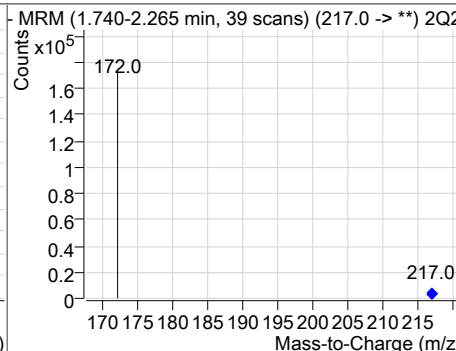
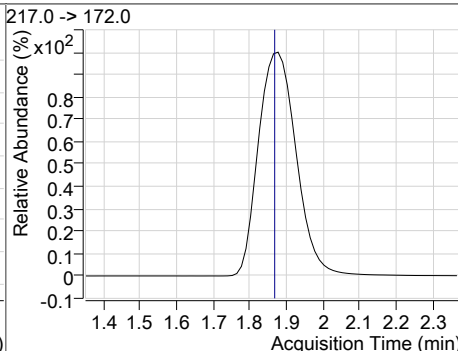
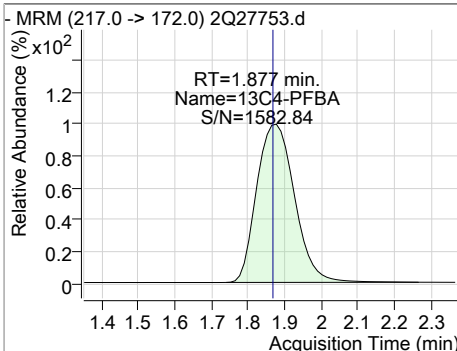
| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.699 | 327.0 -> 307.0 | 35358  | 20.69 µg/L  | 100    |
| 6:2FTS       | 6.432 | 427.0 -> 407.0 | 34788  | 20.18 µg/L  | 100    |
| 8:2FTS       | 7.631 | 527.0 -> 507.0 | 25818  | 20.07 µg/L  | 97     |
| EtFOSAA      | 7.598 | 584.0 -> 419.0 | 18210  | 19.74 µg/L  | 99     |
| FOSA         | 6.947 | 498.0 -> 78.0  | 39741  | 19.61 µg/L  | 100    |
| MeFOSAA      | 7.460 | 570.0 -> 419.0 | 21599  | 19.51 µg/L  | 97     |
| PFBA         | 1.873 | 213.0 -> 169.0 | 24593  | 19.66 µg/L  | 100    |
| PFBS         | 3.783 | 299.0 -> 80.0  | 29514  | 19.93 µg/L  | 100    |
| PFDA         | 7.595 | 513.0 -> 469.0 | 136621 | 19.91 µg/L  | 100    |
| PFDoDA       | 8.468 | 613.0 -> 569.0 | 195553 | 19.95 µg/L  | 99     |
| PFDS         | 8.001 | 599.0 -> 80.0  | 9548   | 19.09 µg/L  | 99     |
| PFHpA        | 5.708 | 363.0 -> 319.0 | 191099 | 19.58 µg/L  | 100    |
| PFHpS        | 6.442 | 449.0 -> 80.0  | 20911  | 20.89 µg/L  | 100    |
| PFHxA        | 4.791 | 313.0 -> 269.0 | 53321  | 19.93 µg/L  | 100    |
| PFHxS        | 5.751 | 399.0 -> 80.0  | 22734  | 19.94 µg/L  | m 96   |
| PFNA         | 7.066 | 463.0 -> 419.0 | 157466 | 20.07 µg/L  | 99     |
| PFNS         | 7.565 | 549.0 -> 80.0  | 19465  | 20.92 µg/L  | 99     |
| PFOA         | 6.437 | 413.0 -> 369.0 | 120459 | 19.50 µg/L  | 98     |
| PFOS         | 7.049 | 499.0 -> 80.0  | 25788  | 19.56 µg/L  | m 79   |
| PFPeA        | 3.528 | 263.0 -> 219.0 | 92643  | 19.46 µg/L  | 100    |
| PFPeS        | 4.908 | 349.0 -> 80.0  | 19467  | 20.54 µg/L  | 97     |
| PFTeDA       | 9.319 | 713.0 -> 669.0 | 210167 | 19.54 µg/L  | 100    |
| PFTTrDA      | 8.919 | 663.0 -> 619.0 | 218426 | 19.49 µg/L  | 99     |
| PFUnDA       | 8.043 | 563.0 -> 519.0 | 160444 | 19.66 µg/L  | 100    |
| 11Cl-PF3OUdS | 8.200 | 631.0 -> 451.0 | 108924 | 18.05 µg/L  | 100    |
| 9Cl-PF3ONS   | 7.335 | 531.0 -> 351.0 | 21615  | 18.24 µg/L  | 100    |
| ADONA        | 5.817 | 377.0 -> 251.0 | 220468 | 19.47 µg/L  | 100    |
| HFPO-DA      | 5.073 | 329.0 -> 169.0 | 203631 | 100.21 µg/L | 99     |

# = Qualifier out of range, m = manually integrated, + = Area summed

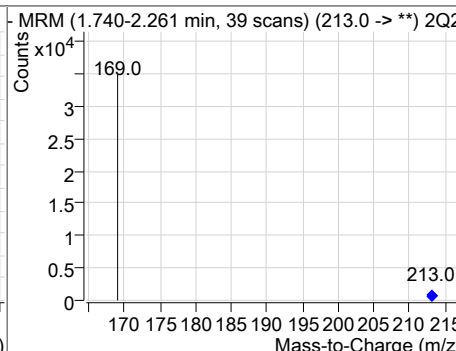
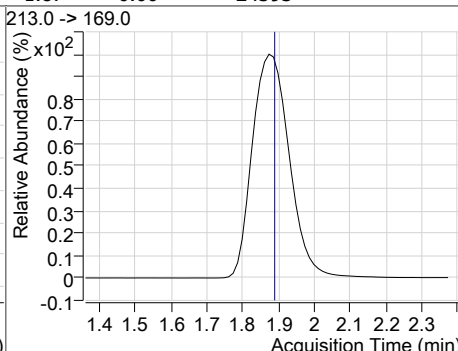
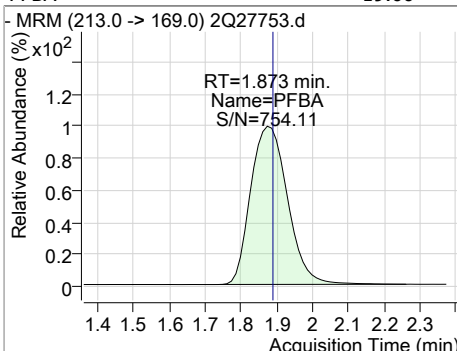
### Perfluorinated Compounds by LC/MS/MS



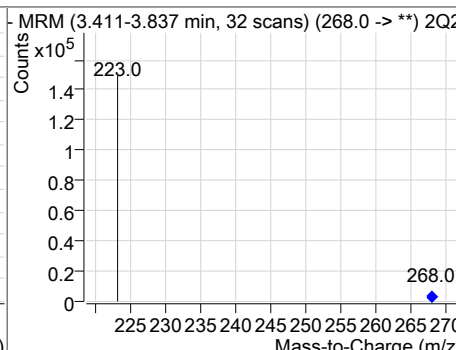
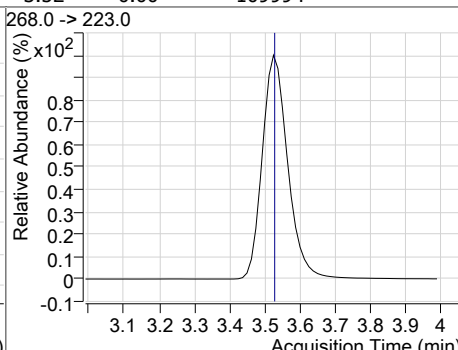
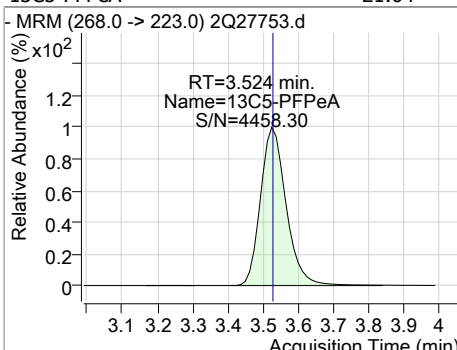
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFBA | 21.03 | 1.88 | 0.01     | 126126 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| PFBA     | 19.66 | 1.87 | 0.00     | 24593 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFPeA | 21.64 | 3.52 | 0.00     | 109994 |      |        |      |      |



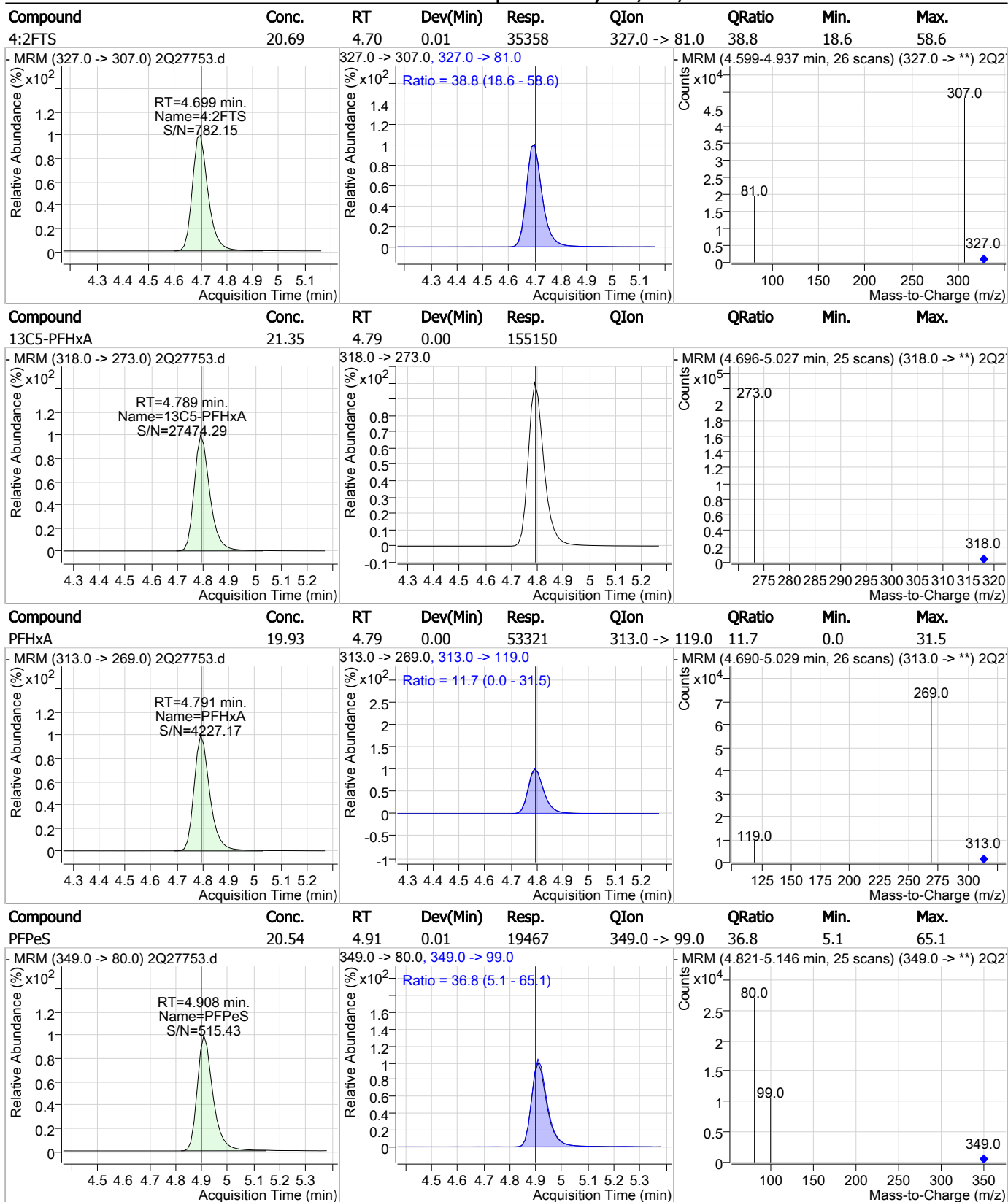
7.6.32  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeA       | 19.46 | 3.53 | 0.00     | 92643 |               |        |      |      |
|             |       |      |          |       |               |        |      |      |
| PFBS        | 19.93 | 3.78 | 0.01     | 29514 | 299.0 -> 99.0 | 35.7   | 5.6  | 65.6 |
|             |       |      |          |       |               |        |      |      |
| 13C3-PFBS   | 20.46 | 3.78 | 0.00     | 18654 |               |        |      |      |
|             |       |      |          |       |               |        |      |      |
| 13C2-4:2FTS | 20.83 | 4.70 | 0.01     | 61941 |               |        |      |      |
|             |       |      |          |       |               |        |      |      |

7.6.32  
7

### Perfluorinated Compounds by LC/MS/MS

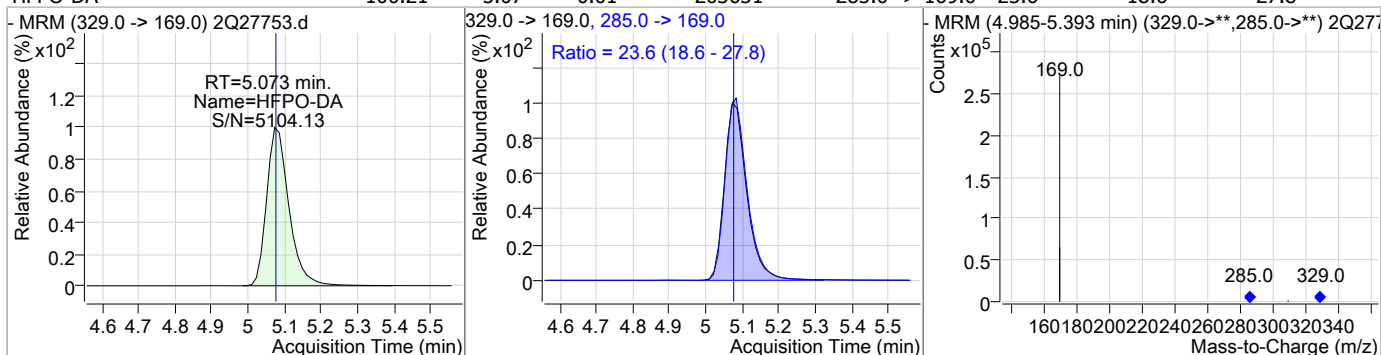


7.6.32

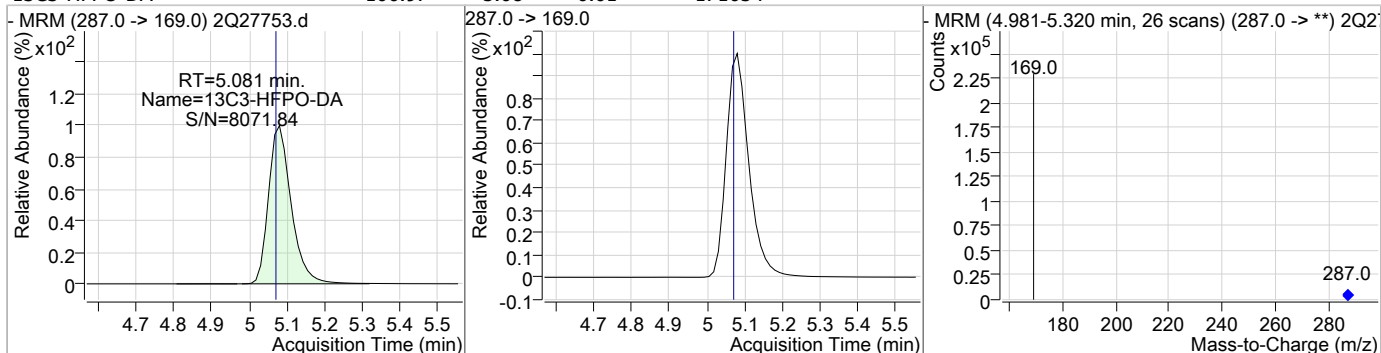
7

### Perfluorinated Compounds by LC/MS/MS

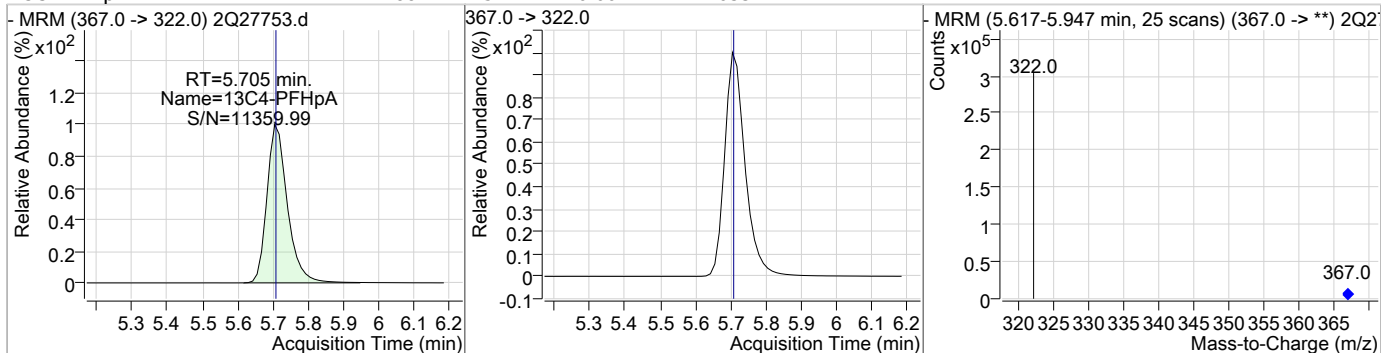
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| HFPO-DA  | 100.21 | 5.07 | 0.01     | 203631 | 285.0 -> 169.0 | 23.6   | 18.6 | 27.8 |



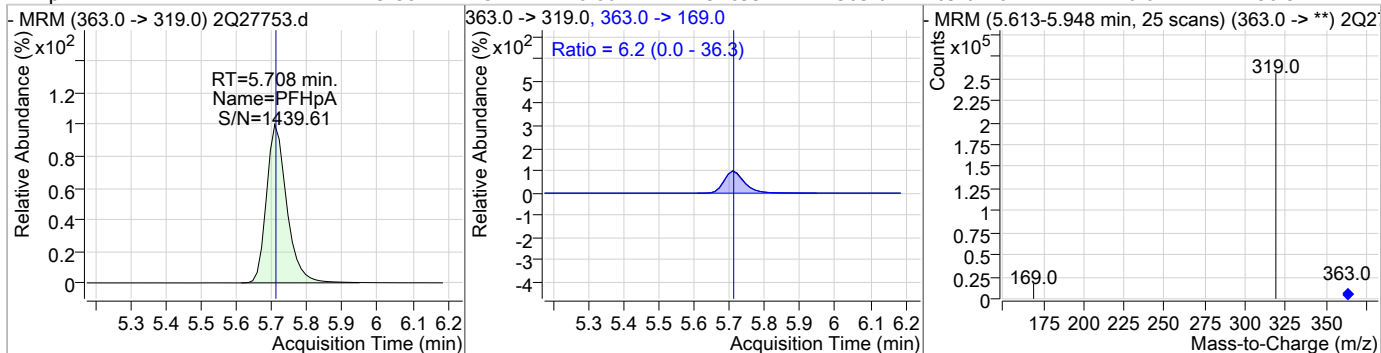
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C3-HFPO-DA | 106.97 | 5.08 | 0.01     | 171054 |      |        |      |      |



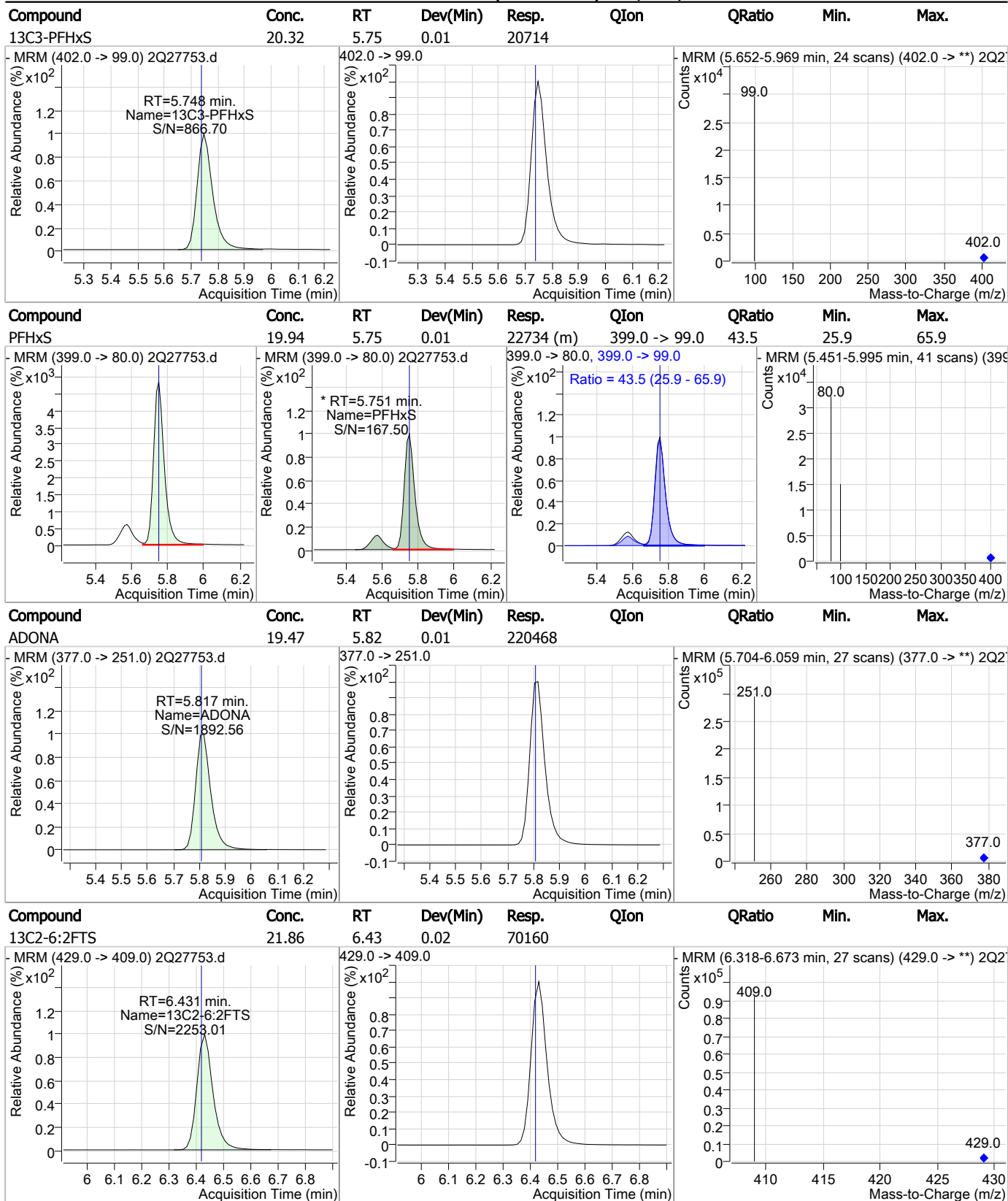
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C4-PFHpA | 21.88 | 5.71 | 0.00     | 226331 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHpA    | 19.58 | 5.71 | 0.00     | 191099 | 363.0 -> 169.0 | 6.2    | 0.0  | 36.3 |



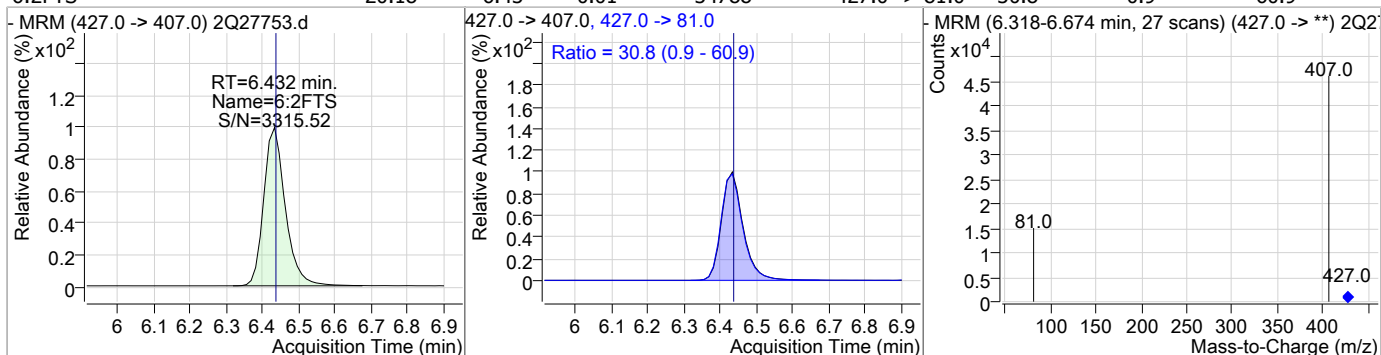
### Perfluorinated Compounds by LC/MS/MS



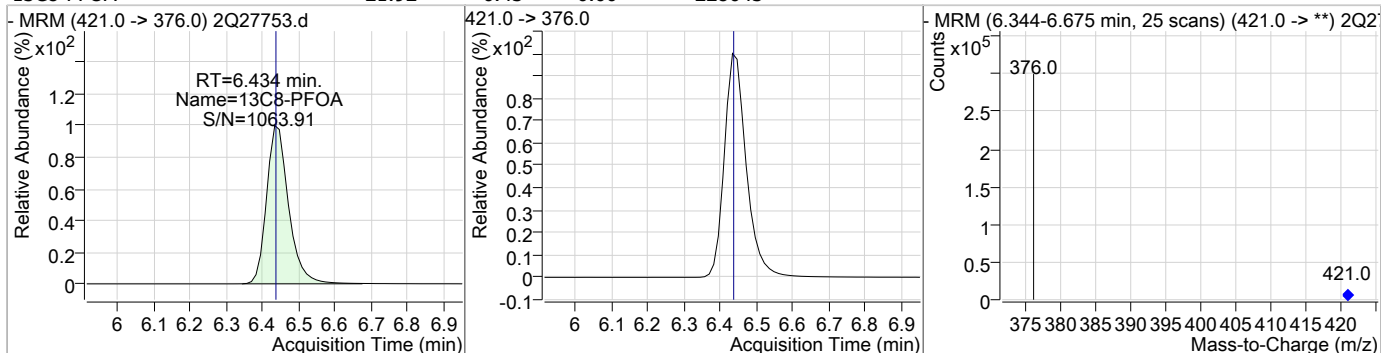
7.6.32  
7

### Perfluorinated Compounds by LC/MS/MS

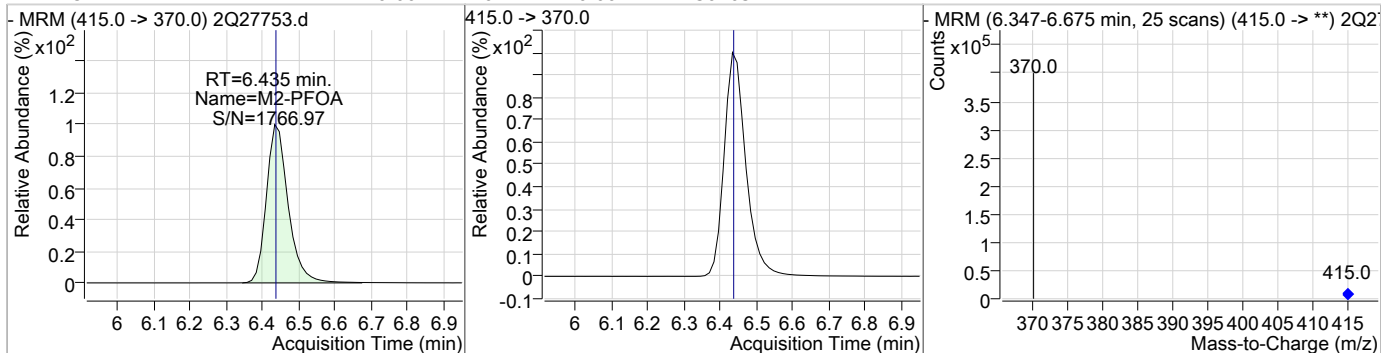
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 20.18 | 6.43 | 0.01     | 34788 | 427.0 -> 81.0 | 30.8   | 0.9  | 60.9 |



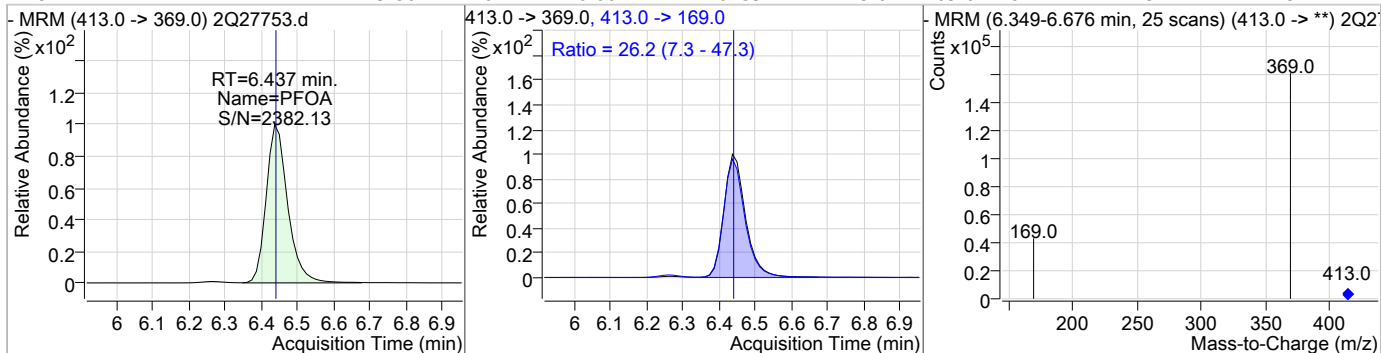
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 21.92 | 6.43 | 0.00     | 228643 |      |        |      |      |



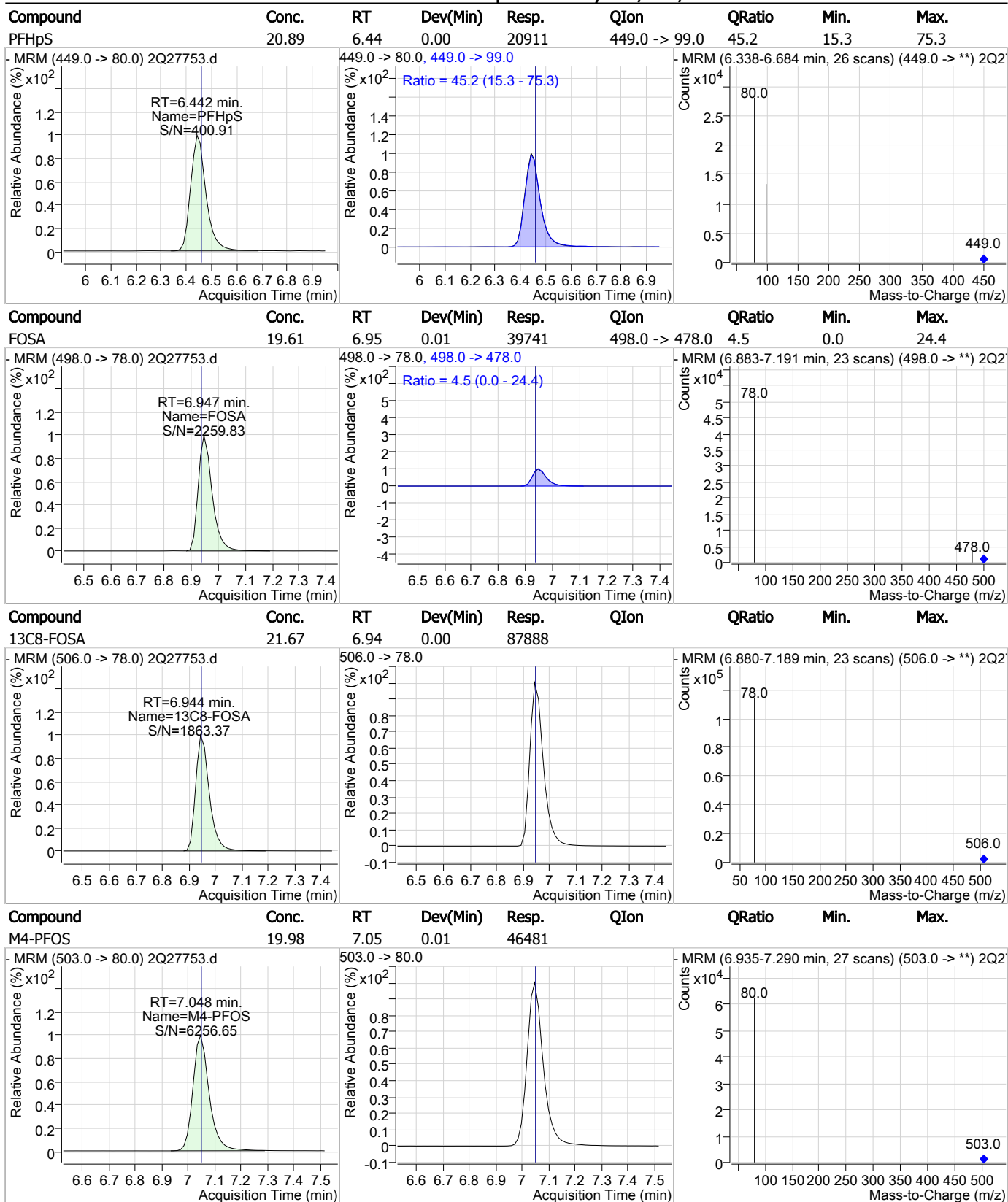
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.44 | 0.00     | 304032 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.50 | 6.44 | 0.00     | 120459 | 413.0 -> 169.0 | 26.2   | 7.3  | 47.3 |



### Perfluorinated Compounds by LC/MS/MS



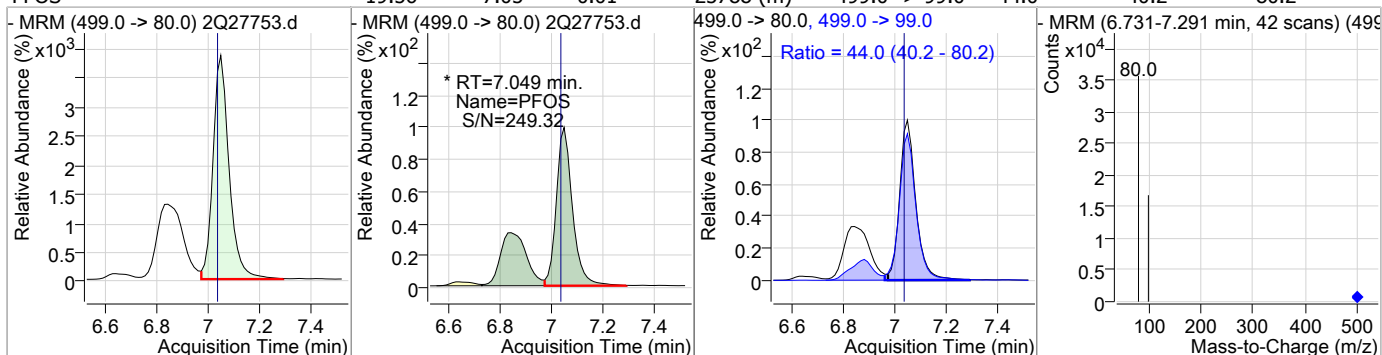
7.6.32

7

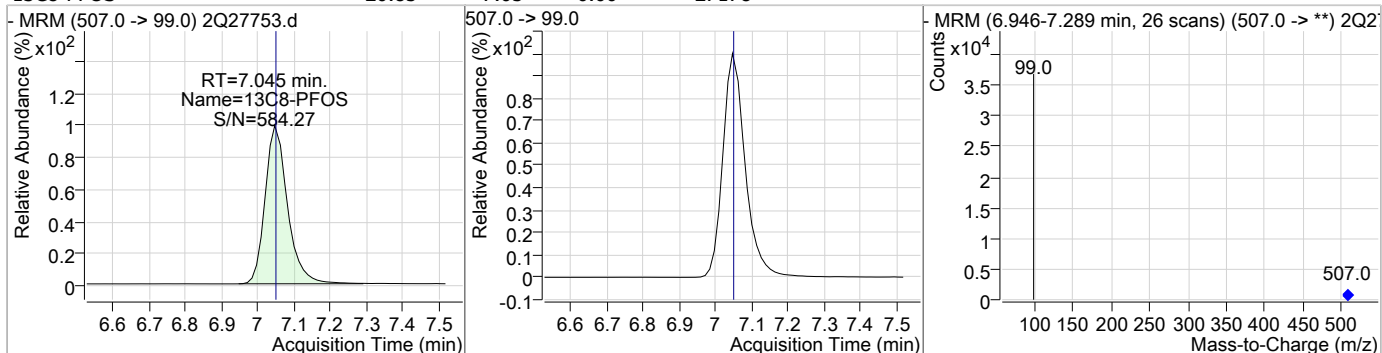


### Perfluorinated Compounds by LC/MS/MS

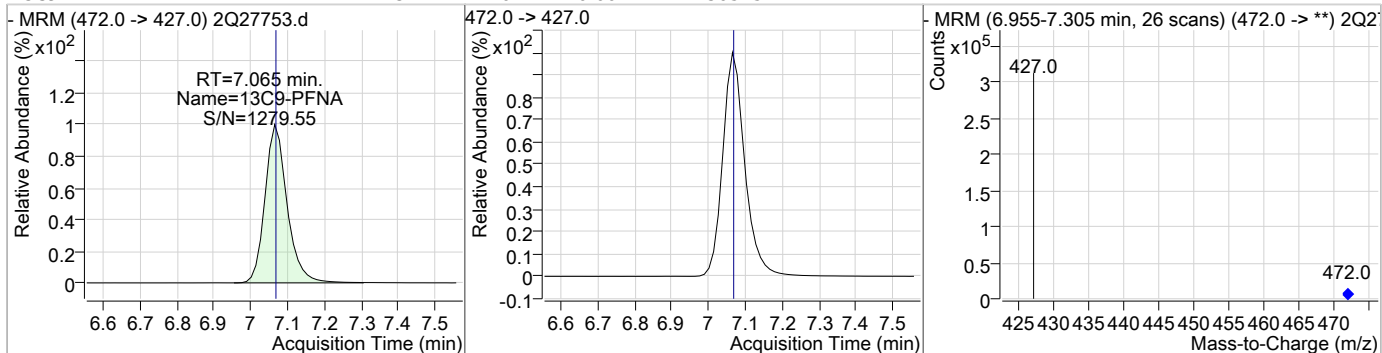
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFOS     | 19.56 | 7.05 | 0.01     | 25788 (m) | 499.0 -> 99.0 | 44.0   | 40.2 | 80.2 |



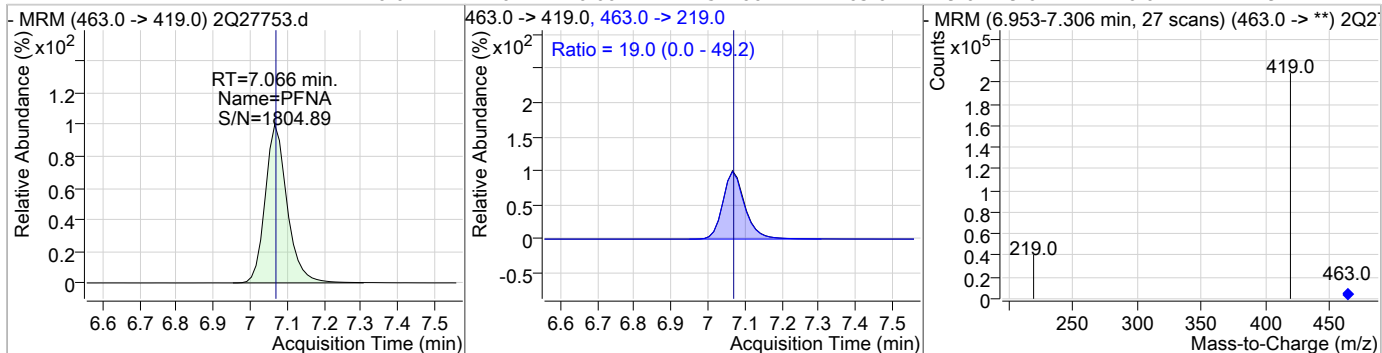
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.85 | 7.05 | 0.00     | 27178 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C9-PFNA | 22.34 | 7.07 | 0.00     | 236515 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFNA     | 20.07 | 7.07 | 0.00     | 157466 | 463.0 -> 219.0 | 19.0   | 0.0  | 49.2 |



7.6.32  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound                         | Conc. | RT   | Dev(Min)                       | Resp. | QIon           | QRatio  | Min. | Max. |
|----------------------------------|-------|------|--------------------------------|-------|----------------|---|------|------|
| 9Cl-PF3ONS                       | 18.24 | 7.34 | 0.01                           | 21615 |                |   |      |      |
| - MRM (531.0 -> 351.0) 2Q27753.d |       |      | 531.0 -> 351.0                 |       |                | - MRM (7.222-7.579 min, 27 scans) (531.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| d3-MeFOSAA                       | 22.61 | 7.46 | 0.01                           | 43337 |                |   |      |      |
| - MRM (573.0 -> 419.0) 2Q27753.d |       |      | 573.0 -> 419.0                 |       |                | - MRM (7.385-7.624 min, 18 scans) (573.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| MeFOSAA                          | 19.51 | 7.46 | 0.00                           | 21599 | 570.0 -> 512.0 | 23.9  | 2.3  | 42.3 |
| - MRM (570.0 -> 419.0) 2Q27753.d |       |      | 570.0 -> 419.0, 570.0 -> 512.0 |       |                | - MRM (7.387-7.625 min, 18 scans) (570.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |
| PFNS                             | 20.92 | 7.57 | 0.00                           | 19465 | 549.0 -> 99.0  | 49.9  | 28.9 | 68.9 |
| - MRM (549.0 -> 80.0) 2Q27753.d  |       |      | 549.0 -> 80.0, 549.0 -> 99.0   |       |                | - MRM (7.461-7.805 min, 26 scans) (549.0 -> **) 2Q2 |      |      |
|                                  |       |      |                                |       |                |   |      |      |

7.6.32  
7

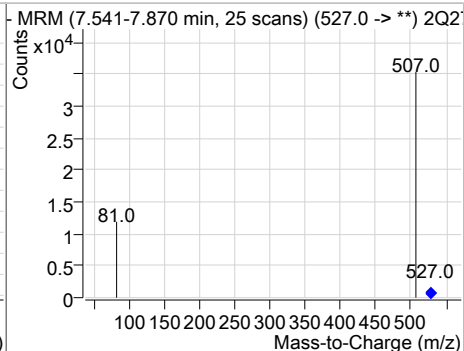
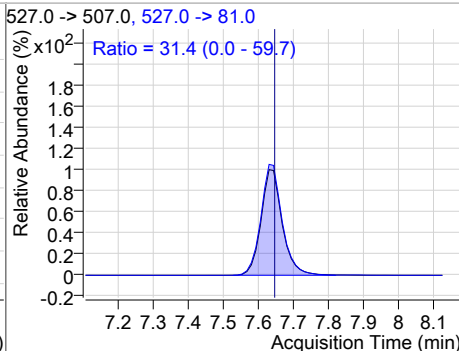
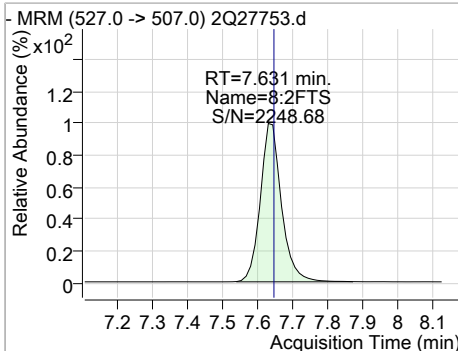
### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA   | 23.10 | 7.59 | 0.00     | 315198 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDA        | 19.91 | 7.60 | 0.00     | 136621 | 513.0 -> 219.0 | 16.7   | 0.0  | 46.9 |
|             |       |      |          |        |                |        |      |      |
| EtFOSAA     | 19.74 | 7.60 | 0.00     | 18210  | 584.0 -> 483.0 | 50.8   | 31.7 | 71.7 |
|             |       |      |          |        |                |        |      |      |
| 13C2-8:2FTS | 23.20 | 7.64 | 0.01     | 51449  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |

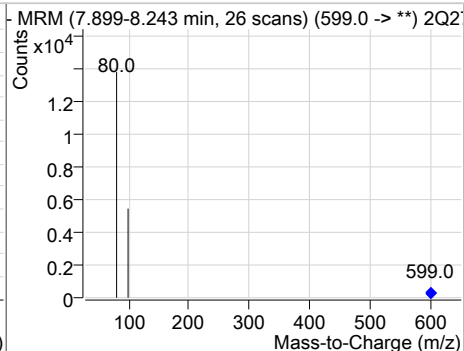
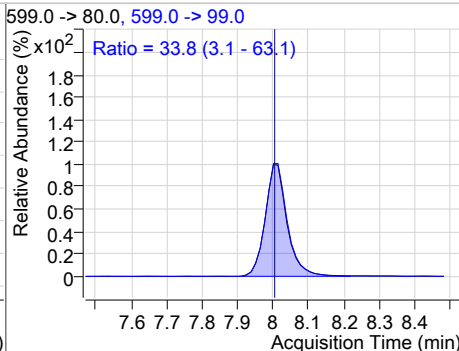
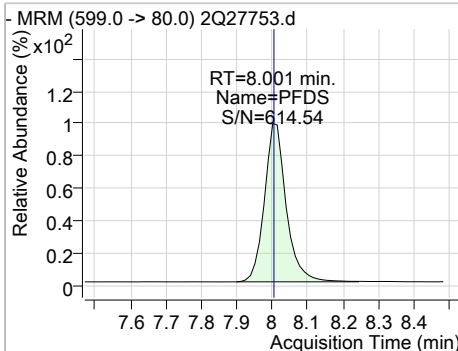
7.6.32  
7

### Perfluorinated Compounds by LC/MS/MS

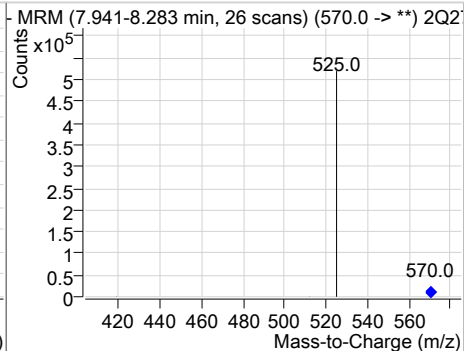
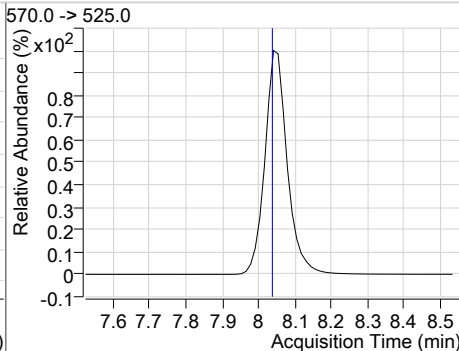
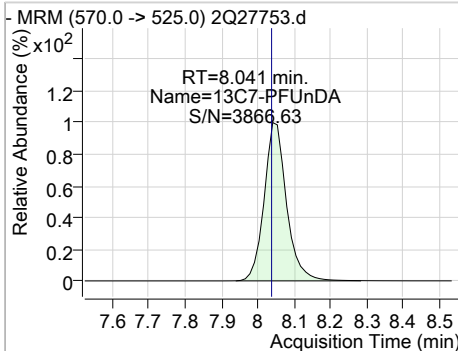
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 8:2FTS   | 20.07 | 7.63 | 0.00     | 25818 | 527.0 -> 81.0 | 31.4   | 0.0  | 59.7 |



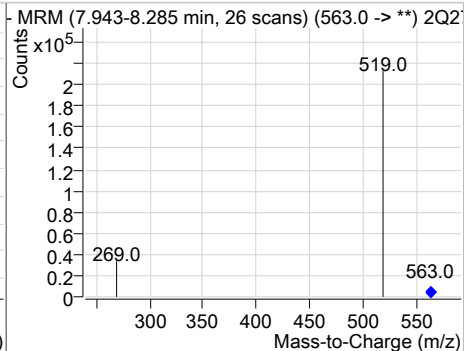
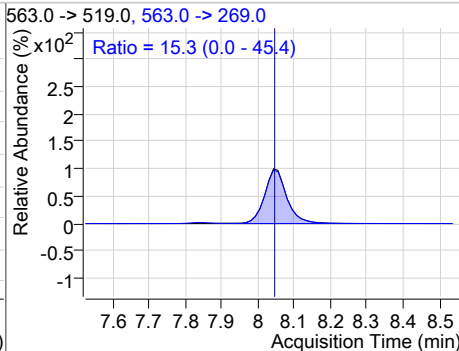
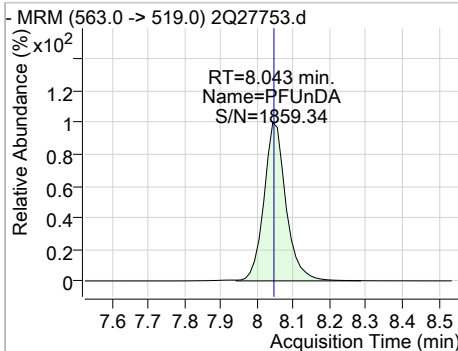
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 19.09 | 8.00 | 0.00     | 9548  | 599.0 -> 99.0 | 33.8   | 3.1  | 63.1 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 23.36 | 8.04 | 0.00     | 395325 | 570.0 -> 525.0 |        |      |      |

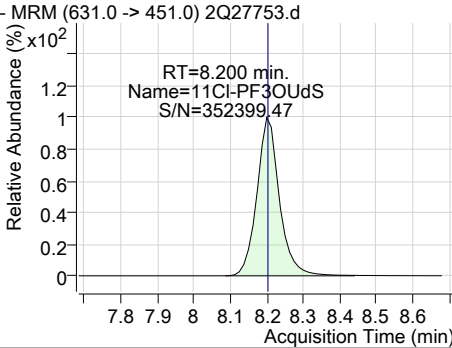
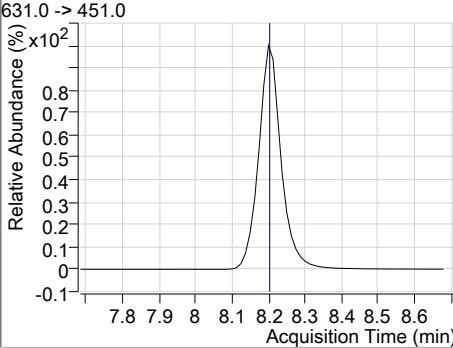
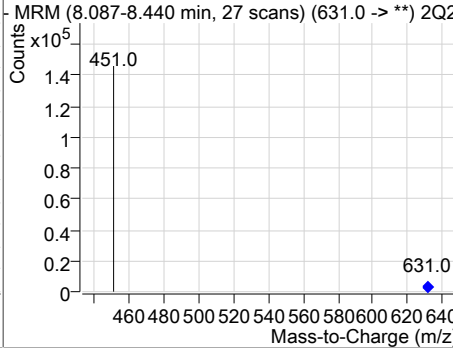
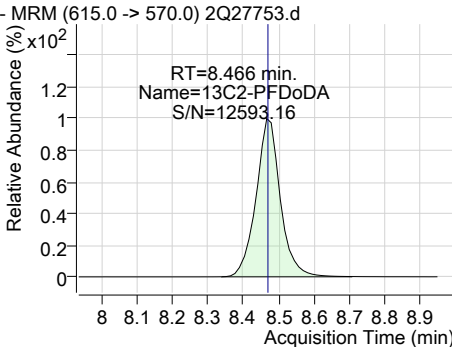
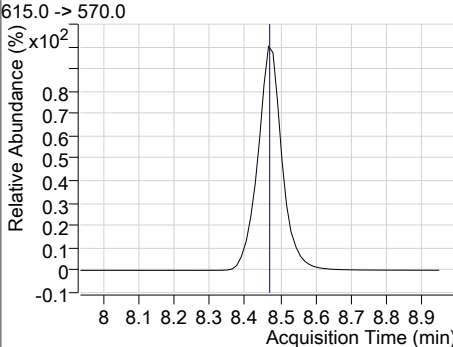
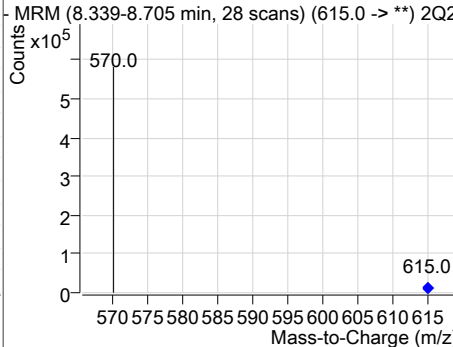
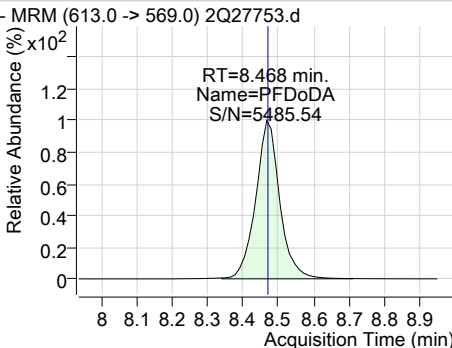
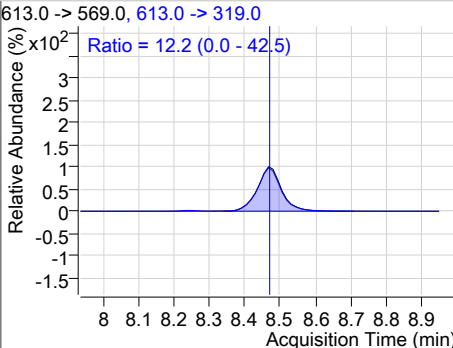
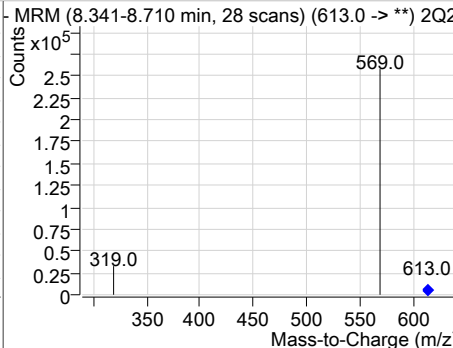
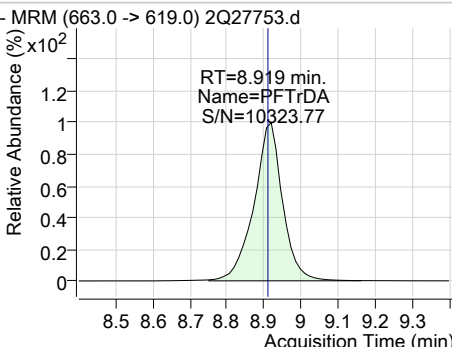
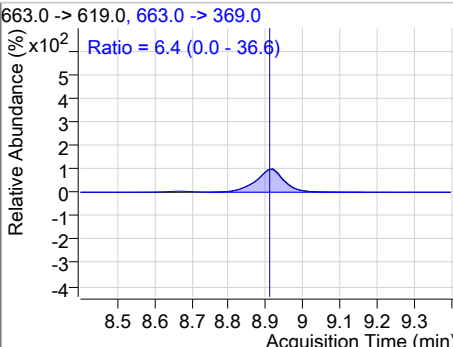
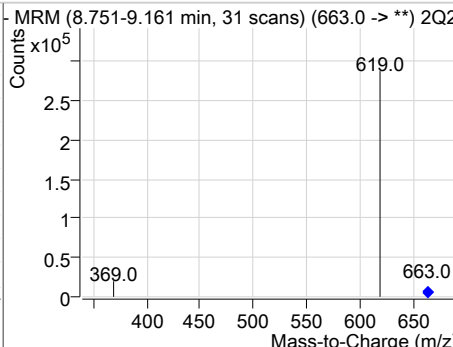


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 19.66 | 8.04 | 0.00     | 160444 | 563.0 -> 269.0 | 15.3   | 0.0  | 45.4 |



7.6.32  
7

### Perfluorinated Compounds by LC/MS/MS

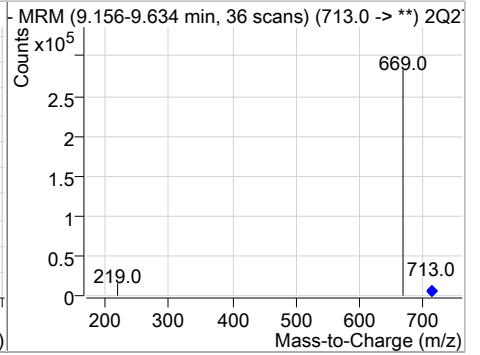
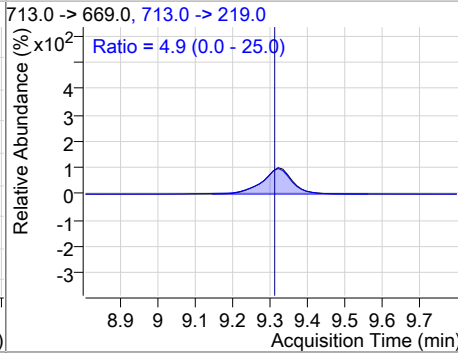
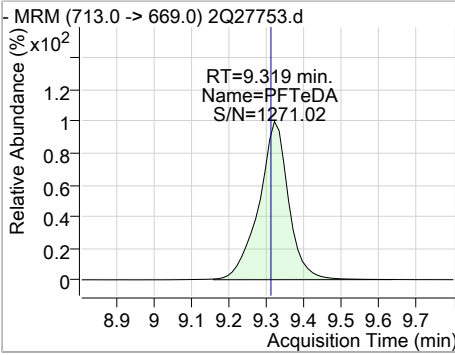
| Compound   | Conc. | RT   | Dev(Min)  | Resp.  | QIon           | QRatio   | Min. | Max. |
|--|-------|------|---|--------|----------------|--|------|------|
| 11Cl-PF3OUdS   | 18.05 | 8.20 | 0.00  | 108924 |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| 13C2-PFDoDA  | 23.41 | 8.47 | 0.00  | 440249 |                |  |      |      |
|    |       |      |    |        |                |    |      |      |
| PFDoDA   | 19.95 | 8.47 | 0.00  | 195553 | 613.0 -> 319.0 | 12.2   | 0.0  | 42.5 |
|  |       |      |  |        |                |  |      |      |
| PFTTrDA  | 19.49 | 8.92 | 0.00  | 218426 | 663.0 -> 369.0 | 6.4  | 0.0  | 36.6 |
|  |       |      |  |        |                |  |      |      |

7.6.32

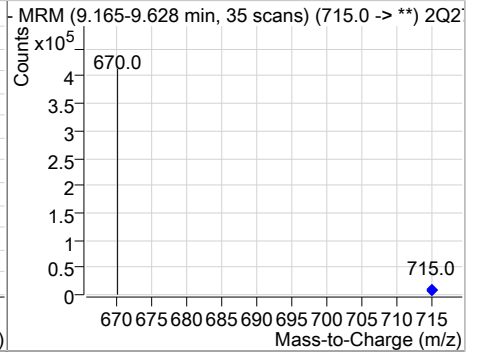
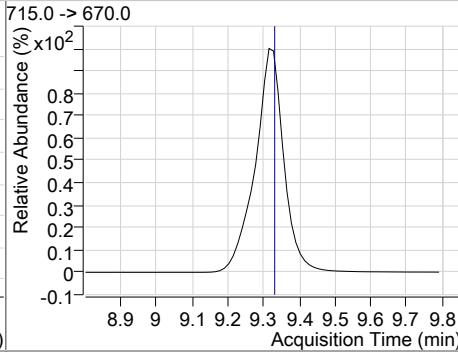
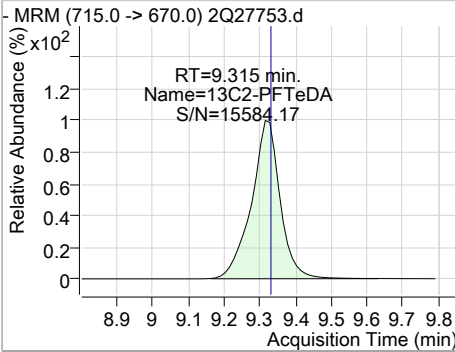
7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 19.54 | 9.32 | 0.00     | 210167 | 713.0 -> 219.0 | 4.9    | 0.0  | 25.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 23.88 | 9.31 | -0.01    | 306579 |      |        |      |      |



7.6.32  
7

# Manual Integration Approval Summary

**Sample Number:** S2Q443-ECC442      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 2Q27753.D      **Analyst approved:** 03/20/19 08:53 Nancy Saunders  
**Injection Time:** 03/19/19 18:08      **Supervisor approved:** 03/20/19 09:31 Norman Farmer

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.75           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.05           | Split peak |

7.6.32.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1972.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 9:54:57 AM  
 Sample Name : ic54-0.5  
 Vial : P3-A2  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.689                | 217.0 -> 172.0 | 327967 | 20.00 µg/L        | -0.013   |
| M5-PFPeA                           | 3.548                | 268.0 -> 223.0 | 222460 | 20.00 µg/L        | -0.013   |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 302147 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 341733 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 328273 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 309255 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 342624 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 380696 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 398988 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 378936 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.298                | 506.0 -> 78.0  | 221259 | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.867                | 302.0 -> 99.0  | 51456  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 51897  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 79090  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 91143  | 20.00 µg/L        | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 87313  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 52733  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 48734  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.242                | 287.0 -> 169.0 | 170823 | 100.00 µg/L       | -0.013   |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 423192 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 127860 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 90659  | 19.10 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.5%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 87305  | 19.10 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.5%  |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 52832  | 18.90 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.5%  |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 398979 | 20.40 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.0% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 379015 | 20.72 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.6% |          |
| 13C3-PFBS                          | 3.867                | 302.0 -> 99.0  | 51011  | 20.22 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.1% |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 51828  | 20.51 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.5% |          |
| 13C4-PFBA                          | 1.689                | 217.0 -> 172.0 | 325185 | 19.94 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.7%  |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 340355 | 20.39 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.9% |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 301659 | 20.50 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.5% |          |
| 13C5-PFPeA                         | 3.548                | 268.0 -> 223.0 | 222426 | 20.09 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.4% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 343195 | 20.60 µg/L        | 0.000    |

7.6.33  
7



### Perfluorinated Compounds by LC/MS/MS

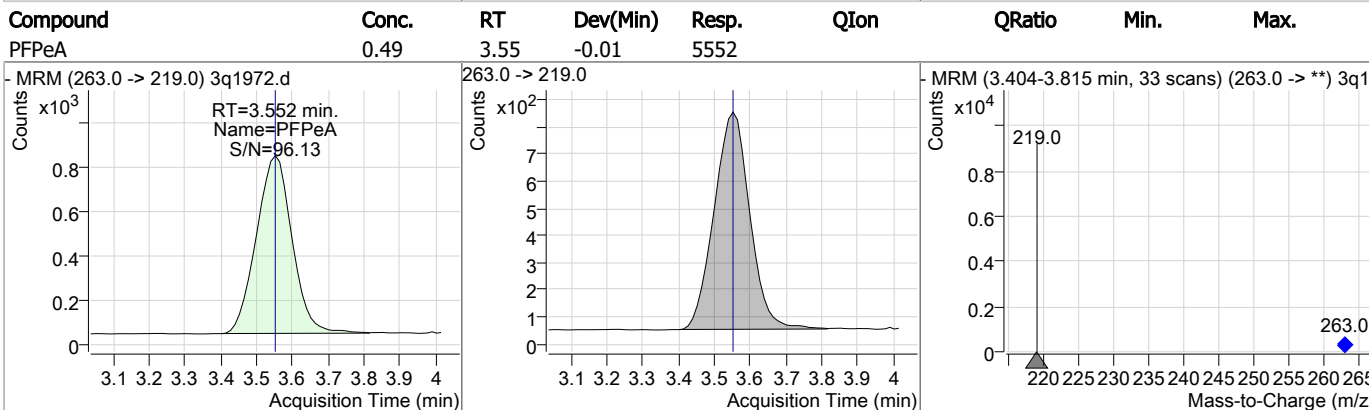
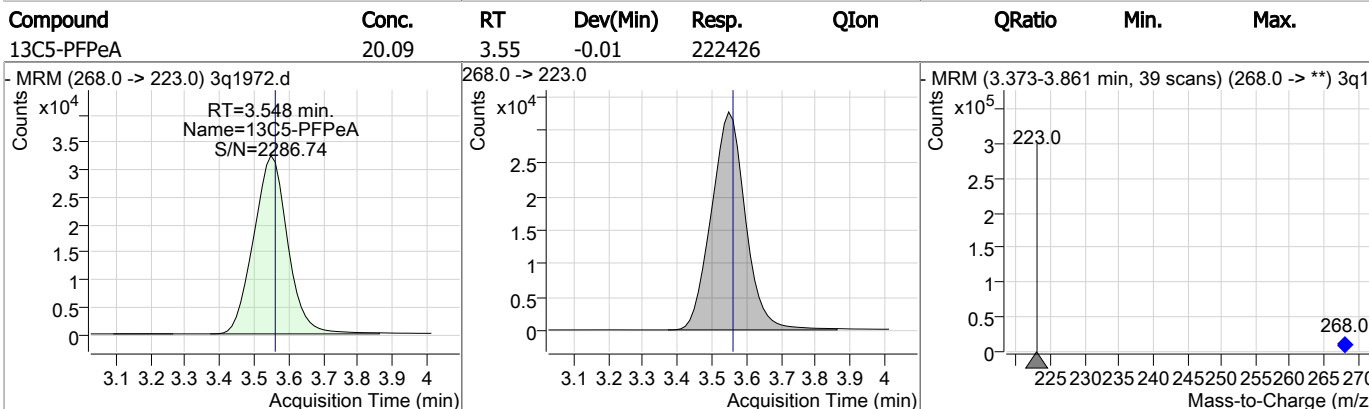
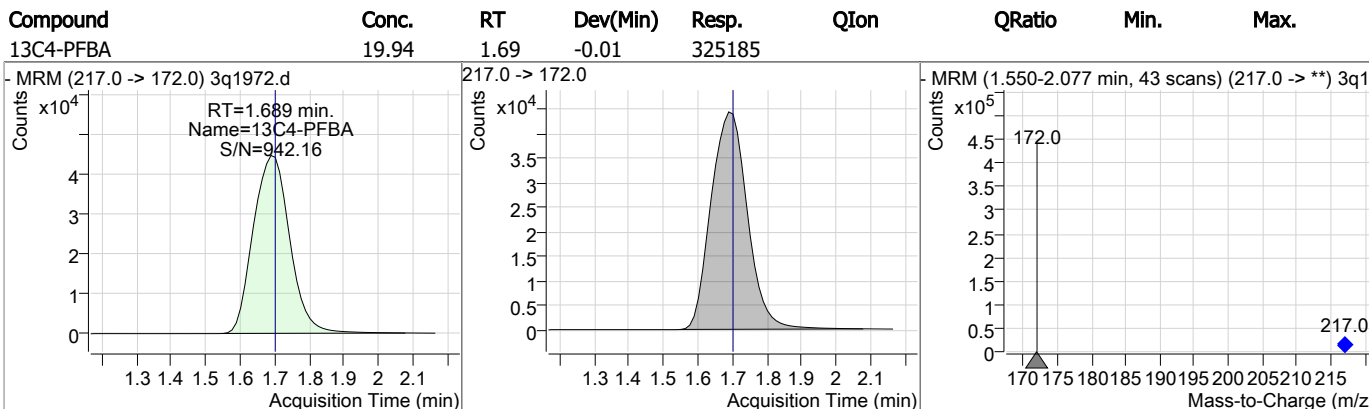
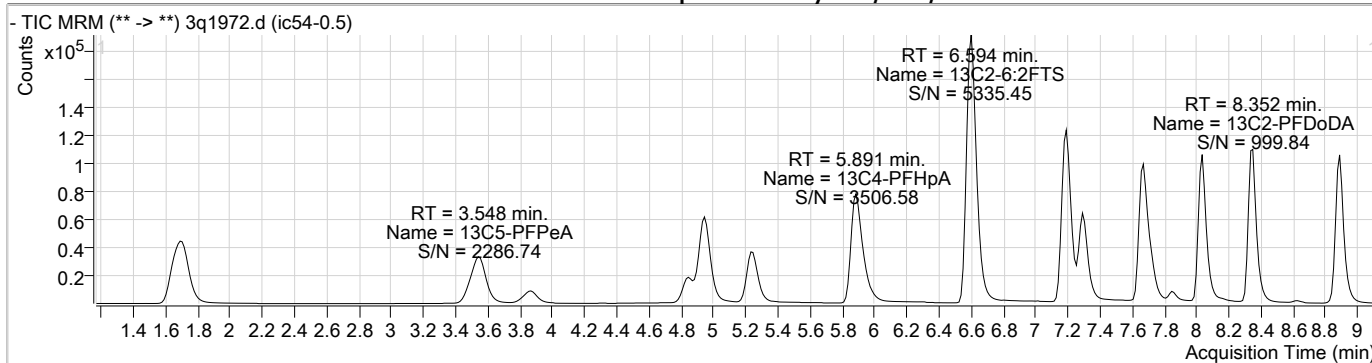
| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.0% |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 380899 | 20.55 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.7% |          |
| 13C8-FOSA             | 7.298                | 506.0 -> 78.0  | 221139 | 21.01 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.1% |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 328269 | 20.75 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.7% |          |
| 13C8-PFOS             | 7.183                | 507.0 -> 99.0  | 79045  | 20.52 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.6% |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 308566 | 20.65 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 48726  | 20.52 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.6% |          |
| 13C3-HFPO-DA          | 5.242                | 287.0 -> 169.0 | 170823 | 102.30 µg/L       | -0.013   |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 102.3% |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 423192 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 127860 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

7.6.33  
7

| Target Compounds | RT    | QIon           | Resp. | Conc. Units | QValue |
|------------------|-------|----------------|-------|-------------|--------|
| 4:2FTS           | 4.836 | 327.0 -> 307.0 | 1240  | 0.50 µg/L   | 91     |
| 6:2FTS           | 6.595 | 427.0 -> 407.0 | 1407  | 0.65 µg/L   | 95     |
| 8:2FTS           | 7.702 | 527.0 -> 507.0 | 666   | 0.51 µg/L   | 86     |
| EtFOSAA          | 7.861 | 584.0 -> 419.0 | 642   | 0.59 µg/L   | 88     |
| FOSA             | 7.301 | 498.0 -> 78.0  | 2218  | 0.45 µg/L   | 96     |
| MeFOSAA          | 7.723 | 570.0 -> 419.0 | 575   | 0.44 µg/L   | 90     |
| PFBA             | 1.698 | 213.0 -> 169.0 | 1458  | 0.47 µg/L   | 100    |
| PFBS             | 3.870 | 299.0 -> 80.0  | 1681  | 0.47 µg/L   | 99     |
| PFDA             | 7.678 | 513.0 -> 469.0 | 3497  | 0.43 µg/L   | 95     |
| PFDoDA           | 8.341 | 613.0 -> 569.0 | 4113  | 0.45 µg/L   | 97     |
| PFDS             | 8.011 | 599.0 -> 80.0  | 636   | 0.54 µg/L   | 87     |
| PFHpA            | 5.894 | 363.0 -> 319.0 | 6908  | 0.46 µg/L   | 99     |
| PFHpS            | 6.618 | 449.0 -> 80.0  | 1086  | 0.44 µg/L   | 93     |
| PFHxA            | 4.952 | 313.0 -> 269.0 | 2660  | 0.49 µg/L   | 99     |
| PFHxS            | 5.937 | 399.0 -> 80.0  | 1336  | 0.47 µg/L   | m 94   |
| PFNA             | 7.201 | 463.0 -> 419.0 | 4284  | 0.45 µg/L   | 96     |
| PFNS             | 7.648 | 549.0 -> 80.0  | 1007  | 0.47 µg/L   | 87     |
| PFOA             | 6.611 | 413.0 -> 369.0 | 4254  | 0.48 µg/L   | 96     |
| PFOS             | 7.186 | 499.0 -> 80.0  | 2401  | 0.66 µg/L   | m 74   |
| PFPeA            | 3.552 | 263.0 -> 219.0 | 5552  | 0.49 µg/L   | 100    |
| PFPeS            | 5.082 | 349.0 -> 80.0  | 989   | 0.44 µg/L   | 84     |
| PFTeDA           | 8.890 | 713.0 -> 669.0 | 5379  | 0.46 µg/L   | 98     |
| PFTTrDA          | 8.628 | 663.0 -> 619.0 | 4432  | 0.44 µg/L   | 99     |
| PFUnDA           | 8.041 | 563.0 -> 519.0 | 3770  | 0.46 µg/L   | 98     |
| 11Cl-PF3OUdS     | 8.162 | 631.0 -> 451.0 | 3688  | 0.48 µg/L   | 100    |
| 9Cl-PF3ONS       | 7.446 | 531.0 -> 351.0 | 862   | 0.45 µg/L   | 100    |
| ADONA            | 5.994 | 377.0 -> 251.0 | 9054  | 0.45 µg/L   | 100    |
| HFPO-DA          | 5.247 | 329.0 -> 169.0 | 6553  | 2.26 µg/L   | 98     |

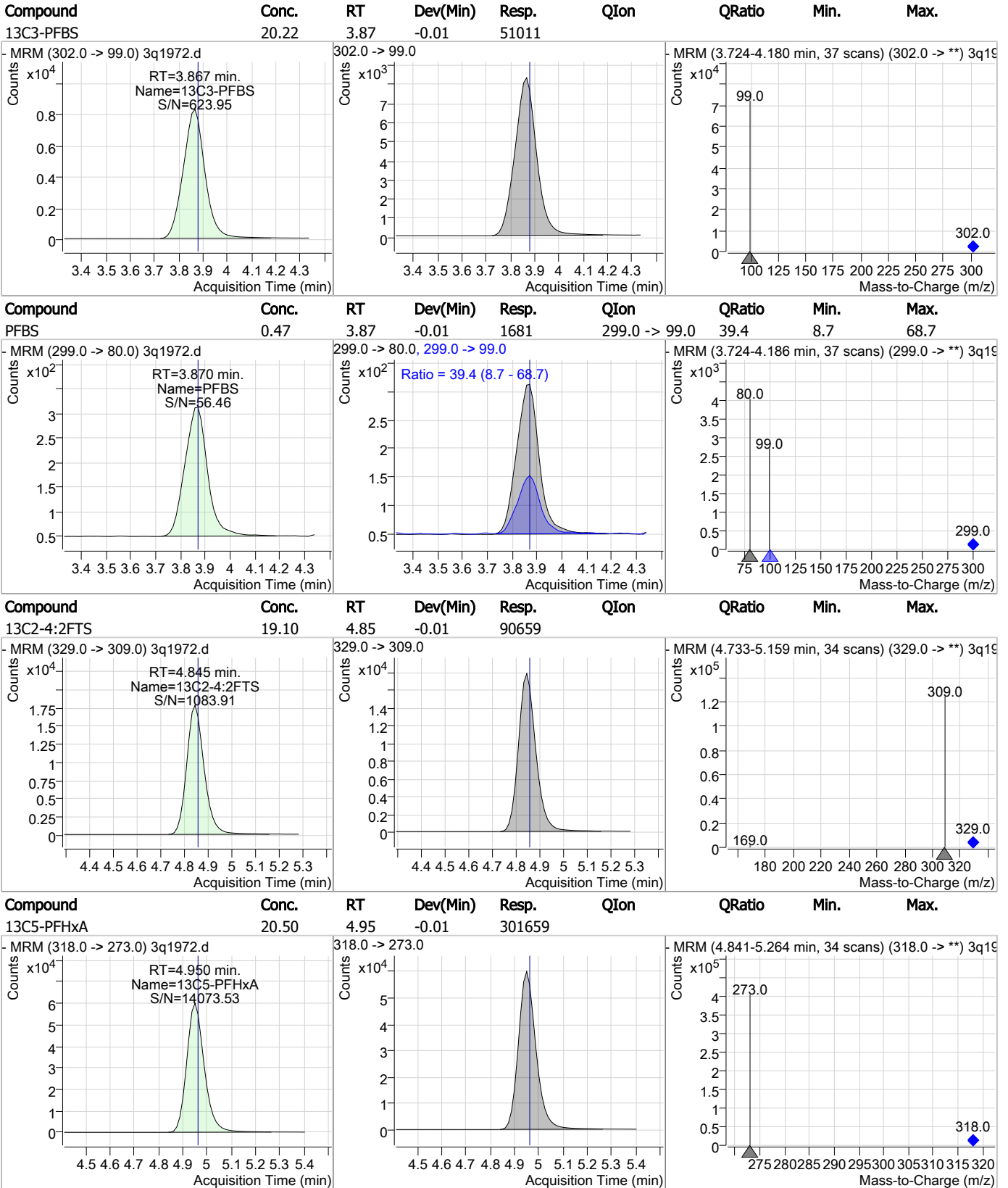
# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



7.6.33  
7

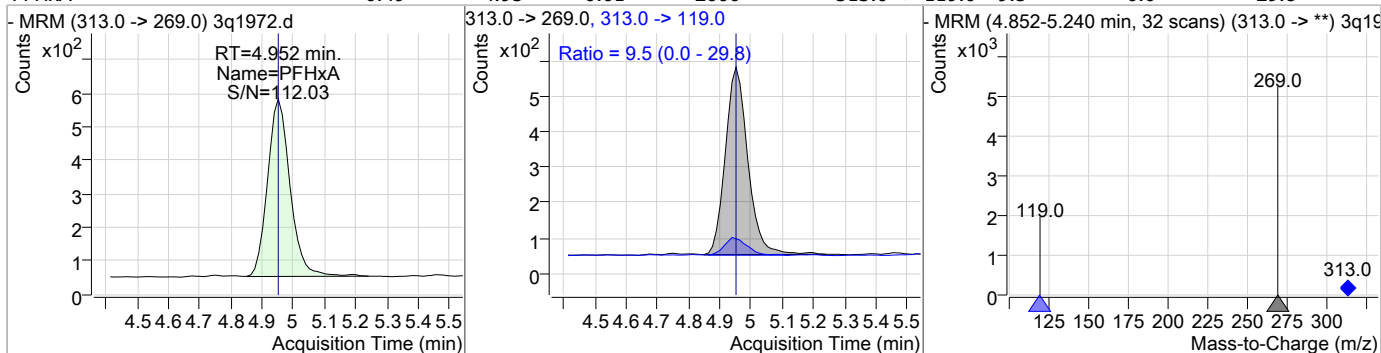
### Perfluorinated Compounds by LC/MS/MS



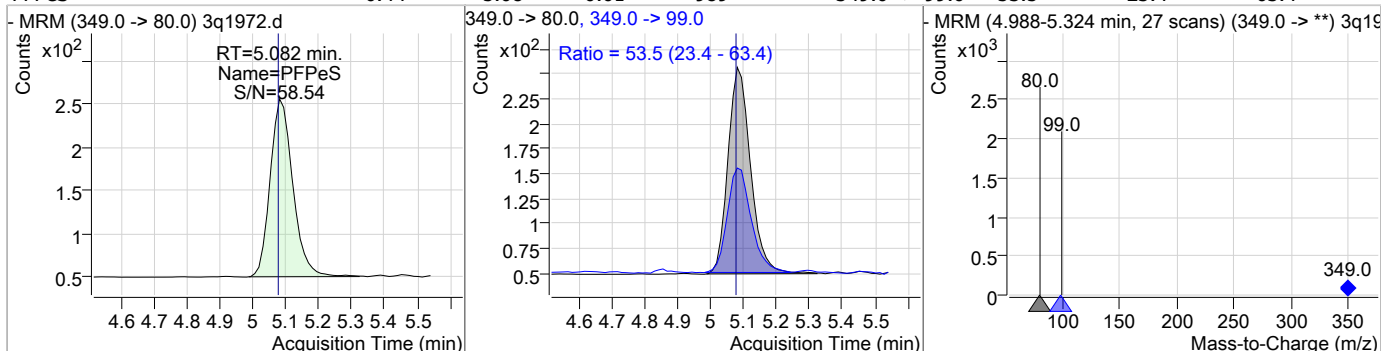
7.6.33  
7

### Perfluorinated Compounds by LC/MS/MS

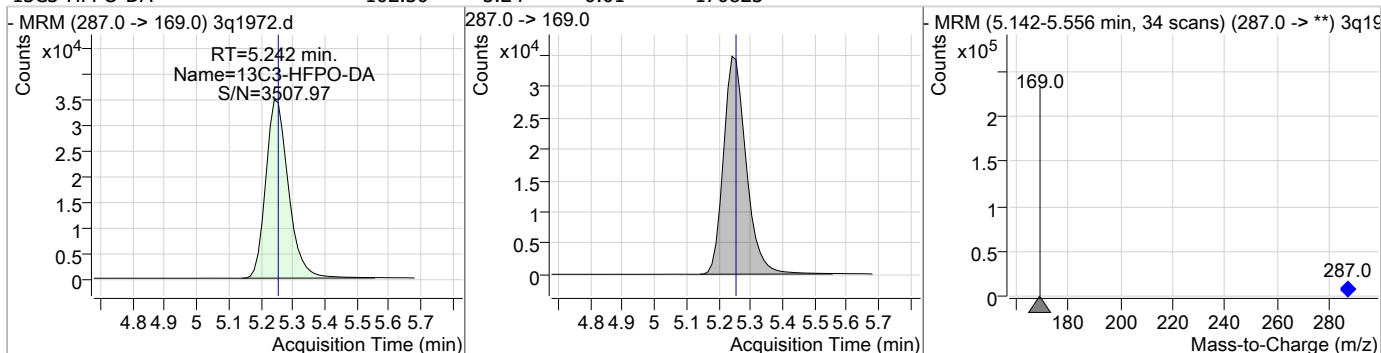
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 0.49  | 4.95 | -0.01    | 2660  | 313.0 -> 119.0 | 9.5    | 0.0  | 29.8 |



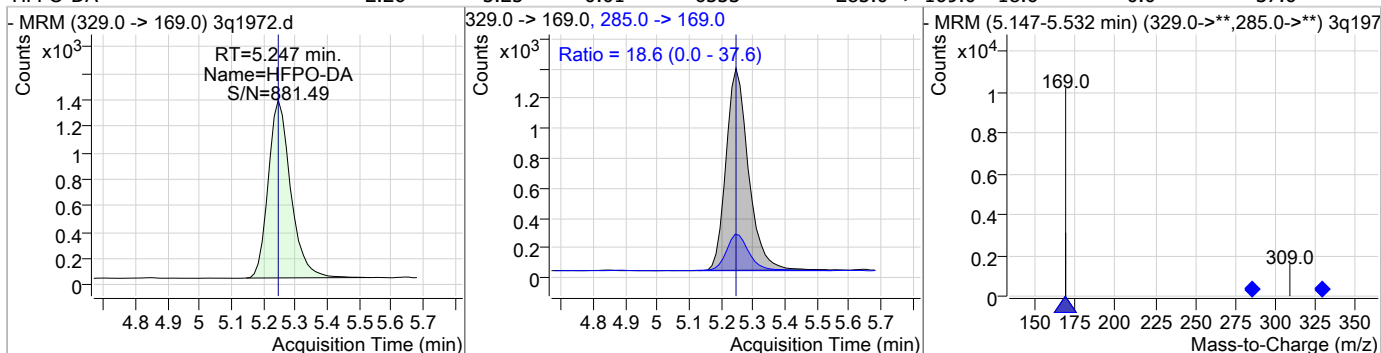
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 0.44  | 5.08 | -0.01    | 989   | 349.0 -> 99.0 | 53.5   | 23.4 | 63.4 |



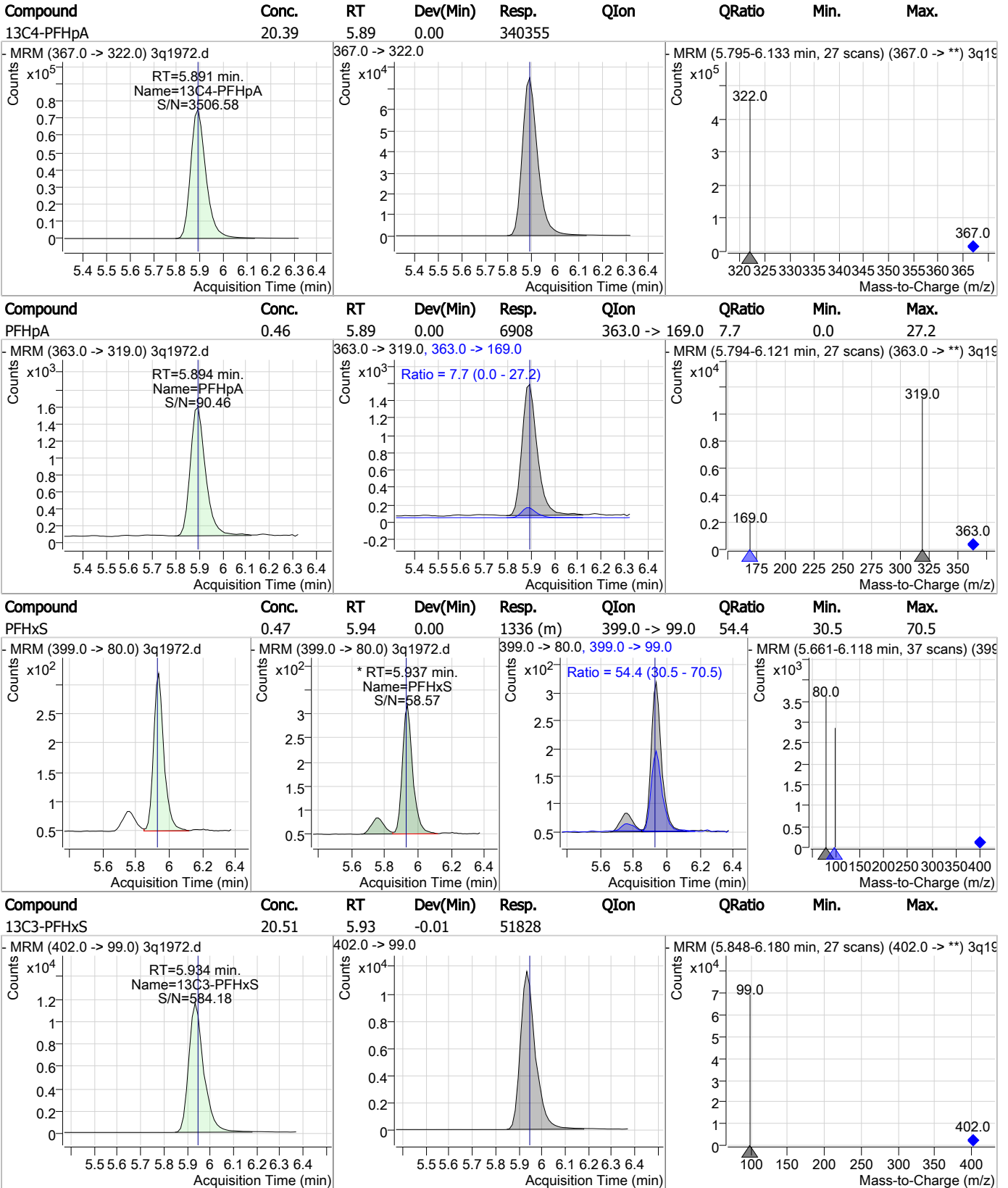
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|----------------|--------|------|------|
| 13C3-HFPO-DA | 102.30 | 5.24 | -0.01    | 170823 | 287.0 -> 169.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| HFPO-DA  | 2.26  | 5.25 | -0.01    | 6553  | 285.0 -> 169.0 | 18.6   | 0.0  | 37.6 |

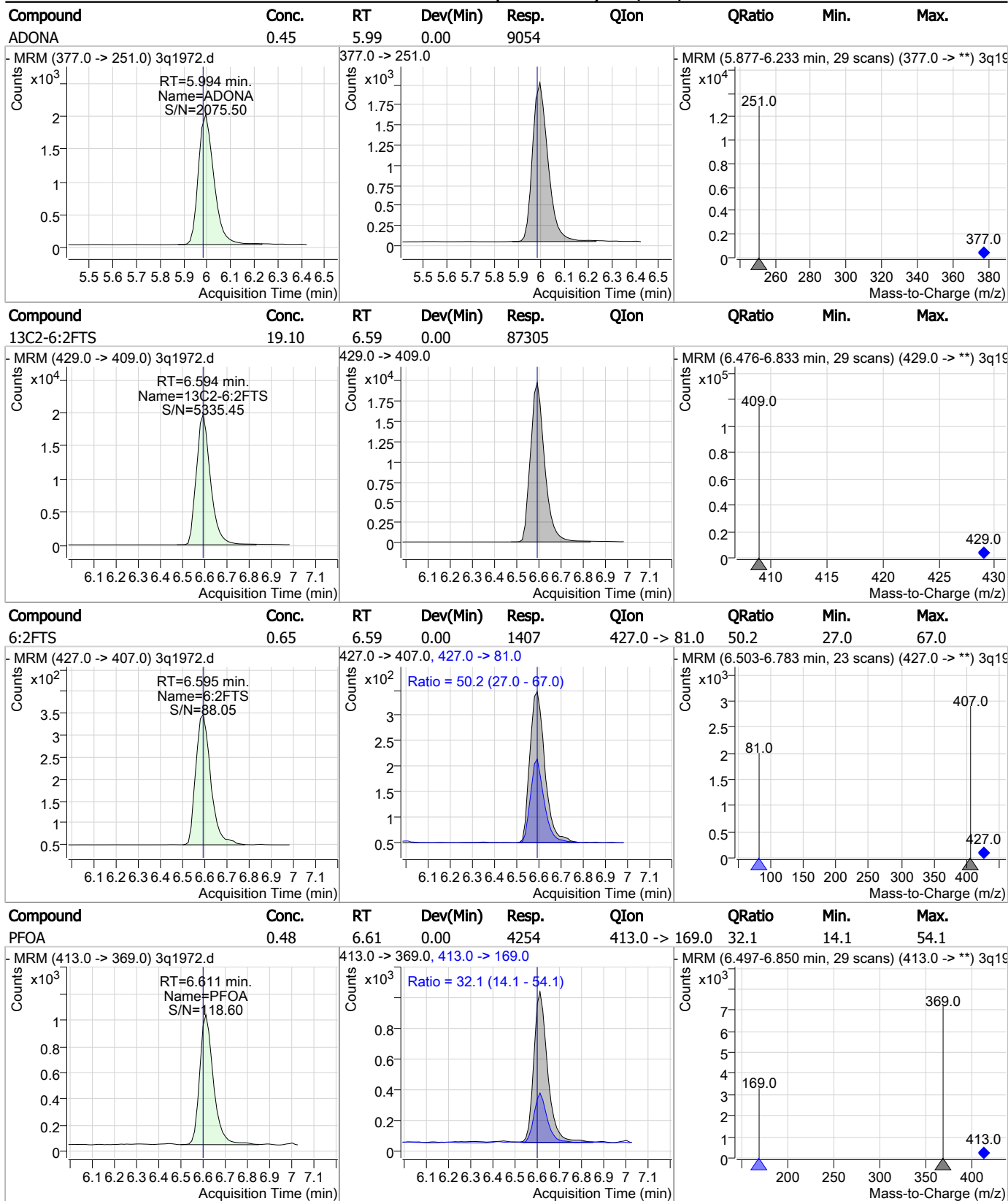


### Perfluorinated Compounds by LC/MS/MS



7.6.33  
7

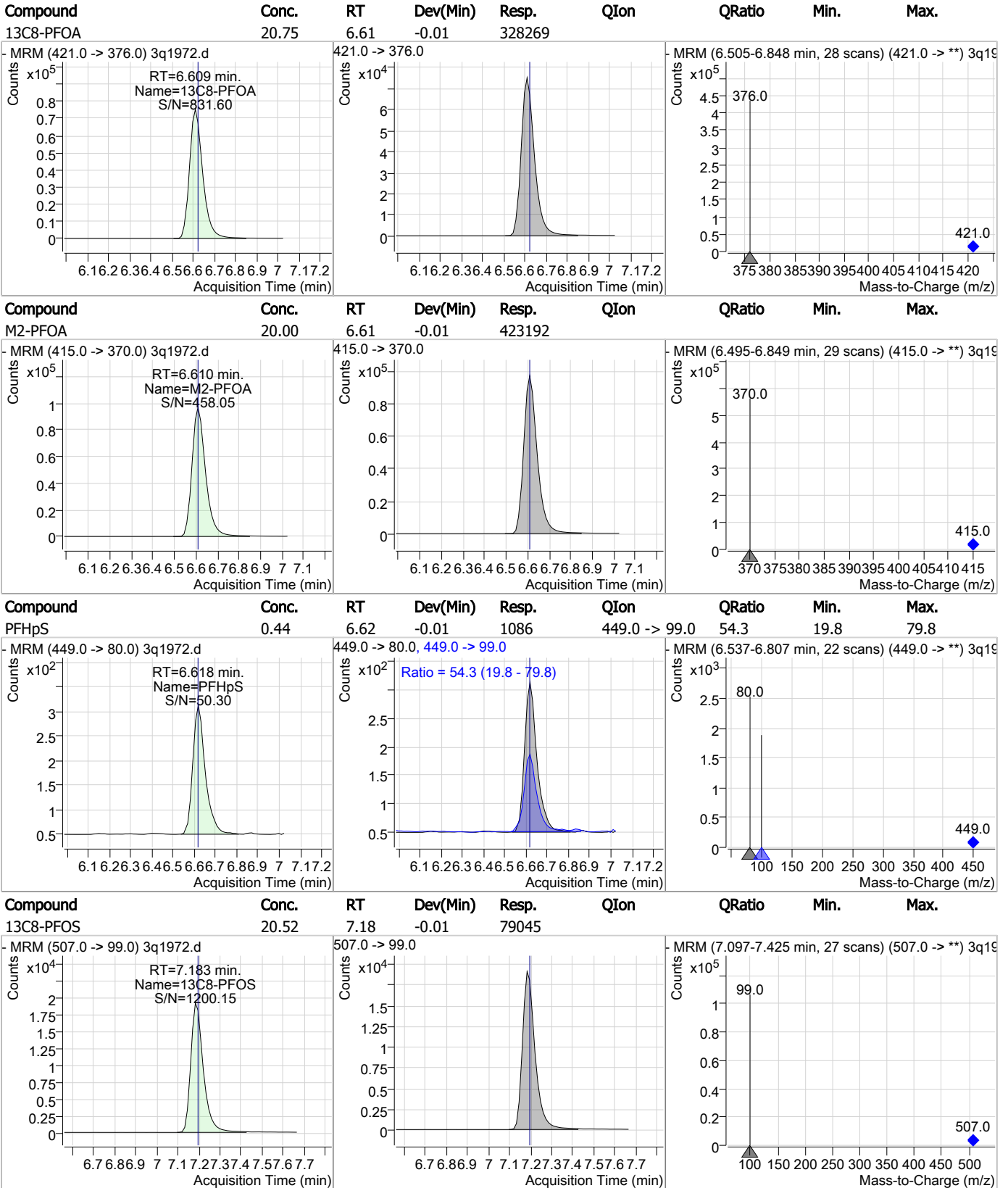
### Perfluorinated Compounds by LC/MS/MS



7.6.33

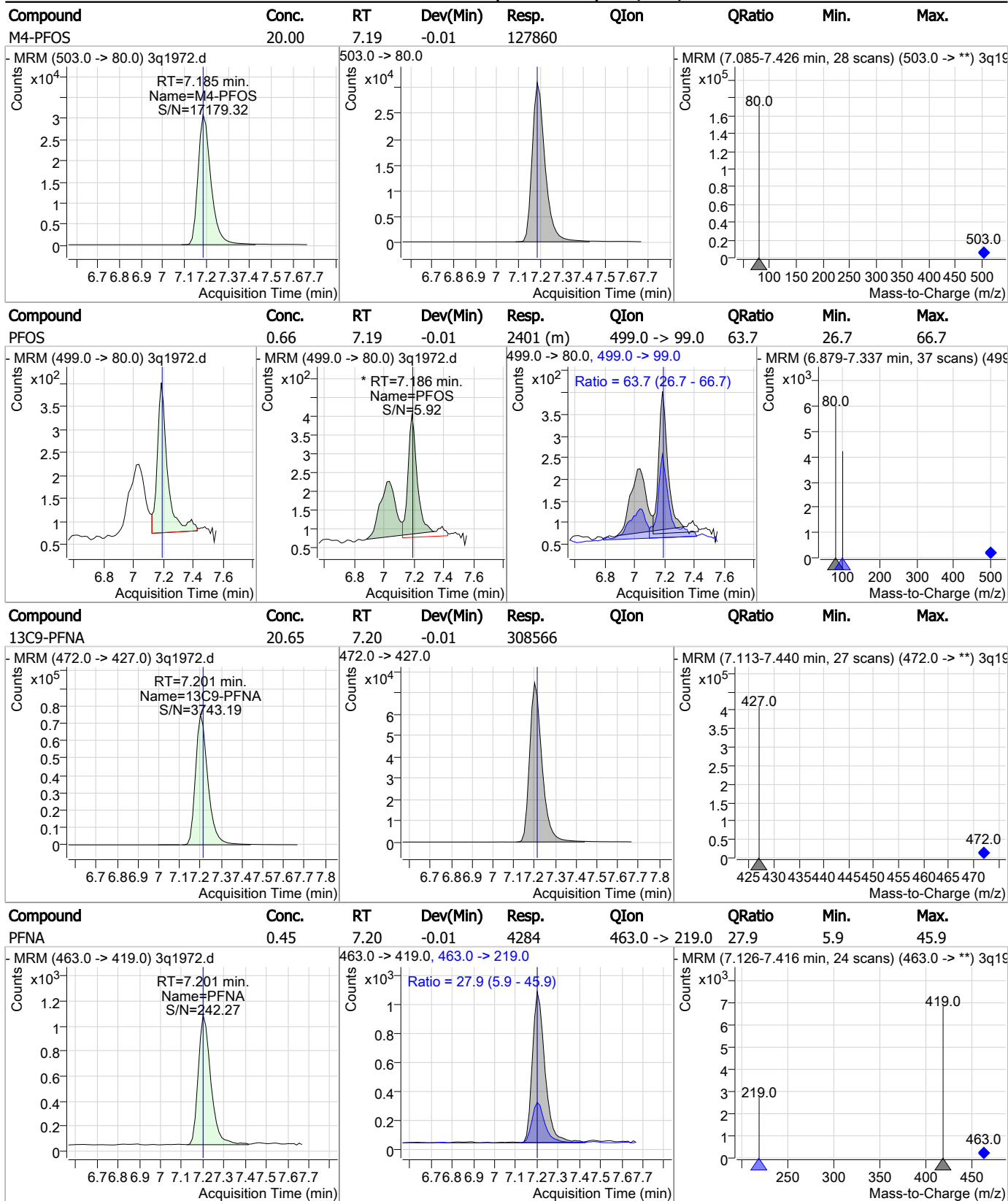
7

### Perfluorinated Compounds by LC/MS/MS



7.6.33  
7

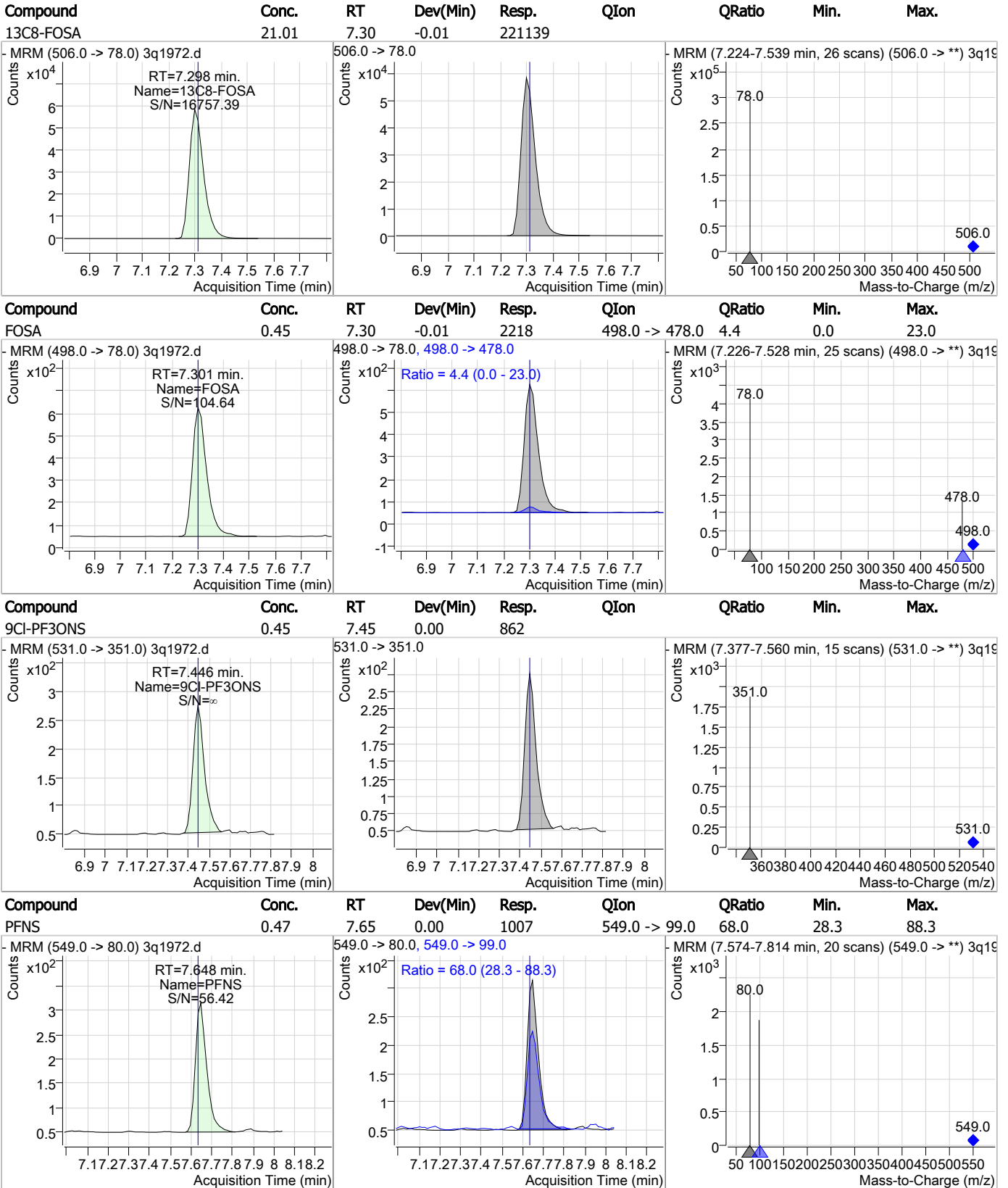
### Perfluorinated Compounds by LC/MS/MS



7.6.33  
7



### Perfluorinated Compounds by LC/MS/MS



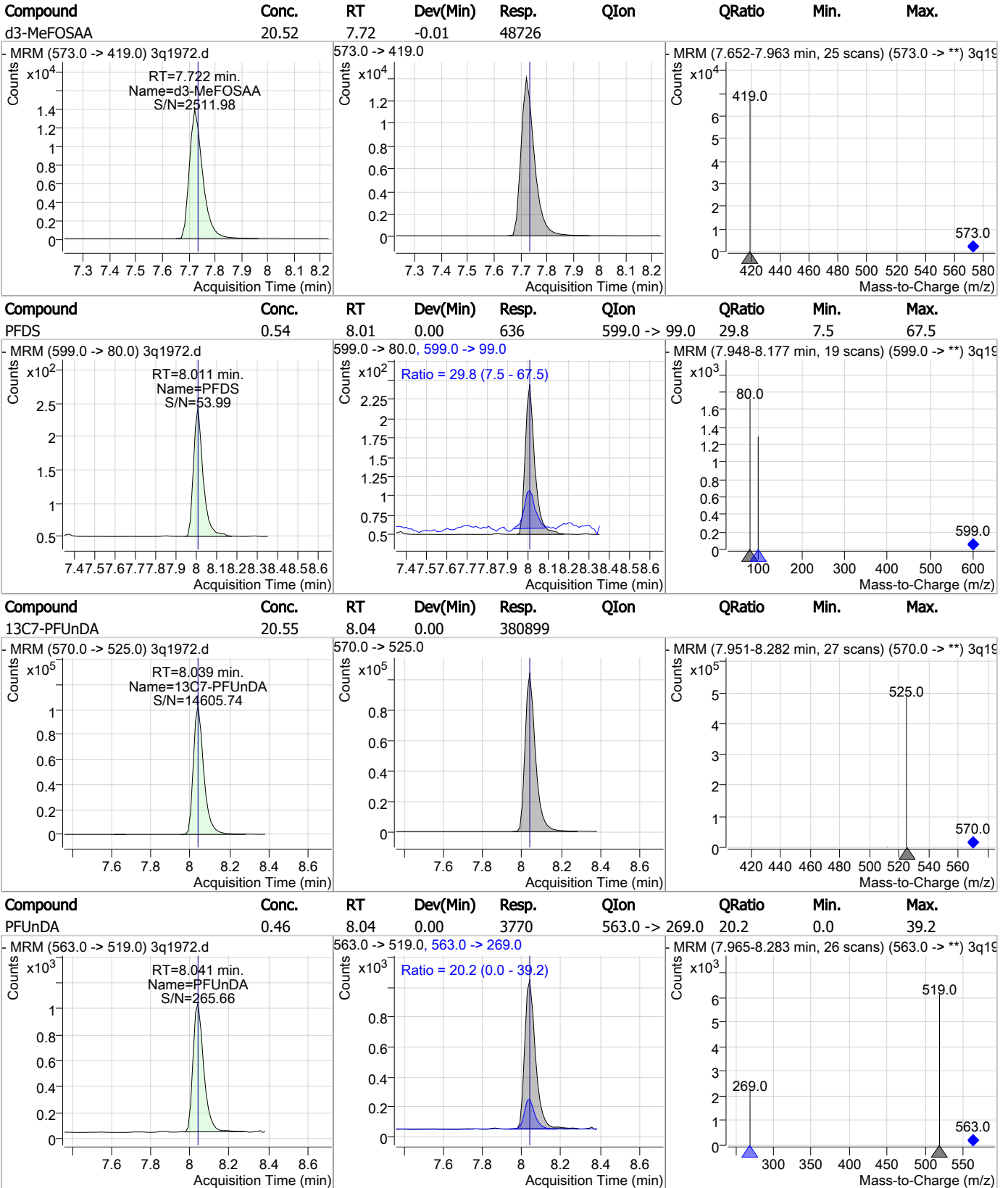
7.6.33  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C6-PFDA   | 20.60 | 7.68 | 0.00     | 343195 |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| PFDA        | 0.43  | 7.68 | 0.00     | 3497   | 513.0 -> 219.0 | 24.6   | 2.2  | 42.2 |
|             |       |      |          |        |                |        |      |      |
| 13C2-8:2FTS | 18.90 | 7.69 | -0.01    | 52832  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| 8:2FTS      | 0.51  | 7.70 | 0.00     | 666    | 527.0 -> 81.0  | 59.2   | 29.6 | 69.6 |
|             |       |      |          |        |                |        |      |      |

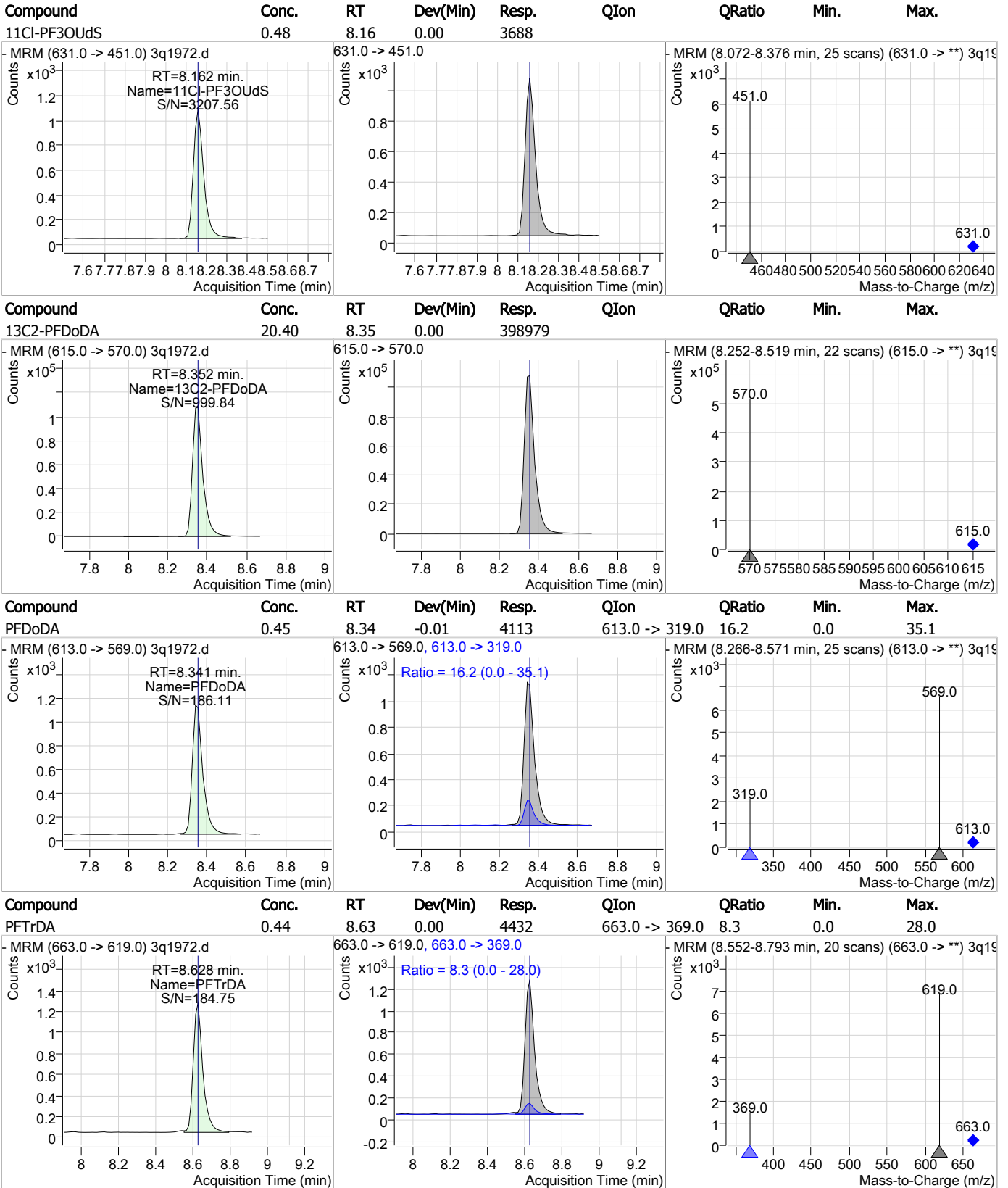
7.6.33  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.33  
7

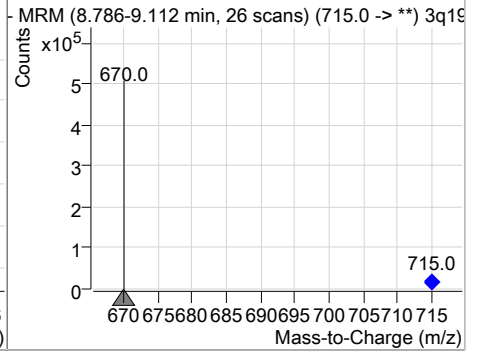
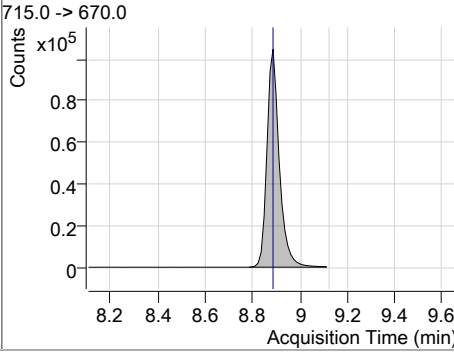
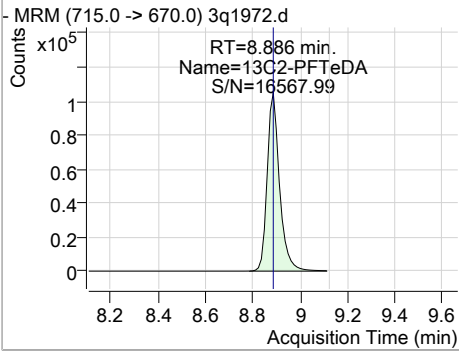
### Perfluorinated Compounds by LC/MS/MS



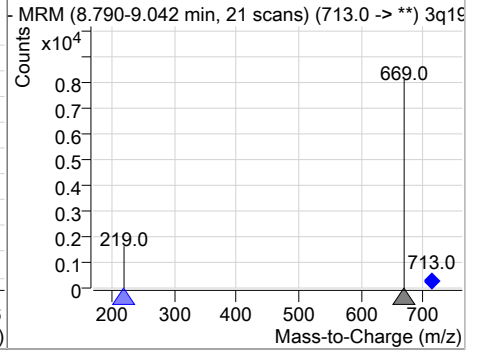
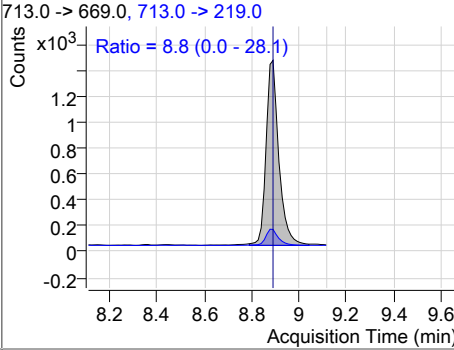
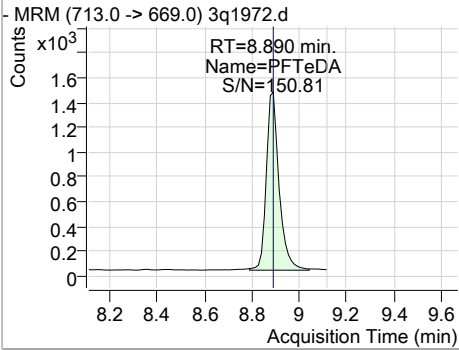
7.6.33  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.72 | 8.89 | 0.00     | 379015 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 0.46  | 8.89 | 0.00     | 5379  | 713.0 -> 219.0 | 8.8    | 0.0  | 28.1 |



7.6.33  
7

# Manual Integration Approval Summary

**Sample Number:** S3Q54-IC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1972.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 09:54      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.33.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1973.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 10:10:04 AM  
 Sample Name : ic54-1.0  
 Vial : P3-A3  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 335513 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 225001 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 302908 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 340952 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 327380 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 307041 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 346445 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 376527 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 392150 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 370918 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 218994 | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 51780  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 52290  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 79143  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 90935  | 20.00 µg/L        | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 87339  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 52321  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 47484  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 175445 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 428772 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 129178 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 90781  | 19.13 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.6%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 87346  | 19.11 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.6%  |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 52320  | 18.72 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 93.6%  |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 392172 | 20.06 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.3% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 371196 | 20.29 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 51358  | 20.36 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.8% |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 51833  | 20.51 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.5% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 332611 | 20.39 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.0% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 340314 | 20.39 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.9% |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 301160 | 20.46 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.3% |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 224962 | 20.32 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.6% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 346515 | 20.80 µg/L        | 0.000    |

7.6.34  
7



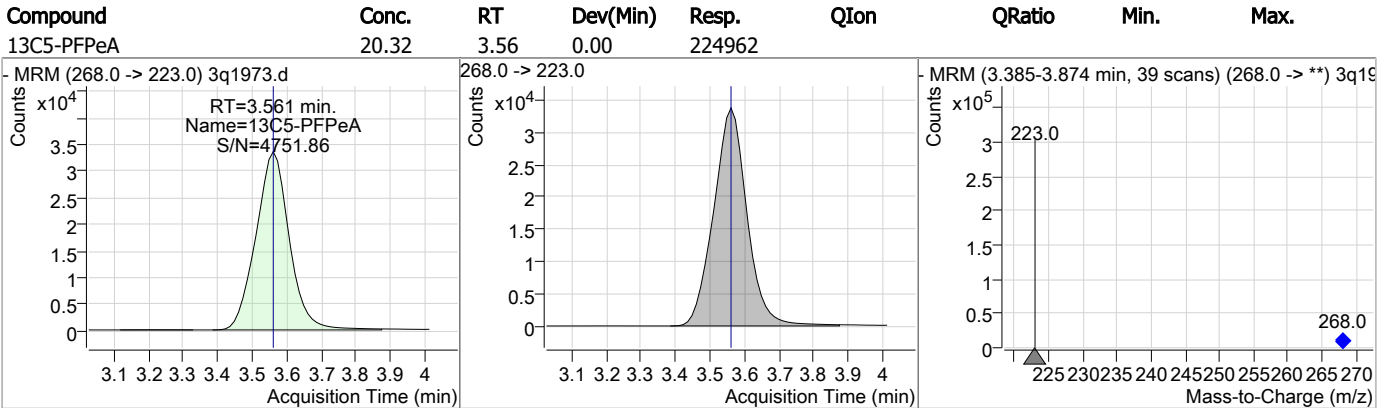
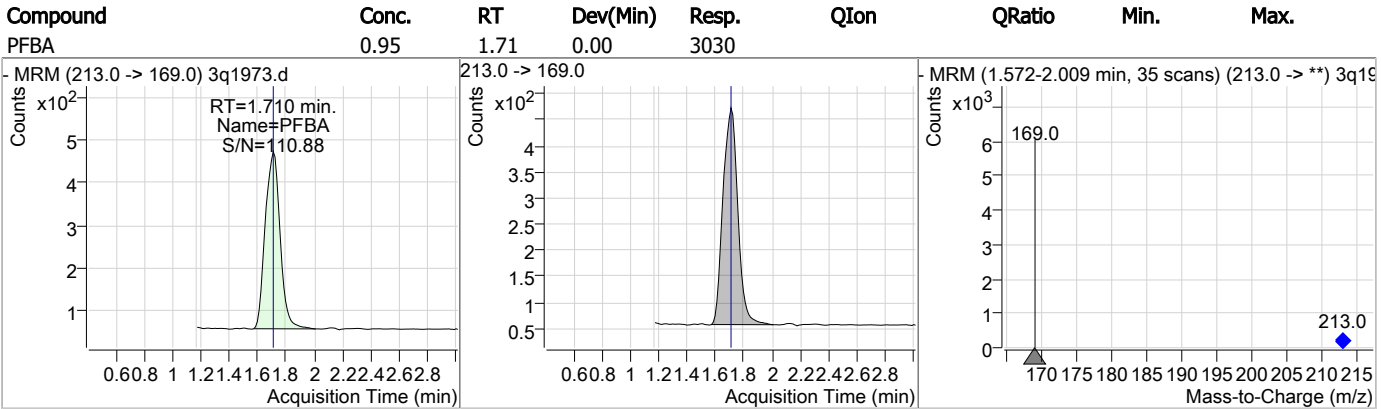
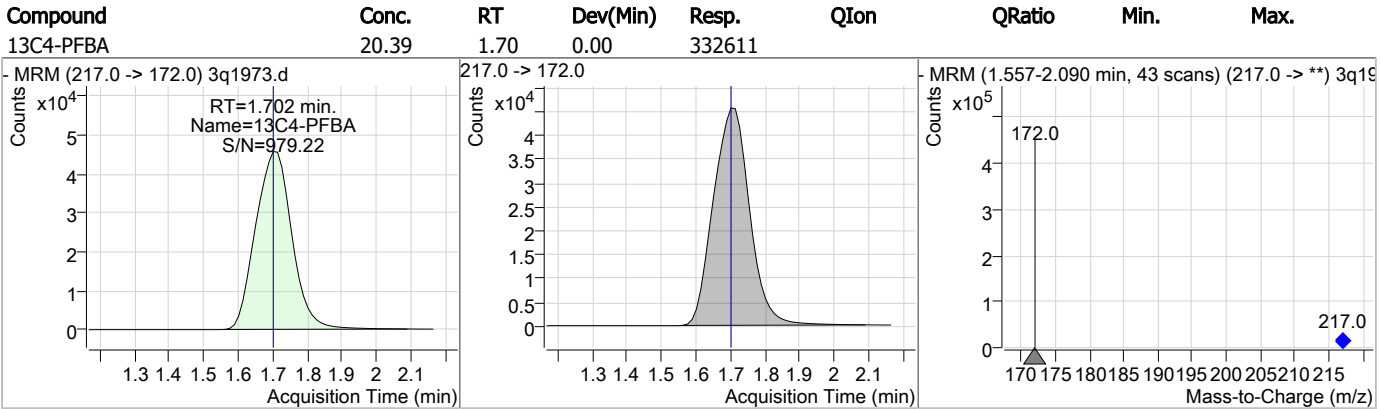
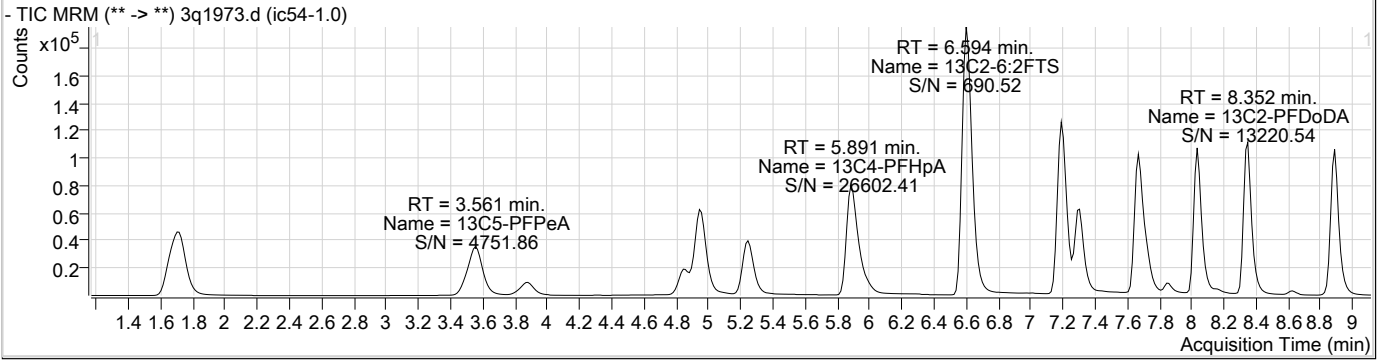
## Perfluorinated Compounds by LC/MS/MS

| Compound                | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min)      |
|-------------------------|----------------------|----------------|--------|-------------------|---------------|
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |               |
| 13C7-PFUnDA             | 8.039                | 570.0 -> 525.0 | 376743 | 20.32 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 101.6% |               |
| 13C8-FOSA               | 7.311                | 506.0 -> 78.0  | 218970 | 20.81 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |               |
| 13C8-PFOA               | 6.609                | 421.0 -> 376.0 | 327299 | 20.69 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 103.4% |               |
| 13C8-PFOS               | 7.196                | 507.0 -> 99.0  | 79458  | 20.63 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 103.1% |               |
| 13C9-PFNA               | 7.201                | 472.0 -> 427.0 | 306751 | 20.53 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 102.6% |               |
| d3-MeFOSAA              | 7.722                | 573.0 -> 419.0 | 47474  | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |               |
| 13C3-HFPO-DA            | 5.255                | 287.0 -> 169.0 | 175445 | 105.06 µg/L       | 0.000         |
| Spiked Amount: 100.00   | Range: 50.0 - 150.0% |                |        | Recovery = 105.1% |               |
| M2-PFOA                 | 6.610                | 415.0 -> 370.0 | 428772 | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |               |
| M4-PFOS                 | 7.185                | 503.0 -> 80.0  | 129178 | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |               |
| <b>Target Compounds</b> |                      |                |        |                   | <b>QValue</b> |
| 4:2FTS                  | 4.848                | 327.0 -> 307.0 | 2489   | 1.00 µg/L         | 94            |
| 6:2FTS                  | 6.595                | 427.0 -> 407.0 | 2114   | 0.98 µg/L         | 90            |
| 8:2FTS                  | 7.702                | 527.0 -> 507.0 | 1280   | 0.99 µg/L         | 85            |
| EtFOSAA                 | 7.861                | 584.0 -> 419.0 | 1093   | 1.03 µg/L         | 97            |
| FOSA                    | 7.301                | 498.0 -> 78.0  | 4691   | 0.96 µg/L         | 97            |
| MeFOSAA                 | 7.723                | 570.0 -> 419.0 | 1063   | 0.84 µg/L         | 99            |
| PFBA                    | 1.710                | 213.0 -> 169.0 | 3030   | 0.95 µg/L         | 100           |
| PFBS                    | 3.883                | 299.0 -> 80.0  | 3467   | 0.96 µg/L         | 100           |
| PFDA                    | 7.678                | 513.0 -> 469.0 | 7472   | 0.91 µg/L         | 98            |
| PFDoDA                  | 8.354                | 613.0 -> 569.0 | 8378   | 0.94 µg/L         | 99            |
| PFDS                    | 8.011                | 599.0 -> 80.0  | 1174   | 1.01 µg/L         | 97            |
| PFHpA                   | 5.894                | 363.0 -> 319.0 | 14199  | 0.94 µg/L         | 98            |
| PFHpS                   | 6.618                | 449.0 -> 80.0  | 2411   | 0.97 µg/L         | 96            |
| PFHxA                   | 4.952                | 313.0 -> 269.0 | 5219   | 0.97 µg/L         | 97            |
| PFHxS                   | 5.937                | 399.0 -> 80.0  | 2801   | 0.97 µg/L         | m 99          |
| PFNA                    | 7.201                | 463.0 -> 419.0 | 9039   | 0.95 µg/L         | 96            |
| PFNS                    | 7.648                | 549.0 -> 80.0  | 2129   | 0.99 µg/L         | 99            |
| PFOA                    | 6.611                | 413.0 -> 369.0 | 8368   | 0.95 µg/L         | 98            |
| PFOS                    | 7.186                | 499.0 -> 80.0  | 3903   | 1.06 µg/L         | m 94          |
| PFPeA                   | 3.564                | 263.0 -> 219.0 | 10961  | 0.96 µg/L         | 100           |
| PFPeS                   | 5.082                | 349.0 -> 80.0  | 2078   | 0.93 µg/L         | 98            |
| PFTeDA                  | 8.890                | 713.0 -> 669.0 | 10881  | 0.94 µg/L         | 100           |
| PFTrDA                  | 8.628                | 663.0 -> 619.0 | 8932   | 0.90 µg/L         | 99            |
| PFUnDA                  | 8.041                | 563.0 -> 519.0 | 7418   | 0.91 µg/L         | 98            |
| 11Cl-PF3OUdS            | 8.162                | 631.0 -> 451.0 | 7278   | 0.97 µg/L         | 100           |
| 9Cl-PF3ONS              | 7.446                | 531.0 -> 351.0 | 1875   | 0.97 µg/L         | 100           |
| ADONA                   | 5.994                | 377.0 -> 251.0 | 18891  | 0.93 µg/L         | 100           |
| HFPO-DA                 | 5.247                | 329.0 -> 169.0 | 13206  | 4.44 µg/L         | 98            |

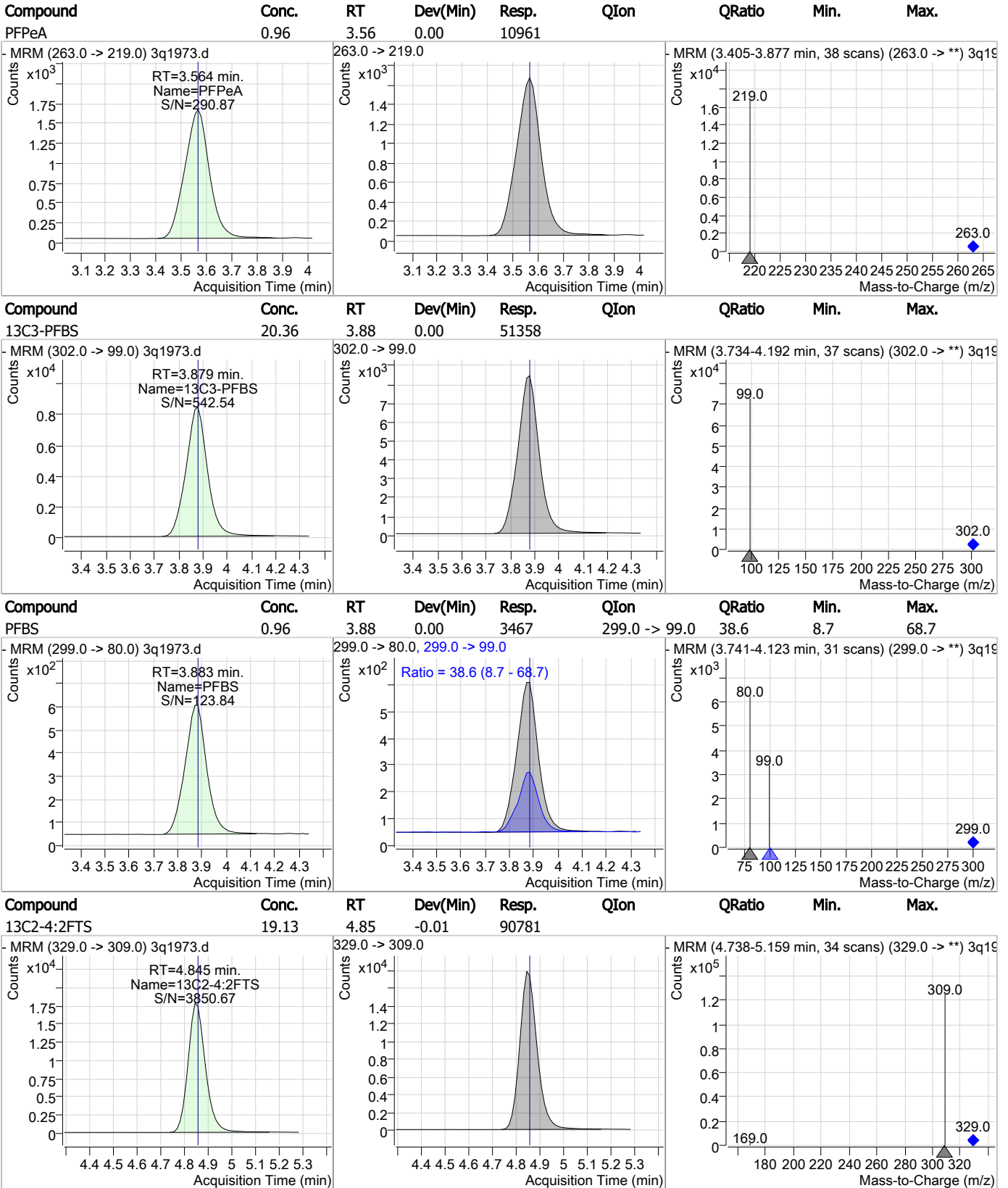
# = Qualifier out of range, m = manually integrated, + = Area summed



### Perfluorinated Compounds by LC/MS/MS

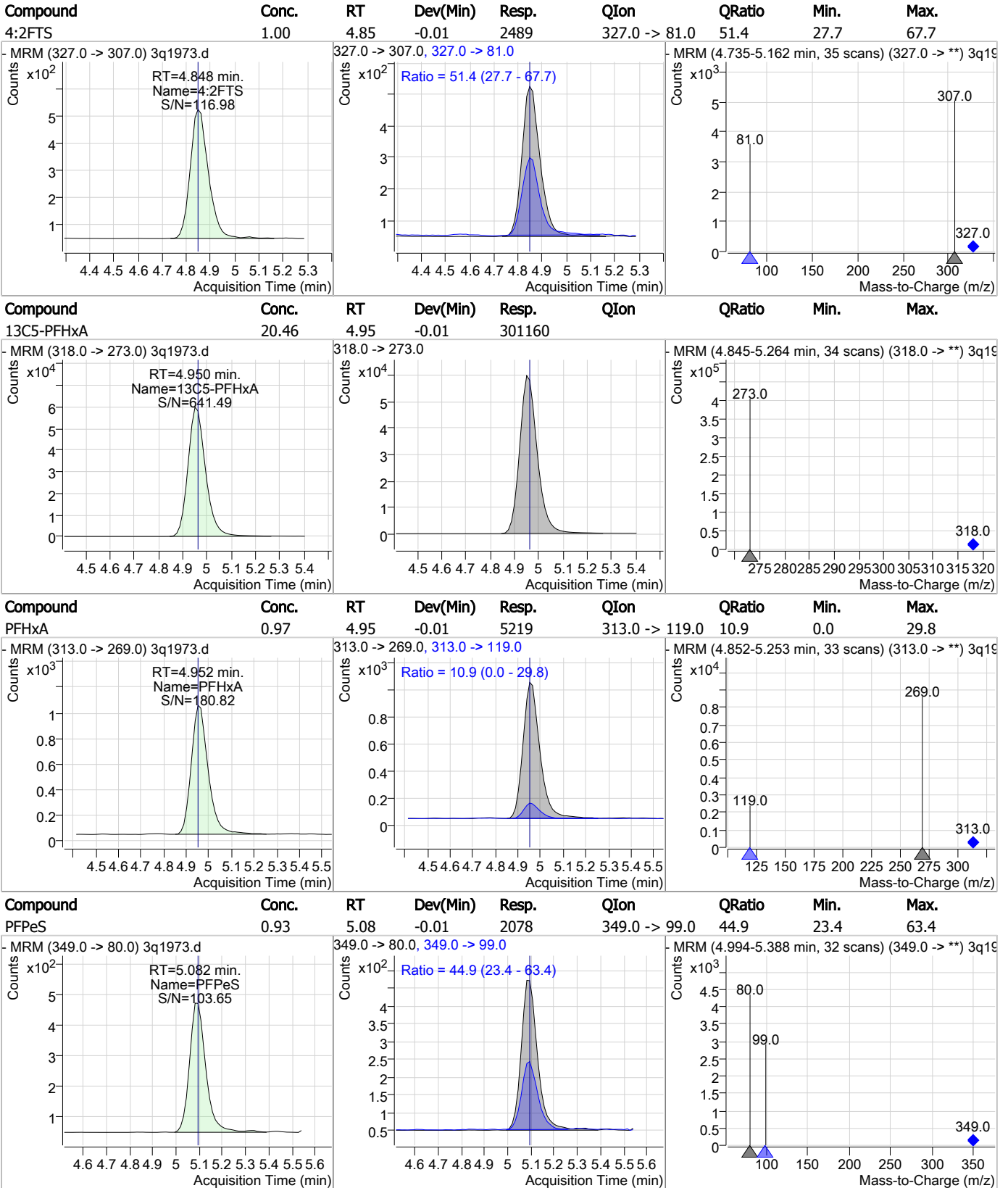


### Perfluorinated Compounds by LC/MS/MS



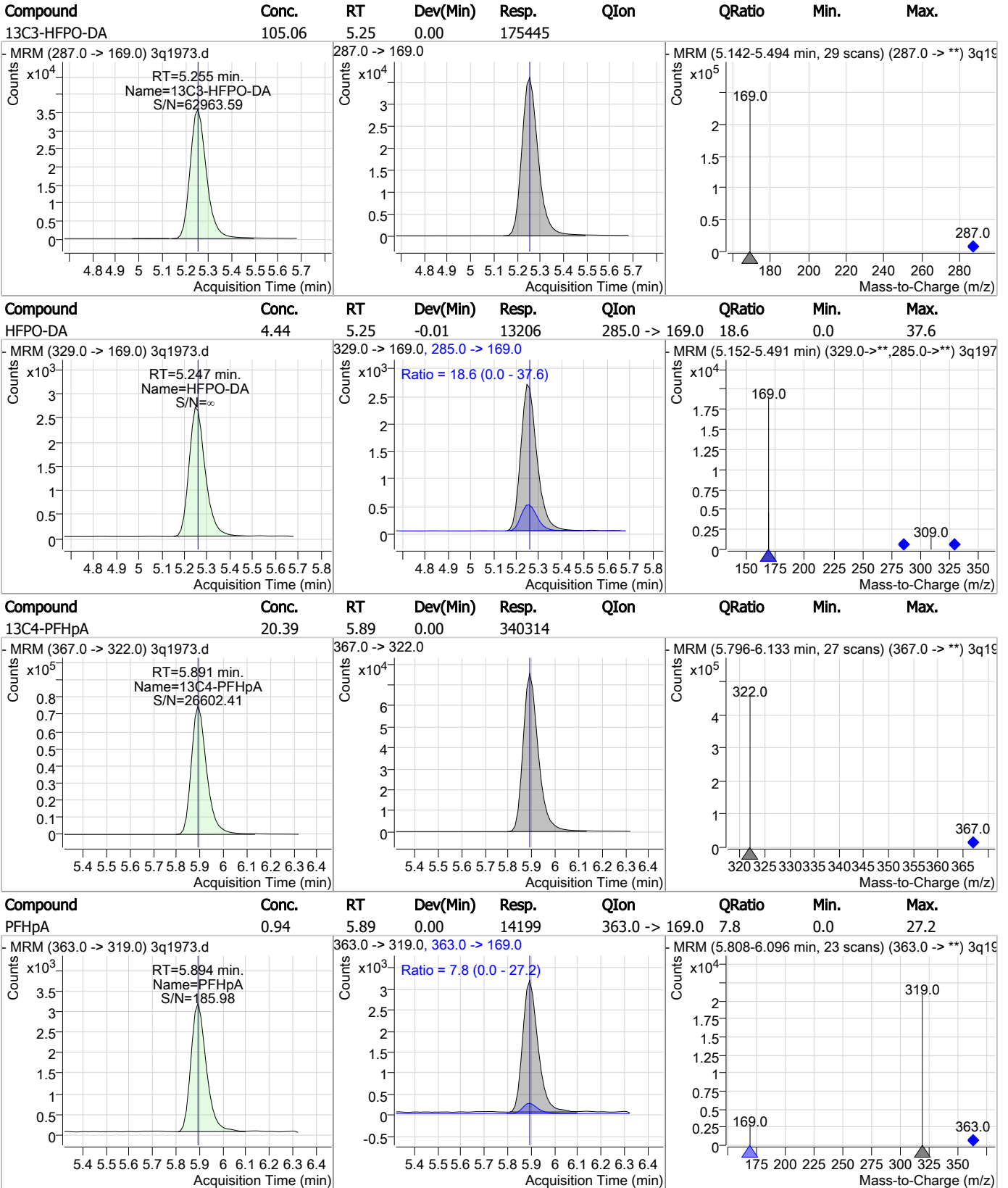
7.6.34  
7

### Perfluorinated Compounds by LC/MS/MS



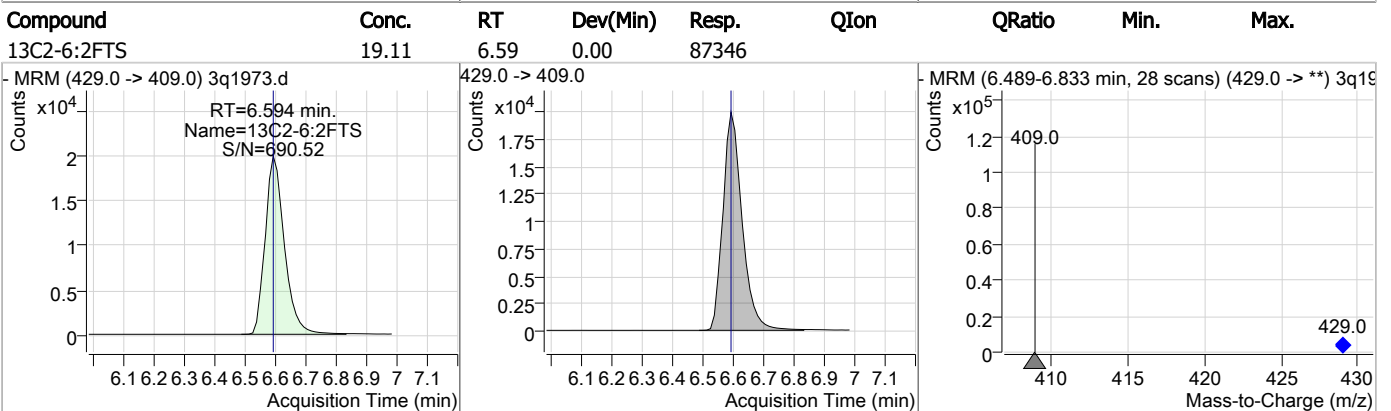
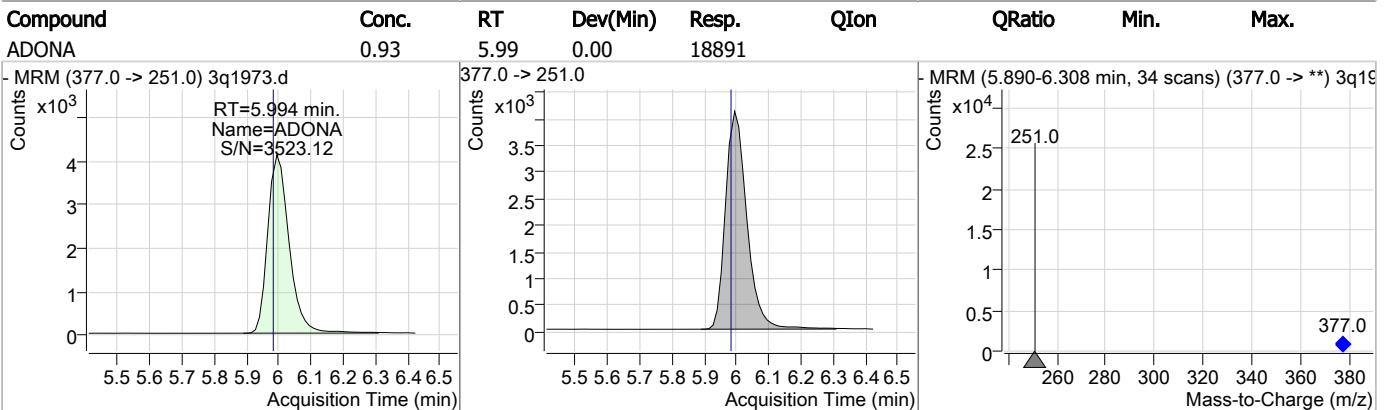
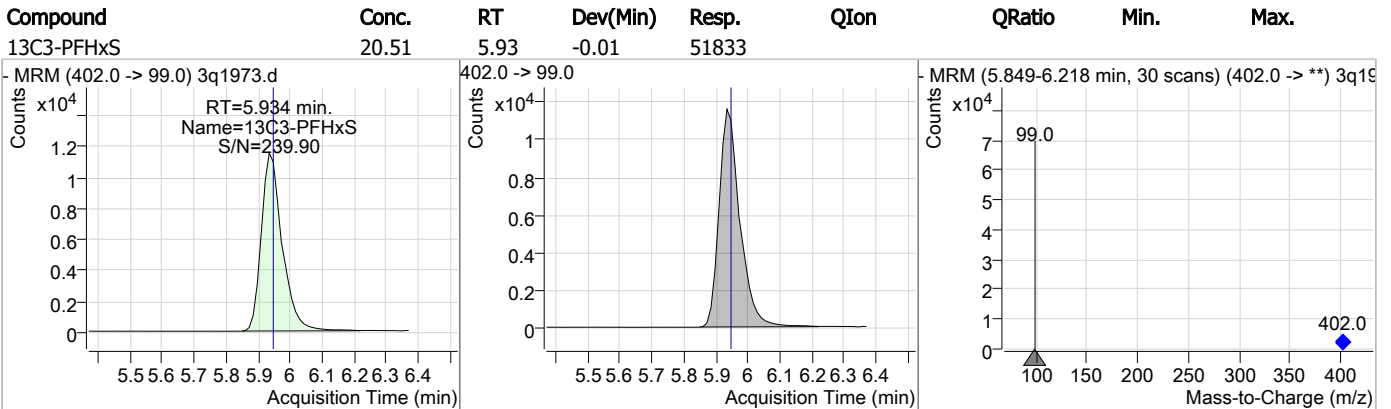
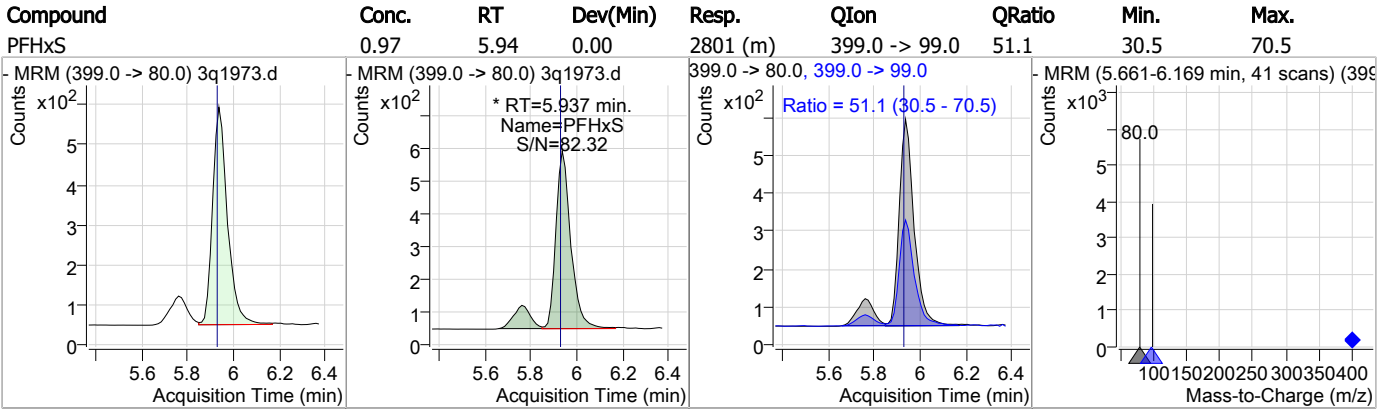
7.6.34  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.34  
7

### Perfluorinated Compounds by LC/MS/MS

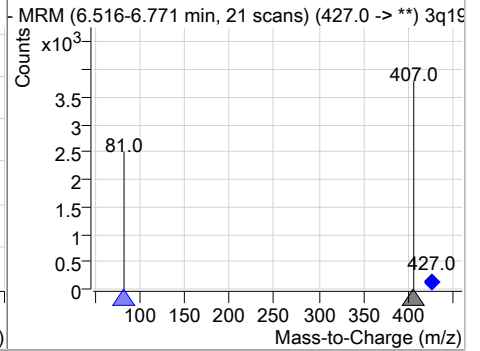
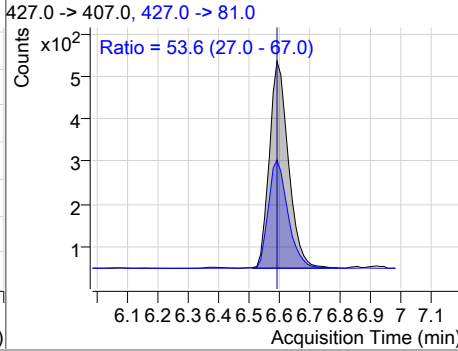
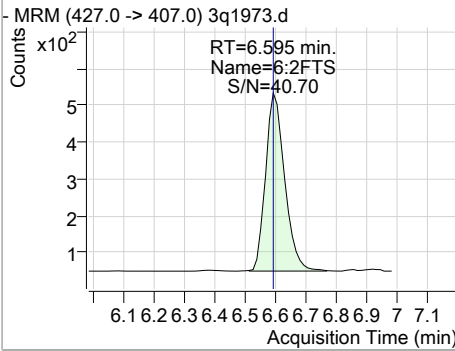


7.6.34

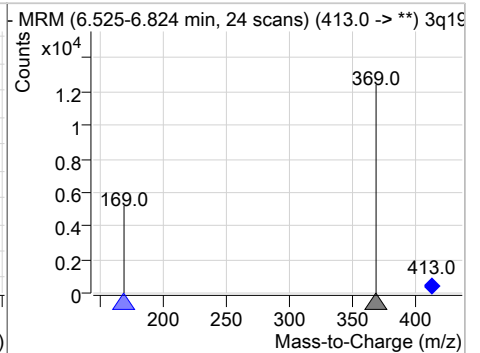
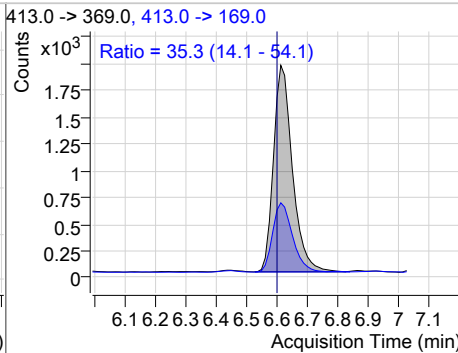
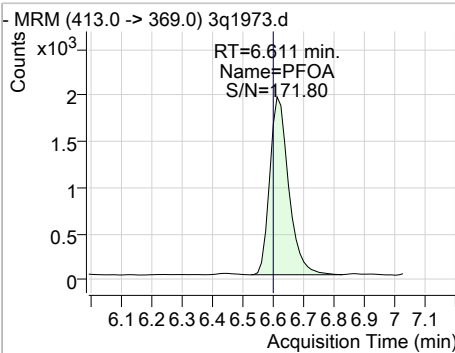
7

### Perfluorinated Compounds by LC/MS/MS

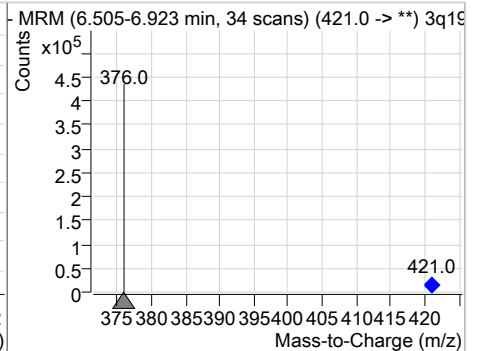
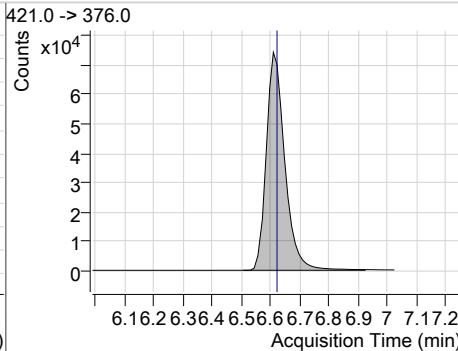
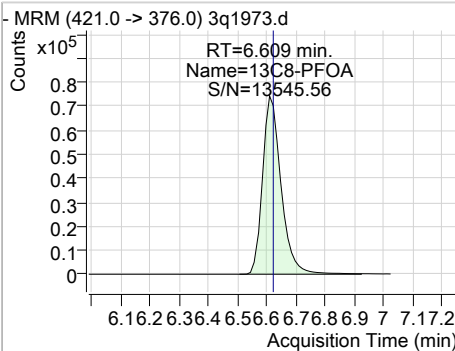
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 0.98  | 6.59 | 0.00     | 2114  | 427.0 -> 81.0 | 53.6   | 27.0 | 67.0 |



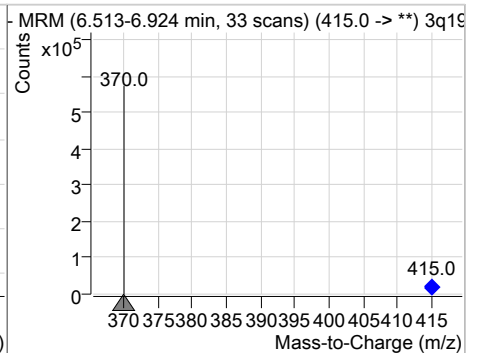
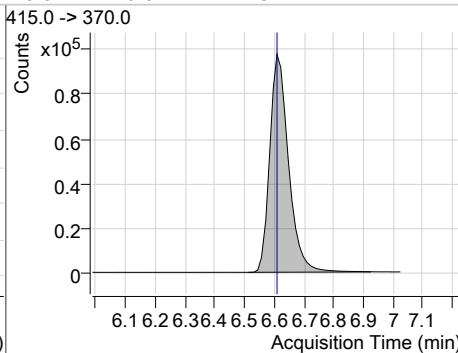
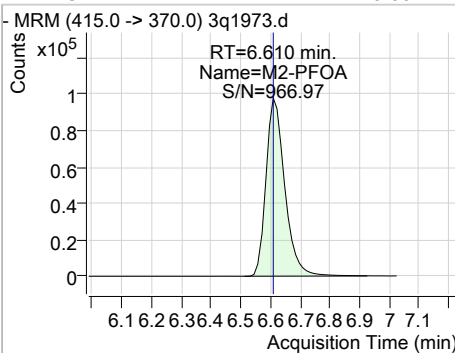
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 0.95  | 6.61 | 0.00     | 8368  | 413.0 -> 169.0 | 35.3   | 14.1 | 54.1 |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 20.69 | 6.61 | -0.01    | 327299 | 421.0 -> 376.0 |        |      |      |



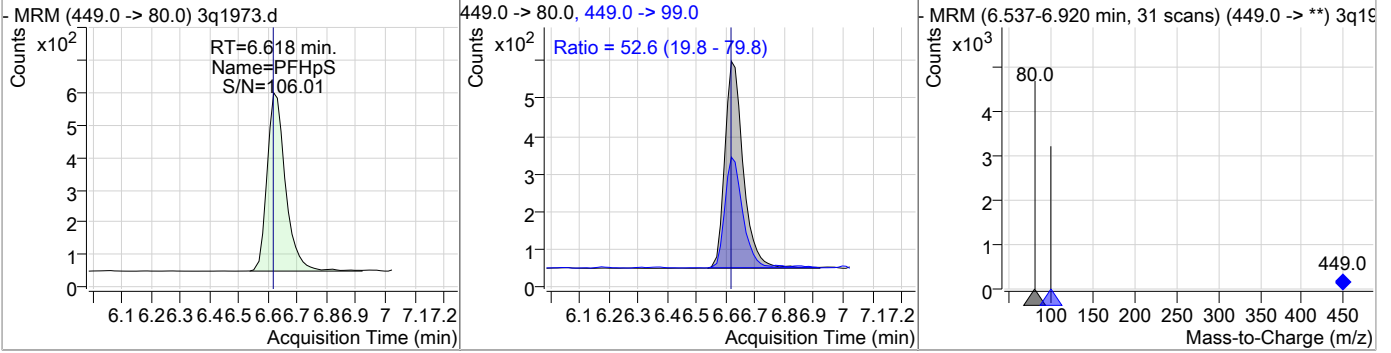
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| M2-PFOA  | 20.00 | 6.61 | -0.01    | 428772 | 415.0 -> 370.0 |        |      |      |



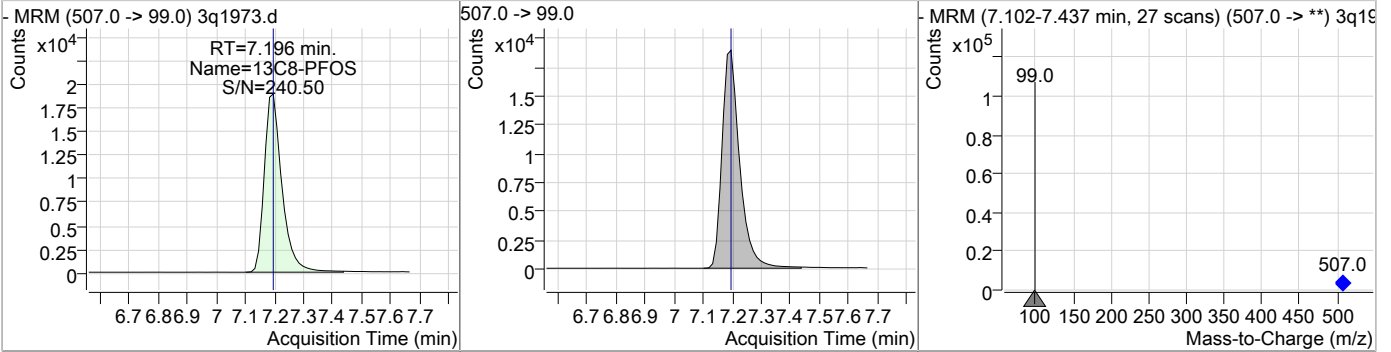
7.6.34  
7

### Perfluorinated Compounds by LC/MS/MS

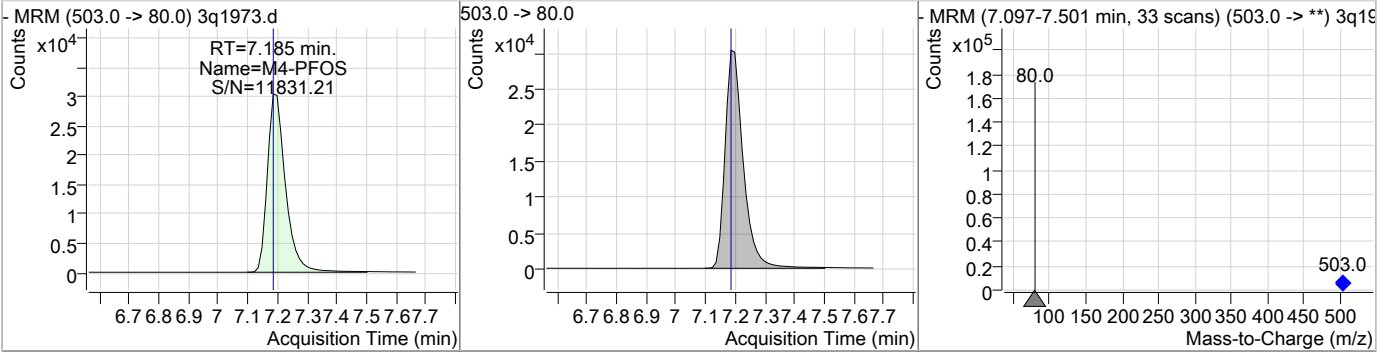
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFHpS    | 0.97  | 6.62 | -0.01    | 2411  | 449.0 -> 99.0 | 52.6   | 19.8 | 79.8 |



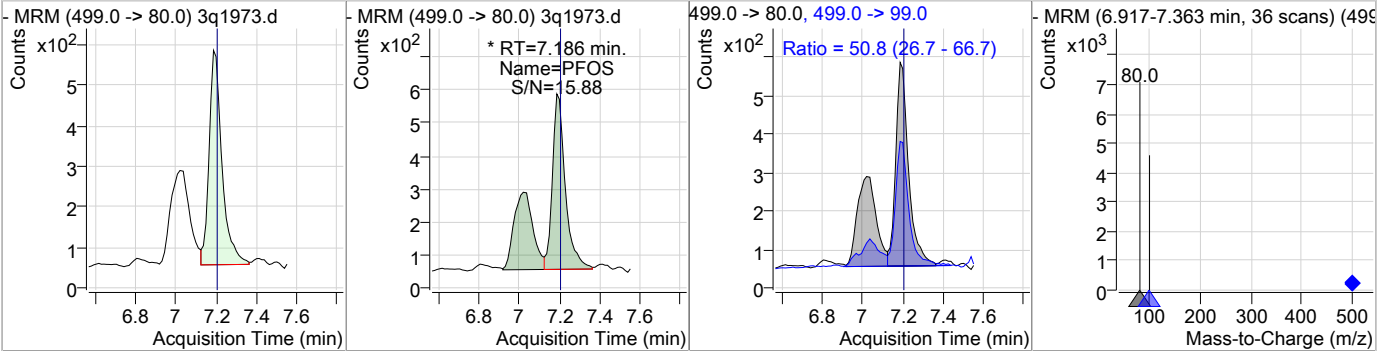
| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.63 | 7.20 | 0.00     | 79458 |      |        |      |      |



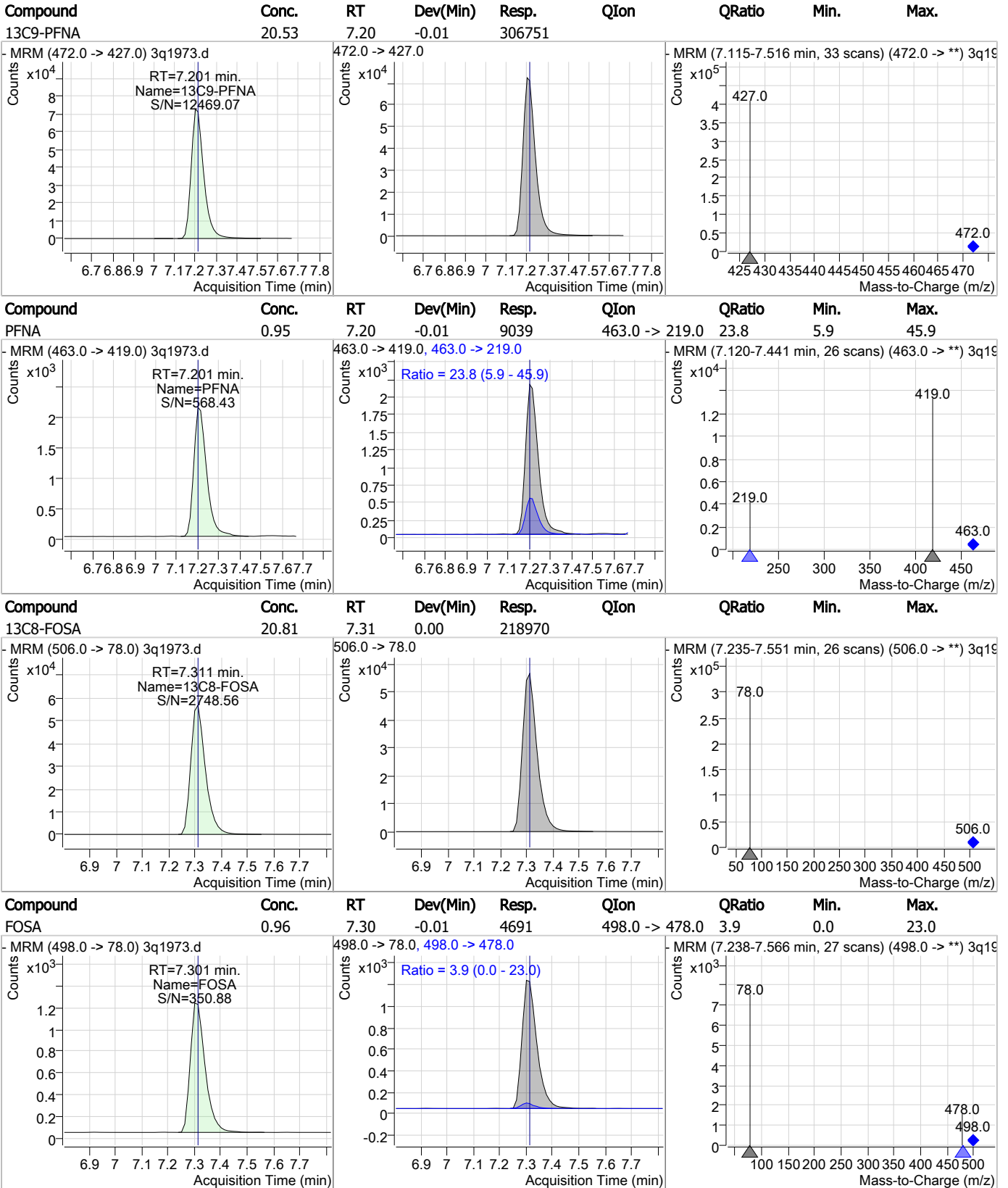
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M4-PFOS  | 20.00 | 7.19 | -0.01    | 129178 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.    | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|----------|---------------|--------|------|------|
| PFOS     | 1.06  | 7.19 | -0.01    | 3903 (m) | 499.0 -> 99.0 | 50.8   | 26.7 | 66.7 |



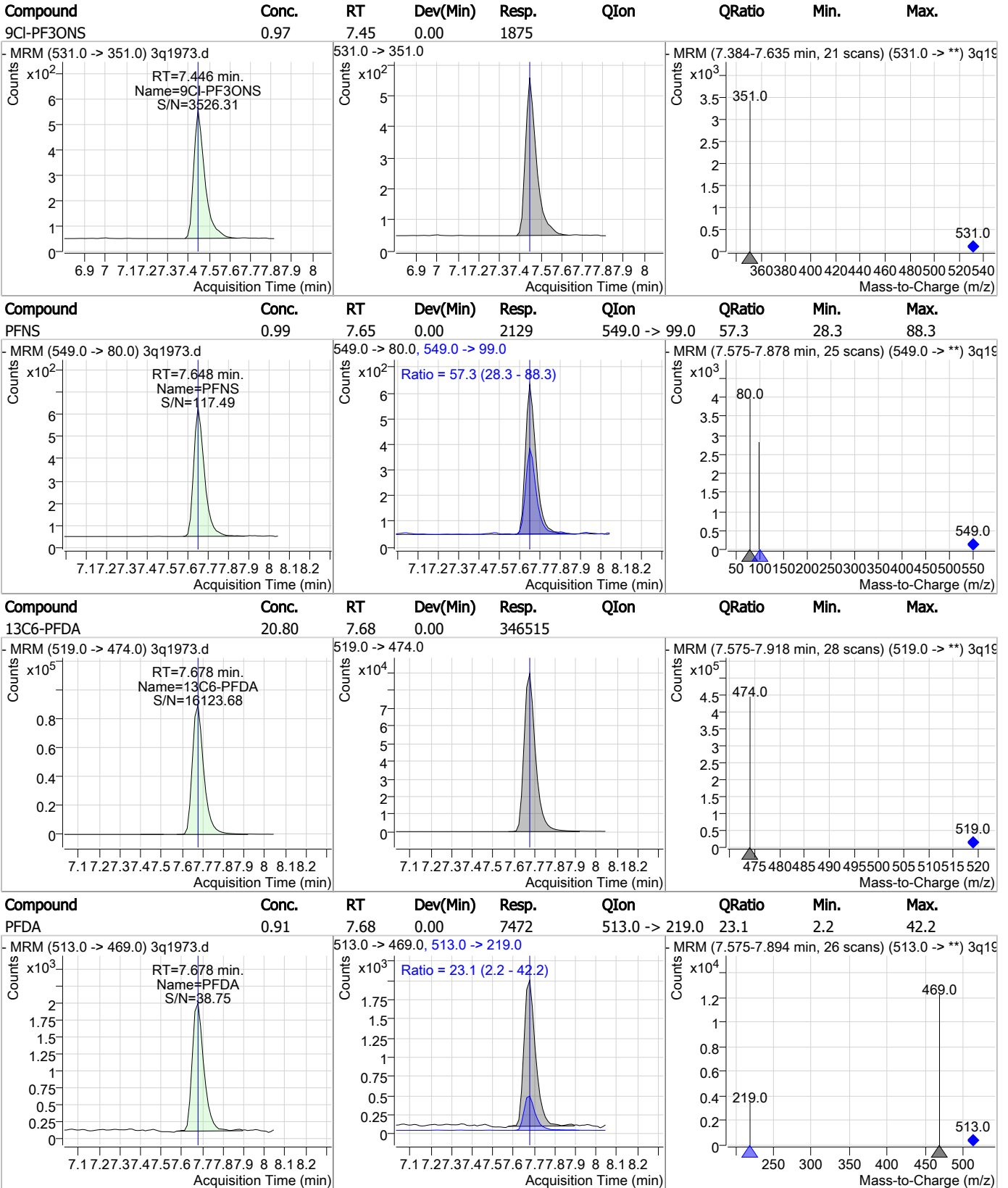
### Perfluorinated Compounds by LC/MS/MS



7.6.34  
7



### Perfluorinated Compounds by LC/MS/MS

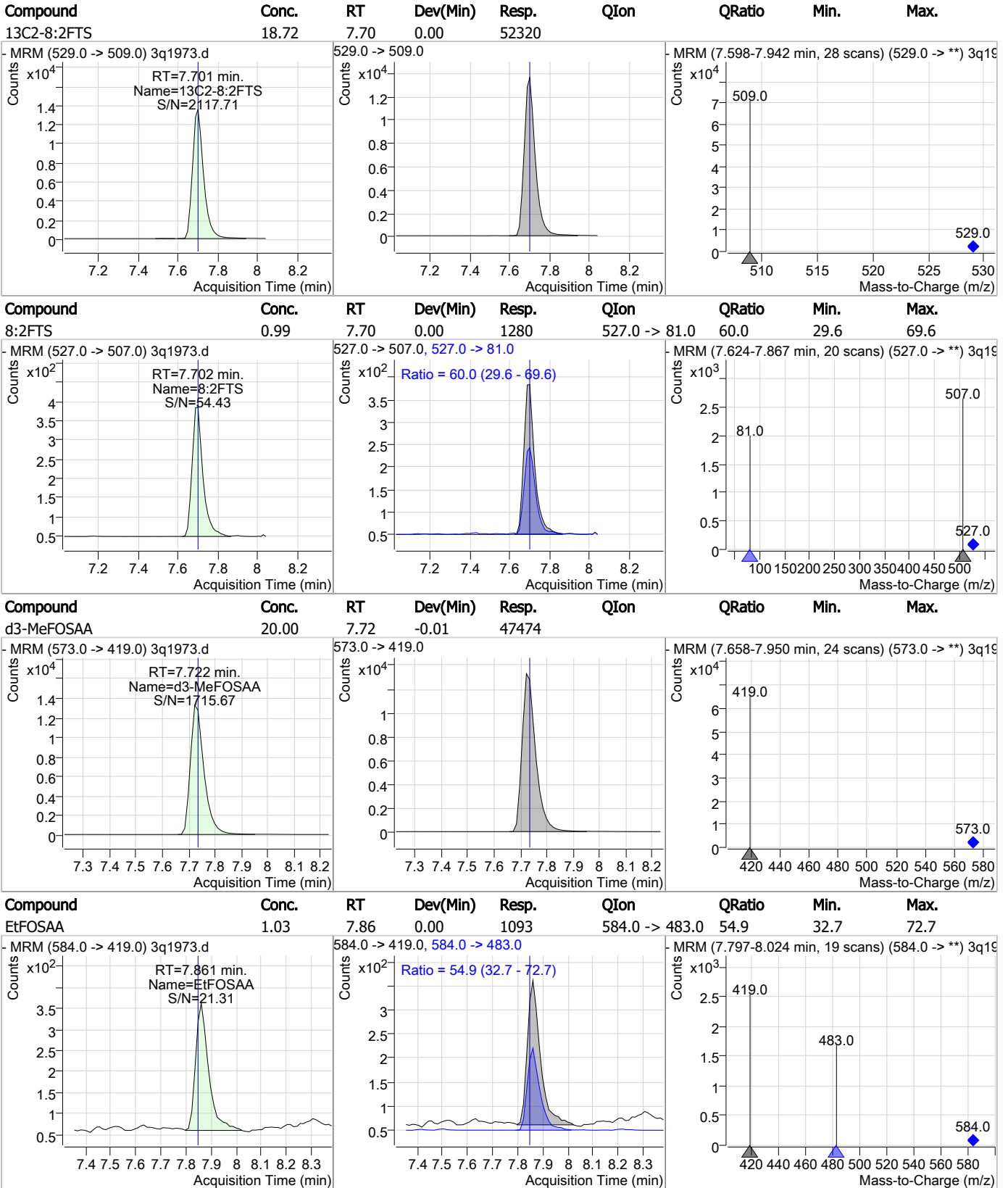


7.6.34

7



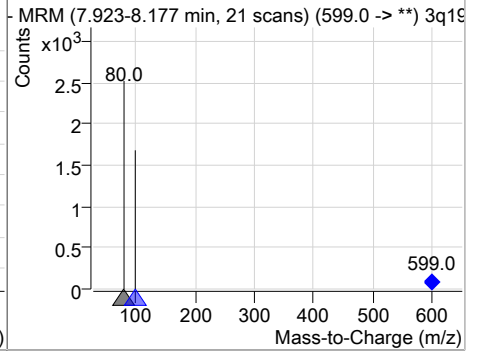
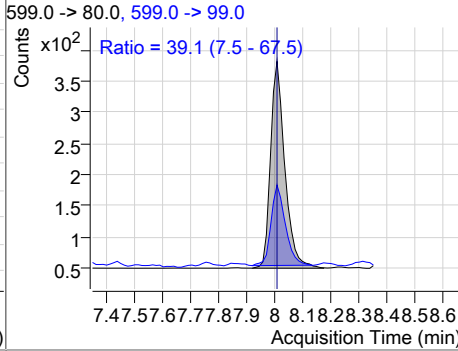
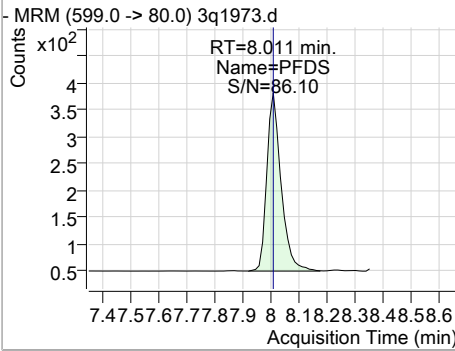
### Perfluorinated Compounds by LC/MS/MS



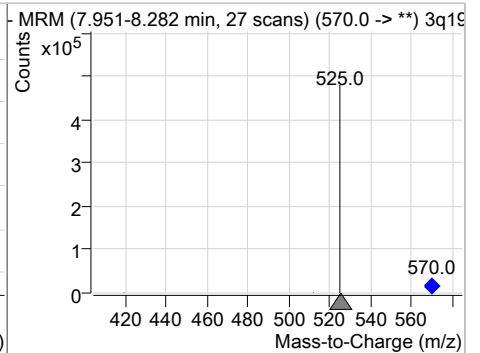
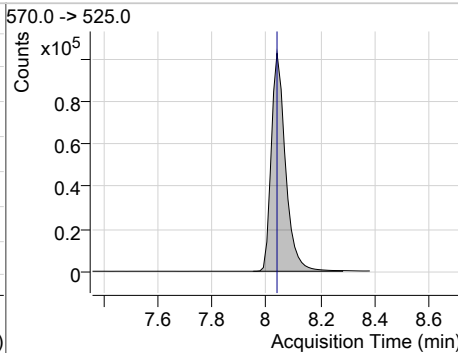
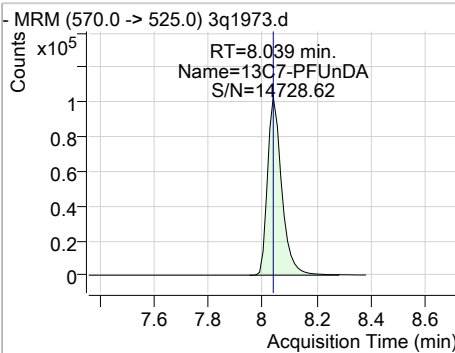
7.6.34  
7

### Perfluorinated Compounds by LC/MS/MS

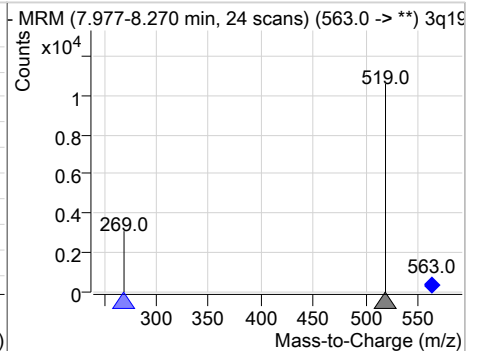
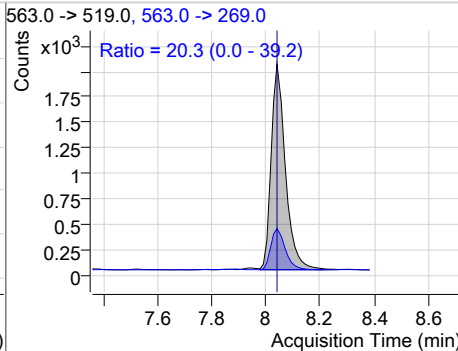
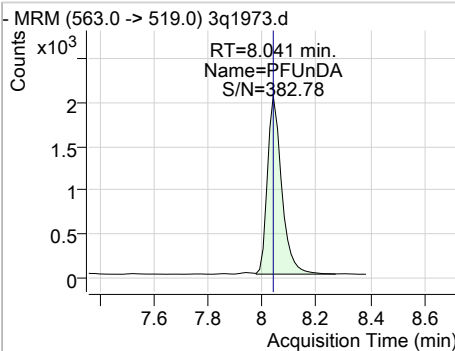
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 1.01  | 8.01 | 0.00     | 1174  | 599.0 -> 99.0 | 39.1   | 7.5  | 67.5 |



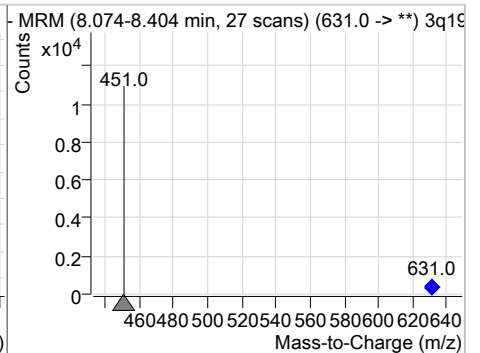
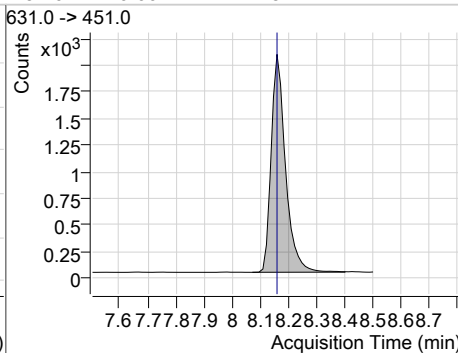
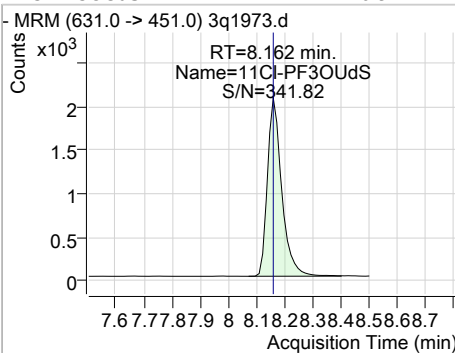
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C7-PFUnDA | 20.32 | 8.04 | 0.00     | 376743 |      |        |      |      |



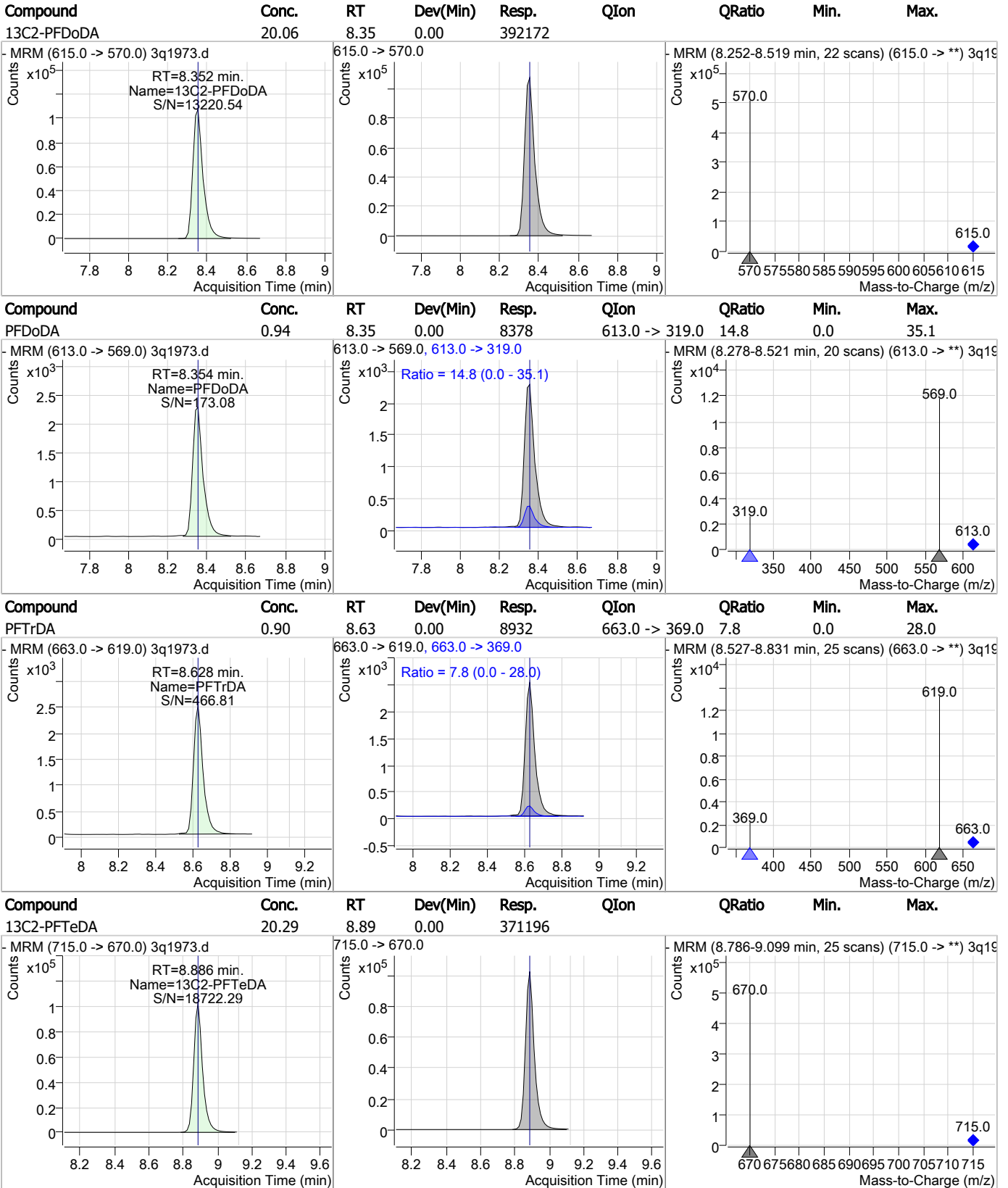
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFUnDA   | 0.91  | 8.04 | 0.00     | 7418  | 563.0 -> 269.0 | 20.3   | 0.0  | 39.2 |



| Compound     | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|--------------|-------|------|----------|-------|------|--------|------|------|
| 11Cl-PF3OUdS | 0.97  | 8.16 | 0.00     | 7278  |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS

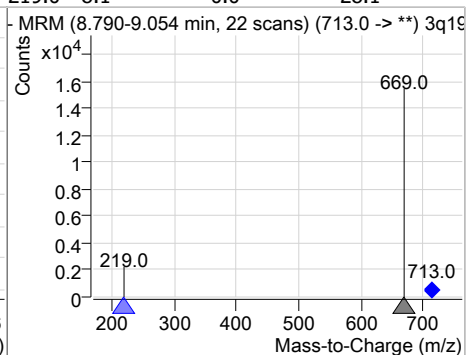
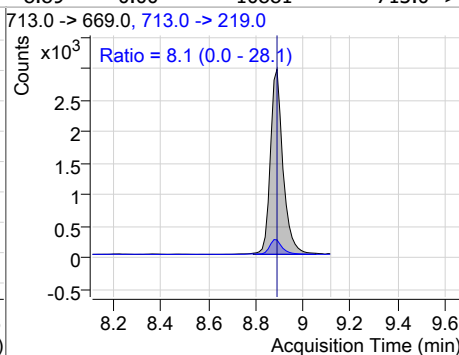
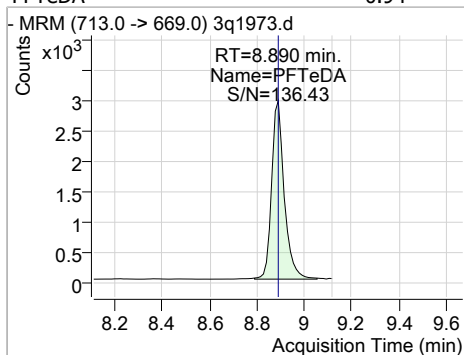


7.6.34

7

### Perfluorinated Compounds by LC/MS/MS

| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 0.94  | 8.89 | 0.00     | 10881 | 713.0 -> 219.0 | 8.1    | 0.0  | 28.1 |



7.6.34

7

# Manual Integration Approval Summary

**Sample Number:** S3Q54-IC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1973.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 10:10      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.34.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1974.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 10:25:10 AM  
 Sample Name : ic54-2.0  
 Vial : P3-A4  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 340155 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 225263 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 302683 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 348114 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 328967 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 313426 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 349355 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 385897 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 402118 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 372558 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.298                | 506.0 -> 78.0  | 222329 | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 52584  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 52637  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 81145  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 92341  | 20.00 µg/L        | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 90971  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 54343  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 48562  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 175052 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 415715 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 124964 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 91964  | 19.38 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.9%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 90971  | 19.91 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.5%  |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 54395  | 19.46 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.3%  |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 403525 | 20.64 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 372616 | 20.37 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.8% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 52075  | 20.65 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.2% |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 52812  | 20.89 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.5% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 337147 | 20.67 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.4% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 347933 | 20.84 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.2% |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 300887 | 20.45 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.2% |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 227258 | 20.52 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.6% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 349481 | 20.98 µg/L        | 0.000    |

7.6.35  
7

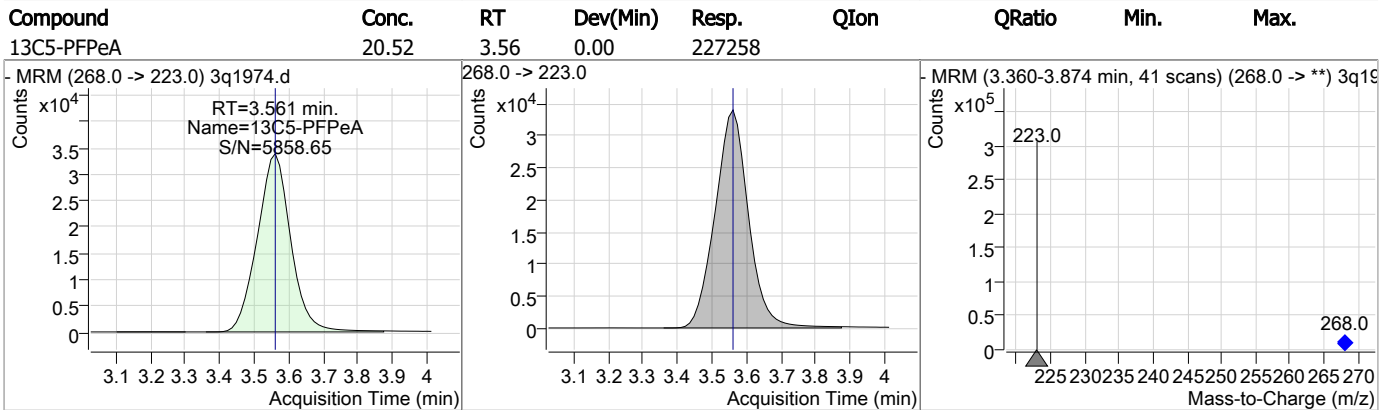
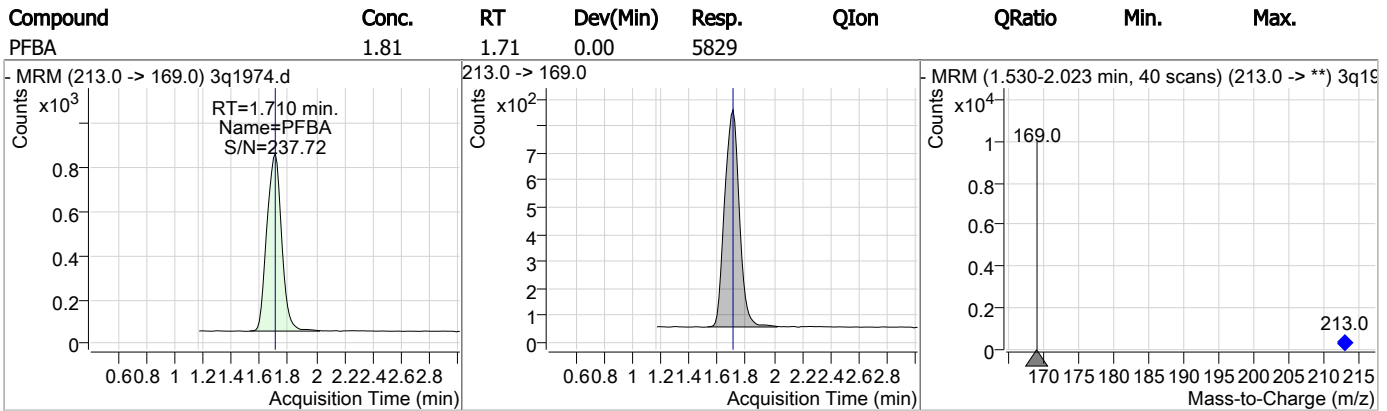
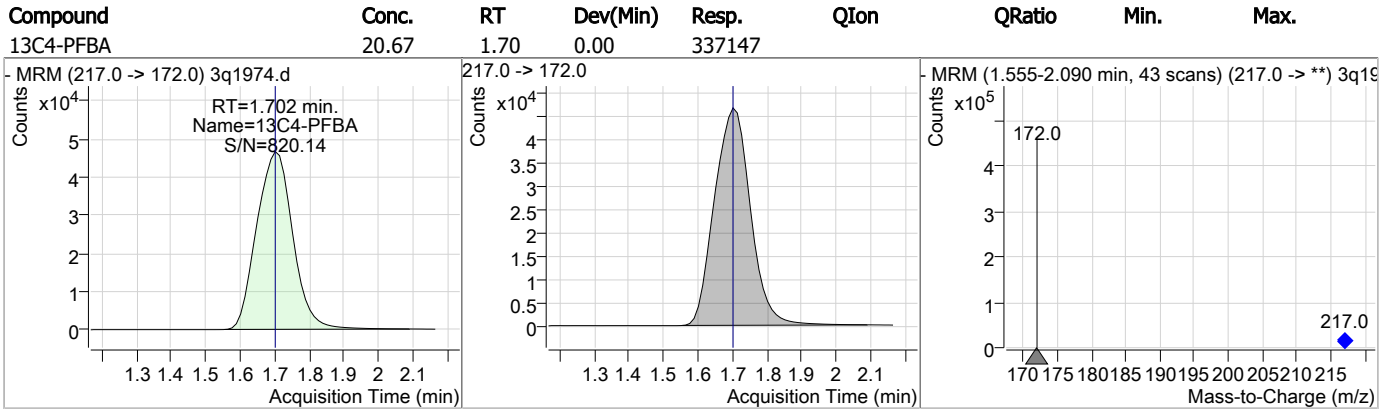
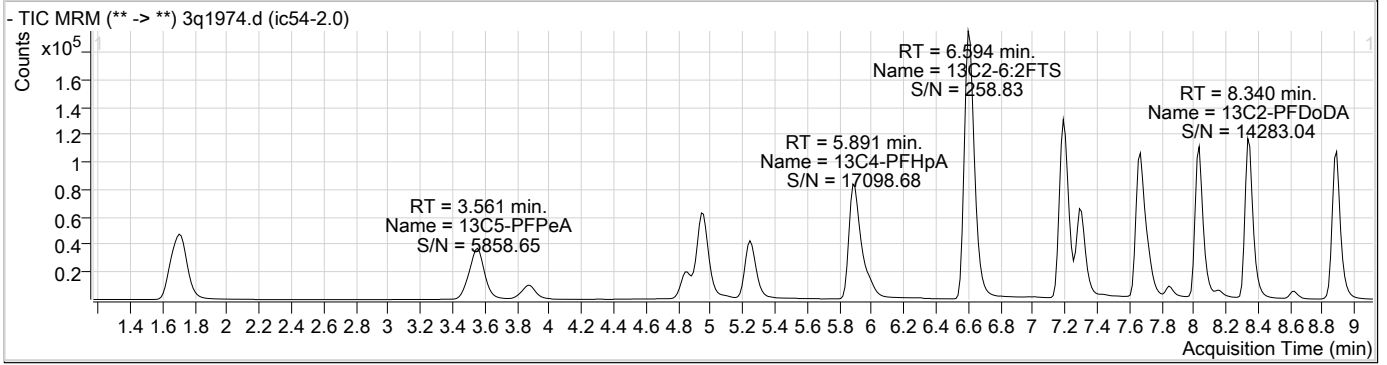
## Perfluorinated Compounds by LC/MS/MS

| Compound                | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min)      |
|-------------------------|----------------------|----------------|--------|-------------------|---------------|
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |               |
| 13C7-PFUnDA             | 8.039                | 570.0 -> 525.0 | 386092 | 20.83 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 104.1% |               |
| 13C8-FOSA               | 7.298                | 506.0 -> 78.0  | 222176 | 21.11 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 105.5% |               |
| 13C8-PFOA               | 6.609                | 421.0 -> 376.0 | 329116 | 20.80 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 104.0% |               |
| 13C8-PFOS               | 7.196                | 507.0 -> 99.0  | 80851  | 20.99 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 104.9% |               |
| 13C9-PFNA               | 7.201                | 472.0 -> 427.0 | 312801 | 20.93 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 104.7% |               |
| d3-MeFOSAA              | 7.722                | 573.0 -> 419.0 | 48563  | 20.46 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 102.3% |               |
| 13C3-HFPO-DA            | 5.255                | 287.0 -> 169.0 | 175052 | 104.83 µg/L       | 0.000         |
| Spiked Amount: 100.00   | Range: 50.0 - 150.0% |                |        | Recovery = 104.8% |               |
| M2-PFOA                 | 6.610                | 415.0 -> 370.0 | 415715 | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |               |
| M4-PFOS                 | 7.185                | 503.0 -> 80.0  | 124964 | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |               |
| <b>Target Compounds</b> |                      |                |        |                   | <b>QValue</b> |
| 4:2FTS                  | 4.848                | 327.0 -> 307.0 | 5008   | 1.98 µg/L         | 97            |
| 6:2FTS                  | 6.595                | 427.0 -> 407.0 | 4247   | 1.89 µg/L         | 98            |
| 8:2FTS                  | 7.689                | 527.0 -> 507.0 | 2776   | 2.06 µg/L         | 97            |
| EtFOSAA                 | 7.861                | 584.0 -> 419.0 | 2122   | 1.95 µg/L         | 98            |
| FOSA                    | 7.301                | 498.0 -> 78.0  | 9379   | 1.89 µg/L         | 98            |
| MeFOSAA                 | 7.723                | 570.0 -> 419.0 | 2545   | 1.96 µg/L         | 99            |
| PFBA                    | 1.710                | 213.0 -> 169.0 | 5829   | 1.81 µg/L         | 100           |
| PFBS                    | 3.870                | 299.0 -> 80.0  | 6744   | 1.84 µg/L         | 98            |
| PFDA                    | 7.664                | 513.0 -> 469.0 | 15272  | 1.85 µg/L         | 100           |
| PFDoDA                  | 8.341                | 613.0 -> 569.0 | 16558  | 1.81 µg/L         | 99            |
| PFDS                    | 8.011                | 599.0 -> 80.0  | 2257   | 1.90 µg/L         | 96            |
| PFHpA                   | 5.894                | 363.0 -> 319.0 | 27987  | 1.82 µg/L         | 98            |
| PFHpS                   | 6.618                | 449.0 -> 80.0  | 4794   | 1.91 µg/L         | 98            |
| PFHxA                   | 4.952                | 313.0 -> 269.0 | 10170  | 1.89 µg/L         | 100           |
| PFHxS                   | 5.937                | 399.0 -> 80.0  | 5376   | 1.86 µg/L         | m 100         |
| PFNA                    | 7.201                | 463.0 -> 419.0 | 17761  | 1.82 µg/L         | 98            |
| PFNS                    | 7.648                | 549.0 -> 80.0  | 4184   | 1.91 µg/L         | 99            |
| PFOA                    | 6.611                | 413.0 -> 369.0 | 16357  | 1.86 µg/L         | 98            |
| PFOS                    | 7.186                | 499.0 -> 80.0  | 6920   | 1.84 µg/L         | m 96          |
| PFPeA                   | 3.564                | 263.0 -> 219.0 | 20727  | 1.82 µg/L         | 100           |
| PFPeS                   | 5.094                | 349.0 -> 80.0  | 4172   | 1.83 µg/L         | 100           |
| PFTeDA                  | 8.877                | 713.0 -> 669.0 | 21227  | 1.83 µg/L         | 100           |
| PFTTrDA                 | 8.628                | 663.0 -> 619.0 | 18071  | 1.82 µg/L         | 99            |
| PFUnDA                  | 8.041                | 563.0 -> 519.0 | 14728  | 1.76 µg/L         | 97            |
| 11Cl-PF3OUdS            | 8.162                | 631.0 -> 451.0 | 14146  | 1.84 µg/L         | 100           |
| 9Cl-PF3ONS              | 7.446                | 531.0 -> 351.0 | 3666   | 1.88 µg/L         | 100           |
| ADONA                   | 5.994                | 377.0 -> 251.0 | 36591  | 1.80 µg/L         | 100           |
| HFPO-DA                 | 5.259                | 329.0 -> 169.0 | 25637  | 8.63 µg/L         | 98            |

# = Qualifier out of range, m = manually integrated, + = Area summed



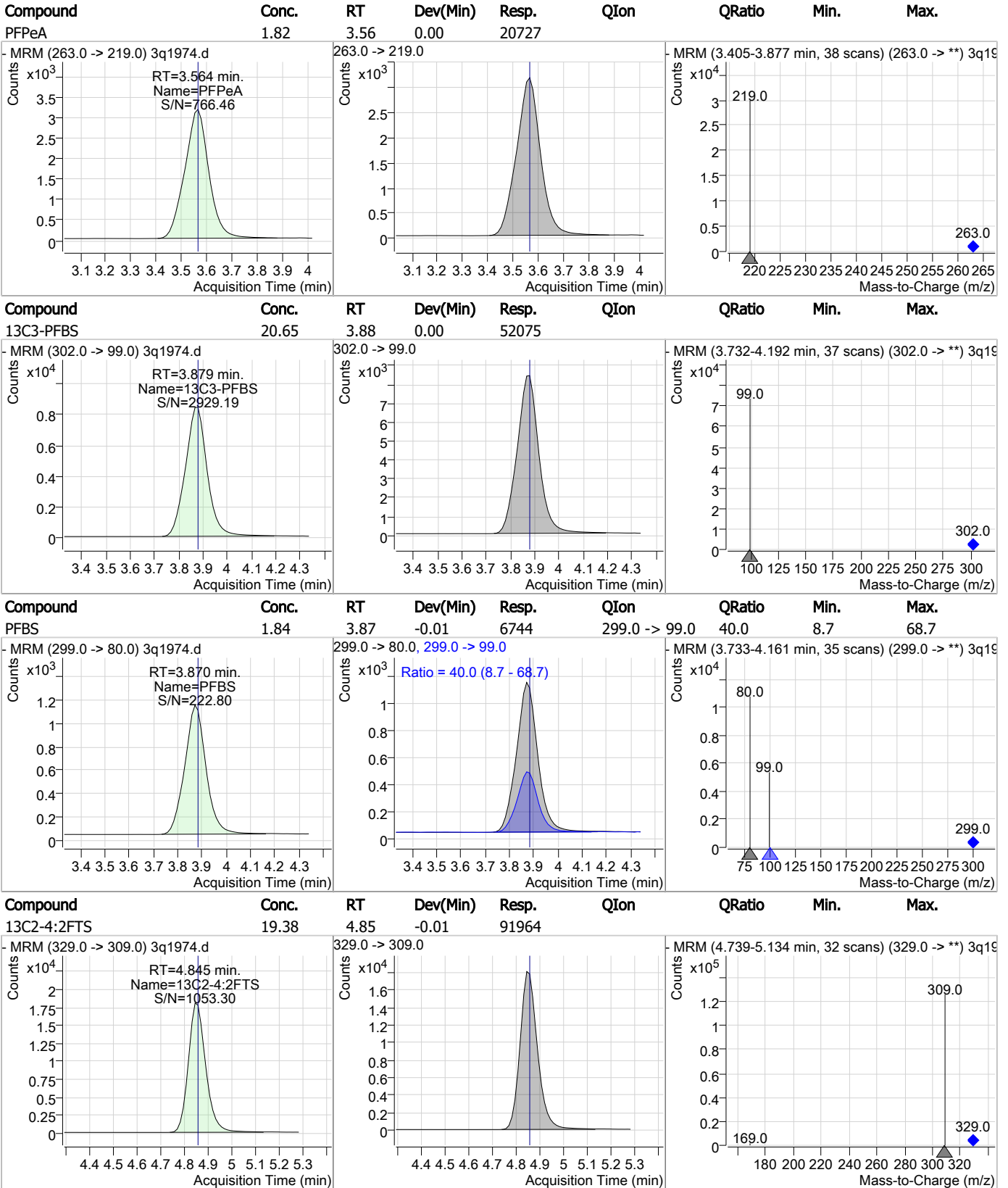
### Perfluorinated Compounds by LC/MS/MS



7.6.35

7

### Perfluorinated Compounds by LC/MS/MS

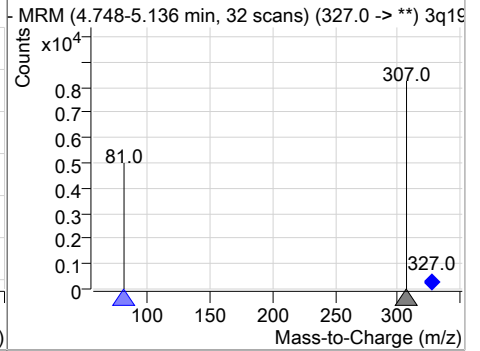
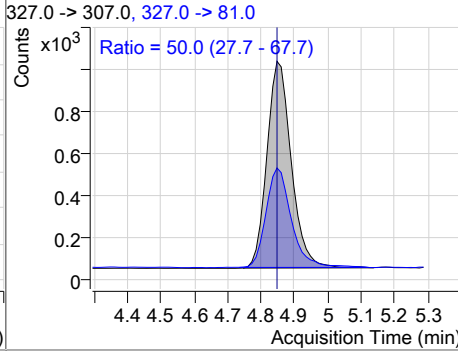
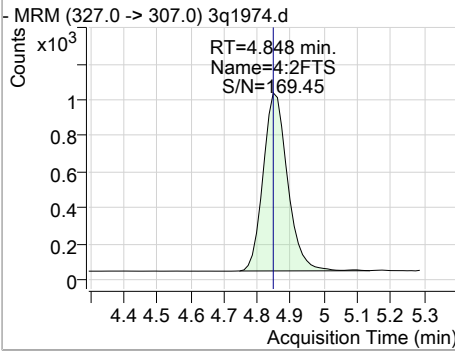


7.6.35  
7

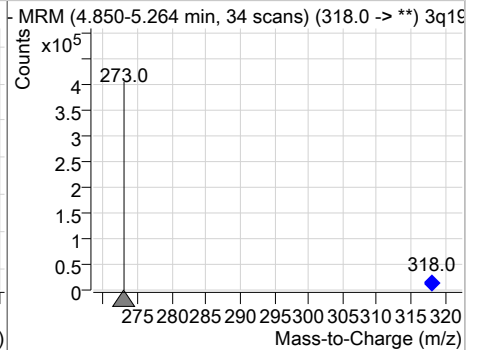
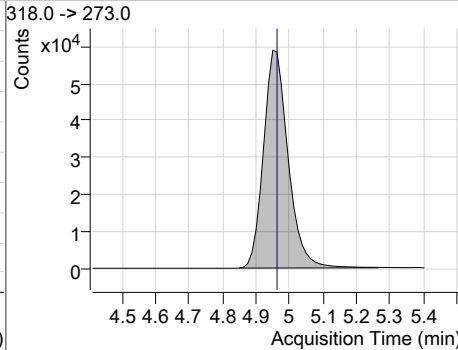
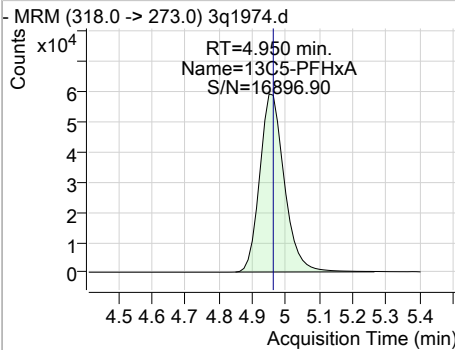


### Perfluorinated Compounds by LC/MS/MS

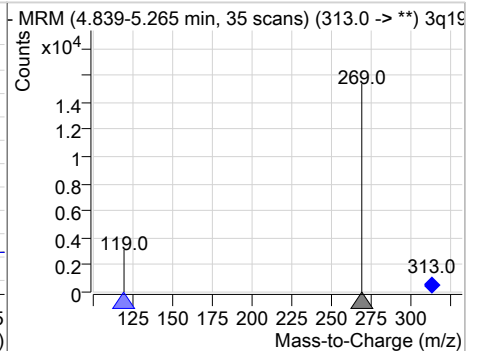
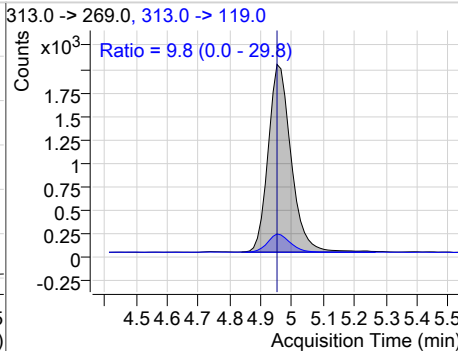
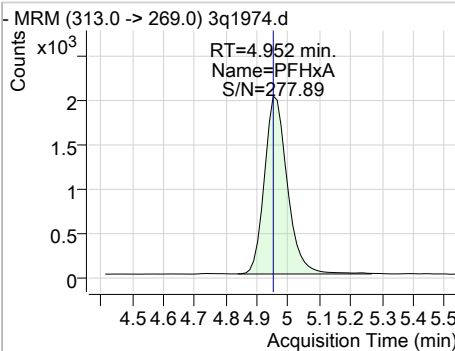
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 1.98  | 4.85 | -0.01    | 5008  | 327.0 -> 81.0 | 50.0   | 27.7 | 67.7 |



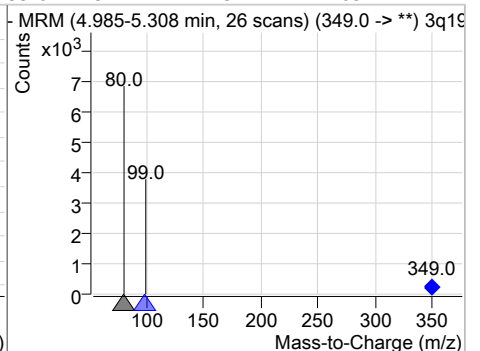
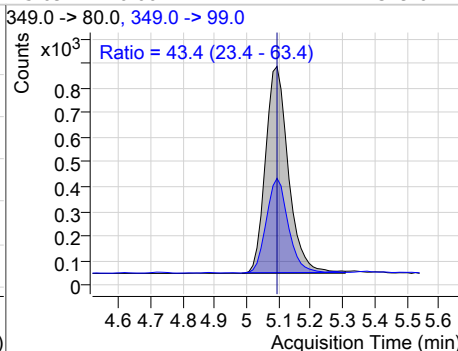
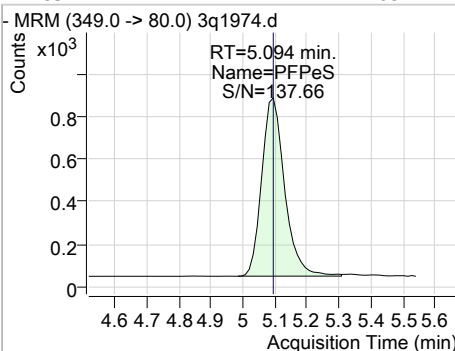
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 20.45 | 4.95 | -0.01    | 300887 |      |        |      |      |



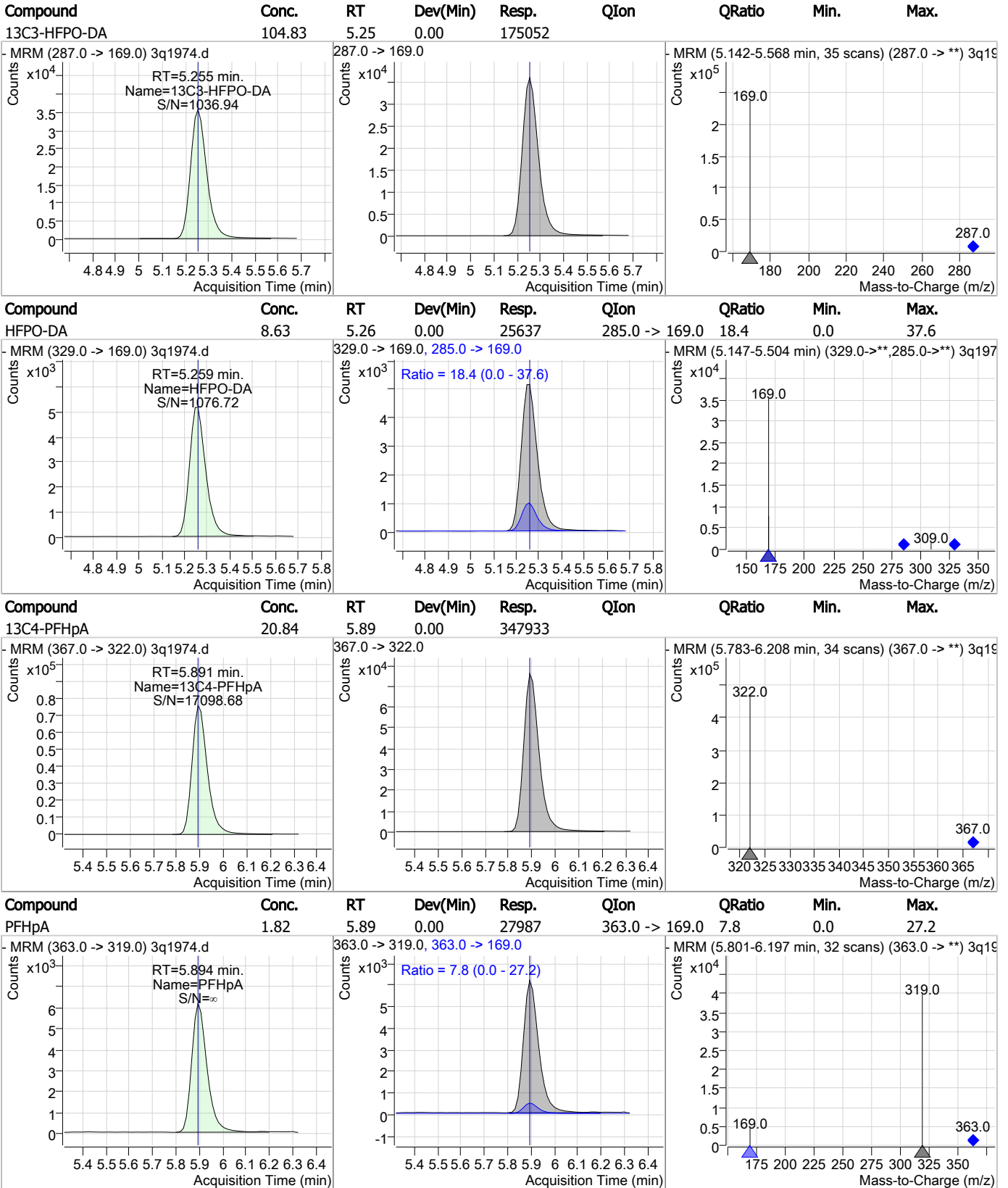
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 1.89  | 4.95 | -0.01    | 10170 | 313.0 -> 119.0 | 9.8    | 0.0  | 29.8 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 1.83  | 5.09 | 0.00     | 4172  | 349.0 -> 99.0 | 43.4   | 23.4 | 63.4 |

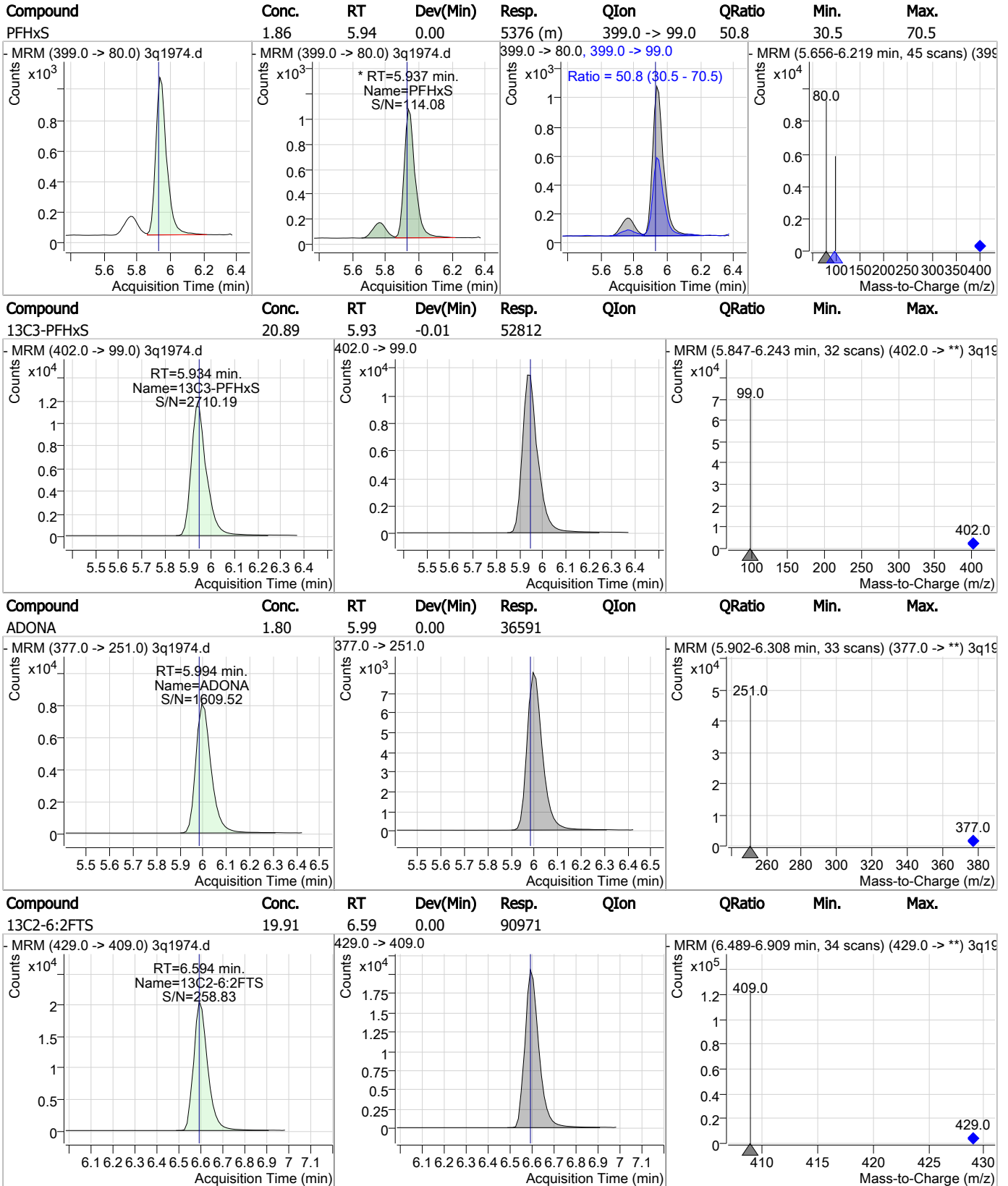


### Perfluorinated Compounds by LC/MS/MS



7.6.35  
7

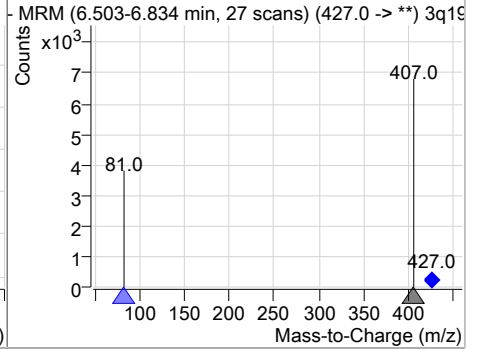
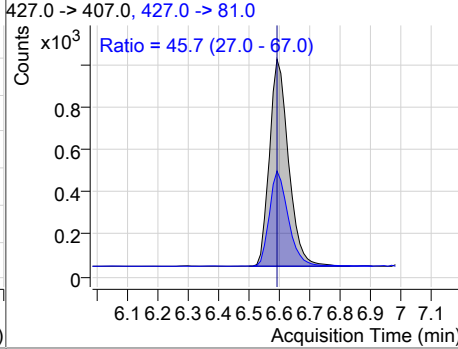
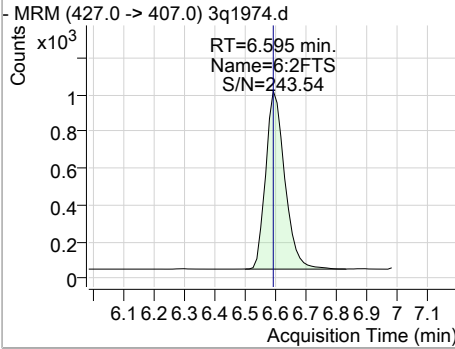
### Perfluorinated Compounds by LC/MS/MS



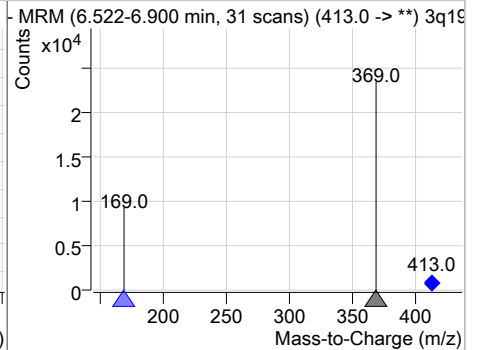
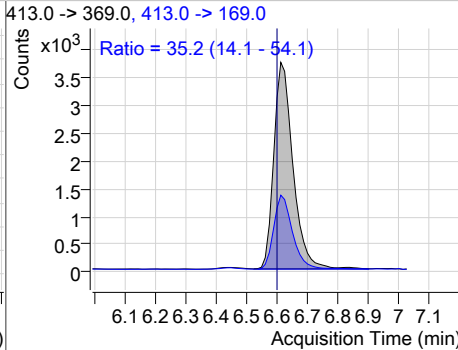
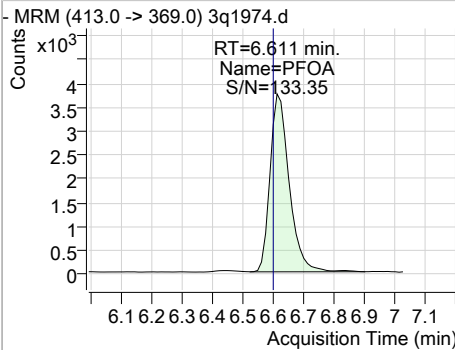
7.6.35  
7

### Perfluorinated Compounds by LC/MS/MS

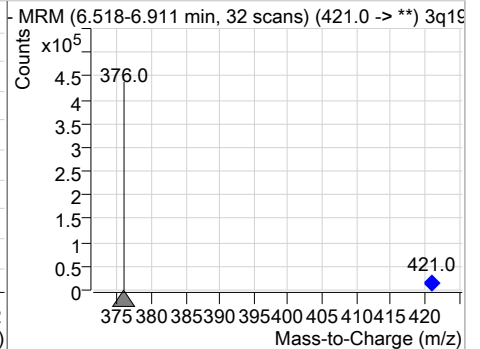
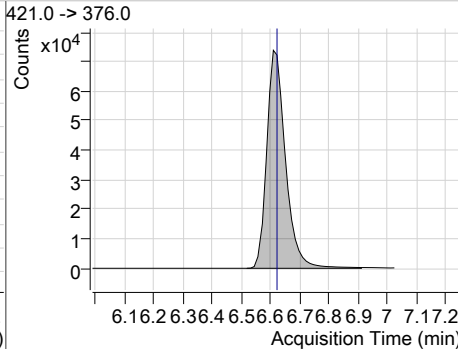
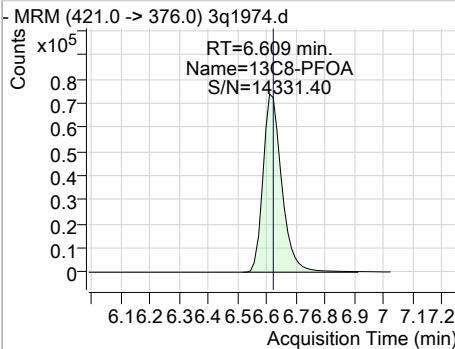
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 1.89  | 6.59 | 0.00     | 4247  | 427.0 -> 81.0 | 45.7   | 27.0 | 67.0 |



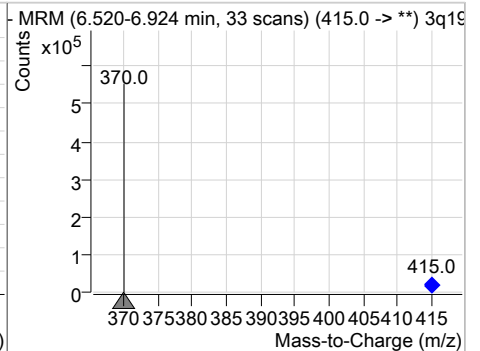
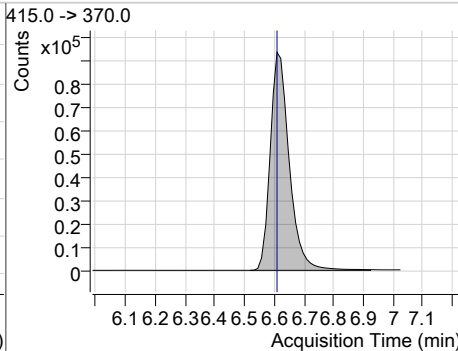
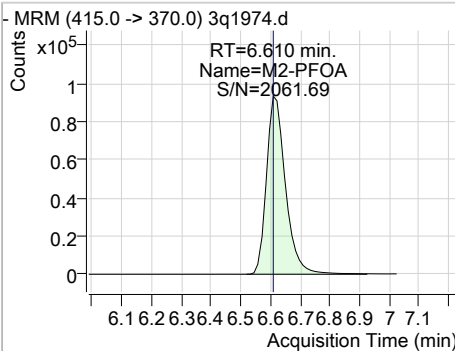
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 1.86  | 6.61 | 0.00     | 16357 | 413.0 -> 169.0 | 35.2   | 14.1 | 54.1 |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 20.80 | 6.61 | -0.01    | 329116 | 421.0 -> 376.0 |        |      |      |

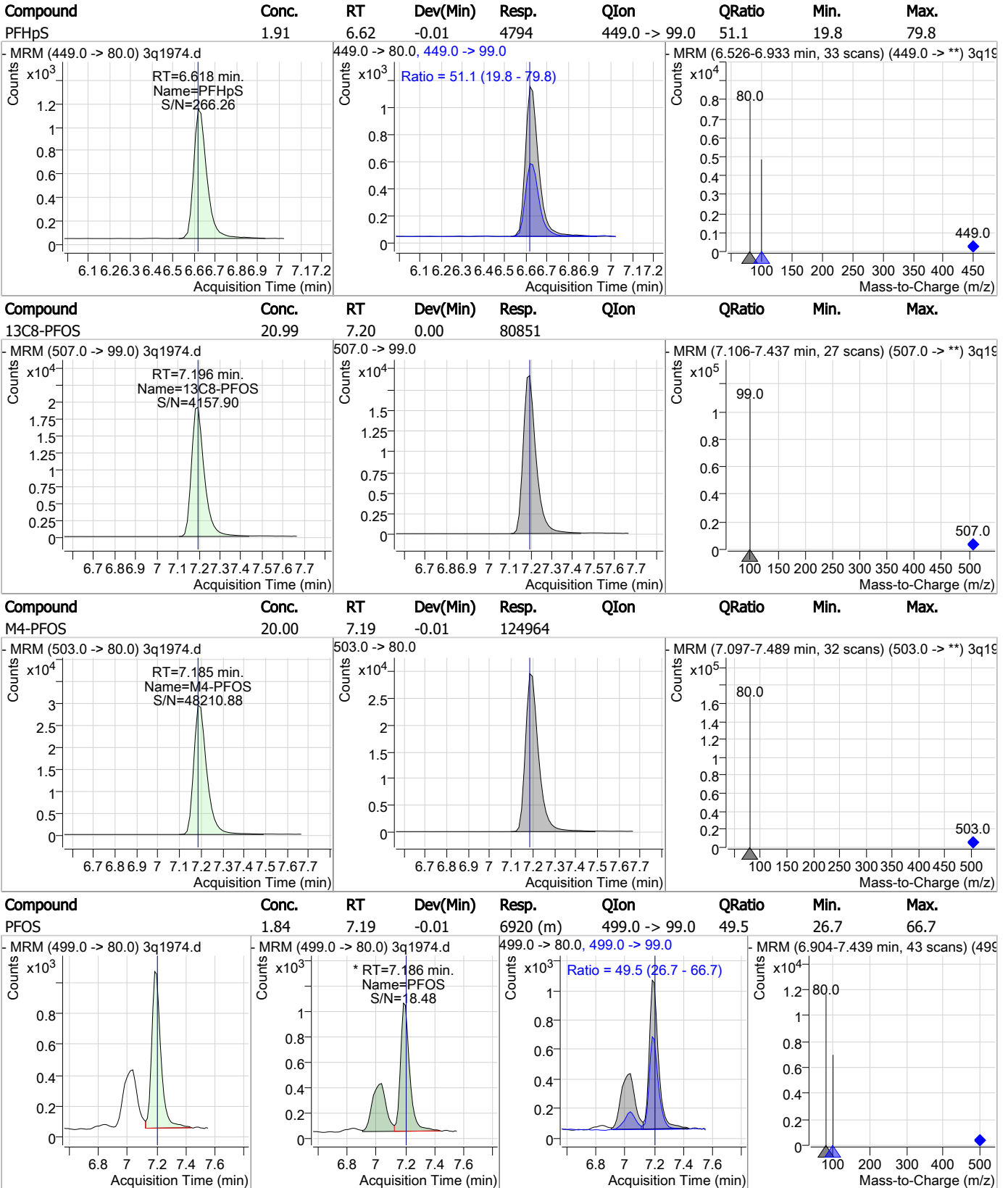


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| M2-PFOA  | 20.00 | 6.61 | -0.01    | 415715 | 415.0 -> 370.0 |        |      |      |



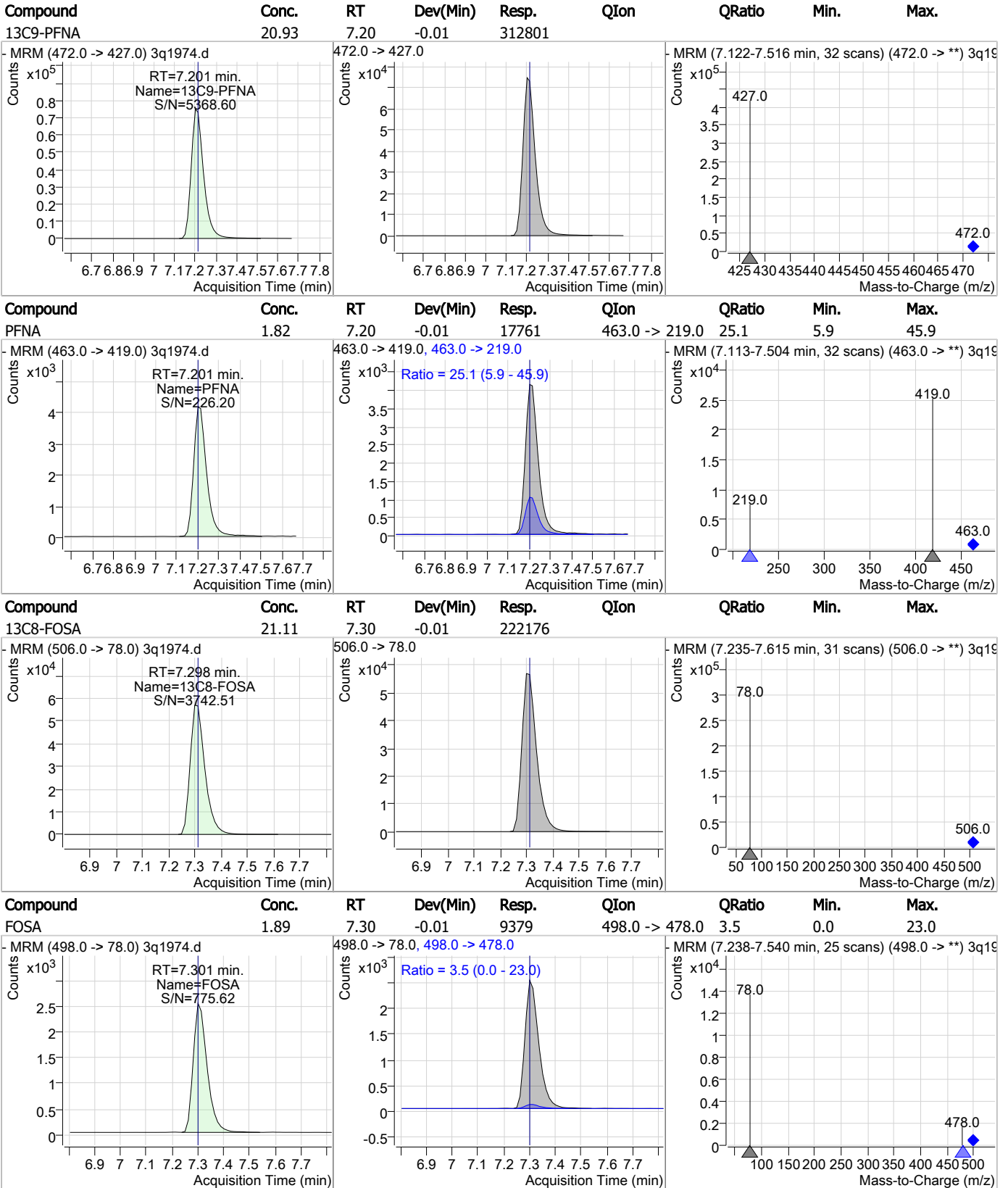
7.6.35  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.35  
7

### Perfluorinated Compounds by LC/MS/MS

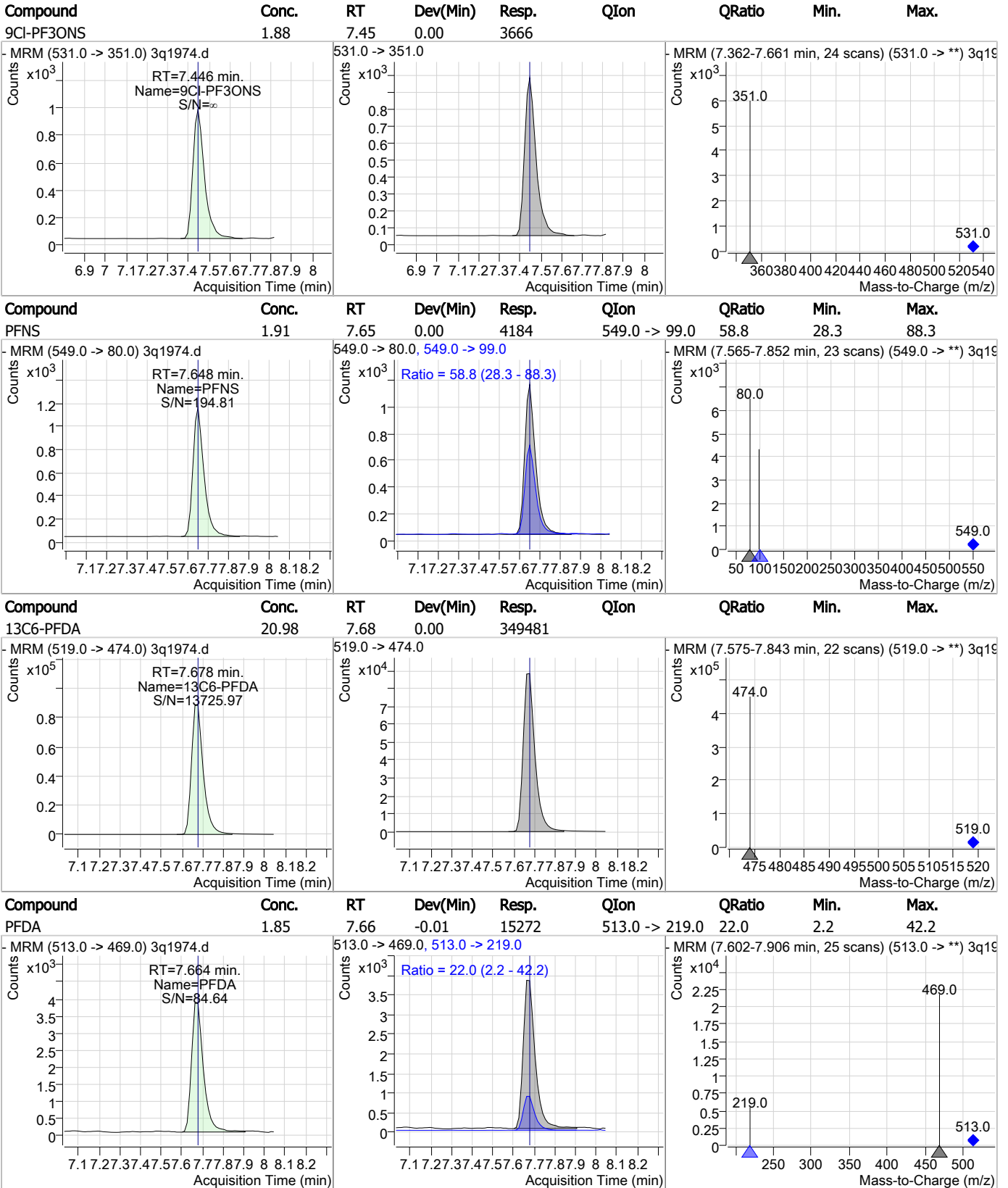


7.6.35  
7



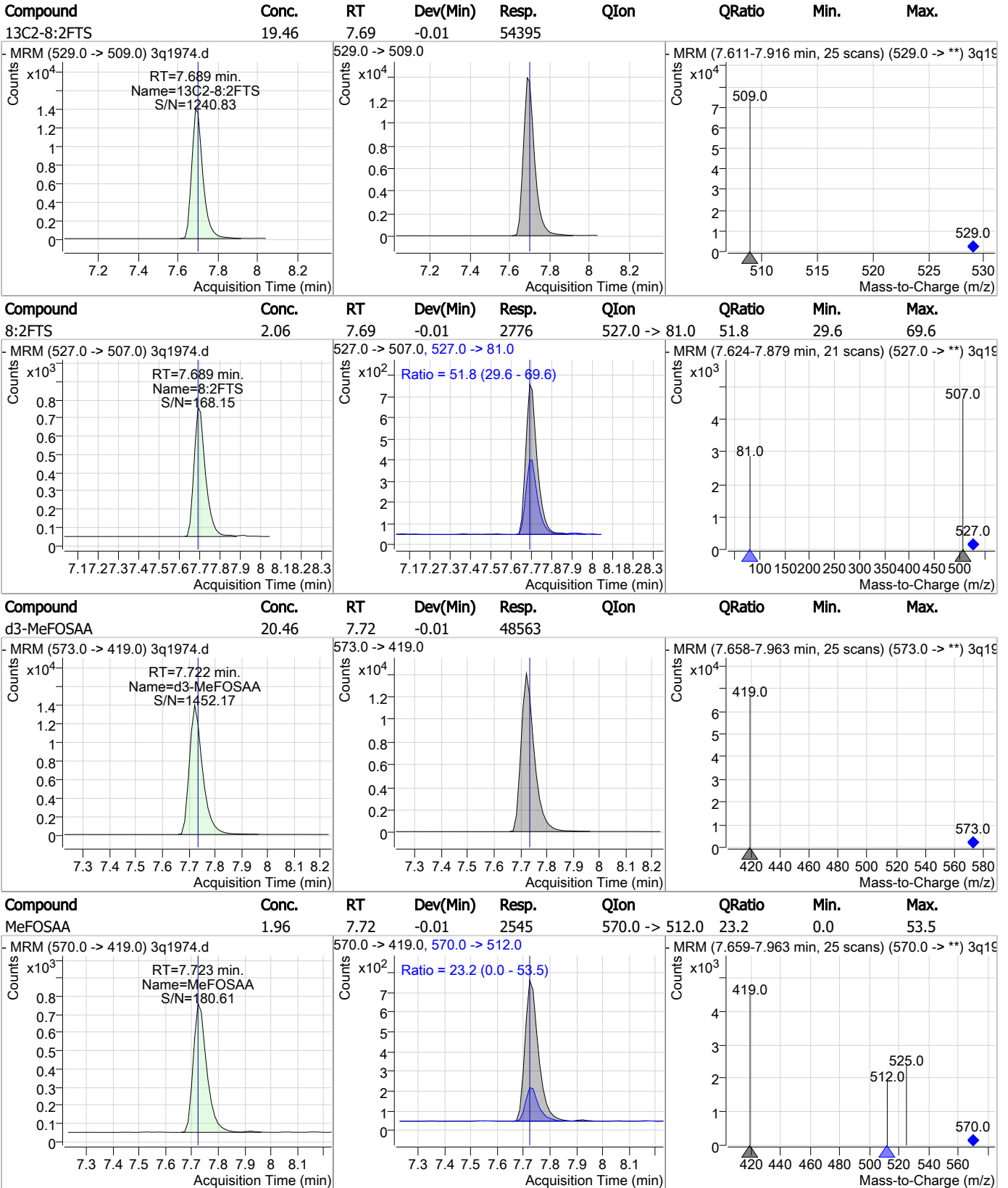


### Perfluorinated Compounds by LC/MS/MS



7.6.35  
7

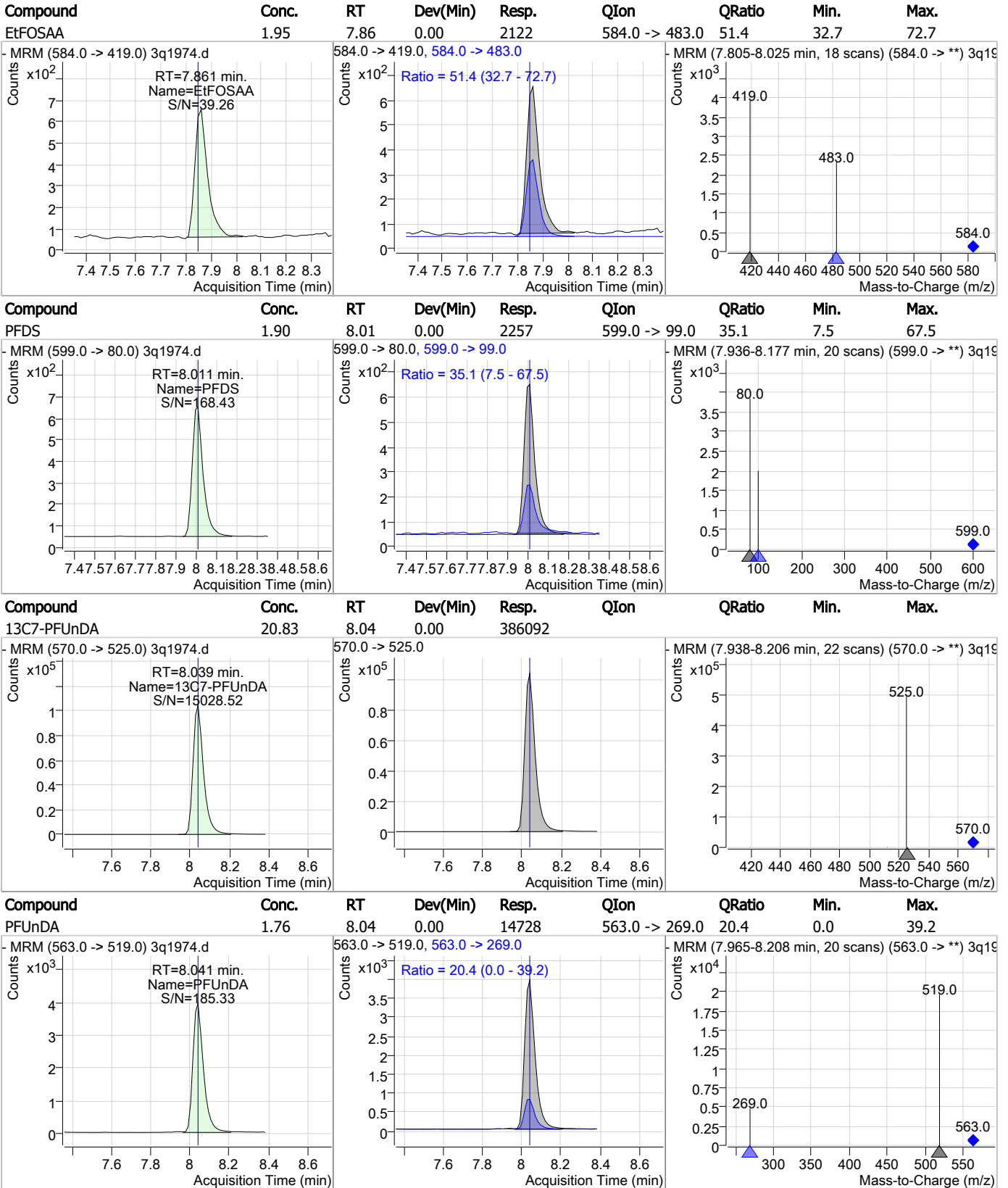
### Perfluorinated Compounds by LC/MS/MS



7.6.35

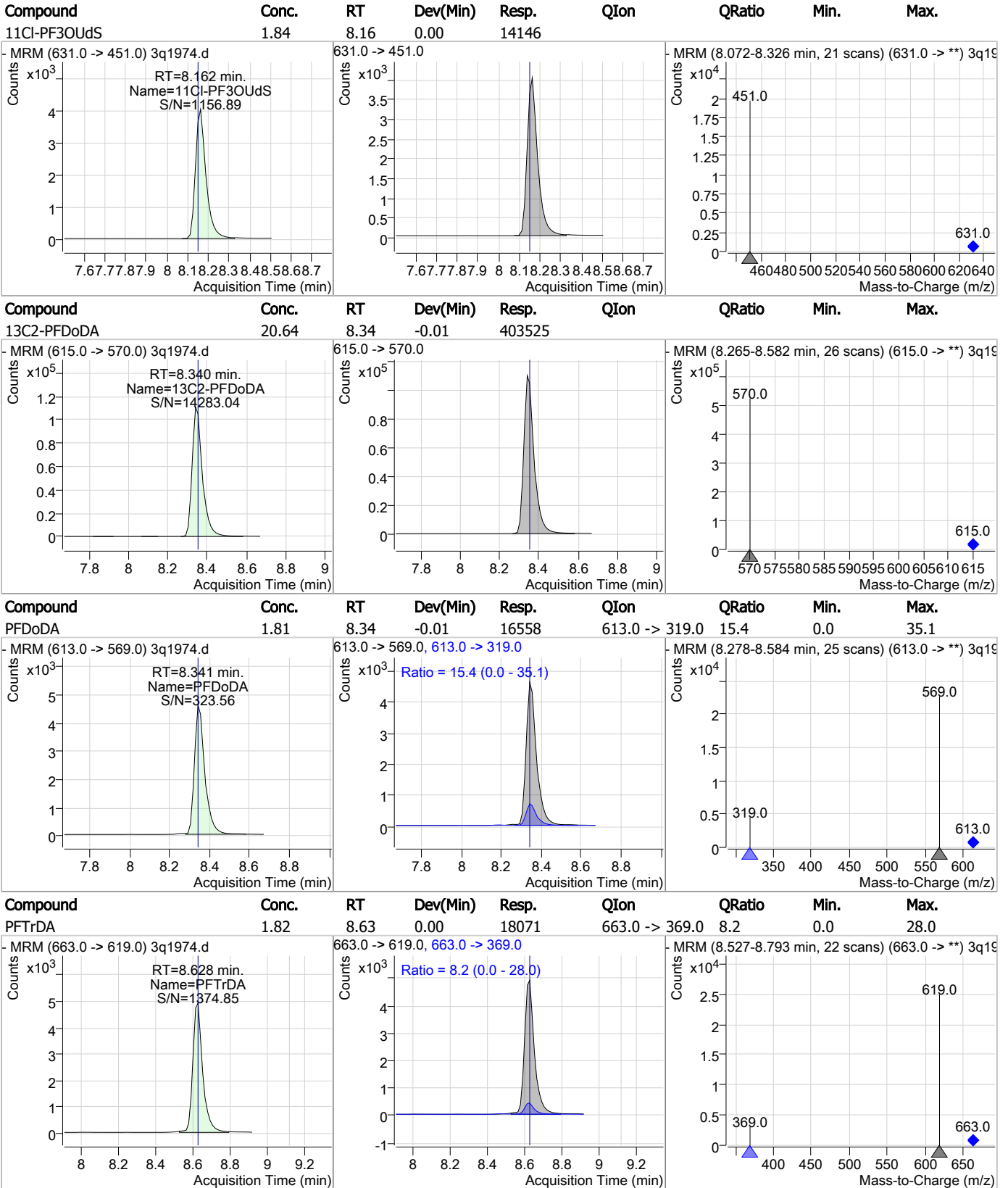
7

### Perfluorinated Compounds by LC/MS/MS



7.6.35  
7

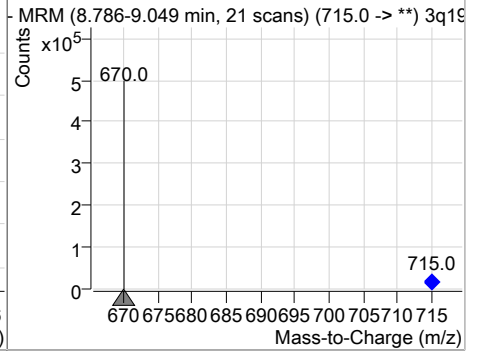
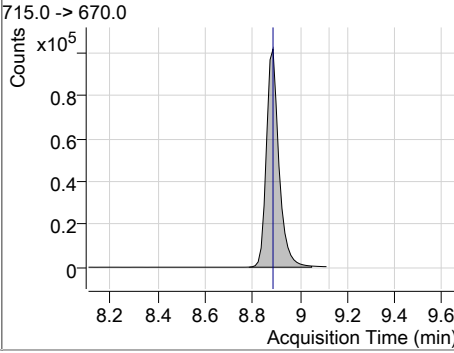
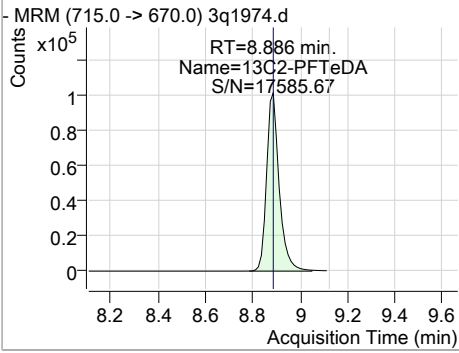
### Perfluorinated Compounds by LC/MS/MS



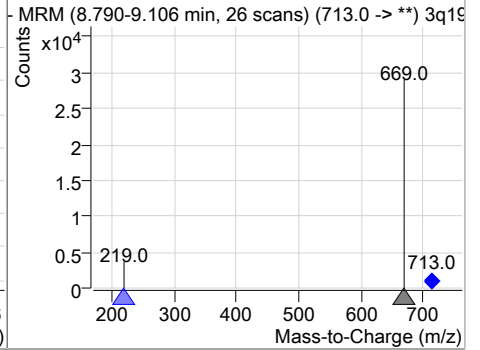
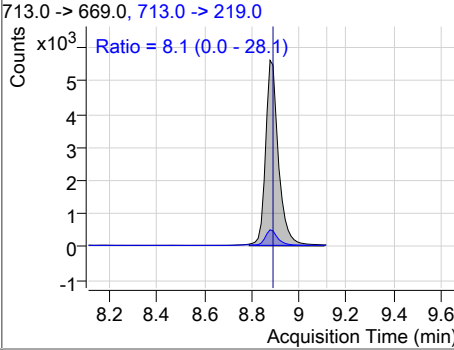
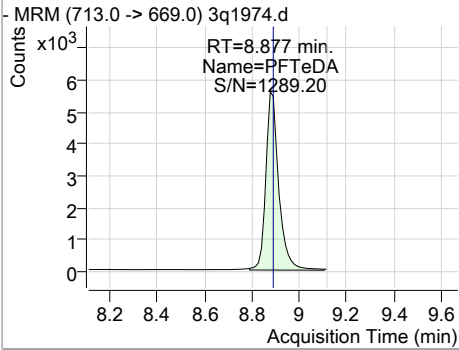
7.6.35  
7

Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.37 | 8.89 | 0.00     | 372616 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 1.83  | 8.88 | -0.01    | 21227 | 713.0 -> 219.0 | 8.1    | 0.0  | 28.1 |



7.6.35  
7

# Manual Integration Approval Summary

**Sample Number:** S3Q54-IC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1974.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 10:25      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.35.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1975.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 10:40:17 AM  
 Sample Name : ic54-5.0  
 Vial : P3-A5  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 330826 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 221221 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 295402 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 338083 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 321723 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 304920 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 338107 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 374300 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 398019 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 375962 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 214902 | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 50859  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.947                | 402.0 -> 99.0  | 51108  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 77836  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 89835  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 87980  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 53379  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 46720  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 171656 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 412371 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 123837 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 89733  | 18.91 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.5%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 88445  | 19.35 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.8%  |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 53537  | 19.15 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.8%  |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 397920 | 20.35 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.7% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 376353 | 20.57 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.9% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 50688  | 20.10 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.5% |          |
| 13C3-PFHxS                         | 5.947                | 402.0 -> 99.0  | 50793  | 20.10 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.5% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 327973 | 20.11 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.5% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 336432 | 20.15 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.8% |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 293948 | 19.97 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.9%  |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 222469 | 20.09 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.5% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 338148 | 20.30 µg/L        | 0.000    |

## Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 375453 | 20.25 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 214661 | 20.40 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.0% |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 321729 | 20.34 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.7% |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 77976  | 20.24 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.2% |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 303367 | 20.30 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 46738  | 19.69 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.4%  |          |
| 13C3-HFPO-DA          | 5.255                | 287.0 -> 169.0 | 171656 | 102.80 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 102.8% |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 412371 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 123837 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

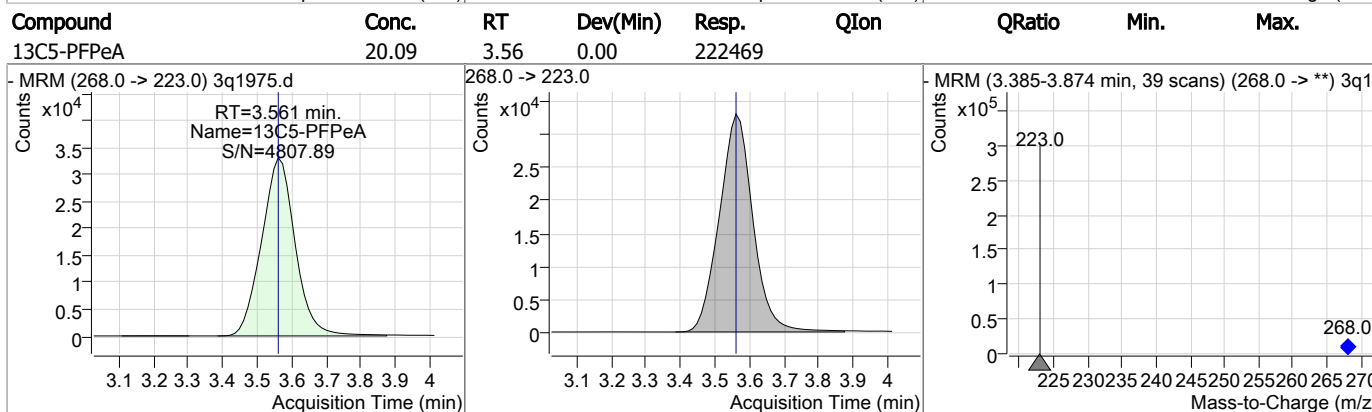
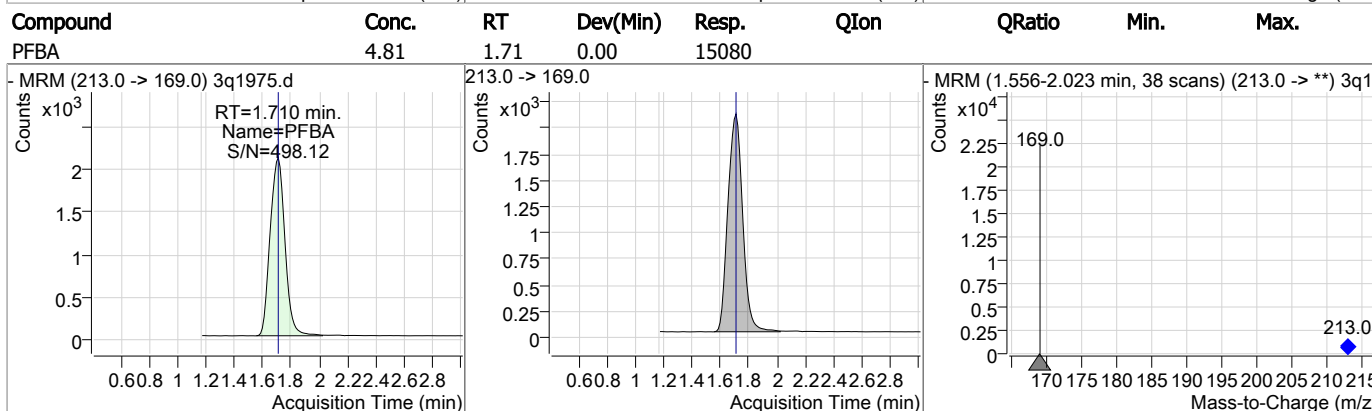
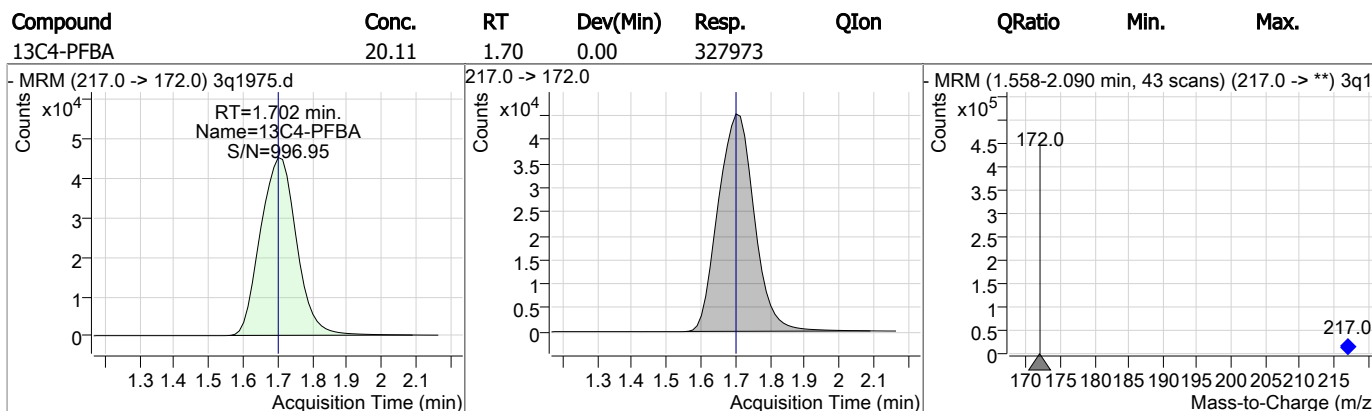
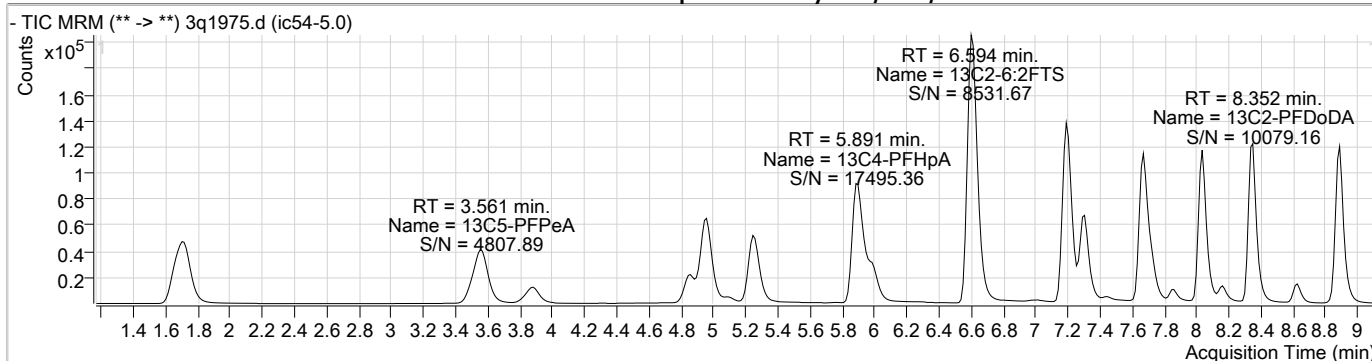
## Target Compounds

| Compound     | RT    | QIon           | Resp. | Conc. Units | QValue |
|--------------|-------|----------------|-------|-------------|--------|
| 4:2FTS       | 4.848 | 327.0 -> 307.0 | 12939 | 5.27 µg/L   | 98     |
| 6:2FTS       | 6.595 | 427.0 -> 407.0 | 10682 | 4.92 µg/L   | 97     |
| 8:2FTS       | 7.702 | 527.0 -> 507.0 | 6952  | 5.26 µg/L   | 94     |
| EtFOSAA      | 7.861 | 584.0 -> 419.0 | 5218  | 4.99 µg/L   | 98     |
| FOSA         | 7.313 | 498.0 -> 78.0  | 23718 | 4.94 µg/L   | 98     |
| MeFOSAA      | 7.735 | 570.0 -> 419.0 | 5994  | 4.79 µg/L   | 94     |
| PFBA         | 1.710 | 213.0 -> 169.0 | 15080 | 4.81 µg/L   | 100    |
| PFBS         | 3.883 | 299.0 -> 80.0  | 17063 | 4.82 µg/L   | 99     |
| PFDA         | 7.678 | 513.0 -> 469.0 | 38762 | 4.84 µg/L   | 97     |
| PFDoDA       | 8.354 | 613.0 -> 569.0 | 42540 | 4.69 µg/L   | 99     |
| PFDS         | 8.011 | 599.0 -> 80.0  | 5839  | 5.07 µg/L   | 99     |
| PFHpA        | 5.894 | 363.0 -> 319.0 | 71566 | 4.78 µg/L   | 99     |
| PFHpS        | 6.618 | 449.0 -> 80.0  | 12118 | 4.98 µg/L   | 98     |
| PFHxA        | 4.965 | 313.0 -> 269.0 | 24842 | 4.72 µg/L   | 99     |
| PFHxS        | 5.937 | 399.0 -> 80.0  | 13312 | 4.74 µg/L   | m 100  |
| PFNA         | 7.201 | 463.0 -> 419.0 | 44183 | 4.66 µg/L   | 100    |
| PFNS         | 7.648 | 549.0 -> 80.0  | 11060 | 5.25 µg/L   | 96     |
| PFOA         | 6.611 | 413.0 -> 369.0 | 42099 | 4.89 µg/L   | 100    |
| PFOS         | 7.186 | 499.0 -> 80.0  | 17519 | 4.86 µg/L   | m 97   |
| PFPeA        | 3.564 | 263.0 -> 219.0 | 53978 | 4.82 µg/L   | 100    |
| PFPeS        | 5.094 | 349.0 -> 80.0  | 10813 | 4.91 µg/L   | 97     |
| PFTeDA       | 8.890 | 713.0 -> 669.0 | 56140 | 4.80 µg/L   | 100    |
| PFTrDA       | 8.628 | 663.0 -> 619.0 | 47824 | 4.78 µg/L   | 100    |
| PFUnDA       | 8.041 | 563.0 -> 519.0 | 39653 | 4.88 µg/L   | 100    |
| 11Cl-PF3OUdS | 8.162 | 631.0 -> 451.0 | 37270 | 4.89 µg/L   | 100    |
| 9Cl-PF3ONS   | 7.446 | 531.0 -> 351.0 | 9244  | 4.89 µg/L   | 100    |
| ADONA        | 5.994 | 377.0 -> 251.0 | 94926 | 4.76 µg/L   | 100    |
| HFPO-DA      | 5.259 | 329.0 -> 169.0 | 67650 | 23.22 µg/L  | 99     |

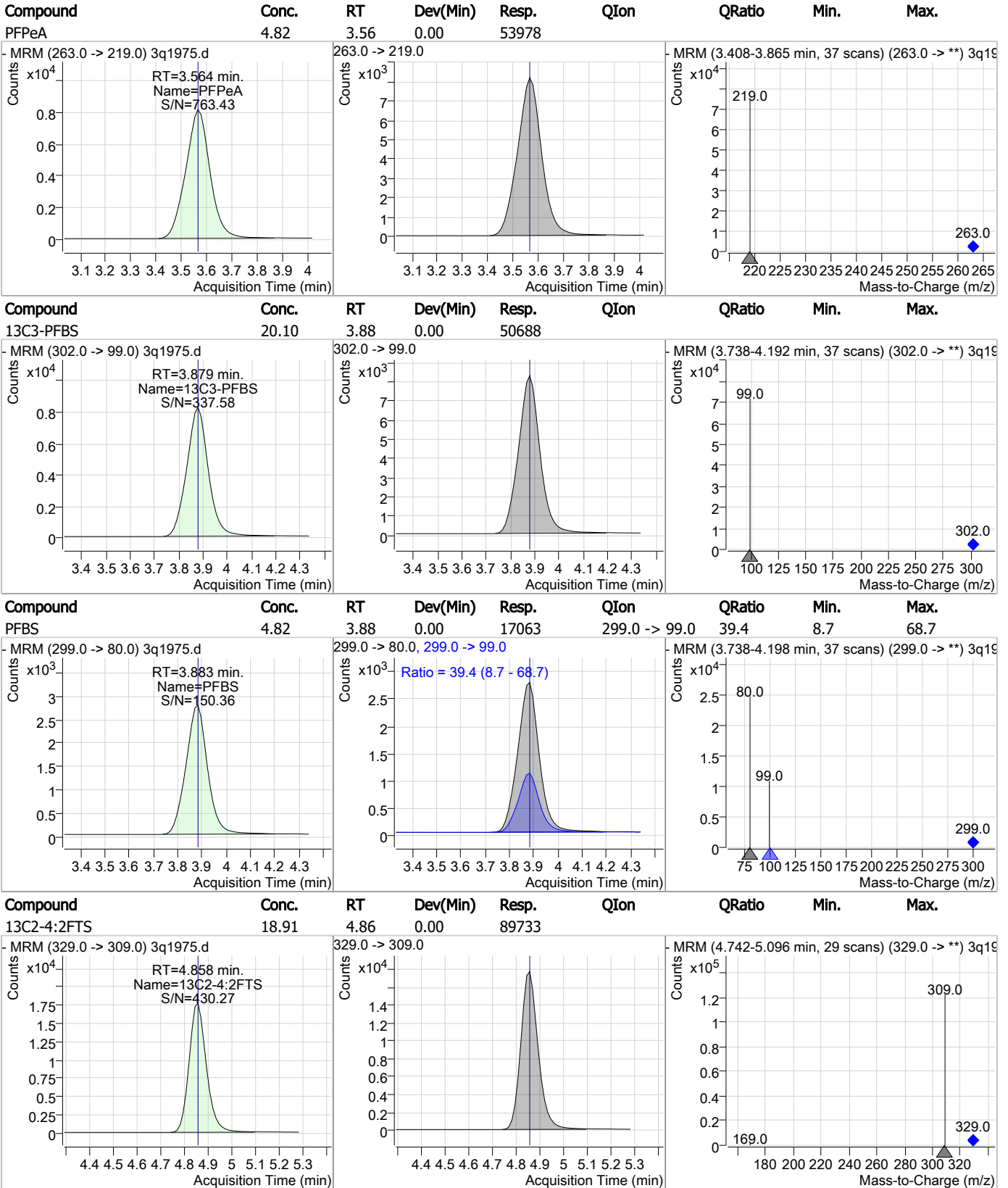
# = Qualifier out of range, m = manually integrated, + = Area summed



### Perfluorinated Compounds by LC/MS/MS



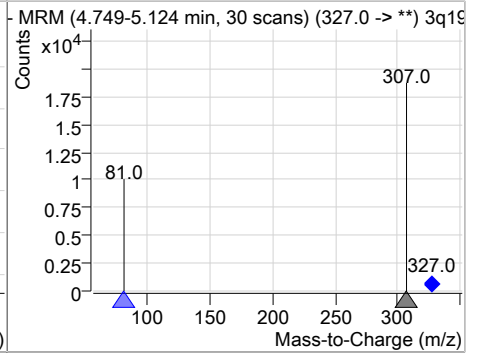
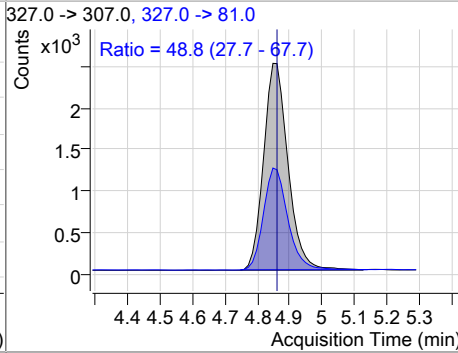
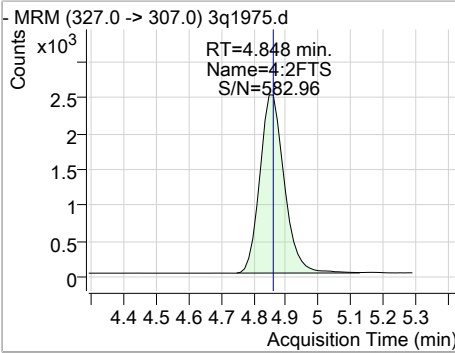
### Perfluorinated Compounds by LC/MS/MS



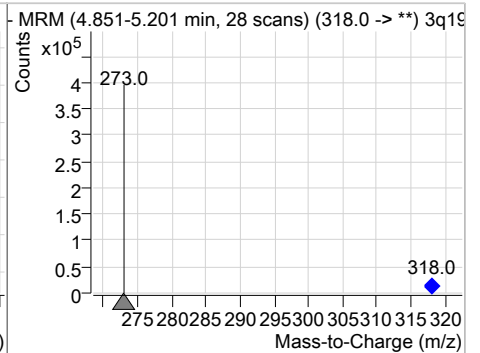
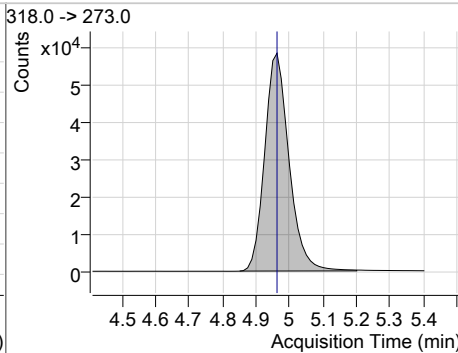
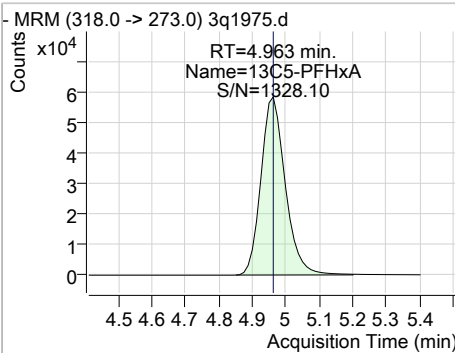
7.6.36  
7

### Perfluorinated Compounds by LC/MS/MS

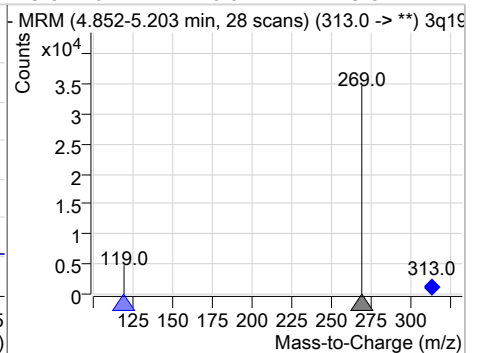
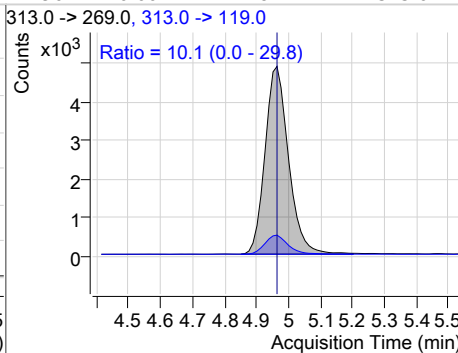
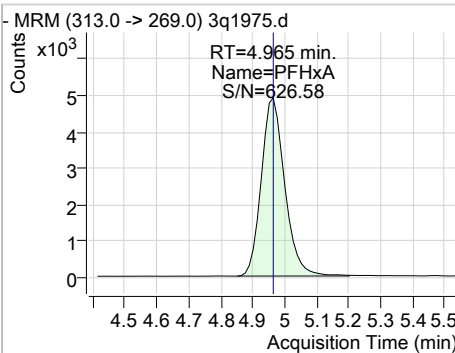
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 5.27  | 4.85 | -0.01    | 12939 | 327.0 -> 81.0 | 48.8   | 27.7 | 67.7 |



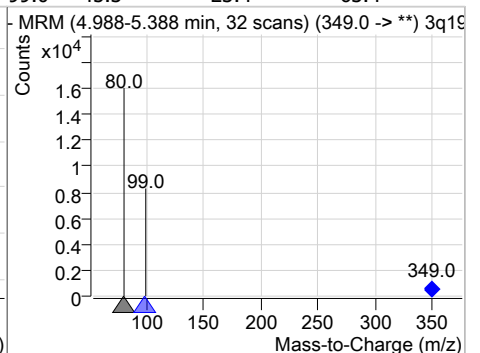
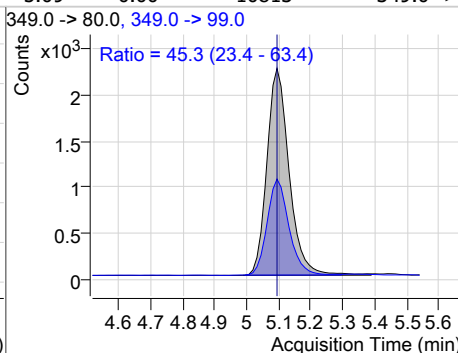
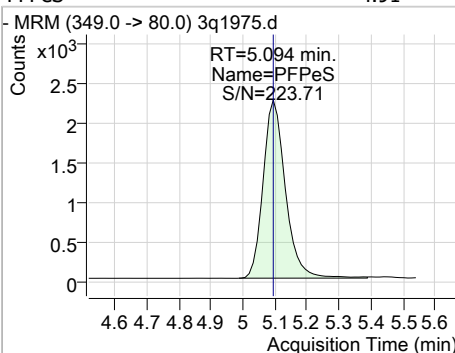
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 19.97 | 4.96 | 0.00     | 293948 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 4.72  | 4.96 | 0.00     | 24842 | 313.0 -> 119.0 | 10.1   | 0.0  | 29.8 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 4.91  | 5.09 | 0.00     | 10813 | 349.0 -> 99.0 | 45.3   | 23.4 | 63.4 |



### Perfluorinated Compounds by LC/MS/MS

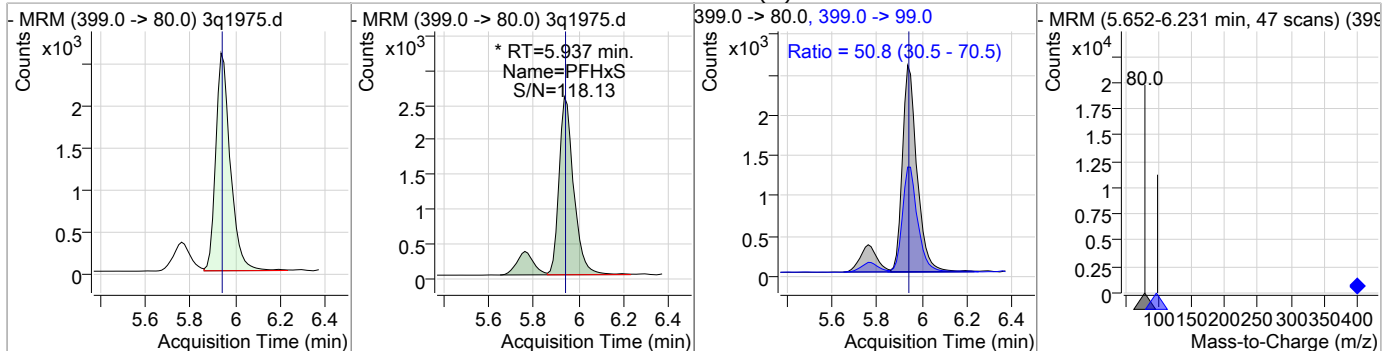
| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon     | QRatio | Min. | Max. |      |
|--------------|--------|------|----------|--------|----------|--------|------|------|------|
| 13C3-HFPO-DA | 102.80 | 5.25 | 0.00     | 171656 |          |        |      |      |      |
|              |        |      |          |        |          |        |      |      |      |
| HFPO-DA      | 23.22  | 5.26 | 0.00     | 67650  | 285.0 -> | 169.0  | 17.9 | 0.0  | 37.6 |
|              |        |      |          |        |          |        |      |      |      |
| 13C4-PFHpA   | 20.15  | 5.89 | 0.00     | 336432 |          |        |      |      |      |
|              |        |      |          |        |          |        |      |      |      |
| PFHpA        | 4.78   | 5.89 | 0.00     | 71566  | 363.0 -> | 169.0  | 7.4  | 0.0  | 27.2 |
|              |        |      |          |        |          |        |      |      |      |

7.6.36

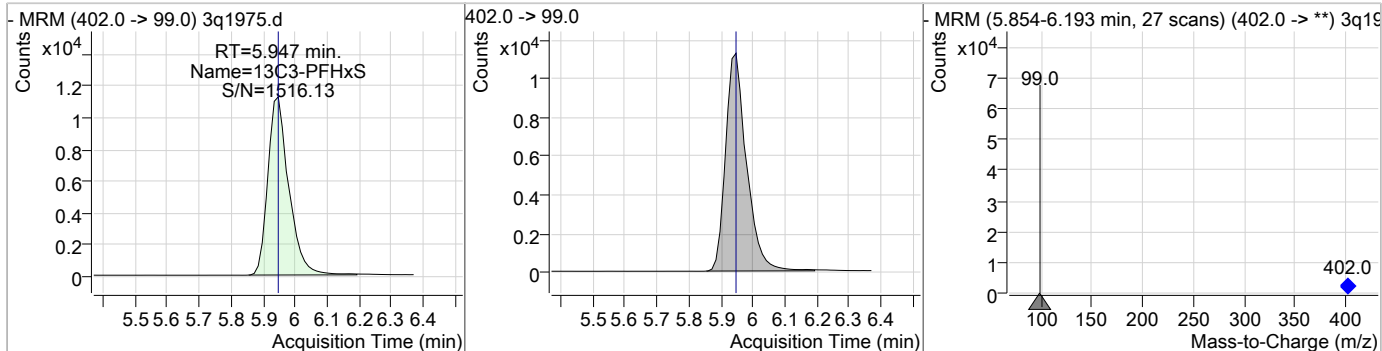
7

### Perfluorinated Compounds by LC/MS/MS

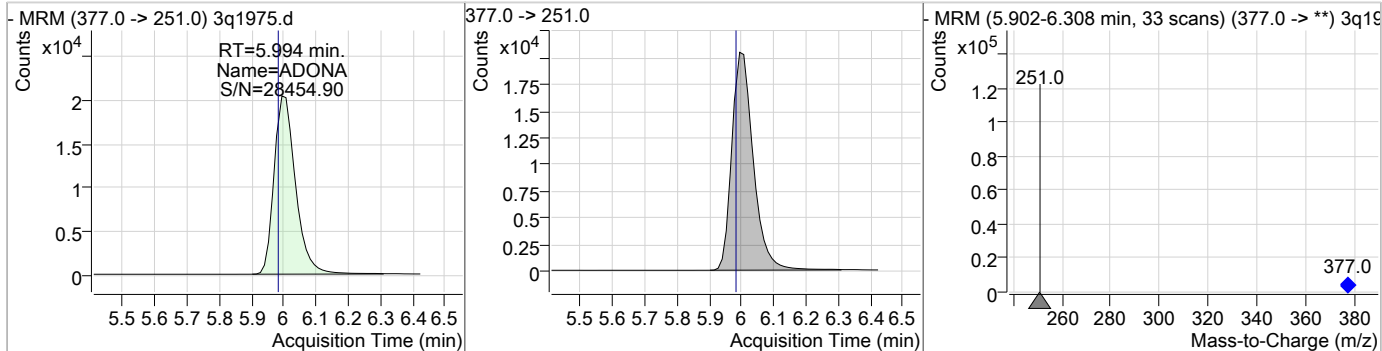
| Compound | Conc. | RT   | Dev(Min) | Resp.     | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-----------|---------------|--------|------|------|
| PFHxS    | 4.74  | 5.94 | 0.00     | 13312 (m) | 399.0 -> 99.0 | 50.8   | 30.5 | 70.5 |



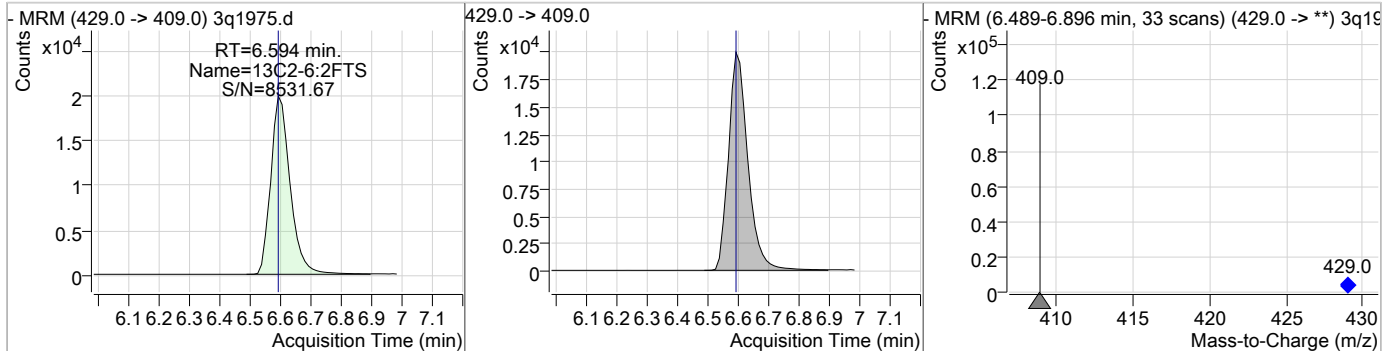
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 20.10 | 5.95 | 0.00     | 50793 |      |        |      |      |



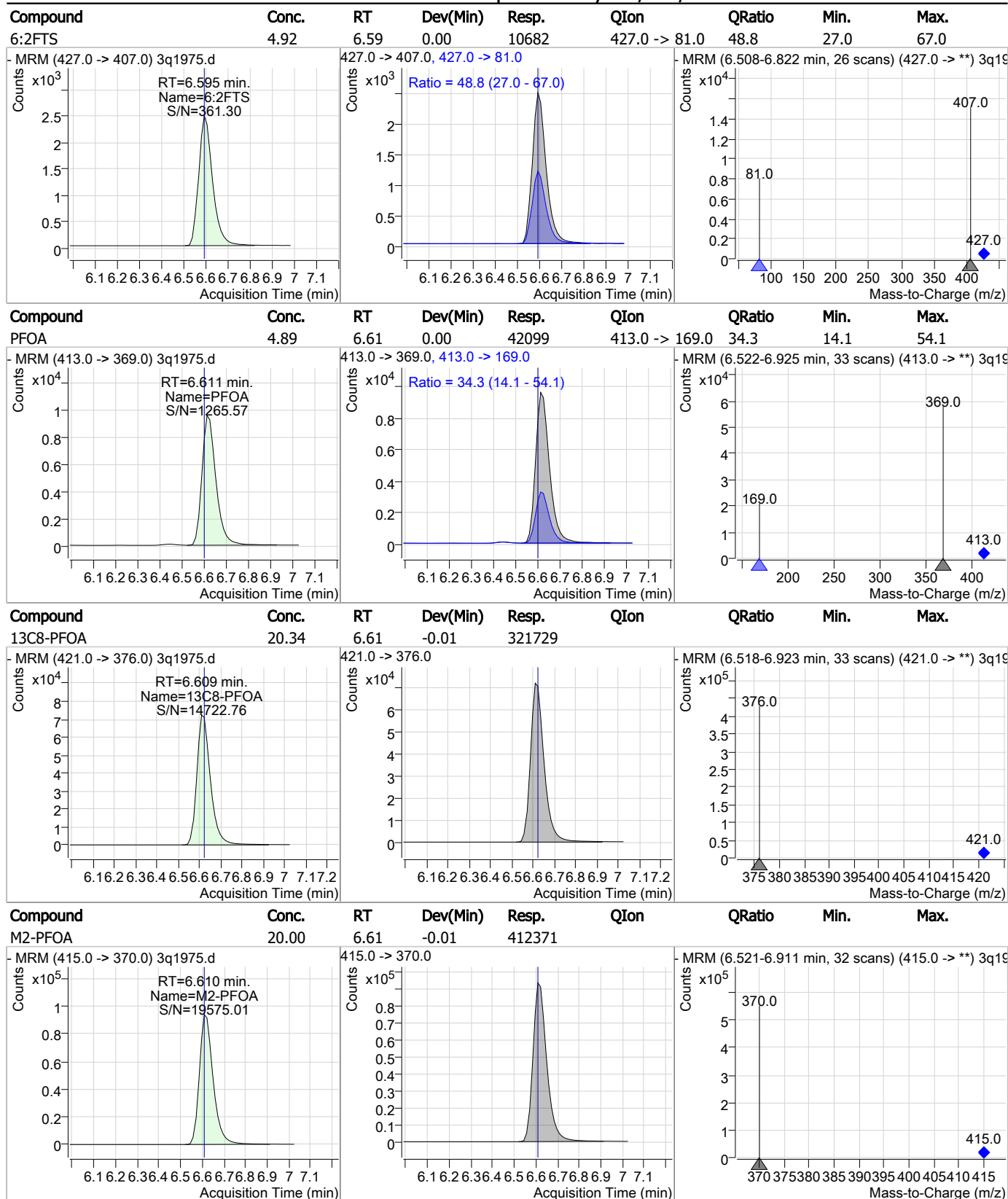
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|------|--------|------|------|
| ADONA    | 4.76  | 5.99 | 0.00     | 94926 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-6:2FTS | 19.35 | 6.59 | 0.00     | 88445 |      |        |      |      |



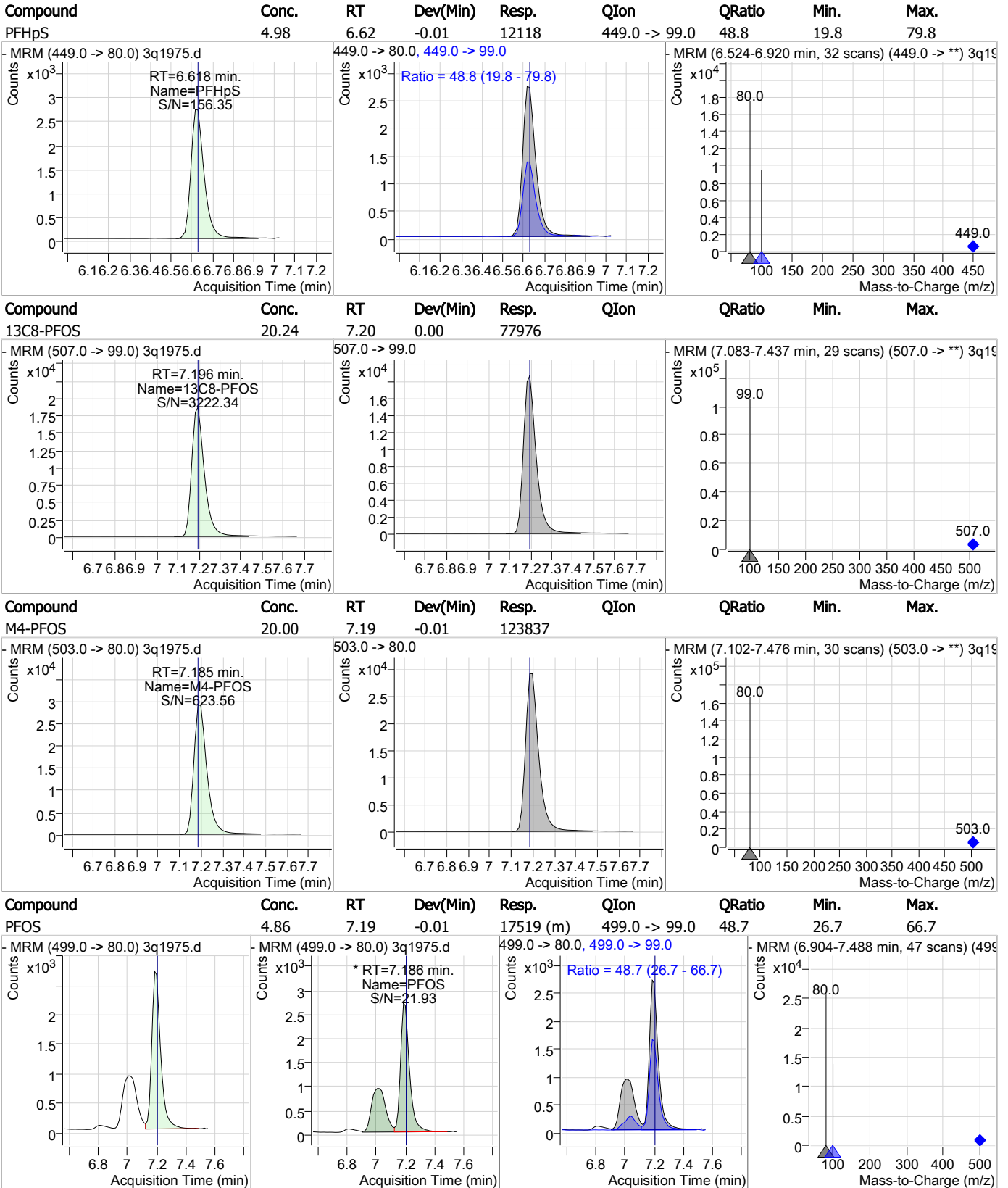
### Perfluorinated Compounds by LC/MS/MS



7.6.36

7

### Perfluorinated Compounds by LC/MS/MS



7.6.36  
7

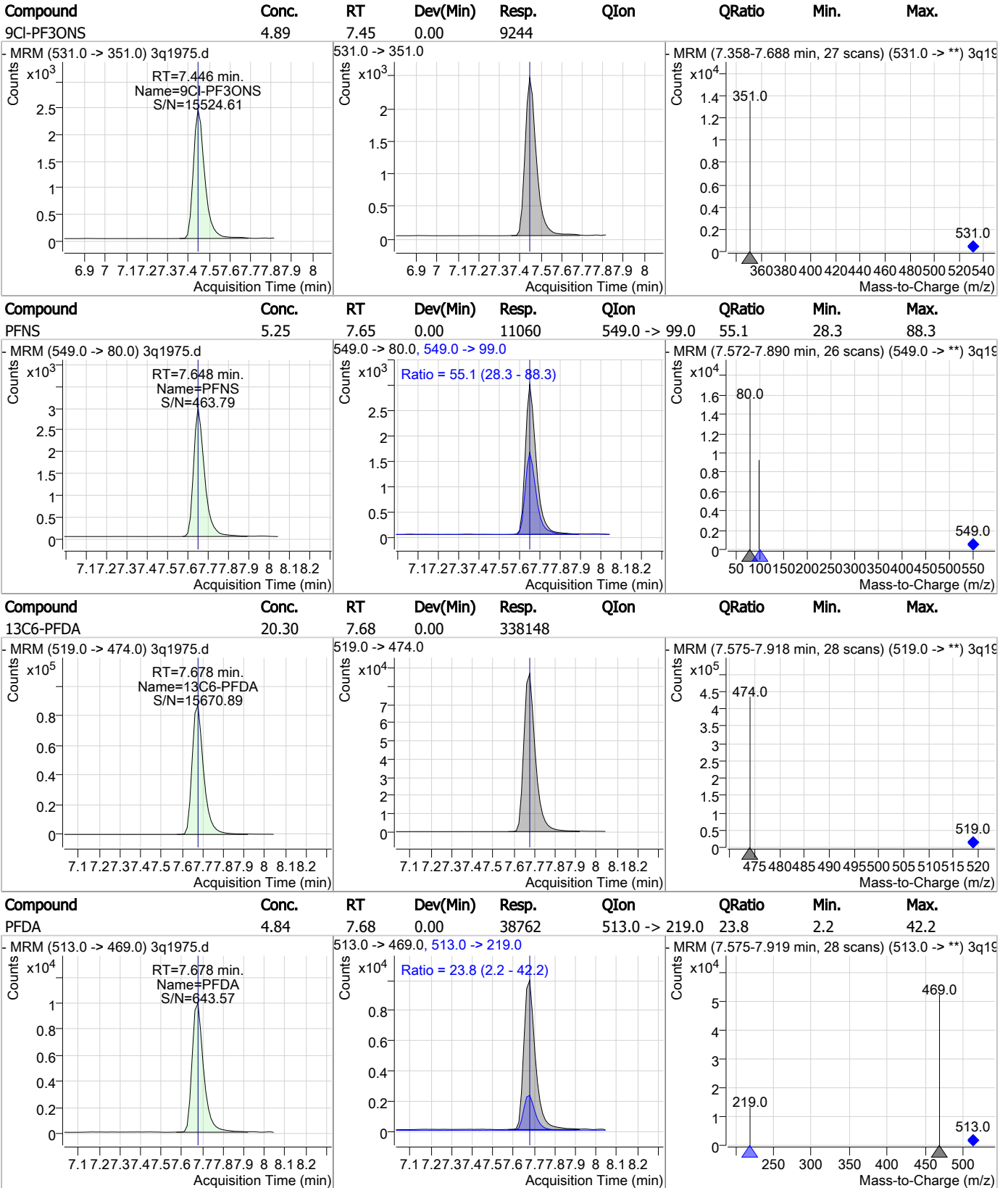
### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C9-PFNA | 20.30 | 7.20 | -0.01    | 303367 |                |        |      |      |
|           |       |      |          |        |                |        |      |      |
| PFNA      | 4.66  | 7.20 | -0.01    | 44183  | 463.0 -> 219.0 | 25.9   | 5.9  | 45.9 |
|           |       |      |          |        |                |        |      |      |
| 13C8-FOSA | 20.40 | 7.31 | 0.00     | 214661 |                |        |      |      |
|           |       |      |          |        |                |        |      |      |
| FOSA      | 4.94  | 7.31 | 0.00     | 23718  | 498.0 -> 478.0 | 3.6    | 0.0  | 23.0 |
|           |       |      |          |        |                |        |      |      |

7.6.36  
7

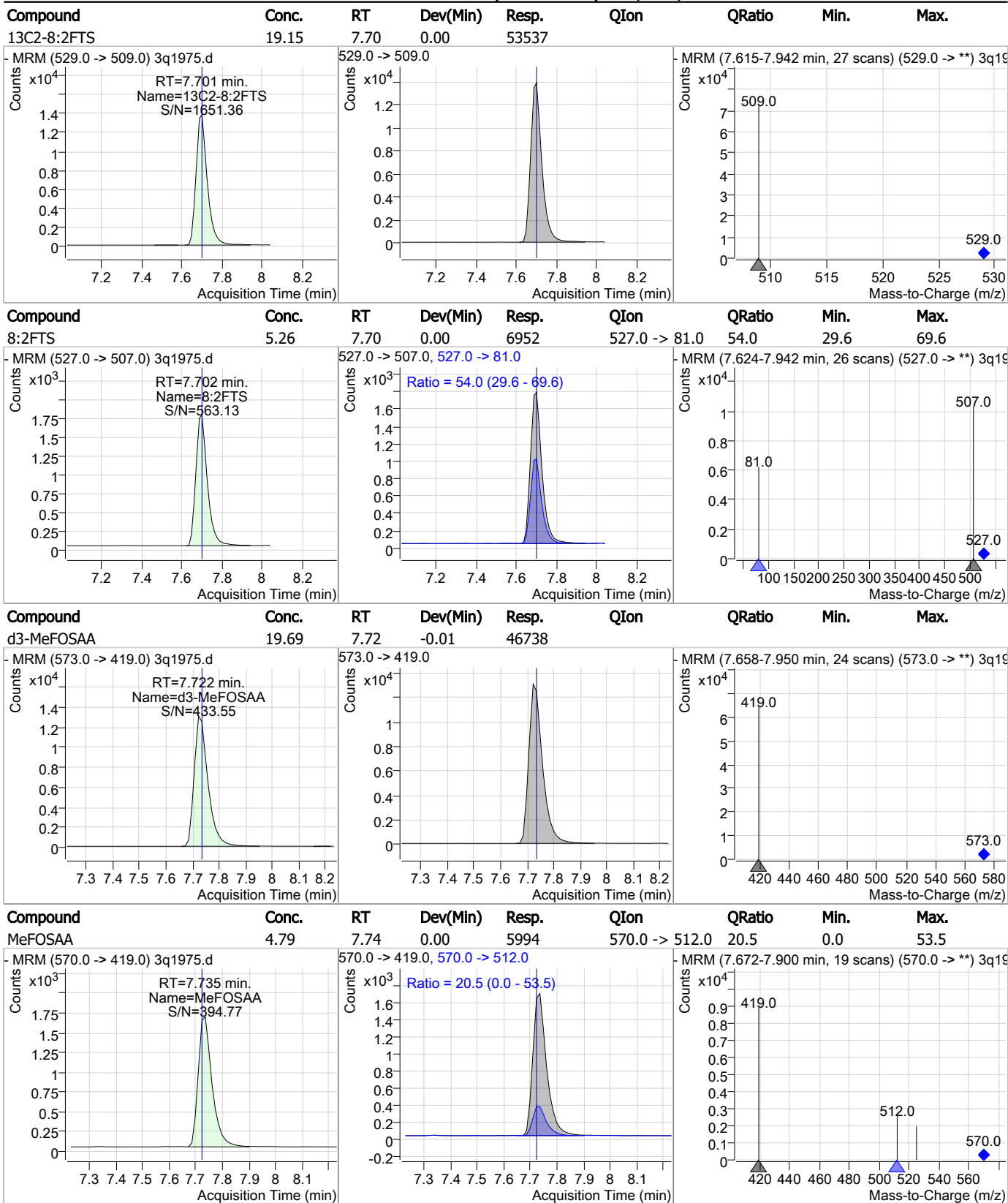


### Perfluorinated Compounds by LC/MS/MS



7.6.36  
7

### Perfluorinated Compounds by LC/MS/MS

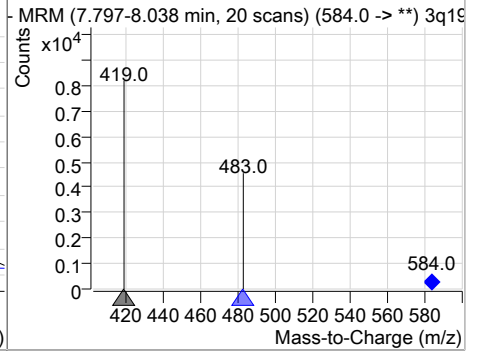
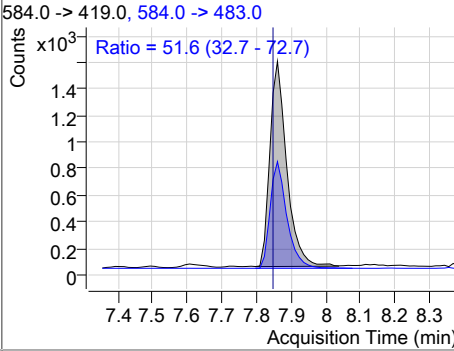
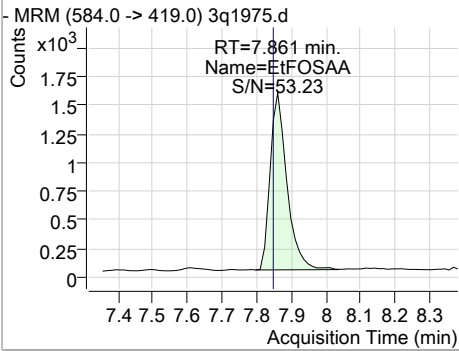


7.6.36

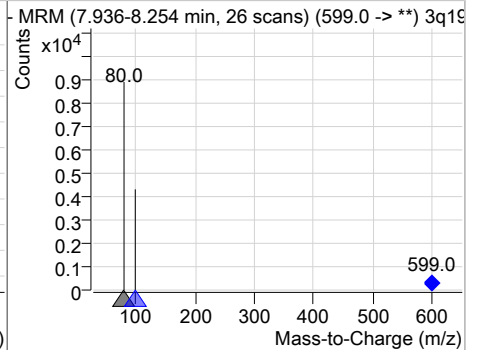
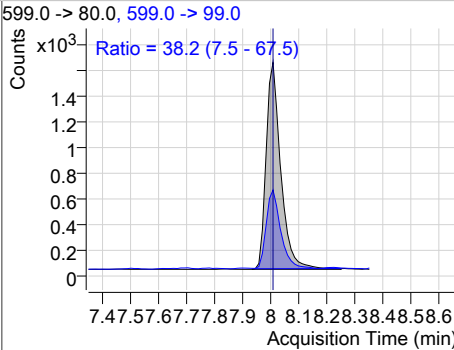
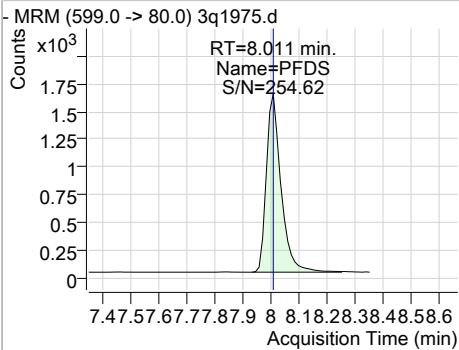
7

### Perfluorinated Compounds by LC/MS/MS

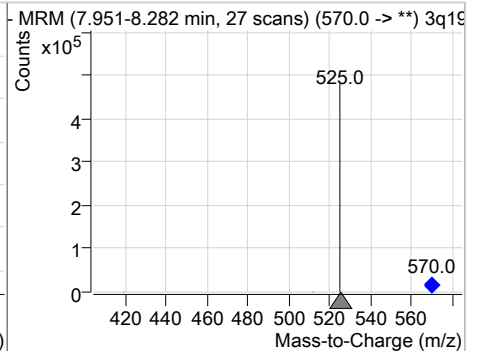
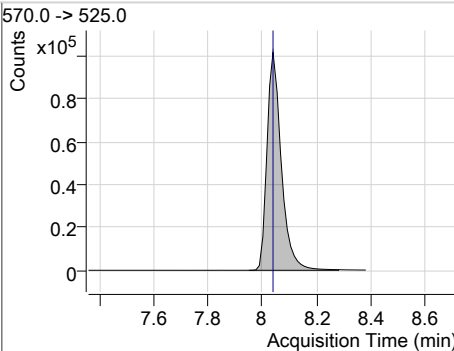
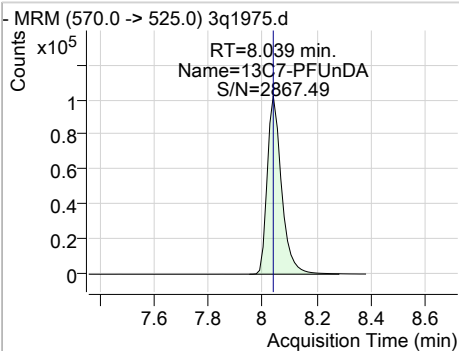
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 4.99  | 7.86 | 0.00     | 5218  | 584.0 -> 483.0 | 51.6   | 32.7 | 72.7 |



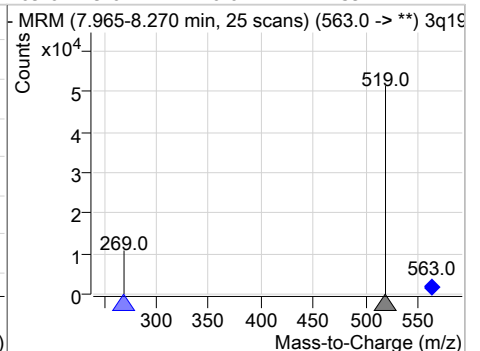
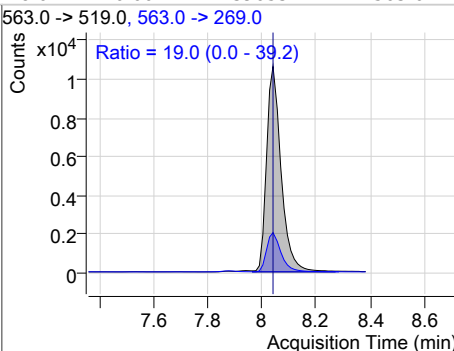
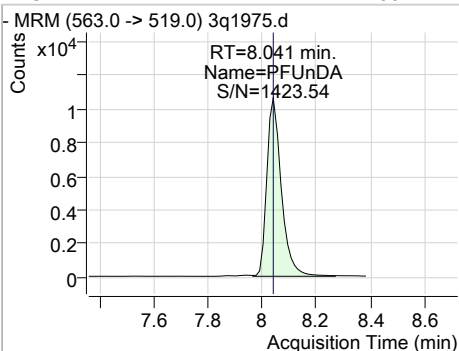
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 5.07  | 8.01 | 0.00     | 5839  | 599.0 -> 99.0 | 38.2   | 7.5  | 67.5 |



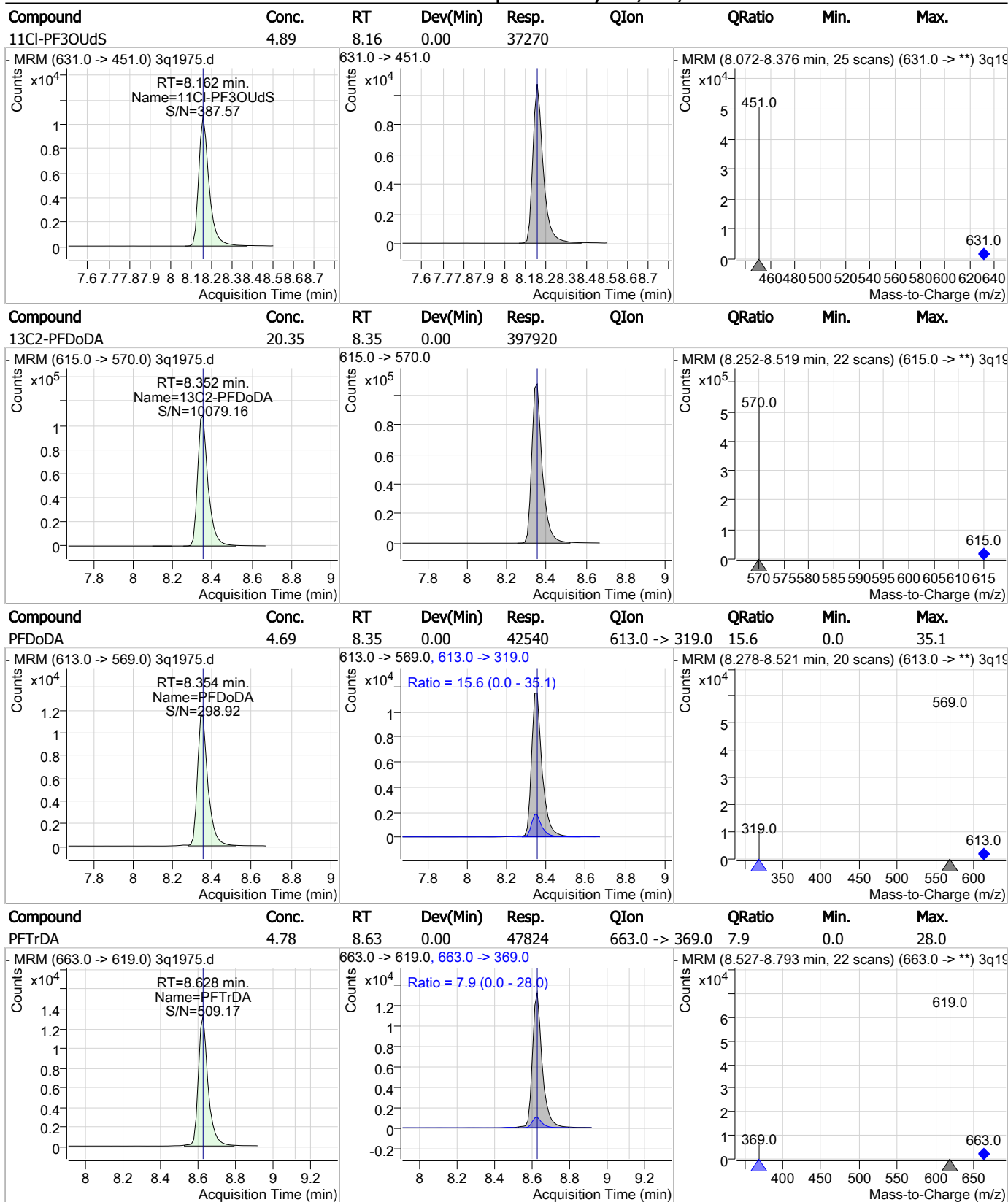
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 20.25 | 8.04 | 0.00     | 375453 | 570.0 -> 525.0 | 19.0   | 0.0  | 39.2 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFUnDA   | 4.88  | 8.04 | 0.00     | 39653 | 563.0 -> 269.0 | 19.0   | 0.0  | 39.2 |



### Perfluorinated Compounds by LC/MS/MS

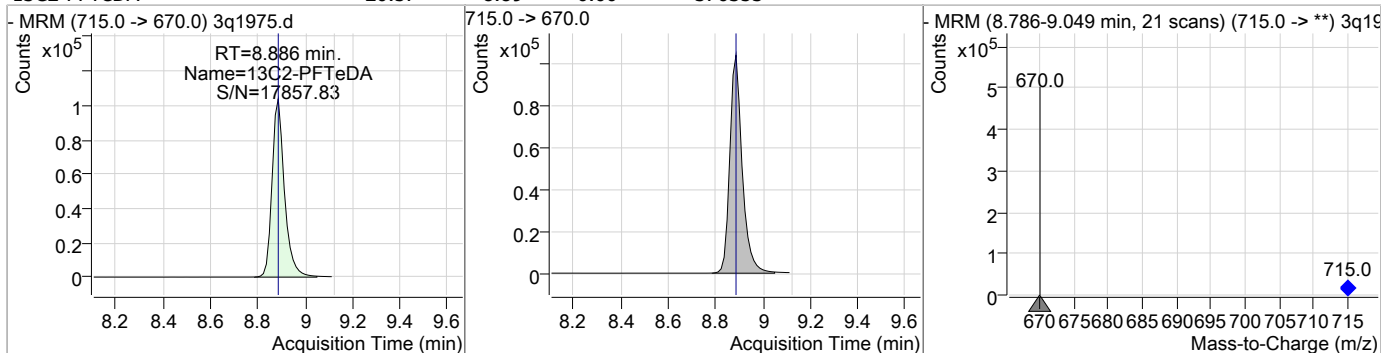


7.6.36

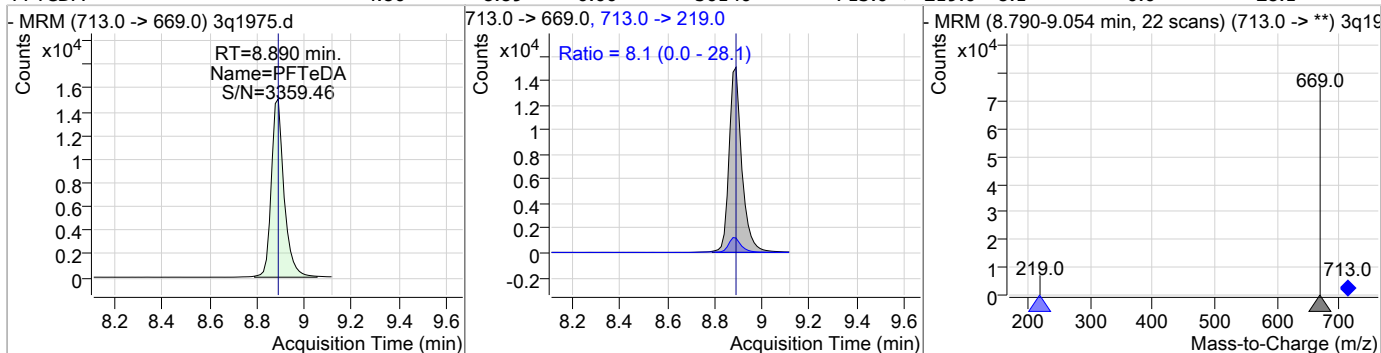
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.57 | 8.89 | 0.00     | 376353 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFTeDA   | 4.80  | 8.89 | 0.00     | 56140 | 713.0 -> 219.0 | 8.1    | 0.0  | 28.1 |



7.6.36  
7



# Manual Integration Approval Summary

**Sample Number:** S3Q54-IC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1975.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 10:40      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.36.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1976.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 10:55:23 AM  
 Sample Name : ic54-10  
 Vial : P3-A6  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.714                | 217.0 -> 172.0 | 327317 | 20.00 µg/L        | 0.013    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 218165 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 295386 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 332190 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 318672 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 297098 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 334317 | 20.00 µg/L        | -0.015   |
| M7-PFUnDA                          | 8.026                | 570.0 -> 525.0 | 376466 | 20.00 µg/L        | -0.013   |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 393818 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.874                | 715.0 -> 670.0 | 367980 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 7.298                | 506.0 -> 78.0  | 214289 | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 50469  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 50239  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 76371  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 90912  | 20.00 µg/L        | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 89172  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 53120  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 47115  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 173555 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 413568 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 124866 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 91022  | 19.18 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.9%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 88578  | 19.38 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.9%  |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 53224  | 19.04 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.2%  |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 391431 | 20.02 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.1% |          |
| 13C2-PFTeDA                        | 8.874                | 715.0 -> 670.0 | 367981 | 20.12 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.6% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 50010  | 19.83 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.1%  |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 50247  | 19.88 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.4%  |          |
| 13C4-PFBA                          | 1.714                | 217.0 -> 172.0 | 324904 | 19.92 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.6%  |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 331412 | 19.85 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.3%  |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 293388 | 19.94 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.7%  |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 219515 | 19.83 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.1%  |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 334429 | 20.08 µg/L        | -0.015   |

7.6.37  
7

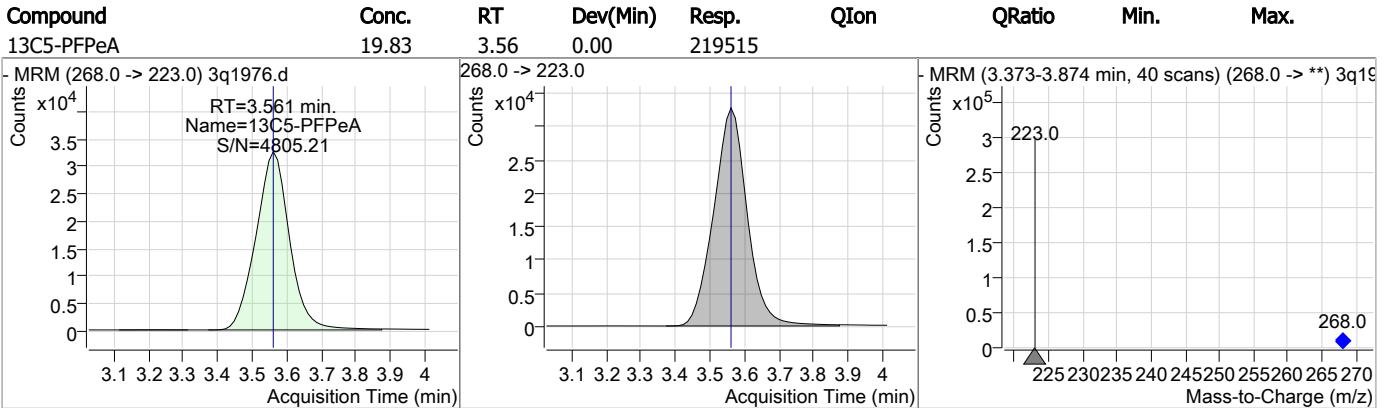
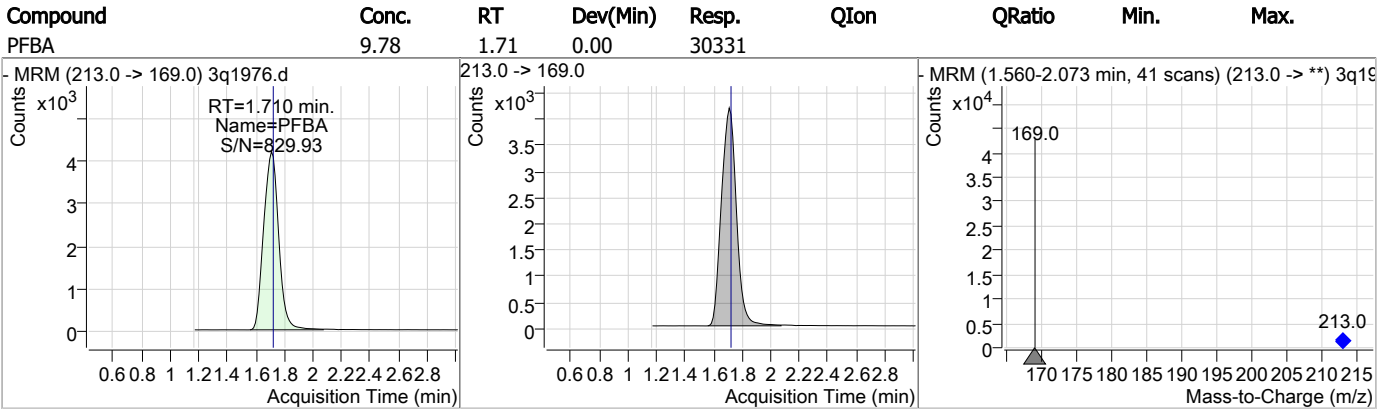
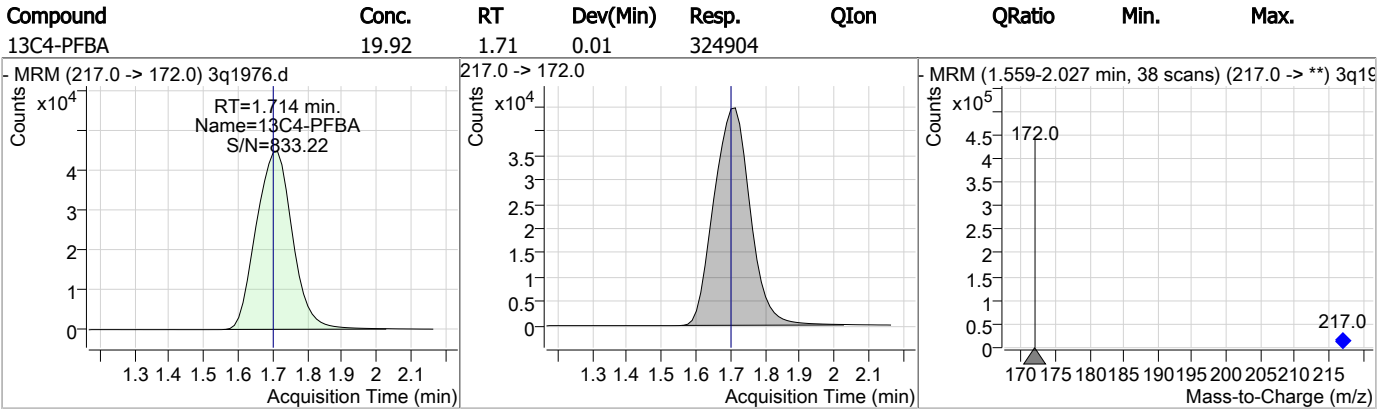
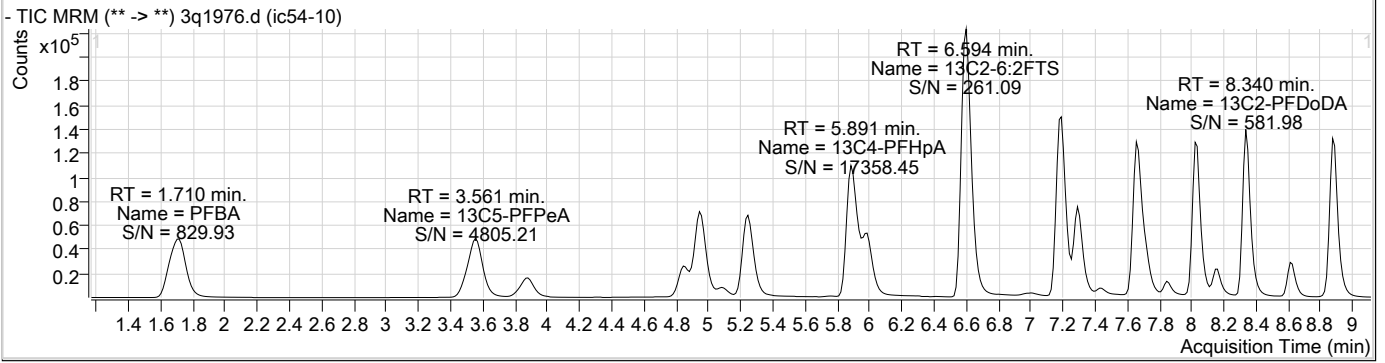
## Perfluorinated Compounds by LC/MS/MS

| Compound                | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min)      |
|-------------------------|----------------------|----------------|--------|-------------------|---------------|
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.4% |               |
| 13C7-PFUnDA             | 8.026                | 570.0 -> 525.0 | 376500 | 20.31 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 101.5% |               |
| 13C8-FOSA               | 7.298                | 506.0 -> 78.0  | 214239 | 20.36 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 101.8% |               |
| 13C8-PFOA               | 6.609                | 421.0 -> 376.0 | 318615 | 20.14 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.7% |               |
| 13C8-PFOS               | 7.183                | 507.0 -> 99.0  | 76324  | 19.81 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 99.1%  |               |
| 13C9-PFNA               | 7.201                | 472.0 -> 427.0 | 295908 | 19.80 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 99.0%  |               |
| d3-MeFOSAA              | 7.722                | 573.0 -> 419.0 | 47215  | 19.89 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 99.4%  |               |
| 13C3-HFPO-DA            | 5.255                | 287.0 -> 169.0 | 173555 | 103.93 µg/L       | 0.000         |
| Spiked Amount: 100.00   | Range: 50.0 - 150.0% |                |        | Recovery = 103.9% |               |
| M2-PFOA                 | 6.610                | 415.0 -> 370.0 | 413568 | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |               |
| M4-PFOS                 | 7.185                | 503.0 -> 80.0  | 124866 | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |               |
| <b>Target Compounds</b> |                      |                |        |                   | <b>QValue</b> |
| 4:2FTS                  | 4.848                | 327.0 -> 307.0 | 26381  | 10.61 µg/L        | 99            |
| 6:2FTS                  | 6.595                | 427.0 -> 407.0 | 22118  | 10.06 µg/L        | 100           |
| 8:2FTS                  | 7.689                | 527.0 -> 507.0 | 13789  | 10.49 µg/L        | 94            |
| EtFOSAA                 | 7.848                | 584.0 -> 419.0 | 10698  | 10.13 µg/L        | 99            |
| FOSA                    | 7.301                | 498.0 -> 78.0  | 48034  | 10.01 µg/L        | 99            |
| MeFOSAA                 | 7.723                | 570.0 -> 419.0 | 11936  | 9.47 µg/L         | 99            |
| PFBA                    | 1.710                | 213.0 -> 169.0 | 30331  | 9.78 µg/L         | 100           |
| PFBS                    | 3.870                | 299.0 -> 80.0  | 34651  | 9.87 µg/L         | 100           |
| PFDA                    | 7.664                | 513.0 -> 469.0 | 79266  | 10.01 µg/L        | 99            |
| PFDoDA                  | 8.341                | 613.0 -> 569.0 | 89066  | 9.92 µg/L         | 98            |
| PFDS                    | 7.999                | 599.0 -> 80.0  | 11187  | 9.65 µg/L         | 94            |
| PFHpA                   | 5.894                | 363.0 -> 319.0 | 143424 | 9.76 µg/L         | 100           |
| PFHpS                   | 6.618                | 449.0 -> 80.0  | 23886  | 9.99 µg/L         | 99            |
| PFHxA                   | 4.952                | 313.0 -> 269.0 | 52285  | 9.94 µg/L         | 100           |
| PFHxS                   | 5.937                | 399.0 -> 80.0  | 27393  | 9.92 µg/L         | m 100         |
| PFNA                    | 7.201                | 463.0 -> 419.0 | 92647  | 10.04 µg/L        | 99            |
| PFNS                    | 7.635                | 549.0 -> 80.0  | 21189  | 10.26 µg/L        | 99            |
| PFOA                    | 6.611                | 413.0 -> 369.0 | 84066  | 9.85 µg/L         | 98            |
| PFOS                    | 7.186                | 499.0 -> 80.0  | 34496  | 9.75 µg/L         | m 99          |
| PFPeA                   | 3.564                | 263.0 -> 219.0 | 109835 | 9.94 µg/L         | 100           |
| PFPeS                   | 5.082                | 349.0 -> 80.0  | 21575  | 9.88 µg/L         | 99            |
| PFTeDA                  | 8.877                | 713.0 -> 669.0 | 113330 | 9.90 µg/L         | 99            |
| PFTrDA                  | 8.615                | 663.0 -> 619.0 | 97034  | 9.91 µg/L         | 99            |
| PFUnDA                  | 8.028                | 563.0 -> 519.0 | 80280  | 9.83 µg/L         | 100           |
| 11Cl-PF3OUdS            | 8.162                | 631.0 -> 451.0 | 74982  | 9.94 µg/L         | 100           |
| 9Cl-PF3ONS              | 7.434                | 531.0 -> 351.0 | 18674  | 9.93 µg/L         | 100           |
| ADONA                   | 5.994                | 377.0 -> 251.0 | 193842 | 9.79 µg/L         | 100           |
| HFPO-DA                 | 5.247                | 329.0 -> 169.0 | 137417 | 46.66 µg/L        | 99            |

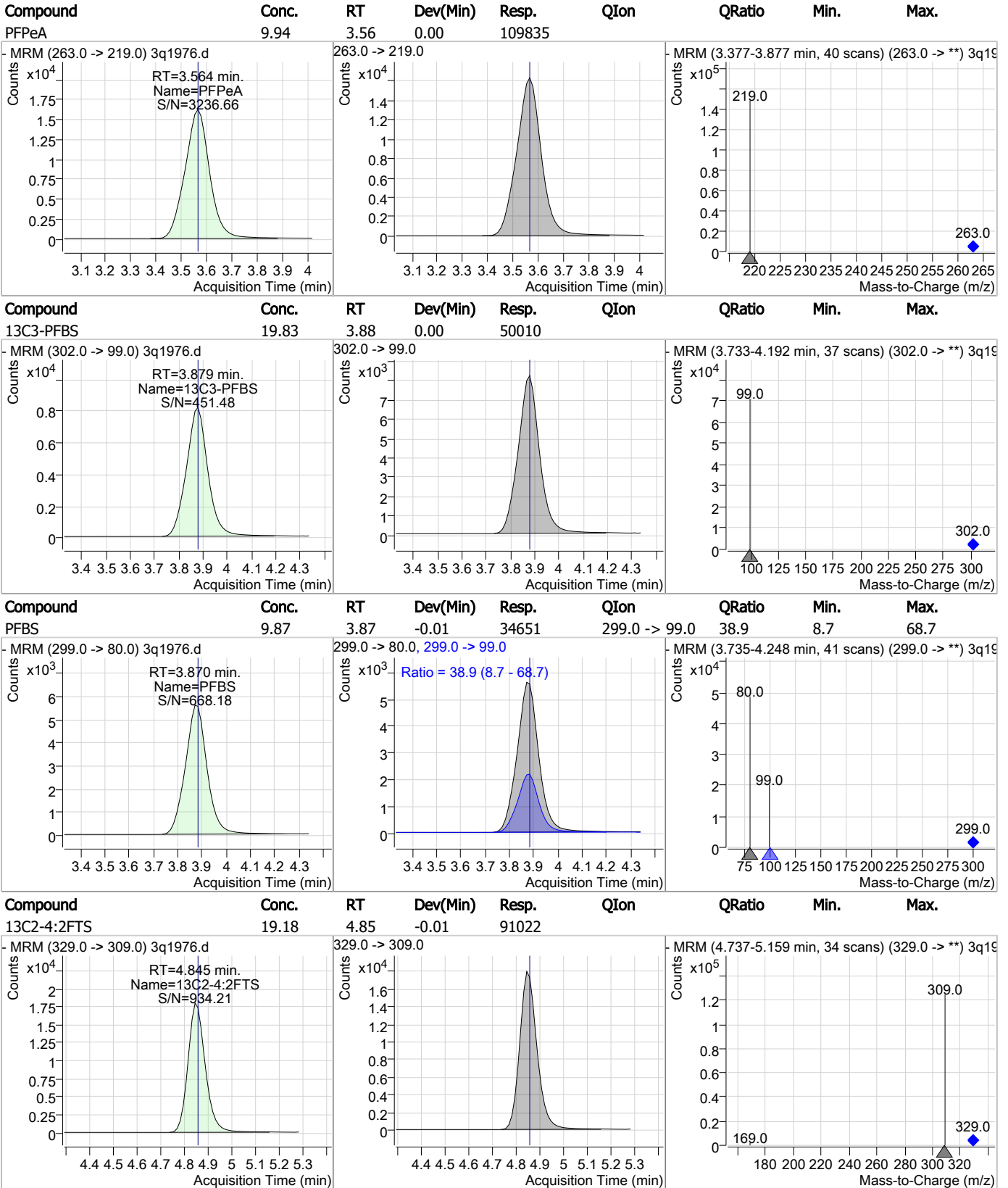
# = Qualifier out of range, m = manually integrated, + = Area summed



### Perfluorinated Compounds by LC/MS/MS



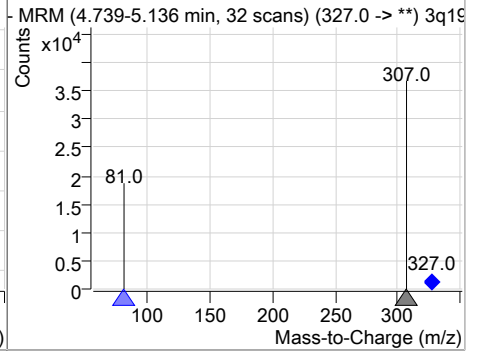
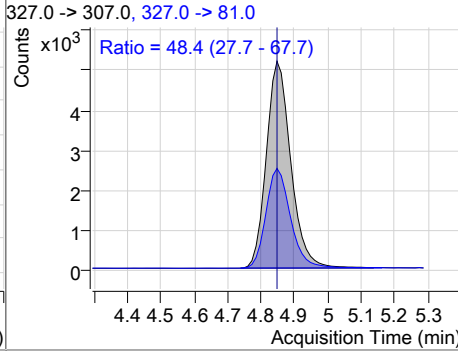
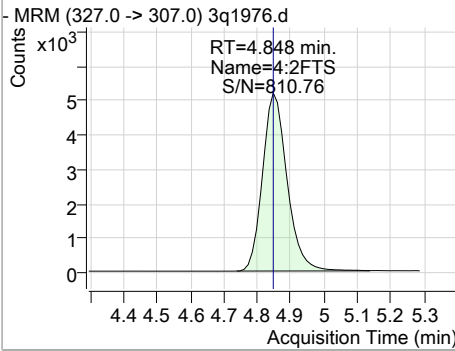
### Perfluorinated Compounds by LC/MS/MS



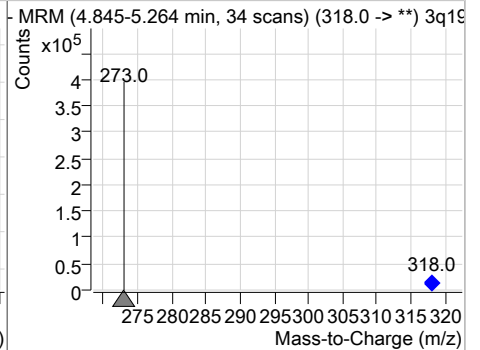
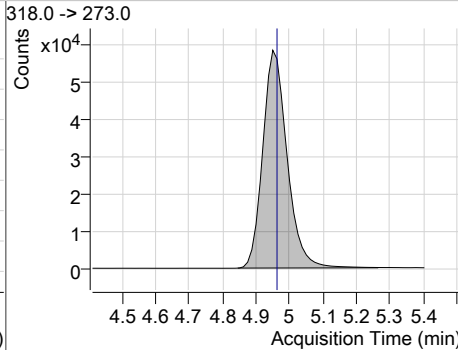
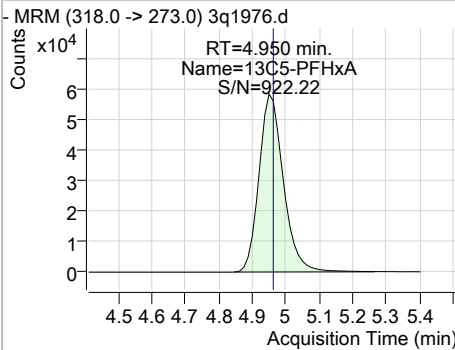
7.6.37  
7

### Perfluorinated Compounds by LC/MS/MS

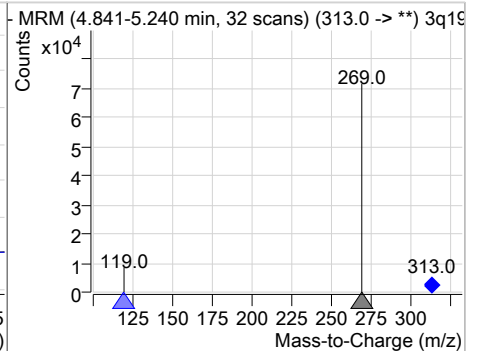
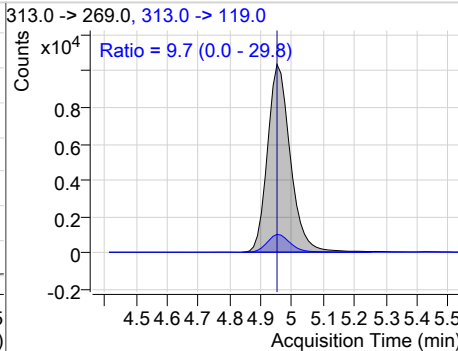
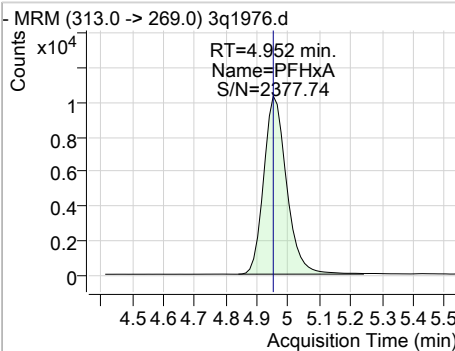
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 10.61 | 4.85 | -0.01    | 26381 | 327.0 -> 81.0 | 48.4   | 27.7 | 67.7 |



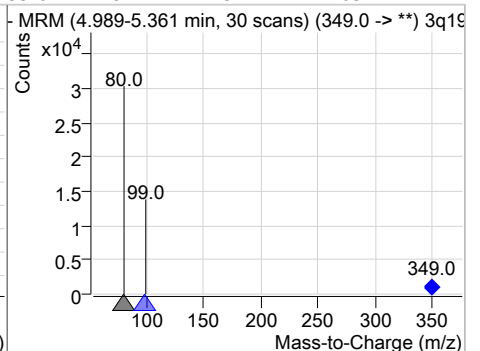
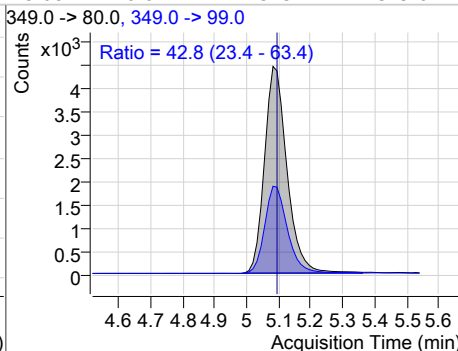
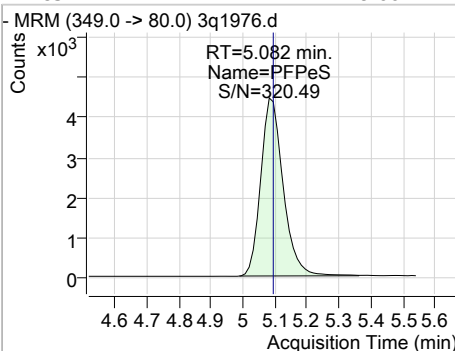
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C5-PFHxA | 19.94 | 4.95 | -0.01    | 293388 | 318.0 -> 273.0 | 9.7    | 0.0  | 29.8 |



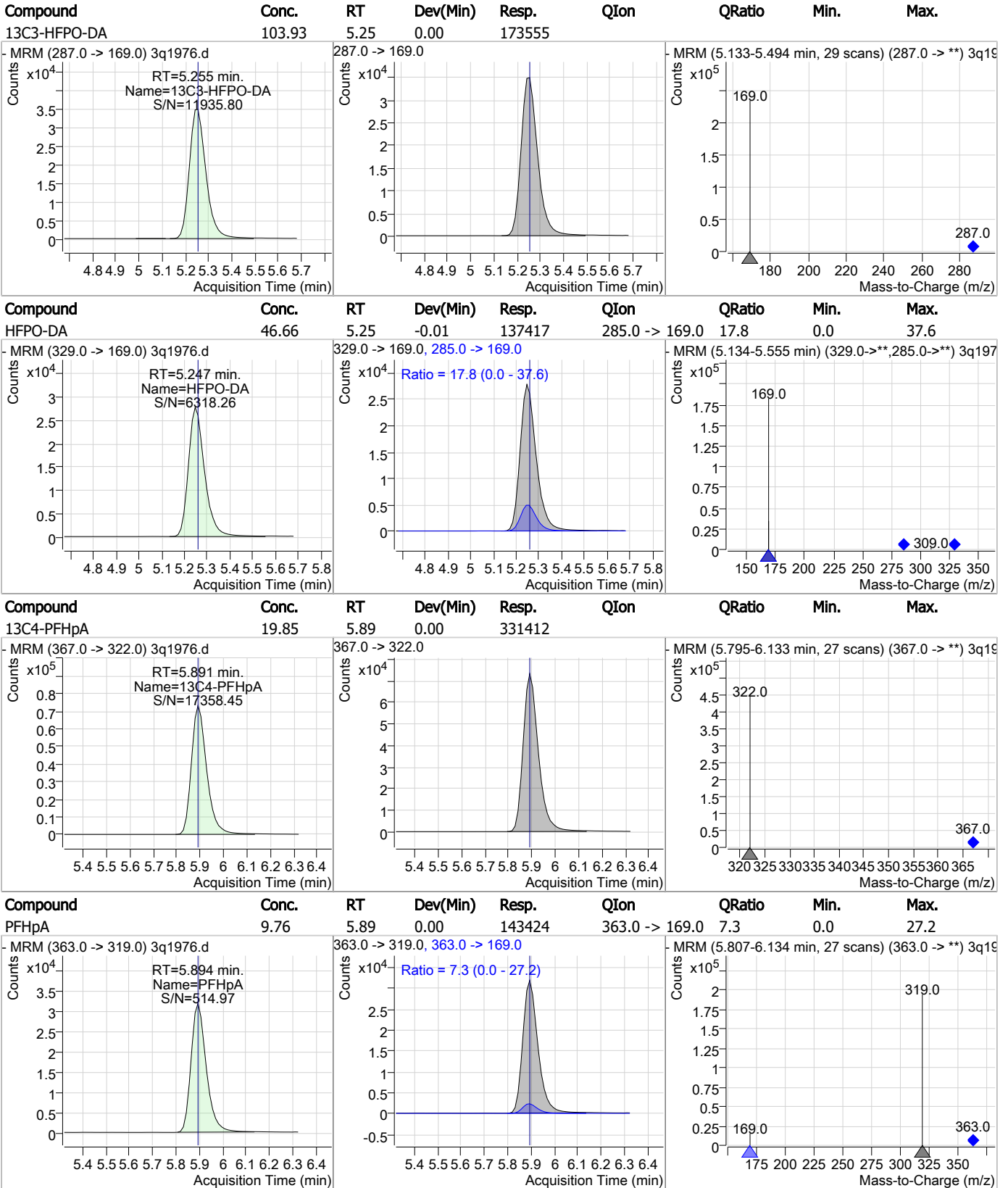
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 9.94  | 4.95 | -0.01    | 52285 | 313.0 -> 119.0 | 9.7    | 0.0  | 29.8 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 9.88  | 5.08 | -0.01    | 21575 | 349.0 -> 99.0 | 42.8   | 23.4 | 63.4 |

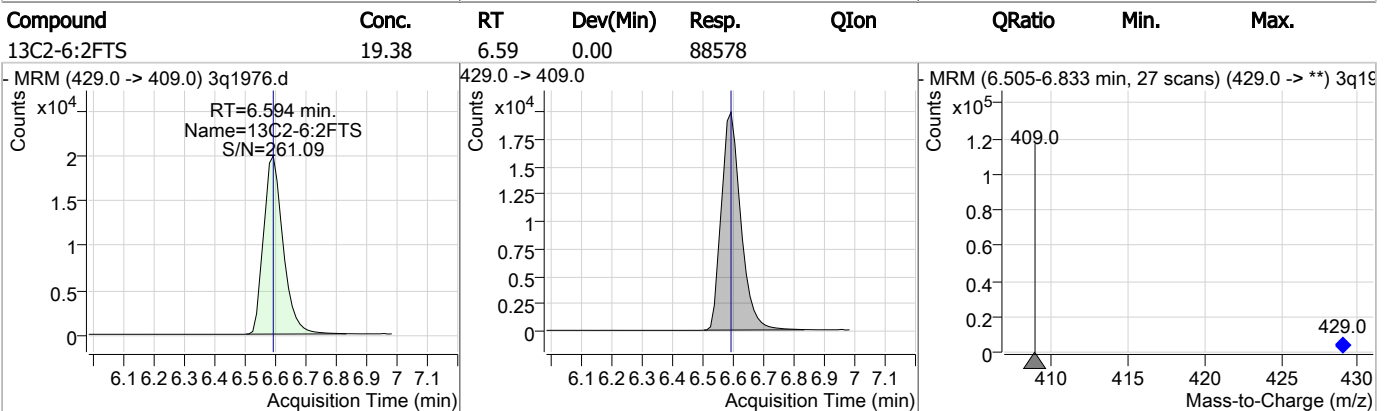
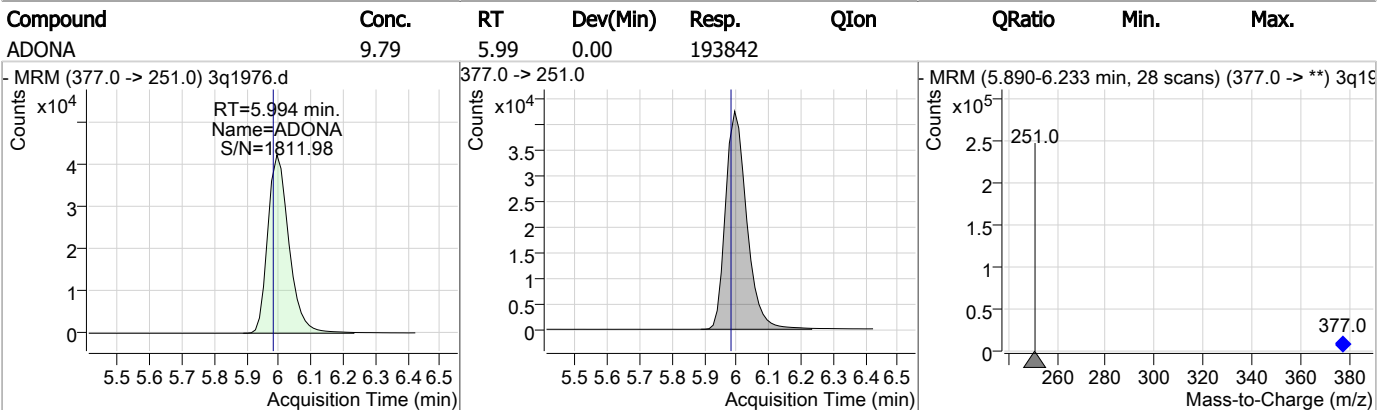
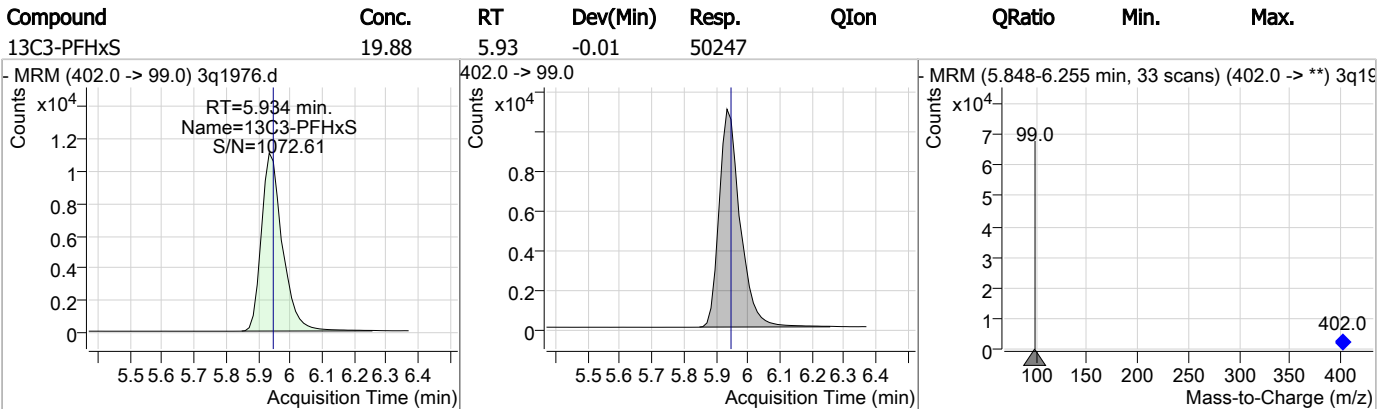
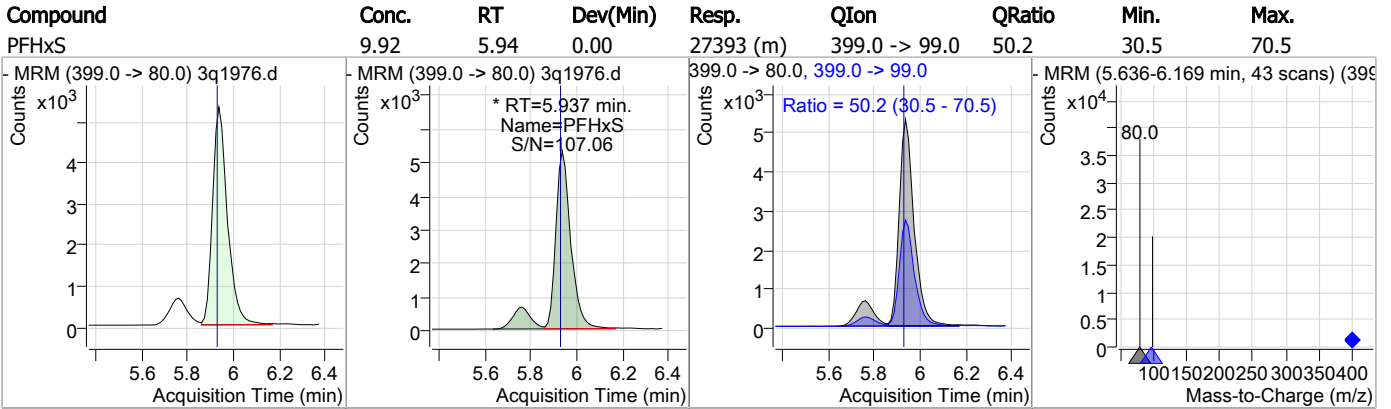


### Perfluorinated Compounds by LC/MS/MS



7.6.37  
7

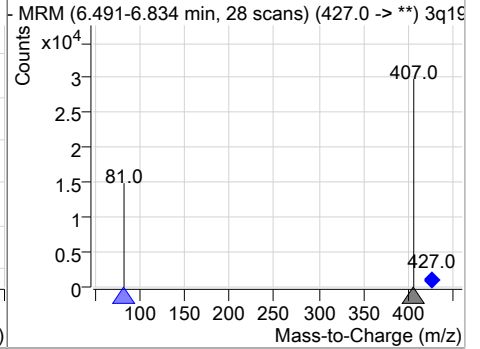
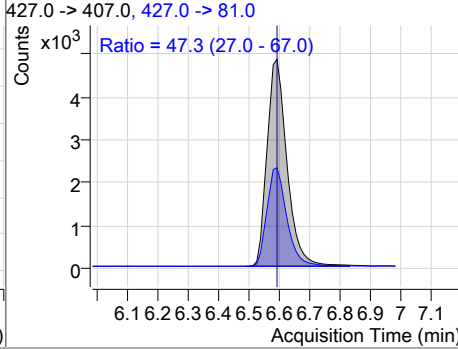
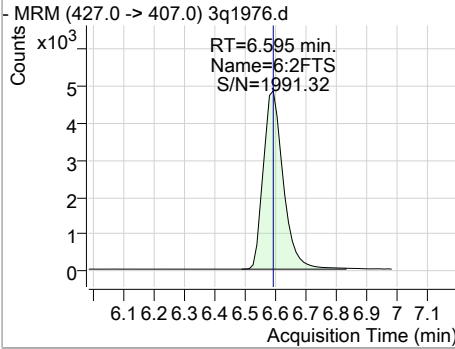
### Perfluorinated Compounds by LC/MS/MS



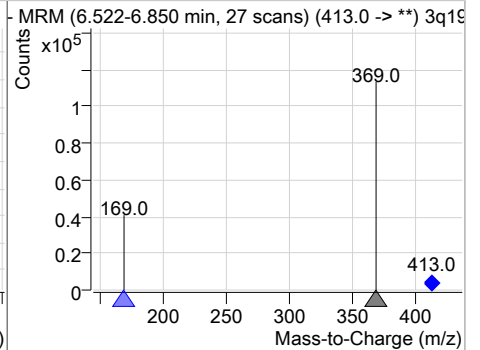
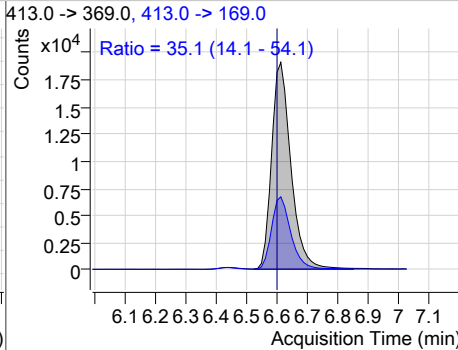
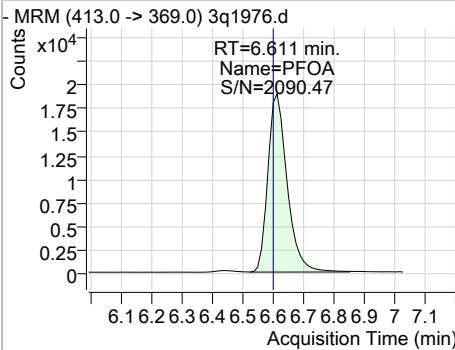
7.6.37  
7

### Perfluorinated Compounds by LC/MS/MS

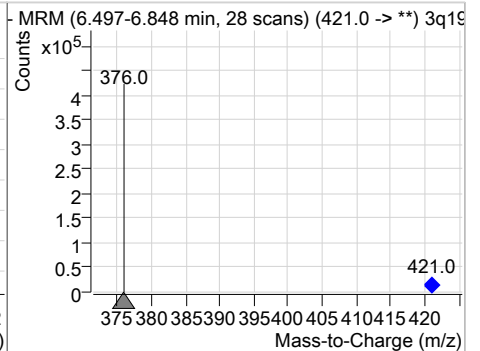
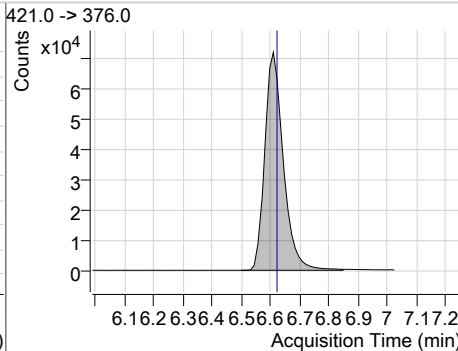
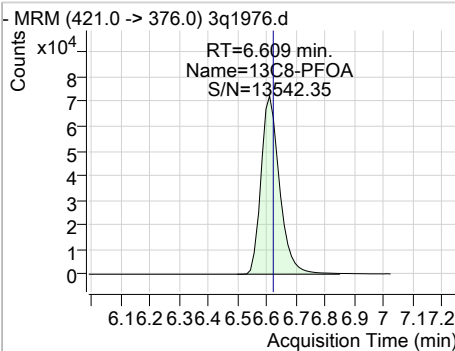
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 10.06 | 6.59 | 0.00     | 22118 | 427.0 -> 81.0 | 47.3   | 27.0 | 67.0 |



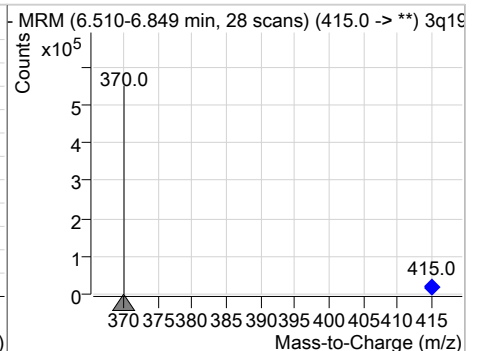
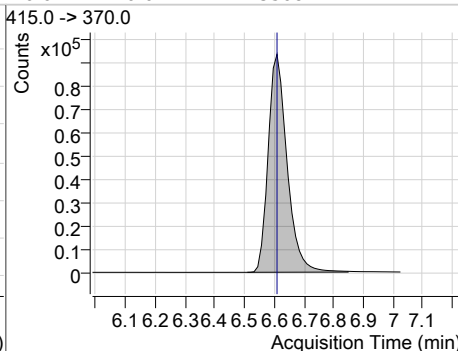
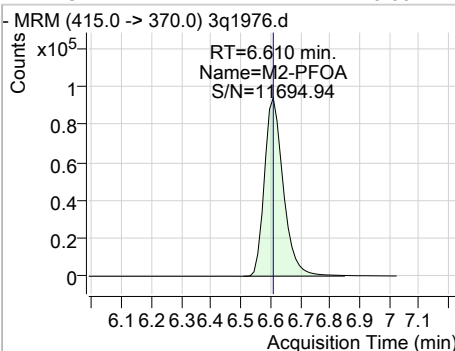
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFOA     | 9.85  | 6.61 | 0.00     | 84066 | 413.0 -> 169.0 | 35.1   | 14.1 | 54.1 |



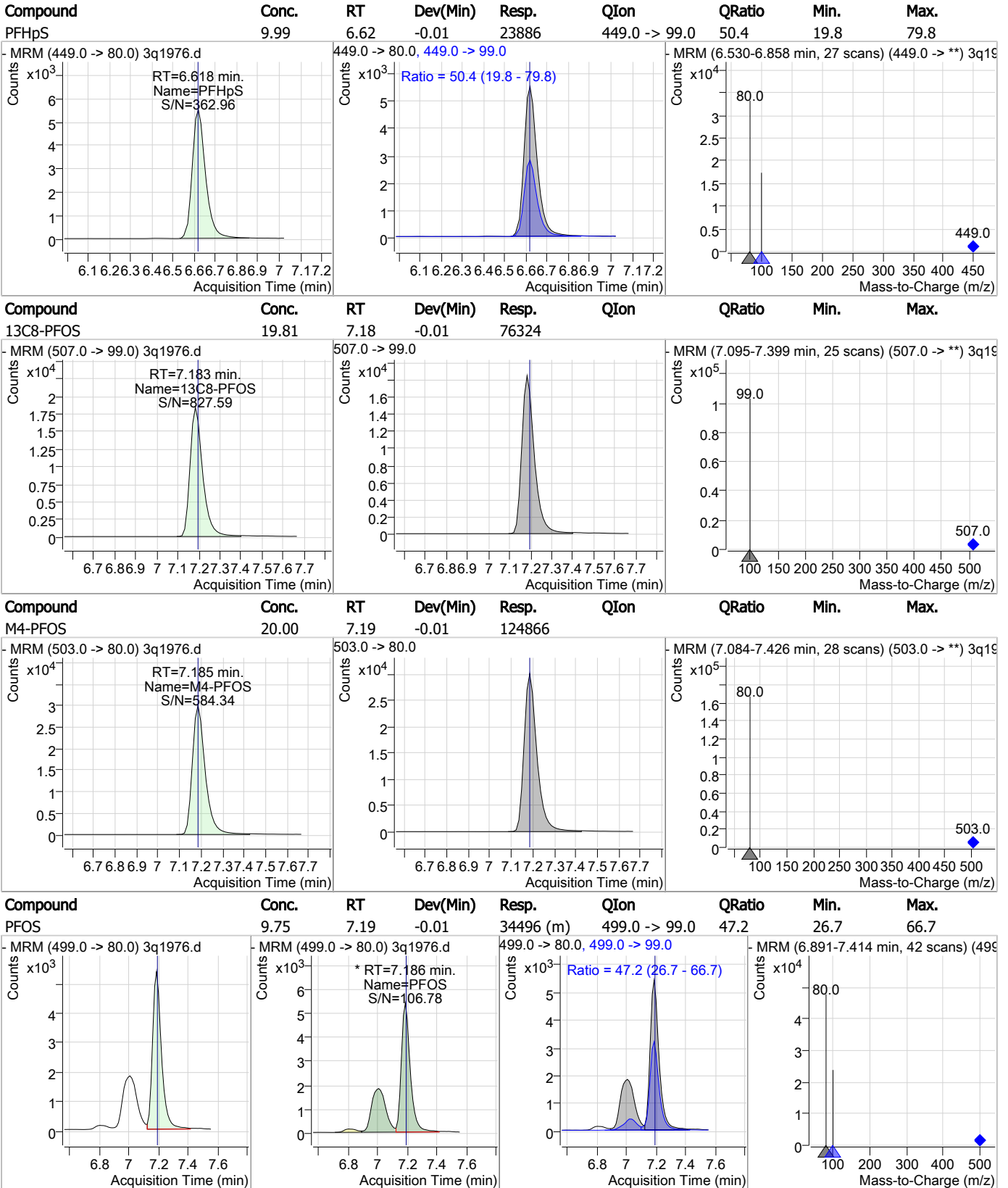
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 20.14 | 6.61 | -0.01    | 318615 | 421.0 -> 376.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| M2-PFOA  | 20.00 | 6.61 | -0.01    | 413568 | 415.0 -> 370.0 |        |      |      |

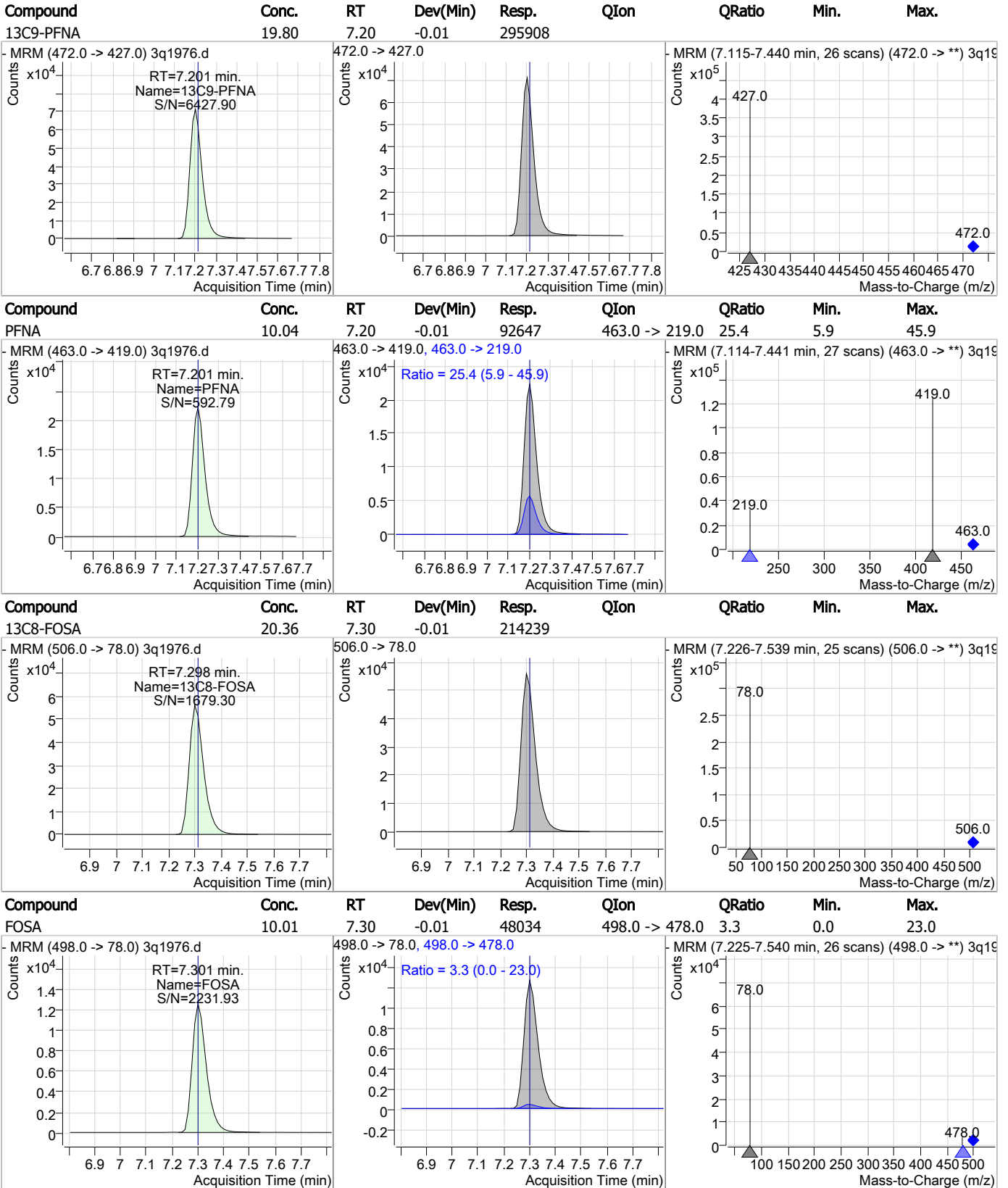


### Perfluorinated Compounds by LC/MS/MS



7.6.37  
7

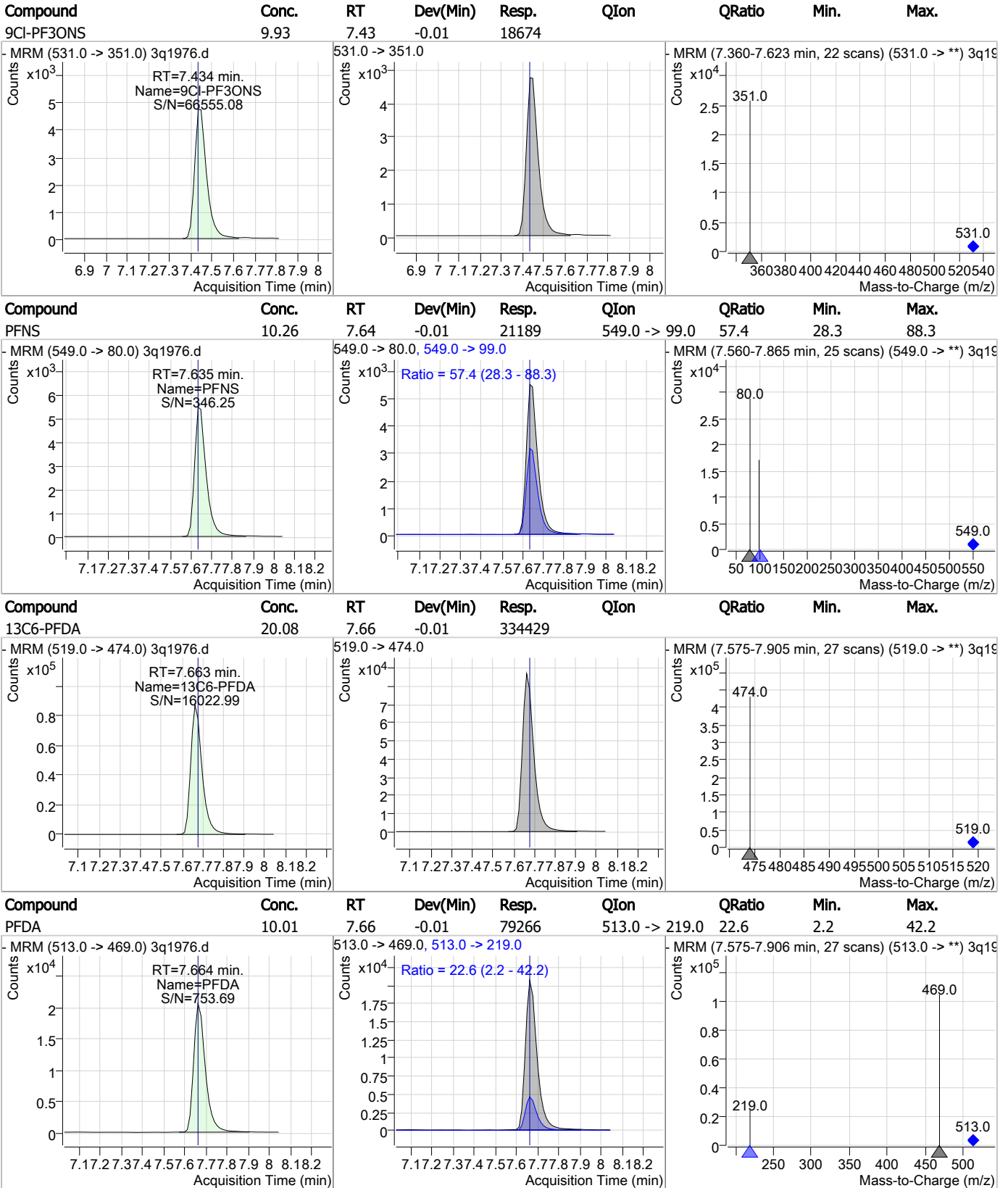
### Perfluorinated Compounds by LC/MS/MS



7.6.37  
7

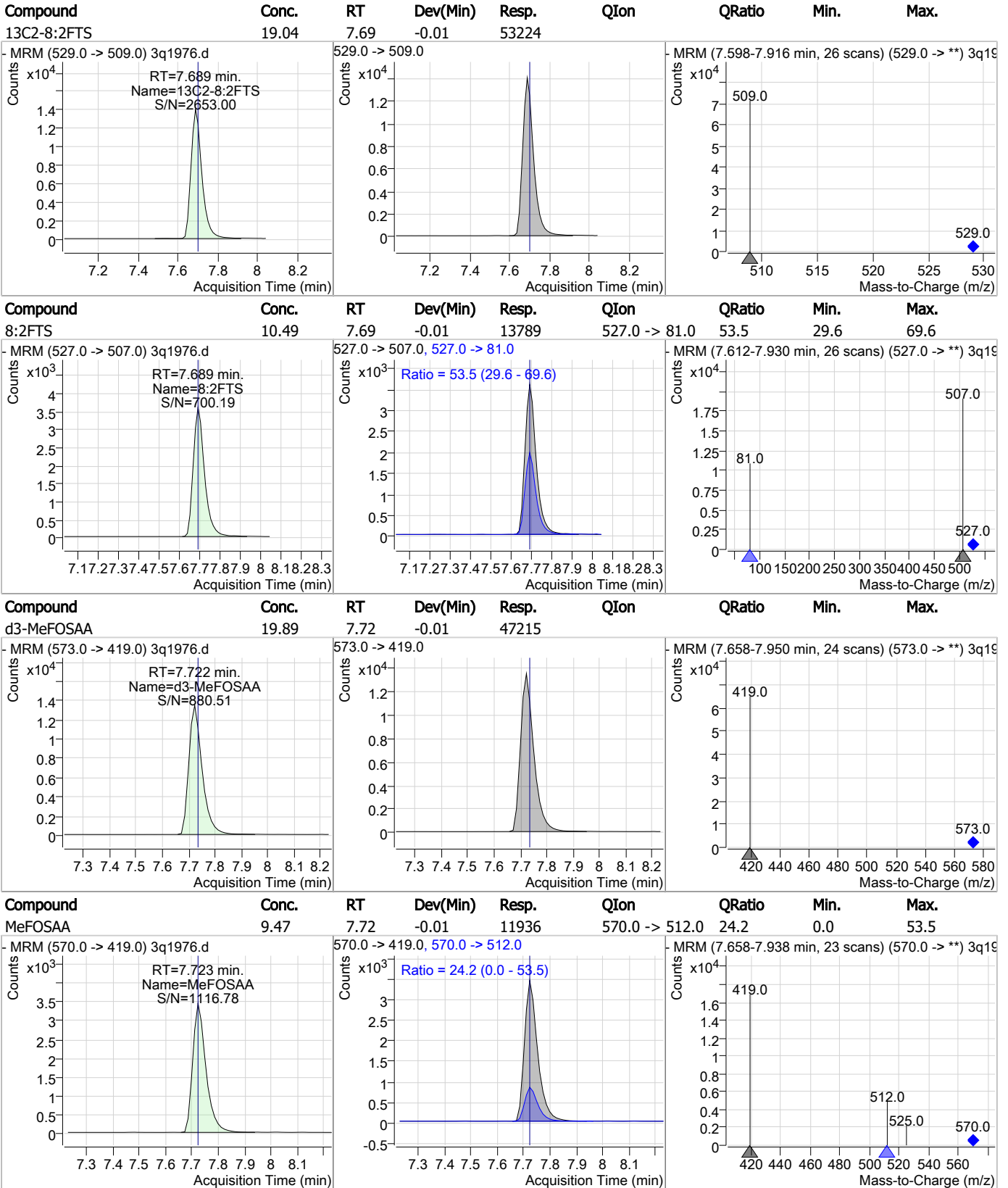


### Perfluorinated Compounds by LC/MS/MS



7.6.37  
7

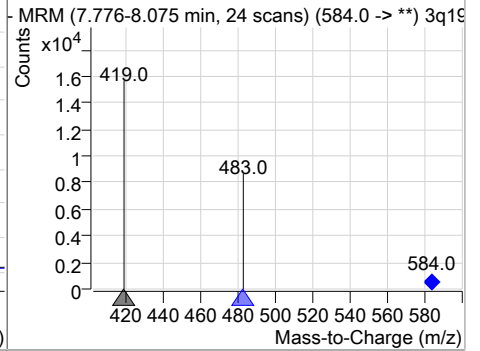
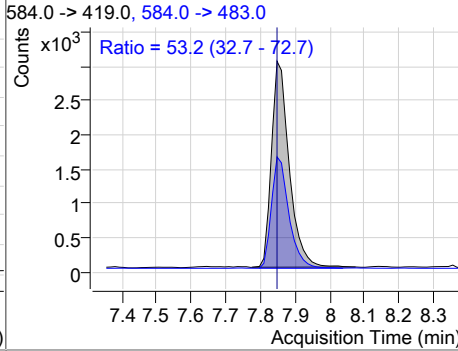
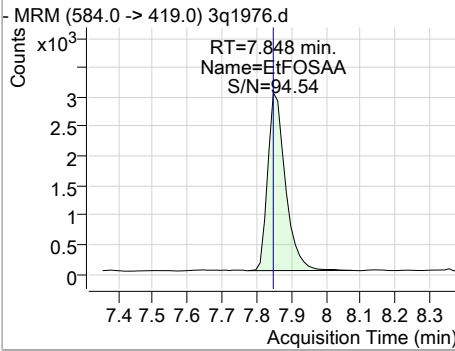
### Perfluorinated Compounds by LC/MS/MS



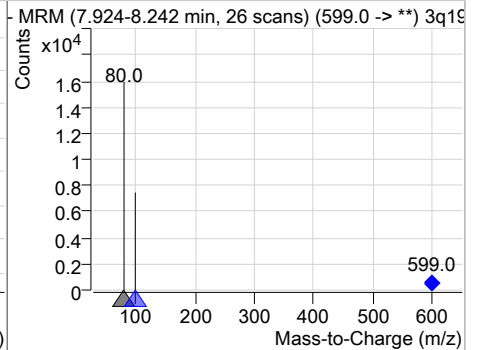
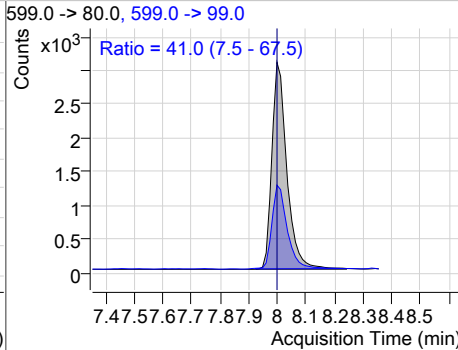
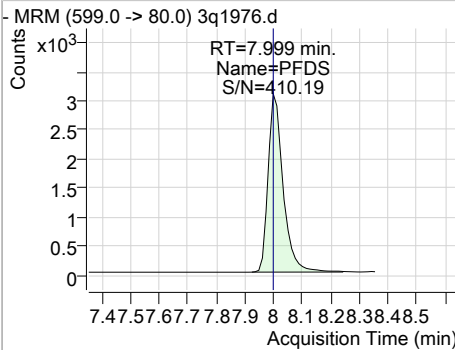
7.6.37  
7

### Perfluorinated Compounds by LC/MS/MS

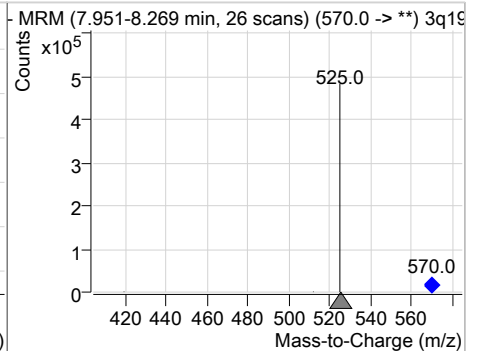
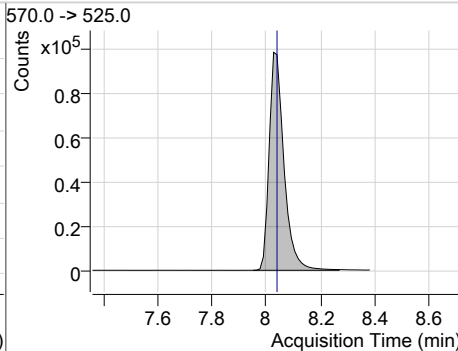
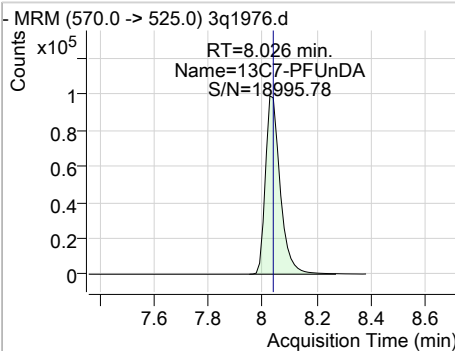
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 10.13 | 7.85 | -0.01    | 10698 | 584.0 -> 483.0 | 53.2   | 32.7 | 72.7 |



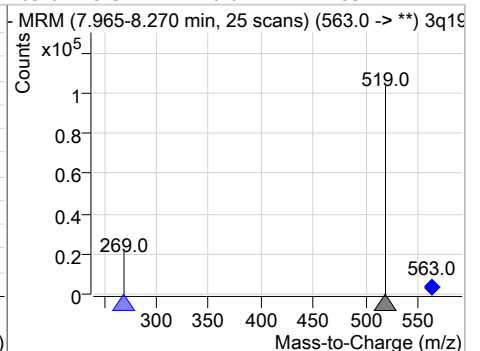
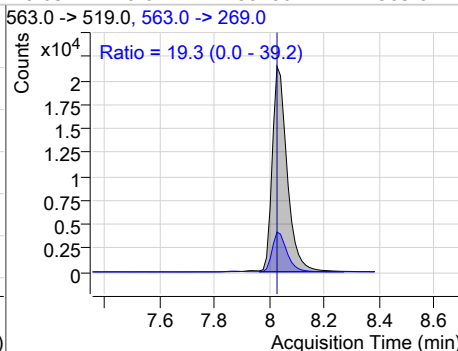
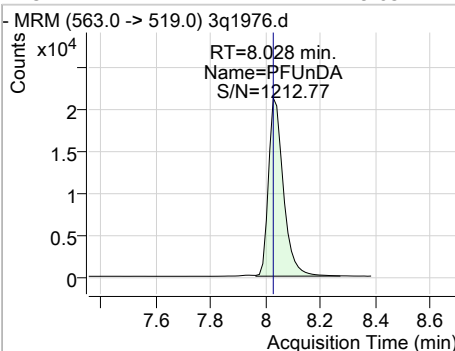
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 9.65  | 8.00 | -0.01    | 11187 | 599.0 -> 99.0 | 41.0   | 7.5  | 67.5 |



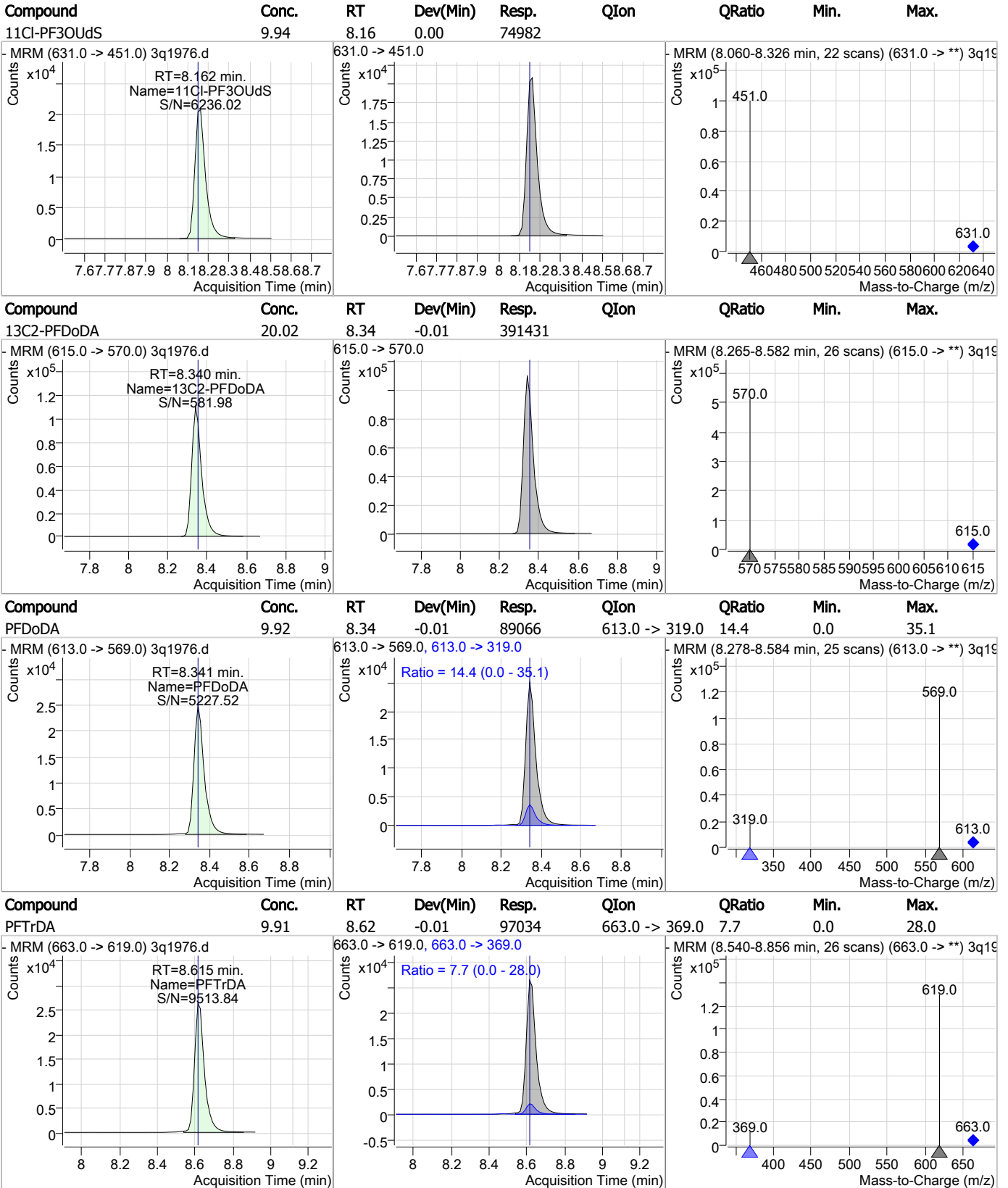
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 20.31 | 8.03 | -0.01    | 376500 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFUnDA   | 9.83  | 8.03 | -0.01    | 80280 | 563.0 -> 269.0 | 19.3   | 0.0  | 39.2 |

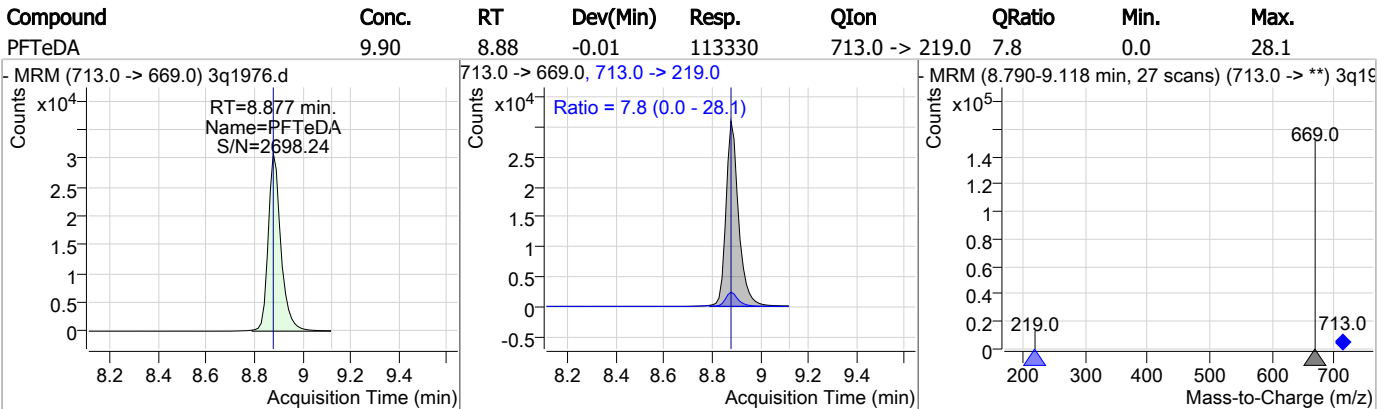
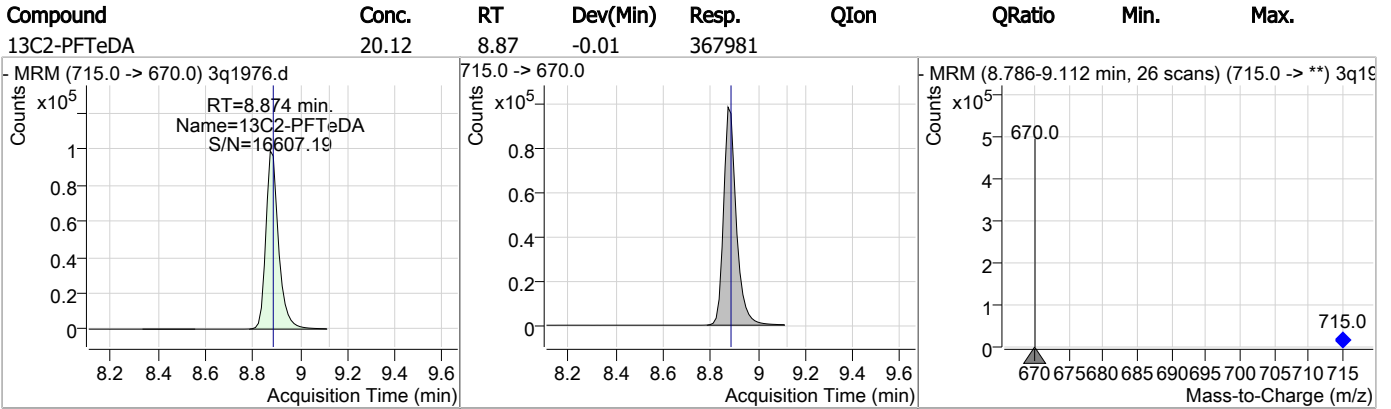


### Perfluorinated Compounds by LC/MS/MS



7.6.37  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.37  
7

# Manual Integration Approval Summary

**Sample Number:** S3Q54-IC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1976.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 10:55      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.37.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Mike Eger  
 03/24/19 19:07

## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1977.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 11:10:30 AM  
 Sample Name : icc54-20  
 Vial : P3-A7  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units      | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                  |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 321547 | 20.00 µg/L       | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 215528 | 20.00 µg/L       | 0.000    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 287626 | 20.00 µg/L       | 0.000    |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 328026 | 20.00 µg/L       | 0.000    |
| M8-PFOA                            | 6.621                | 421.0 -> 376.0 | 308042 | 20.00 µg/L       | 0.000    |
| M9-PFNA                            | 7.213                | 472.0 -> 427.0 | 294310 | 20.00 µg/L       | 0.000    |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 329722 | 20.00 µg/L       | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 363548 | 20.00 µg/L       | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 386059 | 20.00 µg/L       | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 364490 | 20.00 µg/L       | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 207622 | 20.00 µg/L       | 0.000    |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 49333  | 20.00 µg/L       | 0.000    |
| M3-PFHxS                           | 5.947                | 402.0 -> 99.0  | 49657  | 20.00 µg/L       | 0.000    |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 75325  | 20.00 µg/L       | 0.000    |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 92525  | 20.00 µg/L       | 0.000    |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 90570  | 20.00 µg/L       | 0.000    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 54456  | 20.00 µg/L       | 0.000    |
| M3-MeFOSAA                         | 7.735                | 573.0 -> 419.0 | 47335  | 20.00 µg/L       | 0.000    |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 163481 | 100.00 µg/L      | 0.000    |
| 13C2-PFOA                          | 6.622                | 415.0 -> 370.0 | 403246 | 20.00 µg/L       | 0.000    |
| 13C4-PFOS                          | 7.198                | 503.0 -> 80.0  | 120795 | 20.00 µg/L       | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                  |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 91995  | 19.38 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.9% |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 90566  | 19.82 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.1% |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 54589  | 19.53 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.6% |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 386118 | 19.75 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.7% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 364579 | 19.93 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.7% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 49180  | 19.50 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.5% |          |
| 13C3-PFHxS                         | 5.947                | 402.0 -> 99.0  | 49423  | 19.55 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.8% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 318666 | 19.54 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.7% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 328772 | 19.69 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.5% |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 287621 | 19.54 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.7% |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 217226 | 19.62 µg/L       | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.1% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 329627 | 19.79 µg/L       | 0.000    |

7.6.38  
7

## Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.9%  |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 364702 | 19.67 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.4%  |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 207602 | 19.73 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.6%  |          |
| 13C8-PFOA             | 6.621                | 421.0 -> 376.0 | 308064 | 19.47 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.4%  |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 75334  | 19.56 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 97.8%  |          |
| 13C9-PFNA             | 7.213                | 472.0 -> 427.0 | 294474 | 19.71 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.5%  |          |
| d3-MeFOSAA            | 7.735                | 573.0 -> 419.0 | 47370  | 19.95 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.8%  |          |
| 13C3-HFPO-DA          | 5.255                | 287.0 -> 169.0 | 163481 | 97.90 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 97.9%  |          |
| M2-PFOA               | 6.622                | 415.0 -> 370.0 | 403246 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.198                | 503.0 -> 80.0  | 120795 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

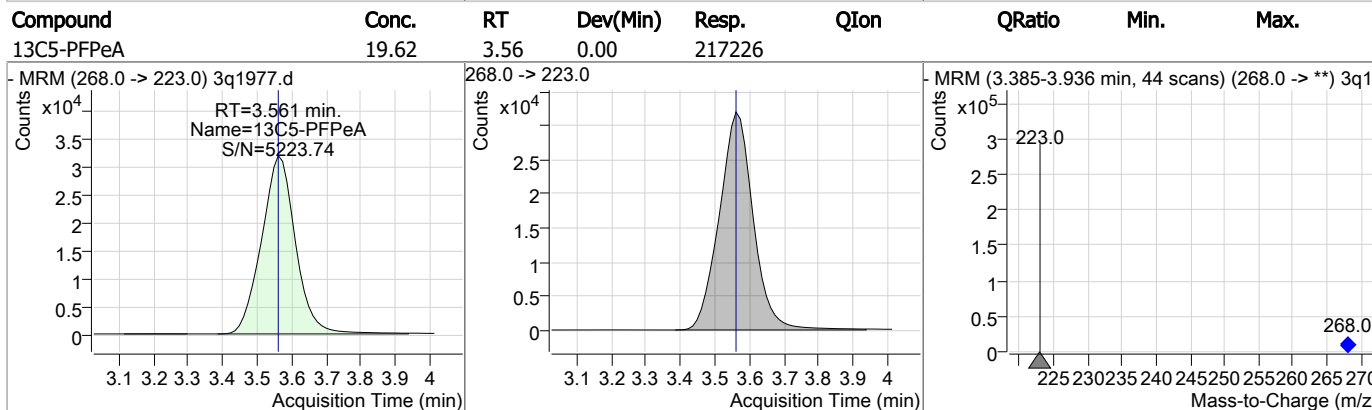
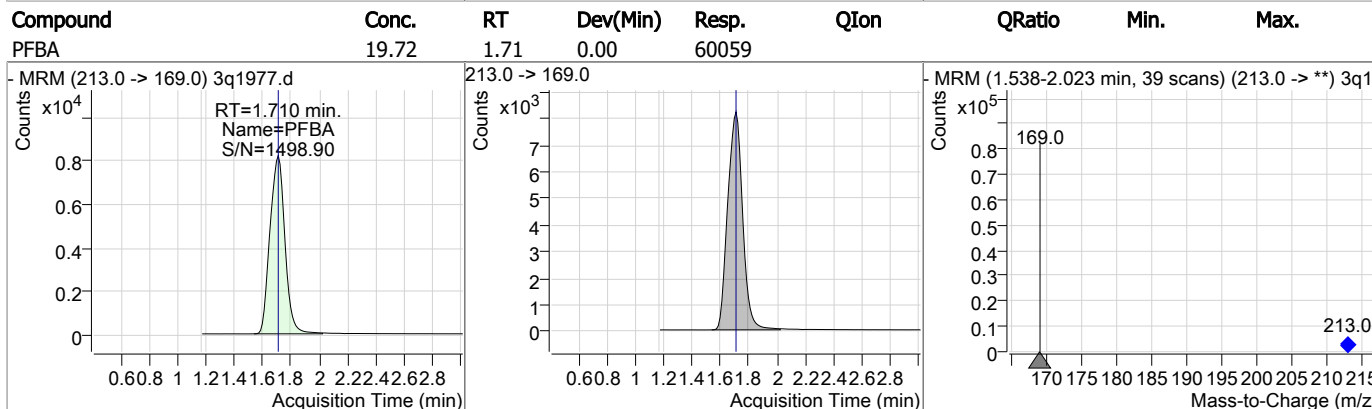
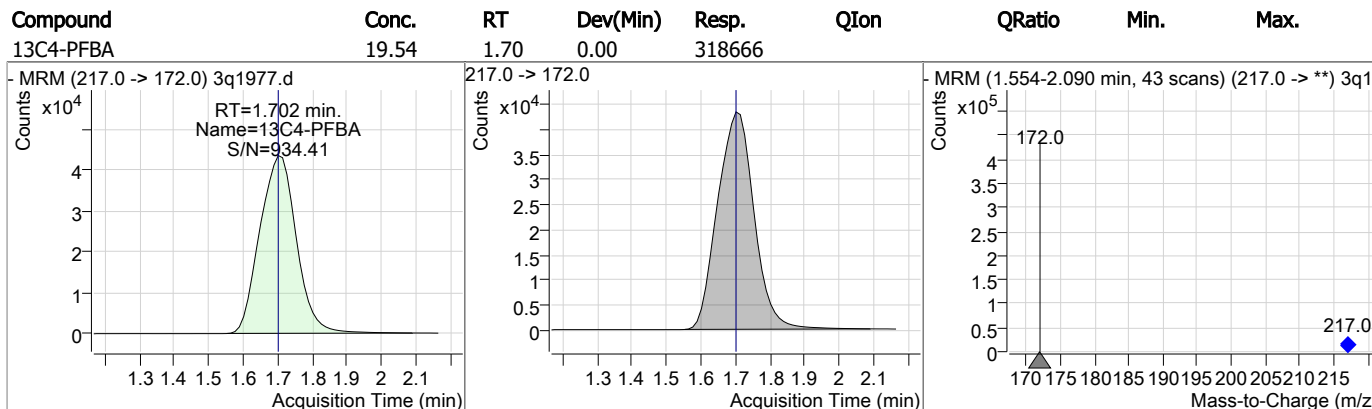
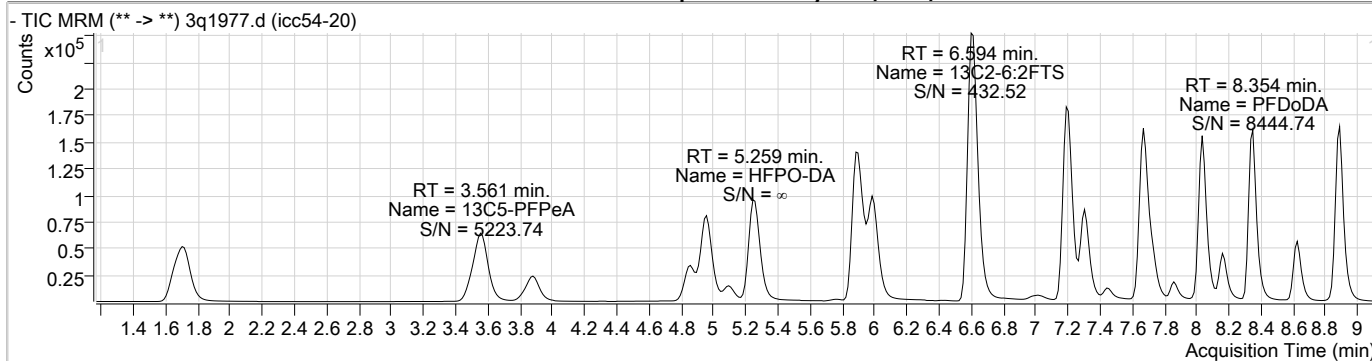
## Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.861 | 327.0 -> 307.0 | 52513  | 20.76 µg/L  | 100    |
| 6:2FTS           | 6.595 | 427.0 -> 407.0 | 43674  | 19.55 µg/L  | 100    |
| 8:2FTS           | 7.702 | 527.0 -> 507.0 | 28242  | 20.95 µg/L  | 100    |
| EtFOSAA          | 7.861 | 584.0 -> 419.0 | 21156  | 19.89 µg/L  | 100    |
| FOSA             | 7.313 | 498.0 -> 78.0  | 93325  | 20.04 µg/L  | 100    |
| MeFOSAA          | 7.735 | 570.0 -> 419.0 | 24560  | 19.39 µg/L  | 100    |
| PFBA             | 1.710 | 213.0 -> 169.0 | 60059  | 19.72 µg/L  | 100    |
| PFBS             | 3.883 | 299.0 -> 80.0  | 68514  | 19.96 µg/L  | 100    |
| PFDA             | 7.678 | 513.0 -> 469.0 | 155435 | 19.91 µg/L  | 100    |
| PFDoDA           | 8.354 | 613.0 -> 569.0 | 172799 | 19.63 µg/L  | 100    |
| PFDS             | 8.011 | 599.0 -> 80.0  | 22398  | 20.01 µg/L  | 100    |
| PFHpA            | 5.894 | 363.0 -> 319.0 | 286156 | 19.71 µg/L  | 100    |
| PFHpS            | 6.630 | 449.0 -> 80.0  | 46961  | 19.87 µg/L  | 100    |
| PFHxA            | 4.965 | 313.0 -> 269.0 | 101452 | 19.81 µg/L  | 100    |
| PFHxS            | 5.937 | 399.0 -> 80.0  | 53870  | 19.73 µg/L  | m 100  |
| PFNA             | 7.214 | 463.0 -> 419.0 | 180124 | 19.70 µg/L  | 100    |
| PFNS             | 7.648 | 549.0 -> 80.0  | 41866  | 20.55 µg/L  | 100    |
| PFOA             | 6.611 | 413.0 -> 369.0 | 166352 | 20.17 µg/L  | 100    |
| PFOS             | 7.199 | 499.0 -> 80.0  | 68859  | 19.74 µg/L  | m 100  |
| PFPeA            | 3.564 | 263.0 -> 219.0 | 217345 | 19.90 µg/L  | 100    |
| PFPeS            | 5.094 | 349.0 -> 80.0  | 42941  | 20.12 µg/L  | 100    |
| PFTeDA           | 8.890 | 713.0 -> 669.0 | 223130 | 19.68 µg/L  | 100    |
| PFTTrDA          | 8.628 | 663.0 -> 619.0 | 188713 | 19.45 µg/L  | 100    |
| PFUnDA           | 8.041 | 563.0 -> 519.0 | 158172 | 20.06 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.162 | 631.0 -> 451.0 | 147489 | 19.95 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.446 | 531.0 -> 351.0 | 37056  | 19.77 µg/L  | 100    |
| ADONA            | 5.994 | 377.0 -> 251.0 | 385528 | 20.03 µg/L  | 100    |
| HFPO-DA          | 5.259 | 329.0 -> 169.0 | 269020 | 96.98 µg/L  | 100    |

# = Qualifier out of range, m = manually integrated, + = Area summed

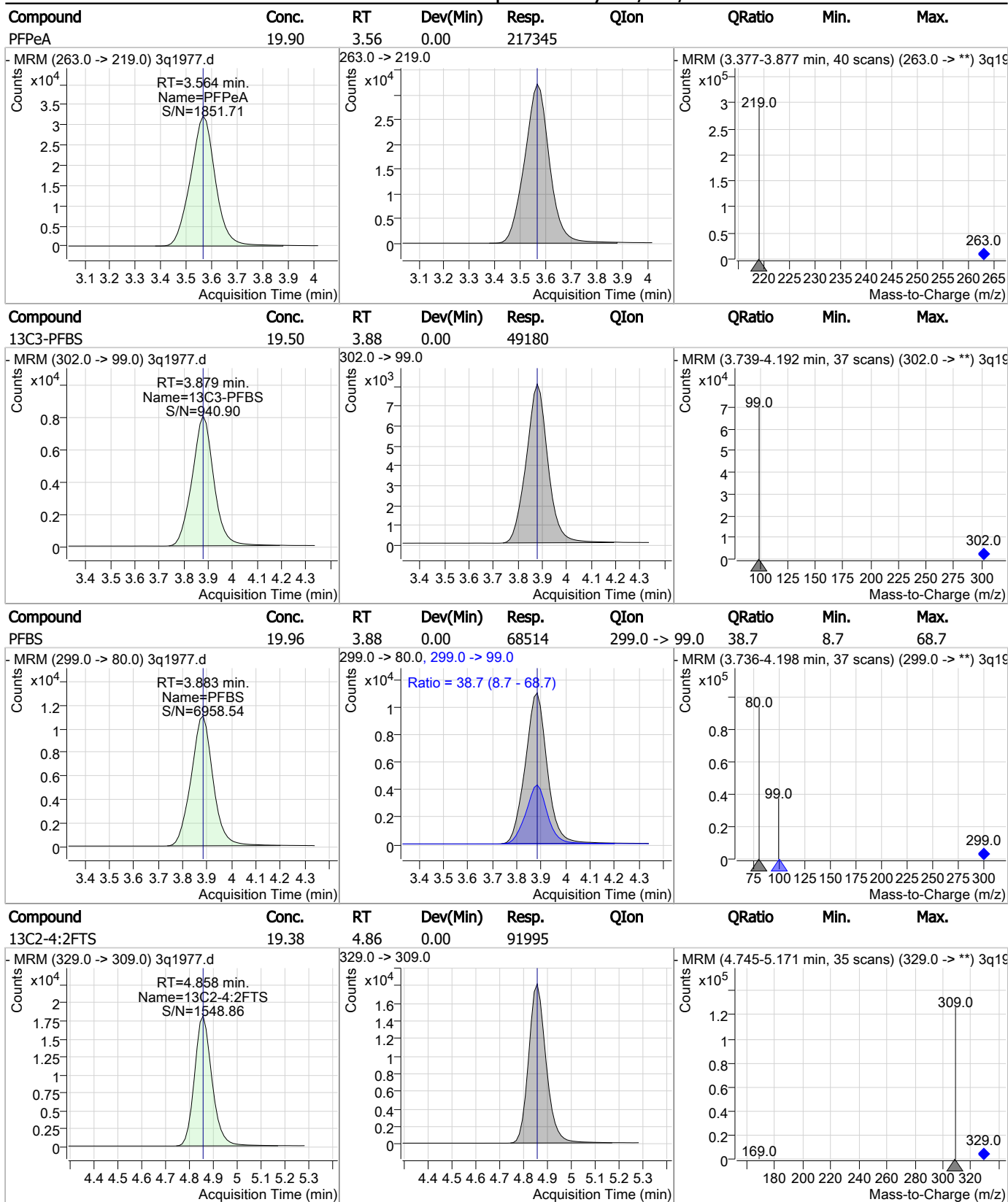


### Perfluorinated Compounds by LC/MS/MS

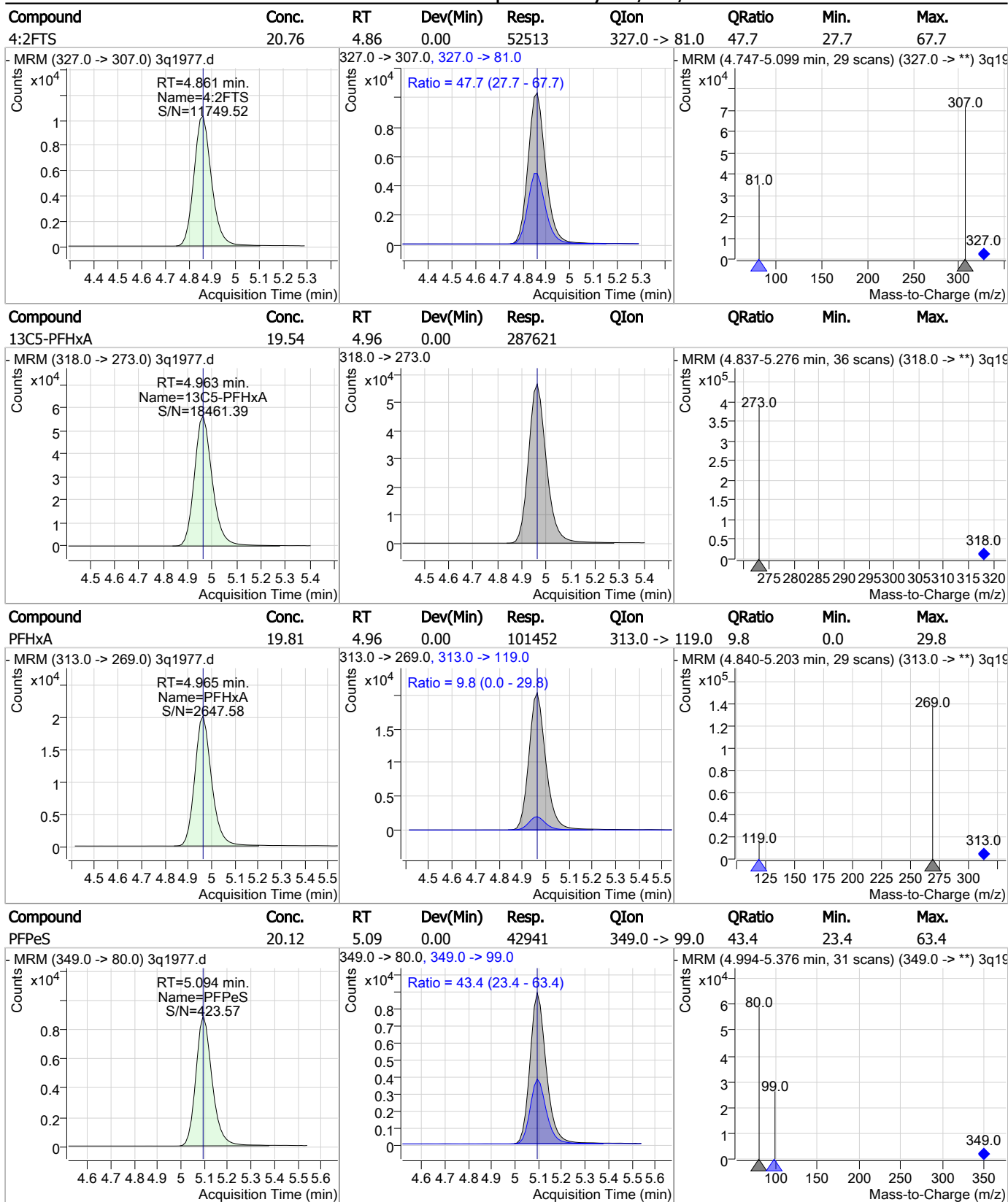


7.6:38  
7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



7.6.38

7

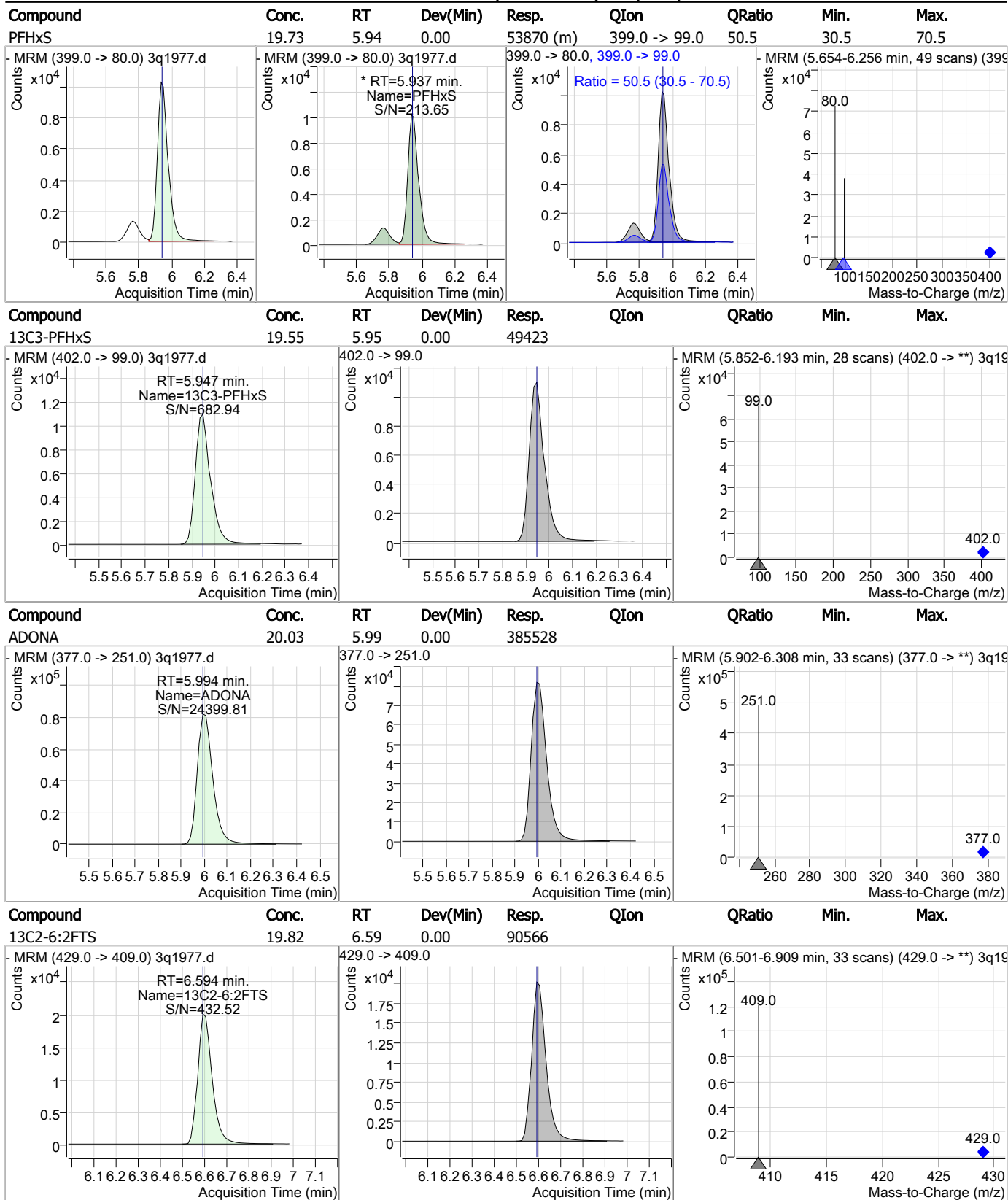
### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon     | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------|--------|------|------|
| 13C3-HFPO-DA | 97.90 | 5.25 | 0.00     | 163481 |          |        |      |      |
|              |       |      |          |        |          |        |      |      |
| HFPO-DA      | 96.98 | 5.26 | 0.00     | 269020 | 285.0 -> | 169.0  | 17.6 | 0.0  |
|              |       |      |          |        |          |        |      |      |
| 13C4-PFHpA   | 19.69 | 5.89 | 0.00     | 328772 |          |        |      |      |
|              |       |      |          |        |          |        |      |      |
| PFHpA        | 19.71 | 5.89 | 0.00     | 286156 | 363.0 -> | 169.0  | 7.2  | 0.0  |
|              |       |      |          |        |          |        |      |      |

7.6.38

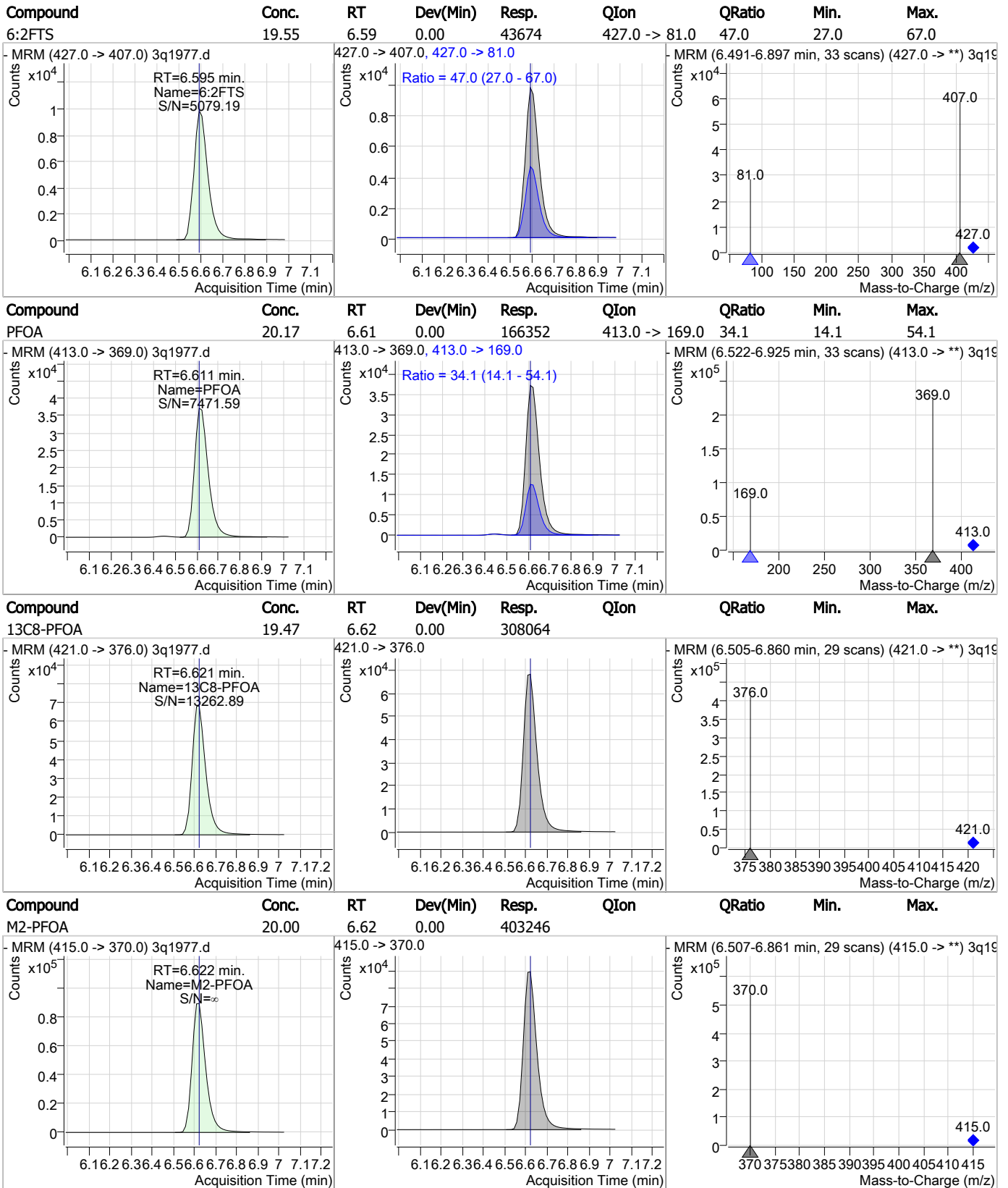
7

### Perfluorinated Compounds by LC/MS/MS



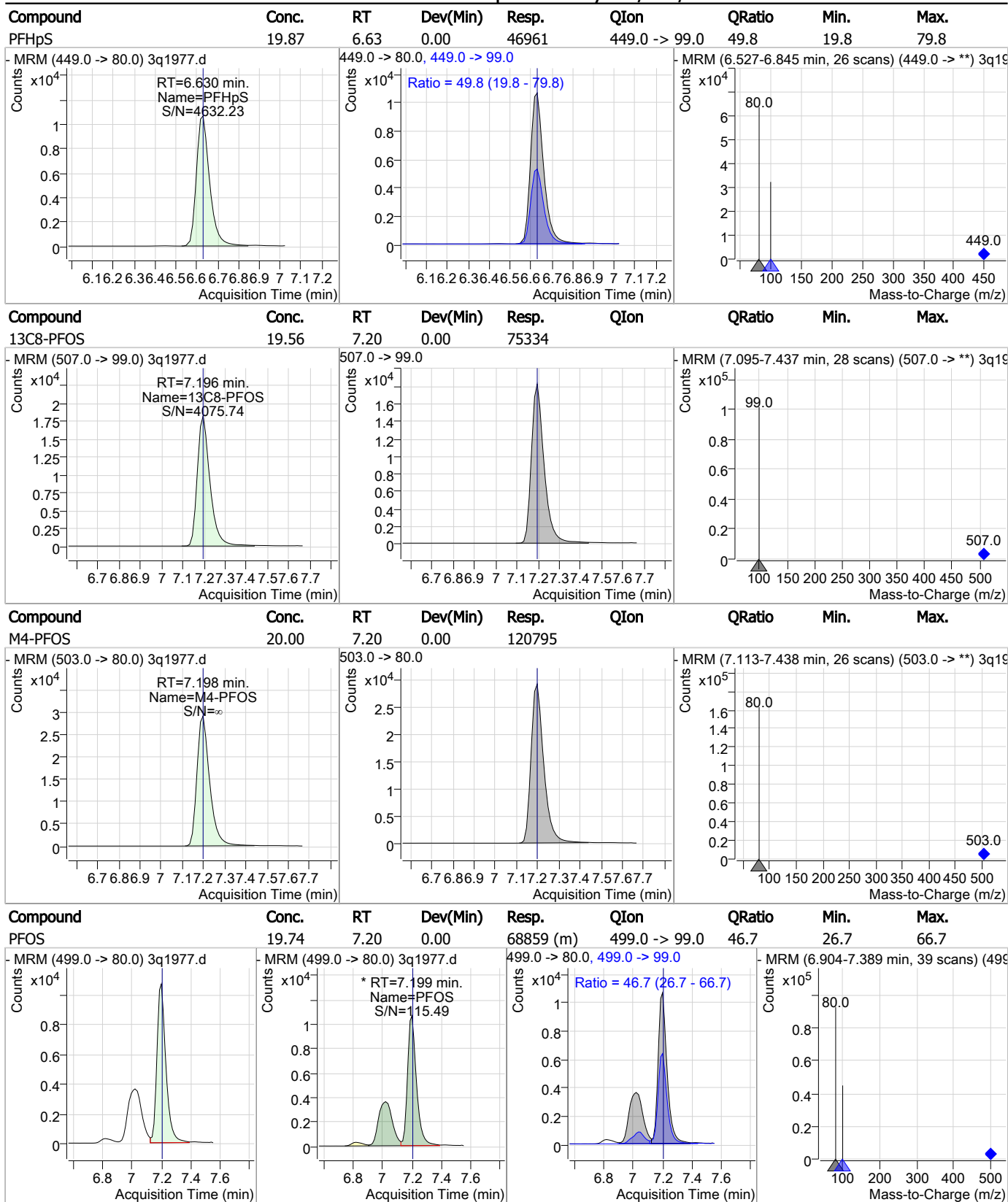
7.6.38  
7

### Perfluorinated Compounds by LC/MS/MS



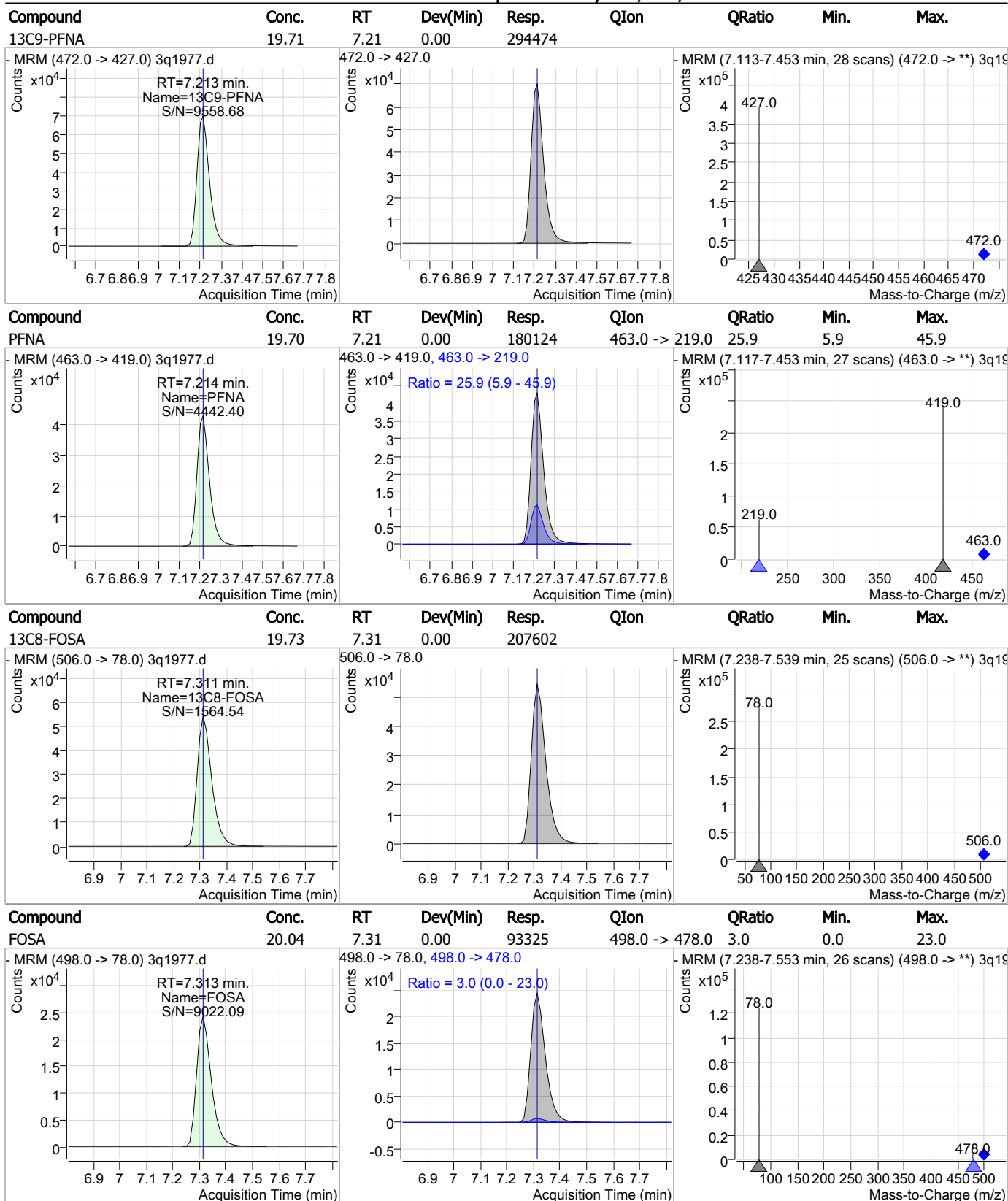
7.6.38  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.38  
7

### Perfluorinated Compounds by LC/MS/MS

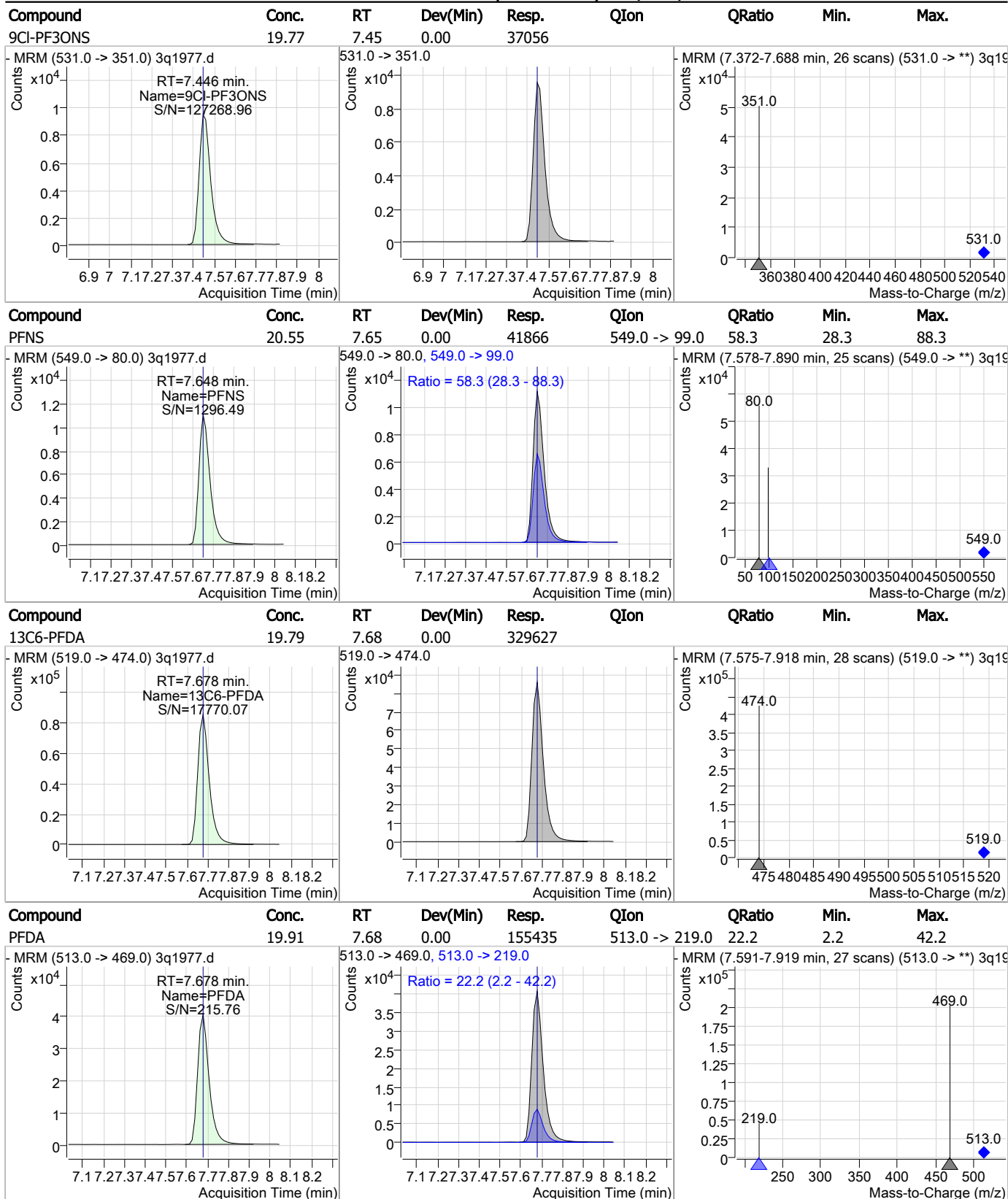


7.6.38

7



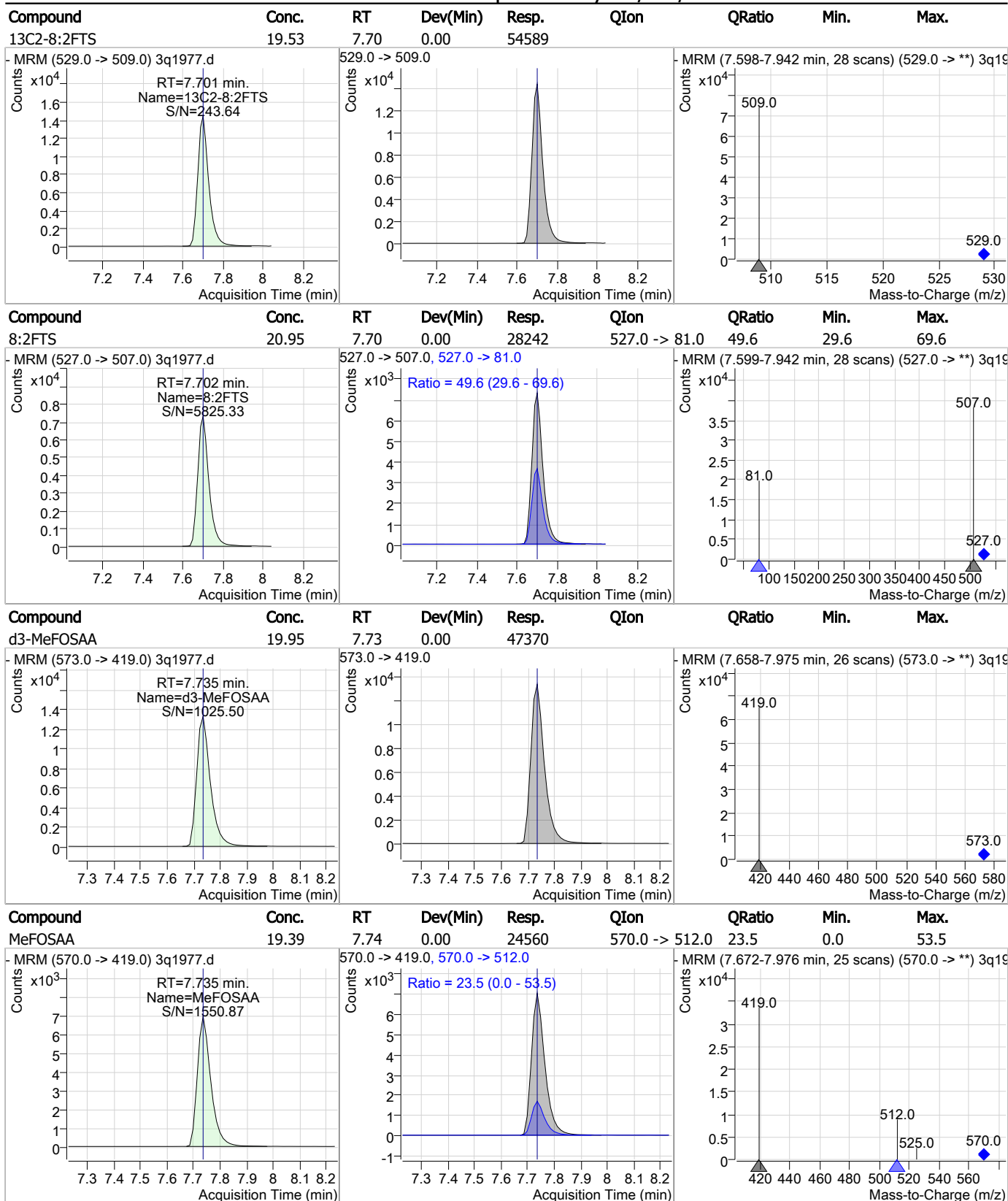
### Perfluorinated Compounds by LC/MS/MS



7.6.38

7

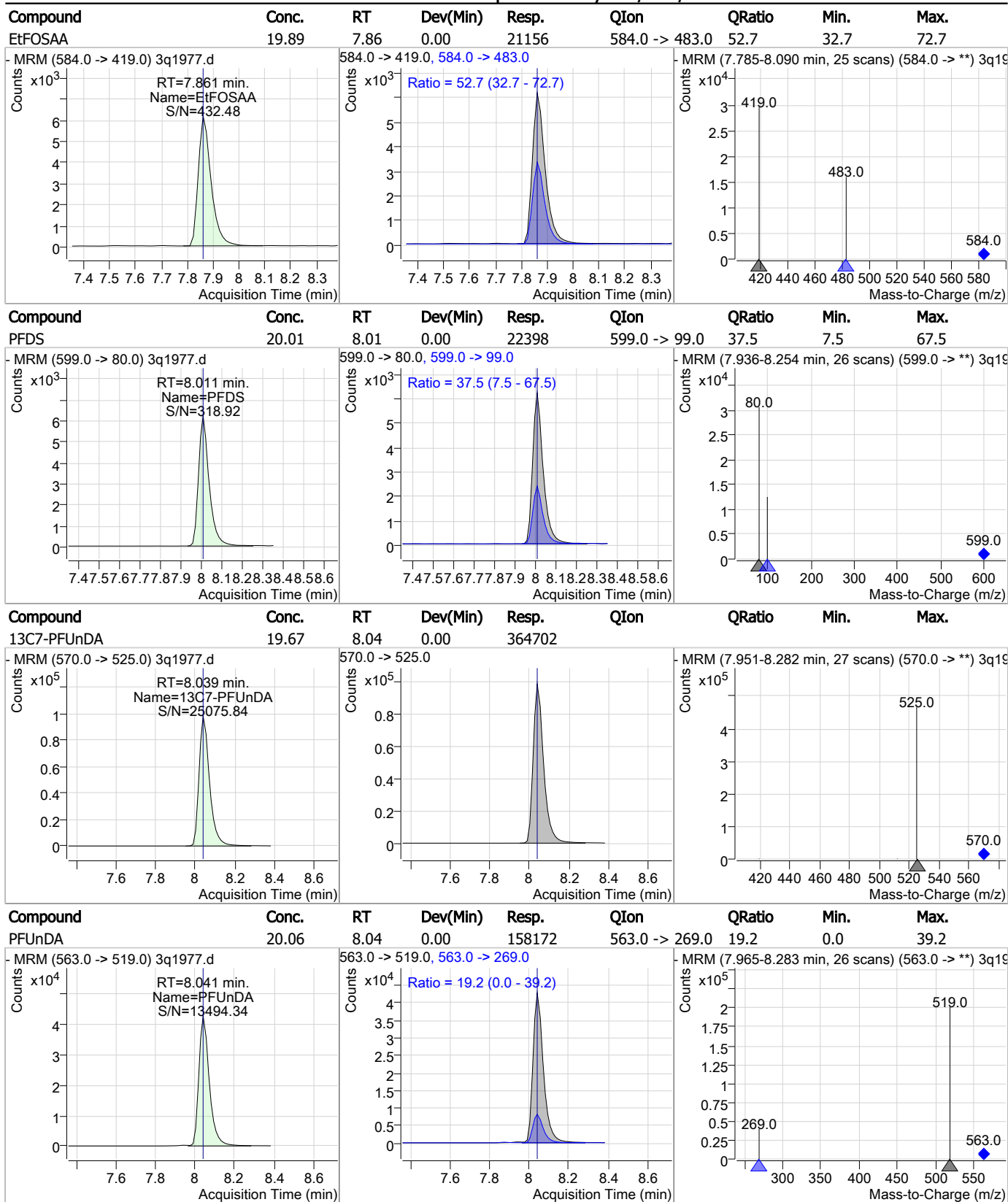
### Perfluorinated Compounds by LC/MS/MS



7.6.38

7

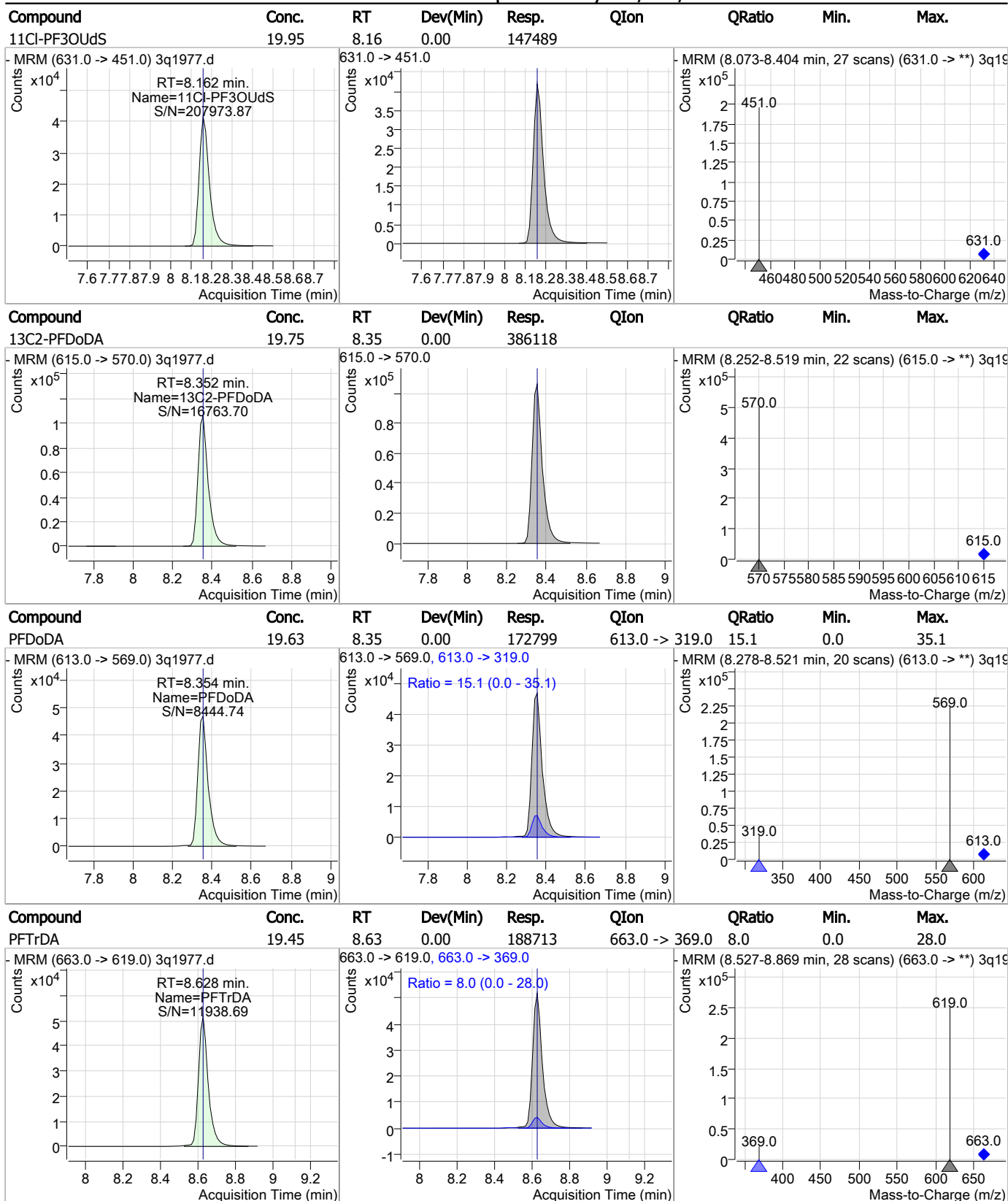
### Perfluorinated Compounds by LC/MS/MS



7.6.38

7

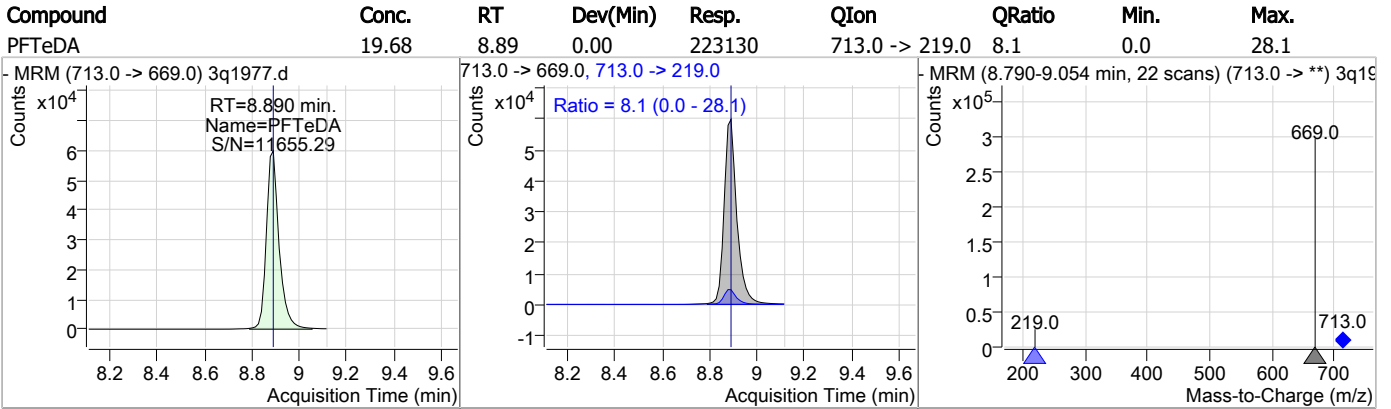
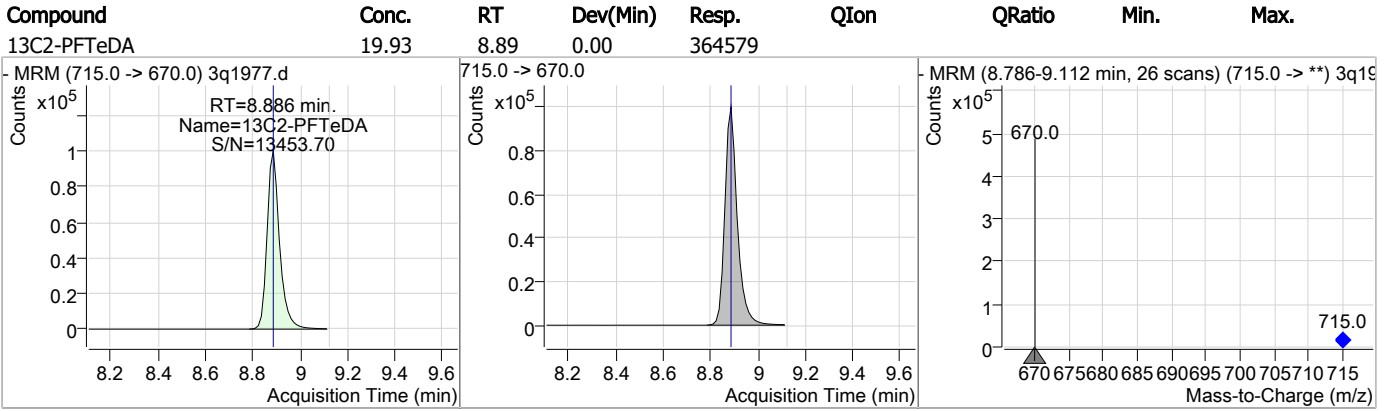
### Perfluorinated Compounds by LC/MS/MS



7.6.38

7

### Perfluorinated Compounds by LC/MS/MS



7.6.38  
7



# Manual Integration Approval Summary

**Sample Number:** S3Q54-ICC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1977.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 11:10      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.20           | Split peak |

7.6.38.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1978.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 11:25:37 AM  
 Sample Name : ic54-50  
 Vial : P3-A8  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.714                | 217.0 -> 172.0 | 319766 | 20.00 µg/L        | 0.013    |
| M5-PFPeA                           | 3.573                | 268.0 -> 223.0 | 215536 | 20.00 µg/L        | 0.013    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 285009 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.904                | 367.0 -> 322.0 | 322363 | 20.00 µg/L        | 0.013    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 299893 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 284989 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 317675 | 20.00 µg/L        | -0.015   |
| M7-PFUnDA                          | 8.026                | 570.0 -> 525.0 | 357372 | 20.00 µg/L        | -0.013   |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 377753 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.874                | 715.0 -> 670.0 | 348086 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 7.298                | 506.0 -> 78.0  | 196993 | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 49260  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.947                | 402.0 -> 99.0  | 48493  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 74368  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 99003  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 92184  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 58704  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 46592  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 158682 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 391111 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 120503 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 98627  | 20.78 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.9% |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 92377  | 20.21 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.1% |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 58693  | 21.00 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 105.0% |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 379302 | 19.40 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.0%  |          |
| 13C2-PFTeDA                        | 8.874                | 715.0 -> 670.0 | 348179 | 19.03 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.2%  |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 49104  | 19.47 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.3%  |          |
| 13C3-PFHxS                         | 5.947                | 402.0 -> 99.0  | 48610  | 19.23 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.2%  |          |
| 13C4-PFBA                          | 1.714                | 217.0 -> 172.0 | 317439 | 19.46 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.3%  |          |
| 13C4-PFHpA                         | 5.904                | 367.0 -> 322.0 | 321523 | 19.26 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.3%  |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 283248 | 19.25 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.2%  |          |
| 13C5-PFPeA                         | 3.573                | 268.0 -> 223.0 | 215546 | 19.47 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.3%  |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 317591 | 19.07 µg/L        | -0.015   |

7.6.39

7

## Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.3%  |          |
| 13C7-PFUnDA           | 8.026                | 570.0 -> 525.0 | 357417 | 19.28 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.4%  |          |
| 13C8-FOSA             | 7.298                | 506.0 -> 78.0  | 196973 | 18.72 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 93.6%  |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 299866 | 18.95 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 94.8%  |          |
| 13C8-PFOS             | 7.183                | 507.0 -> 99.0  | 74417  | 19.32 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.6%  |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 284627 | 19.05 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 95.2%  |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 46602  | 19.63 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| 13C3-HFPO-DA          | 5.255                | 287.0 -> 169.0 | 158682 | 95.03 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 95.0%  |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 391111 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 120503 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

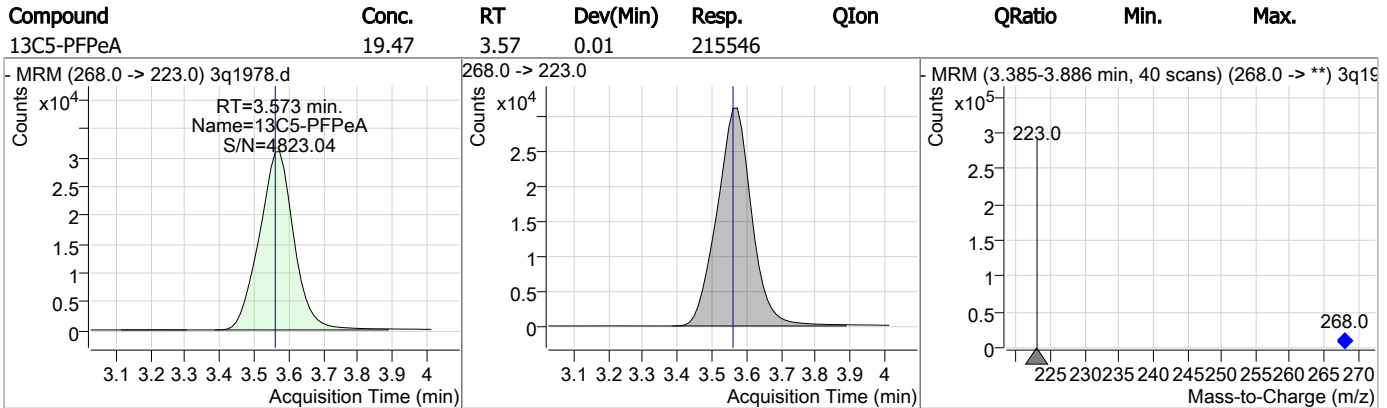
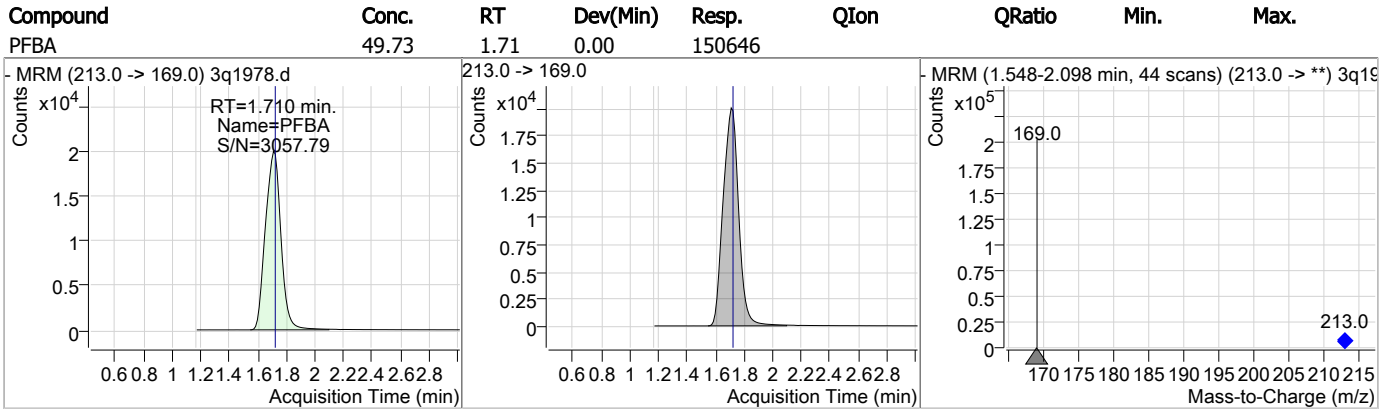
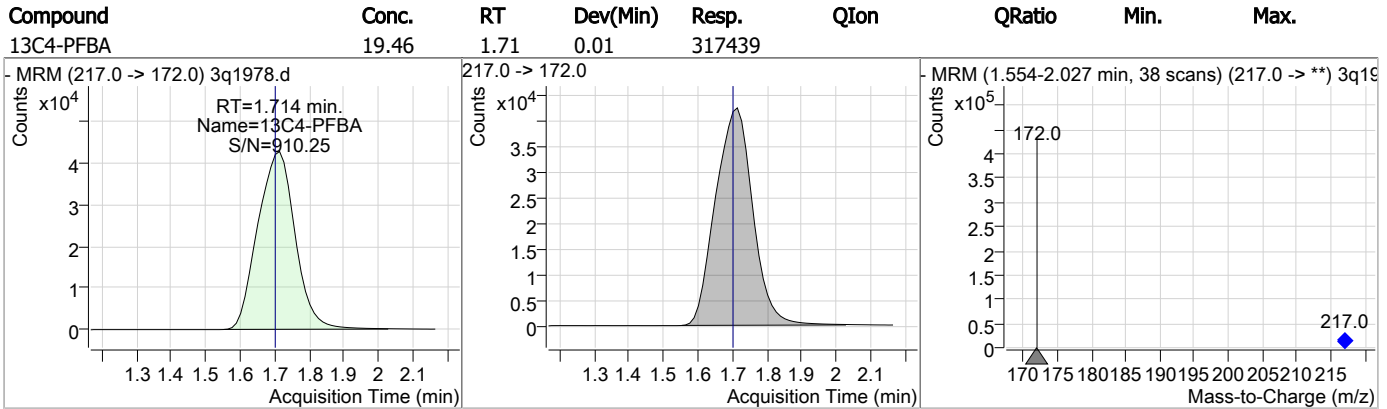
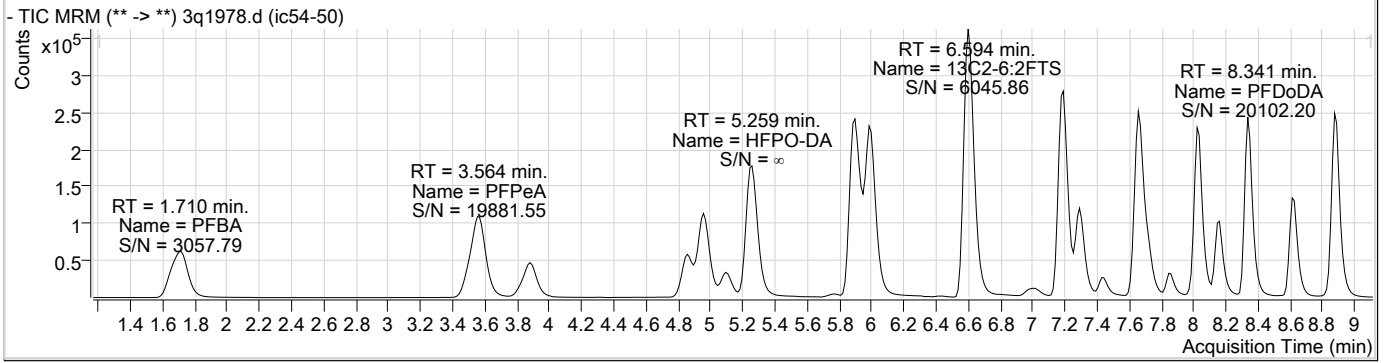
## Target Compounds

| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.861 | 327.0 -> 307.0 | 132202 | 48.84 µg/L  | 100    |
| 6:2FTS           | 6.595 | 427.0 -> 407.0 | 108023 | 47.51 µg/L  | 99     |
| 8:2FTS           | 7.689 | 527.0 -> 507.0 | 70346  | 48.41 µg/L  | 98     |
| EtFOSAA          | 7.861 | 584.0 -> 419.0 | 52779  | 50.02 µg/L  | 98     |
| FOSA             | 7.301 | 498.0 -> 78.0  | 222463 | 49.99 µg/L  | 100    |
| MeFOSAA          | 7.723 | 570.0 -> 419.0 | 62889  | 50.44 µg/L  | 97     |
| PFBA             | 1.710 | 213.0 -> 169.0 | 150646 | 49.73 µg/L  | 100    |
| PFBS             | 3.883 | 299.0 -> 80.0  | 171632 | 50.08 µg/L  | 100    |
| PFDA             | 7.664 | 513.0 -> 469.0 | 373023 | 49.59 µg/L  | 98     |
| PFDoDA           | 8.341 | 613.0 -> 569.0 | 431065 | 50.05 µg/L  | 100    |
| PFDS             | 7.999 | 599.0 -> 80.0  | 54241  | 49.29 µg/L  | 99     |
| PFHpA            | 5.894 | 363.0 -> 319.0 | 704871 | 49.40 µg/L  | 100    |
| PFHpS            | 6.618 | 449.0 -> 80.0  | 117052 | 50.70 µg/L  | 99     |
| PFHxA            | 4.965 | 313.0 -> 269.0 | 254367 | 50.12 µg/L  | 99     |
| PFHxS            | 5.950 | 399.0 -> 80.0  | 132576 | 49.72 µg/L  | m 100  |
| PFNA             | 7.201 | 463.0 -> 419.0 | 441556 | 49.86 µg/L  | 100    |
| PFNS             | 7.635 | 549.0 -> 80.0  | 102473 | 50.96 µg/L  | 99     |
| PFOA             | 6.611 | 413.0 -> 369.0 | 399921 | 49.81 µg/L  | 98     |
| PFOS             | 7.186 | 499.0 -> 80.0  | 169831 | 49.31 µg/L  | m 100  |
| PFPeA            | 3.564 | 263.0 -> 219.0 | 545842 | 49.98 µg/L  | 100    |
| PFPeS            | 5.094 | 349.0 -> 80.0  | 106852 | 50.14 µg/L  | 99     |
| PFTeDA           | 8.877 | 713.0 -> 669.0 | 539864 | 49.87 µg/L  | 100    |
| PFTrDA           | 8.615 | 663.0 -> 619.0 | 463667 | 50.04 µg/L  | 99     |
| PFUnDA           | 8.028 | 563.0 -> 519.0 | 384705 | 49.62 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.162 | 631.0 -> 451.0 | 361059 | 49.91 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.446 | 531.0 -> 351.0 | 93449  | 50.19 µg/L  | 100    |
| ADONA            | 6.007 | 377.0 -> 251.0 | 954127 | 50.12 µg/L  | 100    |
| HFPO-DA          | 5.259 | 329.0 -> 169.0 | 648849 | 240.97 µg/L | 99     |

# = Qualifier out of range, m = manually integrated, + = Area summed



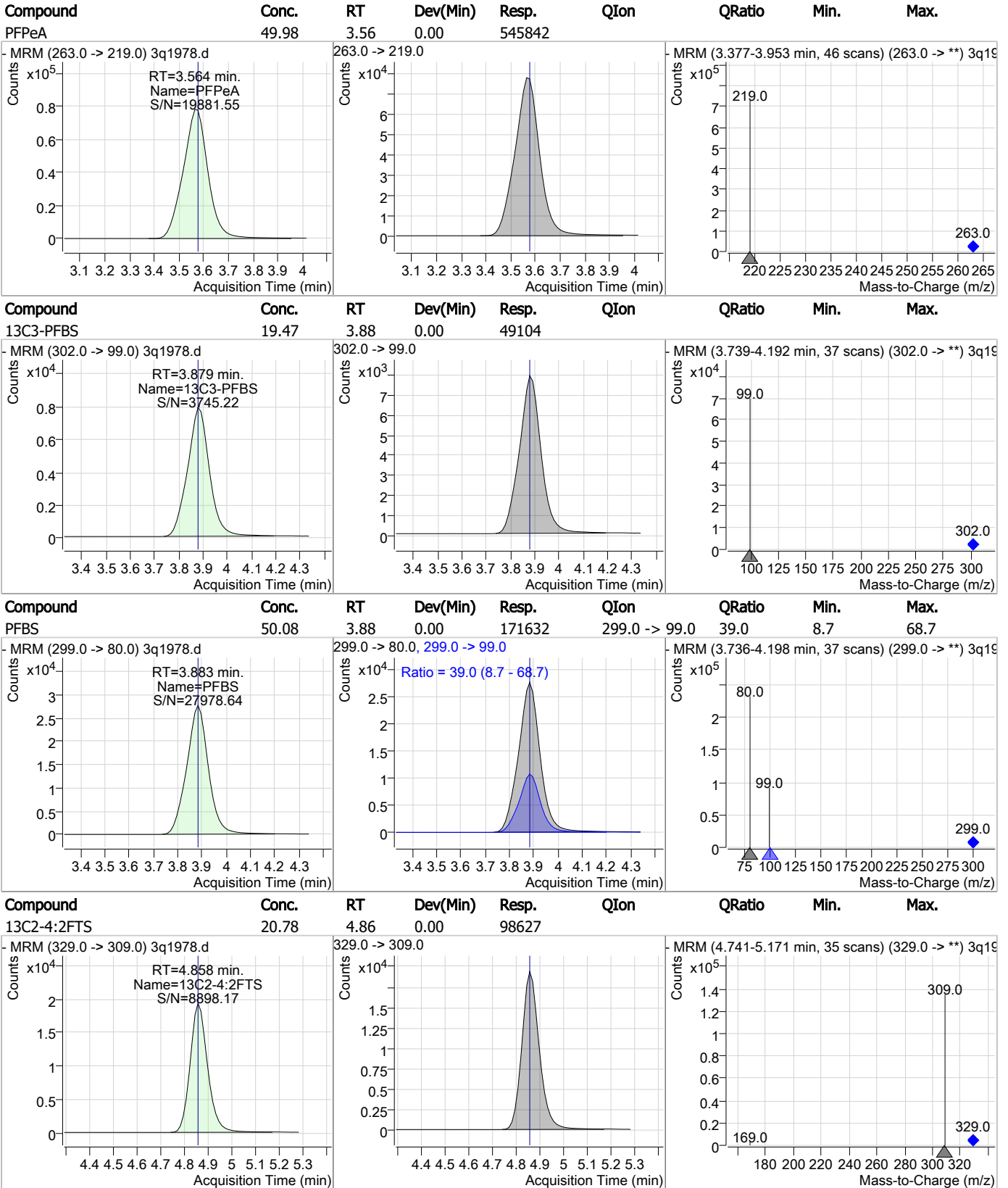
### Perfluorinated Compounds by LC/MS/MS



7.6.39

7

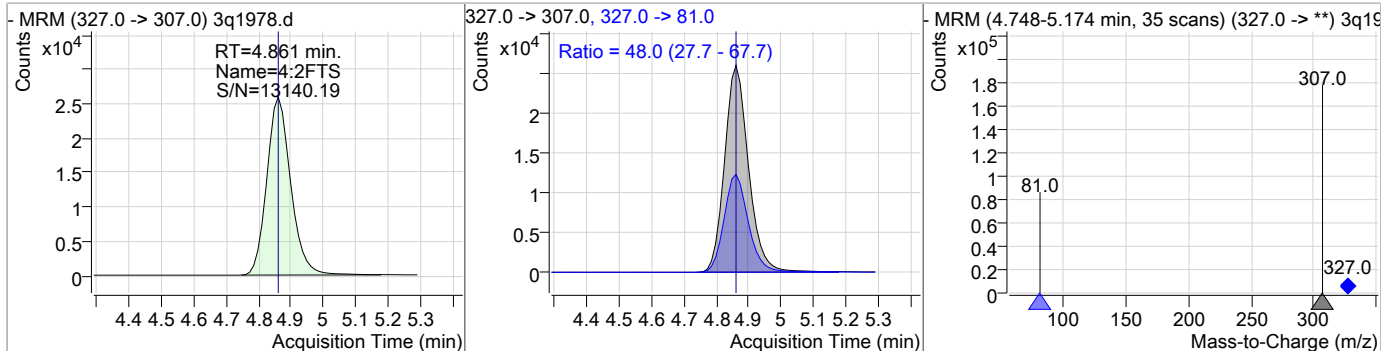
### Perfluorinated Compounds by LC/MS/MS



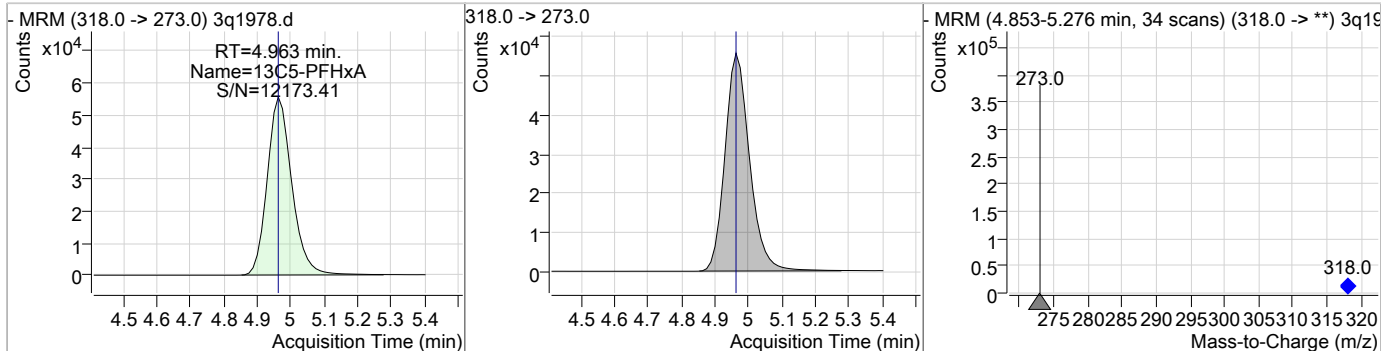
7.6.39  
7

### Perfluorinated Compounds by LC/MS/MS

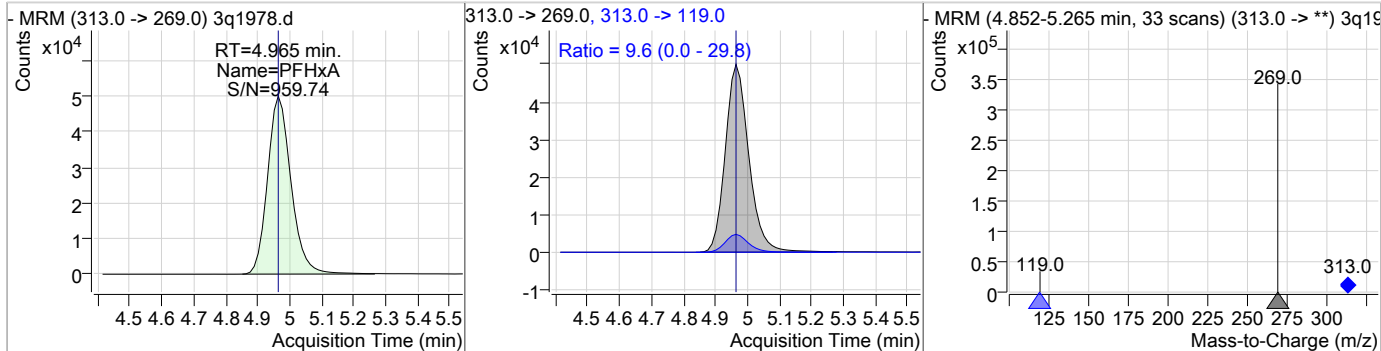
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| 4:2FTS   | 48.84 | 4.86 | 0.00     | 132202 | 327.0 -> 81.0 | 48.0   | 27.7 | 67.7 |



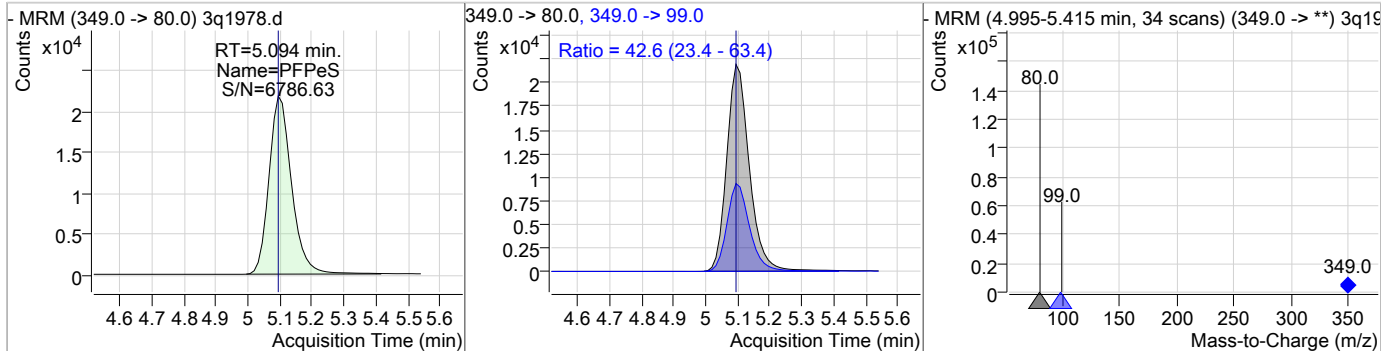
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 19.25 | 4.96 | 0.00     | 283248 |      |        |      |      |



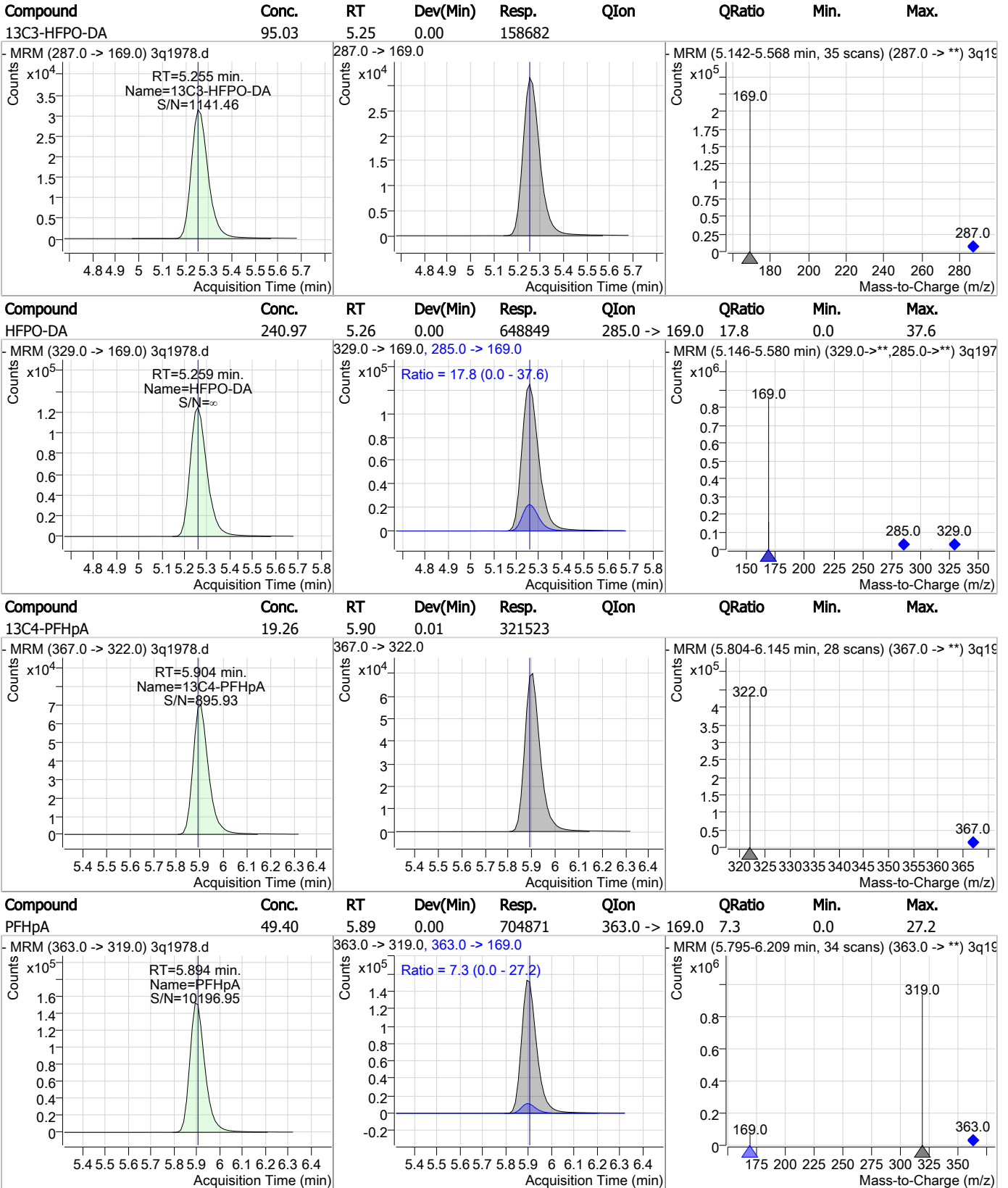
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHxA    | 50.12 | 4.96 | 0.00     | 254367 | 313.0 -> 119.0 | 9.6    | 0.0  | 29.8 |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| PFPeS    | 50.14 | 5.09 | 0.00     | 106852 | 349.0 -> 99.0 | 42.6   | 23.4 | 63.4 |

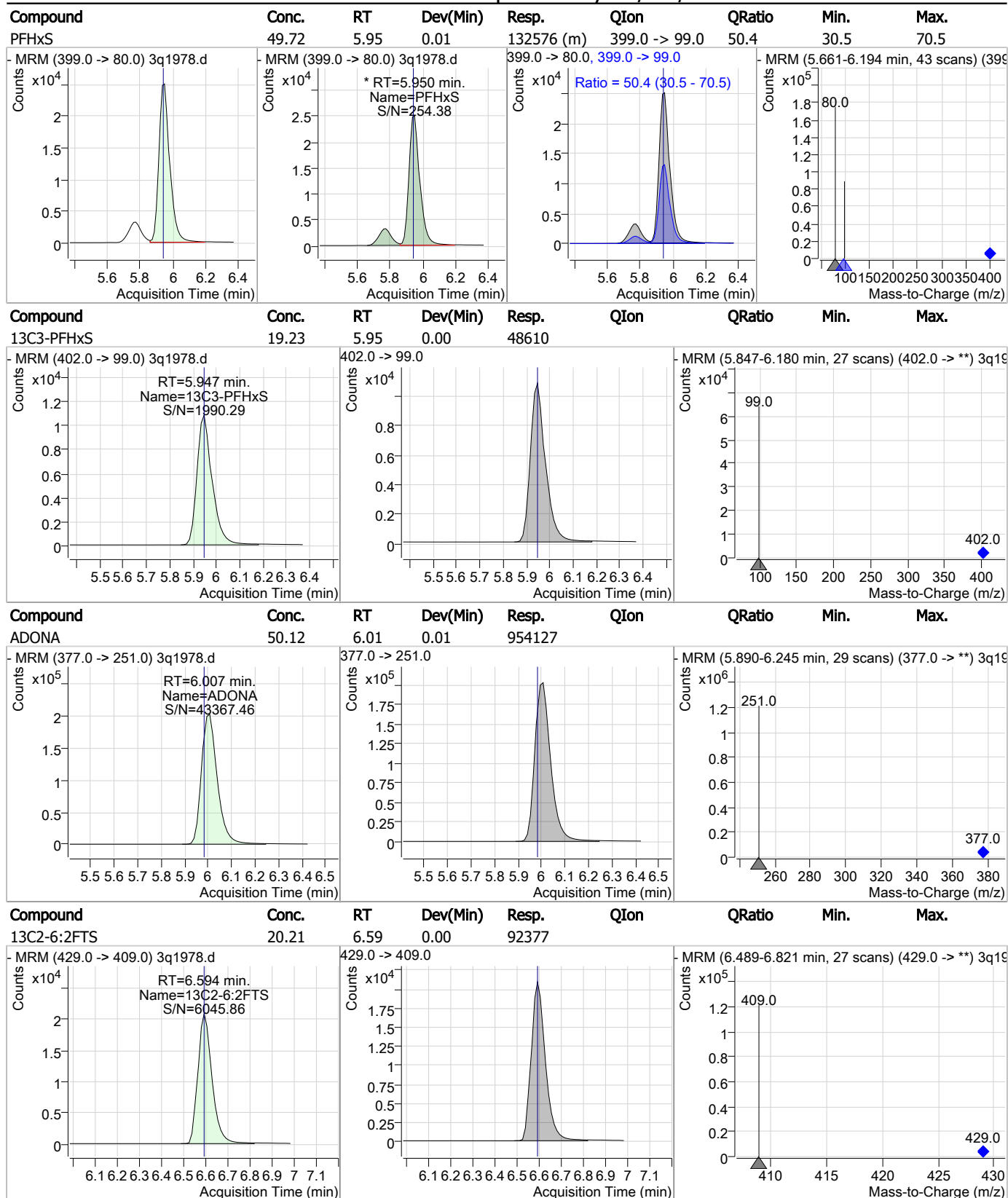


### Perfluorinated Compounds by LC/MS/MS



7.6.39  
7

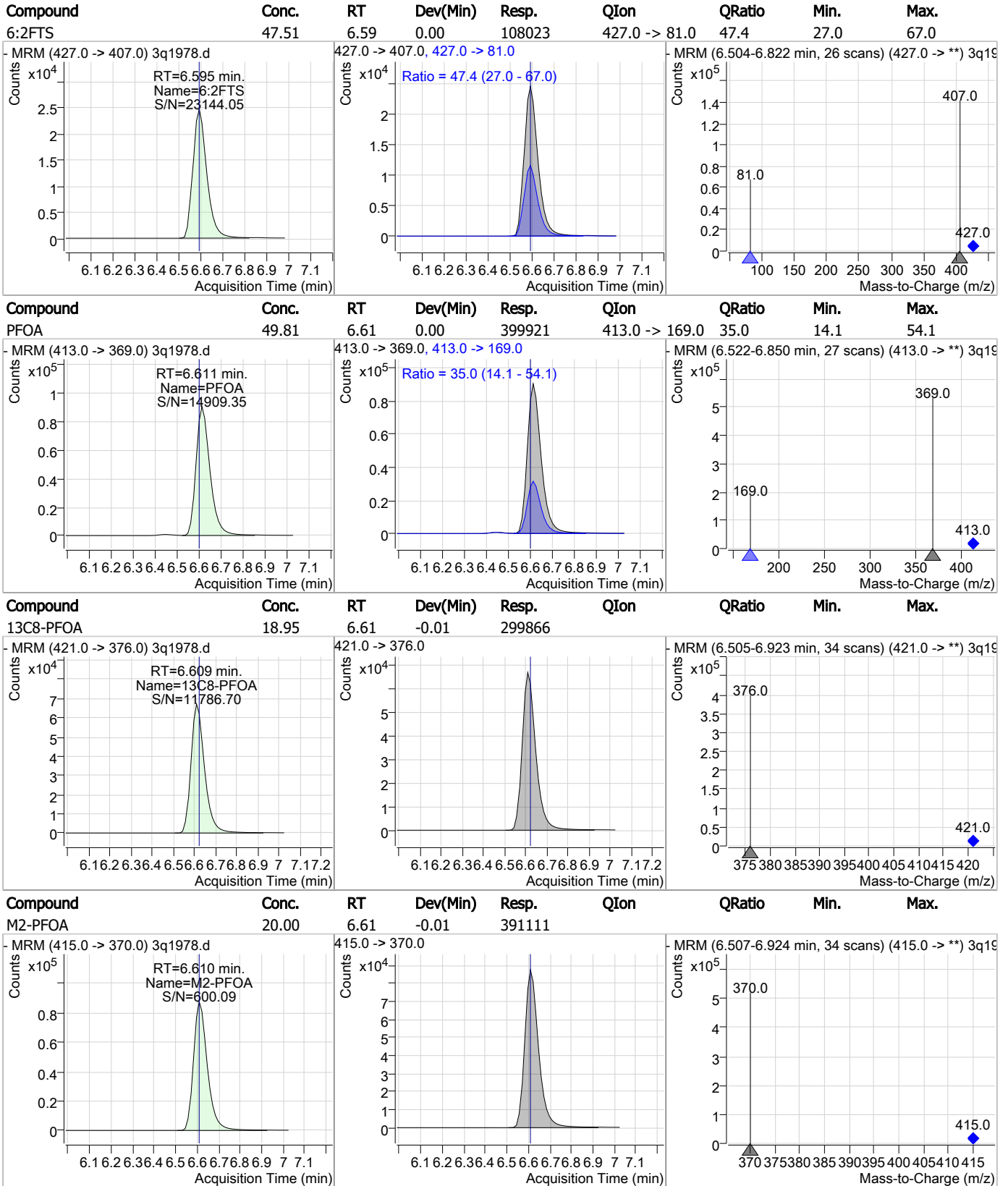
### Perfluorinated Compounds by LC/MS/MS



7.6.39

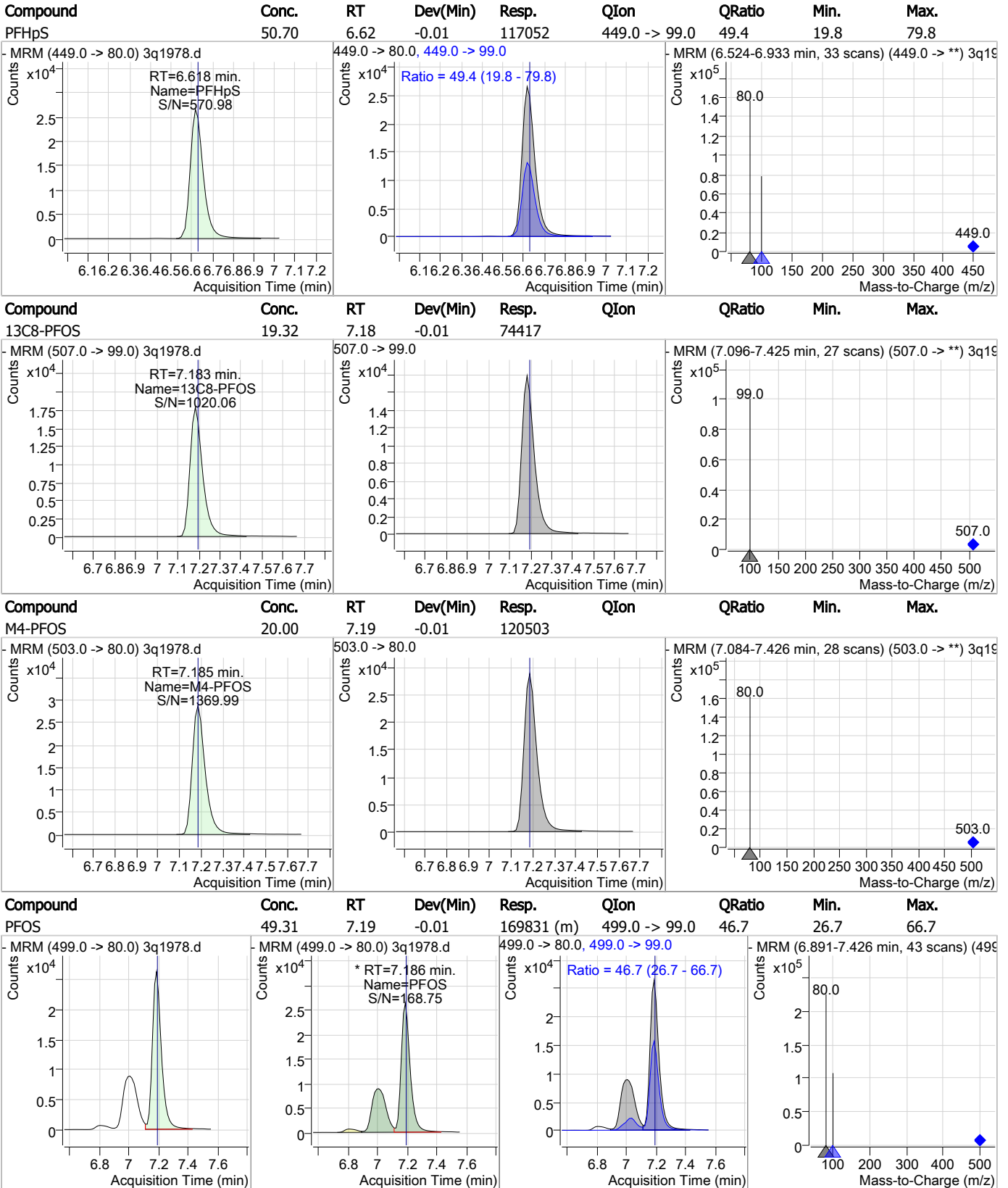
7

### Perfluorinated Compounds by LC/MS/MS



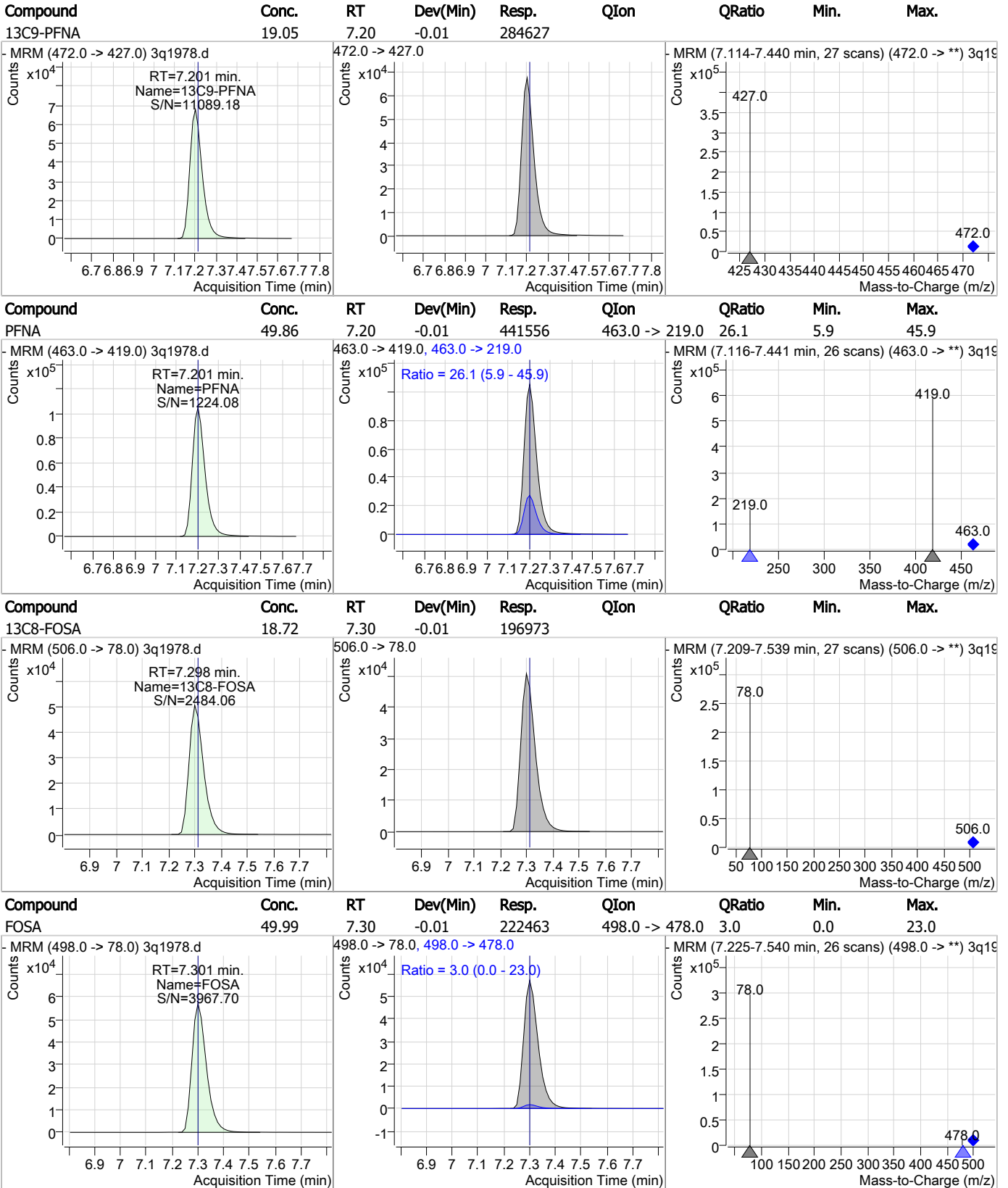
7.6.39  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.39  
7

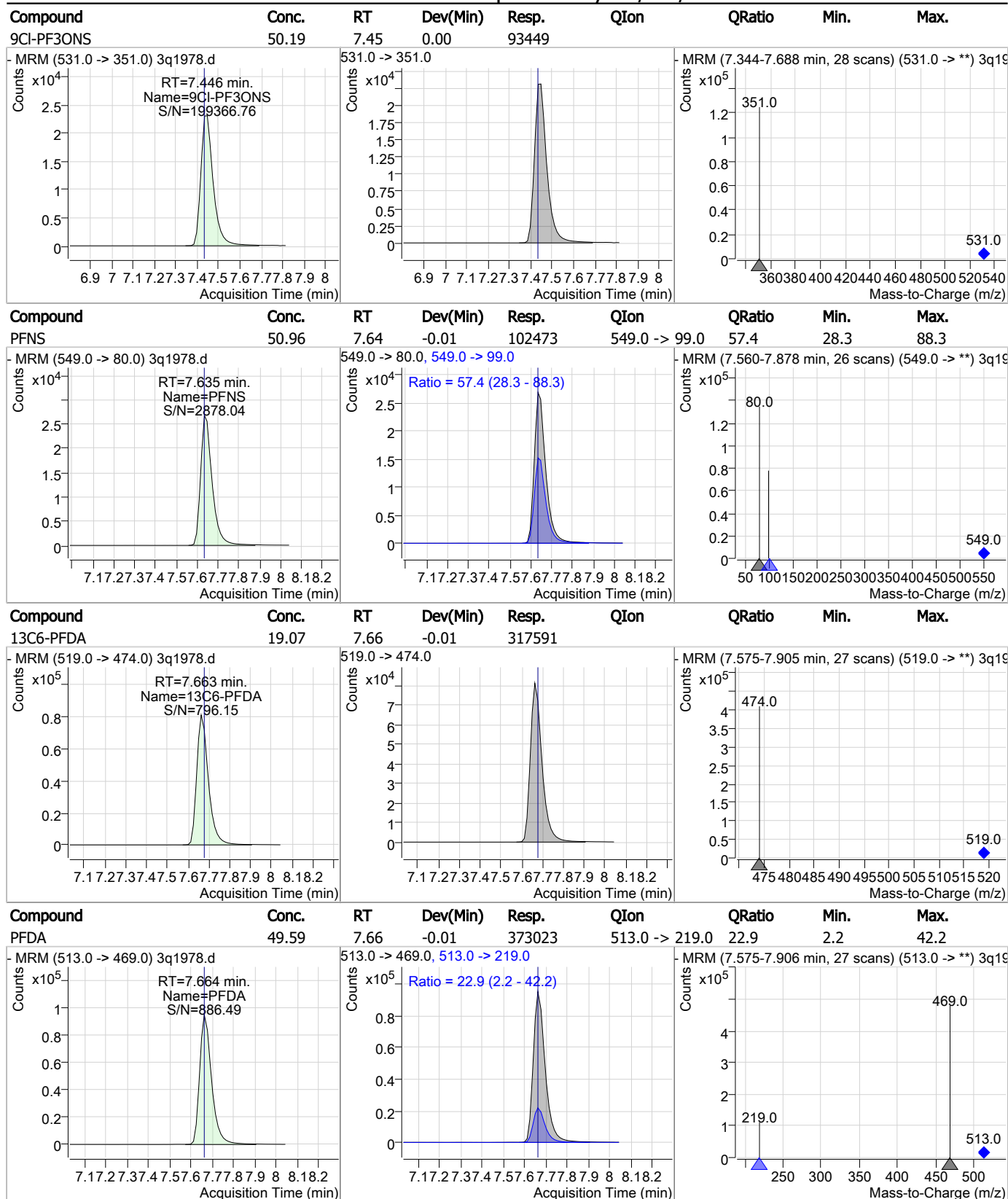
### Perfluorinated Compounds by LC/MS/MS



7.6.39  
7



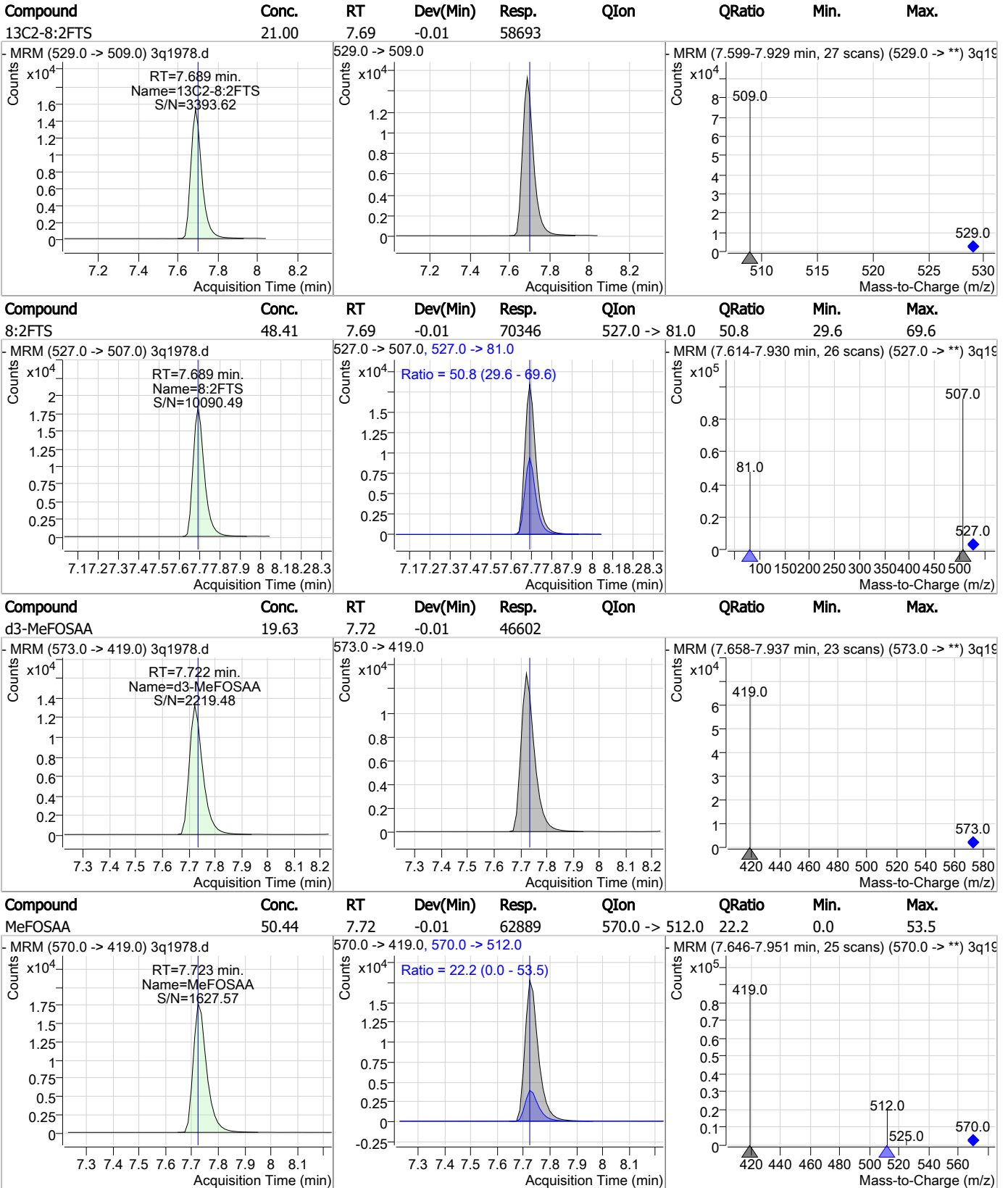
### Perfluorinated Compounds by LC/MS/MS



7.6.39

7

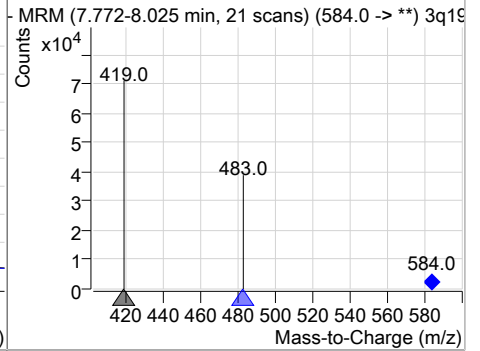
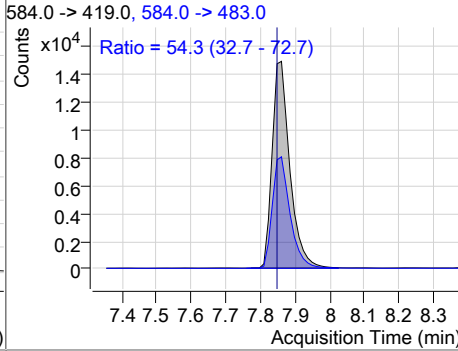
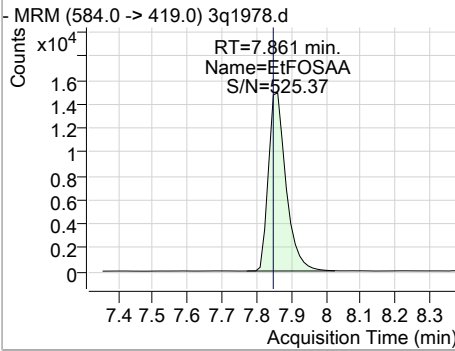
### Perfluorinated Compounds by LC/MS/MS



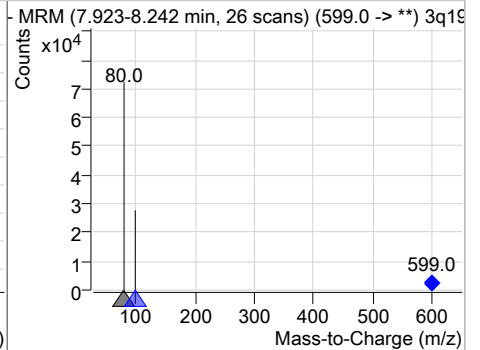
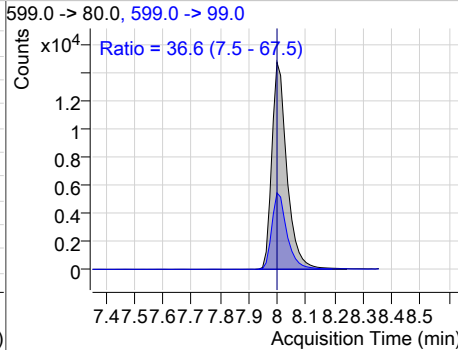
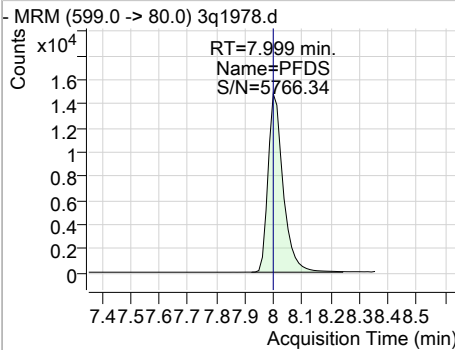
7.6.39  
7

### Perfluorinated Compounds by LC/MS/MS

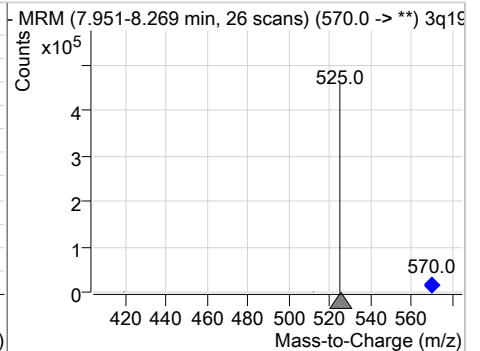
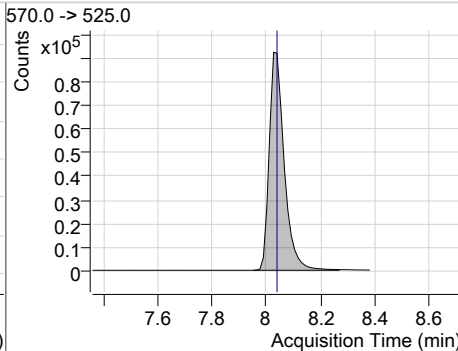
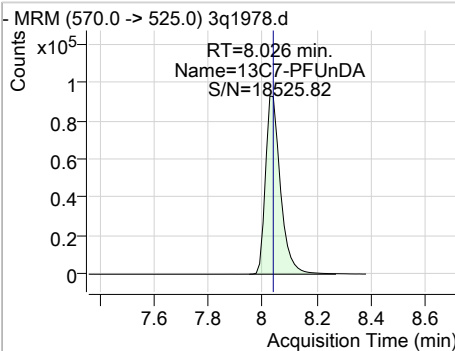
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 50.02 | 7.86 | 0.00     | 52779 | 584.0 -> 483.0 | 54.3   | 32.7 | 72.7 |



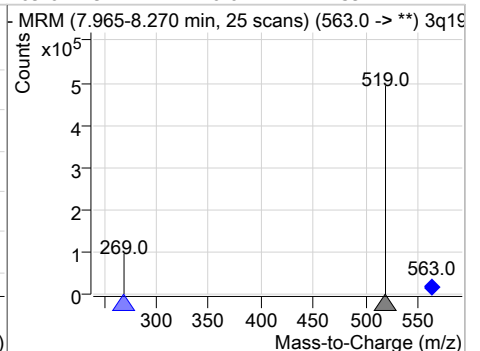
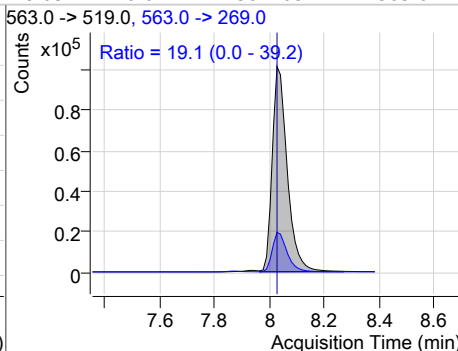
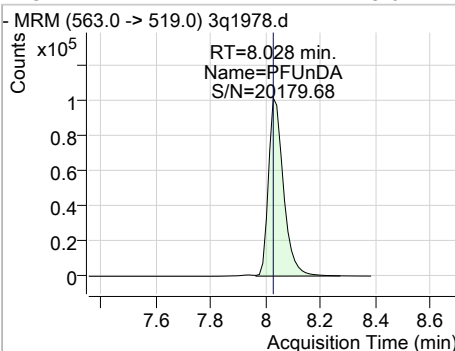
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 49.29 | 8.00 | -0.01    | 54241 | 599.0 -> 99.0 | 36.6   | 7.5  | 67.5 |



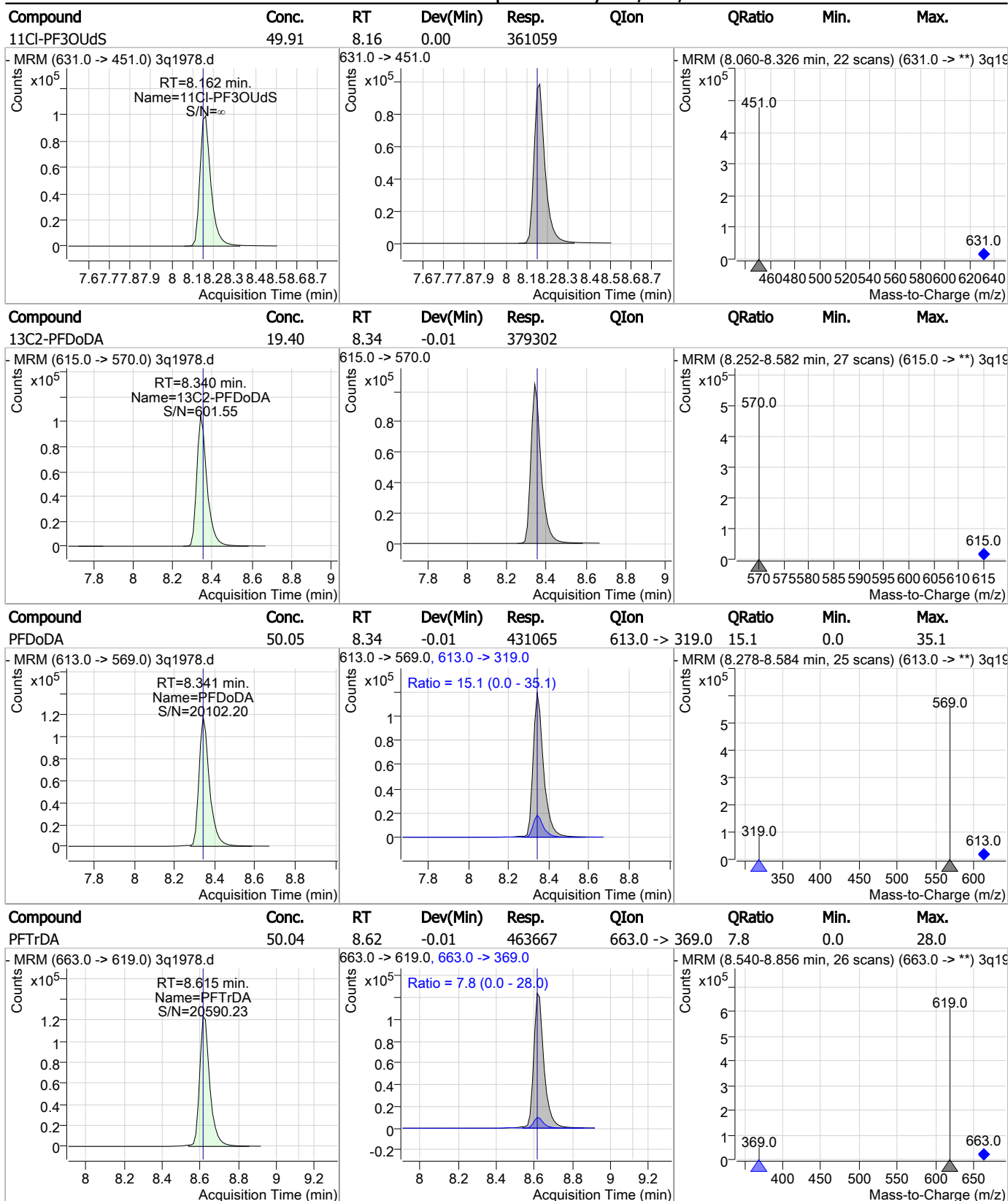
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 19.28 | 8.03 | -0.01    | 357417 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 49.62 | 8.03 | -0.01    | 384705 | 563.0 -> 269.0 | 19.1   | 0.0  | 39.2 |



### Perfluorinated Compounds by LC/MS/MS

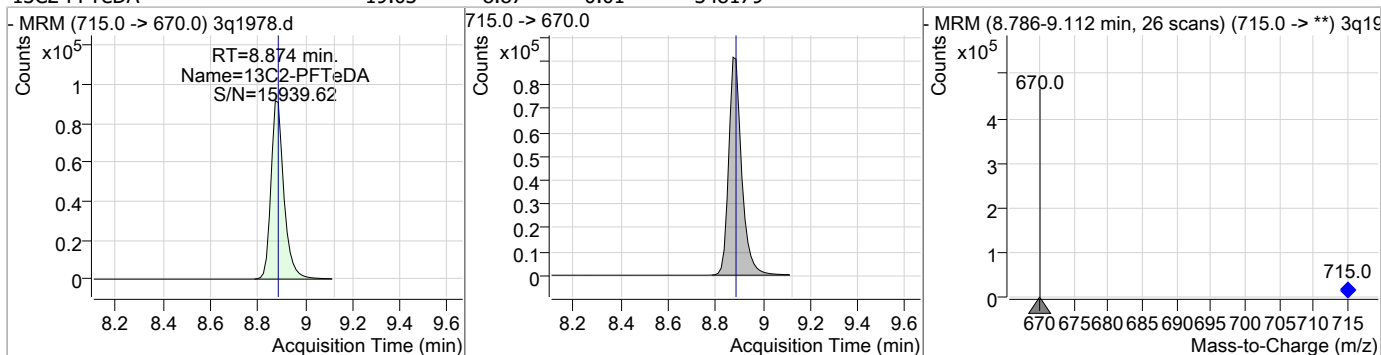


7.6.39

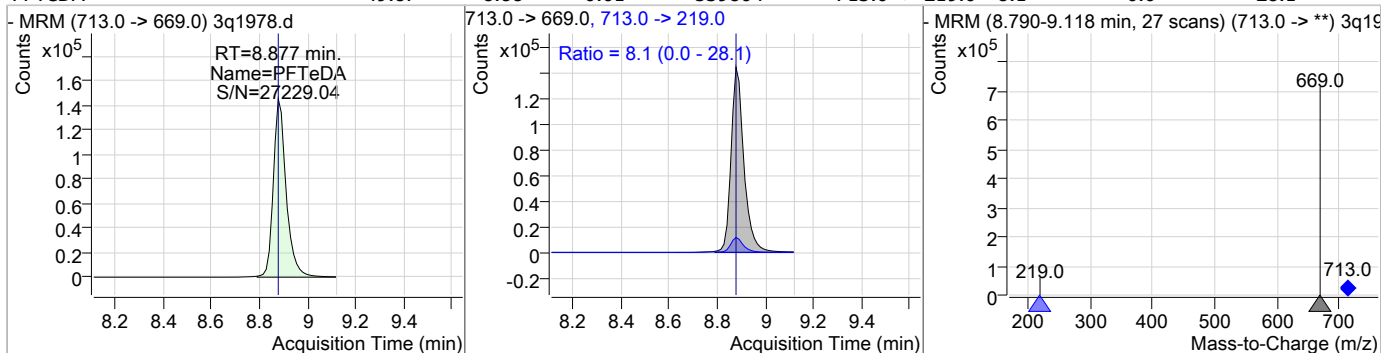
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 19.03 | 8.87 | -0.01    | 348179 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 49.87 | 8.88 | -0.01    | 539864 | 713.0 -> 219.0 | 8.1    | 0.0  | 28.1 |



7.6.39

7

# Manual Integration Approval Summary

**Sample Number:** S3Q54-IC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1978.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 11:25      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.95           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.39.1

7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)

Mike Eger  
 03/24/19 19:07

## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1979.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 11:41:20 AM  
 Sample Name : ic54-100  
 Vial : P3-A9  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 327952 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 222184 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 294421 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 323880 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 298387 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 285535 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 306272 | 20.00 µg/L        | -0.015   |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 348222 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 379312 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 346899 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 188236 | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.867                | 302.0 -> 99.0  | 50631  | 20.00 µg/L        | -0.013   |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 48987  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 73393  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 114535 | 20.00 µg/L        | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 105573 | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 67692  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.735                | 573.0 -> 419.0 | 46978  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.242                | 287.0 -> 169.0 | 147212 | 100.00 µg/L       | -0.013   |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 397898 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 122382 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 114533 | 24.13 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 120.7% |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 105579 | 23.10 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 115.5% |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 67676  | 24.21 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 121.0% |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 379287 | 19.40 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.0%  |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 346937 | 18.97 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.8%  |          |
| 13C3-PFBS                          | 3.867                | 302.0 -> 99.0  | 50147  | 19.88 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.4%  |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 48861  | 19.33 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.7%  |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 325532 | 19.96 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.8%  |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 324327 | 19.43 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.1%  |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 292790 | 19.89 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.5%  |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 222184 | 20.07 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.3% |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 306284 | 18.39 µg/L        | -0.015   |

7.6.40  
7

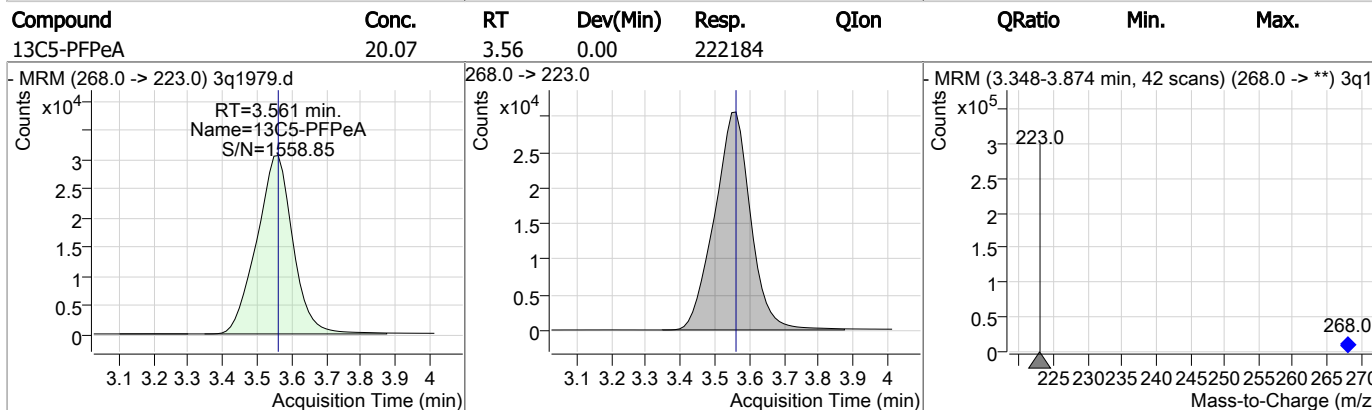
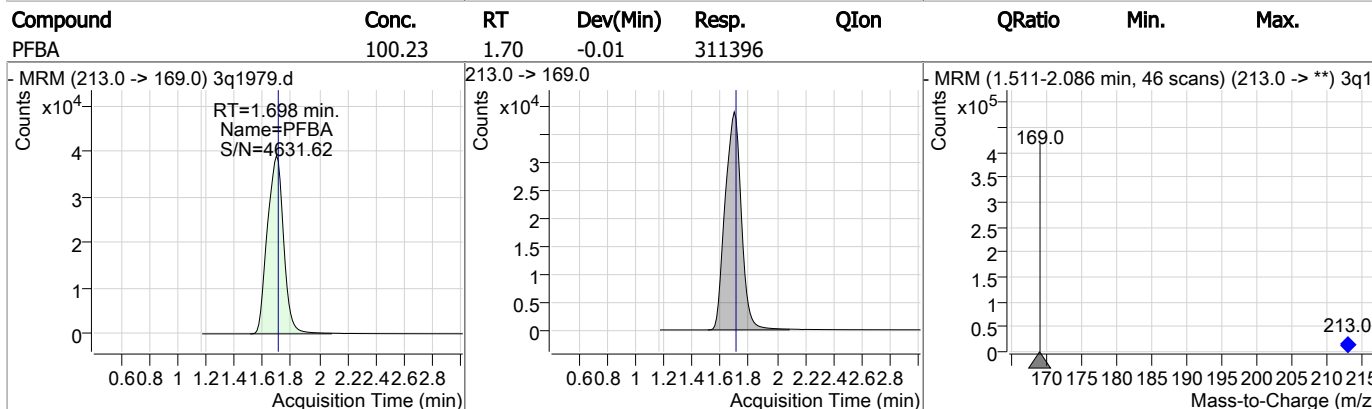
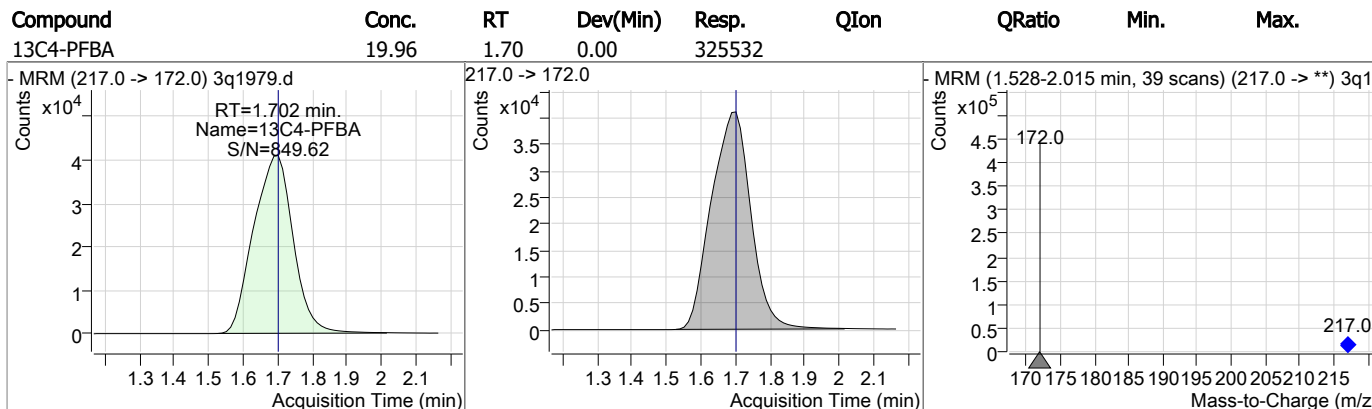
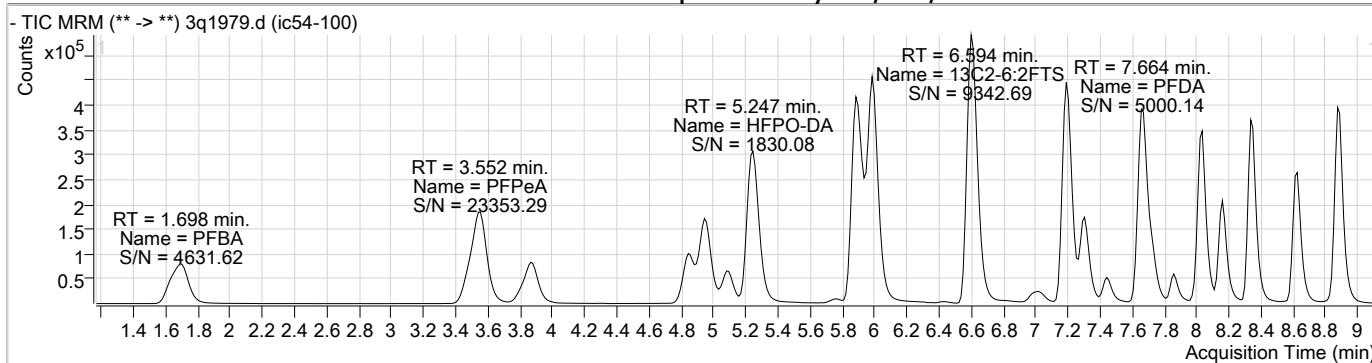
## Perfluorinated Compounds by LC/MS/MS

| Compound                | RT                   | QIon           | Resp.   | Conc. Units       | Dev(Min)      |
|-------------------------|----------------------|----------------|---------|-------------------|---------------|
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 91.9%  |               |
| 13C7-PFUnDA             | 8.039                | 570.0 -> 525.0 | 348488  | 18.80 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 94.0%  |               |
| 13C8-FOSA               | 7.311                | 506.0 -> 78.0  | 188195  | 17.88 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 89.4%  |               |
| 13C8-PFOA               | 6.609                | 421.0 -> 376.0 | 298342  | 18.86 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 94.3%  |               |
| 13C8-PFOS               | 7.183                | 507.0 -> 99.0  | 72960   | 18.94 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 94.7%  |               |
| 13C9-PFNA               | 7.201                | 472.0 -> 427.0 | 284536  | 19.04 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 95.2%  |               |
| d3-MeFOSAA              | 7.735                | 573.0 -> 419.0 | 47159   | 19.86 µg/L        | 0.000         |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 99.3%  |               |
| 13C3-HFPO-DA            | 5.242                | 287.0 -> 169.0 | 147212  | 88.16 µg/L        | -0.013        |
| Spiked Amount: 100.00   | Range: 50.0 - 150.0% |                |         | Recovery = 88.2%  |               |
| M2-PFOA                 | 6.610                | 415.0 -> 370.0 | 397898  | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 100.0% |               |
| M4-PFOS                 | 7.185                | 503.0 -> 80.0  | 122382  | 20.00 µg/L        | -0.013        |
| Spiked Amount: 20.00    | Range: 50.0 - 150.0% |                |         | Recovery = 100.0% |               |
| <b>Target Compounds</b> |                      |                |         |                   | <b>QValue</b> |
| 4:2FTS                  | 4.848                | 327.0 -> 307.0 | 276313  | 88.23 µg/L        | 100           |
| 6:2FTS                  | 6.595                | 427.0 -> 407.0 | 220542  | 84.70 µg/L        | 99            |
| 8:2FTS                  | 7.689                | 527.0 -> 507.0 | 141395  | 84.38 µg/L        | 98            |
| EtFOSAA                 | 7.861                | 584.0 -> 419.0 | 107755  | 100.00 µg/L       | 97            |
| FOSA                    | 7.313                | 498.0 -> 78.0  | 430023  | 100.00 µg/L       | 100           |
| MeFOSAA                 | 7.735                | 570.0 -> 419.0 | 125667  | 99.97 µg/L        | 97            |
| PFBA                    | 1.698                | 213.0 -> 169.0 | 311396  | 100.23 µg/L       | 100           |
| PFBS                    | 3.870                | 299.0 -> 80.0  | 352231  | 99.99 µg/L        | 100           |
| PFDA                    | 7.664                | 513.0 -> 469.0 | 726968  | 100.24 µg/L       | 99            |
| PFDoDA                  | 8.341                | 613.0 -> 569.0 | 865464  | 100.08 µg/L       | 100           |
| PFDS                    | 8.011                | 599.0 -> 80.0  | 105984  | 98.84 µg/L        | 100           |
| PFHpA                   | 5.894                | 363.0 -> 319.0 | 1439110 | 100.40 µg/L       | 100           |
| PFHpS                   | 6.618                | 449.0 -> 80.0  | 232464  | 99.68 µg/L        | 100           |
| PFHxA                   | 4.952                | 313.0 -> 269.0 | 524254  | 100.00 µg/L       | 100           |
| PFHxS                   | 5.937                | 399.0 -> 80.0  | 269969  | 100.22 µg/L       | m 99          |
| PFNA                    | 7.201                | 463.0 -> 419.0 | 888532  | 100.15 µg/L       | 99            |
| PFNS                    | 7.648                | 549.0 -> 80.0  | 197223  | 99.37 µg/L        | 98            |
| PFOA                    | 6.611                | 413.0 -> 369.0 | 799530  | 100.08 µg/L       | 98            |
| PFOS                    | 7.186                | 499.0 -> 80.0  | 341345  | 100.43 µg/L       | m 100         |
| PFPeA                   | 3.552                | 263.0 -> 219.0 | 1126282 | 100.05 µg/L       | 100           |
| PFPeS                   | 5.082                | 349.0 -> 80.0  | 218865  | 99.92 µg/L        | 98            |
| PFTeDA                  | 8.877                | 713.0 -> 669.0 | 1080613 | 100.15 µg/L       | 100           |
| PFTTrDA                 | 8.628                | 663.0 -> 619.0 | 924562  | 100.12 µg/L       | 100           |
| PFUnDA                  | 8.041                | 563.0 -> 519.0 | 756934  | 100.21 µg/L       | 100           |
| 11Cl-PF3OUdS            | 8.162                | 631.0 -> 451.0 | 726998  | 100.07 µg/L       | 100           |
| 9Cl-PF3ONS              | 7.446                | 531.0 -> 351.0 | 188349  | 99.97 µg/L        | 100           |
| ADONA                   | 5.994                | 377.0 -> 251.0 | 1942586 | 99.97 µg/L        | 100           |
| HFPO-DA                 | 5.247                | 329.0 -> 169.0 | 1262962 | 505.58 µg/L       | 100           |

# = Qualifier out of range, m = manually integrated, + = Area summed

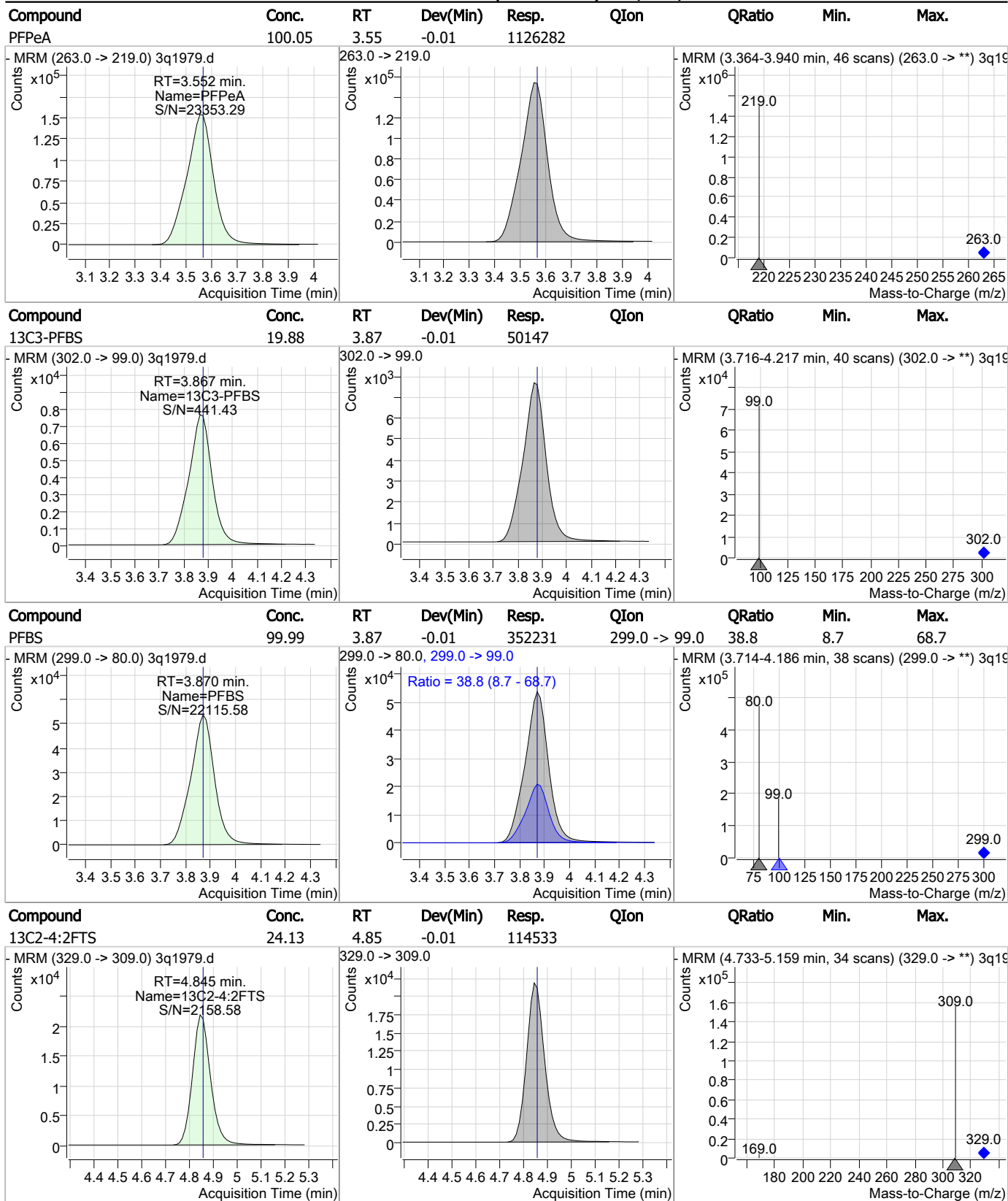


### Perfluorinated Compounds by LC/MS/MS



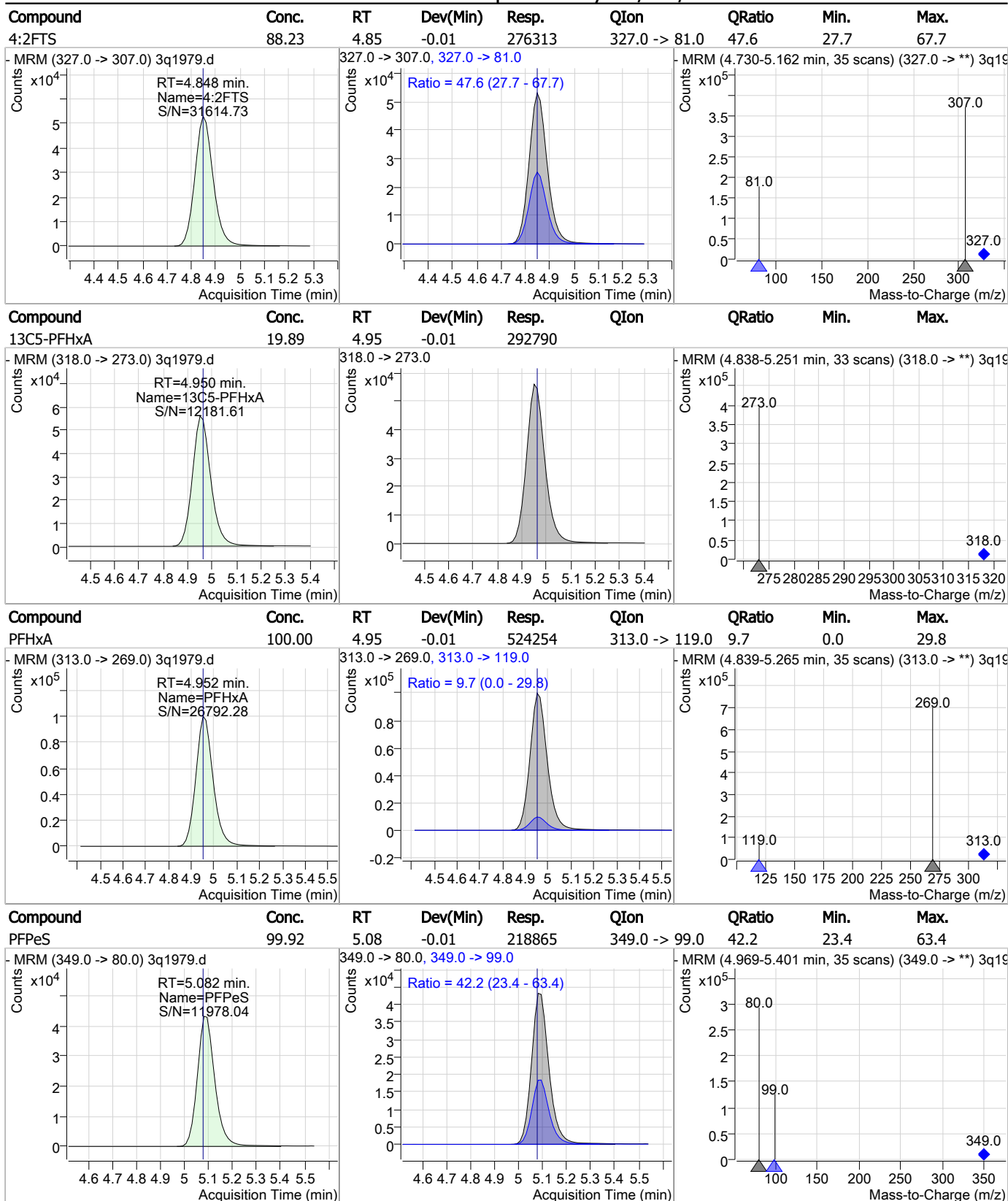
7.6.40  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.40  
7

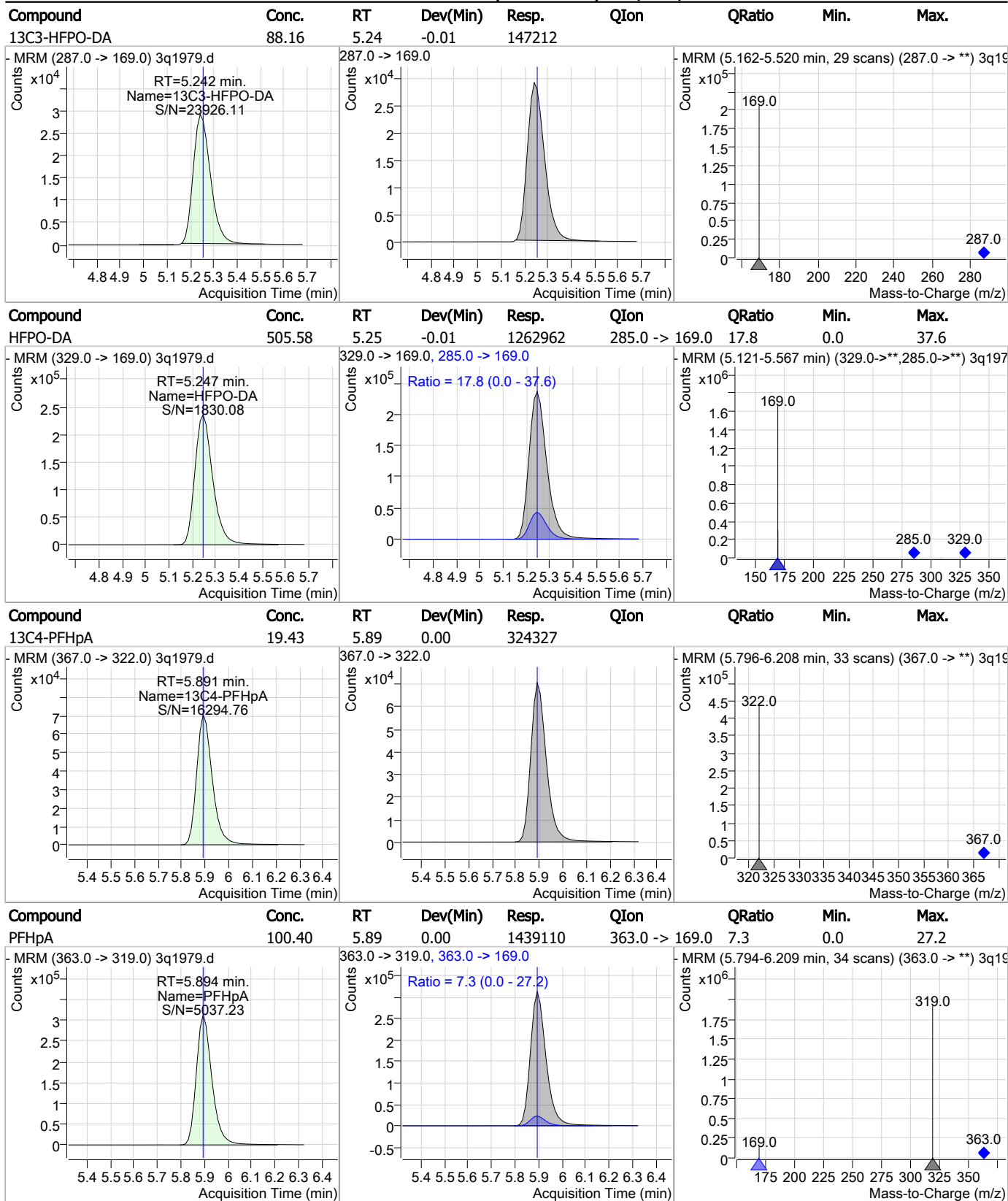
### Perfluorinated Compounds by LC/MS/MS



7.6.40

7

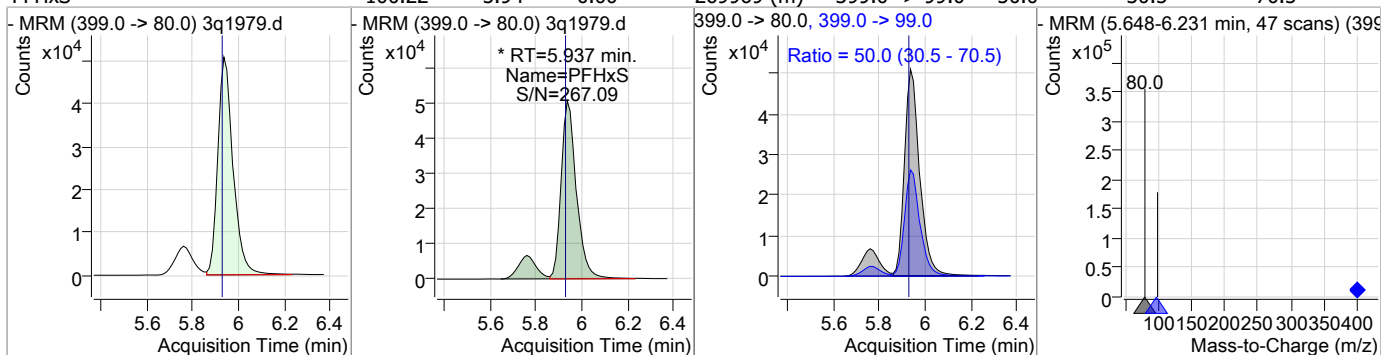
### Perfluorinated Compounds by LC/MS/MS



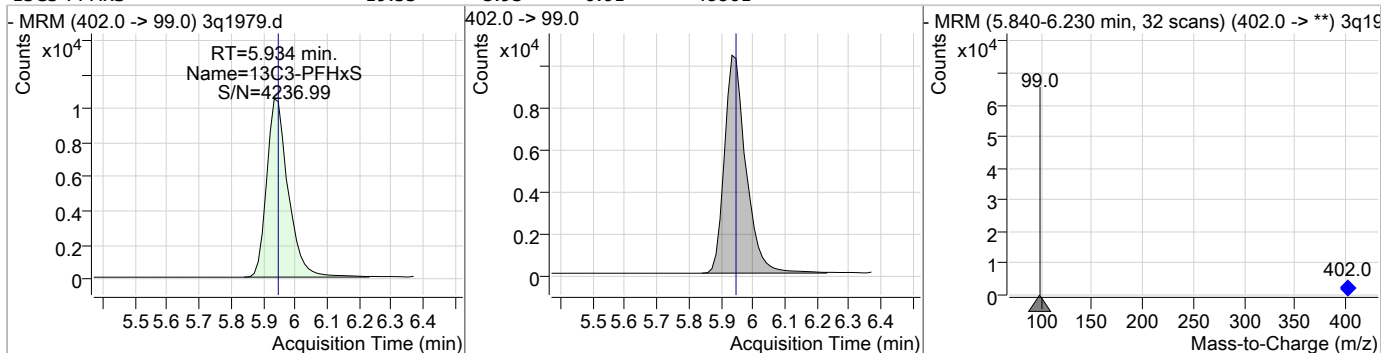
7.6.40  
7

### Perfluorinated Compounds by LC/MS/MS

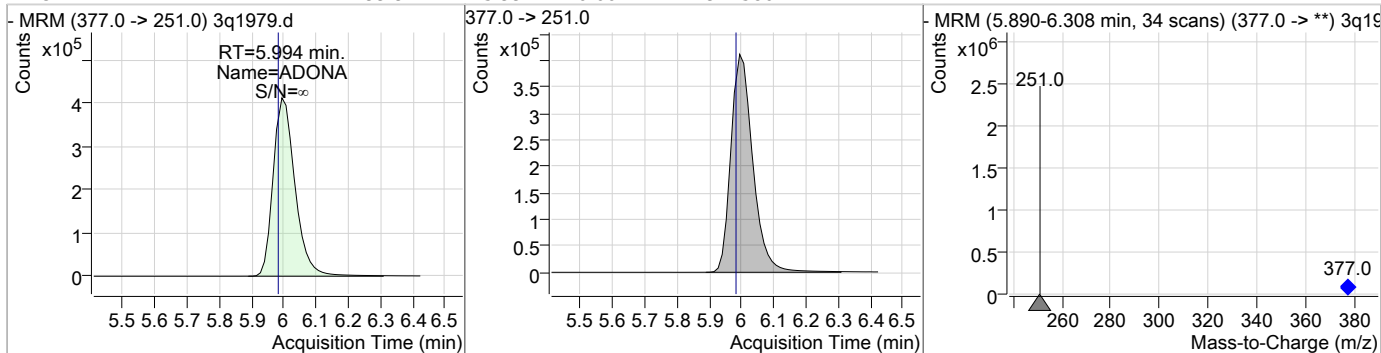
| Compound | Conc.  | RT   | Dev(Min) | Resp.      | QIon          | QRatio | Min. | Max. |
|----------|--------|------|----------|------------|---------------|--------|------|------|
| PFHxS    | 100.22 | 5.94 | 0.00     | 269969 (m) | 399.0 -> 99.0 | 50.0   | 30.5 | 70.5 |



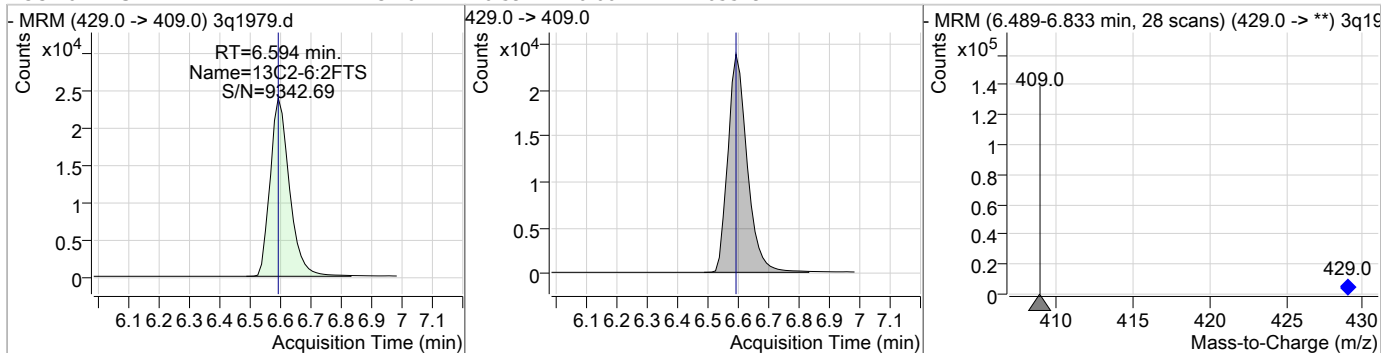
| Compound   | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|-------|------|--------|------|------|
| 13C3-PFHxS | 19.33 | 5.93 | -0.01    | 48861 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.   | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|---------|------|--------|------|------|
| ADONA    | 99.97 | 5.99 | 0.00     | 1942586 |      |        |      |      |



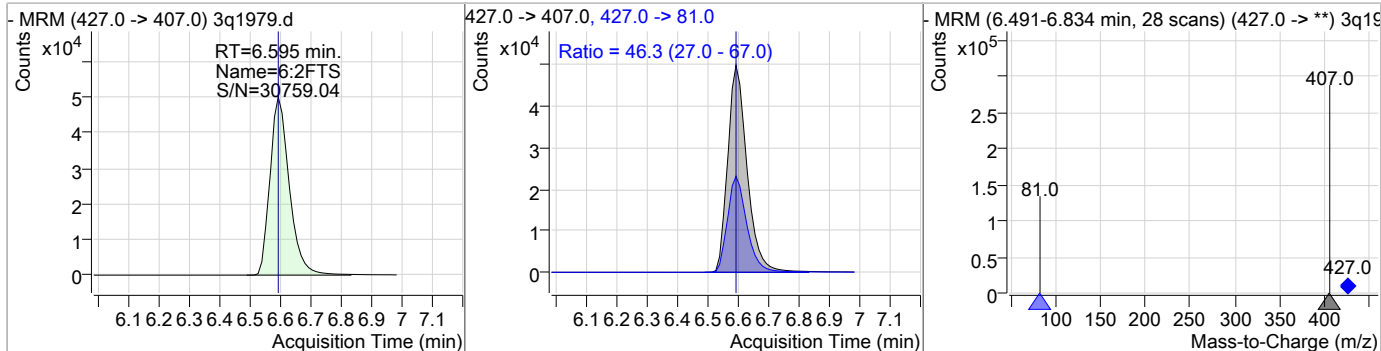
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-6:2FTS | 23.10 | 6.59 | 0.00     | 105579 |      |        |      |      |



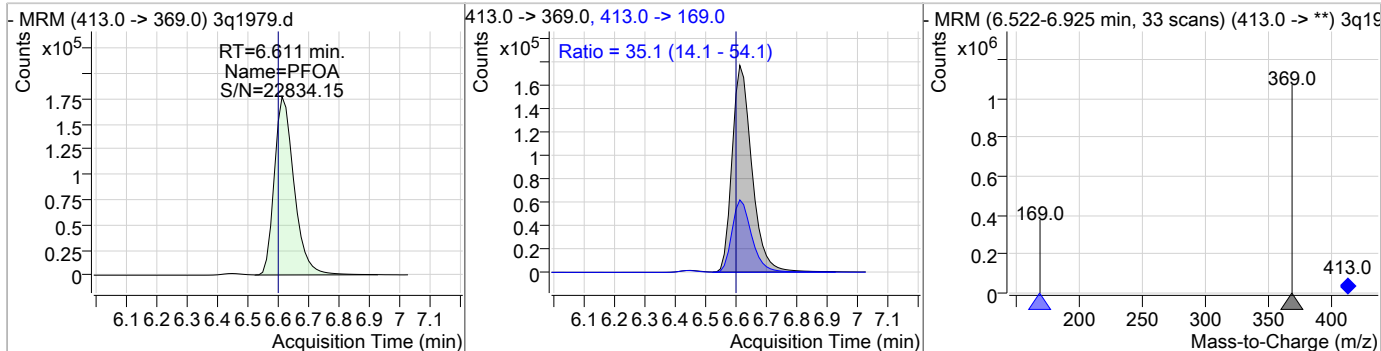
7.6.40  
7

### Perfluorinated Compounds by LC/MS/MS

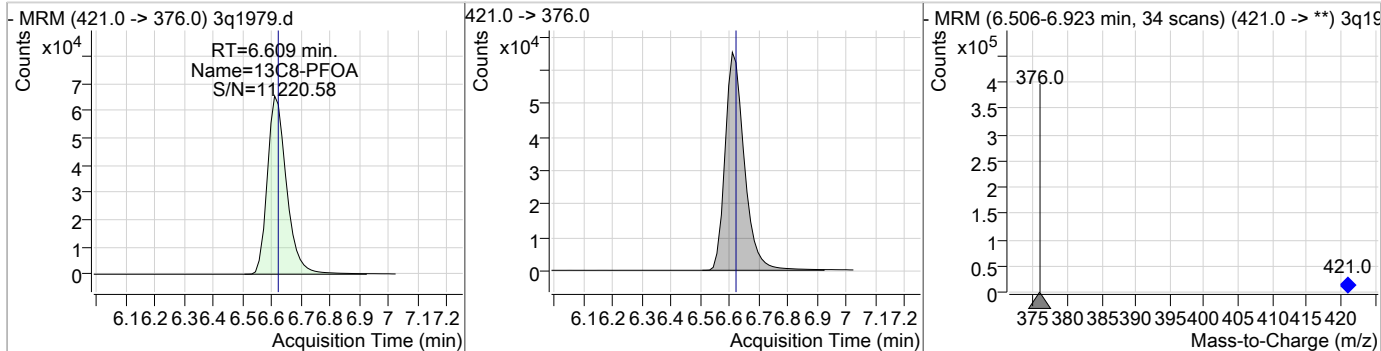
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| 6:2FTS   | 84.70 | 6.59 | 0.00     | 220542 | 427.0 -> 81.0 | 46.3   | 27.0 | 67.0 |



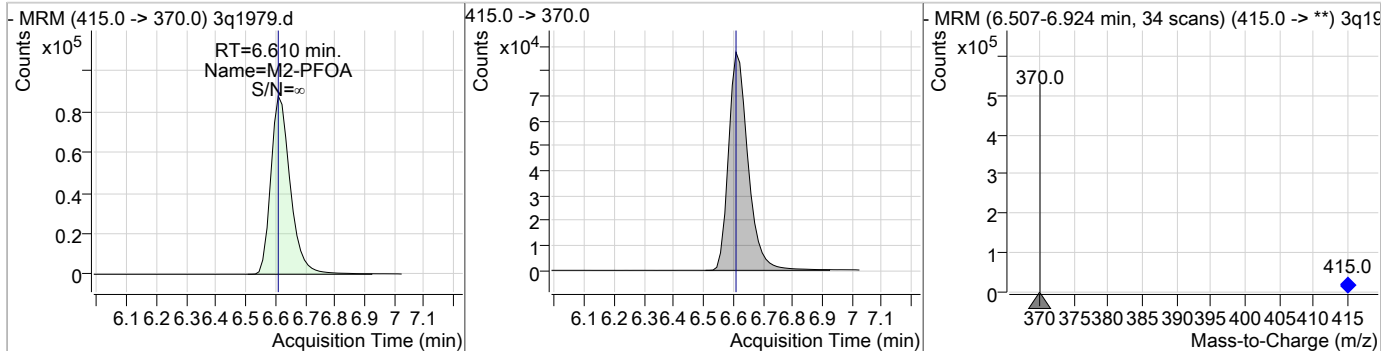
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 100.08 | 6.61 | 0.00     | 799530 | 413.0 -> 169.0 | 35.1   | 14.1 | 54.1 |



| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 18.86 | 6.61 | -0.01    | 298342 | 421.0 -> 376.0 |        |      |      |

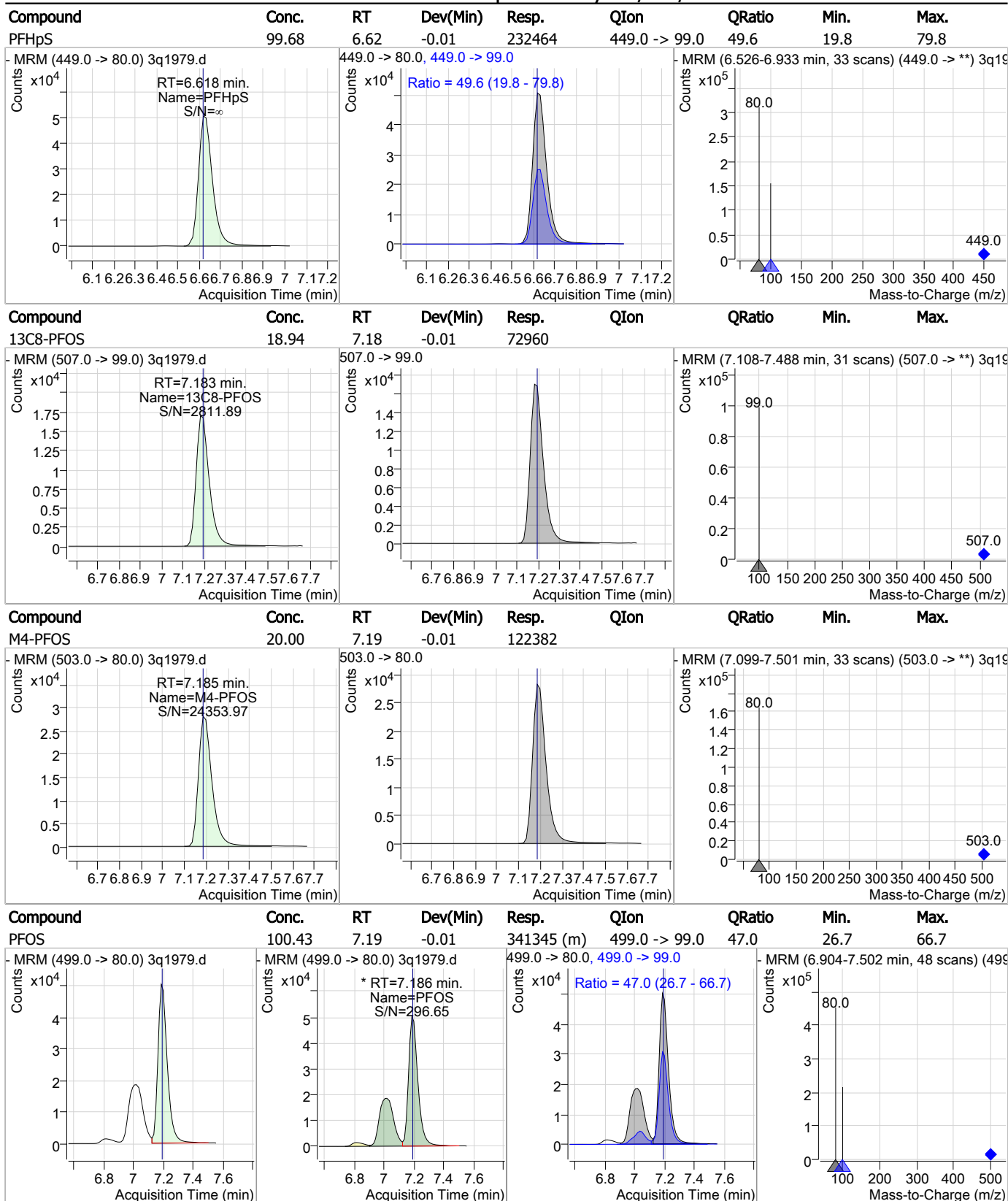


| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| M2-PFOA  | 20.00 | 6.61 | -0.01    | 397898 | 415.0 -> 370.0 |        |      |      |



7.6.40  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.40  
7

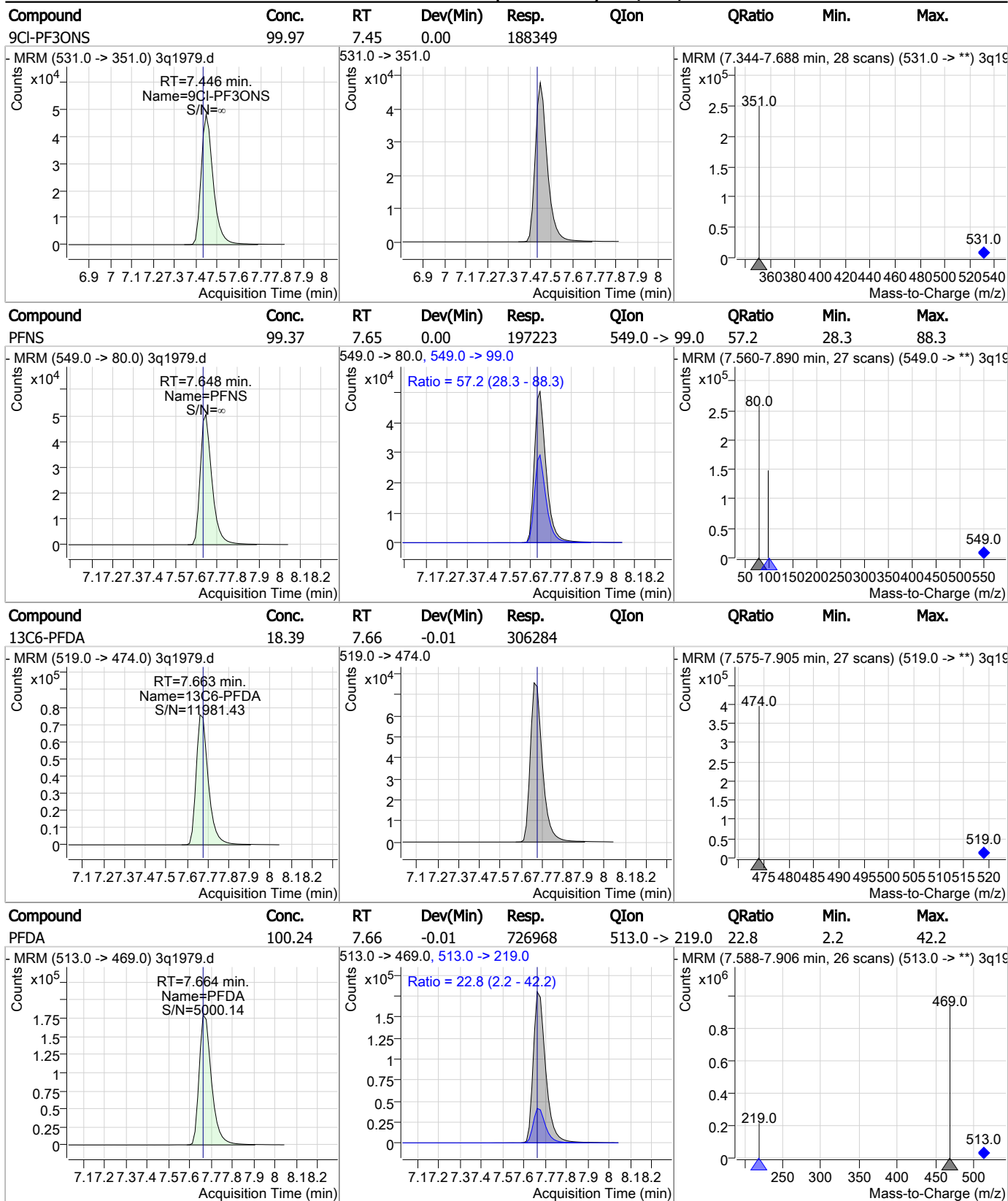
### Perfluorinated Compounds by LC/MS/MS

| Compound  | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|--------|------|----------|--------|----------------|--------|------|------|
| 13C9-PFNA | 19.04  | 7.20 | -0.01    | 284536 |                |        |      |      |
|           |        |      |          |        |                |        |      |      |
| PFNA      | 100.15 | 7.20 | -0.01    | 888532 | 463.0 -> 219.0 | 25.6   | 5.9  | 45.9 |
|           |        |      |          |        |                |        |      |      |
| 13C8-FOSA | 17.88  | 7.31 | 0.00     | 188195 |                |        |      |      |
|           |        |      |          |        |                |        |      |      |
| FOSA      | 100.00 | 7.31 | 0.00     | 430023 | 498.0 -> 478.0 | 3.2    | 0.0  | 23.0 |
|           |        |      |          |        |                |        |      |      |

7.6.40  
7



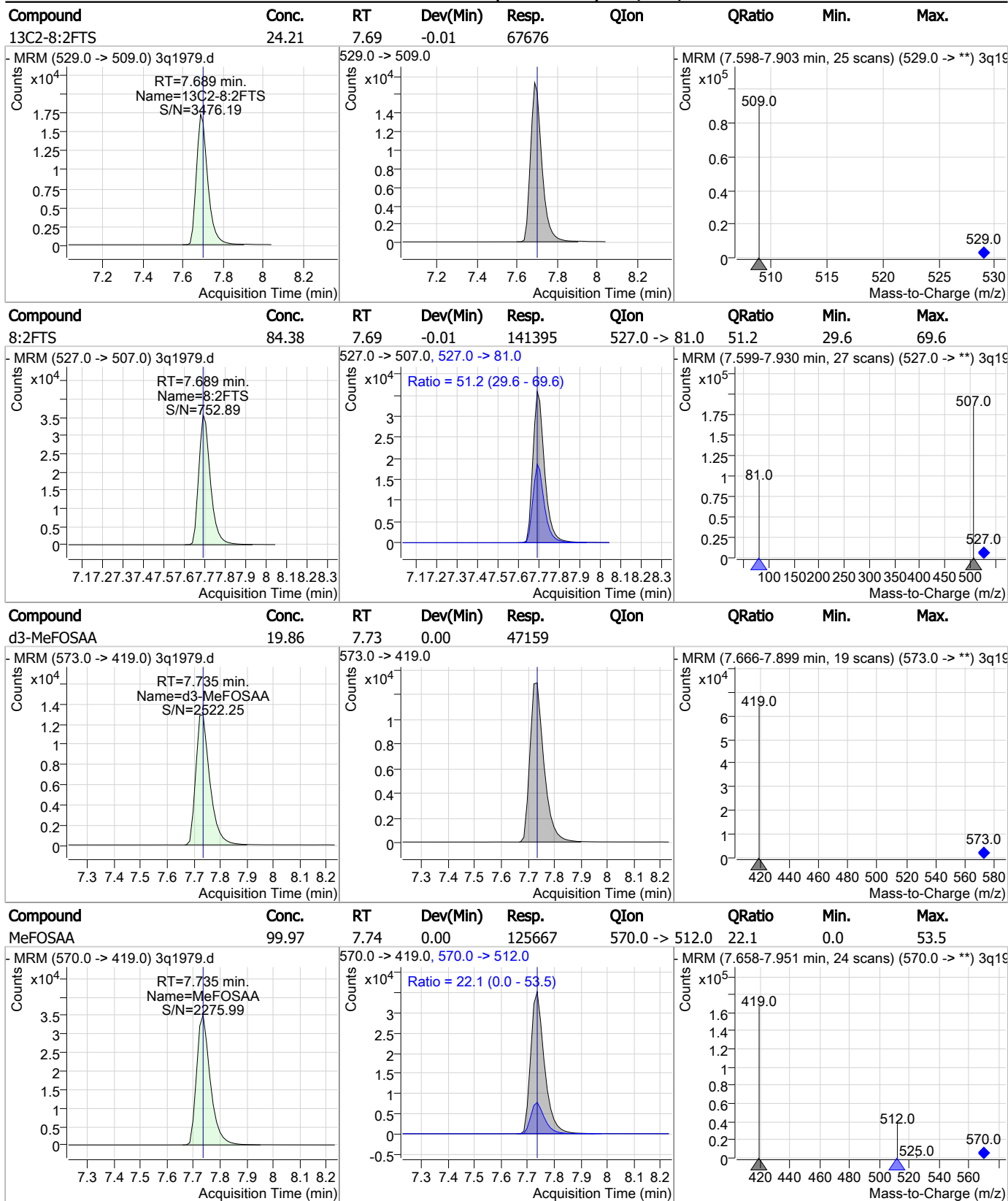
### Perfluorinated Compounds by LC/MS/MS



7.6.40  
7



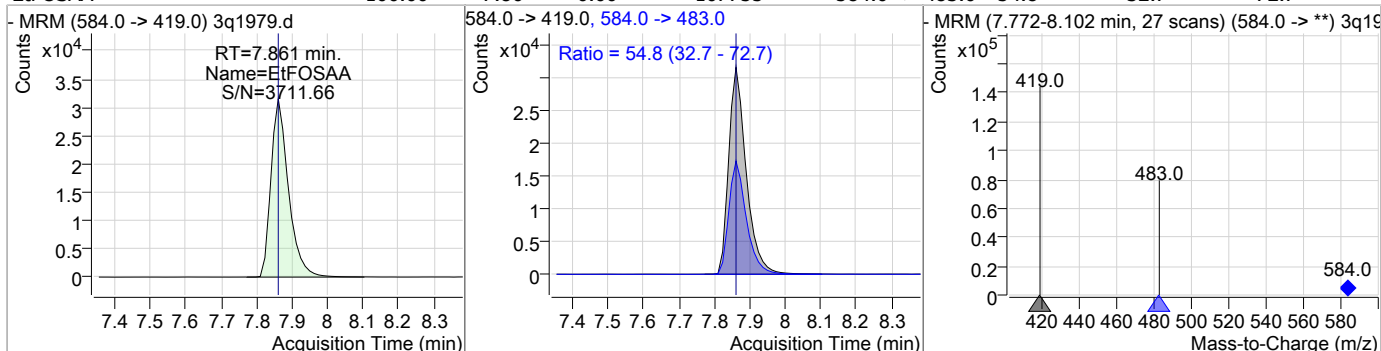
### Perfluorinated Compounds by LC/MS/MS



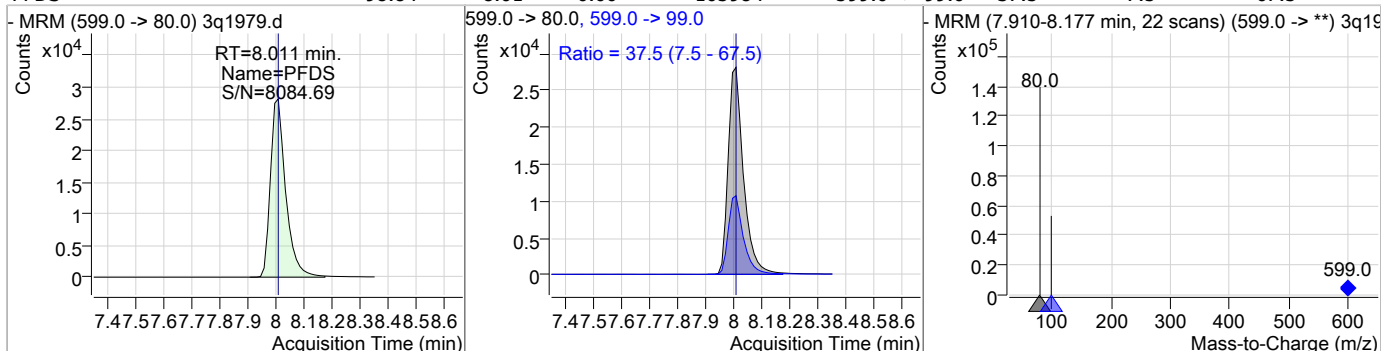
7.6.40  
7

### Perfluorinated Compounds by LC/MS/MS

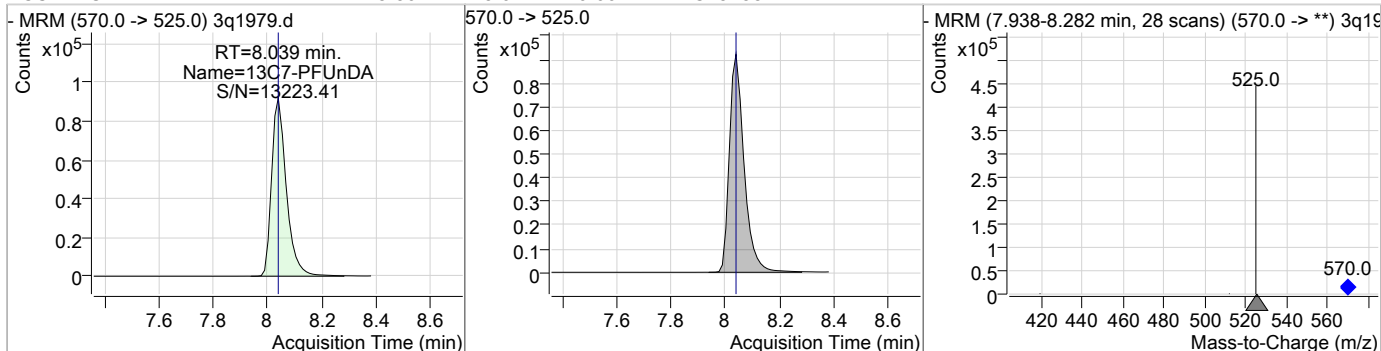
| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| EtFOSAA  | 100.00 | 7.86 | 0.00     | 107755 | 584.0 -> 483.0 | 54.8   | 32.7 | 72.7 |



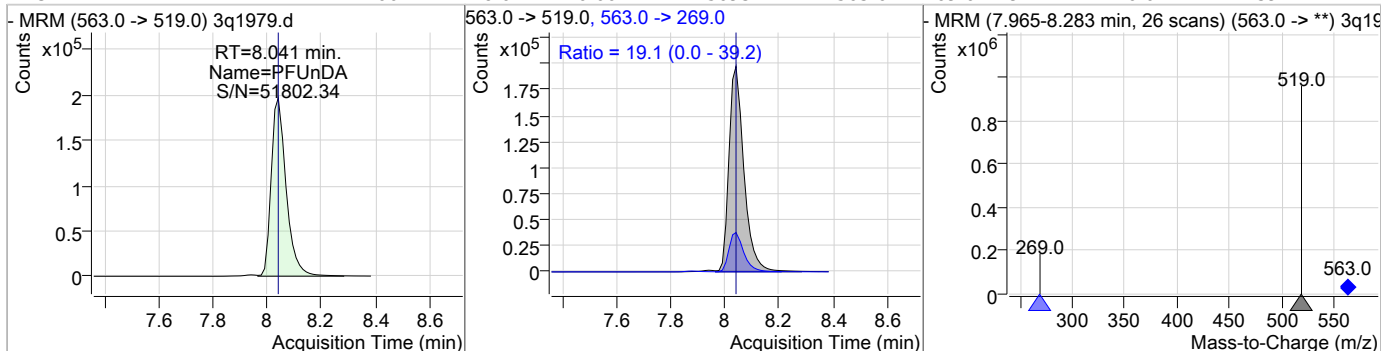
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|---------------|--------|------|------|
| PFDS     | 98.84 | 8.01 | 0.00     | 105984 | 599.0 -> 99.0 | 37.5   | 7.5  | 67.5 |



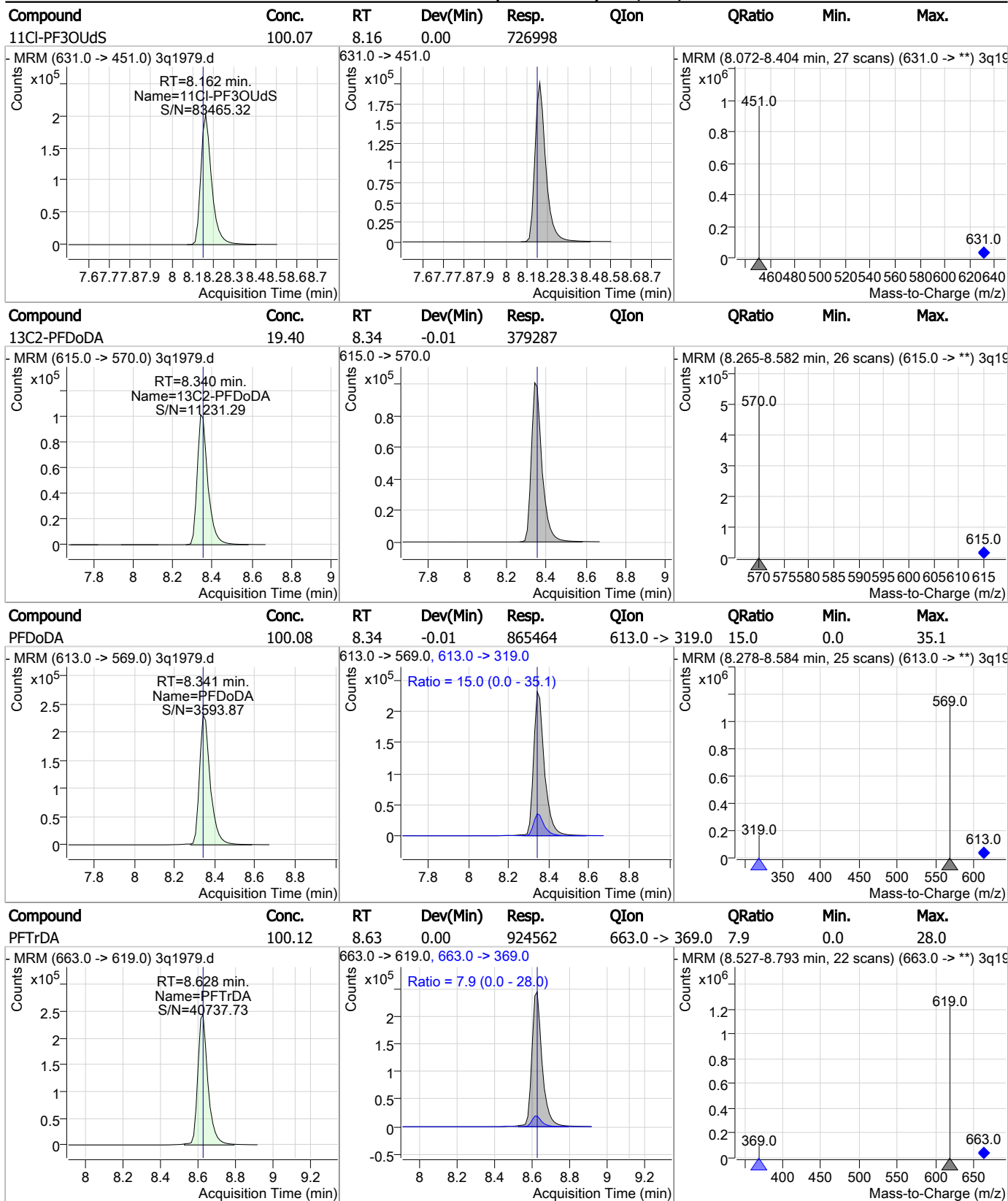
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 18.80 | 8.04 | 0.00     | 348488 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc.  | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|--------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 100.21 | 8.04 | 0.00     | 756934 | 563.0 -> 269.0 | 19.1   | 0.0  | 39.2 |

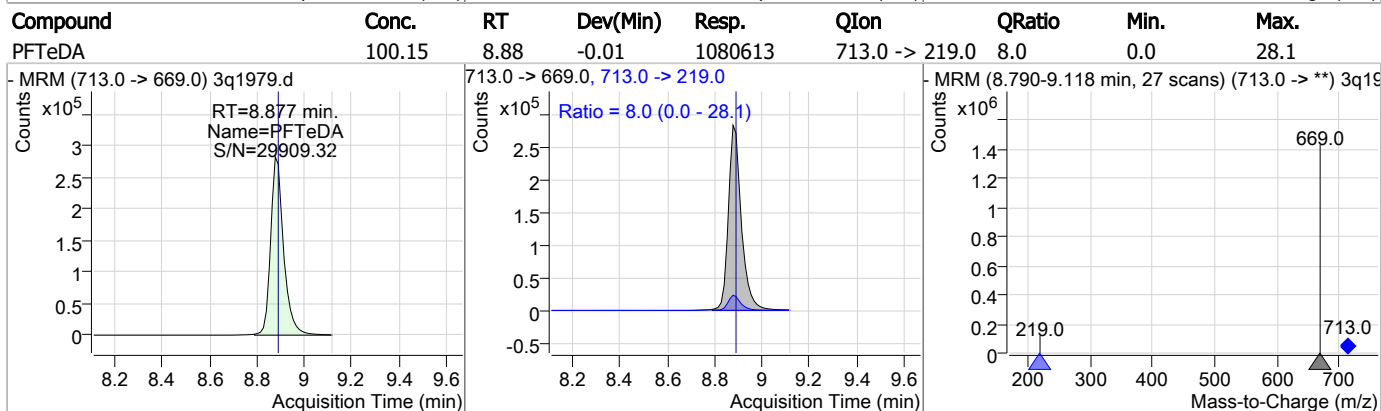
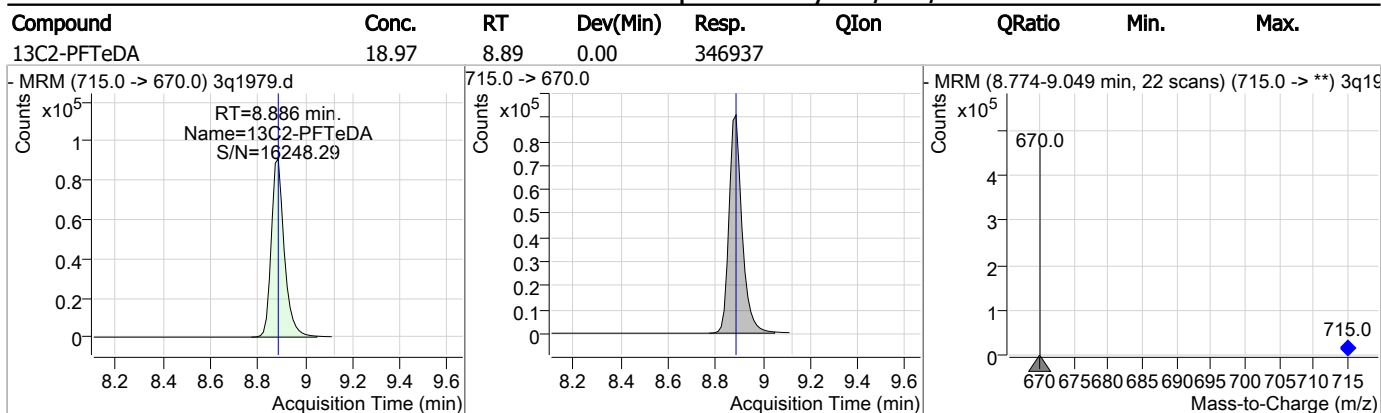


### Perfluorinated Compounds by LC/MS/MS



7.6.40  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.40  
7



# Manual Integration Approval Summary

**Sample Number:** S3Q54-IC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1979.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 11:41      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.40.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1981.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 12:11:32 PM  
 Sample Name : icv54-20  
 Vial : P3-B1  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 334602 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 223674 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.950                | 318.0 -> 273.0 | 298500 | 20.00 µg/L        | -0.013   |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 341972 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 325910 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 308735 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 353259 | 20.00 µg/L        | -0.015   |
| M7-PFUnDA                          | 8.026                | 570.0 -> 525.0 | 400107 | 20.00 µg/L        | -0.013   |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 416296 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.874                | 715.0 -> 670.0 | 388363 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 7.298                | 506.0 -> 78.0  | 223491 | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 51140  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 51892  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 78642  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.845                | 329.0 -> 309.0 | 90215  | 20.00 µg/L        | -0.013   |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 89242  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 54868  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 49600  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 173297 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 431932 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 128287 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.845                | 329.0 -> 309.0 | 89625  | 18.89 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 94.4%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 89261  | 19.53 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.7%  |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 54862  | 19.63 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.1%  |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 416326 | 21.29 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.5% |          |
| 13C2-PFTeDA                        | 8.874                | 715.0 -> 670.0 | 388472 | 21.24 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 106.2% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 51109  | 20.26 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 51351  | 20.32 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.6% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 331544 | 20.33 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.6% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 340751 | 20.41 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.1% |          |
| 13C5-PFHxA                         | 4.950                | 318.0 -> 273.0 | 296582 | 20.15 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.8% |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 223641 | 20.20 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.0% |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 354839 | 21.30 µg/L        | -0.015   |

7.641  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc.             | Units | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|-------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.5% |       |          |
| 13C7-PFUnDA           | 8.026                | 570.0 -> 525.0 | 400123 | 21.58             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.9% |       |          |
| 13C8-FOSA             | 7.298                | 506.0 -> 78.0  | 223431 | 21.23             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.1% |       |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 325885 | 20.60             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.0% |       |          |
| 13C8-PFOS             | 7.183                | 507.0 -> 99.0  | 78265  | 20.32             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.6% |       |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 309021 | 20.68             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.4% |       |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 49642  | 20.91             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.6% |       |          |
| 13C3-HFPO-DA          | 5.255                | 287.0 -> 169.0 | 173297 | 103.78            | µg/L  | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 103.8% |       |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 431932 | 20.00             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |       |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 128287 | 20.00             | µg/L  | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |       |          |

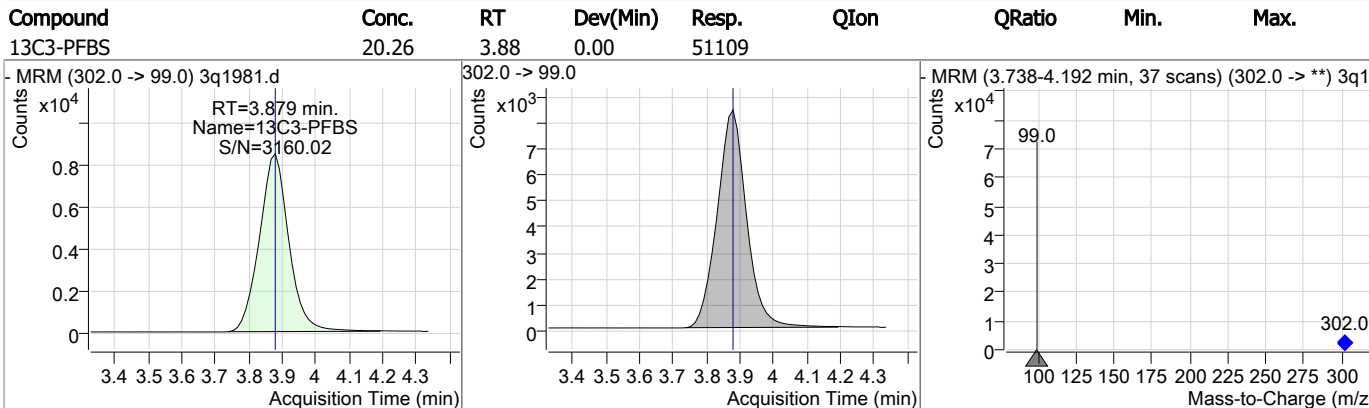
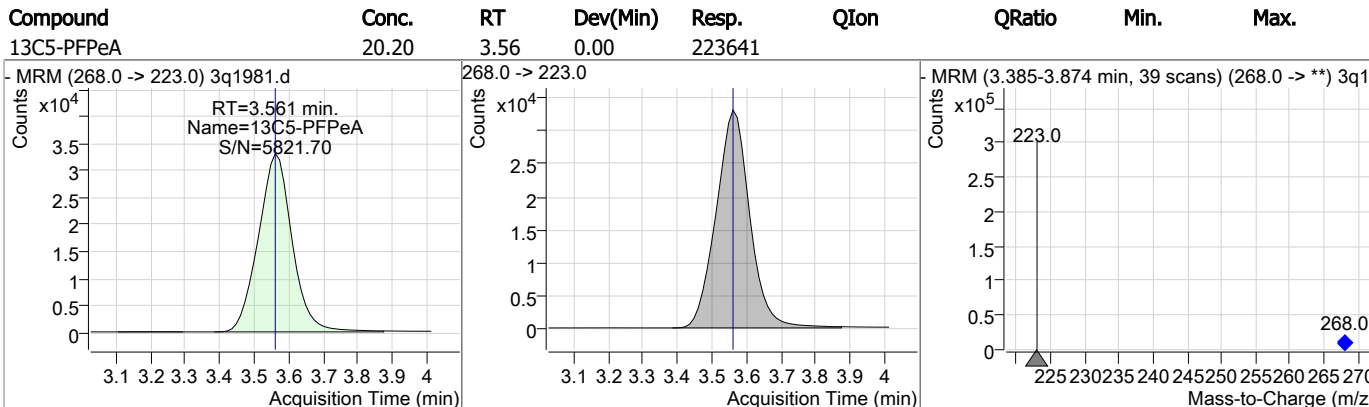
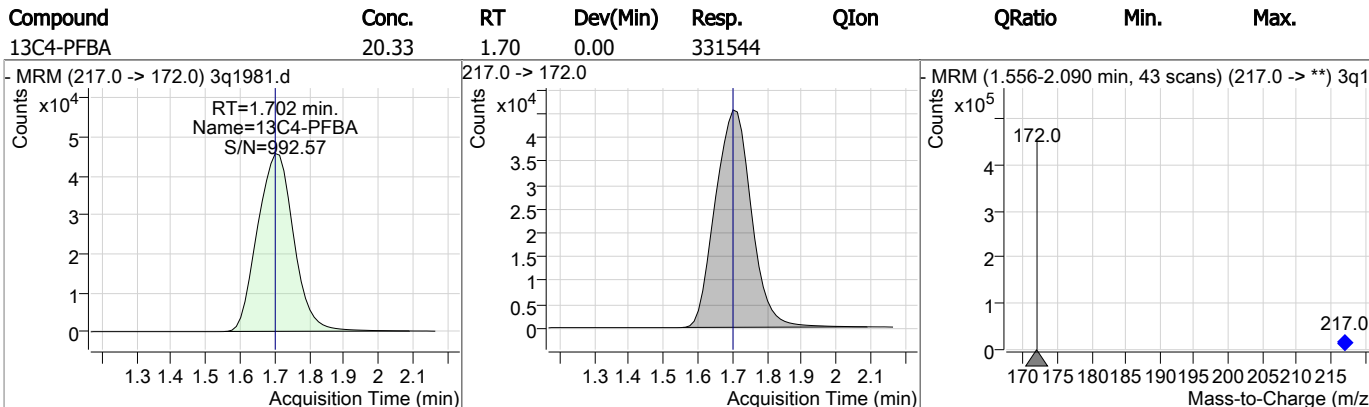
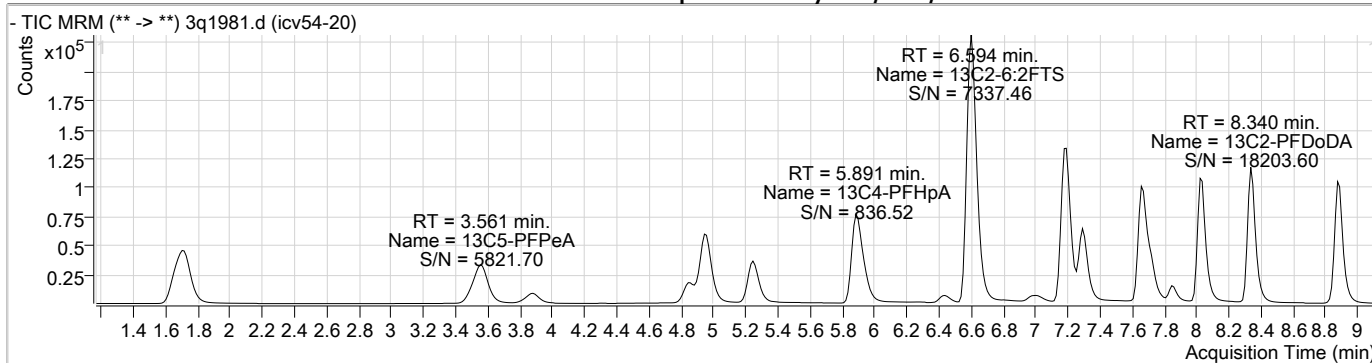
7.6.41  
7

| Target Compounds | RT    | QIon           | Resp.  | Conc. | Units  | QValue |
|------------------|-------|----------------|--------|-------|--------|--------|
| 4:2FTS           | -     | 327.0 -> 307.0 | -      | N.D.  |        |        |
| 6:2FTS           | -     | 427.0 -> 407.0 | -      | N.D.  |        |        |
| 8:2FTS           | -     | 527.0 -> 507.0 | -      | N.D.  |        |        |
| EtFOSAA          | 7.848 | 584.0 -> 419.0 | 16815  | 15.11 | µg/L m | 88     |
| FOSA             | -     | 498.0 -> 78.0  | -      | N.D.  |        |        |
| MeFOSAA          | 7.723 | 570.0 -> 419.0 | 22685  | 17.09 | µg/L m | 95     |
| PFBA             | -     | 213.0 -> 169.0 | -      | N.D.  |        |        |
| PFBS             | -     | 299.0 -> 80.0  | -      | N.D.  |        |        |
| PFDA             | -     | 513.0 -> 469.0 | -      | N.D.  |        |        |
| PFDoDA           | -     | 613.0 -> 569.0 | -      | N.D.  |        |        |
| PFDS             | -     | 599.0 -> 80.0  | -      | N.D.  |        |        |
| PFHpA            | 5.894 | 363.0 -> 319.0 | 0      | 0.00  | µg/L m | 1      |
| PFHpS            | -     | 449.0 -> 80.0  | -      | N.D.  |        |        |
| PFHxA            | -     | 313.0 -> 269.0 | -      | N.D.  |        |        |
| PFHxS            | 5.937 | 399.0 -> 80.0  | 0      | 0.00  | µg/L m | 1      |
| PFNA             | -     | 463.0 -> 419.0 | -      | N.D.  |        |        |
| PFNS             | -     | 549.0 -> 80.0  | -      | N.D.  |        |        |
| PFOA             | 6.611 | 413.0 -> 369.0 | 151617 | 17.38 | µg/L m | 95     |
| PFOS             | 7.186 | 499.0 -> 80.0  | 70711  | 19.42 | µg/L m | 97     |
| PFPeA            | -     | 263.0 -> 219.0 | -      | N.D.  |        |        |
| PFPeS            | -     | 349.0 -> 80.0  | -      | N.D.  |        |        |
| PFTeDA           | -     | 713.0 -> 669.0 | -      | N.D.  |        |        |
| PFTTrDA          | -     | 663.0 -> 619.0 | -      | N.D.  |        |        |
| PFUnDA           | -     | 563.0 -> 519.0 | -      | N.D.  |        |        |
| 11Cl-PF3OUdS     | -     | 631.0 -> 451.0 | -      | N.D.  |        |        |
| 9Cl-PF3ONS       | -     | 531.0 -> 351.0 | -      | N.D.  |        |        |
| ADONA            | -     | 377.0 -> 251.0 | -      | N.D.  |        |        |
| HFPO-DA          | -     | 329.0 -> 169.0 | -      | N.D.  |        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed



### Perfluorinated Compounds by LC/MS/MS



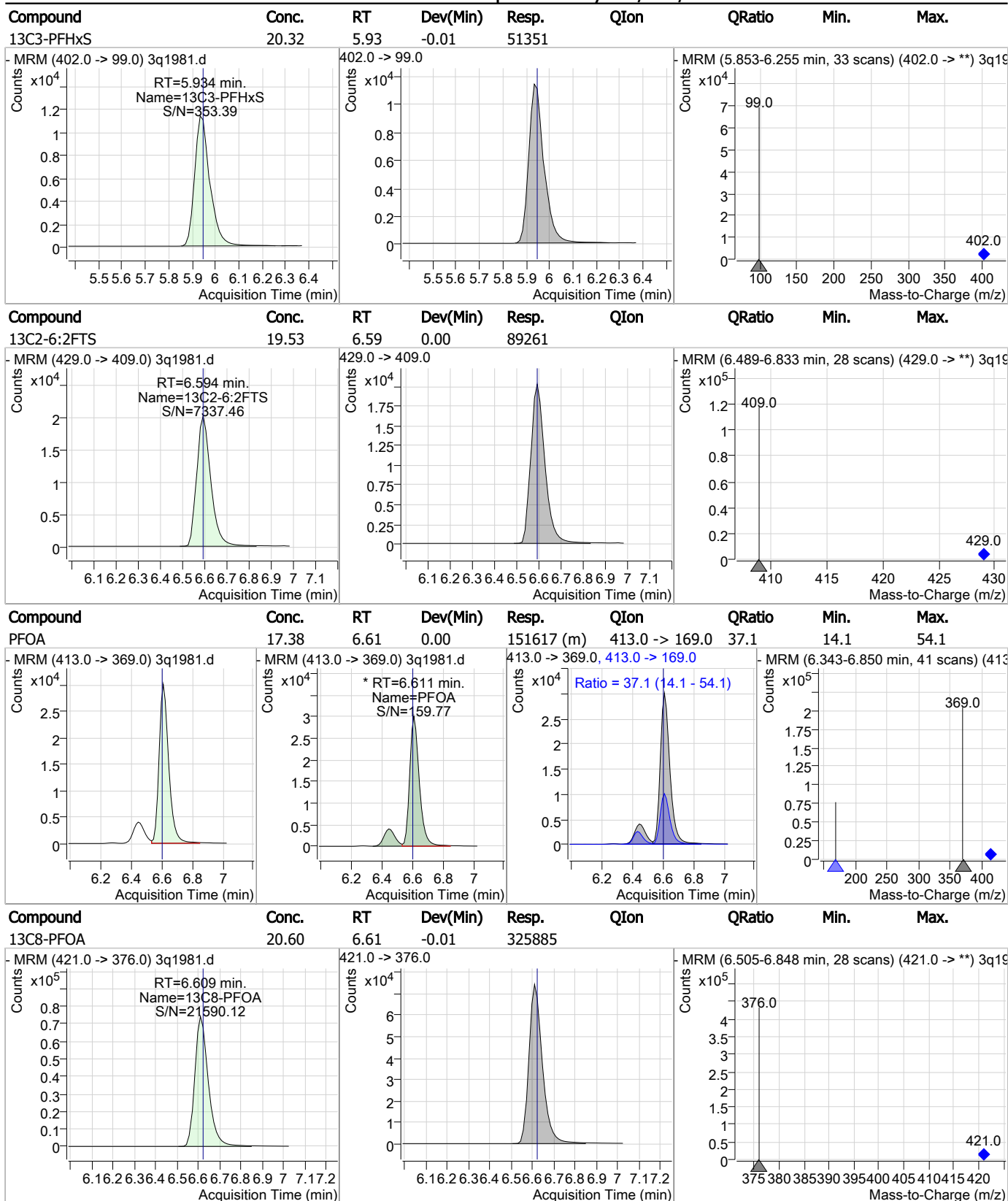
7.6.41  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc.  | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|--------------|--------|------|----------|--------|------|--------|------|------|
| 13C2-4:2FTS  | 18.89  | 4.85 | -0.01    | 89625  |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C5-PFHxA   | 20.15  | 4.95 | -0.01    | 296582 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C3-HFPO-DA | 103.78 | 5.25 | 0.00     | 173297 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |
| 13C4-PFHpA   | 20.41  | 5.89 | 0.00     | 340751 |      |        |      |      |
|              |        |      |          |        |      |        |      |      |

7.6.41  
7

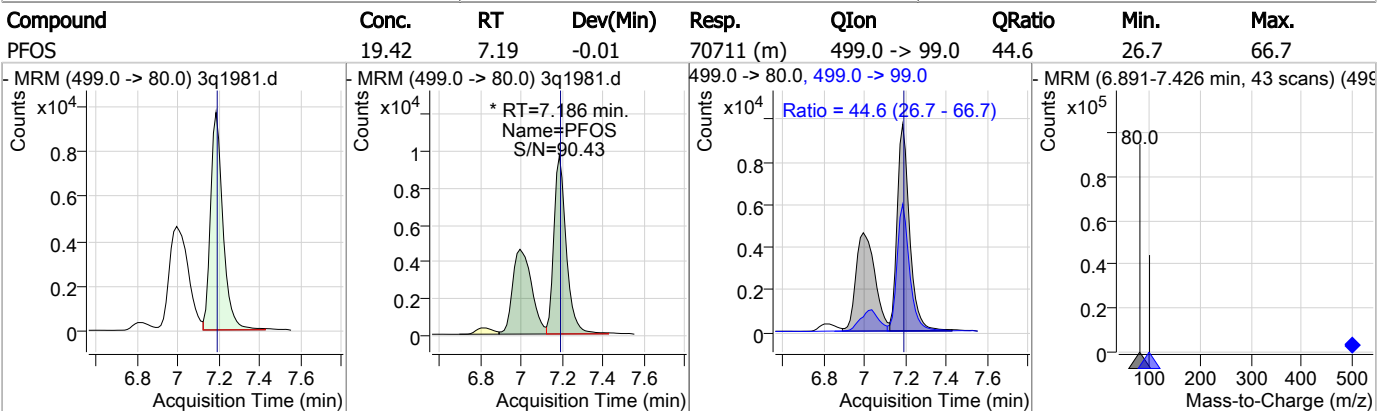
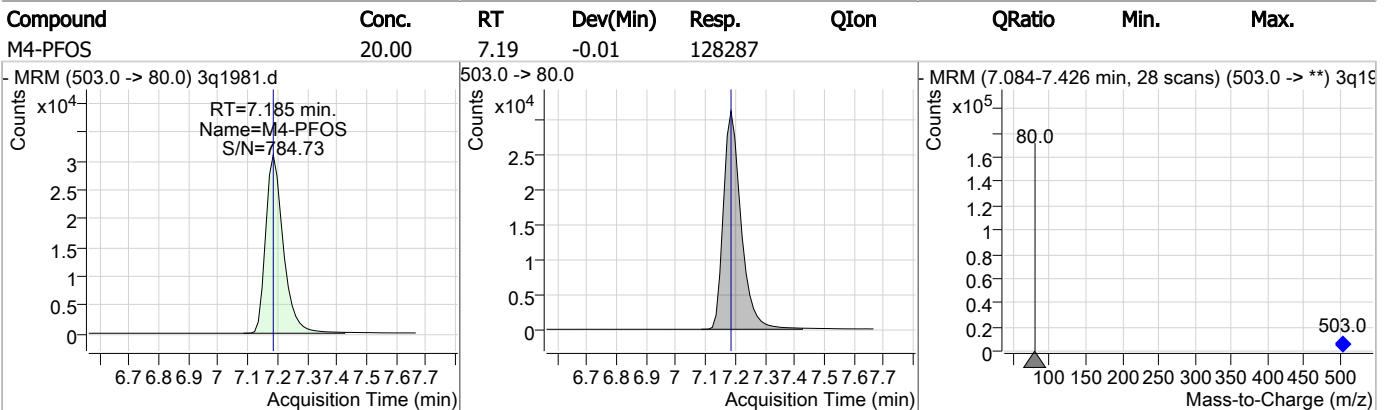
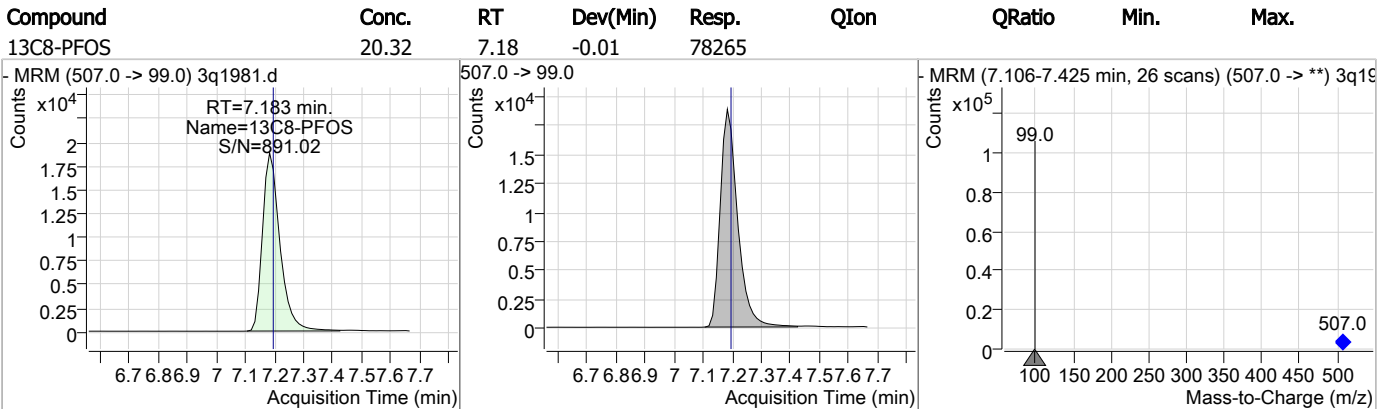
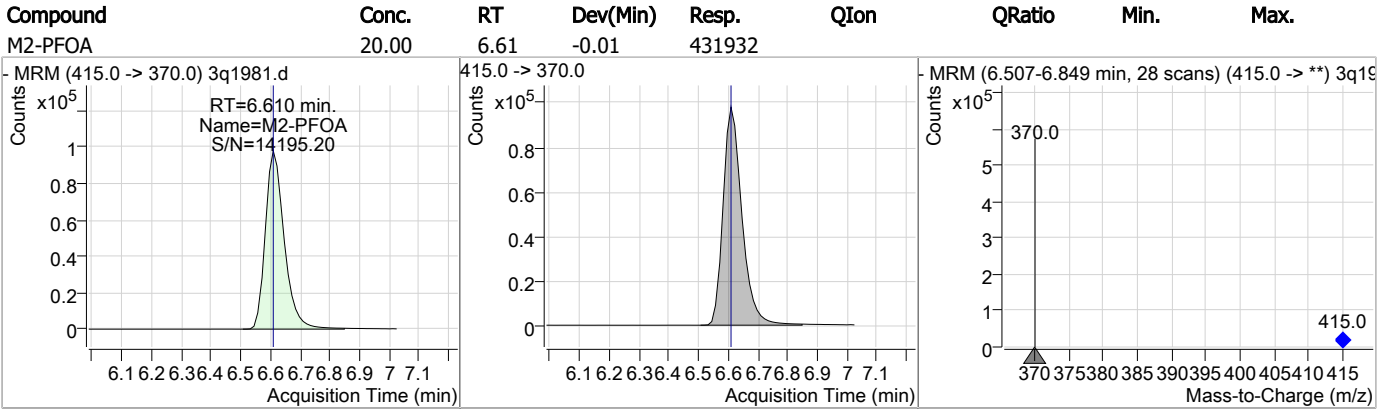
### Perfluorinated Compounds by LC/MS/MS



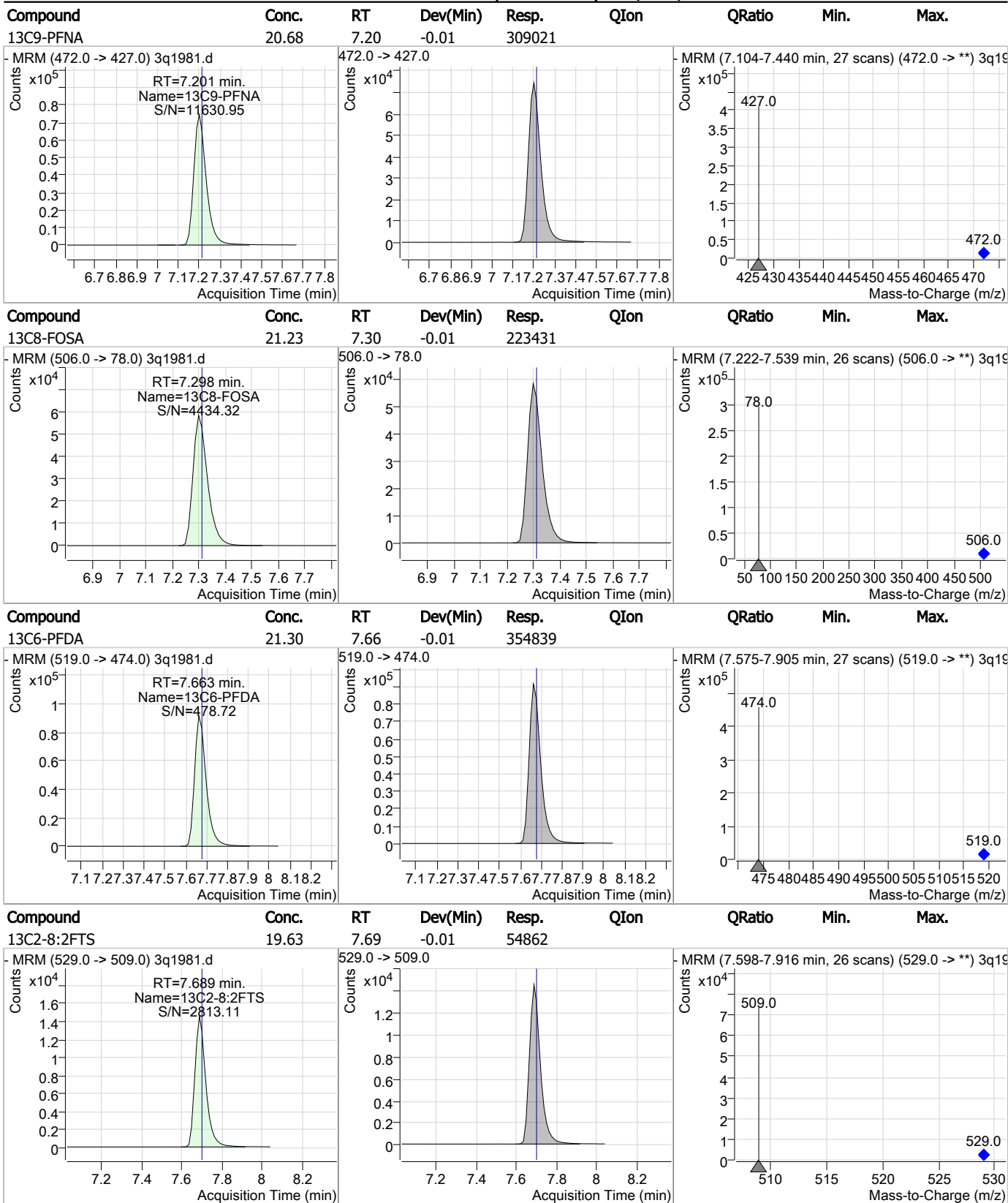
7.6.41

7

### Perfluorinated Compounds by LC/MS/MS



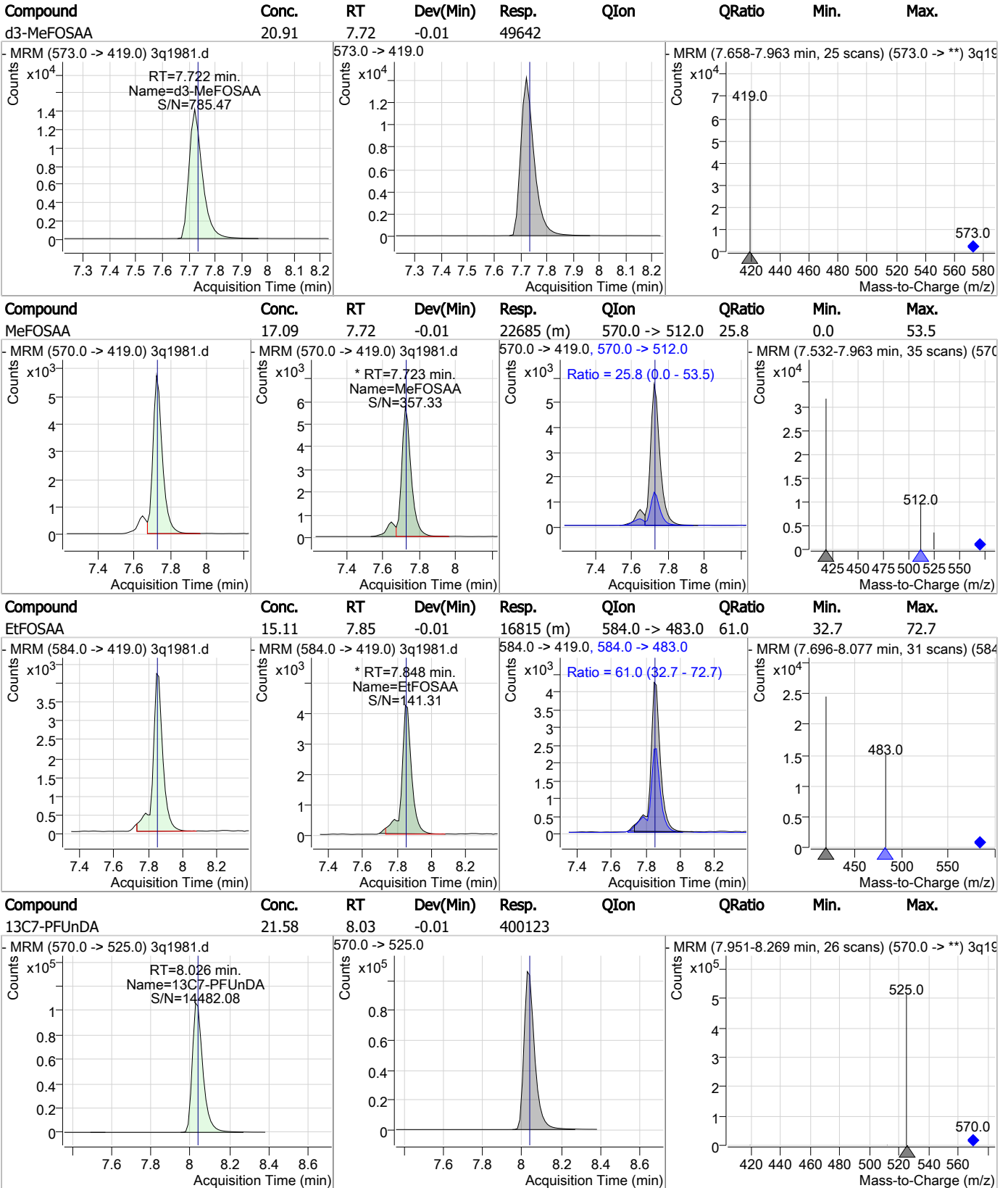
### Perfluorinated Compounds by LC/MS/MS



7.6.41

7

### Perfluorinated Compounds by LC/MS/MS

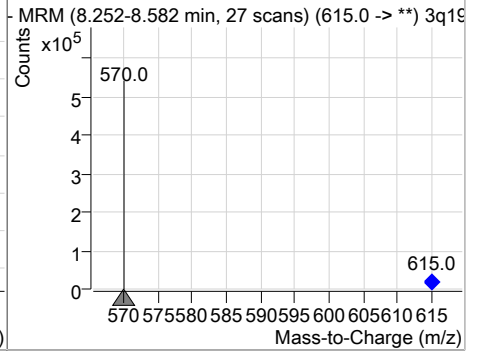
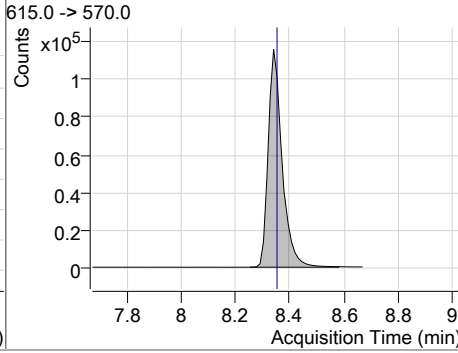
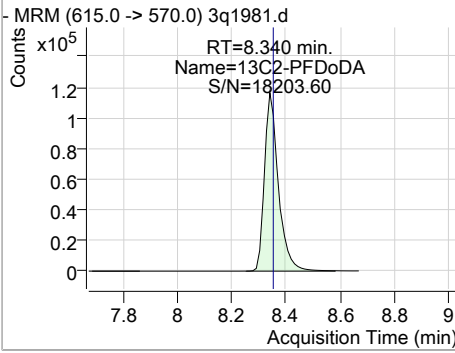


7.6.41

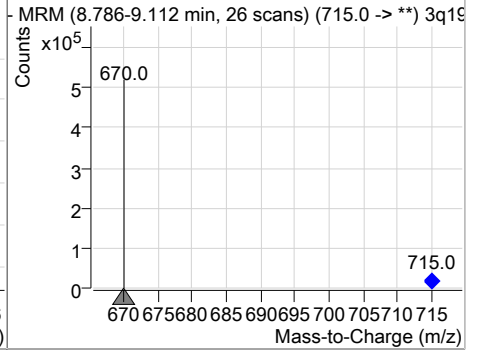
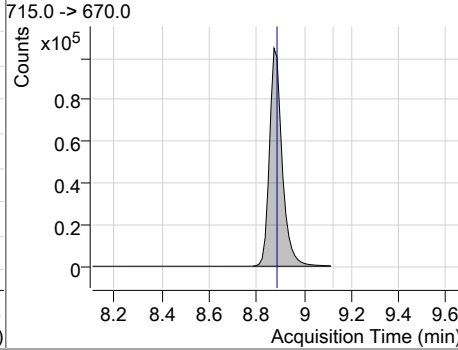
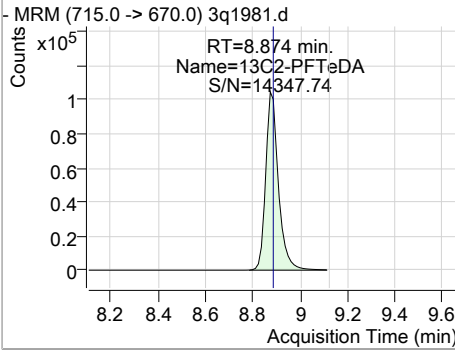
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFDoDA | 21.29 | 8.34 | -0.01    | 416326 |      |        |      |      |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 21.24 | 8.87 | -0.01    | 388472 |      |        |      |      |



7.6.41  
7

# Manual Integration Approval Summary

**Sample Number:** S3Q54-ICV54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1981.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 12:11      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorooctanoic acid       | 335-67-1  |      | 6.61           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |
| MeFOSAA                      | 2355-31-9 |      | 7.72           | Split peak |
| EtFOSAA                      | 2991-50-6 |      | 7.85           | Split peak |

7.6.41.1

7



## Perfluorinated Compounds by LC/MS/MS

Data File : 3q1982.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 12:26:38 PM  
 Sample Name : icv54-20  
 Vial : P3-B2  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.702                | 217.0 -> 172.0 | 333736 | 20.00 µg/L        | 0.000    |
| M5-PFPeA                           | 3.561                | 268.0 -> 223.0 | 224414 | 20.00 µg/L        | 0.000    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 298557 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 341085 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 322829 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 305628 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 348824 | 20.00 µg/L        | -0.015   |
| M7-PFUnDA                          | 8.026                | 570.0 -> 525.0 | 389519 | 20.00 µg/L        | -0.013   |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 407238 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.874                | 715.0 -> 670.0 | 376679 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 7.298                | 506.0 -> 78.0  | 214606 | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 50972  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 51957  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 79163  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 95386  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 92688  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 57184  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 49646  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 176215 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 420516 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 126655 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 95367  | 20.10 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.5% |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 92684  | 20.28 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.4% |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 57157  | 20.45 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.2% |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 408873 | 20.91 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.5% |          |
| 13C2-PFTeDA                        | 8.874                | 715.0 -> 670.0 | 376762 | 20.60 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.0% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 50917  | 20.19 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.9% |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 51855  | 20.52 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.6% |          |
| 13C4-PFBA                          | 1.702                | 217.0 -> 172.0 | 330773 | 20.28 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.4% |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 339345 | 20.33 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.6% |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 296923 | 20.18 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.9% |          |
| 13C5-PFPeA                         | 3.561                | 268.0 -> 223.0 | 224415 | 20.27 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 348783 | 20.94 µg/L        | -0.015   |

7.6.42  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.7% |          |
| 13C7-PFUnDA           | 8.026                | 570.0 -> 525.0 | 391030 | 21.09 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.5% |          |
| 13C8-FOSA             | 7.298                | 506.0 -> 78.0  | 215417 | 20.47 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.3% |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 322837 | 20.41 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.0% |          |
| 13C8-PFOS             | 7.183                | 507.0 -> 99.0  | 79362  | 20.60 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.0% |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 305422 | 20.44 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.2% |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 49613  | 20.90 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.5% |          |
| 13C3-HFPO-DA          | 5.255                | 287.0 -> 169.0 | 176215 | 105.53 µg/L       | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 105.5% |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 420516 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 126655 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

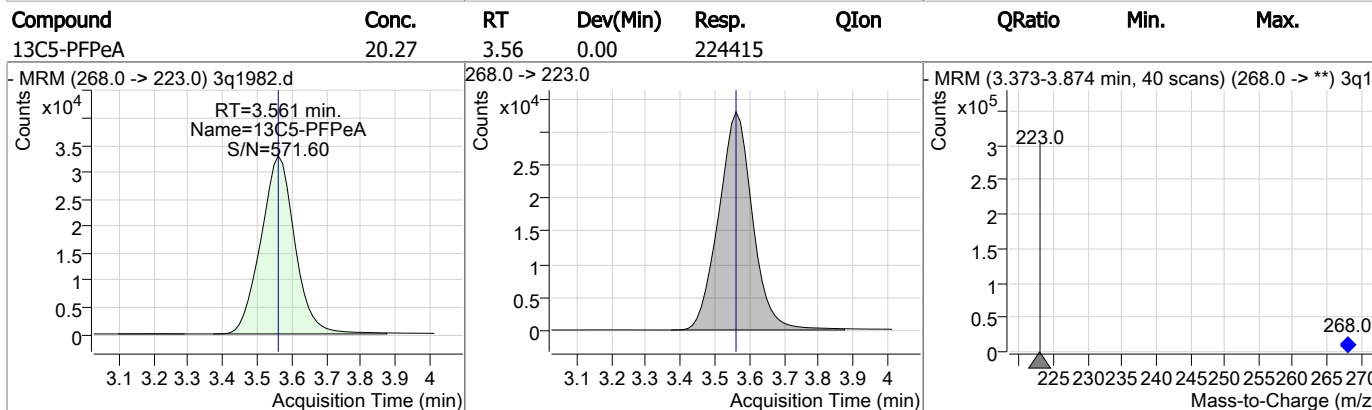
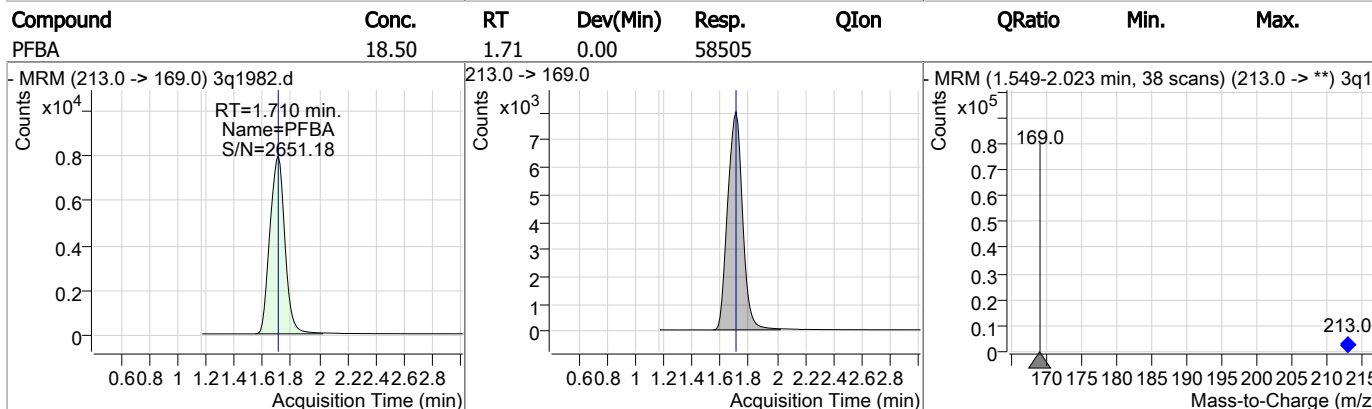
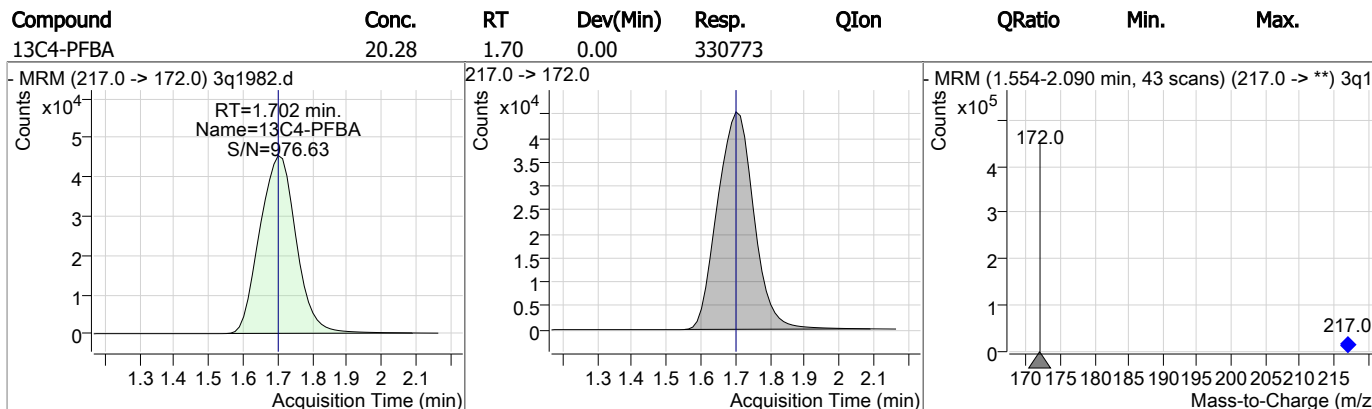
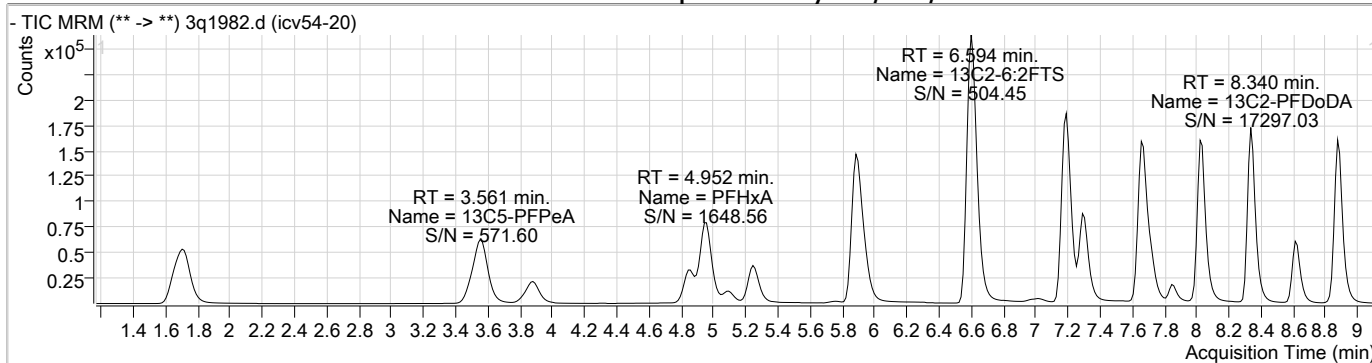
7.6.42  
7

**Target Compounds**

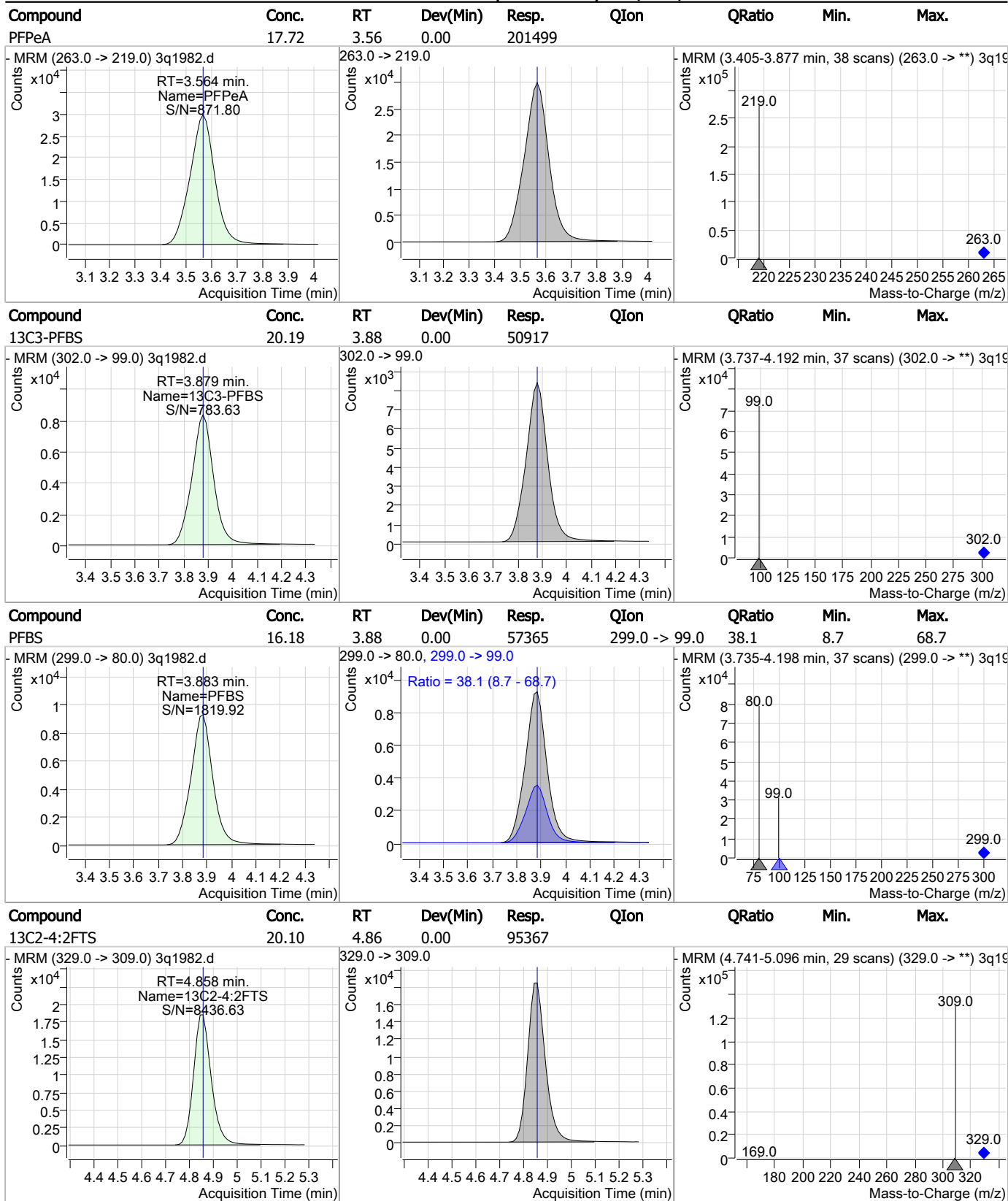
| Compound     | RT    | QIon           | Resp.  | Conc. Units | QValue |
|--------------|-------|----------------|--------|-------------|--------|
| 4:2FTS       | 4.848 | 327.0 -> 307.0 | 47871  | 18.36 µg/L  | 100    |
| 6:2FTS       | 6.595 | 427.0 -> 407.0 | 40932  | 17.91 µg/L  | 100    |
| 8:2FTS       | 7.689 | 527.0 -> 507.0 | 27025  | 19.09 µg/L  | 98     |
| EtFOSAA      | 7.848 | 584.0 -> 419.0 | 21134  | 18.95 µg/L  | 97     |
| FOSA         | 7.301 | 498.0 -> 78.0  | 95361  | 19.81 µg/L  | 99     |
| MeFOSAA      | 7.723 | 570.0 -> 419.0 | 25047  | 18.85 µg/L  | 97     |
| PFBA         | 1.710 | 213.0 -> 169.0 | 58505  | 18.50 µg/L  | 100    |
| PFBS         | 3.883 | 299.0 -> 80.0  | 57365  | 16.18 µg/L  | 99     |
| PFDA         | 7.664 | 513.0 -> 469.0 | 140865 | 17.05 µg/L  | 99     |
| PFDoDA       | 8.341 | 613.0 -> 569.0 | 180408 | 19.43 µg/L  | 100    |
| PFDS         | 7.999 | 599.0 -> 80.0  | 20159  | 16.81 µg/L  | 98     |
| PFHpA        | 5.894 | 363.0 -> 319.0 | 293619 | 19.45 µg/L  | 100    |
| PFHpS        | 6.618 | 449.0 -> 80.0  | 45167  | 18.26 µg/L  | 97     |
| PFHxA        | 4.952 | 313.0 -> 269.0 | 90035  | 16.94 µg/L  | 100    |
| PFHxS        | 5.937 | 399.0 -> 80.0  | 45712  | 16.00 µg/L  | m 99   |
| PFNA         | 7.201 | 463.0 -> 419.0 | 167611 | 17.65 µg/L  | 100    |
| PFNS         | 7.648 | 549.0 -> 80.0  | 38030  | 17.77 µg/L  | 98     |
| PFOA         | 6.611 | 413.0 -> 369.0 | 163810 | 18.95 µg/L  | 98     |
| PFOS         | 7.186 | 499.0 -> 80.0  | 66233  | 18.07 µg/L  | m 94   |
| PFPeA        | 3.564 | 263.0 -> 219.0 | 201499 | 17.72 µg/L  | 100    |
| PFPeS        | 5.094 | 349.0 -> 80.0  | 34819  | 15.79 µg/L  | 99     |
| PFTeDA       | 8.877 | 713.0 -> 669.0 | 200515 | 17.12 µg/L  | 100    |
| PFTTrDA      | 8.615 | 663.0 -> 619.0 | 205038 | 20.45 µg/L  | 99     |
| PFUnDA       | 8.028 | 563.0 -> 519.0 | 162756 | 19.26 µg/L  | 100    |
| 11Cl-PF3OUdS | -     | 631.0 -> 451.0 | -      | N.D.        |        |
| 9Cl-PF3ONS   | -     | 531.0 -> 351.0 | -      | N.D.        |        |
| ADONA        | -     | 377.0 -> 251.0 | -      | N.D.        |        |
| HFPO-DA      | -     | 329.0 -> 169.0 | -      | N.D.        |        |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

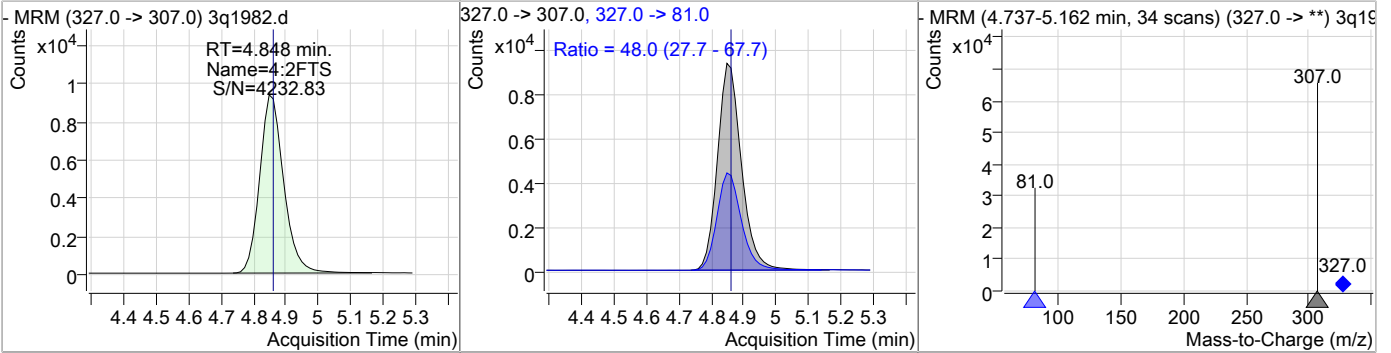


7.6.42  
7

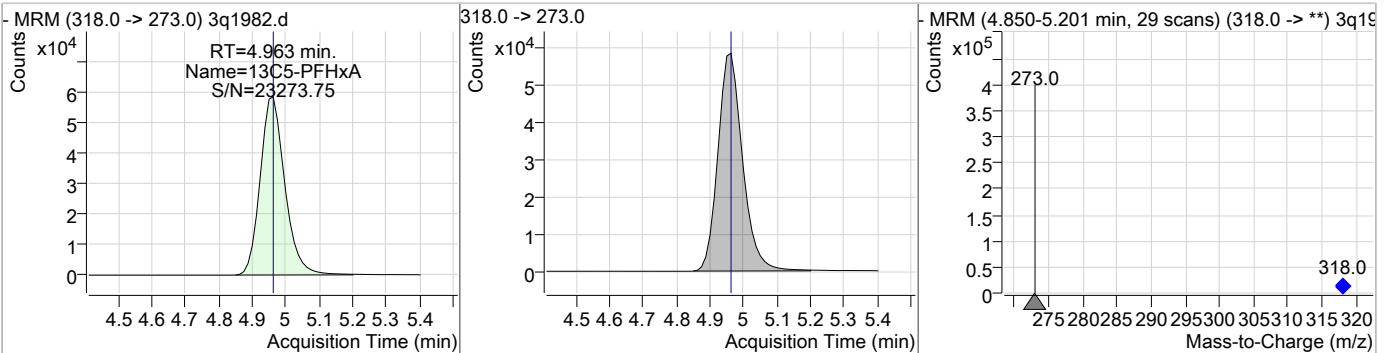


### Perfluorinated Compounds by LC/MS/MS

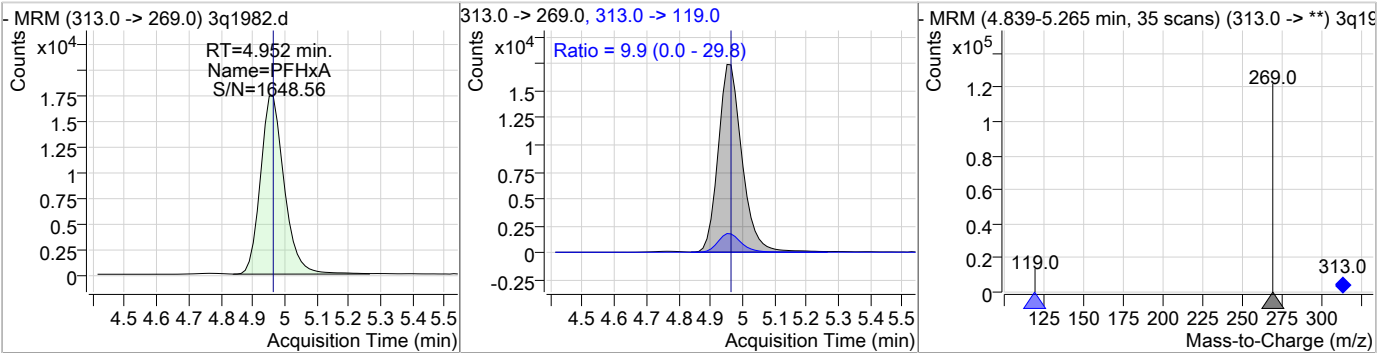
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 18.36 | 4.85 | -0.01    | 47871 | 327.0 -> 81.0 | 48.0   | 27.7 | 67.7 |



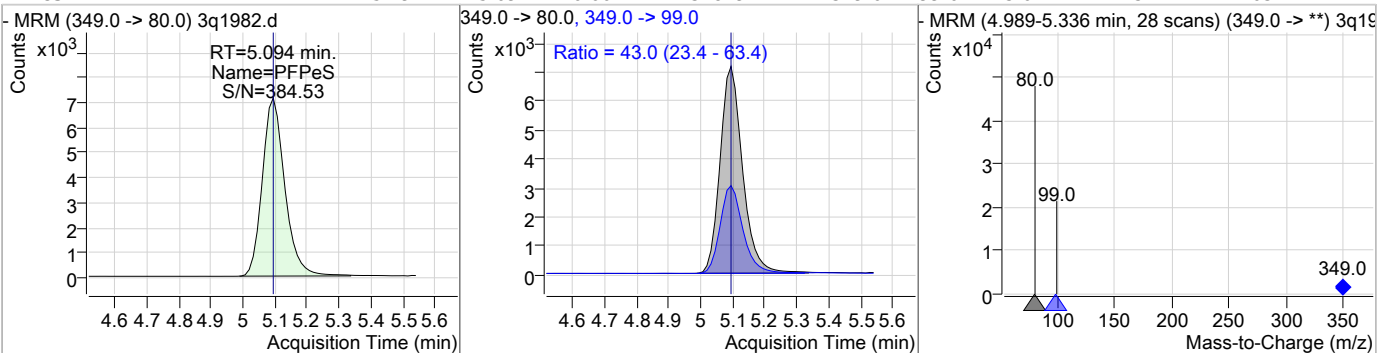
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 20.18 | 4.96 | 0.00     | 296923 |      |        |      |      |



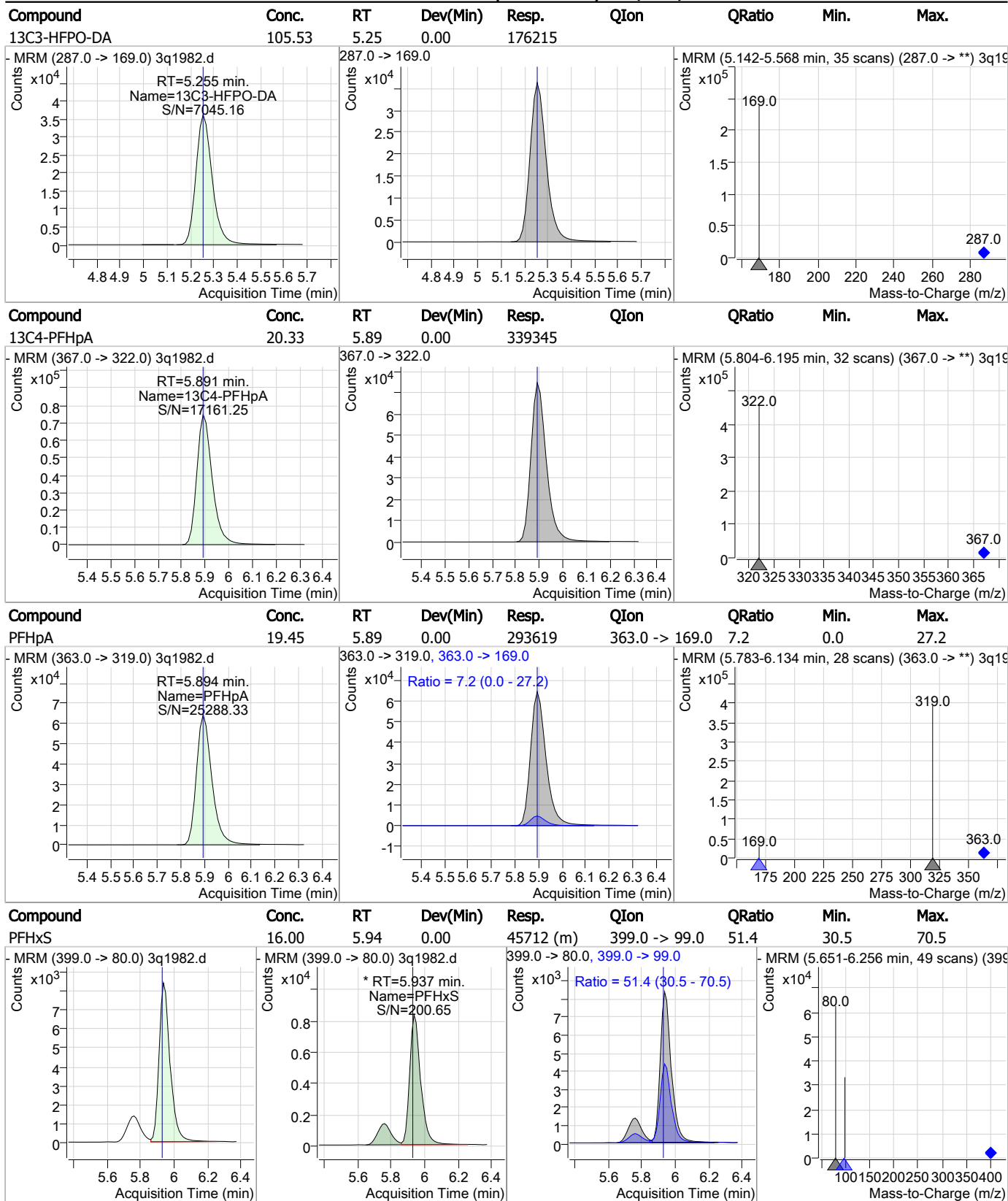
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 16.94 | 4.95 | -0.01    | 90035 | 313.0 -> 119.0 | 9.9    | 0.0  | 29.8 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 15.79 | 5.09 | 0.00     | 34819 | 349.0 -> 99.0 | 43.0   | 23.4 | 63.4 |



### Perfluorinated Compounds by LC/MS/MS



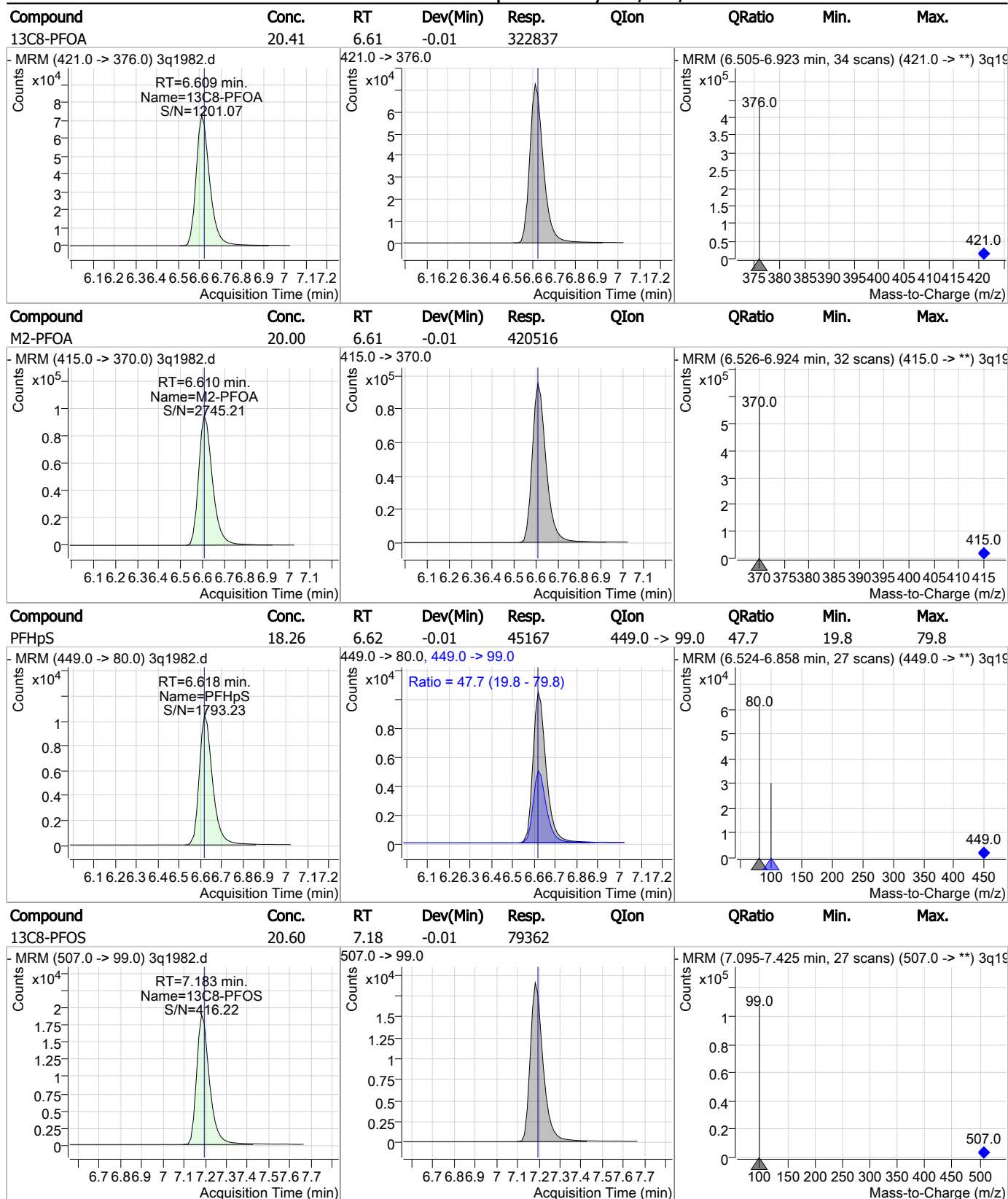
7.6.42  
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C3-PFHxS  | 20.52 | 5.93 | -0.01    | 51855  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| 13C2-6:2FTS | 20.28 | 6.59 | 0.00     | 92684  |                |        |      |      |
|             |       |      |          |        |                |        |      |      |
| 6:2FTS      | 17.91 | 6.59 | 0.00     | 40932  | 427.0 -> 81.0  | 46.9   | 27.0 | 67.0 |
|             |       |      |          |        |                |        |      |      |
| PFOA        | 18.95 | 6.61 | 0.00     | 163810 | 413.0 -> 169.0 | 35.1   | 14.1 | 54.1 |
|             |       |      |          |        |                |        |      |      |

7.6.42 7

### Perfluorinated Compounds by LC/MS/MS

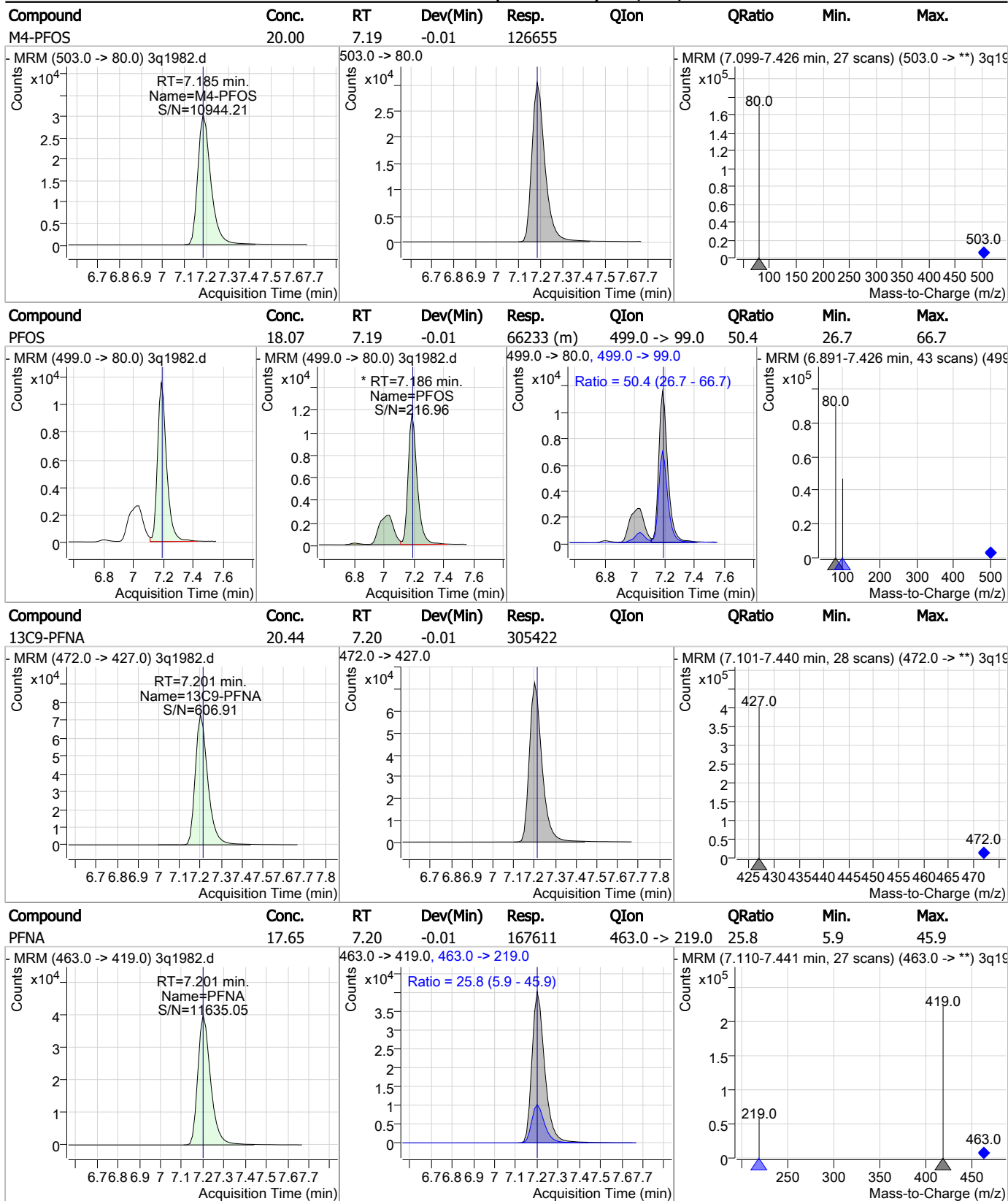


7.6.42

7

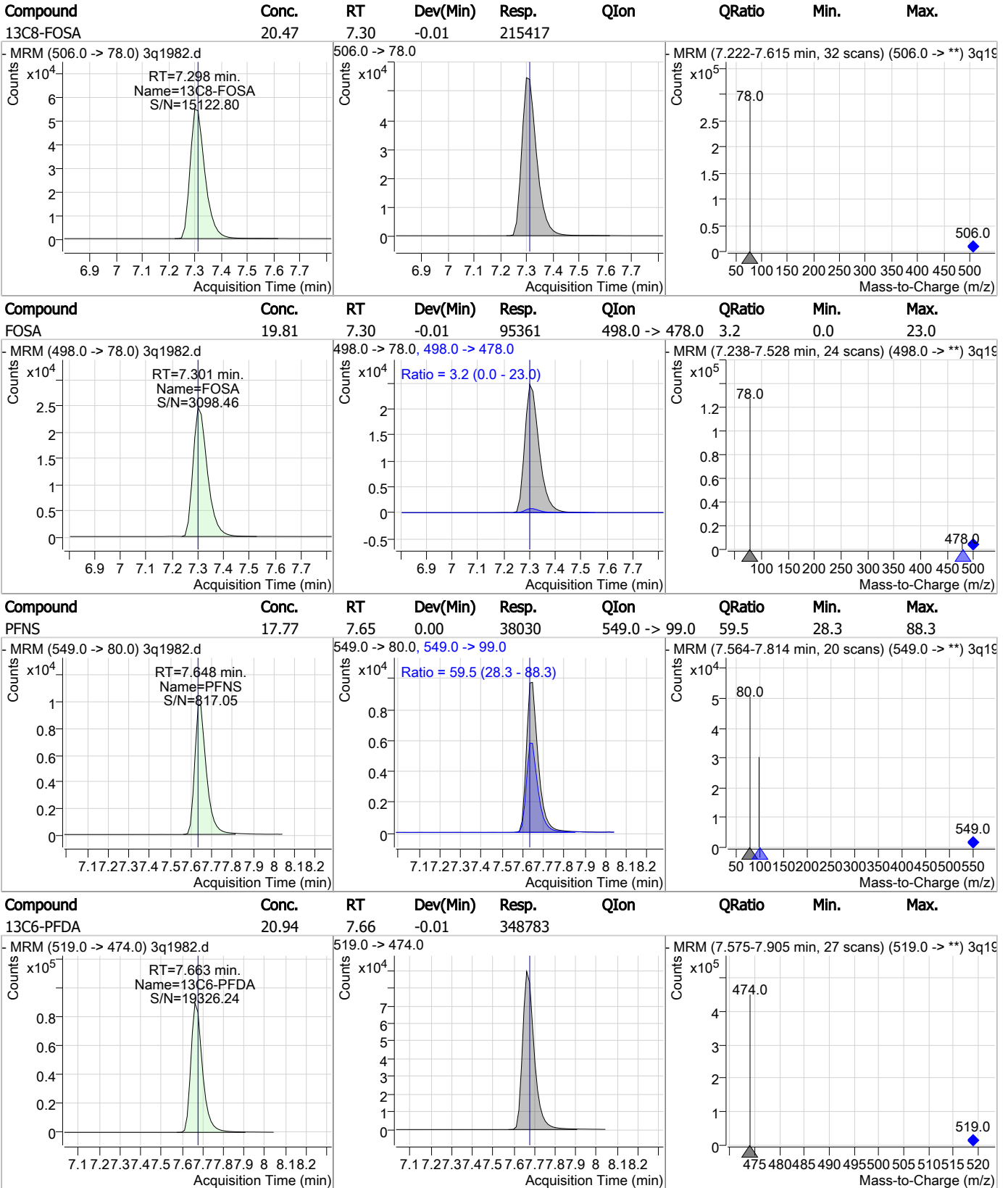


### Perfluorinated Compounds by LC/MS/MS



7.6.42  
7

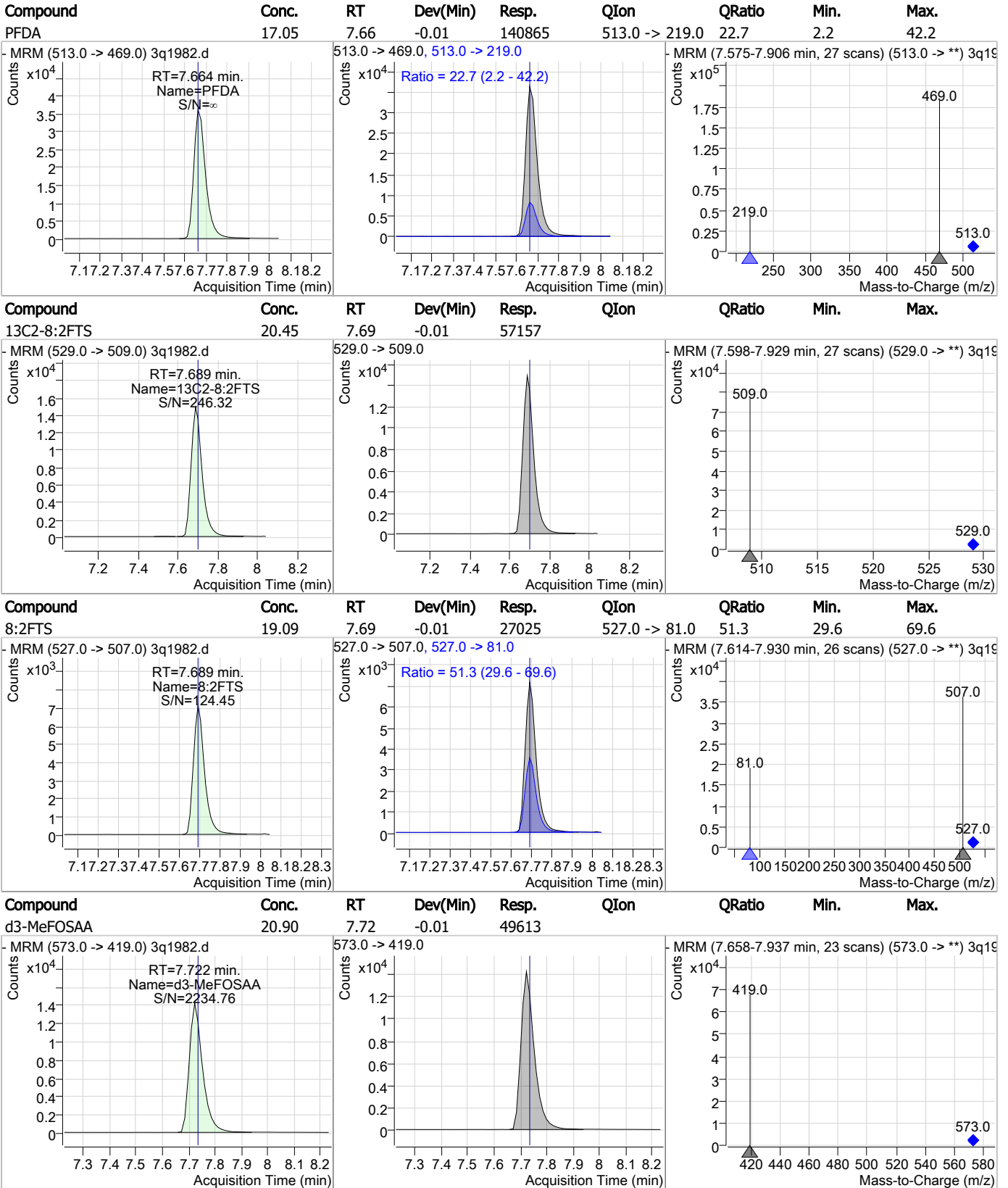
### Perfluorinated Compounds by LC/MS/MS



7.6.42

7

### Perfluorinated Compounds by LC/MS/MS

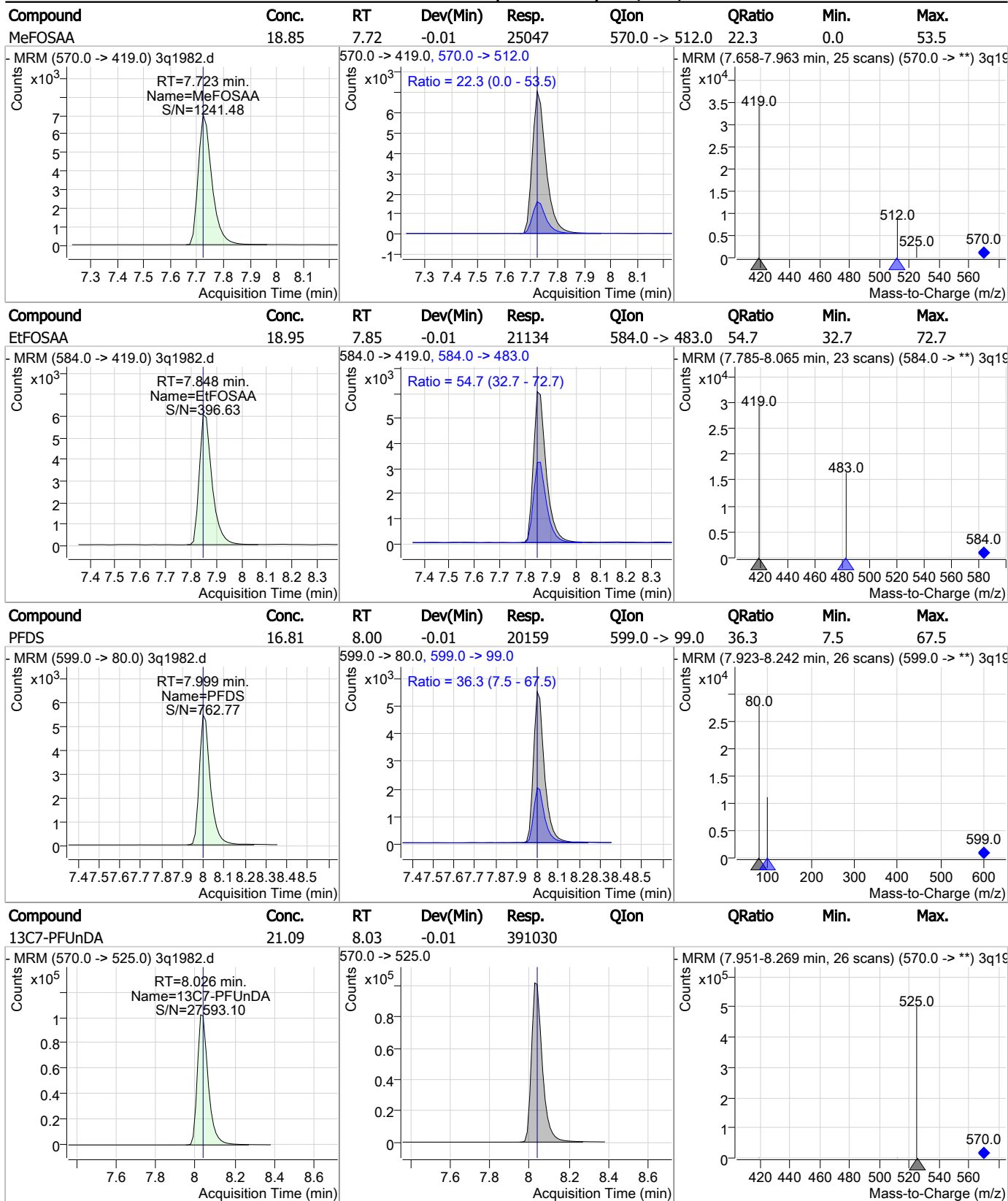


7.6.42

7



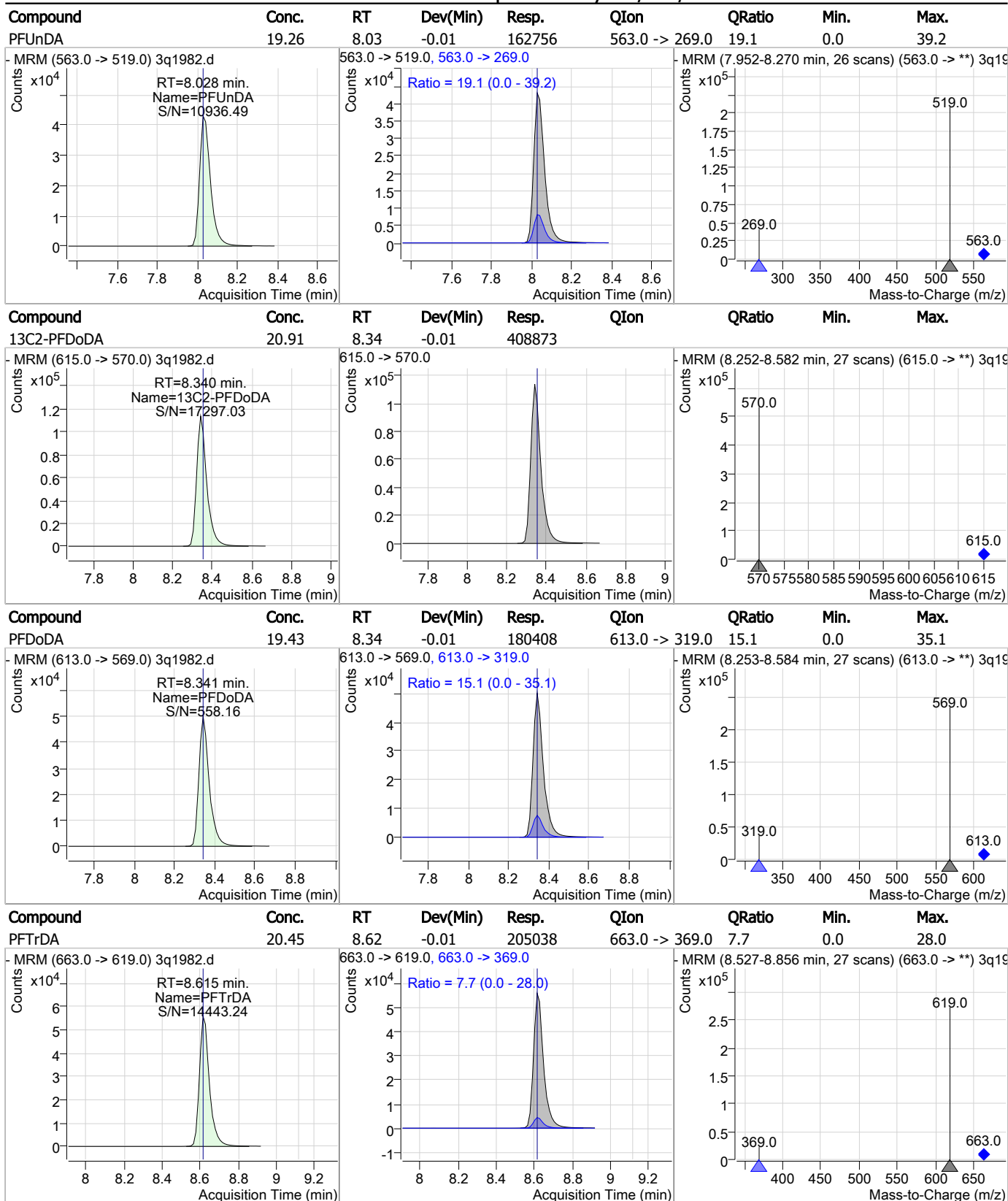
### Perfluorinated Compounds by LC/MS/MS



7.6.42  
7



### Perfluorinated Compounds by LC/MS/MS

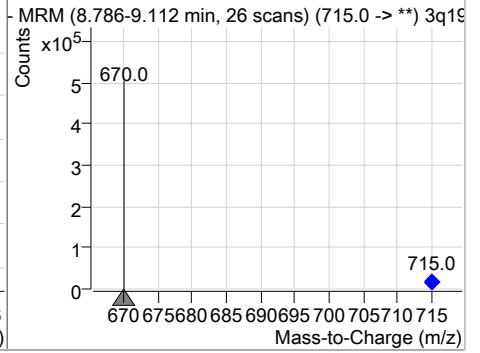
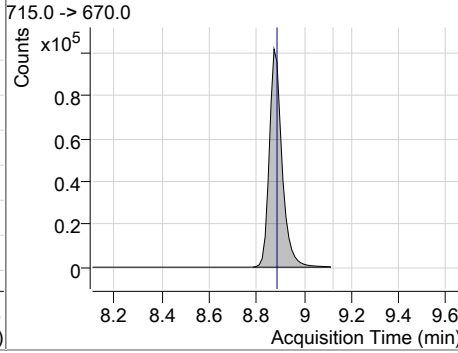
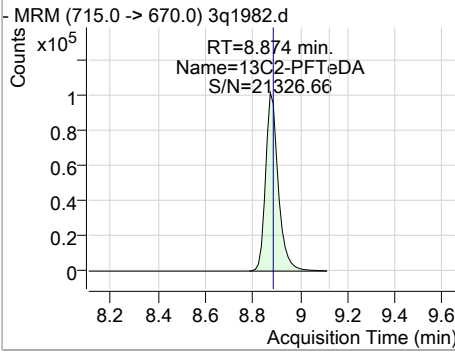


7.6.42

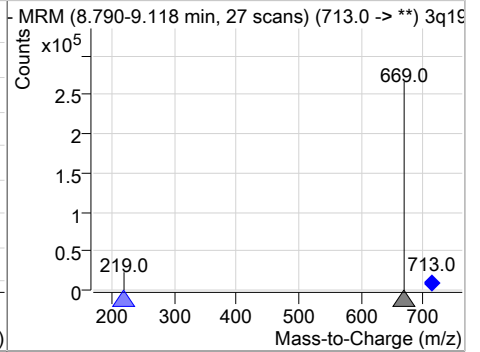
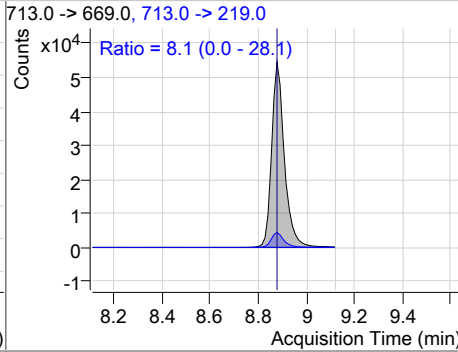
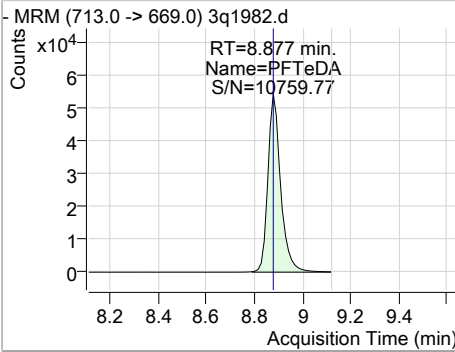
7

### Perfluorinated Compounds by LC/MS/MS

| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|------|--------|------|------|
| 13C2-PFTeDA | 20.60 | 8.87 | -0.01    | 376762 |      |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 17.12 | 8.88 | -0.01    | 200515 | 713.0 -> 219.0 | 8.1    | 0.0  | 28.1 |



7.6.42

7



# Manual Integration Approval Summary

**Sample Number:** S3Q54-ICV54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1982.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 12:26      **Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.42.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1983.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 12:41:45 PM  
 Sample Name : icv54-20  
 Vial : P3-B3  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.714                | 217.0 -> 172.0 | 331350 | 20.00 µg/L        | 0.013    |
| M5-PFPeA                           | 3.573                | 268.0 -> 223.0 | 222879 | 20.00 µg/L        | 0.013    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 296083 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.904                | 367.0 -> 322.0 | 335718 | 20.00 µg/L        | 0.013    |
| M8-PFOA                            | 6.621                | 421.0 -> 376.0 | 325739 | 20.00 µg/L        | 0.000    |
| M9-PFNA                            | 7.213                | 472.0 -> 427.0 | 308702 | 20.00 µg/L        | 0.000    |
| M6-PFDA                            | 7.678                | 519.0 -> 474.0 | 358083 | 20.00 µg/L        | 0.000    |
| M7-PFUnDA                          | 8.039                | 570.0 -> 525.0 | 393729 | 20.00 µg/L        | 0.000    |
| M2-PFDoDA                          | 8.352                | 615.0 -> 570.0 | 407773 | 20.00 µg/L        | 0.000    |
| M2-PFTeDA                          | 8.886                | 715.0 -> 670.0 | 379684 | 20.00 µg/L        | 0.000    |
| M8-FOSA                            | 7.311                | 506.0 -> 78.0  | 224626 | 20.00 µg/L        | 0.000    |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 50921  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.947                | 402.0 -> 99.0  | 50450  | 20.00 µg/L        | 0.000    |
| M8-PFOS                            | 7.196                | 507.0 -> 99.0  | 78333  | 20.00 µg/L        | 0.000    |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 90683  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.606                | 429.0 -> 409.0 | 89621  | 20.00 µg/L        | 0.013    |
| M2-8:2FTS                          | 7.701                | 529.0 -> 509.0 | 55478  | 20.00 µg/L        | 0.000    |
| M3-MeFOSAA                         | 7.735                | 573.0 -> 419.0 | 50074  | 20.00 µg/L        | 0.000    |
| M3-HFPO-DA                         | 5.267                | 287.0 -> 169.0 | 168872 | 100.00 µg/L       | 0.013    |
| 13C2-PFOA                          | 6.622                | 415.0 -> 370.0 | 427134 | 20.00 µg/L        | 0.000    |
| 13C4-PFOS                          | 7.198                | 503.0 -> 80.0  | 126368 | 20.00 µg/L        | 0.000    |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 90295  | 19.03 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.1%  |          |
| 13C2-6:2FTS                        | 6.606                | 429.0 -> 409.0 | 89605  | 19.61 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.0%  |          |
| 13C2-8:2FTS                        | 7.701                | 529.0 -> 509.0 | 55047  | 19.69 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.5%  |          |
| 13C2-PFDoDA                        | 8.352                | 615.0 -> 570.0 | 407946 | 20.86 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.3% |          |
| 13C2-PFTeDA                        | 8.886                | 715.0 -> 670.0 | 379760 | 20.76 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.8% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 50720  | 20.11 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.5% |          |
| 13C3-PFHxS                         | 5.947                | 402.0 -> 99.0  | 50859  | 20.12 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.6% |          |
| 13C4-PFBA                          | 1.714                | 217.0 -> 172.0 | 330801 | 20.28 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 101.4% |          |
| 13C4-PFHpA                         | 5.904                | 367.0 -> 322.0 | 336636 | 20.16 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.8% |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 296183 | 20.13 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.6% |          |
| 13C5-PFPeA                         | 3.573                | 268.0 -> 223.0 | 222879 | 20.13 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 100.6% |          |
| 13C6-PFDA                          | 7.678                | 519.0 -> 474.0 | 358083 | 21.50 µg/L        | 0.000    |

7.6.43  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 107.5% |          |
| 13C7-PFUnDA           | 8.039                | 570.0 -> 525.0 | 393747 | 21.24 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.2% |          |
| 13C8-FOSA             | 7.311                | 506.0 -> 78.0  | 224899 | 21.37 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 106.8% |          |
| 13C8-PFOA             | 6.621                | 421.0 -> 376.0 | 325734 | 20.59 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.9% |          |
| 13C8-PFOS             | 7.196                | 507.0 -> 99.0  | 78029  | 20.26 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 101.3% |          |
| 13C9-PFNA             | 7.213                | 472.0 -> 427.0 | 307270 | 20.56 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.8% |          |
| d3-MeFOSAA            | 7.735                | 573.0 -> 419.0 | 50088  | 21.10 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 105.5% |          |
| 13C3-HFPO-DA          | 5.267                | 287.0 -> 169.0 | 168872 | 101.13 µg/L       | 0.013    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 101.1% |          |
| M2-PFOA               | 6.622                | 415.0 -> 370.0 | 427134 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.198                | 503.0 -> 80.0  | 126368 | 20.00 µg/L        | 0.000    |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

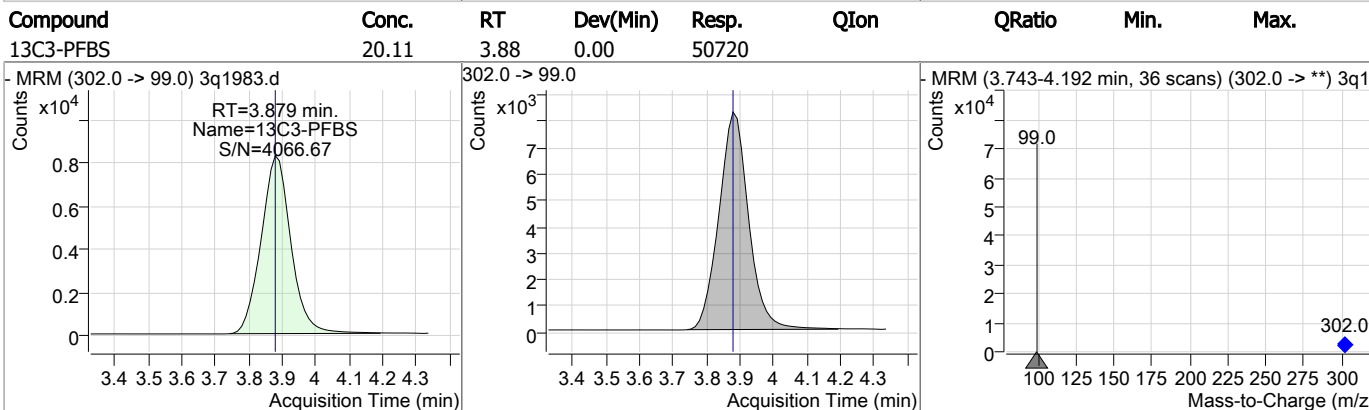
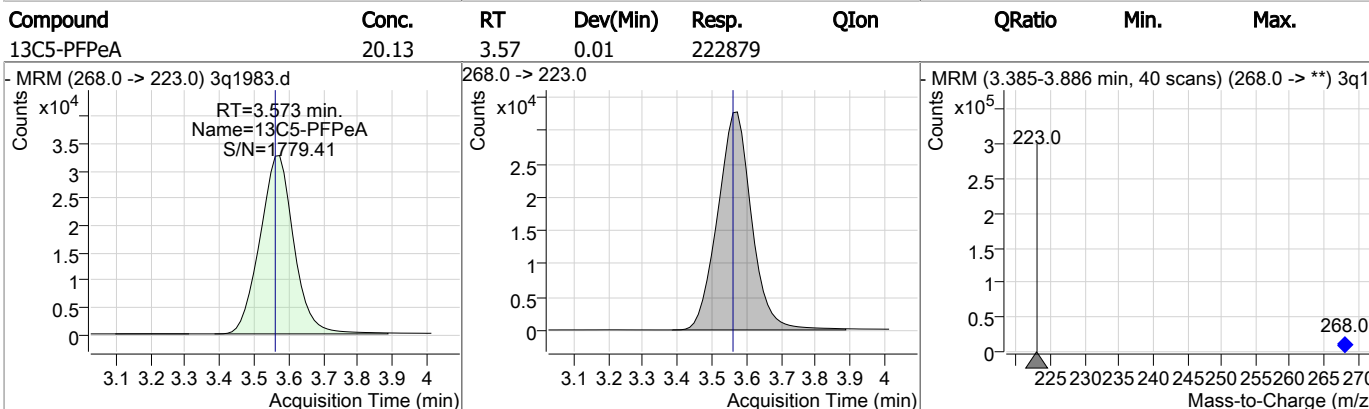
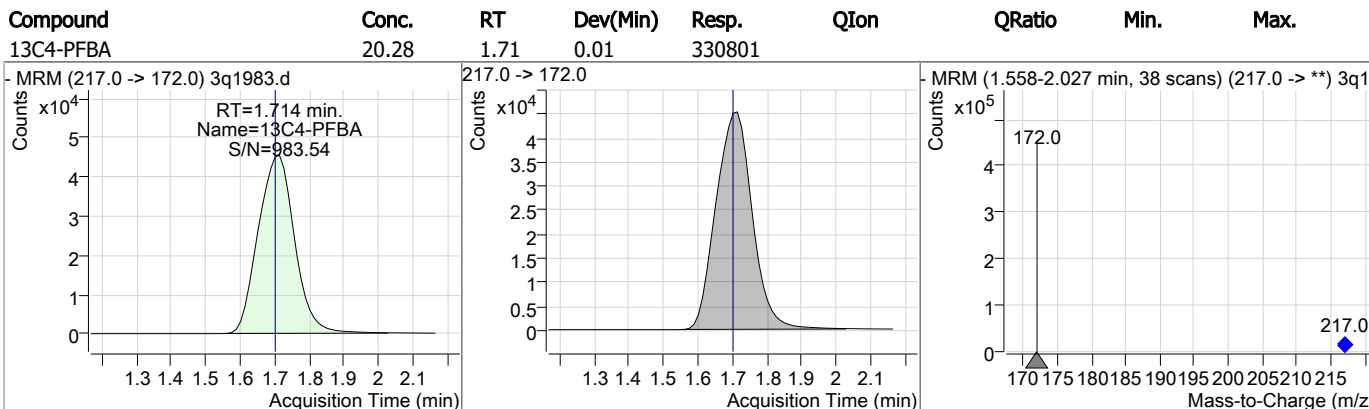
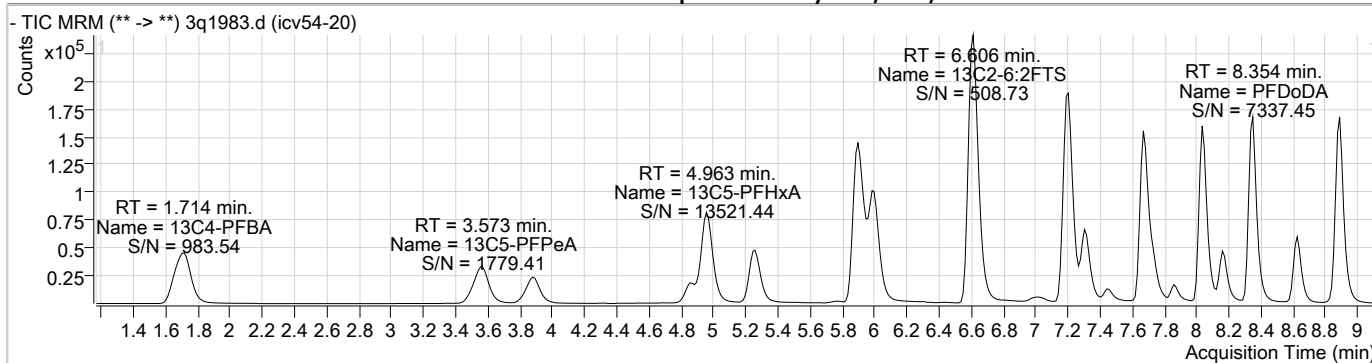
**Target Compounds**

| Compound     | RT    | QIon           | Resp.  | Conc. Units  | QValue |
|--------------|-------|----------------|--------|--------------|--------|
| 4:2FTS       | -     | 327.0 -> 307.0 | -      | N.D.         |        |
| 6:2FTS       | -     | 427.0 -> 407.0 | -      | N.D.         |        |
| 8:2FTS       | -     | 527.0 -> 507.0 | -      | N.D.         |        |
| EtFOSAA      | 7.861 | 584.0 -> 419.0 | 19803  | 17.61 µg/L m | 94     |
| FOSA         | -     | 498.0 -> 78.0  | -      | N.D.         |        |
| MeFOSAA      | 7.735 | 570.0 -> 419.0 | 22519  | 16.81 µg/L m | 97     |
| PFBA         | -     | 213.0 -> 169.0 | -      | N.D.         |        |
| PFBS         | 3.883 | 299.0 -> 80.0  | 66905  | 18.89 µg/L   | 99     |
| PFDA         | 7.678 | 513.0 -> 469.0 | 161373 | 19.03 µg/L   | 99     |
| PFDoDA       | 8.354 | 613.0 -> 569.0 | 173349 | 18.65 µg/L   | 100    |
| PFDS         | -     | 599.0 -> 80.0  | -      | N.D.         |        |
| PFHpA        | 5.907 | 363.0 -> 319.0 | 284923 | 19.18 µg/L   | 100    |
| PFHpS        | -     | 449.0 -> 80.0  | -      | N.D.         |        |
| PFHxA        | 4.965 | 313.0 -> 269.0 | 99576  | 18.89 µg/L   | 100    |
| PFHxS        | 5.950 | 399.0 -> 80.0  | 53184  | 19.17 µg/L m | 100    |
| PFNA         | 7.214 | 463.0 -> 419.0 | 188370 | 19.64 µg/L   | 99     |
| PFNS         | -     | 549.0 -> 80.0  | -      | N.D.         |        |
| PFOA         | 6.623 | 413.0 -> 369.0 | 169487 | 19.43 µg/L   | 99     |
| PFOS         | 7.199 | 499.0 -> 80.0  | 67564  | 18.62 µg/L m | 99     |
| PFPeA        | -     | 263.0 -> 219.0 | -      | N.D.         |        |
| PFPeS        | -     | 349.0 -> 80.0  | -      | N.D.         |        |
| PFTeDA       | 8.890 | 713.0 -> 669.0 | 221508 | 18.76 µg/L   | 100    |
| PFTrDA       | 8.628 | 663.0 -> 619.0 | 199380 | 19.73 µg/L   | 99     |
| PFUnDA       | 8.041 | 563.0 -> 519.0 | 161879 | 18.95 µg/L   | 100    |
| 11Cl-PF3OUdS | 8.162 | 631.0 -> 451.0 | 155127 | 19.86 µg/L   | 100    |
| 9Cl-PF3ONS   | 7.446 | 531.0 -> 351.0 | 39751  | 19.54 µg/L   | 100    |
| ADONA        | 6.007 | 377.0 -> 251.0 | 399095 | 19.61 µg/L   | 100    |
| HFPO-DA      | 5.259 | 329.0 -> 169.0 | 55257  | 19.28 µg/L   | 100    |

# = Qualifier out of range, m = manually integrated, + = Area summed

7.6.43  
7

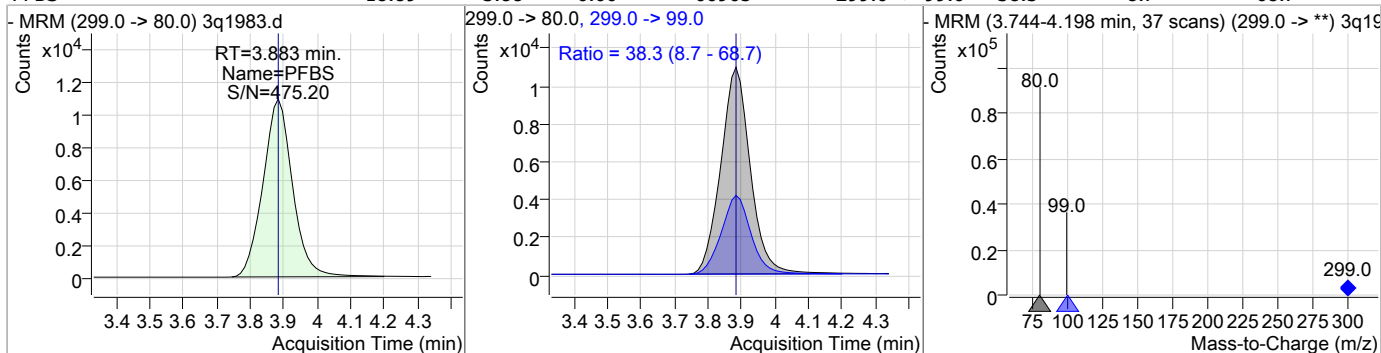
### Perfluorinated Compounds by LC/MS/MS



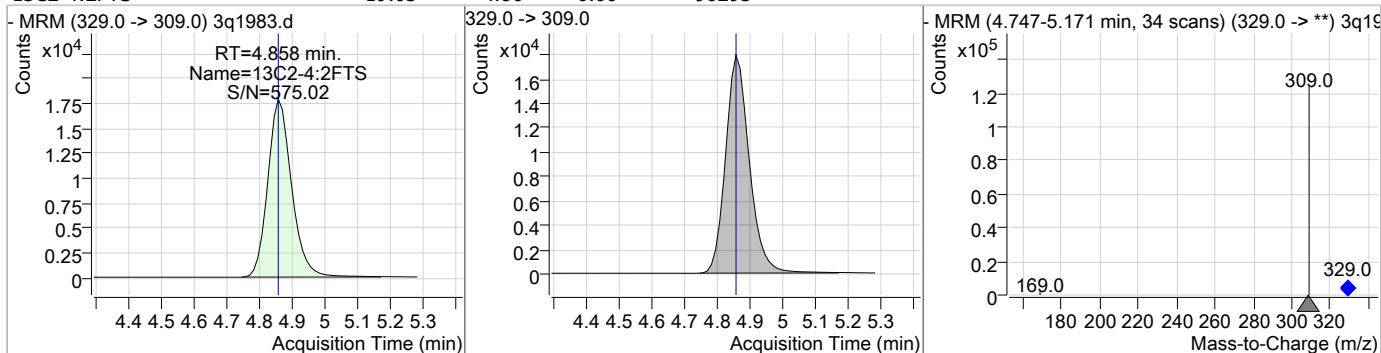
7.6.43  
7

### Perfluorinated Compounds by LC/MS/MS

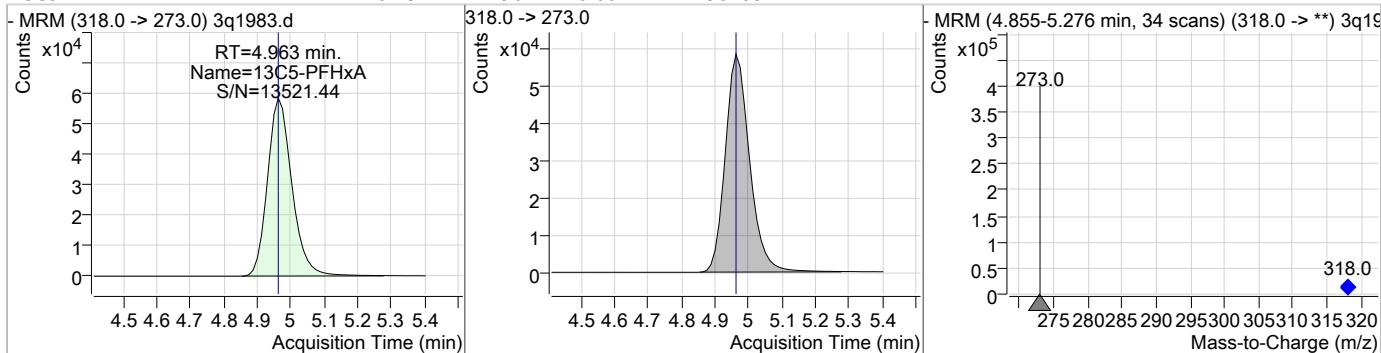
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFBS     | 18.89 | 3.88 | 0.00     | 66905 | 299.0 -> 99.0 | 38.3   | 8.7  | 68.7 |



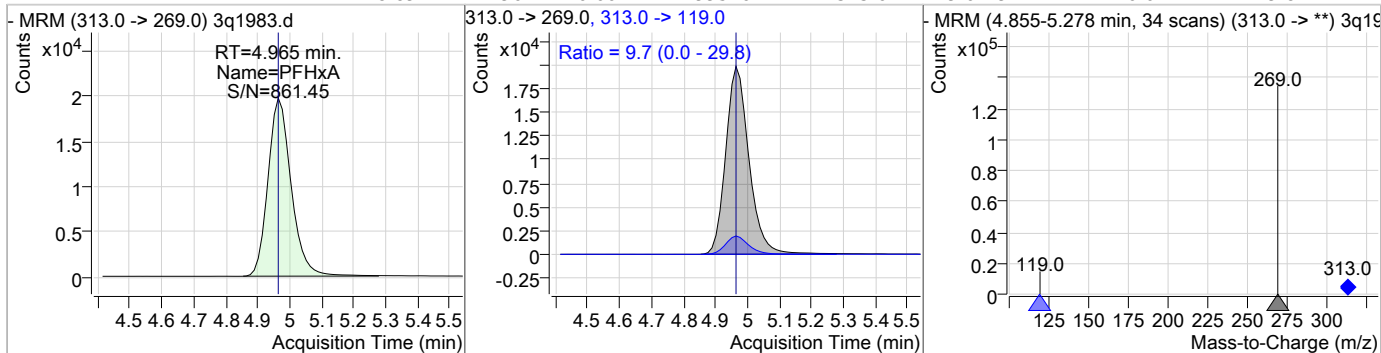
| Compound    | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-------------|-------|------|----------|-------|------|--------|------|------|
| 13C2-4:2FTS | 19.03 | 4.86 | 0.00     | 90295 |      |        |      |      |



| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|------|--------|------|------|
| 13C5-PFHxA | 20.13 | 4.96 | 0.00     | 296183 |      |        |      |      |

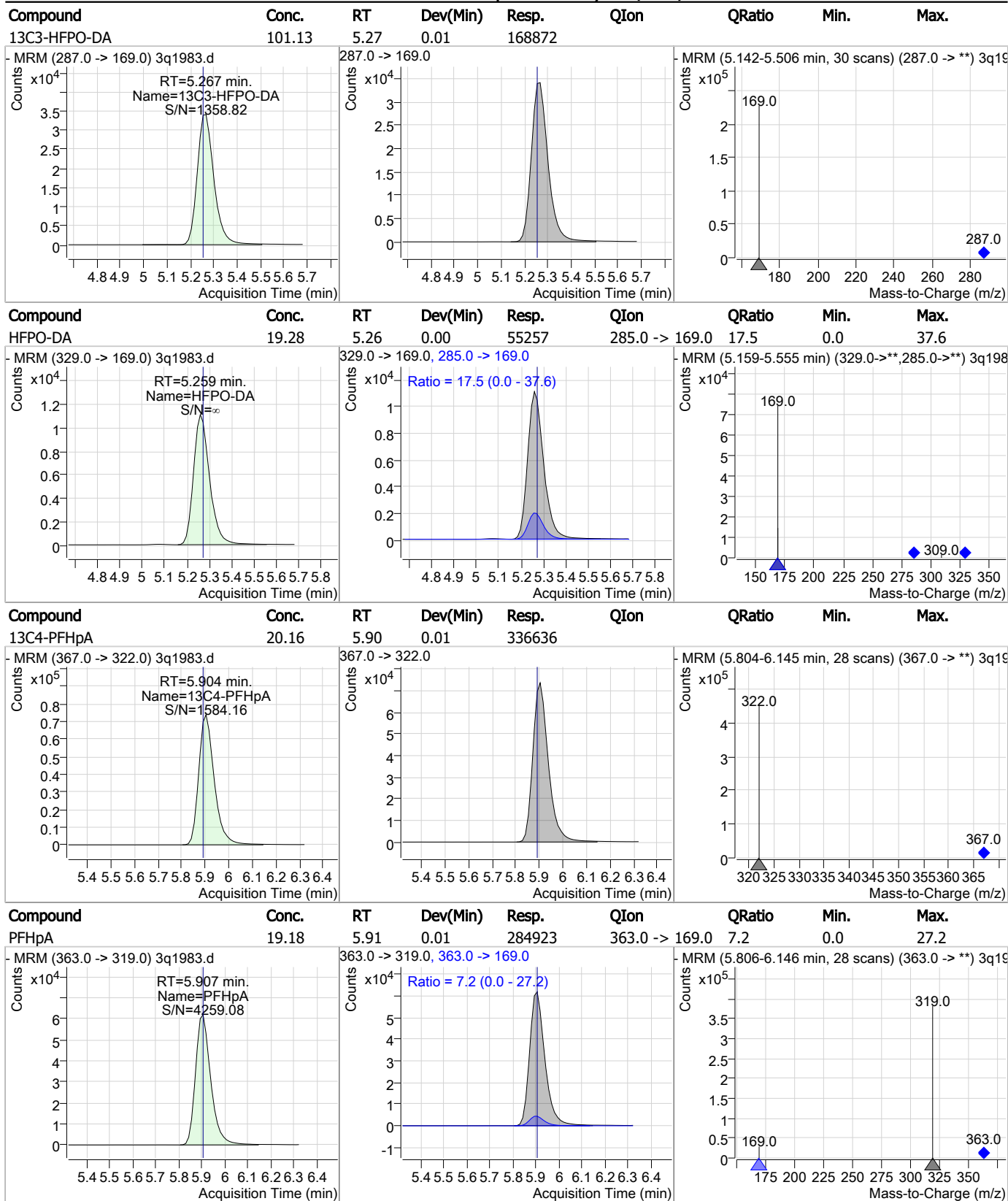


| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| PFHxA    | 18.89 | 4.96 | 0.00     | 99576 | 313.0 -> 119.0 | 9.7    | 0.0  | 29.8 |



7.6.43  
7

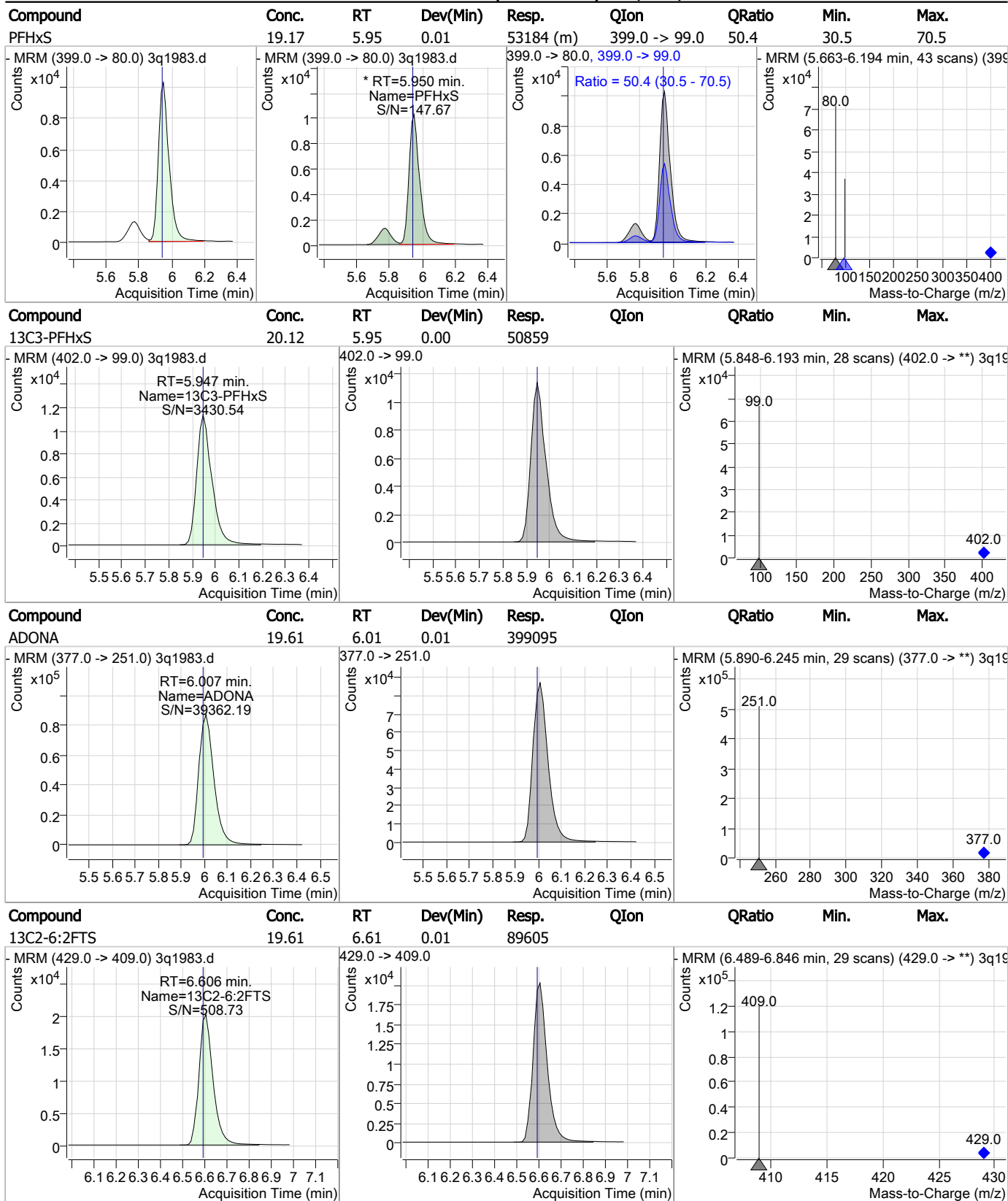
### Perfluorinated Compounds by LC/MS/MS



7.6.43

7

### Perfluorinated Compounds by LC/MS/MS

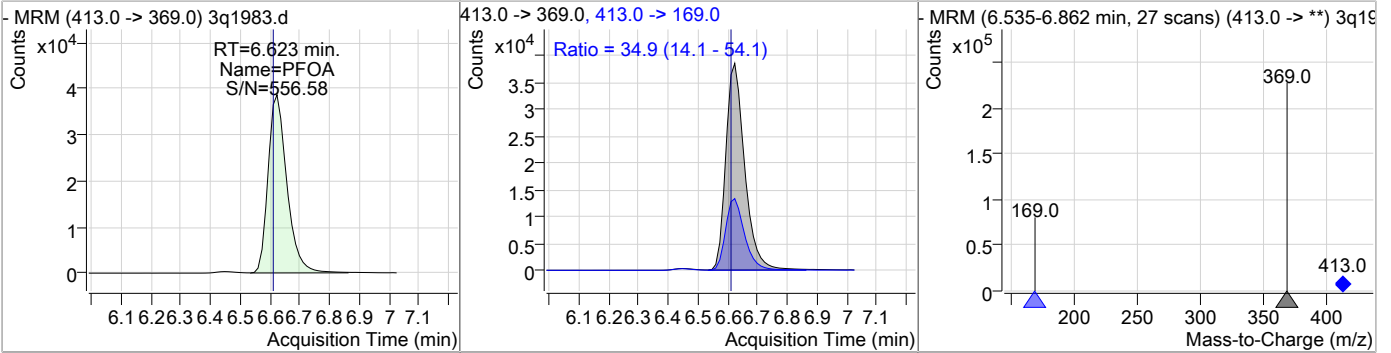


7.6.43

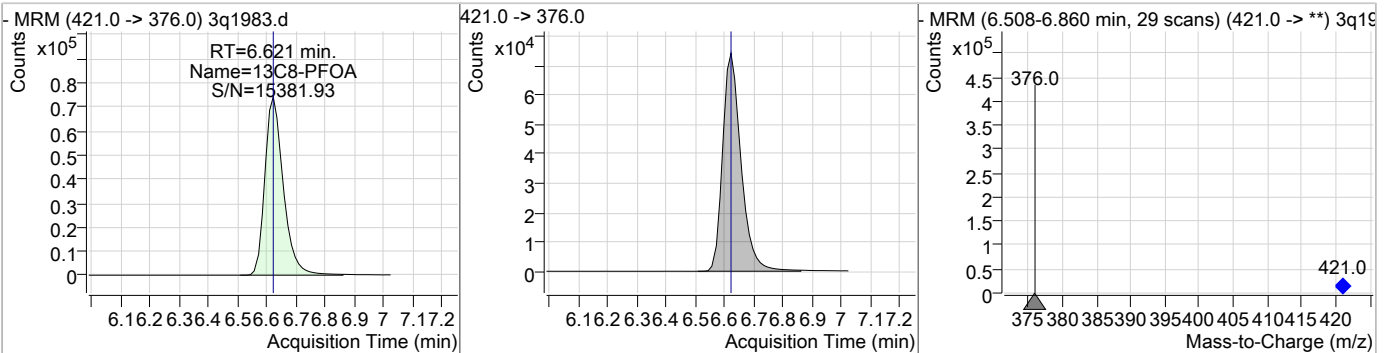
7

### Perfluorinated Compounds by LC/MS/MS

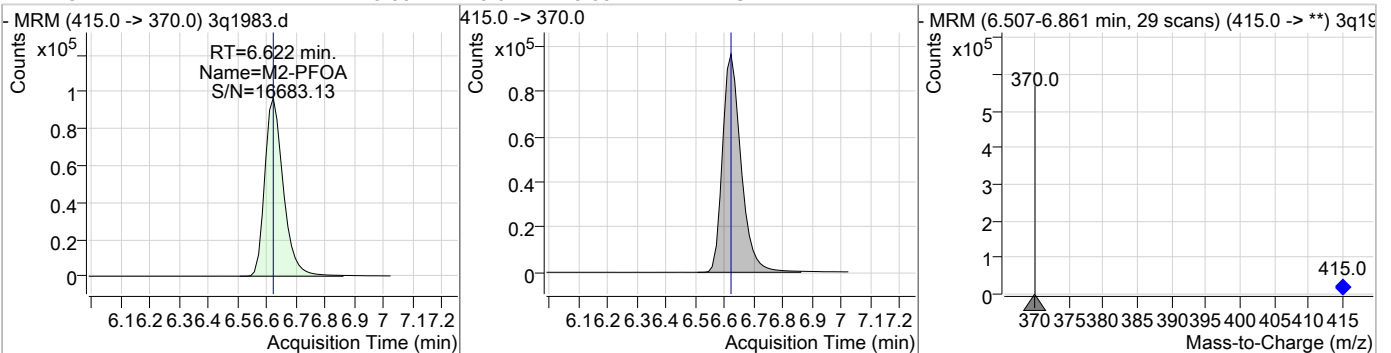
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 19.43 | 6.62 | 0.01     | 169487 | 413.0 -> 169.0 | 34.9   | 14.1 | 54.1 |



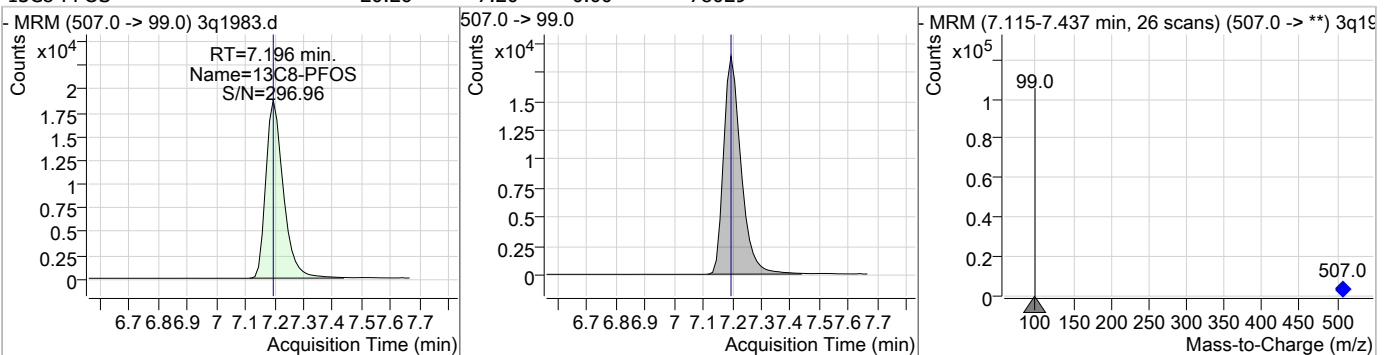
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|------|--------|------|------|
| 13C8-PFOA | 20.59 | 6.62 | 0.00     | 325734 |      |        |      |      |



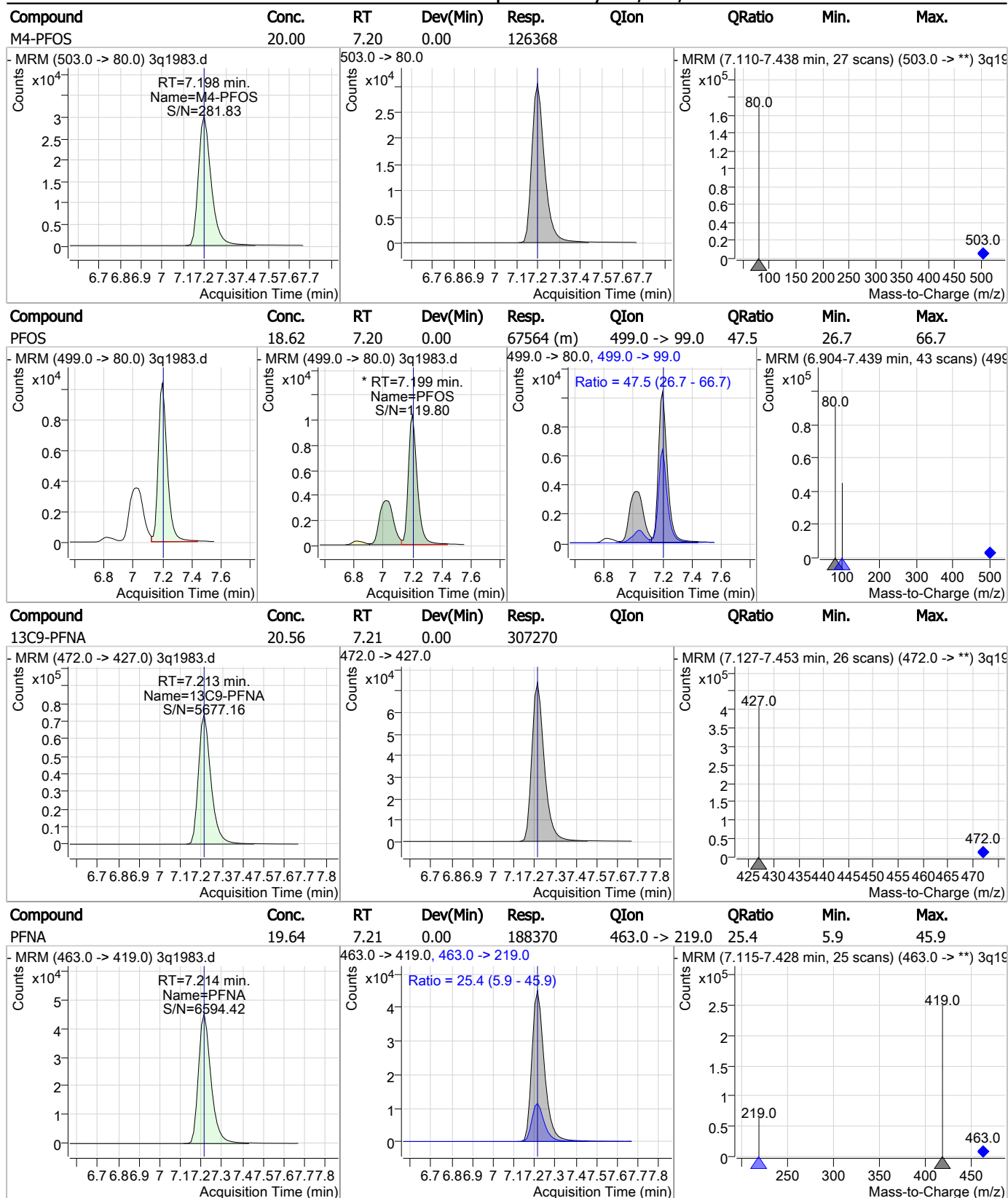
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|------|--------|------|------|
| M2-PFOA  | 20.00 | 6.62 | 0.00     | 427134 |      |        |      |      |



| Compound  | Conc. | RT   | Dev(Min) | Resp. | QIon | QRatio | Min. | Max. |
|-----------|-------|------|----------|-------|------|--------|------|------|
| 13C8-PFOS | 20.26 | 7.20 | 0.00     | 78029 |      |        |      |      |



### Perfluorinated Compounds by LC/MS/MS



7.6.43

7

### Perfluorinated Compounds by LC/MS/MS

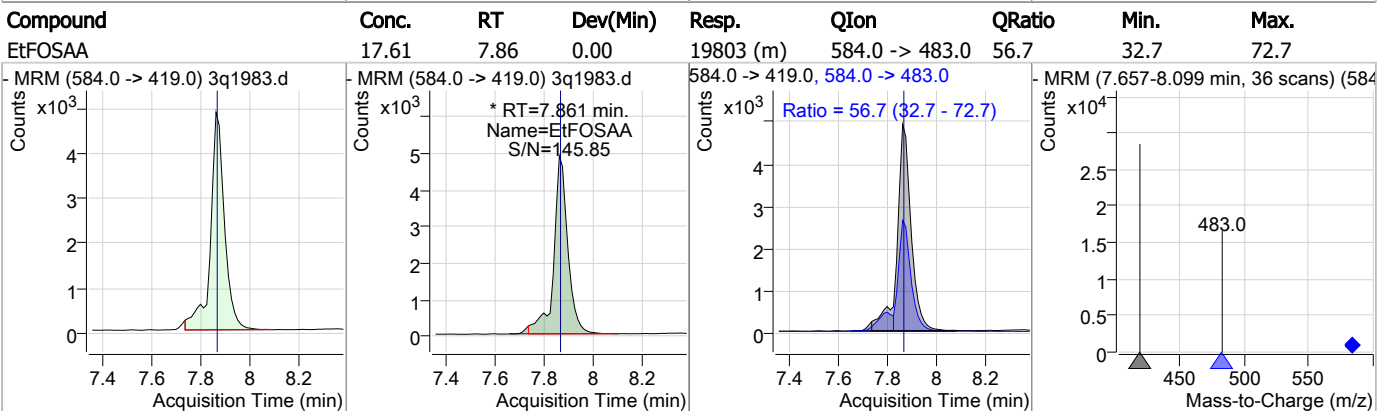
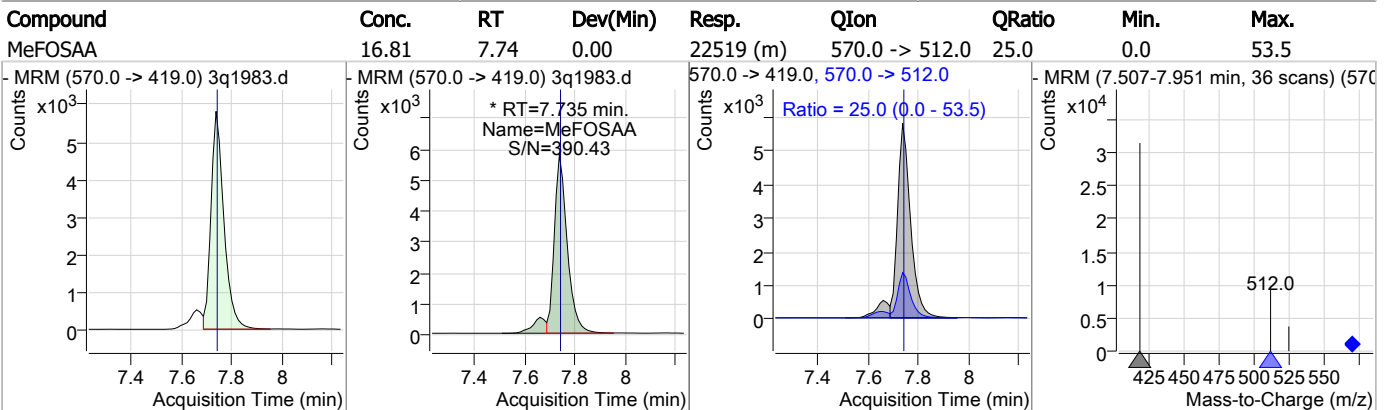
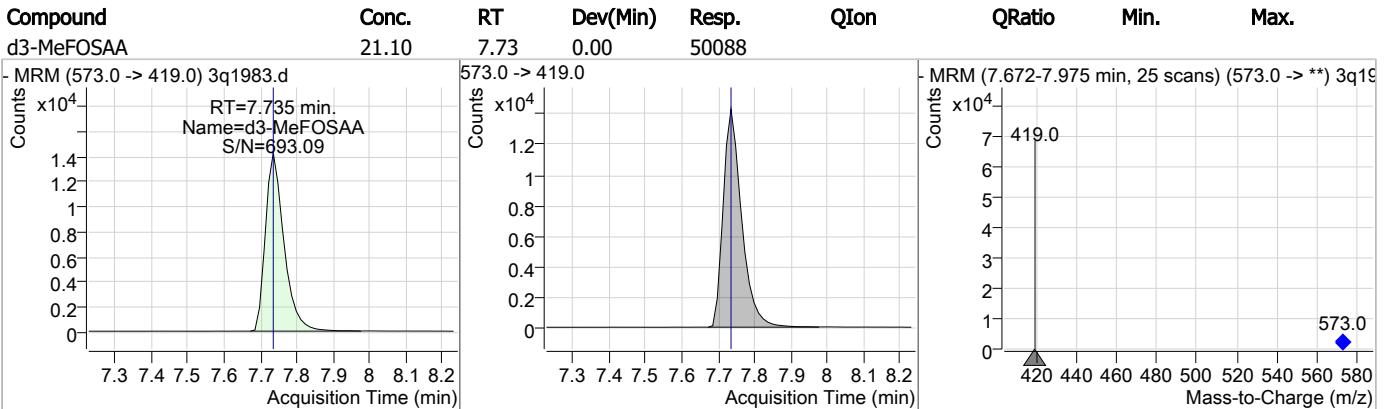
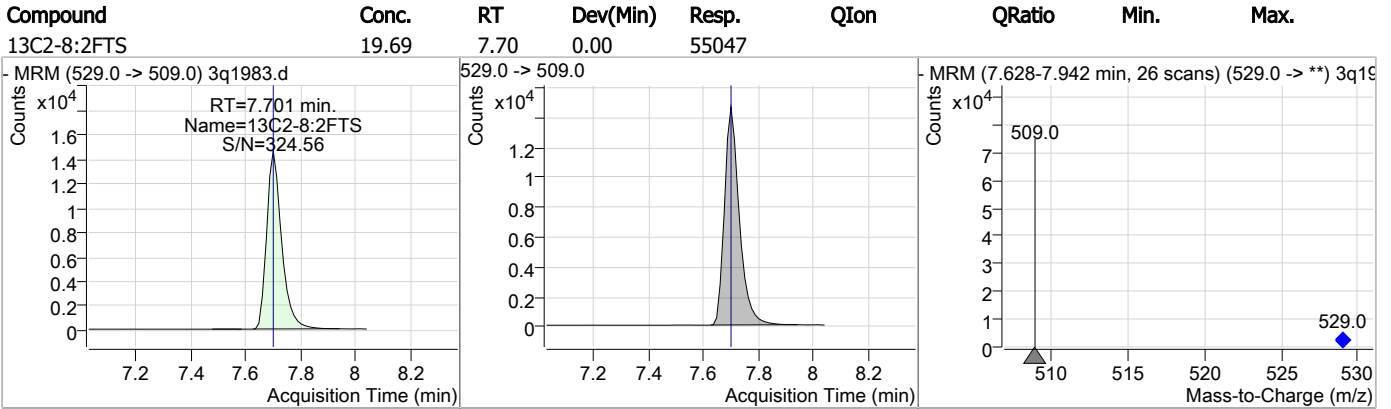
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-FOSA  | 21.37 | 7.31 | 0.00     | 224899 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| 9Cl-PF3ONS | 19.54 | 7.45 | 0.00     | 39751  |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| 13C6-PFDA  | 21.50 | 7.68 | 0.00     | 358083 |                |        |      |      |
|            |       |      |          |        |                |        |      |      |
| PFDA       | 19.03 | 7.68 | 0.00     | 161373 | 513.0 -> 219.0 | 22.8   | 2.2  | 42.2 |
|            |       |      |          |        |                |        |      |      |

7.6.43

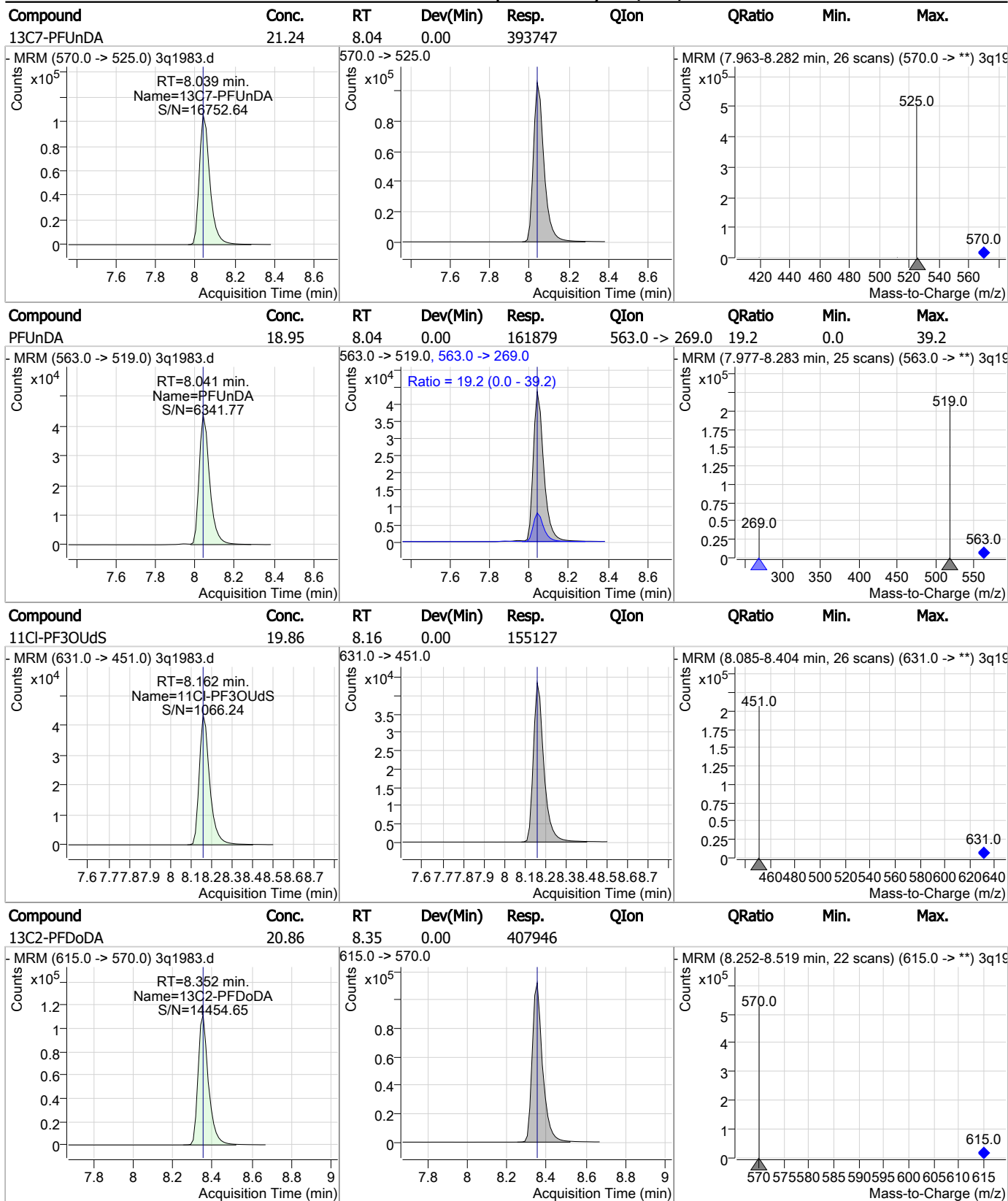
7



## Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

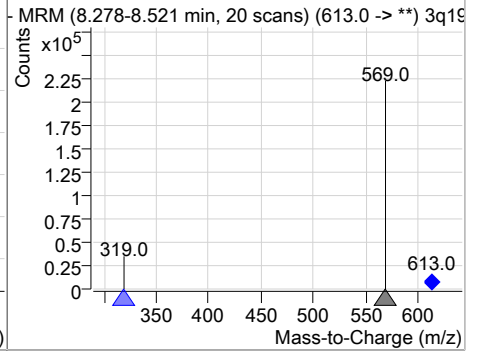
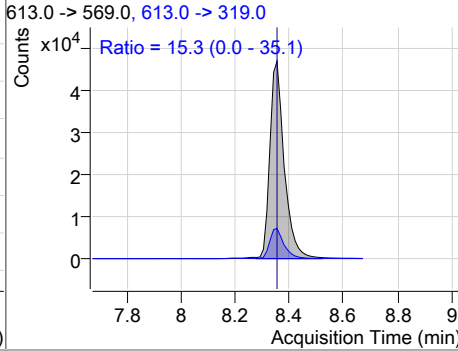
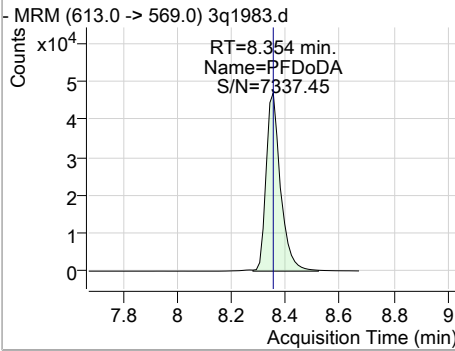


7.6.43

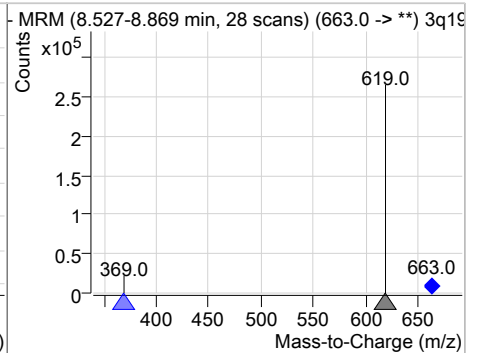
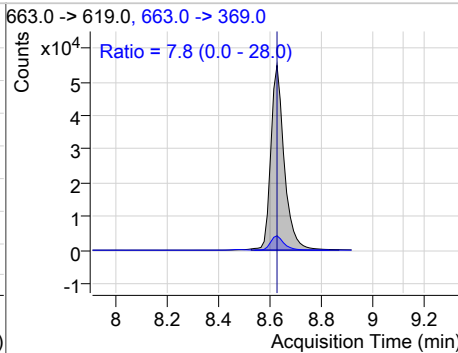
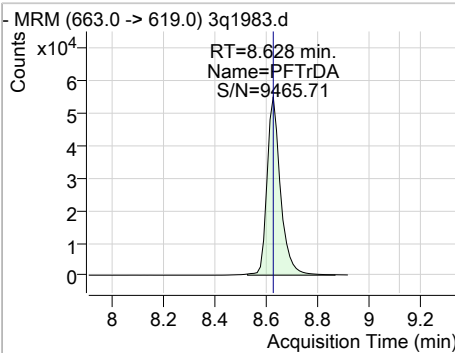
7

### Perfluorinated Compounds by LC/MS/MS

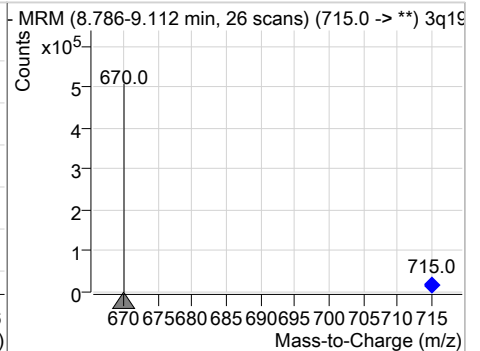
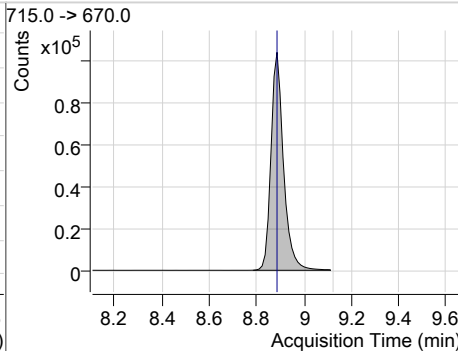
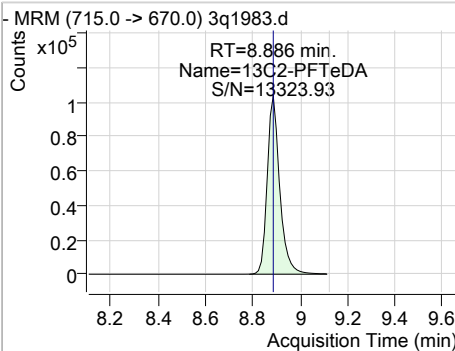
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFDODA   | 18.65 | 8.35 | 0.00     | 173349 | 613.0 -> 319.0 | 15.3   | 0.0  | 35.1 |



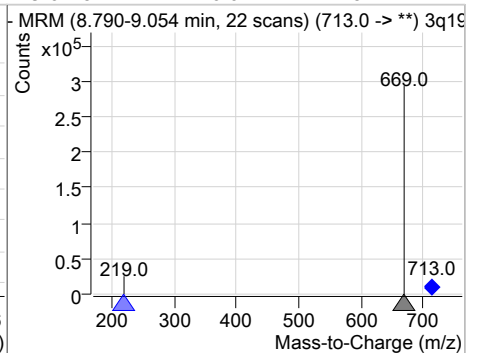
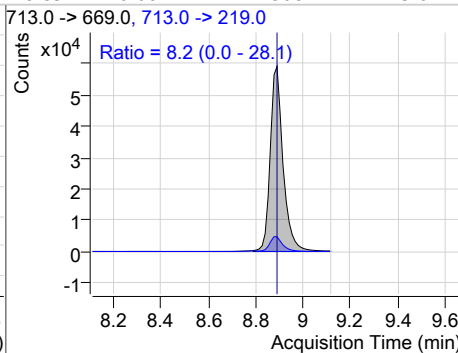
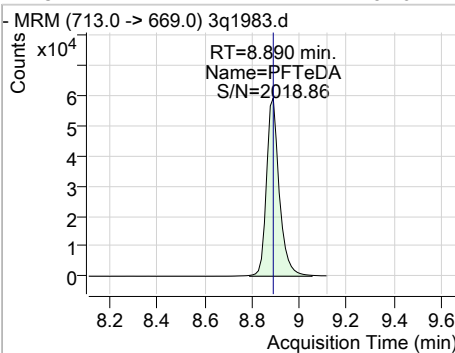
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTrDA   | 19.73 | 8.63 | 0.00     | 199380 | 663.0 -> 369.0 | 7.8    | 0.0  | 28.0 |



| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C2-PFTeDA | 20.76 | 8.89 | 0.00     | 379760 | 715.0 -> 670.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFTeDA   | 18.76 | 8.89 | 0.00     | 221508 | 713.0 -> 219.0 | 8.2    | 0.0  | 28.1 |



# Manual Integration Approval Summary

**Sample Number:** S3Q54-ICV54  
**Lab FileID:** 3Q1983.D  
**Injection Time:** 03/21/19 12:41

**Method:** EPA 537M QSM5.1 B-15  
**Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Supervisor approved:** 03/24/19 19:07 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.95           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.20           | Split peak |
| MeFOSAA                      | 2355-31-9 |      | 7.74           | Split peak |
| EtFOSAA                      | 2991-50-6 |      | 7.86           | Split peak |

7.6.43.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 3q1992.d  
 Operator : nancyf  
 Acq. Method : dMRM\_ID\_PFC\_2.1\_GENX.m  
 Acq. Date-Time : 3/21/2019 3:07:11 PM  
 Sample Name : cc54-20  
 Vial : P3-A7  
 DA Method File : ID\_GENX\_032119\_S3Q54.quantmethod.xml  
 Batch Name : s3q54.batch.bin  
 Sample Information : op74053,S3Q54,250,,,,1.0,1,WATER

| Compound                           | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|------------------------------------|----------------------|----------------|--------|-------------------|----------|
| <b>Internal Standards</b>          |                      |                |        |                   |          |
| M4-PFBA                            | 1.714                | 217.0 -> 172.0 | 321154 | 20.00 µg/L        | 0.013    |
| M5-PFPeA                           | 3.573                | 268.0 -> 223.0 | 215160 | 20.00 µg/L        | 0.013    |
| M5-PFHxA                           | 4.963                | 318.0 -> 273.0 | 286306 | 20.00 µg/L        | 0.000    |
| M4-PFHpA                           | 5.891                | 367.0 -> 322.0 | 327377 | 20.00 µg/L        | 0.000    |
| M8-PFOA                            | 6.609                | 421.0 -> 376.0 | 313323 | 20.00 µg/L        | -0.013   |
| M9-PFNA                            | 7.201                | 472.0 -> 427.0 | 300576 | 20.00 µg/L        | -0.013   |
| M6-PFDA                            | 7.663                | 519.0 -> 474.0 | 340528 | 20.00 µg/L        | -0.015   |
| M7-PFUnDA                          | 8.026                | 570.0 -> 525.0 | 386922 | 20.00 µg/L        | -0.013   |
| M2-PFDoDA                          | 8.340                | 615.0 -> 570.0 | 407758 | 20.00 µg/L        | -0.013   |
| M2-PFTeDA                          | 8.874                | 715.0 -> 670.0 | 379050 | 20.00 µg/L        | -0.013   |
| M8-FOSA                            | 7.298                | 506.0 -> 78.0  | 211719 | 20.00 µg/L        | -0.013   |
| M3-PFBS                            | 3.879                | 302.0 -> 99.0  | 48813  | 20.00 µg/L        | 0.000    |
| M3-PFHxS                           | 5.934                | 402.0 -> 99.0  | 49321  | 20.00 µg/L        | -0.013   |
| M8-PFOS                            | 7.183                | 507.0 -> 99.0  | 74359  | 20.00 µg/L        | -0.013   |
| M2-4:2FTS                          | 4.858                | 329.0 -> 309.0 | 91989  | 20.00 µg/L        | 0.000    |
| M2-6:2FTS                          | 6.594                | 429.0 -> 409.0 | 90464  | 20.00 µg/L        | 0.000    |
| M2-8:2FTS                          | 7.689                | 529.0 -> 509.0 | 57377  | 20.00 µg/L        | -0.013   |
| M3-MeFOSAA                         | 7.722                | 573.0 -> 419.0 | 48949  | 20.00 µg/L        | -0.013   |
| M3-HFPO-DA                         | 5.255                | 287.0 -> 169.0 | 159533 | 100.00 µg/L       | 0.000    |
| 13C2-PFOA                          | 6.610                | 415.0 -> 370.0 | 408724 | 20.00 µg/L        | -0.013   |
| 13C4-PFOS                          | 7.185                | 503.0 -> 80.0  | 120813 | 20.00 µg/L        | -0.013   |
| <b>System Monitoring Compounds</b> |                      |                |        |                   |          |
| 13C2-4:2FTS                        | 4.858                | 329.0 -> 309.0 | 91937  | 19.37 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.9%  |          |
| 13C2-6:2FTS                        | 6.594                | 429.0 -> 409.0 | 90461  | 19.80 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 99.0%  |          |
| 13C2-8:2FTS                        | 7.689                | 529.0 -> 509.0 | 57362  | 20.52 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 102.6% |          |
| 13C2-PFDoDA                        | 8.340                | 615.0 -> 570.0 | 407747 | 20.85 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 104.3% |          |
| 13C2-PFTeDA                        | 8.874                | 715.0 -> 670.0 | 379219 | 20.73 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 103.7% |          |
| 13C3-PFBS                          | 3.879                | 302.0 -> 99.0  | 48615  | 19.27 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.4%  |          |
| 13C3-PFHxS                         | 5.934                | 402.0 -> 99.0  | 49234  | 19.48 µg/L        | -0.013   |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.4%  |          |
| 13C4-PFBA                          | 1.714                | 217.0 -> 172.0 | 318946 | 19.56 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 97.8%  |          |
| 13C4-PFHpA                         | 5.891                | 367.0 -> 322.0 | 327291 | 19.61 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 98.0%  |          |
| 13C5-PFHxA                         | 4.963                | 318.0 -> 273.0 | 284878 | 19.36 µg/L        | 0.000    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 96.8%  |          |
| 13C5-PFPeA                         | 3.573                | 268.0 -> 223.0 | 212294 | 19.17 µg/L        | 0.013    |
| Spiked Amount: 20.00               | Range: 50.0 - 150.0% |                |        | Recovery = 95.9%  |          |
| 13C6-PFDA                          | 7.663                | 519.0 -> 474.0 | 340464 | 20.44 µg/L        | -0.015   |

7.6.44  
7



### Perfluorinated Compounds by LC/MS/MS

| Compound              | RT                   | QIon           | Resp.  | Conc. Units       | Dev(Min) |
|-----------------------|----------------------|----------------|--------|-------------------|----------|
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 102.2% |          |
| 13C7-PFUnDA           | 8.026                | 570.0 -> 525.0 | 386962 | 20.87 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 104.4% |          |
| 13C8-FOSA             | 7.298                | 506.0 -> 78.0  | 211398 | 20.09 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.4% |          |
| 13C8-PFOA             | 6.609                | 421.0 -> 376.0 | 313241 | 19.80 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 99.0%  |          |
| 13C8-PFOS             | 7.183                | 507.0 -> 99.0  | 74292  | 19.29 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 96.4%  |          |
| 13C9-PFNA             | 7.201                | 472.0 -> 427.0 | 301213 | 20.16 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.8% |          |
| d3-MeFOSAA            | 7.722                | 573.0 -> 419.0 | 48947  | 20.62 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 103.1% |          |
| 13C3-HFPO-DA          | 5.255                | 287.0 -> 169.0 | 159533 | 95.54 µg/L        | 0.000    |
| Spiked Amount: 100.00 | Range: 50.0 - 150.0% |                |        | Recovery = 95.5%  |          |
| M2-PFOA               | 6.610                | 415.0 -> 370.0 | 408724 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |
| M4-PFOS               | 7.185                | 503.0 -> 80.0  | 120813 | 20.00 µg/L        | -0.013   |
| Spiked Amount: 20.00  | Range: 50.0 - 150.0% |                |        | Recovery = 100.0% |          |

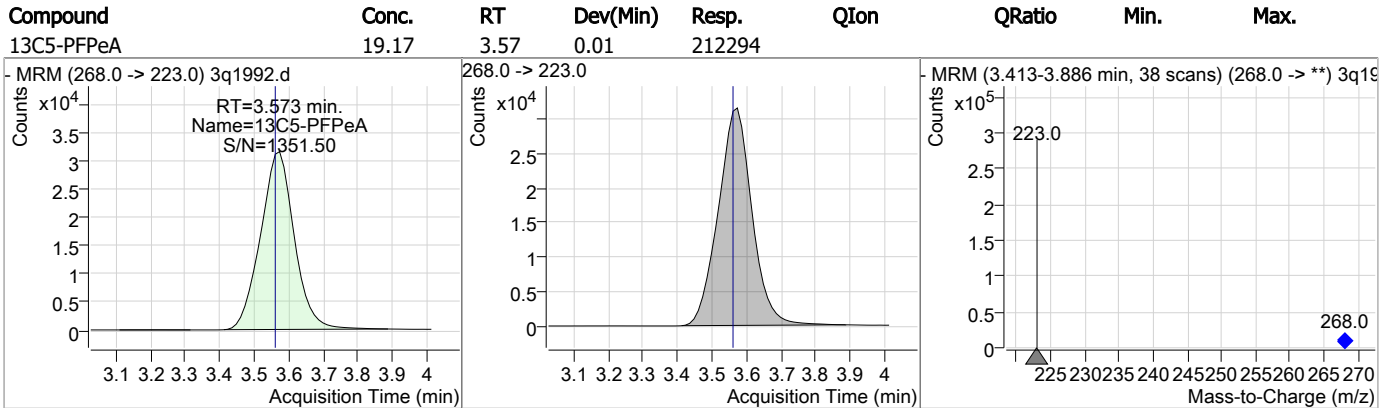
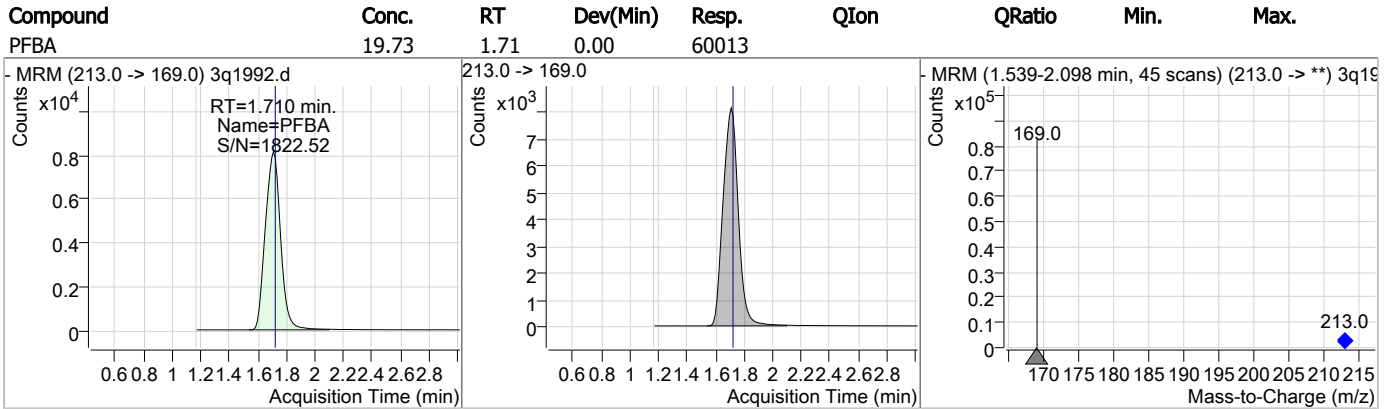
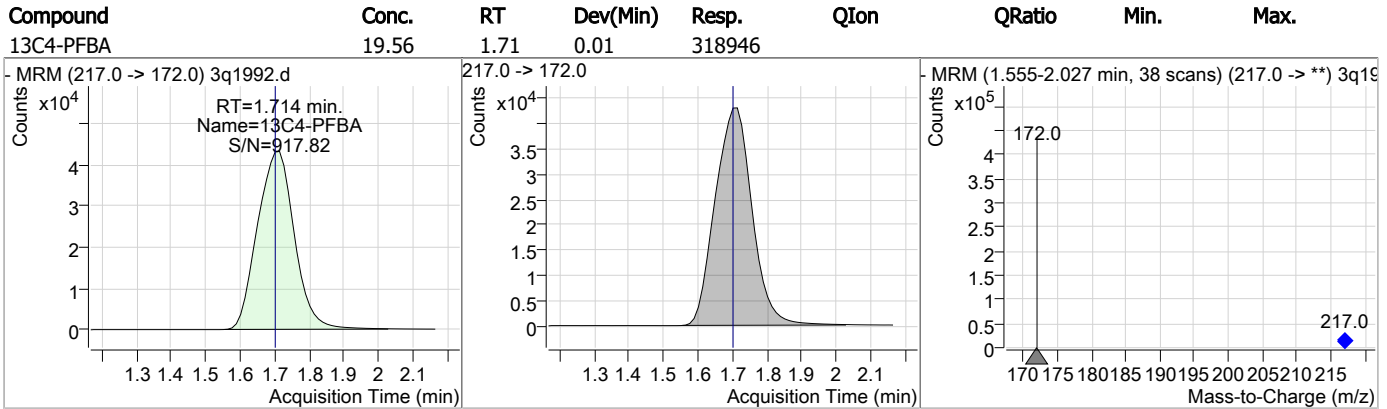
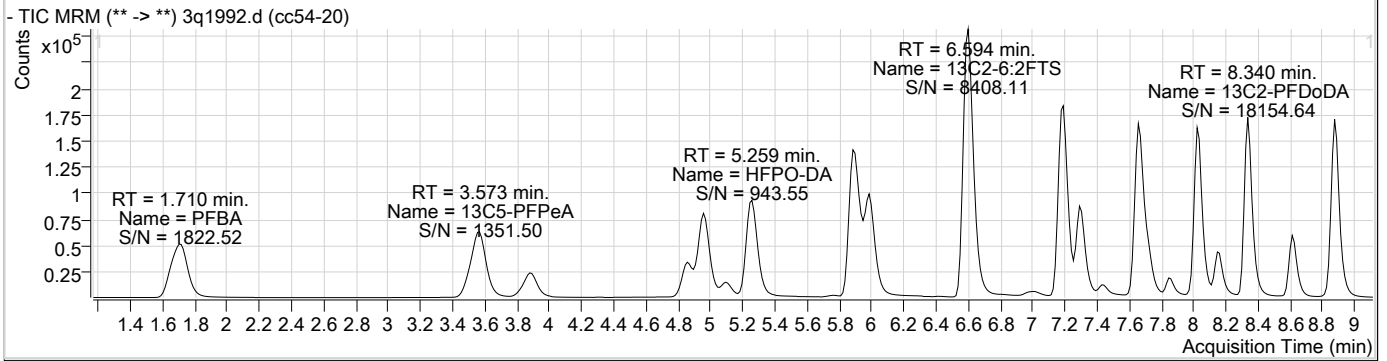
7.6.44  
7

**Target Compounds**

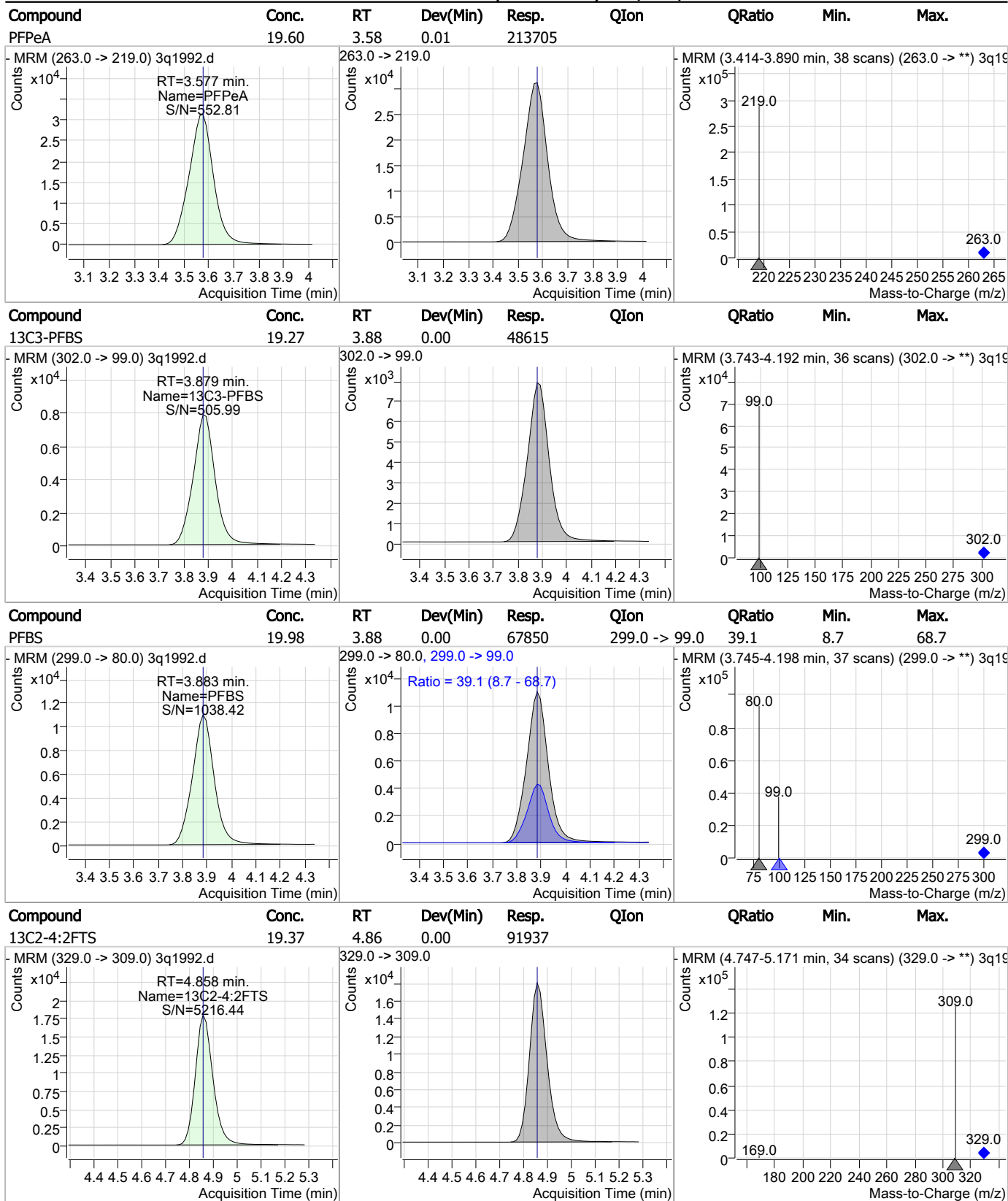
| Target Compounds | RT    | QIon           | Resp.  | Conc. Units | QValue |
|------------------|-------|----------------|--------|-------------|--------|
| 4:2FTS           | 4.861 | 327.0 -> 307.0 | 52750  | 20.97 µg/L  | 100    |
| 6:2FTS           | 6.595 | 427.0 -> 407.0 | 43865  | 19.66 µg/L  | 100    |
| 8:2FTS           | 7.689 | 527.0 -> 507.0 | 29221  | 20.57 µg/L  | 96     |
| EtFOSAA          | 7.861 | 584.0 -> 419.0 | 22488  | 20.44 µg/L  | 100    |
| FOSA             | 7.301 | 498.0 -> 78.0  | 95842  | 20.18 µg/L  | 99     |
| MeFOSAA          | 7.723 | 570.0 -> 419.0 | 24736  | 18.88 µg/L  | 97     |
| PFBA             | 1.710 | 213.0 -> 169.0 | 60013  | 19.73 µg/L  | 100    |
| PFBS             | 3.883 | 299.0 -> 80.0  | 67850  | 19.98 µg/L  | 99     |
| PFDA             | 7.664 | 513.0 -> 469.0 | 162602 | 20.16 µg/L  | 99     |
| PFDoDA           | 8.341 | 613.0 -> 569.0 | 183195 | 19.71 µg/L  | 100    |
| PFDS             | 7.999 | 599.0 -> 80.0  | 21815  | 18.31 µg/L  | 98     |
| PFHpA            | 5.894 | 363.0 -> 319.0 | 287324 | 19.83 µg/L  | 100    |
| PFHpS            | 6.618 | 449.0 -> 80.0  | 46935  | 19.99 µg/L  | 100    |
| PFHxA            | 4.965 | 313.0 -> 269.0 | 101322 | 19.87 µg/L  | 100    |
| PFHxS            | 5.937 | 399.0 -> 80.0  | 53294  | 19.65 µg/L  | m 100  |
| PFNA             | 7.201 | 463.0 -> 419.0 | 184842 | 19.79 µg/L  | 100    |
| PFNS             | 7.635 | 549.0 -> 80.0  | 42039  | 20.91 µg/L  | 98     |
| PFOA             | 6.611 | 413.0 -> 369.0 | 167845 | 20.01 µg/L  | 99     |
| PFOS             | 7.186 | 499.0 -> 80.0  | 68548  | 19.91 µg/L  | m 98   |
| PFPeA            | 3.577 | 263.0 -> 219.0 | 213705 | 19.60 µg/L  | 100    |
| PFPeS            | 5.094 | 349.0 -> 80.0  | 42494  | 20.12 µg/L  | 99     |
| PFTeDA           | 8.877 | 713.0 -> 669.0 | 233507 | 19.81 µg/L  | 100    |
| PFTTrDA          | 8.615 | 663.0 -> 619.0 | 198039 | 19.63 µg/L  | 100    |
| PFUnDA           | 8.028 | 563.0 -> 519.0 | 165785 | 19.75 µg/L  | 100    |
| 11Cl-PF3OUdS     | 8.149 | 631.0 -> 451.0 | 146698 | 18.78 µg/L  | 100    |
| 9Cl-PF3ONS       | 7.446 | 531.0 -> 351.0 | 36178  | 18.71 µg/L  | 100    |
| ADONA            | 5.994 | 377.0 -> 251.0 | 384526 | 19.64 µg/L  | 100    |
| HFPO-DA          | 5.259 | 329.0 -> 169.0 | 264480 | 97.70 µg/L  | 99     |

# = Qualifier out of range, m = manually integrated, + = Area summed

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



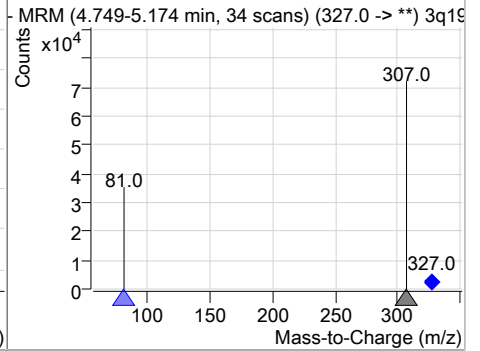
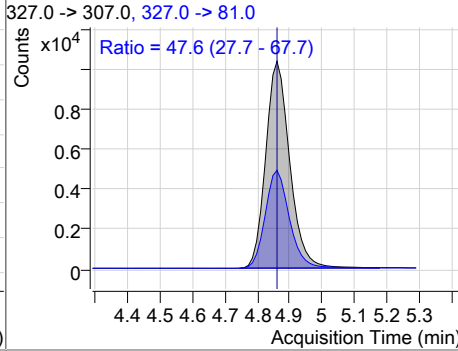
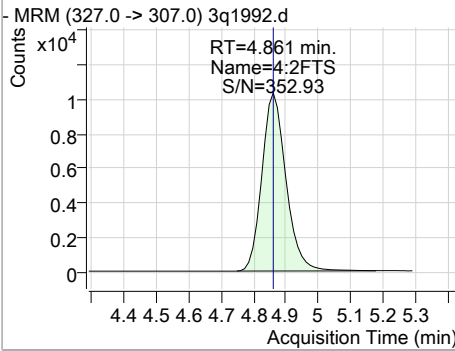
7.6.44

7

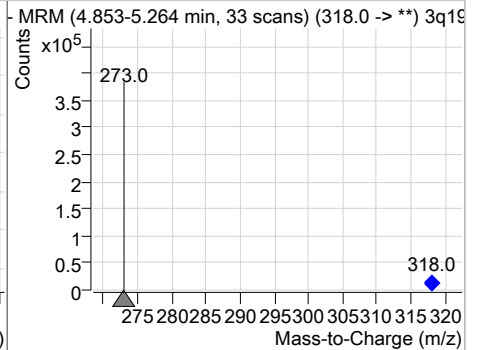
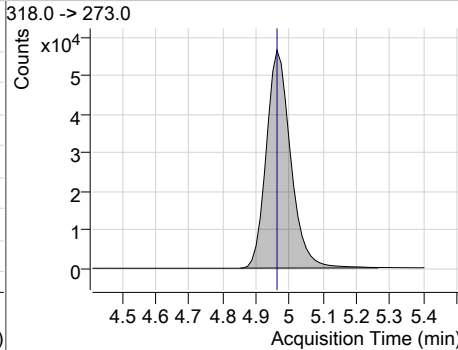
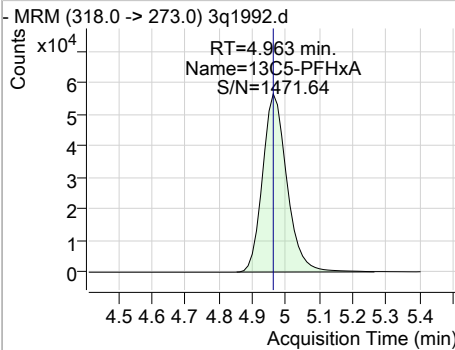


### Perfluorinated Compounds by LC/MS/MS

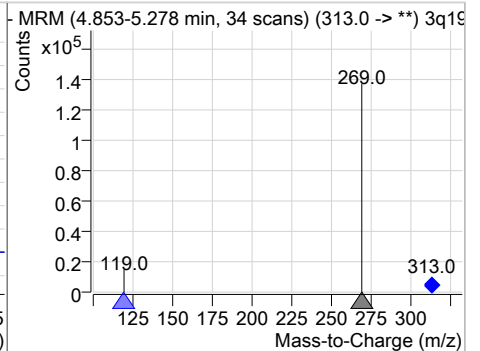
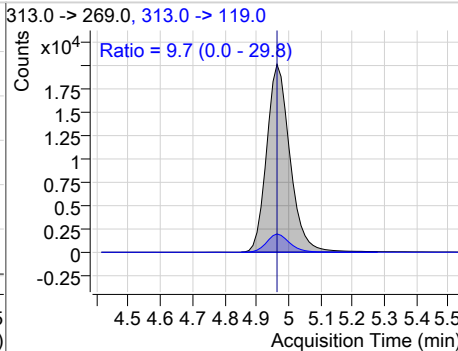
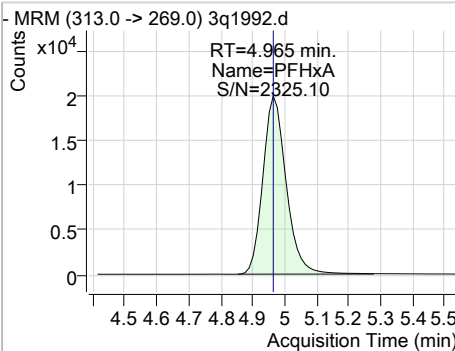
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 4:2FTS   | 20.97 | 4.86 | 0.00     | 52750 | 327.0 -> 81.0 | 47.6   | 27.7 | 67.7 |



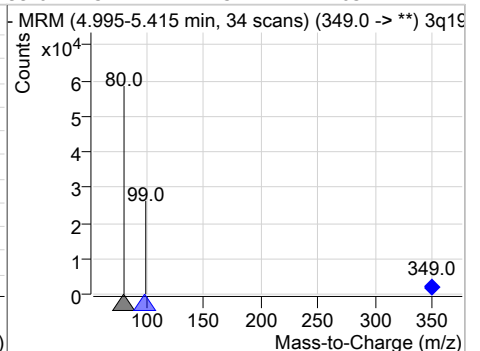
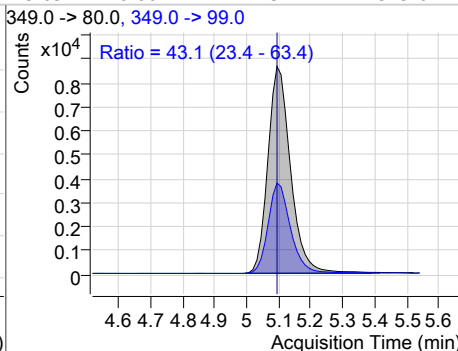
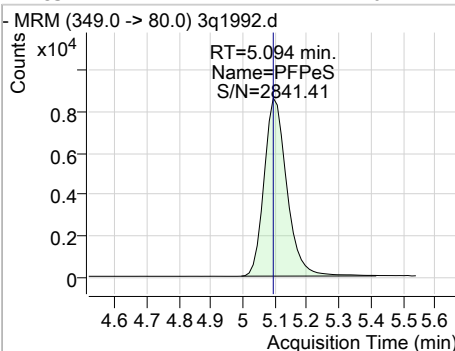
| Compound   | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C5-PFHxA | 19.36 | 4.96 | 0.00     | 284878 | 318.0 -> 273.0 | 9.7    | 0.0  | 29.8 |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFHxA    | 19.87 | 4.96 | 0.00     | 101322 | 313.0 -> 119.0 | 9.7    | 0.0  | 29.8 |



| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFPeS    | 20.12 | 5.09 | 0.00     | 42494 | 349.0 -> 99.0 | 43.1   | 23.4 | 63.4 |

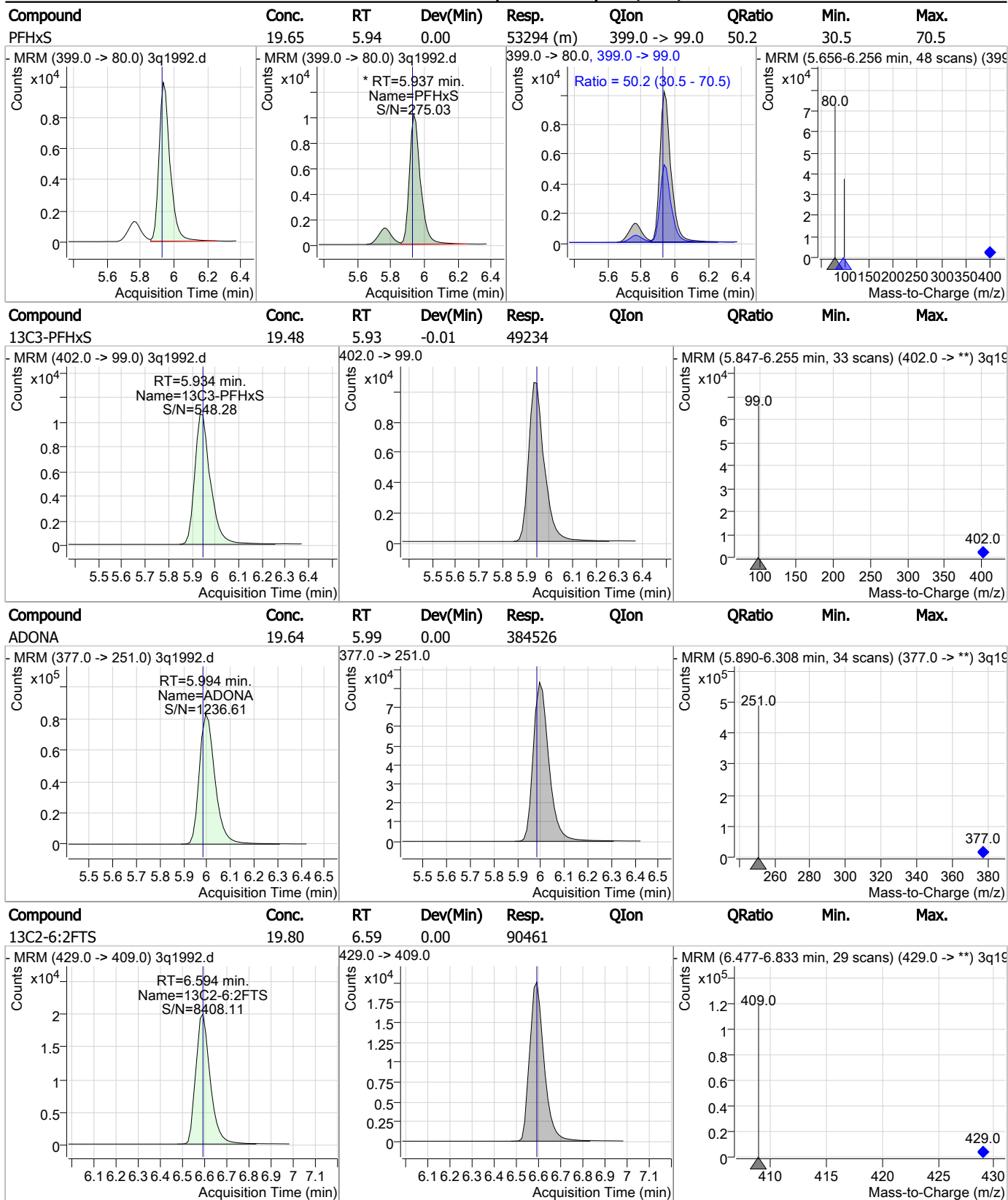


### Perfluorinated Compounds by LC/MS/MS

| Compound     | Conc. | RT   | Dev(Min) | Resp.  | QIon     | QRatio | Min. | Max. |
|--------------|-------|------|----------|--------|----------|--------|------|------|
| 13C3-HFPO-DA | 95.54 | 5.25 | 0.00     | 159533 |          |        |      |      |
|              |       |      |          |        |          |        |      |      |
| HFPO-DA      | 97.70 | 5.26 | 0.00     | 264480 | 285.0 -> | 169.0  | 17.2 | 0.0  |
|              |       |      |          |        |          |        |      |      |
| 13C4-PFHpA   | 19.61 | 5.89 | 0.00     | 327291 |          |        |      |      |
|              |       |      |          |        |          |        |      |      |
| PFHpA        | 19.83 | 5.89 | 0.00     | 287324 | 363.0 -> | 169.0  | 7.2  | 0.0  |
|              |       |      |          |        |          |        |      |      |

7.6.44  
7

### Perfluorinated Compounds by LC/MS/MS

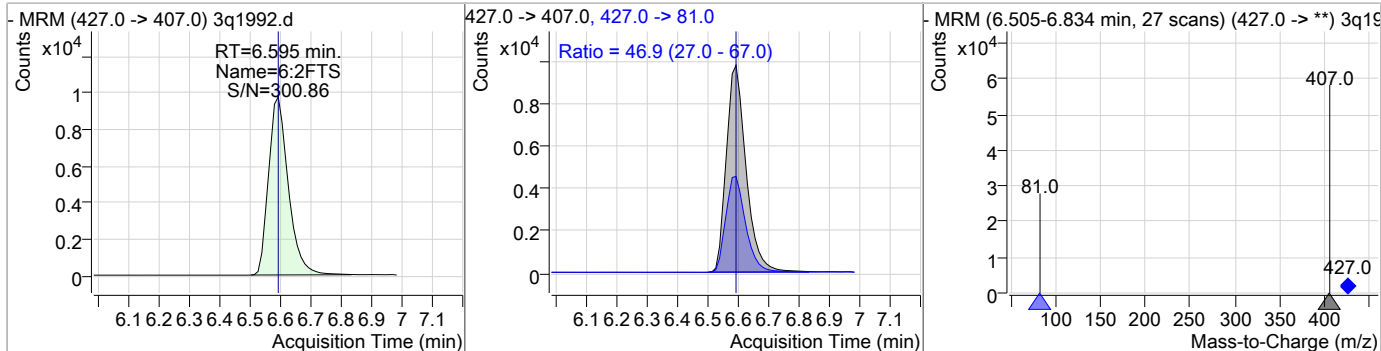


7.6.44

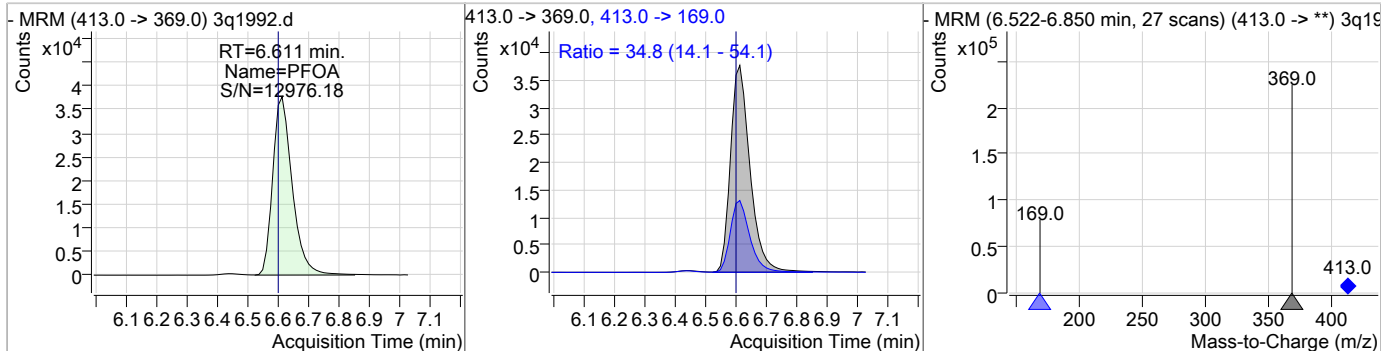
7

### Perfluorinated Compounds by LC/MS/MS

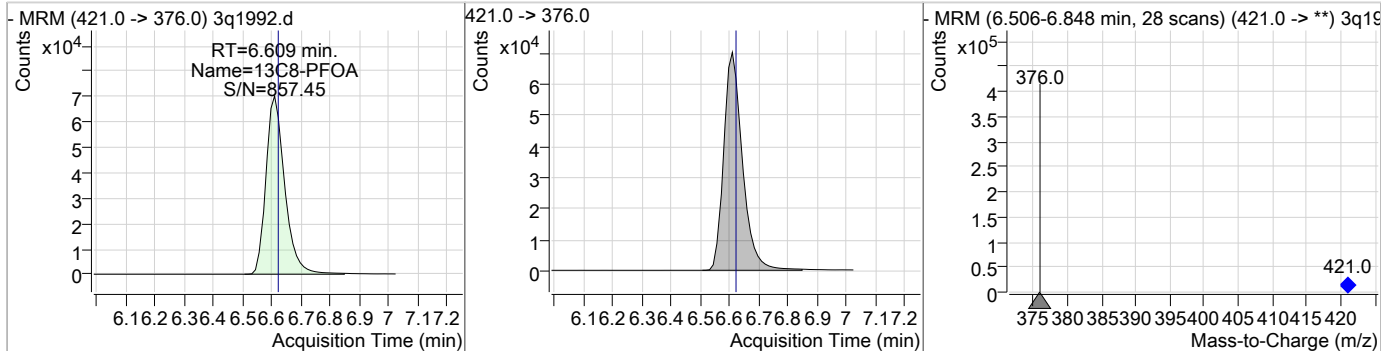
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| 6:2FTS   | 19.66 | 6.59 | 0.00     | 43865 | 427.0 -> 81.0 | 46.9   | 27.0 | 67.0 |



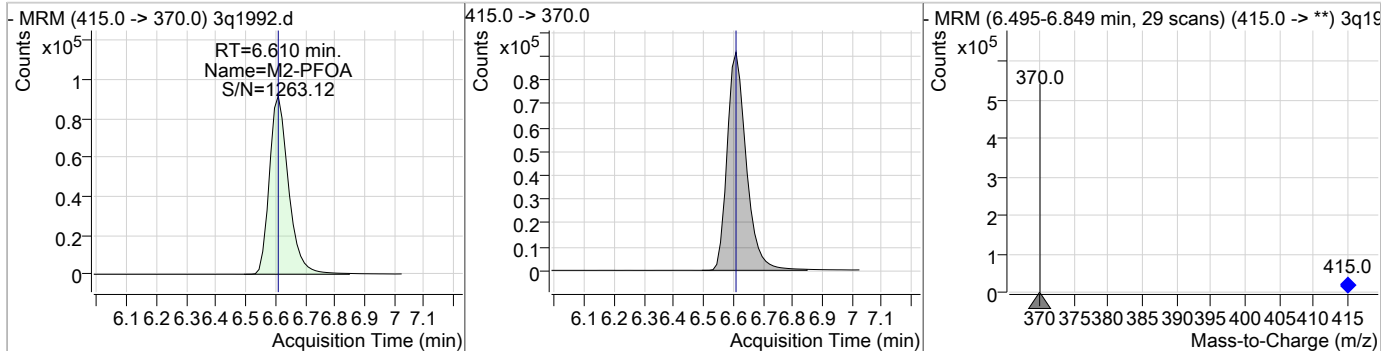
| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFOA     | 20.01 | 6.61 | 0.00     | 167845 | 413.0 -> 169.0 | 34.8   | 14.1 | 54.1 |



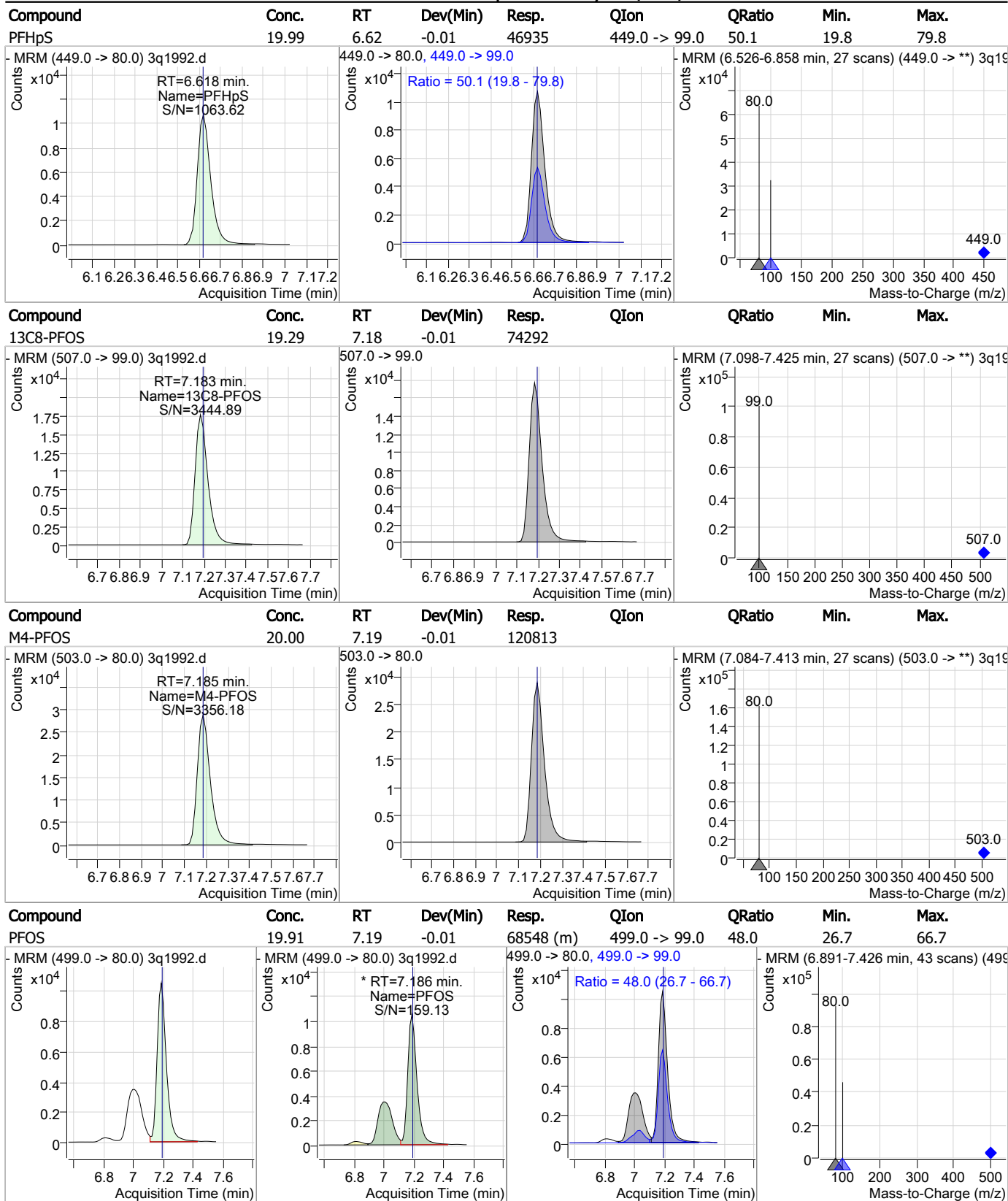
| Compound  | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-----------|-------|------|----------|--------|----------------|--------|------|------|
| 13C8-PFOA | 19.80 | 6.61 | -0.01    | 313241 | 421.0 -> 376.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| M2-PFOA  | 20.00 | 6.61 | -0.01    | 408724 | 415.0 -> 370.0 |        |      |      |



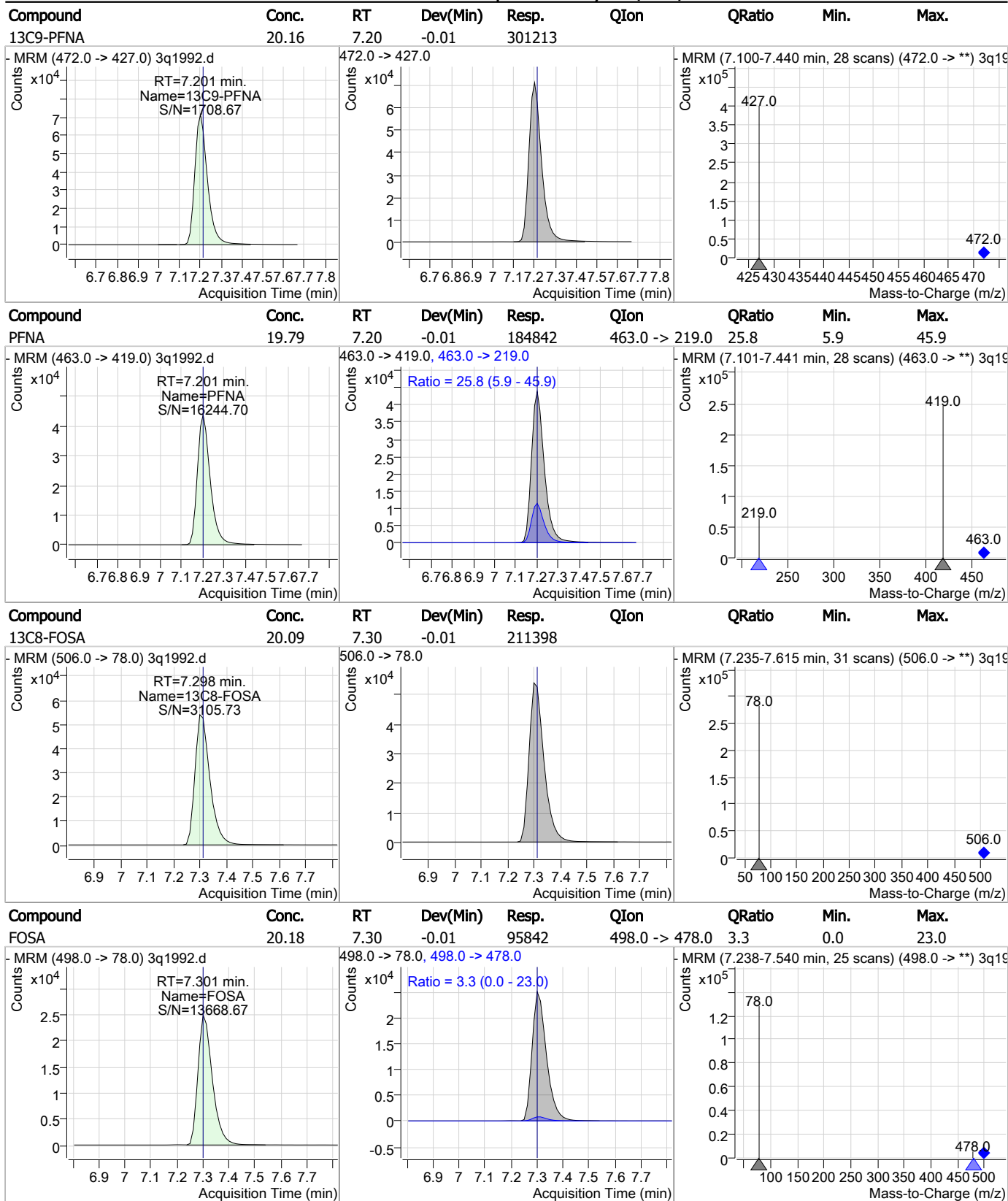
### Perfluorinated Compounds by LC/MS/MS



7.6.44

7

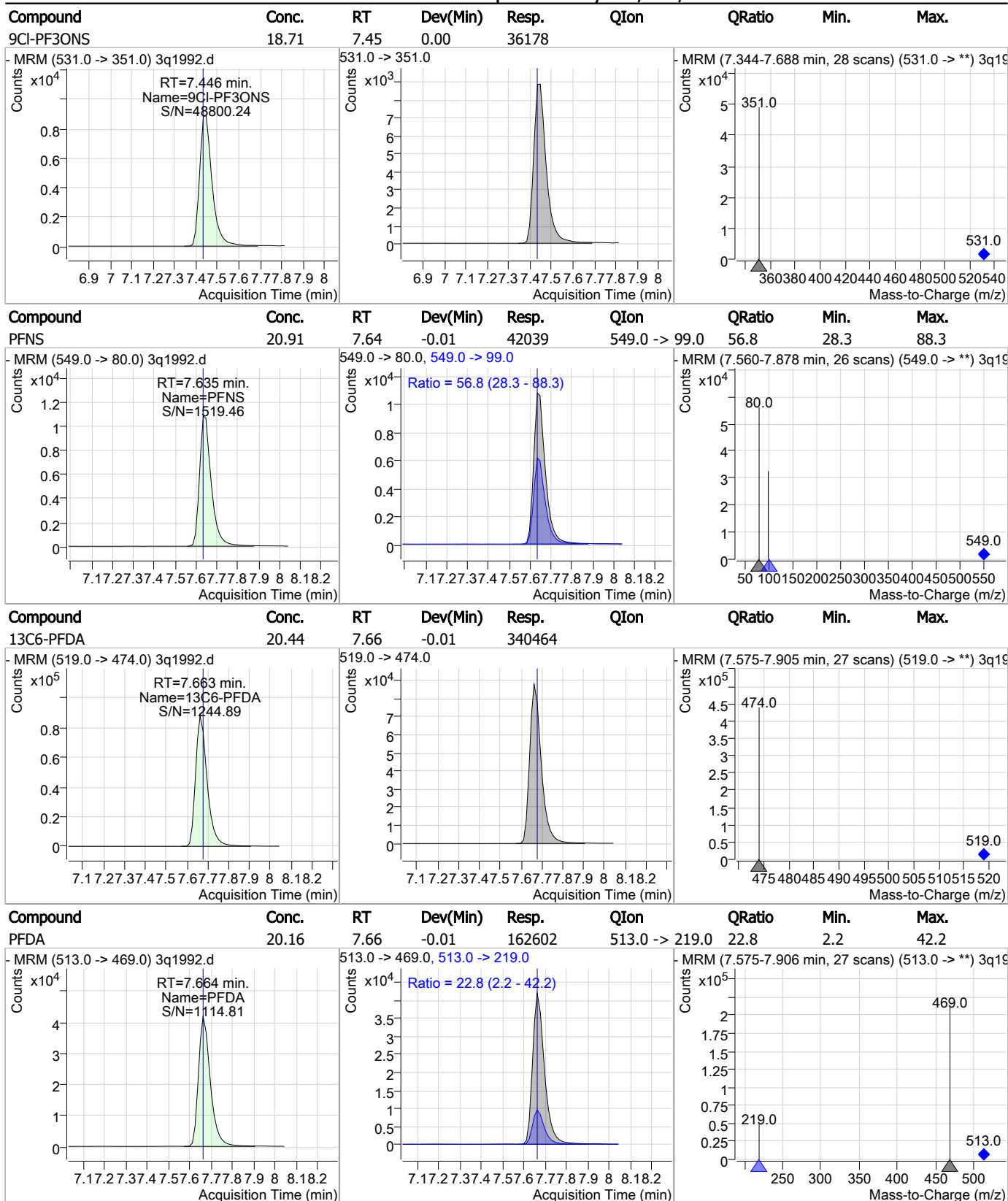
### Perfluorinated Compounds by LC/MS/MS



7.6.44  
7



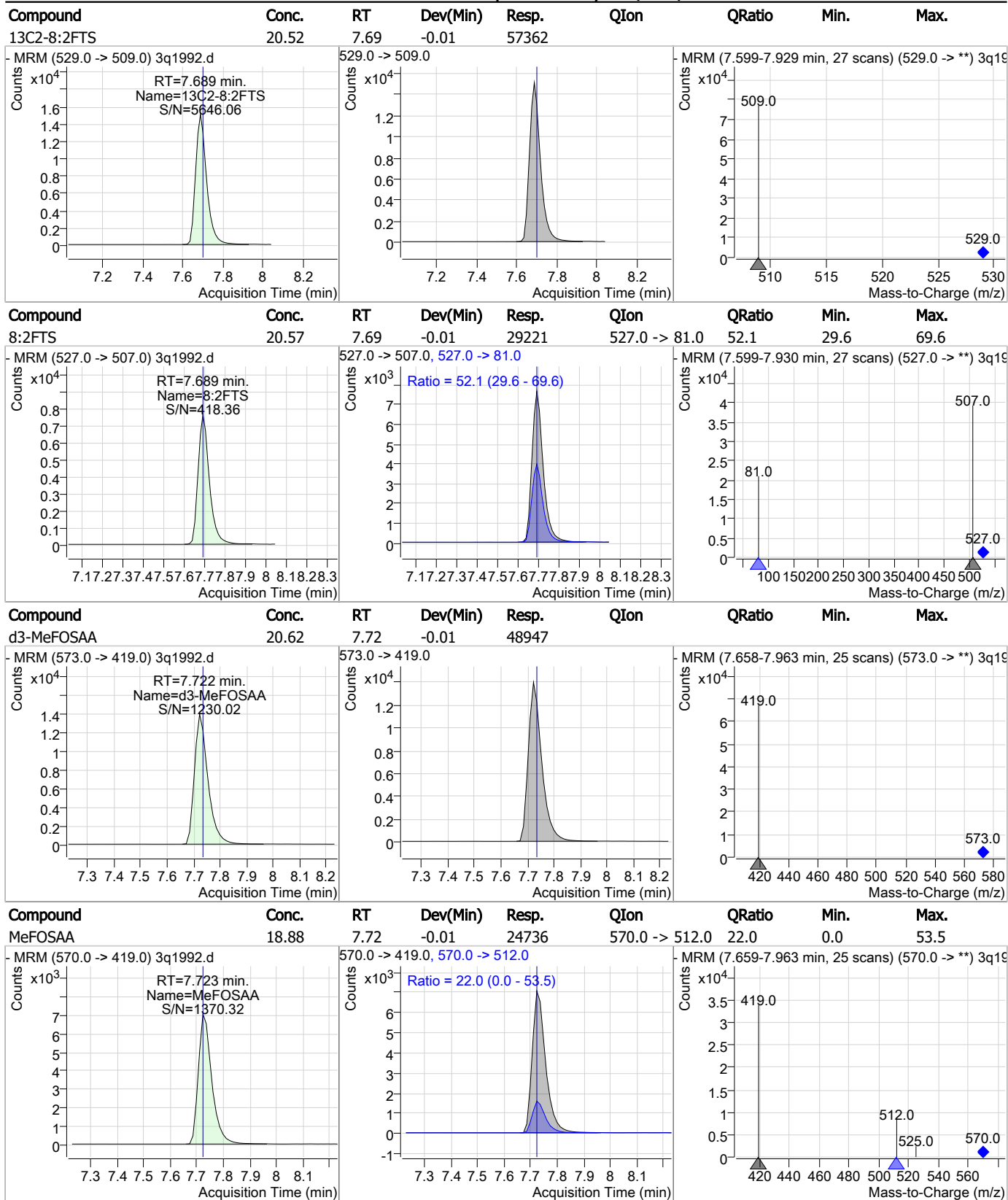
### Perfluorinated Compounds by LC/MS/MS



7.6.44

7

### Perfluorinated Compounds by LC/MS/MS



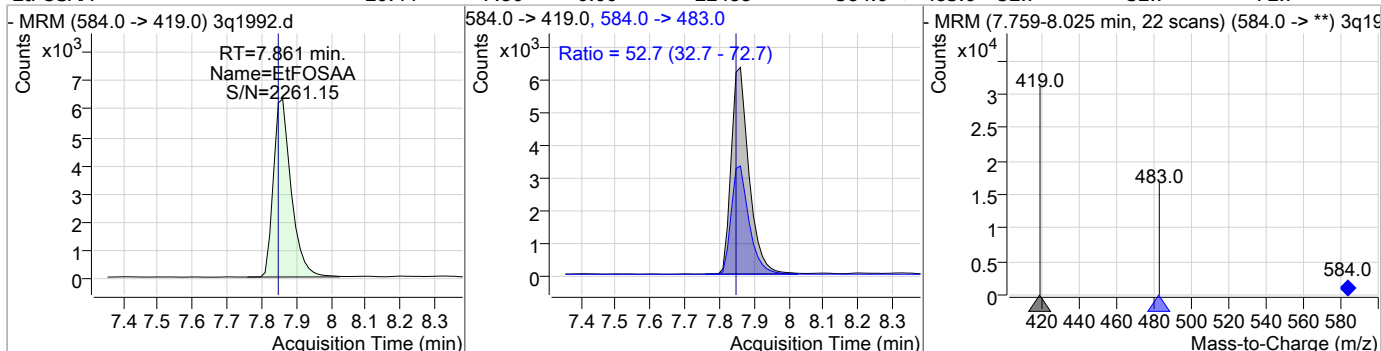
7.6.44

7

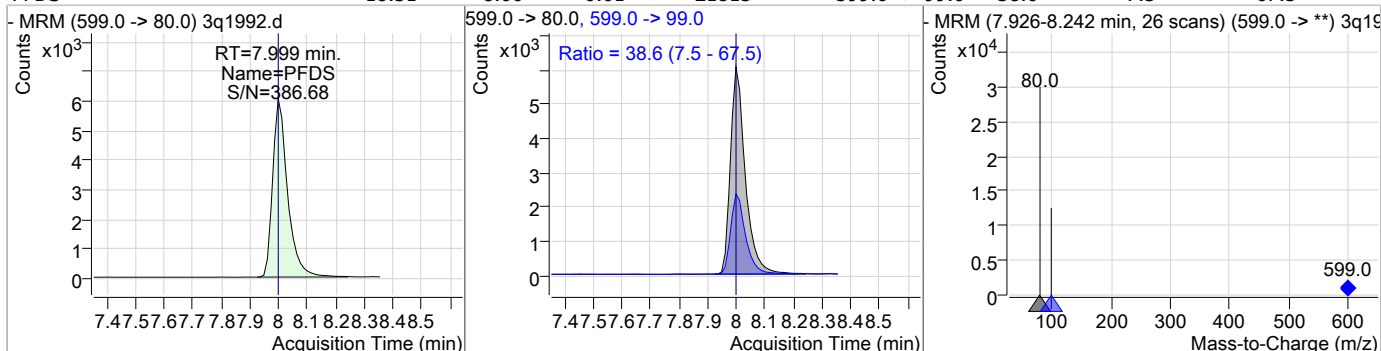


### Perfluorinated Compounds by LC/MS/MS

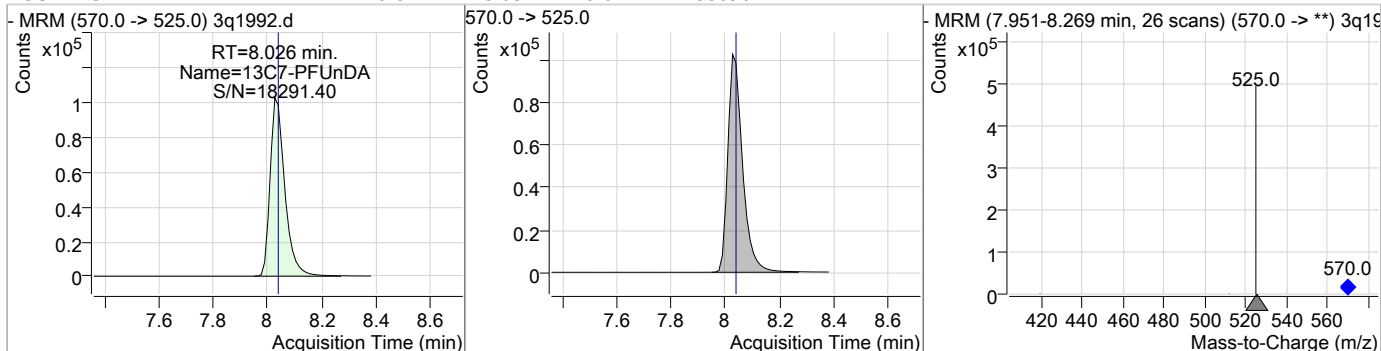
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|----------------|--------|------|------|
| EtFOSAA  | 20.44 | 7.86 | 0.00     | 22488 | 584.0 -> 483.0 | 52.7   | 32.7 | 72.7 |



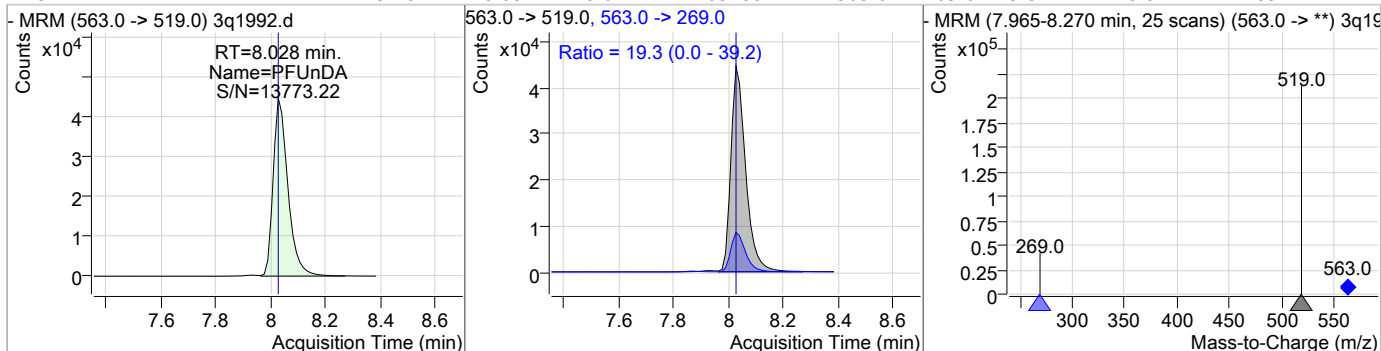
| Compound | Conc. | RT   | Dev(Min) | Resp. | QIon          | QRatio | Min. | Max. |
|----------|-------|------|----------|-------|---------------|--------|------|------|
| PFDS     | 18.31 | 8.00 | -0.01    | 21815 | 599.0 -> 99.0 | 38.6   | 7.5  | 67.5 |



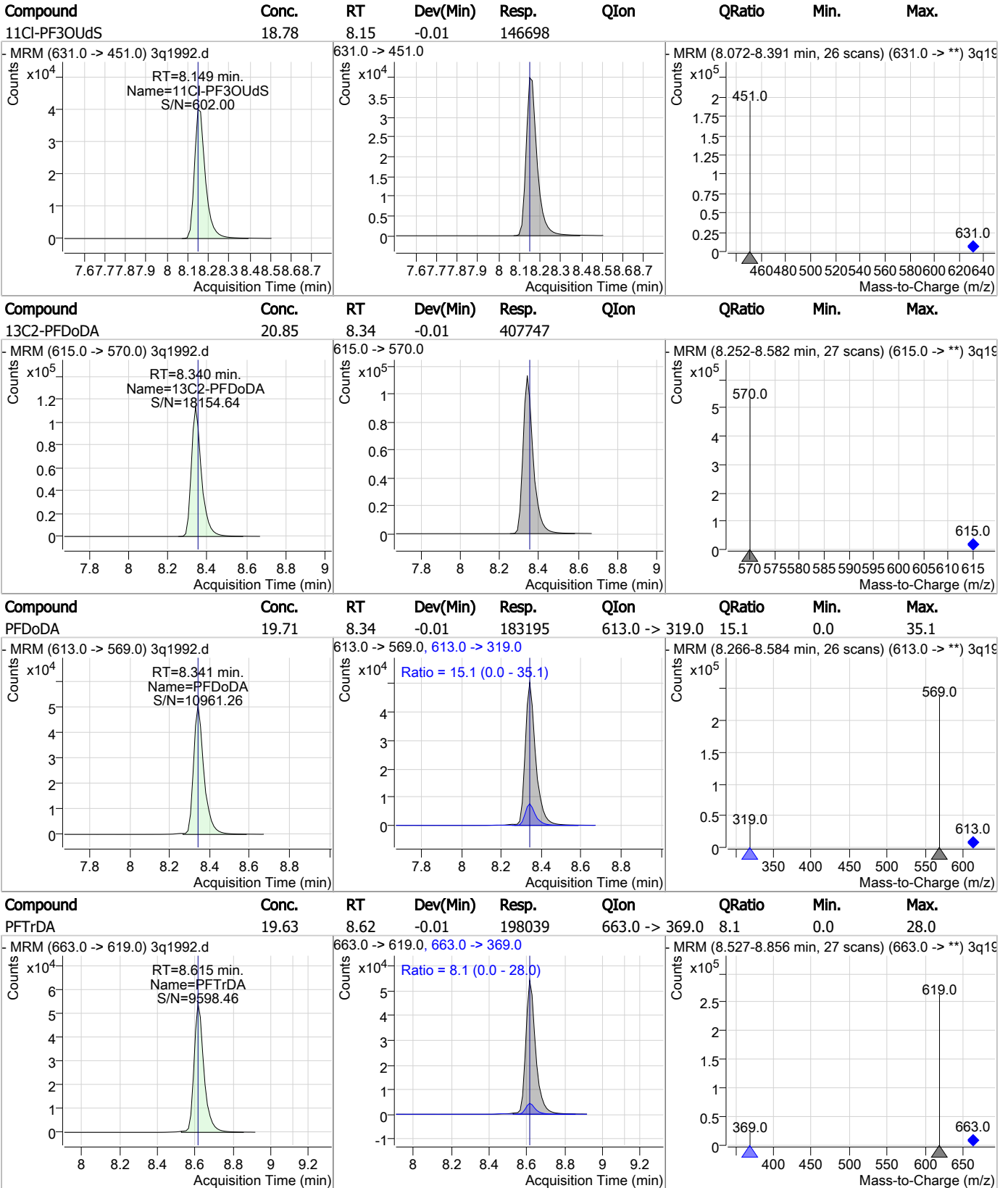
| Compound    | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|-------------|-------|------|----------|--------|----------------|--------|------|------|
| 13C7-PFUnDA | 20.87 | 8.03 | -0.01    | 386962 | 570.0 -> 525.0 |        |      |      |



| Compound | Conc. | RT   | Dev(Min) | Resp.  | QIon           | QRatio | Min. | Max. |
|----------|-------|------|----------|--------|----------------|--------|------|------|
| PFUnDA   | 19.75 | 8.03 | -0.01    | 165785 | 563.0 -> 269.0 | 19.3   | 0.0  | 39.2 |

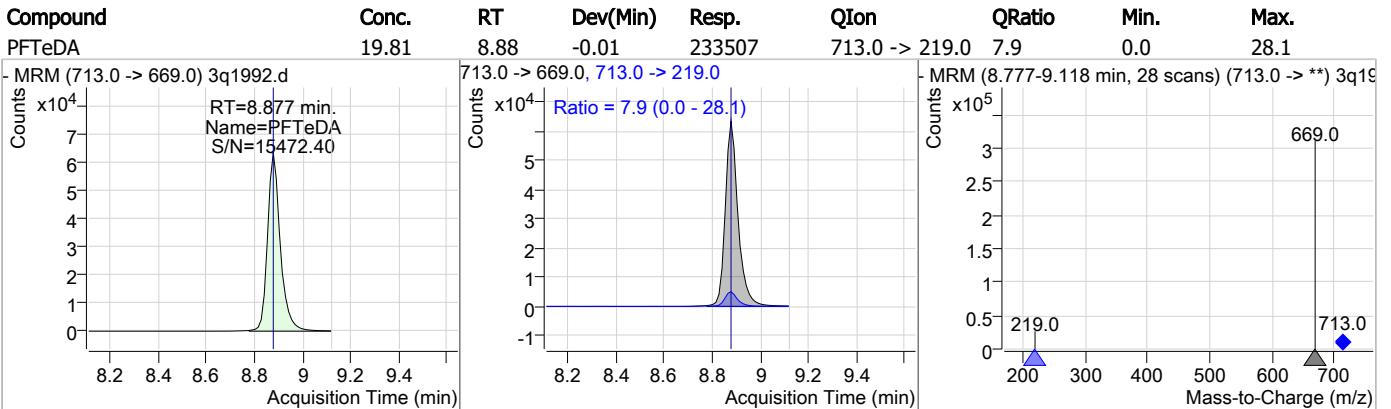
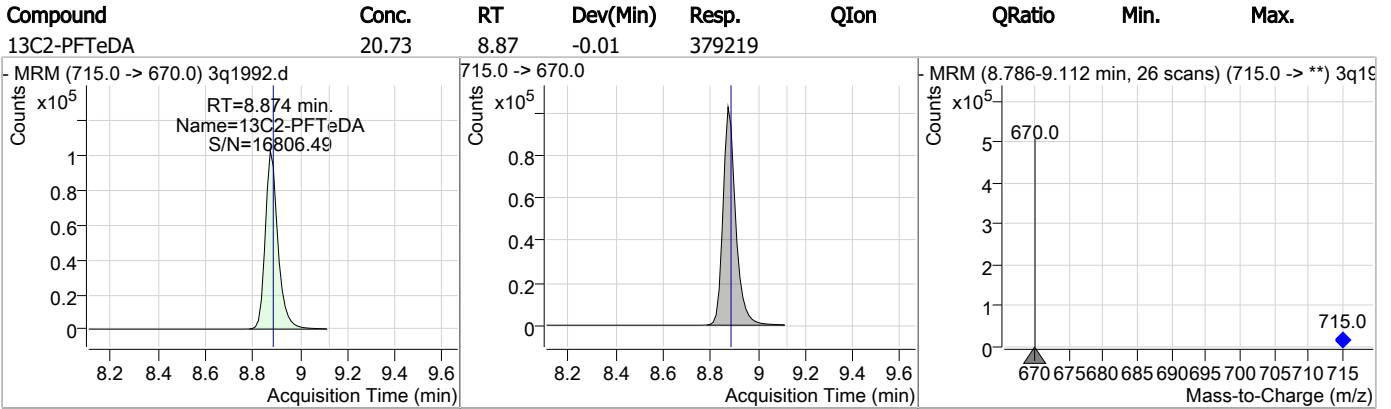


### Perfluorinated Compounds by LC/MS/MS



7.6.44  
7

### Perfluorinated Compounds by LC/MS/MS



7.6.44

7



# Manual Integration Approval Summary

**Sample Number:** S3Q54-CC54      **Method:** EPA 537M QSM5.1 B-15  
**Lab FileID:** 3Q1992.D      **Analyst approved:** 03/22/19 11:47 Nancy Saunders  
**Injection Time:** 03/21/19 15:07      **Supervisor approved:** 03/24/19 19:08 Mike Eger

| Parameter                    | CAS       | Sig# | R.T.<br>(min.) | Reason     |
|------------------------------|-----------|------|----------------|------------|
| Perfluorohexanesulfonic acid | 355-46-4  |      | 5.94           | Split peak |
| Perfluorooctanesulfonic acid | 1763-23-1 |      | 7.19           | Split peak |

7.6.44.1

7

SGS ACCUTEST-ORLANDO

DATE: 03-13-14  
 COLUMN TYPE: P.C.S. 11 E.C.V  
 AMOUNT INJECTED: 4 ul  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 245

LCMS2-2Q ANALYSIS LOG

METHODS: F.D. (MIX)  
 ACQ. METHOD: 2.M.M.M.I.D.P.F.C. 2.1 (MIX)  
 PROC. METHOD: T.O. (MIX) ~~P.C.S. 11 E.C.V~~ 033 (MIX) 033 (MIX) 033 (MIX)  
 CALIB. DATE: 03-13-14  
 RUN BATCH: S2Q 439

ANALYST: M45  
 ELUENT A LOT #: 10684L W/INTEGRATION  
 ELUENT B LOT #: 107826  
 WATER LOT #: 10684L  
 ISTD Lot #: LC 1217

| DATA FILE | ALS # | SAMPLE ID   | SAMPLE METHOD | OP BATCH | DF      | ION RATIO | MANUAL INTS RATIONALE, PK # | SCON <CL* | COMMENTS |
|-----------|-------|-------------|---------------|----------|---------|-----------|-----------------------------|-----------|----------|
| 2Q 2758   | 1     | CCB         | PFLID         |          |         |           |                             |           | ✓        |
| 2Q 59     | 1     | CCB         |               |          |         |           |                             |           | ✓        |
| 2Q 60     | 1     | CCB         |               |          |         |           |                             |           | ✓        |
| 2Q 61     | 3     | RT          |               | LC1217   | 100/500 |           |                             |           | ✓        |
| 2Q 62     | 1     | CCB         |               |          |         |           |                             |           | ✓        |
| 2Q 63     | 2     | FC439-10    |               | LC1217   | 25/500  |           | SP                          |           | ✓        |
| 2Q 64     | 3     | -1.0        |               |          | 5/500   |           | SP                          |           | ✓        |
| 2Q 65     | 4     | -1.0        |               |          | 4/500   |           | SP                          |           | ✓        |
| 2Q 66     | 5     | -5.0        |               |          | 25/500  |           | SP                          |           | ✓        |
| 2Q 67     | 6     | -10         |               |          | 70/500  |           | SP                          |           | ✓        |
| 2Q 68     | 7     | FC439-10    |               |          | 100/500 |           | SP                          |           | ✓        |
| 2Q 69     | 8     | FC439-50    |               |          | 250/500 |           | SP                          |           | ✓        |
| 2Q 70     | 9     | -100        |               |          | 17      |           | SP                          |           | ✓        |
| 2Q 71     | 1     | I6CK        |               |          |         |           |                             |           | BDL      |
| 2Q 72     | 10    | FC439-10    |               | LC9414B  | 5/500   |           | SP                          |           | Pass     |
| 2Q 73     | 11    | -10         |               | LC1160C  | 5/500   |           | SP                          |           | Pass     |
| 2Q 74     | 12    | -10         |               | LC1204   | 100/500 |           | SP                          |           | Pass     |
| 2Q 75     | 13    | FA61536-4R  |               | 0974101  | 17      |           |                             |           | ✓        |
| 2Q 76     | 14    | -6R         |               |          |         |           |                             |           | ✓        |
| 2Q 77     | 15    | FA61549-10R |               |          |         |           | SP                          |           | ✓        |

\* < Conductivity Limit For Perchlorate by SW846 6850  
 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: \_\_\_\_\_

SGS ACCUTEST-ORLANDO

DATE: 03-13-14  
 COLUMN TYPE: PLSK11 F09  
 AMOUNT INJECTED: 4 ul  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 345

LCMS2-2Q ANALYSIS LOG

METHODS: F0 6mX  
 ACQ. METHOD: AMRM IP PFC 2.16mX  
 PROC. METHOD: F0 6mX 031314 02034  
 CALIB. DATE: 03-13-14  
 RUN BATCH: S2Q 434

ANALYST: NAs  
 ELUENT A LOT #: 100 04L w/ HPLC fluid  
 ELUENT B LOT #: 100 04L  
 WATER LOT #: 100 04L  
 ISTD Lot #: LC 1117

| DATA FILE | ALS # | SAMPLE ID     | SAMPLE METHOD | OP BATCH | DF    | ION RATIO | MANUAL INTS RATIONALE, PK# | SCON <CL* | COMMENTS         |
|-----------|-------|---------------|---------------|----------|-------|-----------|----------------------------|-----------|------------------|
| 2Q 27576  | 16    | FAC1504-12R   | PFC F0        | 0074101  | 14    |           | SP                         |           | ✓                |
| 2Q 79     | 7     | CC 434-20     |               | LC1228   | 10050 |           | SP                         |           | Pass             |
| 2Q 80     | 1     | CCB           |               |          |       |           |                            |           | 302              |
| 2Q 81     | 17    | FAC62151-1    |               | 0074116  | 14    |           |                            |           | ✓ 2R R-T-P       |
| 2Q 82     | 10    | -2            |               |          |       |           |                            |           | ✓                |
| 2Q 83     | 14    | -3            |               |          |       |           |                            |           | ✓                |
| 2Q 84     | 20    | 0074116 - 1ms |               |          |       |           |                            |           | ✓                |
| 2Q 85     | 21    | - 1ms         |               |          |       |           |                            |           | ✓                |
| 2Q 86     | 22    | FAC 62151-4   |               |          |       |           |                            |           | ✓                |
| 2Q 87     | 23    | -5            |               |          |       |           |                            |           | ✓                |
| 2Q 88     | 24    | -6            |               |          |       |           |                            |           | ✓                |
| 2Q 89     | 25    | -8            |               |          |       |           |                            |           | ✓                |
| 2Q 90     | 26    | -9            |               |          |       |           |                            |           | ✓                |
| 2Q 91     | 7     | FCC 434-20    |               | LC1228   | 10050 |           | SP mp                      |           | Pass R-T shifted |
| 2Q        |       |               |               |          |       |           |                            |           | L-20K run        |
| 2Q        |       |               |               |          |       |           |                            |           | Stopped          |
| 2Q        |       |               |               |          |       |           |                            |           |                  |
| 2Q        |       |               |               |          |       |           |                            |           |                  |
| 2Q        |       |               |               |          |       |           |                            |           |                  |
| 2Q        |       |               |               |          |       |           |                            |           |                  |
| 2Q        |       |               |               |          |       |           |                            |           |                  |

\* < Conductivity Limit For Perchlorate by SW846 6850  
 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.

LCMS2\_2Q\_log.xls ME rev. 06/16

Analyst's Signature: \_\_\_\_\_

27 of 100

SGS ACCUTEST-ORLANDO

DATE: 03-15-19  
 COLUMN TYPE: P&W 3411618  
 AMOUNT INJECTED: 4 ul  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 350

LCMS2-2Q ANALYSIS LOG

METHODS: F0 6mm X  
 ACQ. METHOD: 1000M F0 PPL 2.16m X  
 PROC. METHOD: F0 6mm X 0313 (9 5kV-15V)  
 CALIB. DATE: 03-13-19  
 RUN BATCH: S2Q 441

ANALYST: NAB  
 ELUENT ALOT #: 180842 w / H+K RLD  
 ELUENT BLOT #: 187 020  
 WATER LOT #: 180842  
 ISTD Lot #: 26, 117

| DATA FILE | ALS # | SAMPLE ID  | SAMPLE METHOD | OP BATCH | DF      | ION RATIO | MANUAL INTS RATIONALE, PK # | SCON <CL* | COMMENTS |
|-----------|-------|------------|---------------|----------|---------|-----------|-----------------------------|-----------|----------|
| 2Q 27621  | 1     | CCB        | PFCID         |          |         |           |                             |           | ✓        |
| 2Q 25     | 9     | high std   |               | LIAB     | 17      |           |                             |           | ✓        |
| 2Q 26     | 1     | FSLK       |               |          |         |           |                             |           | ADL      |
| 2Q 000314 | 3     | CC439-20.0 |               | LIAB     | 5/100   |           | SP                          |           | PSS      |
| 2Q 23     | 7     | -20        |               |          | 100/100 |           | SP                          |           | PSS      |
| 2Q 24     | 34    | F# 6215-1  |               | 0074116  | 17      |           | SP                          |           | ✓        |
| 2Q 30     | 35    | -10        |               |          |         |           | SP                          |           | ✓        |
| 2Q 31     | 36    | -14        |               |          |         |           | SP                          |           | ADL      |
| 2Q 32     | 7     | CC434-20   |               | LIAB     | 100/100 |           | SP                          |           | PSS      |
| 2Q 33     | 1     | CCB        |               |          |         |           | SP                          |           | ADL      |
| 2Q 34     | 37    | 0074149-85 |               | 0074149  | 17      |           | SP                          |           | ✓        |
| 2Q 35     | 38    | -MB        |               |          |         |           | SP                          |           | ADL      |
| 2Q 36     | 40    | FA62177-2  |               |          |         |           | SP                          |           | ADL      |
| 2Q 37     | 45    | -5         |               |          |         |           | SP                          |           | ADL      |
| 2Q 38     | 39    | -1         |               |          |         |           | SP                          |           | ✓        |
| 2Q 39     | 4     | -3         |               |          |         |           | SP                          |           | ADL      |
| 2Q 40     | 42    | -4         |               |          |         |           | SP                          |           | ADL      |
| 2Q 41     | 43    | 0074149-85 |               |          |         |           | SP                          |           | ✓        |
| 2Q 42     | 44    | -MB        |               |          |         |           | SP                          |           | ✓        |
| 2Q 43     | 46    | CA 02177-6 |               |          |         |           | SP                          |           | ✓        |

\*< Conductivity Limit For Perchlorate by SW846 6850  
 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.

LCMS2\_2Q\_log.xls ME rev. 06/16

30 of 100

Analyst's Signature: \_\_\_\_\_



SGS ACCUTEST-ORLANDO

DATE: 03-15-14  
 COLUMN TYPE: Porosilk 10 5µm  
 AMOUNT INJECTED: 4 µl  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 310

LCMS2-2Q ANALYSIS LOG

METHODS: F0 6mmX  
 ACQ. METHOD: AMRIW 10 PSL 2.16mmX  
 PROC. METHOD: F0 6mmX 031314 2.16mmX  
 CALIB. DATE: 03-13-14  
 RUN BATCH: S2Q 441

ANALYST: NMS  
 ELUENT A LOT #: 106642 W/Asystec A.L.L.  
 ELUENT B LOT #: 105826 +  
 WATER LOT #: 106642  
 ISTD Lot #: LC1227

| DATA FILE | ALS # | SAMPLE ID   | SAMPLE METHOD | OP BATCH | DF      | ION RATIO | MANUAL INTS RATIONALE, PK # | SCON <CL* | COMMENTS |
|-----------|-------|-------------|---------------|----------|---------|-----------|-----------------------------|-----------|----------|
| 2Q 27644  | 7     | CC439-20    | PFL           | LC1226   | 100/500 |           | SP                          |           | Poss     |
| 2Q 45     | 1     | CUB         |               |          |         |           |                             |           | BOL      |
| 2Q 46     | 47    | FA62177-7   |               | 0874149  | 1x      |           | SP                          |           | ✓        |
| 2Q 47     | 48    | -8          |               |          |         |           | SP                          |           | ✓        |
| 2Q 48     | 49    | -9          |               |          |         |           |                             |           | BOL      |
| 2Q 49     | 50    | -10         |               |          |         |           |                             |           | BOL      |
| 2Q 50     | 51    | -11         |               |          |         |           |                             |           | BOL      |
| 2Q 51     | 52    | -12         |               |          |         |           | SP                          |           | ✓        |
| 2Q 52     | 53    | -13         |               |          |         |           |                             |           | ✓        |
| 2Q 53     | 7     | CC439-20    |               | LC1226   | 100/500 |           | SP                          |           | Poss     |
| 2Q 54     | 1     | CC3         |               |          |         |           |                             |           | BOL      |
| 2Q 55     | 54    | 0874164-05  |               | 0874164  | 1x      |           | SP                          |           | ✓        |
| 2Q 56     | 55    | -m3         |               |          |         |           |                             |           | BOL      |
| 2Q 57     | 56    | KA62220-21  |               |          |         |           |                             |           | ✓        |
| 2Q 58     | 57    | 0874164-m5  |               |          |         |           | SP                          |           | ✓        |
| 2Q 59     | 58    | CA62220-22  |               |          |         |           |                             |           | ✓        |
| 2Q 60     | 59    | 0874164-000 |               |          |         |           |                             |           | ✓        |
| 2Q 61     | 60    | FA62157-1   |               |          | 10x     | AA6       |                             |           | BOL      |
| 2Q 62     | 61    | -2          |               |          | 10x     | 031314    |                             |           | BOL      |
| 2Q 63     | 7     | CC439-20    |               | LC1226   | 100/500 |           | SP                          |           | Poss     |
| 2Q 64     | 1     |             |               |          |         |           |                             |           | BOL      |

\* < Conductivity Limit For Perchlorate by SW846 6850  
 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: \_\_\_\_\_



SGS ACCUTEST-ORLANDO

DATE: 03-18-19  
 COLUMN TYPE: F0003k11 F014  
 AMOUNT INJECTED: 4 ul  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 360

LCMS2-2Q ANALYSIS LOG

METHODS: ID Ion X  
 ACQ. METHOD: 4000M 50 F0 2.16m X  
 PROC. METHOD: F0 6m X 631814520442  
 CALIB. DATE: 03-18-19  
 RUN BATCH: S2Q 442

ANALYST: MAS  
 ELUENT A LOT #: 186642 1/19/18 Acid  
 ELUENT B LOT #: 185626 L  
 WATER LOT #: 186642  
 ISTD Lot #: 181227

| DATA FILE | ALS # | SAMPLE ID | SAMPLE METHOD | OP BATCH | DF     | ION RATIO | MANUAL INTS RATIONALE, PK # | SCON <CL* | COMMENTS |
|-----------|-------|-----------|---------------|----------|--------|-----------|-----------------------------|-----------|----------|
| 2Q 27665  | 1     | CC0       | PFLTD         |          |        |           |                             |           |          |
| 2Q 66     | 1     | CC0       |               |          |        |           |                             |           |          |
| 2Q 67     | 2     | FC442-0.5 |               | LC1205   | 2.5/TW |           | SP                          |           |          |
| 2Q 68     | 3     | -1.0      |               |          | 5/TW   |           | SP                          |           |          |
| 2Q 69     | 4     | -2.0      |               |          | 10/TW  |           | SP                          |           |          |
| 2Q 70     | 5     | -5.0      |               |          | 20/TW  |           | SP                          |           |          |
| 2Q 71     | 6     | -10       |               |          | 30/TW  |           | SP                          |           |          |
| 2Q 72     | 7     | FC442-20  |               |          | 100/TW |           | SP                          |           |          |
| 2Q 73     | 8     | FC442-50  |               |          | 200/TW |           | SP                          |           |          |
| 2Q 74     | 9     | -100      |               |          | 1x     |           | SP                          |           |          |
| 2Q 75     | 1     | F0003     |               |          |        |           |                             |           |          |
| 2Q 76     | 10    | F00442-20 |               | LC1204   | 100/TW |           | SP                          |           |          |
| 2Q 77     | 11    | -20       |               | LC1100   | 5/TW   |           | SP                          |           |          |
| 2Q 78     | 12    | -20       |               | 94143    |        |           | SP                          |           |          |
| 2Q 79     | 62    | FA62157-1 |               | 074164   | 1x     |           |                             |           |          |
| 2Q 80     | 63    | -2        |               | 1x       |        |           |                             |           |          |
| 2Q 81     | 40    | FA62177-2 |               | 074169   | 100/TW |           |                             |           |          |
| 2Q 82     | 48    | -8        |               |          |        |           |                             |           |          |
| 2Q 83     | 50    | -10       |               |          |        |           |                             |           |          |
| 2Q 84     | 53    | -13       |               |          |        |           |                             |           |          |

\* < Conductivity Limit For Perchlorate by SW846 6850  
 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.

LCMS2\_2Q\_log.xls ME rev. 06/16

32 of 100

Analyst's Signature: \_\_\_\_\_



SGS ACCUTEST-ORLANDO

DATE: 05-19-19  
 COLUMN TYPE: Porosil B 5 μm  
 AMOUNT INJECTED: 4 ul  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 360

LCMS2-2Q ANALYSIS LOG

METHODS: FID 6mmx  
 ACQ. METHOD: 10min 1.0 2.16min  
 PROC. METHOD: 10min 0.3min 1.0 2.16min  
 CALIB. DATE: 03-18-19  
 RUN BATCH: S2Q 442

ANALYST: NMS  
 ELUENT A LOT #: 180842 w/ H<sub>2</sub>O 4.0  
 ELUENT B LOT #: 185226  
 WATER LOT #: 1806342  
 ISTD Lot #: LC 1227

| DATA FILE | ALS # | SAMPLE ID  | SAMPLE METHOD | OP BATCH | DF      | ION RATIO | MANUAL INTS RATIONALE, PK # | SCON <CL* | COMMENTS            |
|-----------|-------|------------|---------------|----------|---------|-----------|-----------------------------|-----------|---------------------|
| 2Q 27685  | 46    | FA62177-6  | PFL           | 0874144  | 1*      |           |                             |           | use 1st run 1st run |
| 2Q 86     | 47    | -7         |               |          |         |           |                             |           | use 1st run 1st run |
| 2Q 87     | 7     | CC442-20   |               | LC1228   | 100/100 |           | SP                          |           | TE 1st run          |
| 2Q 88     | 7     | -20        |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 89     | 1     | CC13       |               |          |         |           |                             |           | TE 1st run          |
| 2Q 90     | 3     | CC442-1.0  |               | LC1228   | 5/100   |           | SP                          |           | TE 1st run          |
| 2Q 91     | 13    | 0874180-b5 |               | 0874180  | 1*      |           | SP                          |           | TE 1st run          |
| 2Q 92     | 14    | -mb        |               |          |         |           |                             |           | TE 1st run          |
| 2Q 93     | 15    | FA62220-1  |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 94     | 16    | 0874180-ms |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 95     | 17    | -msd       |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 96     | 18    | FA62220-2  |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 97     | 19    | -3         |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 98     | 20    | -4         |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 99     | 21    | -5         |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 27700  | 22    | -6         |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 01     | 7     | CC442-20   |               | LC1228   | 100/100 |           | SP                          |           | TE 1st run          |
| 2Q 02     | 1     | CC5        |               |          |         |           | SP                          |           | TE 1st run          |
| 2Q 03     | 23    | FA62220-7  |               | 0874180  | 1*      |           | SP                          |           | TE 1st run          |
| 2Q 04     | 24    | -8         |               |          |         |           | SP                          |           | TE 1st run          |

\* < Conductivity Limit For Perchlorate by SW846 6850  
 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.

LCMS2\_2Q\_log.xls ME rev. 06/16

33 of 100

Analyst's Signature: \_\_\_\_\_

\_\_\_\_\_

SGS ACCUTEST-ORLANDO

DATE: 03-18-19  
 COLUMN TYPE: Porosil 100 μl  
 AMOUNT INJECTED: 4  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 360

LCMS2-2Q ANALYSIS LOG

METHODS: 30 min  
 ACQ. METHOD: 0 min 10 sec 20 min  
 PROC. METHOD: 30 min 0.1 sec 50 min  
 CALIB. DATE: 03-18-19  
 RUN BATCH: S2Q 442

ANALYST: MAS  
 ELUENT A LOT #: 106842 w/Merck  
 ELUENT B LOT #: 105446  
 WATER LOT #: 104842  
 ISTD Lot #: 66 1117

| DATA FILE | ALS # | SAMPLE ID | SAMPLE METHOD | OP BATCH | DF | ION RATIO | MANUAL INTS RATIONALE, PK # | SCON <CL* | COMMENTS |
|-----------|-------|-----------|---------------|----------|----|-----------|-----------------------------|-----------|----------|
| 2Q 27705  | 25    | F46220-9  | DFCIB         | 0874180  | 1* |           |                             |           | SP       |
| 2Q 26     | 26    | -10       |               |          |    |           |                             |           | ✓        |
| 2Q 27     | 27    | -11       |               |          |    |           |                             |           | SP ✓     |
| 2Q 28     | 28    | -12       |               |          |    |           | SP                          |           | ✓        |
| 2Q 29     | 29    | -13       |               |          |    |           | SP                          |           | ✓        |
| 2Q 30     | 30    | -14       |               |          |    |           | SP                          |           | ✓        |
| 2Q 31     | 31    | -15       |               |          |    |           | SP                          |           | ✓        |
| 2Q 32     | 32    | -16       |               |          |    |           | SP                          |           | ✓        |
| 2Q 33     | 33    | F46220-17 | LC12B         | 101500   |    |           |                             |           | Pass     |
| 2Q 34     | 34    | CCB       |               |          |    |           |                             |           | SP       |
| 2Q 35     | 35    | F46220-17 | 0874180       | 1*       |    |           |                             |           | SP ✓     |
| 2Q 36     | 36    | -19       |               |          |    |           |                             |           | SP ✓     |
| 2Q 37     | 37    | -20       |               |          |    |           |                             |           | SP ✓     |
| 2Q 38     | 38    | -20       |               |          |    |           |                             |           | SP ✓     |
| 2Q 39     | 39    | F46220-20 | LC12B         | 101500   |    |           |                             |           | Pass     |
| 2Q 40     | 40    | CCB       |               |          |    |           |                             |           | SP       |
| 2Q 41     | 41    |           |               |          |    |           |                             |           | Pass     |
| 2Q 42     | 42    |           |               |          |    |           |                             |           | Pass     |
| 2Q 43     | 43    |           |               |          |    |           |                             |           | Pass     |
| 2Q 44     | 44    |           |               |          |    |           |                             |           | Pass     |
| 2Q 45     | 45    |           |               |          |    |           |                             |           | Pass     |
| 2Q 46     | 46    |           |               |          |    |           |                             |           | Pass     |
| 2Q 47     | 47    |           |               |          |    |           |                             |           | Pass     |
| 2Q 48     | 48    |           |               |          |    |           |                             |           | Pass     |
| 2Q 49     | 49    |           |               |          |    |           |                             |           | Pass     |
| 2Q 50     | 50    |           |               |          |    |           |                             |           | Pass     |

\* < Conductivity Limit For Perchlorate by SW846 6850  
 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.  
 Analyst's Signature: \_\_\_\_\_  
 34 of 100

SGS ACCUTEST-ORLANDO

DATE: 03-14-14  
 COLUMN TYPE: Porosil 11 E (10 ul  
 AMOUNT INJECTED: 4 ul  
 INSTRUMENT: LCMS2-2Q  
 HEAD PRESSURE: 360

LCMS2-2Q ANALYSIS LOG

METHODS: ID 6m x  
 ACQ. METHOD: dms.m 30 PFL 2.1 6m x  
 PROC. METHOD: ID 6m x 031619 30-492  
 CALIB. DATE: 03-18-14  
 RUN BATCH: S2Q 442 443

ANALYST: MAS  
 ELUENT A LOT #: 18684L w/142818 01.1 d  
 ELUENT B LOT #: 191826  
 WATER LOT #: 18684L  
 ISTD Lot #: LC1217

| DATA FILE | ALS # | SAMPLE ID  | SAMPLE METHOD | OP BATCH | DF      | ION RATIO | MANUAL INTS RATIONALE, PK # | SCON <CL* | COMMENTS    |
|-----------|-------|------------|---------------|----------|---------|-----------|-----------------------------|-----------|-------------|
| 2Q 27721  | 1     | CC5        | PCL 20        |          |         |           |                             |           | BAL         |
| 2Q 22     | 1     | CC5        |               |          |         |           |                             |           | BAL         |
| 2Q 23     | 1     | CC5        |               |          |         |           |                             |           | BAL         |
| 2Q 24     | 9     | high std   |               | LC1228   | 17      |           |                             |           | ✓           |
| 2Q 25     | 1     | FSLK       |               |          |         |           |                             |           | BAL         |
| 2Q 26     | 3     | CC441-1.0  |               | LC1228   | 5/500   |           | SP                          |           | POSS        |
| 2Q 27     | 7     | -2.0       |               |          | 100/500 |           | SP                          |           | POSS        |
| 2Q 28     | 13    | FA62220-4  |               | 0074180  | 17      |           | SP                          |           | FSTO ↓ redo |
| 2Q 29     | 23    | 0174147-b5 |               | 0074197  | 17      |           | SP                          |           | ✓           |
| 2Q 30     | 24    | -mb        |               |          |         |           |                             |           | BAL         |
| 2Q 31     | 25    | FA62151-10 |               |          |         |           | SP BR                       |           | ✓           |
| 2Q 32     | 26    | FA62265-1  |               |          |         |           |                             | -300      | ✓ BAL       |
| 2Q 33     | 27    | 0074147-m5 |               |          |         |           | SP                          | -300      | ✓           |
| 2Q 34     | 7     | CC442-2.0  |               | LC1228   | 100/500 |           | SP                          |           | POSS        |
| 2Q 35     | 1     | CC5        |               |          |         |           |                             |           | BAL         |
| 2Q 36     | 17    | 0074145-b5 |               | 0074195  | 17      |           | SP                          |           | ✓           |
| 2Q 37     | 18    | -mb        |               |          |         |           |                             |           | ✓ PFBA      |
| 2Q 38     | 19    | FA62324-1  |               |          |         |           |                             |           | BAL         |
| 2Q 39     | 20    | -2         |               |          |         |           |                             |           | BAL         |
| 2Q 40     | 21    | 0074145-m5 |               |          |         |           | SP                          |           | ✓           |

\*< Conductivity Limit For Perchlorate by SW846 6850  
 Manual Integration Rationale SOP QA029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, BR Baseline Ripple, PI 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.

LCMS2\_2Q\_log.xls ME rev. 06/16

Analyst's Signature:

35 of 100





get m...  
 300...  
 53054

SGS - ORLANDO

DATE: 03-21-14  
 COLUMN TYPE: Nitro Skill 1/16  
 AMOUNT INJECTED: 4 ul  
 INSTRUMENT: LCMS3-3Q  
 HEAD PRESSURE: 370

LCMS3-3Q ANALYSIS LOG

METHODS:  
 ACQ. METHOD: 377 600X  
 PROC. METHOD: 377 600X  
 CALIB. DATE: 03-21-14  
 RUN BATCH: S3Q

ANALYST: AMK  
 ELUENT A LOT #: 187166  
 ELUENT B LOT #: 186954  
 ISTD Lot # / amount added: LL-1433  
 INJ STD Lot # / amount added: LL-1229

| DATA FILE | ALS # | SAMPLE ID    | SAMPLE METHOD | OP BATCH | DF     | ISTD DILUTION | ION RATIO | MANUAL INTEGRATIONS* | SCON <CL** | COMMENTS |
|-----------|-------|--------------|---------------|----------|--------|---------------|-----------|----------------------|------------|----------|
| 3Q 1993   | P308  | FA62454-1    | DFC 10        | 0174233  | 14     |               |           | SP                   |            | ✓        |
| 3Q 89     | P4    | 0P74233-1A40 |               |          |        |               |           | SP                   |            | ✓        |
| 3Q 90     | C1    | FA62454-2    |               |          |        |               |           | SP                   |            | ✓        |
| 3Q 91     | C2    | 0P74233-MS   |               |          |        |               |           | SP                   |            | ✓        |
| 3Q 92     | A7    | CC54-10      |               | LCMS1240 | 10/170 |               |           | SP                   |            | Pass     |
| 3Q 93     | A1    | CC8          |               |          |        |               |           | SP                   |            | Pass     |
| 3Q 94     | C3    | 0P74233-05   |               | 0174232  | 14     |               |           | SP                   |            | ✓        |
| 3Q 95     | C4    | mb           |               |          |        |               |           | SP                   |            | Pass     |
| 3Q 96     | C5    | FA62255-1    |               |          |        |               |           | SP                   |            | ETA PASS |
| 3Q 97     | C6    | -2           |               |          |        |               |           | SP                   |            | Pass     |
| 3Q 98     | C7    | -3           |               |          |        |               |           | SP                   |            | Pass     |
| 3Q 99     | C8    | -4           |               |          |        |               |           | SP                   |            | Pass     |
| 3Q 2000   | C9    | -4           |               |          | 10     |               |           | SP                   |            | Pass     |
| 3Q 01     | D1    | -5           |               |          | 14     |               |           | SP                   |            | Pass     |
| 3Q 02     | D2    | -5           |               |          | 10     |               |           | SP                   |            | Pass     |
| 3Q 03     | A7    | CC54-20      |               | LCMS1240 | 10/170 |               |           | SP                   |            | Pass     |
| 3Q 04     | A1    | CC6          |               |          |        |               |           | SP                   |            | Pass     |
| 3Q 05     | D3    | FA62289-1    |               | 0174232  | 14     |               |           | SP                   |            | Pass     |
| 3Q 06     | D4    | -2           |               |          |        |               |           | SP                   |            | Pass     |
| 3Q 07     | D5    | 0P74233-040  |               |          |        |               |           | SP                   |            | Pass     |

Manual Integration Rationale SOP QA029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, PII Poor Instrument Integration  
 \*Manual Integration Rationale for Peaks other than including Branched Isomers.  
 \*\*< Conductivity Limit For Perchlorate by SW846 6850  
 All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.

LCMS3\_3Q\_log.xls NF rev. 1/1/18

Analyst's Signature: \_\_\_\_\_

20 of 100

Cell method: dilution to PFC 2.0 ppm  
 No. method: PFC to ppm using S3Q54

SGS - ORLANDO

|                  |                 |
|------------------|-----------------|
| DATE:            | 03-21-19        |
| COLUMN TYPE:     | Percolator E-10 |
| AMOUNT INJECTED: | 4 ul            |
| INSTRUMENT:      | LCMS3-3Q        |
| HEAD PRESSURE:   | 370             |

|               |          |
|---------------|----------|
| METHODS:      | S37 ppm  |
| ACQ. METHOD:  | S37 ppm  |
| PROC. METHOD: | S37 ppm  |
| CALIB. DATE:  | 03-21-19 |
| RUN BATCH:    | S3Q      |

|                               |         |
|-------------------------------|---------|
| ANALYST:                      | MWS     |
| ELUENT A LOT #:               | 19-7166 |
| ELUENT B LOT #:               | 19-6474 |
| ISTD Lot # / amount added:    | LC 1103 |
| INJ STD Lot # / amount added: | LC 1224 |

LCMS3-3Q ANALYSIS LOG

| DATA FILE | ALS # | SAMPLE ID   | SAMPLE METHOD | OP BATCH | DF      | ISTD DILUTION RATIO | ION RATIO | MANUAL INTEGRATIONS* | SCON <CL** | COMMENTS         |
|-----------|-------|-------------|---------------|----------|---------|---------------------|-----------|----------------------|------------|------------------|
| 3Q 2008   | P306  | F462204-3   | PFC TO        | 074232   | 17      |                     |           | SP                   |            | ✓                |
| 3Q 09     | D7    | -4          |               |          |         |                     |           | SP                   |            | ✓ PA BX          |
| 3Q 10     | D8    | F46220-1    |               |          |         |                     |           | SP                   |            | ✓                |
| 3Q 11     | D9    | 0074232-MS  |               |          |         |                     |           | SP                   |            | ✓                |
| 3Q 12     | E1    | F46220-2    |               |          |         |                     |           | SP                   |            | ✓                |
| 3Q 13     | A7    | CC54-10     |               |          | 100/100 |                     |           | SP                   |            | Pass             |
| 3Q 14     | A1    | C10         |               |          |         |                     |           | SP                   |            | Pass             |
| 3Q 15     | A3    | CC54-1.0    |               |          | 5/100   |                     |           | SP                   |            | Pass             |
| 3Q 16     | E2    | F462306-7   |               |          | 10X     |                     |           | SP                   |            | ✓ PA BX          |
| 3Q 17     | E3    | -1          |               |          | 10X     |                     |           |                      |            | Not needed       |
| 3Q 18     | E4    | 0074210-dup |               |          | 50X     |                     |           |                      |            | PA 10X           |
| 3Q 19     | E5    | F462306-3   |               |          | 17      |                     |           |                      |            | ✓ PE, F02A ↓     |
| 3Q 20     | E6    | -3          |               |          | 10X     |                     |           |                      |            | ✓ PA ↓           |
| 3Q 21     | E7    | -4          |               |          | 5X      |                     |           |                      |            | ✓                |
| 3Q 22     | E8    | -4          |               |          | 25X     |                     |           |                      |            | Not needed       |
| 3Q 23     | E9    | -5          |               |          | 17      |                     |           |                      |            | ✓ PE, PA, F02A ↓ |
| 3Q 24     | F1    | -5          |               |          | 20X     |                     |           |                      |            | X NO ESTD.       |
| 3Q 25     | A7    | CC54-10     |               |          | 100/100 |                     |           | SP                   |            | Pass             |
| 3Q 26     | A1    | C10         |               |          |         |                     |           |                      |            | Pass             |
| 3Q 27     | F2    | F462306-6   |               |          | 10X     |                     |           |                      |            | ✓ PA ↓           |

Manual Integration Rationale SOP QA029: MP Missed Peak, OP Overlapping Peak, SP Split Peak, PDB Poorly Defined Baseline, PII Poor Instrument Integration  
 \*Manual Integration Rationale for Peaks other than including Branched Isomers.  
 \*\*< Conductivity Limit For Perchlorate by SW846 6850  
 All strikeouts must be initialed and dated. If correction was not due to a transcription error, then list the reason for correction.





SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 03-14-19 7:00  
 Started {mm/dd/yy 24:00}

Prep Method: 3535A or 537 or 537MOD (circle)

Date/Time: 03/15/19 1030-1330  
 Finished {mm/dd/yy 24:00} 03/15/19

Analytical Method: CC 537 (LD)

Batch#: 0974164 Ext. By: MV Conc. By: MS Viald By: MS

| Sample ID              | Bottle Number | Amount Extracted (ml) | Initial pH | Adjusted pH | Surrogate Amount | Spike Amount | Final Volume (ml) | Manifold ID | Comments |
|------------------------|---------------|-----------------------|------------|-------------|------------------|--------------|-------------------|-------------|----------|
| OP74164 MB             | <del>X</del>  | 250                   | 6          | NA          | 20ul             |              | 1ml               | D           |          |
| OP74164 BS             | <del>X</del>  | 250                   | ↓          | ↓           | ↓                | 50ul         | ↓                 | ↓           |          |
| FAG2154-1              | 1             | 250                   | ↓          | ↓           | ↓                |              | ↓                 | ↓           |          |
| -2                     | 1             | 250                   | ↓          | ↓           | ↓                |              | ↓                 | ↓           |          |
| FAG2220-21             | 1             | 250                   | ↓          | ↓           | ↓                |              | ↓                 | ↓           |          |
| -22                    | 1             | 250                   | ↓          | ↓           | ↓                |              | ↓                 | ↓           |          |
| <del>MS 03/15/19</del> |               |                       |            |             |                  |              |                   |             |          |
| FAG2220-21 MS          | 2             | 250                   | 6          | NA          | 20ul             | 50ul         | 1ml               | D           |          |
| MSD                    | -             |                       |            |             |                  |              |                   |             |          |
| -22 DUP                | 2             | 250                   | 6          | NA          | 20ul             |              | 1ml               | D           |          |

Comments:

Surr.1 ID: CC1236B Conc: 1.0 ppm Exp. Date: 02-22-20 Inj. By: MV Ver. By: MV  
 Spk.1 ID: CC1233 Conc: 400 ppb Exp. Date: 08-21-19 Inj. By: MV Ver. By: MV  
 Spk.2 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By: ✓  
 Spk.3 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By: ✓

TurboVap Temp (Therm ID): ✓ N-Evap Temp (Therm ID): ✓  
 Observed Temp °C: 45°C Corr. Temp °C: ✓ Observed Temp °C: ✓ Corr. Temp °C: ✓

Methanol Lot # 186954 SPE Lot # 6429443-09 pH Paper # 212218  
 Acetonitrile Lot # ✓ Syringe filter Lot # ✓ Reagent # 2% MEOH, 186954  
 Water Lot # 0973908 Pre-filter Lot # ✓ Reagent # 2% NH4OH, 718050  
 Solvent # ✓ Carbon Lot # 107563 Other ✓

Relinquished By: [Signature] Date: 03/15/19  
 Accepted By: [Signature] Date: 03-15-19

ORLD-EXT-0001-3-08-FORM-extwater\_spe.xls 032718

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 03/15/19 7:30  
 Started (mm/dd/yy 24:00)

Prep Method: 3535A or 537 or 537MOD (circle)

Date/Time: 03/18/19 11:50  
 Finished (mm/dd/yy 24:00)

Analytical Method: LC537

Batch#: OP 74180 Ext. By: MV Conc. By: MV Viald By: MV

| Sample ID     | Bottle Number | Amount Extracted (ml) | Initial pH | Adjusted pH | Surrogate Amount | Spike Amount | Final Volume (ml) | Manifold ID | Comments |
|---------------|---------------|-----------------------|------------|-------------|------------------|--------------|-------------------|-------------|----------|
| OP 74180 MB   | X             | 250                   | 6          | NA          | 20ul             |              | 1ml               | B           |          |
| OP 74180 BS   | X             | 250                   |            |             |                  | 50ul         |                   |             |          |
| FA 62220-1    | 1             | 250                   |            |             |                  |              |                   |             | *        |
| -2            | 1             | 250                   |            |             |                  |              |                   |             | *        |
| -3            | 1             | 250                   |            |             |                  |              |                   |             | *        |
| -4            | 1             | 250                   |            |             |                  |              |                   |             | *        |
| -5            | 1             | 250                   |            |             |                  |              |                   |             | *        |
| -6            | 1             | 250                   |            |             |                  |              |                   |             |          |
| -7            | 1             | 250                   |            |             |                  |              |                   |             |          |
| -8            | 1             | 250                   |            |             |                  |              |                   | C           |          |
| -9            | 1             | 250                   |            |             |                  |              |                   |             |          |
| -10           | 1             | 250                   |            |             |                  |              |                   |             | *        |
| -11           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -12           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -13           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -14           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -15           | 1             | 250                   |            |             |                  |              |                   |             | *        |
| -16           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -17           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -18           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -19           | 1             | 250                   |            |             |                  |              |                   |             |          |
| -20           | 1             | 250                   |            |             |                  |              |                   |             |          |
| FA 62220-1 MS | 2             | 250                   |            |             |                  | 50ul         |                   | B           | *        |
| -1MSD         | 3             | 250                   | ↓          | ↓           | ↓                | ↓            |                   | ↓           | *        |
| DUP           |               |                       |            |             |                  |              |                   |             |          |

Comments: to Hard Time Passing through SPE cartridge, MS-MSD, -1, -3, -4, -5, -10, -15

|                           |                      |                            |                    |                    |
|---------------------------|----------------------|----------------------------|--------------------|--------------------|
| Surr.1 ID: <u>LC12363</u> | Conc: <u>1.0 ppm</u> | Exp. Date: <u>02-22-20</u> | Inj. By: <u>MV</u> | Ver. By: <u>MV</u> |
| Spk.1 ID: <u>LC1233</u>   | Conc: <u>400 ppb</u> | Exp. Date: <u>08-21-19</u> | Inj. By: <u>MV</u> | Ver. By: <u>MV</u> |
| Spk.2 ID: <u>✓</u>        | Conc: <u>✓</u>       | Exp. Date: <u>✓</u>        | Inj. By: <u>✓</u>  | Ver. By: <u>✓</u>  |
| Spk.3 ID: <u>✓</u>        | Conc: <u>✓</u>       | Exp. Date: <u>✓</u>        | Inj. By: <u>✓</u>  | Ver. By: <u>✓</u>  |

|   |                                  |
|---|----------------------------------|
| TurboVap Temp (Therm ID): <u>TV #12</u> | N-Evap Temp (Therm ID): <u>✓</u> |
| Observed Temp °C: <u>45C</u>            | Observed Temp °C: <u>✓</u>       |
| Corr. Temp °C: <u>✓</u>                 | Corr. Temp °C: <u>✓</u>          |

|                              |                               |                                    |
|------------------------------|-------------------------------|------------------------------------|
| Methanol Lot # <u>186489</u> | SPE Lot # <u>6429443-09</u>   | pH Paper # <u>212218</u>           |
| Acetonitrile Lot # <u>✓</u>  | Syringe filter Lot # <u>✓</u> | Reagent # <u>2% NH4OH, 186954</u>  |
| Water Lot# <u>OP 73908</u>   | Pre-filter Lot# <u>✓</u>      | Reagent # <u>2% NH4OH, 7118050</u> |
| Solvent# <u>✓</u>            | Carbon Lot# <u>107563</u>     | Other <u>✓</u>                     |

Relinquished By: [Signature] Date: 3/18/19  
 Accepted By: [Signature] Date: 03-18-19

ORLD-EXT-0001-3-08-FORM-extwater\_spe.xls 032718

7.8.2  
 7

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 3-20-19 12:00  
 Started (mm/dd/yy 24:00)

Prep Method: 3535A or 537 or 537MOD (circle)

Date/Time: 03/21/19 1100  
 Finished (mm/dd/yy 24:00)

Analytical Method: LC537 (ID)

Batch#: 0074233 Ext. By: NV Conc. By: MB Viald By: MV

| Sample ID          | Bottle Number | Amount Extracted (ml) | Initial pH | Adjusted pH | Surrogate Amount | Spike Amount | Final Volume (ml) | Manifold ID | Comments |
|--------------------|---------------|-----------------------|------------|-------------|------------------|--------------|-------------------|-------------|----------|
| OP74233 MB         | X             | 130                   | 6          | NA          | 20ul             |              | 1ml               | D           |          |
| OP74233 BS         | X             | 130                   |            |             |                  | 50ul         |                   |             |          |
| FA62220-4RE        | 2             | 250                   |            |             |                  |              |                   |             |          |
| -8RE               | 2             | 250                   |            |             |                  |              |                   |             |          |
| FA62454-1          | 1             | 130                   |            |             |                  |              |                   |             |          |
| -2                 | 1             | 130                   |            |             |                  |              |                   |             |          |
| <i>MB 03/21/19</i> |               |                       |            |             |                  |              |                   |             |          |
| FA62454-2 MS       | 2             | 130                   | 6          | NA          | 20ul             | 50ul         | 1ml               | D           |          |
| MSD                |               |                       |            |             |                  |              |                   |             |          |
| FA62454-1 DUP      | 2             | 130                   | 6          | NA          | 20ul             |              | 1ml               | D           |          |

Comments:

Surr.1 ID: LC12433 Conc: 1.0ppm Exp. Date: 2-12-20 Inj. By: NV Ver. By: NV  
 Spk.1 ID: LC1233 Conc: 400ppb Exp. Date: 8-21-19 Inj. By: NV Ver. By: NV  
 Spk.2 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By: ✓  
 Spk.3 ID: ✓ Conc: ✓ Exp. Date: ✓ Inj. By: ✓ Ver. By: ✓

TurboVap Temp (Therm ID): TU # 10 N-Evap Temp (Therm ID): ✓  
 Observed Temp °C: 45°C Corr. Temp °C: ✓ Observed Temp °C: ✓ Corr. Temp °C: ✓

Methanol Lot # 186489 SPE Lot # 6429443-10 pH Paper # 212218  
 Acetonitrile Lot # ✓ Syringe filter Lot # ✓ Reagent # 2% NH4OH, 186954  
 Water Lot# 0173908 Pre-filter Lot# ✓ Reagent # 2% NH4OH, 7118050  
 Solvent# ✓ Carbon Lot# 107563 Other ✓

Relinquished By: [Signature] Date: 03/21/19  
 Accepted By: [Signature] Date: 03-21-19

ORLD-EXT-0001-3-08-FORM-extwater\_spe.xls 032718

7.8.3

7

## **APPENDIX B**

### Real Property Records for FAAF Aviation Hangars



|                                     |        |                                   |                                  |                            |   |   |  |   |  |
|-------------------------------------|--------|-----------------------------------|----------------------------------|----------------------------|---|---|--|---|--|
| 1. FACILITY NO.<br>510 Ft Ord       |        | 2. DESIGNATION<br>Mnt Hangar AVUM |                                  | 3. CATEGORY CODE<br>211 10 |   | 4. DESIGNED CAPACITY  |  | 5. TOTAL AREA<br>21,947   |  |
| 6. UNIT OF MEASURE<br>SF            |        |                                   | 7. DRAWING NO.<br>53-15-16       |                            |   | 8. MAP NO.  |  | 9. <input type="checkbox"/> LEASED <input checked="" type="checkbox"/> OWNED<br>LEASE NO. |  |
| 10. AIR CONDITIONING                |        |                                   | 16. FIRE PROTECTION              |                            |   | 18. TYPE OF CONSTRUCTION  |  |   |  |
| a. TYPE                             |        |                                   | a. NUMBER radio fire alarm       |                            |   | <input checked="" type="checkbox"/> PERM <input type="checkbox"/> SEMI-PERM <input type="checkbox"/> TEMP |  |   |  |
| b. CAPACITY                         |        |                                   | b. TYPE transmitter              |                            |   | 19. BUILDING DIMENSIONS   |  |   |  |
| c. SQ YD AIR COND                   |        |                                   | 17. MATERIALS                    |                            |   | a. MAIN BLDG 128'4" x 135'8"  |  |   |  |
| 11. HEATING                         |        |                                   | a. FOUNDATION Reinf Conc         |                            |   | b. OFFSETS 120' x 17'10" 2nd Floor  |  |   |  |
| a. SOURCE Convectors & Unit heaters |        |                                   | b. FLOOR Reinf Conc              |                            |   | c. WINGS 91'4" x 17'10"   |  |   |  |
| b. FUEL Nat. Gas                    |        |                                   | c. WALLS Conc Block & mtl siding |                            |   | d. BASEMENT 10'8" x 12'8"   |  |   |  |
| 12. HOT WATER FACILITIES            |        |                                   | d. ROOF 3 Ply Built-up           |                            |   | e. ATTIC 18'4" x 10'  |  |   |  |
| a. CAPACITY                         |        |                                   | e. SURFACE                       |                            |   | 20. TYPE OF CARD  |  |   |  |
| b. TEMPERATURE RISE                 |        |                                   | f. BASE                          |                            |   | <input checked="" type="checkbox"/> BLDG <input type="checkbox"/> MISC STR                                |  |   |  |
| 13. NO. USABLE FLOORS<br>2          |        |                                   | 14. OTHER MEASUREMENTS           |                            |   | <input type="checkbox"/> UTIL DIST SYS <input type="checkbox"/> RAILROAD                                  |  |   |  |
|                                     |        |                                   |                                  |                            |   | <input type="checkbox"/> LAND <input type="checkbox"/> SURFACED AREAS                                     |  |   |  |
| 15. UTILITY CONNECTIONS             |        |                                   |                                  |                            | 21. REMARKS   |   |  |   |  |
|                                     | NUMBER | SIZE                              | CAPACITY                         |                            | Automatic Sprinkling System<br>Hanger Fire Alarm System<br>Restrictor Vents on Feed Pipes<br><i>Sand separator</i><br><i>oil/water separator</i><br>CONTRACT DA-04-203 ENG-5347 2nd & Final |   |  |   |  |
| a. WATER                            | 3      | 1 2", 2 6"                        |                                  |                            |   |   |  |   |  |
| b. SEWER                            | 3      | 4"                                |                                  |                            |   |   |  |   |  |
| c. ELECTRICITY                      | 1      | 3 #250MCM & 1 3"                  |                                  |                            |   |   |  |   |  |
| d. GAS                              | 1      | 3"                                |                                  |                            |   |   |  |   |  |
| e. STEAM                            | 18     | 13 3", 5 4"                       |                                  |                            |   |   |  |   |  |
| f. CONDENSATE                       |        |                                   |                                  |                            |   |   |  |   |  |

DA FORM 2877  
1 NOV 54

\* GPO : 1965 O-759-639

REPLACES DA FORMS 5-46, 5-47, 5-49, 5-50,  
5-51, AND 5-52, WHICH ARE OBSOLETE.

REAL PROPERTY RECORD  
(AR 735-27)

|               |             |              |
|---------------|-------------|--------------|
| CATEGORY CODE | DESIGNATION | FACILITY NO. |
|---------------|-------------|--------------|

| 22. COST DATA |                |   |                |              |
|---------------|----------------|---|----------------|--------------|
| VOUCHER NO    | DATE COMPLETED | DESCRIPTION OF CHANGE   | COST OF CHANGE | TOTAL COST   |
| 933-60        | 24 Nov 59      | For transfer of property listed above Est. Cost   |                | \$455,314    |
| 1935-60       | 24 Feb 60      | Hanger Fire Alarm System - Est. Cost  | +\$126         | 455,740      |
| 2323-60       |                | Final Cost Statement on Hanger - \$455,943  | +\$629         | 456,369      |
| 1908-61       | 7 Jun 61       | Revised Final Cost Statement  |                |              |
|               |                | Hanger - \$462,464  | +\$6,521       |              |
|               |                | Alarm Sys - \$ 352  | - 71           |              |
|               |                |   | +\$6,447       | \$462,816    |
| 95-78         | 10 May 78      | Installation of a hoist flange (capacity 2 tons) on overhead beam. \$2,548.00.                          |                | \$465,364.00 |
| 143-83        | 26 Apr 83      | CAPITAL DECREASE; Removal of 1 ea toilet, sink, urinal, steam radiator & steal-framed window. -\$370.00 |                | \$464,994.00 |
| 76-90         | 24 Oct 89      | Cap Imprv: Install shower and emergency eyewash with activation alarms. 77-06204-6P. +\$2200. est.      |                | \$467,194.00 |
| CATEGORY CODE | DESIGNATION    | FACILITY NO.  |                |              |









## **APPENDIX C**

### Responses to USEPA Comments on the Draft Technical Summary Report

## Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California<sup>1</sup> submitted by the U.S. Environmental Protection Agency (USEPA)<sup>2</sup>

**GENERAL COMMENT 1:** The Draft PFAS Report does not adhere to the investigative process identified in the *Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)*, dated September 2018 (the Army PFAS Guidance). According to the Army PFAS Guidance, the first step of the investigative process is to conduct a preliminary assessment (PA) at installations where aqueous film-forming foam (AFFF) or other per- and polyfluoroalkyl substances (PFAS)-containing materials were used or stored; however, the Draft PFAS Report does not demonstrate that this first step was followed for each of the 52 sites. Table 1 (Site Summary and Primary Records Review Results) does not demonstrate that PAs were performed at each site or provide rationale for exclusion of each site from further evaluation.

Further, the primary reviews described in Section 1.2 (Review Methodology) and summarized in Table 1 (Site Summary and Primary Records Review Results) do not meet the objectives of a PA, which are specified in Section 4.0 (Reporting Requirements) and Table 4-1 (PA Narrative Report, Outline of Contents) of the United States Environmental Protection Agency's (EPA's) *Guidance for Performing Preliminary Assessments Under CERCLA*, EPA/540/G-91/013, dated September 1991 (the PA Guidance). Please revise the Draft PFAS Report to follow the procedures listed in the Army PFAS Guidance, meet the reporting requirements for a PA as outlined in Section 4.0 and Table 4-1 of the PA Guidance, and include documentation for each of the 52 sites evaluated.

**RESPONSE TO GENERAL COMMENT 1:** *The U.S. Department of the Army (Army) does not intend for the Technical Summary Report to be a PA; therefore, it was not revised per the comment. The Army scoped and developed the Technical Summary Report based on requests for information from USEPA and the California Department of Toxic Substances Control (DTSC) that predated the Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS) (Army PFAS Guidance):*

- *In a letter dated June 7, 2017, USEPA requested the Army “conduct a site-wide review of historical activities with the potential to cause PFOA [perfluorooctanoic acid]/PFOS [perfluorooctane sulfonate] contamination in soil and groundwater at Fort Ord, and that the results be summarized in a technical memo... site[s] on Fort Ord where products containing PFOA/PFOS were possibly used or disposed of, should be evaluated.”<sup>3</sup>*
- *In a letter dated January 27, 2017, DTSC requested PFOA and PFOS be added to the list of analytes for groundwater at Sites 2 and 12, Operable Unit 2 (OU2), and Operable Unit Carbon Tetrachloride Plume (OUCTP).<sup>4</sup> The Army agreed to sample groundwater associated with OU2*

<sup>1</sup> Administrative Record No. OU2-722.

<sup>2</sup> In a letter dated December 3, 2019 (Administrative Record No. OU2-722.5). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.

<sup>3</sup> From USEPA comments on the 4<sup>th</sup> Five-Year Review Report for Fort Ord Superfund Site (Administrative Record No. BW-2834).

<sup>4</sup> Administrative Record No. BW-2785B.2.

*because it is possible products containing PFOA and PFOS were disposed of at the Fort Ord Landfills.*

*Accordingly, the Technical Summary Report is limited to a review of Army activities with the potential to cause PFOA and PFOS contamination in soil and groundwater at the former Fort Ord, and reporting the results of groundwater monitoring at OU2 for PFOA and PFOS. Therefore, referring to the document as a PA or the "PFAS Report" is incorrect and misleading, and the responses to comments herein refer to it as the "Technical Summary Report."*

*Because the Army PFAS Guidance was issued as the quality assurance project plan (QAPP) for PFOA/PFOS sampling and analysis for OU2 groundwater was being prepared, the Army PFAS Guidance was only applied to the extent practicable for the former Fort Ord basewide review given the scope and intent of the Technical Summary Report. However, the Army will request funding to perform a PA based on the results of the basewide review presented in the Technical Summary Report, though per the Army PFAS Guidance, Army installations are prioritized and sequenced for PAs consistent with the U.S. Department of Defense (DoD) "worst first" approach, and the former Fort Ord is a lower risk site because 1) the Army does not own or operate a potable water supply system there, 2) there is no hydraulic communication between shallow aquifers where PFAS might be found (A-Aquifer) and deeper aquifers of adjacent potable water supply systems (Lower 180-Foot Aquifer and 400-Foot Aquifer), and 3) PFOA and PFOS are not detected in the adjacent potable water supply systems.*

**GENERAL COMMENT 2:** The Draft PFAS Report is missing information about migration pathways and exposure pathways. Based on Figure 2-1 (Checklist of PA Information Needs) and Table 4-1 (PA Narrative Report, Outline of Contents) of the PA Guidance, the Draft PFAS Report should discuss the pathways for groundwater, surface water, soil, and air for the installation, including:

- Groundwater Use and Characteristics
  - Identification of private and municipal wells within a 4-mile radius (locations, distance, populations served, etc.);
  - Distance to the nearest drinking water well;
- Surface Water Use and Characteristics
  - Site locations with respect to floodplains and information on the flood frequency;
  - Identification of surface water bodies within 15 downstream miles (types, characteristics, etc.);
  - Identification of drinking water intakes within 15 downstream miles (locations, populations served, etc.);
  - Identification of fisheries, wetlands, and other sensitive environments within 15 downstream miles;
  - Distance to the nearest surface water body;
- Soil Exposure Pathways
  - Number of people living within a 200-foot radius and number of workers within a 200-foot radius;
  - Identification of schools and/or day care facilities within a 200-foot radius;
  - Populations within a 1-mile radius;
  - Identification of terrestrial sensitive environments;
- Air Exposure Pathways

- Populations within a 4-mile radius; and
- Identification of acreage of wetlands and sensitive environments within a 4-mile radius.

This information is key to the PA stage and is identified in the “core PA data elements” in the EPA’s guidance document, *Federal Facilities Remedial Preliminary Assessment Summary Guide*, dated July 21, 2005 (the PA Summary Guide). Please revise the Draft PFAS Report to discuss groundwater, surface water, soil, and air pathways for the installation consistent with the information outlined in Army PFAS Guidance, PA Guidance, and the PA Summary Guide.

**RESPONSE TO GENERAL COMMENT 2:** *The Technical Summary Report is not intended to be a PA and was not revised per the comment.*

**GENERAL COMMENT 3:** The Draft PFAS Report contains insufficient site descriptions, operational histories, and waste characteristics for each site. Based on Figure 2-1 (Checklist of PA Information Needs) and Table 4-1 (PA Narrative Report, Outline of Contents) of the PA Guidance, the following information for each site should be included:

- Site type (hanger, fire station, testing area, etc.);
- Site status (active or inactive);
- Years of operation and summary of operational history;
- Latitude and longitude coordinates;
- Physical characteristics (dimensions, size, structures, buildings, borders, drainage patterns, etc.); and
- Identification of nearby drinking water wells, residences, and other sensitive receptors (schools, daycares, hospitals, etc.).
- Sensitive environments (wetlands, etc.)
- Current and former owners and site activities
- Types of waste generated, quantities, etc.
- Past regulatory activities, removals, investigations, and analytical data presented in tabular form and discussed

Please revise the Draft PFAS Report to expand the site descriptions for each of the 52 sites to include the information outlined in Figure 2-1 and Table 4-1 of the PA Guidance.

**RESPONSE TO GENERAL COMMENT 3:** *The Technical Summary Report contains sufficient information to evaluate historical activities with the potential to cause PFAS contamination in soil and groundwater at the former Fort Ord per USEPA’s request, but it is not intended to be a PA and was not revised per the comment.*

**GENERAL COMMENT 4:** The Draft PFAS Report should include site-specific figures for each of the 52 sites assessed. A site-specific figure displaying the location of relevant site features (e.g., AFFF storage areas, floor drains, suspected runoff areas, etc.) should be included for each site evaluated. The figures currently provided in the Draft PFAS Report are only for sites identified as requiring further evaluation, and those figures do not include locations of relevant site features (such as the storm line drain discharge at Site 34, the Imhoff tank at Site 36, etc.). Please revise the Draft PFAS Report to include site-specific figures that depict relevant site features for each site evaluated.

**RESPONSE TO GENERAL COMMENT 4:** *Inclusion of site-specific figures in the Technical Summary Report is not necessary for sites that were eliminated from further evaluation after the primary and secondary site reviews because no activities occurred at these sites that could have resulted in a release of PFAS. However, the figures for sites identified as requiring further evaluation were revised and site-specific figures were added as appropriate to identify relevant site features per the comment.*

**GENERAL COMMENT 5:** The Draft PFAS Report should provide a photographic log for each site evaluated. The photographic log should include a description of pertinent features identified during the site reconnaissance at each site (e.g., surface water flow direction, drainage structures, surface covers). Please revise the Draft PFAS Report to provide photographic documentation of the site reconnaissance at each of the 52 sites evaluated.

**RESPONSE TO GENERAL COMMENT 5:** *Site reconnaissance of all 52 sites evaluated exceeds the scope and intent of the Technical Summary Report. The primary and secondary reviews of basewide historical records was sufficient to determine whether activities may have occurred at a particular site that would have resulted in a release of PFAS (i.e., FTAs, AFFF storage, aircraft crashes, aviation hangars, landfilling, and wastewater treatment). If the primary or secondary review of basewide historical records determined these activities did not occur at a site, then a site reconnaissance was unnecessary and the site was eliminated from further evaluation. Photographs, where appropriate for the purposes of the basewide review, are included in the Technical Summary Report; however, historical photographs of many of the sites reviewed are included in the Draft Final Field Investigation and Data Review, Solid Waste Management Units, Fort Ord, California (Administrative Record No. BW-1496A).*

**GENERAL COMMENT 6:** The Draft PFAS Report includes figures indicating a general groundwater flow direction at the sites proposed for further evaluation; however, it is unclear if the groundwater flow directions are known or estimated for each site evaluated. Please clarify whether groundwater flow directions are known or estimated for each site evaluated. If known, provide groundwater elevation data and potentiometric surface maps or a reference to such data to support such statements. If estimated, revise the Draft PFAS Report to indicate that the groundwater flow directions are unknown but estimated based on surface elevation, geology, distance to nearest water body, etc. In addition, at least one figure displaying the potentiometric surface map for groundwater at the installation should be included to support the direction of groundwater flow.

**RESPONSE TO GENERAL COMMENT 6:** *The figures indicating general groundwater flow directions were revised to include a note with a reference to recent groundwater monitoring reports. The groundwater monitoring reports include the groundwater elevation data and contour maps that support the direction of groundwater flow.*

**GENERAL COMMENT 7:** The Draft PFAS Report should discuss whether any foaming of the runway(s) or foam salutes occurred at the installation. Foaming of the runway was an aviation safety practice that consisted of spreading a layer of fire suppression foam on an airport runway to prevent fires prior to an emergency landing while foam salutes is a celebratory practice that consists of spraying two streams of AFFF to create an arch that planes would pass under during inaugural or final flights. Please revise the Draft PFAS Report to indicate whether foaming of the runway(s) or any foam salutes occurred. If so, please revise the Draft PFAS Report to provide information on how many times this occurred on each runway and the volume of foam used.

**RESPONSE TO GENERAL COMMENT 7:** Interviews with former Fort Ord fire department personnel indicate no foaming of the runways or foam salutes occurred at Fritzsche Army Airfield (FAAF). There was one reported emergency landing at FAAF, as described in Section 2.3.3 of the Technical Summary Report; however, AFFF was not deployed for this incident. Water salutes are a relatively common practice for inaugural or final flights; however, AFFF or other foams are not used because they can foul aircraft engine intakes and cause engine damage. Additionally, helicopters were the primary aircraft used at Fort Ord, and a foam salute for a helicopter to pass through while the rotors are operating would result in an undesirable distribution of the foam.

**GENERAL COMMENT 8:** The Draft PFAS Report regularly refers to personal communication with the former Chief of the Monterey Fire Department, Mr. Jack Riso. Yet, documentation of these interviews are not provided. As a result, the information obtained from Mr. Riso cannot be substantiated. Per the PA Guidance, please revise the Draft PFAS Report to provide documentation of the referenced personal communication information used during the evaluation.

**RESPONSE TO GENERAL COMMENT 8:** The interviews with Chief Riso are documented in Section 4.0 (References). This is consistent with historical practice for documentation of interviews at the former Fort Ord and, as noted in the responses to previous comments, the Technical Summary Report is not intended to be a PA. The Technical Summary Report was not revised per the comment.

**GENERAL COMMENT 9:** According to Section 2.1.5, contaminated soil within Operable Unit 1 – FAAF Fire Drill Area was treated in 1988 using an aqueous nutrient formulation to stimulate microbial degradation of the hydrocarbons in the soil and was then transported to a soil borrow area for use as fill in construction projects at the former Fort Ord. As a result, the soil borrow area and the sites where the fill was used are potential PFAS contaminated sites. Revise the Draft PFAS Report to recommend further evaluation of Operable Unit 1 – FAAF Fire Drill Area and potential sites of fill use.

**RESPONSE TO GENERAL COMMENT 9:** The Technical Summary Report was revised to state that no additional investigation of the soil borrow or fill areas at historical construction sites is recommended because the soil excavated from Operable Unit 1 (OU1) was removed from the borrow area and there is no available record of the locations of the construction sites. Note that Section 2.1.5 is now Section 2.1.6.

**GENERAL COMMENT 10:** According to Section 2.4.1 (Site 20 – South Parade Ground and 3800 and 519th Motor Pools), aerial photographs and property records were reviewed, and personnel interviews were conducted as part of the PA for Site 20 – South Parade Ground and 3800 and 519th Motor Pools. However, these records and interviews are not included in the Draft PFAS Report to substantiate the decision to eliminate this site from further evaluation. Revise the Draft PFAS Report to include all historical information (e.g., aerial photographs, property records, documentation of personnel interviews) used during the evaluation.

**RESPONSE TO GENERAL COMMENT 10:** Review of aerial photographs and property records, and personnel interviews are incorporated by reference to the Draft Final Site Characterization, Site 20 – South Parade Ground, 3800 and 519<sup>th</sup> Motor Pools, Fort Ord, California (HLA, 1995b). Regardless, as indicated in Section 2.4.1, Site 20 was not used as an airfield after the early 1960s, which precludes the use of AFFF. The Technical Summary Report was not revised per the comment.



**GENERAL COMMENT 11:** The Draft PFAS Report states that contaminated soils from Sites 8 (Range 49, Molotov Cocktail Range), 10 (Burn Pit/Fire Training Area), and 40 (FAAF Helicopter Defueling Area) were transported to the Fort Ord Soil Treatment Area (FOSTA) for treatment; however, the FOSTA was not included in the 52 sites evaluated. In addition, information on how soils were treated at the FOSTA are not provided and/or referenced. Given that the FOSTA received excavated soil from potentially PFAS contaminated sites, please revise the Draft PFAS Report to include an assessment of the FOSTA.

**RESPONSE TO GENERAL COMMENT 11:** *The Technical Summary Report was revised to include an assessment of the FOSTA in Section 2.6 (Landfills) per the comment. While not a landfill per se, the FOSTA was used to temporarily store and manage soils from other sites at Fort Ord, and all these soils were ultimately placed at the Fort Ord Landfills.*

**GENERAL COMMENT 12:** The Draft PFAS Report does not include any information on the location(s) of fire stations or AFFF storage. While the burn pit and fire training area at the Fort Ord Fire Station is discussed in Section 2.1.2 (Site 10 – Burn Pit/Fire Training Area), no fire stations were evaluated, and the twelve sites identified as potential AFFF storage sites did not store AFFF. Given that AFFF was used onsite, please revise the Draft PFAS Report to include assessments of fire stations and AFFF storage locations. If no known AFFF storage locations can be identified, include such discussion in the Draft PFAS Report.

**RESPONSE TO GENERAL COMMENT 12:** *Section 2.2 of the Technical Summary Report was revised to include an evaluation of fire stations as potential AFFF storage locations per the comment.*

**GENERAL COMMENT 13:** The Draft PFAS Report should summarize data for all PFAS analytes, not just PFOA and PFOS, detected in the narrative of the report. Please also include this information in Table 3, Figure 6, Figure 7, and elsewhere as appropriate.

**RESPONSE TO GENERAL COMMENT 13:** *Per the response to General Comment 1, only PFOA and PFOS were sampled, analyzed for, and reported by the analytical laboratory. The Technical Summary Report was not revised per the comment; however, it is recommended in Section 3.0 that, for any future sampling for PFAS analysis at the former Fort Ord, the analytical laboratory should report results for the 18 PFAS compounds listed in the Army PFAS Guidance.*

**GENERAL COMMENT 14:** Throughout the Draft PFAS Report, the analysis of the PFAS detections should be based on the screening levels identified in the October 15, 2019 DOD Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (e.g., 40 ppt PFOA and PFOS, individual, if multiple PFAS are detected) as well as the EPA Health Advisory Level of 70 ppt for groundwater that is a current or potential source of drinking water.

**RESPONSE TO GENERAL COMMENT 14:** *The Technical Summary Report was revised per the comment to compare detections of PFOA and PFOS in groundwater at OU2 to the DoD screening levels referenced in the comment along with the USEPA lifetime health advisory levels. Please note the USEPA lifetime health advisory levels are specifically for drinking water and not groundwater (see USEPA memorandum dated November 15, 2016), but were applied here as screening level concentrations to determine the need for further action.*

**SPECIFIC COMMENT 1: Section 1.1, PFOA and PFOS Background, Page 1:** Although the Draft PA Report is dated September 2019, Section 1.1 does not reference EPA's Per- and Polyfluoroalkyl Substances

(PFAS) Action Plan, EPA 823R18004, dated February 2019 (EPA PFAS Action Plan). Given that the EPA PFAS Action Plan describes EPA's approach to identifying and understanding PFAS, approaches to addressing current PFAS contamination, preventing future contamination, and effectively communicating with the public about PFAS, its inclusion in Section 1.1 is warranted. Please revise Section 1.1 to discuss the EPA PFAS Action Plan.

**RESPONSE TO SPECIFIC COMMENT 1:** *While the USEPA PFAS Action Plan is informative with respect to USEPA's objectives, it is not prescriptive and does not appear to add useful information with respect to the process described in the Technical Summary Report or the Army's current framework for addressing PFAS. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 2: Section 1.2, Review Methodology, Page 2:** While aircraft crash sites where AFFF may have been applied for fire control are included as locations with the greatest likelihood of PFAS releases, runways where AFFF may have been applied in anticipation of an aircraft crash are not included as a location with the greatest likelihood of PFAS releases. Please revise Section 1.2 to include runways where AFFF may have been applied in anticipation of an aircraft crash as a location with the greatest likelihood of PFAS releases.

**RESPONSE TO SPECIFIC COMMENT 2:** *There is no evidence AFFF was applied to runways in anticipation of an aircraft crash at FAAF. To the contrary, there was one reported emergency landing at FAAF, as described in Section 2.3.3 of the Technical Summary Report; however, AFFF was not deployed for this incident. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 3: Section 1.2.1, Primary Site Review, Page 3:** Section 1.2.1 indicates that "There are no known sites where large fires were suppressed using AFFF;" however, it is unclear if there is documentation to substantiate that large fires were specifically not addressed by AFFF. Please revise the Draft PFAS Report to include documentation which specifically shows that large fires were not suppressed using AFFF.

**RESPONSE TO SPECIFIC COMMENT 3:** *As noted in Section 1.1 of the draft Technical Summary Report (now Section 1.3), AFFF for firefighting was generally used in areas where fuel- or petroleum-based fires may have occurred, such as in the vicinity of aviation assets, fuel farms, or aircraft crash sites. There are no documented large fires associated with these types of sites at the former Fort Ord. Additionally, large non-petroleum fires, such as structure fires and range fires, contraindicate use of AFFF. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 4: Section 1.3.1, Sampling Events and Objectives, Page 4:** This section lists the primary objectives of the OU2 PFOA/PFOS sampling. However, the objective of verifying that groundwater treatment plant (GWTP) effluent concentrations are below the EPA PFOA and PFOS health advisory (HA) levels is not listed. Please revise Section 1.3.1 to include verification of GWTP effluent concentrations below EPA PFOA and PFOS HA levels as a primary objective of OU2 PFOA/PFOS sampling.

**RESPONSE TO SPECIFIC COMMENT 4:** *The objective of verifying that GWTP effluent concentrations are below the USEPA PFOA and PFOS health advisory levels is not listed because it is not one of the goals of the study identified in the QAPP.<sup>5</sup> The Technical Summary Report was not revised per the comment.*

---

<sup>5</sup> Administrative Record No. OU2-715B.

**SPECIFIC COMMENT 5: Section 1.3.1, Sampling Events and Objectives, Pages 4-5:** California State Water Resources Control Board (SWRCB) has notification levels for PFOA (0.0051 µg/L) and PFOS (0.0065 µg/L) for drinking water ([https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/PFOA\\_PFOS.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html)). Although these are non-promulgated, these guidance values for PFAS in drinking water should be referenced and used for screening. Please revise Section 1.3.1 to discuss and screen the analytical results against the California SWRCB notification levels.

**RESPONSE TO SPECIFIC COMMENT 5:** *Per the California guidelines, the notification requirement only applies to “local water agencies.” The Army does not own or operate any water supply system at or near the former Fort Ord. As stated in the QAPP, the purpose of the groundwater sampling effort was only to screen for the presence of PFOA and PFOS in groundwater associated with OU2 at the former Fort Ord to determine the need for further action. Additionally, all of the wells sampled were monitoring wells, not water supply wells. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 6: Section 2.1.5, Operable Unit 1 – FAAF Fire Drill Area, Page 9:** Footnote 8 on Page 9 states that firefighting foam in the form of protein foam was used at Fort Ord prior to 1972. The Army PFAS Guidance states that these protein foams were typically fluoroprotein foams, which contained other fluorinated surfactants, including perfluorooctanesulfonic acid (PFOS). Revise the PFAS Report to recommend additional investigation in areas where protein foams were reportedly stored or used. It is noted that Operable Unit 1 – FAAF Fire Drill Area is already recommended for additional investigation.

**RESPONSE TO SPECIFIC COMMENT 6:** *The Army PFAS Guidance also states the primary mechanism for releases of PFAS is through use of AFFF after 1972. As noted in the comment, footnote 8 states protein foam was used at Fort Ord prior to 1972, and is therefore not a significant mechanism for release of PFAS, if at all. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 7: Section 2.4.2, Site 34 – FAAF Multiple Sites, Page 13:** It is unclear whether the original fire suppression systems in Buildings 510 and 524 have been modified for AFFF use. The text states that these systems could have been modified for AFFF use after 1972, but no further information is provided. Revise the text to clarify what type of fire suppression systems are currently in place at Buildings 510 and 524 and provide photographic documentation of these systems.

**RESPONSE TO SPECIFIC COMMENT 7:** *According to the Airport Services Manager, Mr. Jeff Crechriou, the fire suppression systems currently in place for all the hangars at the Marina Municipal Airport are deluge systems supplied by 10-inch diameter water pipelines. Water system basemaps provided by the Marina Coast Water District confirm the presence of the pipelines and indicate they are for nonpotable water. Section 2.4.2 of the Technical Summary Report was revised to include this information and figures were added with photographs of Buildings 510 and 524.*

**SPECIFIC COMMENT 8: Section 2.6.2, Site 16 – DOL Maintenance Yard, Pete’s Pond and Pete’s Pond Extension, Page 17:** Insufficient information is provided to substantiate the elimination of this site from further evaluation. For example, Section 2.6.2 states that, “Though AFFF may have been discharged at the wash rack associated with Building 4900 during maintenance activities, the volumes would have been small and intermittent, and would have mostly been contained in the oil/water separator;” however, information to substantiate that the volume of AFFF charged to the wash rack was small and

intermittent is not provided and/or referenced. As such, the statements provided supporting elimination of the site from further evaluation are circumstantial and based on assumption rather than fact. Please revise the Draft PFAS Report to include factual evidence to support the elimination of this site from further evaluation, or alternately recommend further evaluation of this site.

**RESPONSE TO SPECIFIC COMMENT 8:** Chief Riso previously stated the AFFF tanks on fire department vehicle were flushed at Building 2722 (Site 12) and Building 4900 (Site 16) before servicing; however, he has clarified that AFFF was drained out of the tanks at the Main Garrison Fire Station prior to servicing at these facilities, and the AFFF tanks and systems on fire department vehicles only required servicing or repairs five times over the course of 40 years. This additional information indicates the amount of AFFF potentially discharged at Site 16 was negligible. The Technical Summary Report was revised to include this information.

**SPECIFIC COMMENT 9: Section 3.3, Site 10 – Burn Pit/Fire Training Area, Page 26:** The Draft PFAS Report does not provide sufficient information to justify the use of MW-OU2-29-180 as an appropriate location to monitor for potential PFAS impacts to groundwater. MW-OU2-29-180 is 1.7 miles downgradient of Site 10, and the specific “characteristics of the Upper 180-Foot Aquifer” to justify the use of this well as appropriate are not discussed. Please revise the PFAS Report to discuss the specific characteristics of the aquifer and how they justify the use of the proposed monitoring well.

**RESPONSE TO SPECIFIC COMMENT 9:** Section 3.3 was revised to note that hydraulic conductivities in the Upper 180-Foot Aquifer range up to 366 feet per day and groundwater modeling indicates PFAS could have traveled in the Upper 180-Foot Aquifer from Site 10 to the Fort Ord Landfills within 30 years. Therefore, monitoring wells MW-OU2-54-180, MW-OU2-55-180, and MW-OU2-62-180 are recommended to be sampled for PFAS analysis in addition to MW-OU2-29-180.

**SPECIFIC COMMENT 10: Section 3.5, Site 34 – FAAF Aviation Hangars, Page 27:** The Draft PFAS Report does not recommend groundwater sampling for PFAS analysis at Site 34. Although the text states that “long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible,” the Army PFAS Guidance indicates that PFAS are very water soluble. Therefore, groundwater is the most appropriate media to sample to determine if a PFAS release had occurred. Please revise the Draft PFAS Report to recommend groundwater sampling at Site 34.

**RESPONSE TO SPECIFIC COMMENT 10:** Section 3.5 (now Section 3.4) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.

**SPECIFIC COMMENT 11: Section 3.7, Site 40A – East FAAF Helicopter Defueling Area, Page 28:** The Draft PFAS Report does not recommend groundwater sampling for PFAS analysis at Site 40A. Although the text states that “long-term retention of longer-chain PFAS in shallow soils after extended percolation is possible,” the Army PFAS Guidance indicates that PFAS are very water soluble. Therefore, groundwater is the most appropriate media to sample to determine if a PFAS release had occurred. Please revise the Draft PFAS Report to recommend groundwater sampling at Site 40A.

**RESPONSE TO SPECIFIC COMMENT 11:** Section 3.7 (now Section 3.6) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.

**SPECIFIC COMMENT 12: Figure 6, OU2 A-Aquifer Sampling Locations:** Figure 6 does not illustrate the information presented in Section 2.6.5 (Operable Unit 2 – Fort Ord Landfills). Specifically, Figure 6 does not include the extents of six landfill areas, groundwater flow directions, depths or formations monitoring and extraction wells are completed in, etc. Please revise Figure 6 to include the extents of landfills, groundwater flow directions, and the depths or formations in which monitoring and extraction wells are completed. In addition, indicate on the figure which extraction wells were in operation when GWTP samples were collected.

**RESPONSE TO SPECIFIC COMMENT 12:** *Figure 6 was revised to identify the extents of the six Fort Ord Landfills areas, groundwater flow directions, and to indicate which OU2 extraction wells were in operation when the GWTS samples were collected. Similar revisions were made to Figure 7. Please note that Figures 6 and 7 are now Figures 14 and 15, respectively. Section 1.0 of the text was revised to include information about the depths and formations in which monitoring and extraction wells are completed for the A-Aquifer and the Upper 180-Foot Aquifer.*

## **APPENDIX D**

### Responses to DTSC Comments on the Draft Technical Summary Report

## Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California<sup>1</sup> submitted by the Department of Toxic Substances Control (DTSC)<sup>2</sup>

**COMMENT 1:** Site 39 – Inland Ranges/Mudhen Lake Helicopter Crashes. Additional investigation of the Mudhen Lake crash should be conducted to confirm the presence or absence of a helicopter crash and subsequent fuel spill clean-up, and the Site 39 – Inland Ranges helicopter crash locations should be included for further evaluation.

As noted in the Report, Aqueous Film-Forming Foam (AFFF) was applied to a fuel spill that occurred at the Fritzche Army Airfield (FAAF) Helicopter Defueling Area to reduce the risk of fire and to aide in the clean-up of the spill. AFFF contains PFAS and PFOA which bioaccumulate in humans and wildlife and poses a risk to human-health and the environment. As noted in the Report, during the historical review of Mudhen Lake, a helicopter crash was reported during a helicopter survey of Fort Ord on August 2, 1993. However, during the munitions response at Mudhen Lake, the presence of helicopter wreckage was not observed. This crash could have potentially been misattributed to Mudhen Lake and could potentially be referring to one of the helicopter crashes reported at Site 39 – Inland Ranges in the 1980s. The primary concern for the Mudhen Lake crash was a fuel spill with no fire associated with the crash. As the potential for AFFF to be applied to fuel spills at Fort Ord exists, and due to the uncertainty of the crash location, a data gap is present for these areas.

**RESPONSE TO COMMENT 1:** *No additional investigation of the reported helicopter crash sites is warranted. As noted in Section 2.3, no AFFF was used at these sites. The reported fuel spill at the East FAAF helicopter defueling area (Site 40A) was large in volume (5,000 to 10,000 gallons of fuel) and occurred on a paved surface (i.e., there was a large pool of fuel on an impervious surface), which prompted the use of AFFF to mitigate the potential for fire. Helicopters used at Fort Ord in the 1980s included the Bell UH-1H Iroquois (Huey), Bell OH-58A Kiowa, and Bell AH-1G Cobra, each of which had fuel tank capacities of less than 250 gallons. If a helicopter fuel tank leaked or ruptured after a crash in the Inland Ranges or Mudhen Lake, the relatively small amount fuel would have quickly infiltrated the sandy soil at the ground surface, precluding the need for applying AFFF. Without evidence or records of known AFFF releases in these areas, there is insufficient justification for further investigation, and it is not feasible to conduct investigations everywhere in Fort Ord where small quantities of AFFF theoretically could have been released.*

**COMMENT 2:** Site 40 – FAAF Helicopter Defueling Area Further Evaluation. Section 2.5.2 of the report states that there is no evidence an AFFF or other PFAS release occurred at Site 40, and that the site was eliminated for further evaluation. However, the next sentence states that additional investigation is recommended because of reported use of AFFF for a fuel spill response at this location. This section

---

<sup>1</sup> Administrative Record No. OU2-722.

<sup>2</sup> In a letter dated December 3, 2019 (Administrative Record No. OU2-722.3). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.

should be revised to: 1) provide clarity to whether additional evaluation is warranted at Site 40, or 2) if additional work is not recommended, provide a basis for why.

**RESPONSE TO COMMENT 2:** *The next sentence states additional investigation is recommended at Site 40A, not Site 40. The text was not revised.*

**COMMENT 3:** Monitoring Well Installation Work Plan. Two new aquifer groundwater monitoring wells are proposed to be installed in the former Operable Unit 1 area, where all previous monitoring wells had been decommissioned. A work plan for the proposed monitoring wells should be prepared and submitted to DTSC for review and approval.

Provision of a workplan is needed because it allows regulators and other stakeholder to determine the appropriateness of the proposed monitoring well locations, well construction, sample frequency, sample collection methodology, QA/QC procedures, proposed analyses, and decision rules if elevated concentrations of PFAS/PFOA compounds are detected from samples collected from the proposed monitoring wells. Decision rules for additional groundwater investigation at Site 10 from groundwater analytical results from monitoring well MW-OU2-29-180 should be included in the work plan.

**RESPONSE TO COMMENT 3:** *The U.S. Department of the Army (Army) is performing remedial actions at the former Fort Ord per the CERCLA process; therefore, in accordance with the Fort Ord Federal Facility Agreement (FFA; Administrative Record No. BW-0119), all draft primary and secondary remedial action documents are submitted to the USEPA, DTSC, and CCRWQCB for review. Should the parties to the FFA agree it is appropriate to install additional monitoring wells, the Army will prepare a well installation work plan and submit it for regulatory agency and stakeholder review. Note that decision rules related to analytical results for PFAS compounds and for additional groundwater investigation at Site 10 will be included in a quality assurance project plan (QAPP), separate from a well installation work plan.*

**COMMENT 4:** Sampling and Analysis Plan. For areas where further evaluation through representative soil sampling is recommended, Site 34 – FAAF Aviation Hangars, Site 46 – FAAF Sewage Treatment Plant, Site 40A – East FAAF Helicopter Defueling Area, and Site 39 – Inland Ranges, a sampling and analysis plan (SAP) should be prepared and submitted to DTSC for review and approval.

The SAP should include proposed sampling locations, sample collection depths, sample collection methodologies, soil sampling analytical methods, QA/QC procedures, decision rules for soil samples that contain elevated levels of PFAS/PFOA compounds, and decision rules that will trigger additional groundwater investigation to establish a connection between soil and potential groundwater impacts.

**RESPONSE TO COMMENT 4:** *Should the parties to the FFA agree the soil sampling recommended in the Technical Summary Report is appropriate, the Army will prepare a QAPP per Army and Department of Defense policy that will include the information suggested in the comment.*



## **APPENDIX E**

### Responses to CCRWQCB Comments on the Draft Technical Summary Report

## Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California<sup>1</sup> submitted by the Central Coast Regional Water Quality Control Board (CCRWQCB)<sup>2</sup>

**GENERAL COMMENT 1:** Throughout the Report it is stated that there is not an exposure pathway to human receptors for groundwater that may contain PFAS. Please revise the Report to include a review of domestic and municipal water supply wells within a minimum two-mile radius as groundwater from water supply wells is a potential exposure pathway for PFAS to human receptors.

**RESPONSE TO GENERAL COMMENT 1:** *The Technical Summary Report states there is no exposure pathway to human receptors for groundwater at Operable Unit 1 (OU1), Site 12, Site 34, Site 36, and Site 40. OU1 and Sites 34, 36, and 40 overlie the A-Aquifer in the area of the former Fritzsche Army Airfield (FAAF) and Site 12 overlies the unconfined Upper 180-Foot Aquifer adjacent to Monterey Bay; however, water supply wells in the vicinity of the former Fort Ord are screened in the Lower 180-Foot Aquifer or deeper, and there is no hydraulic communication between the shallow aquifers at the sites listed above and these deeper aquifers that would justify the review suggested by the comment. Additionally, such a review is outside the scope of the Technical Summary Report, which was prepared in response to a request from the U.S. Environmental Protection Agency (USEPA) to “conduct a site-wide review of historical activities with the potential to cause PFOA [perfluorooctanoic acid]/PFOS [perfluorooctane sulfonate] contamination in soil and groundwater at Fort Ord” and is consistent with U.S. Department of the Army (Army) guidance for reviewing and identifying potential sites where per- and polyfluoroalkyl substances (PFAS) releases may have occurred. The Technical Summary Report was not revised per the comment.*

**GENERAL COMMENT 2:** It should be noted that quarterly groundwater testing of all military owned municipal drinking water supply wells is currently being performed in response to the State Water Resources Control Board (State Water Board’s) November 13, 2019 memorandum<sup>3</sup> sent to Mr. Richard Mach of the Office of the Assistant Secretary of the Navy and cc’d to other Navy, Army, and Air Force officials. The State Water Board also plans to issue California Health & Safety Code, Section 116378 orders to non-military municipal water supply wells within a two-mile radius of Department of Defense sites for one year of quarterly PFAS analysis to verify that these wells have not been impacted.

Please revise the Report to include a discussion and summary table for all available PFAS sampling results for the Marina Coast Water District and any other public water supply wells within a 2-mile radius of former Fort Ord to support the basewide PFAS review.

---

<sup>1</sup> Administrative Record No. OU2-722.

<sup>2</sup> In a letter dated December 13, 2019 (Administrative Record No. OU2-722.4). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.

<sup>3</sup> The SWRCB’s Memorandum can be found at:

[https://geotracker.waterboards.ca.gov/regulators/deliverable\\_documents/9592189967/DoD\\_PFAS\\_Drinking%20Water%20Well\\_memo\\_11-13-19.pdf](https://geotracker.waterboards.ca.gov/regulators/deliverable_documents/9592189967/DoD_PFAS_Drinking%20Water%20Well_memo_11-13-19.pdf)

**RESPONSE TO GENERAL COMMENT 2:** *Inclusion of the summary table suggested by the comment is outside the scope of the Technical Summary Report and not relevant to the basewide review (see response to General Comment 1). The Technical Summary Report was not revised per the comment.*

**GENERAL COMMENT 3:** While it is acknowledged that notification levels are non-regulatory and precautionary health-based measures, please add reference to the California State Water Board's Department of Drinking Water (DDW) PFAS notification levels of 6.5 parts per trillion (ppt) for PFOS and 5.1 ppt for PFOA. These levels were revised in August 2019 based on updated health-impact information provided by the Office of Environmental Health Hazard Assessment (OEHHA)<sup>4</sup>. It should also be noted in the Report that the laboratory reporting limits provided in the PFAS Quality Assurance Project Plan (QAPP)<sup>5</sup> for the OU2 groundwater sampling and analysis are below these notification levels. These values should be used as screening levels in the event that future decisions are based on a lower level than the current 70 parts per trillion (ppt) combined PFOA and PFOS lifetime Health Advisory Level issued by the United States Environmental Protection Agency (USEPA).

**RESPONSE TO GENERAL COMMENT 3:** *Per the California guidelines, the notification requirement only applies to "local water agencies." The Army does not own or operate any water supply system at or near the former Fort Ord. As stated in the quality assurance project plan (QAPP), the purpose of the groundwater sampling effort was only to screen for the presence of PFOA and PFOS in groundwater associated with OU2 at the former Fort Ord and compare the results to the USEPA Health Advisory levels to determine the need for further action. The Technical Summary Report was not revised per the comment.*

**GENERAL COMMENT 4:** The Report includes a summary of the OU2 groundwater sampling results for PFOA and PFOS. Please provide a table summarizing any additional PFAS analytes reported by the laboratory.

**RESPONSE TO GENERAL COMMENT 4:** *Only PFOA and PFOS were sampled, analyzed for, and reported by the analytical laboratory. The Technical Summary Report was not revised per the comment; however, it is recommended in Section 3.0 that, for any future sampling for PFAS analysis at the former Fort Ord, the analytical laboratory should report results for the 18 PFAS compounds listed in the Army PFAS Guidance.*

**GENERAL COMMENT 5:** A QAPP specific to PFAS soil sampling and analysis should be prepared or the OU2 PFAS QAPP should be revised to include soil. The soil QAPP should include risk-based Regional Screening Levels (RSLs) for residential and industrial populations such as those referenced in the U.S. Army Public Health Center's Technical Information Paper on environmental criteria for PFOA and PFOS<sup>6</sup>.

**RESPONSE TO GENERAL COMMENT 5:** *Should the USEPA, California Department of Toxic Substances Control (DTSC), and CCRWQCB (collectively the "regulatory agencies") agree with the Army that soil sampling is appropriate per the recommendations presented in the Technical Summary Report, the Army*

---

<sup>4</sup> The August 2019 Notification Levels for PFOA and PFOS can be found at:

[https://www.waterboards.ca.gov/drinking\\_water/certlic/drinkingwater/PFOA\\_PFOS.html](https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html)

<sup>5</sup> The PFAS QAPP can be found at:

[https://geotracker.waterboards.ca.gov/esi/uploads/geo\\_report/8352859735/DOD100221900.PDF](https://geotracker.waterboards.ca.gov/esi/uploads/geo_report/8352859735/DOD100221900.PDF)

<sup>6</sup> The U.S. Army Public Health Center Technical Paper on Perfluorinated Alkyl Compounds can be found at:

[https://phc.amedd.army.mil/PHC%20Resource%20Library/TIP\\_No\\_85-067-0117\\_EnvironmentalCriteriaPerfluorinatedAlkylCompounds.pdf](https://phc.amedd.army.mil/PHC%20Resource%20Library/TIP_No_85-067-0117_EnvironmentalCriteriaPerfluorinatedAlkylCompounds.pdf)

will prepare a QAPP to describe applicable methods and procedures for sampling and analysis of soil, and the QAPP will include appropriate reference screening levels in accordance with applicable Army and Department of Defense policy.

**GENERAL COMMENT 6:** Groundwater sampling should be performed to confirm the presence or absence at all PFAS investigation areas since these compounds are highly water soluble, persistent in soil and groundwater, and source areas in soil may not be easily identified/located or were previously removed.

**RESPONSE TO GENERAL COMMENT 6:** Per Table 2 of the Technical Summary Report, there are three sites recommended for only soil sampling at this time (Sites 34, 36, and 40A). As noted in the response to General Comment 1, there is no exposure pathway to human receptors for groundwater at these sites; however, per Section 3.0 of the Technical Summary Report, groundwater investigations may be warranted in downgradient areas depending on the analytical results for the soil samples.

**GENERAL COMMENT 7:** In a meeting on November 21, 2019 between the Army, State Water Resources Control Board, Regional Water Quality Control Boards, USEPA, and Department of Toxic Substances Control (DTSC) regarding PFAS investigations at California Army installations, fire department locations and nozzle testing areas were discussed as potential areas of concern. Based on this discussion, a review and recommendations for Fire Department locations and potential nozzle testing areas should be included in the Report.

**RESPONSE TO GENERAL COMMENT 7:** An evaluation of fire department locations for potential AFFF storage was added to Section 2.2 of the Technical Summary Report. Per the National Fire Protection Association (NFPA) 1962 Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances, nozzles associated with firefighting vehicles and equipment are both flow and hydrostatically tested with water, not AFFF. There is no evidence nozzle testing of this type using AFFF was done at the former Fort Ord; however, fixed foam generator nozzles, such as those observed in Building 507, may have been tested intermittently using AFFF in accordance with DoD policy. Any releases associated with this type of testing would be addressed by the additional investigation recommended in Section 3.4 of the draft final Technical Summary Report.

**SPECIFIC COMMENT 1: Section 2.1.1, Site 8 – Range 49, Molotov Cocktail Range; Section 2.1.3, Site 34B – Former Burn Pit; and Section 2.1.4, Site 41 – Crescent Bluff Fire Drill Area –** These areas were listed as potential or known FTA's with the potential for AFFF use and were recommended for removal from the PFAS investigation based on personal communication with the retired Fire Chief indicating that there were no records of fires requiring suppression using AFFF and/or the area wasn't in use after 1973, when AFFF was first used at Army installations. Please provide additional justification to support removing each of these areas from the basewide PFAS investigation. If additional supporting documentation is not available, please revise the Report to include these areas.

**RESPONSE TO SPECIFIC COMMENT 1:** Chief Riso served as an active duty firefighter at Fort Ord for over 40 years and the Army considers him to be a credible source of information regarding historical fire incidents and firefighting practices at the former Fort Ord. Additionally, all three of these sites were Interim Action (IA) sites where contaminated soil was excavated and removed. This information is presented in the discussion of Site 8, and the Technical Summary Report was revised to also include this information for Site 34B (now Section 2.1.4) and Site 41 (now Section 2.1.5). Additional supporting

documentation regarding the operation of these sites while Fort Ord was an active installation has not been found; however, based on what is known about these areas from the existing literature and Chief Riso, there is no evidence of AFFF use to justify additional investigation at these sites.

**SPECIFIC COMMENT 2: Section 2.1.5, Operable Unit 1 – Former Fire Drill Area (FDA)** – The Report indicates that approximately 4,000 cubic yards of contaminated soil were removed from the former FDA to a depth of 31 feet, and the area was backfilled with clean soil. Excavated soils were spread over the area of the former FDA to a depth of 2.5 to 3 feet above the original ground surface and remediated using treated groundwater to stimulate microbial degradation of hydrocarbons. As the soil was remediated it was then transported to a soil borrow area for use as fill for construction projects at Former Fort Ord. A remediation confirmation study and risk assessment indicated chemicals remaining in soil at the former FDA did not present an unacceptable risk to human health or the environment and the remaining soil was left in-place. Many conventional remedial technologies used to address organic compounds are ineffective at breaking down PFAS chemicals due to their low volatility and resistance to biodegradation<sup>7</sup>. Therefore, this area should be considered for further soil investigation to confirm whether there is PFAS present in the soil left in-place.

**RESPONSE TO SPECIFIC COMMENT 2:** *As noted in Section 3.1 of the Technical Summary Report, analytical results for PFOA and PFOS in samples collected in May 2015 from A-Aquifer wells downgradient of the former FDA indicated the former FDA was no longer a source of PFAS in groundwater. Specifically, concentrations of PFOA and PFOS in the downgradient wells closest to the FDA were not detectable or less than the USEPA health advisory (HA) levels and U.S. Department of Defense (DoD) screening levels, and higher concentrations of PFOA and PFOS were detected in wells further downgradient, indicating source removal and subsequent contaminant migration in groundwater (i.e., similar to fate and transport in groundwater of the ten chemicals of concern identified in the OU1 Record of Decision [Administrative Record No. OU1-362]). No further soil investigation at the FDA is recommended.*

**SPECIFIC COMMENT 3: Section 2.4.2, Site 34 – Fritzsche Army Airfield (FAAF) Multiple Sites** – The Report recommends investigating Building 507 related to a reported accidental discharge of foam from the fire suppression system in an unknown hanger. Building 507 is proposed for investigation since it was constructed after 1972 and currently has a foam suppression system. While the interior of Building 527 has no indication of a foam suppression system nor infrastructure in place to support one, it was also constructed after 1972 and it is possible that the hangar has been modified in the last 45 years to remove a foam suppression system and/or infrastructure. Based on this information, please include Building 527 in the PFAS investigation activities unless additional justification for removal of Building 527 can be provided.

Please also provide a figure showing the locations of the five aviation hangars at FAAF that are still in existence (Buildings 507, 510, 524, 527, and 533).

**RESPONSE TO SPECIFIC COMMENT 3:** *While it is possible Building 527 was modified to remove a foam suppression system and associated infrastructure, it is unlikely based on the information presented in Army real property records (Appendix B). Additionally, typical for utility systems that are no longer used,*

---

<sup>7</sup> Additional information on Groundwater and PFAS can be found at: [https://www.ngwa.org/docs/default-source/default-document-library/publications/pfas-doc-section1-overview.pdf?sfvrsn=f4ae9fe6\\_2](https://www.ngwa.org/docs/default-source/default-document-library/publications/pfas-doc-section1-overview.pdf?sfvrsn=f4ae9fe6_2).

*decommissioning of a foam suppression system would most likely have included cutting and capping pipelines at key locations and then abandoning the system in place, similar to what is visible in Building 507, because it is not cost effective or necessary to remove the system in its entirety. Because the current fire suppression system at Building 527 (and the other four hangars) is a water-supplied deluge system and likely the originally installed system, and there is no evidence a foam suppression system existed at Building 527, no additional investigation is recommended. Section 2.4.2 was revised to include this information.*

*New Figure 6, showing the locations of the existing aviation hangars, was added to the Technical Summary Report per the comment.*

**SPECIFIC COMMENT 4: Section 2.6.1, Site 12 – Lower Meadow Disposal Area** – The Report indicates that surface water containing PFAS could have been discharged from Outfall 15 to a closed depression within the dunes where contaminated soil was excavated in 1997 and 1998. Additionally, the Report indicates that several pipes discharged into the Lower Meadow, including Outfall 31 which was located at the southeast corner. Based on the high infiltration rates of dune sands and the rationale provided in General Comment no. 6, please include groundwater sampling of the Outfall 15 and Outfall 31 discharge areas as part of the Site 12 PFAS investigation.

**RESPONSE TO SPECIFIC COMMENT 4:** *Chief Riso previously stated the AFFF tanks on fire department vehicle were flushed at Building 2722 (Site 12) and Building 4900 (Site 16) before servicing; however, he has clarified that AFFF was drained out of the tanks at the Main Garrison Fire Station prior to servicing at these facilities, and the AFFF tanks and systems on fire department vehicles only required servicing or repairs five times over the course of 40 years. This additional information indicates the amount of AFFF potentially discharged at Outfall 15 and Outfall 31 was negligible. The Technical Summary Report was revised to include this information. Accordingly, no groundwater sampling at Outfall 15 and Outfall 31 is recommended. Further, based on this new information, the Technical Summary Report was revised to state no additional investigation is recommended at the Lower Meadow.*

**SPECIFIC COMMENT 5: Section 2.6.2, Site 16 – DOL Maintenance Yard, Pete’s Pond and Pete’s Pond Extension** – This area was used for servicing of fire department vehicles which may have included flushing of tanks and systems containing AFFF. Runoff was reportedly discharged into an adjacent oil/water separator and drainage from the DOL maintenance yard that did not reach the oil/water separator or sanitary sewer system drained to Pete’s Pond Extension, a topographic depression northwest of the yard and adjacent to Pete’s Pond. Please revise the Report to include Site 16 in the PFAS groundwater investigation activities based on the following:

- There is the potential that runoff containing PFAS did not reach the oil/water separator and may have drained to Pete’s Pond Extension;
- The rationale provided in General Comment no. 6; and
- The highest concentration of PFAS was detected in groundwater monitoring well MW-OU2-23-180 which is screened in the Upper 180-Foot Aquifer and located approximately 1,500 feet downgradient of Site 16.

**RESPONSE TO SPECIFIC COMMENT 5:** *Per the response to Specific Comment 4, the amount of AFFF potentially discharged at Site 16 was negligible. The Technical Summary Report was revised to include this information. As described in Section 2.6.5 and Table 3 of the Technical Summary Report, the highest*

concentrations of PFOA and PFOS were detected in groundwater at monitoring well MW-OU2-23-180; however, based on the information available, the source of PFOA and PFOS at this well is suspected to be the Fort Ord Landfills, not Site 16. Additionally, because this well is screened in the Upper 180-Foot Aquifer it is approximately 3,750 feet downgradient of Site 16, as groundwater from the Site 16 area would first travel west to the edge of the Fort Ord-Salinas Valley Aquitard (FO-SVA) and then east toward MW-OU2-23-180. Based on this information, no groundwater investigation is recommended at Site 16.

**SPECIFIC COMMENT 6: Section 2.7.2, Site 2 – Main Garrison Sewage Treatment Plant** – The Report indicates that possible sources of PFAS in the sludge include discharges of AFFF at the DOL Automotive Yard and the DOL Maintenance Yard that could have entered the sanitary sewer system. The report also indicates that these discharges would have been intermittent, of relatively small volume, and primarily contained in the oil/water separators at each site however, documentation of this is not provided.

Based on the potential that discharges of AFFF could have entered the sanitary sewer system, PFAS may have been present in sludge stored in this area, and the rationale provided in General Comment no. 6, please include groundwater sampling in this area as part of the basewide PFAS investigation.

**RESPONSE TO SPECIFIC COMMENT 6:** *Per the responses to Specific Comments 4 and 5, there are no suspected significant releases of AFFF to the sanitary sewer system that would justify groundwater sampling at Site 2. Additionally, as noted in Section 2.7.2 of the Technical Summary Report, contaminants were mainly confined to the sludge in the asphalt-lined drying beds, which were a barrier preventing infiltration of contaminants to the subsurface, and the sludge was removed from the site. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 7: Section 3.1 – FAAF FDA** – In the Report, two new A-Aquifer groundwater monitoring wells are proposed in the area of abandoned OU1 monitoring wells MW-OU1-85-A and MW-OU1-88-A that would serve as downgradient monitoring wells for the PFAS investigation at OU1 as well as to define the Operable Unit Carbon Tetrachloride Plume (OUCTP). In a letter dated November 4, 2019 regarding the OUCTP Draft Deployment Area 3A Data Summary Report<sup>8</sup>, the Central Coast Water Board recommended considering an additional well or moving the well that is proposed near former well MW-OU1-85-A closer to the central downgradient edge of the CT plume. This comment was related to further defining the OUCTP extent and is also applicable to the basewide PFAS investigation.

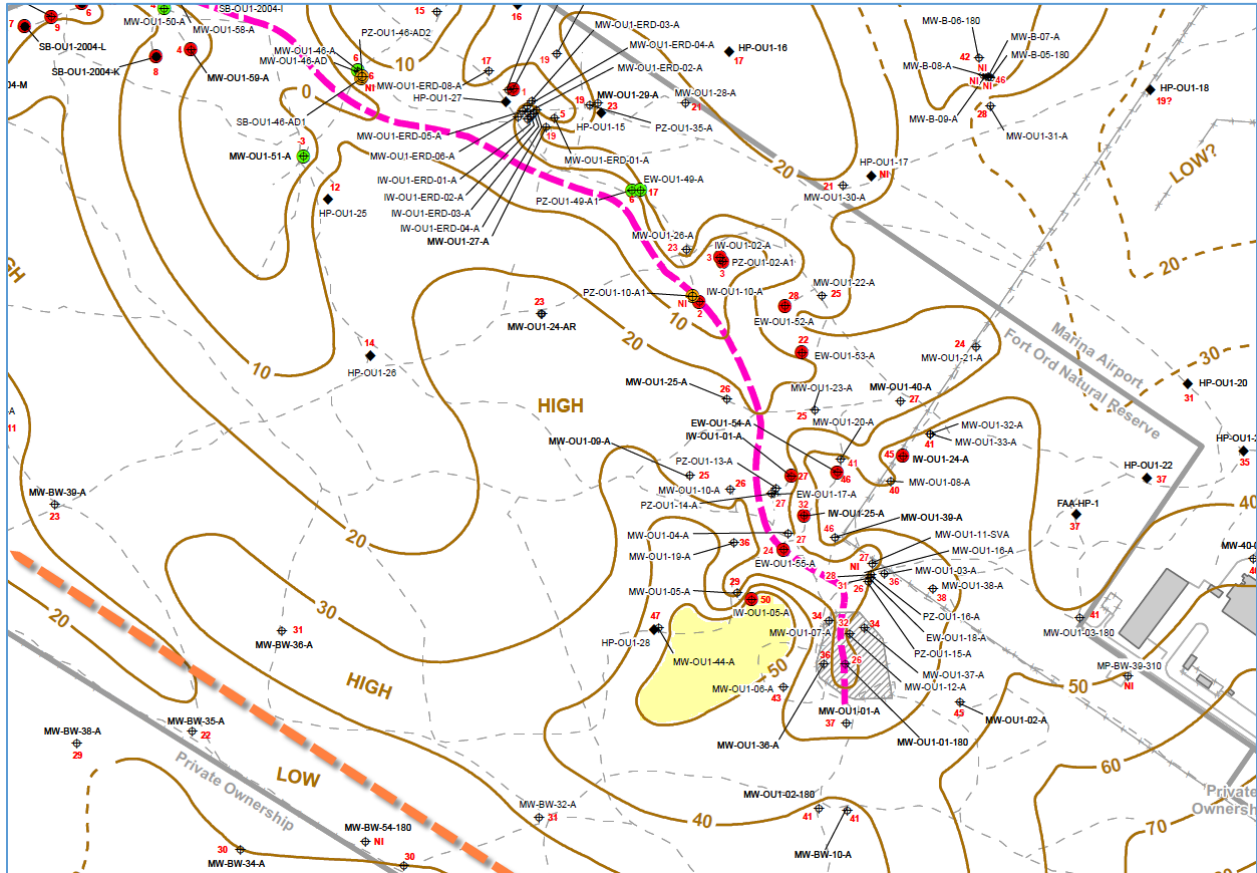
As indicated in the comments to Section 2.1, the FAAF FDA should be considered for further investigation to confirm whether there is PFAS present in the soil left in-place following bioremediation.

**RESPONSE TO SPECIFIC COMMENT 7:** *The downgradient edge of the carbon tetrachloride (CT) plume in the A-Aquifer was revised based on data collected during the third quarter 2019 groundwater monitoring event and review of the FO-SVA elevation contours prompted by the Water Board's comments on the draft and draft final OUCTP Deployment Area 3A Data Summary Report, Enhanced In Situ Bioremediation Remedial Action. These data indicate the CT plume is migrating into the northern FO-SVA channel low formerly associated with OU1 (pink dashed line on the illustration below) and into the southern FO-SVA channel low that roughly parallels Reservation Road in Marina (orange dashed line on the illustration below). These two channel lows are separated by an FO-SVA knoll (yellow-shaded area on*

---

<sup>8</sup> The Water Board's comment letter can be found at:  
[https://geotracker.waterboards.ca.gov/view\\_documents?global\\_id=DOD100196800&enforcement\\_id=6419323](https://geotracker.waterboards.ca.gov/view_documents?global_id=DOD100196800&enforcement_id=6419323).

the illustration below). This same FO-SVA knoll precludes migration of the CT plume into the area indicated in the comment, and the CT plume downgradient edge was redrawn accordingly. Historical groundwater analytical data for OU1 support this interpretation, as OU1 chemicals of concern were not detected at sampling points downgradient of the FO-SVA knoll. However, should future groundwater monitoring indicate a data gap in this area, additional monitoring wells will be considered.



**Illustration:** FO-SVA Channel Lows and FO-SVA Knoll (modified from Figure 4 of OU1-623A).

Additionally, this area is heavily vegetated and within the Fort Ord Natural Reserve (FONR), and preservation of habitat must be a consideration in siting new wells in accordance with the Programmatic Biological Opinion (Administrative Record No. BW-2747A).

As noted in the response to Specific Comment 2, no further soil investigation at the FDA is recommended. The Technical Summary Report was not revised per the comment.

**SPECIFIC COMMENT 8: Section 3.2 – Operable Unit 2 (OU2) – Fort Ord Landfills** – It is noted that the suspected sources of PFAS at the Fort Ord Landfills are the buried waste and AFFF discharged during fire suppression there however, the locations where fire suppression was performed are not identified. Please provide additional information on the reported fire suppression locations and confirm that the proposed groundwater sampling for PFAS at the Fort Ord Landfills includes these areas.

Section 2.6.5 of the Report indicates that PFOA and PFOS were not detected in the A-Aquifer well east of the groundwater divide and that the PFOA and PFOS detections may not be associated with the



trichloroethene (TCE) plume in the A-Aquifer. Based on this interpretation please review whether or not additional groundwater monitoring wells in the A-Aquifer and Upper 180-Foot that are within and downgradient of the OU2 Landfills and outside of the OU2 COC plumes should be proposed for sampling.

Additionally, please revise the Report to include additional investigation in the A-Aquifer and sampling of groundwater monitoring well MW-OU2-23-A to confirm the absence or presence of PFAS in groundwater in the A-Aquifer. Well MW-OU2-23-A is screened in the aquifer above the 180-Foot Aquifer where the highest PFAS detection was reported in groundwater monitoring well MW-OU2-23-180.

**RESPONSE TO SPECIFIC COMMENT 8:** *The text in Section 2.6.5 of the Technical Summary Report was revised to state the exact locations of the landfill fires are unknown, but based on the operational history of the Fort Ord Landfills they were likely in the area south of Imjin Parkway. As stated in Section 2.6.5, PFOA and PFOS were either not detected or detected at concentrations an order of magnitude less than the USEPA HA levels in samples collected from A-Aquifer monitoring wells immediately adjacent to and downgradient of the Fort Ord Landfills, indicating the Fort Ord Landfills are no longer a source of PFAS in groundwater and no additional groundwater investigation in A-Aquifer is necessary.*

*Section 2.6.5 of the Technical Summary Report states PFOA and PFOS were not detected in the A-Aquifer well east of the groundwater divide and the PFOA and PFOS detections may not be associated with the tetrachloroethene (PCE) plume in the A-Aquifer. The analytical results for samples collected from monitoring wells at the downgradient extents of the study area in the A-Aquifer and the Upper 180-Foot Aquifer indicate PFOA and PFOS concentrations would not exceed USEPA HA levels or DoD screening levels outside the study area; therefore, no additional wells outside the study area are proposed for sampling.*

*Monitoring well MW-OU2-23-A is cross-gradient of the Fort Ord Landfills, it is vertically separated from MW-OU2-23-180 by the FO-SVA, and there is no evidence of hydraulic communication (i.e., a vertical conduit) between the A-Aquifer and the Upper 180-Foot Aquifer in this area to justify sampling MW-OU2-23-A for PFAS analysis. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 9: Section 3.3 – Site 10 – Burn Pit/Fire Training Area** – The Report indicates that AFFF was regularly used at Site 10 for at least two decades and well MW-OU2-29-180 is recommended for PFAS analysis to determine if additional groundwater investigation is warranted in the area between this well and Site 10.

Since regular use of AFFF at Site 10 has been documented and the results from well MW-OU2-29-180 may not be indicative of a release as it is a significant distance (1.7 miles) from the potential source area(s), additional investigation at Site 10 is warranted to confirm the absence or presence of PFAS in groundwater. Please revise the Report to include additional groundwater sampling location(s) within the potential source area(s) at Site 10.

**RESPONSE TO SPECIFIC COMMENT 9:** *Section 3.3 was revised to note that hydraulic conductivities in the Upper 180-Foot Aquifer range up to 366 feet per day and groundwater modeling indicates PFAS could have traveled in the Upper 180-Foot Aquifer from Site 10 to the Fort Ord Landfills within 30 years. Therefore, monitoring wells MW-OU2-54-180, MW-OU2-55-180, and MW-OU2-62-180 are recommended to be sampled for PFAS analysis in addition to MW-OU2-29-180.*

**SPECIFIC COMMENT 10: Section 3.4 – Site 12 – Lower Meadow Disposal Area** – The Report recommends additional groundwater investigation at Site 12 within the historical extent of the Sites 2 and 12 (Site 2/12) TCE groundwater plume. Site 2/12 also includes a tetrachloroethene (PCE) groundwater plume. Please revise the report to include groundwater monitoring wells within the historical and current extent of the PCE groundwater plume in the PFAS investigation.

As indicated in the comment above on Section 2.6.1, due to the likelihood that PFAS containing surface water was discharged in this area, the high infiltration rates of dune sands, and the rationale provided in General Comment no. 6, the Outfall 15 and Outfall 31 discharge areas should be included in the PFAS groundwater investigation.

**RESPONSE TO SPECIFIC COMMENT 10:** *The source of the historical TCE groundwater plume is suspected to be the Lower Meadow area and the DOL Automotive Yard near former Building 2722, the same area where AFFF was suspected of being discharged when tanks on fire department vehicles were flushed. However, the source of the PCE groundwater plume is suspected to be surface disposal of PCE at a location near the former paint shop at Building 2726, approximately 900 feet east of where AFFF may have been discharged to the Lower Meadow.<sup>9</sup> There is no evidence the PCE groundwater plume is associated with any potential releases of PFAS to justify a PFAS groundwater investigation within the historical and current extent of the PCE groundwater plume. The Technical Summary Report was not revised per the comment.*

*As stated in the response to Specific Comment 4, the amount of AFFF potentially discharged at Outfall 15 and Outfall 31 was negligible. Accordingly, no groundwater sampling at Outfall 15 and Outfall 31 is recommended.*

**SPECIFIC COMMENT 11: Section 3.5 – Site 34 – Fritzsche Army Airfield (FAAF) Multiple Sites** – The Report indicates that soil sampling is recommended in this area based on cleanup after the accidental discharge of AFFF that may have resulted in AFFF being discharged to surface drainage channels or the sanitary sewer system, and a suspected release of PFAS at stormwater infiltration areas south of Building 507 or the FAAF Sewage Treatment Plant. Per the rationale provided in General Comment no. 6, please include groundwater sampling as part of the PFAS investigation in this area as well.

**RESPONSE TO SPECIFIC COMMENT 11:** *Section 3.5 (now Section 3.4) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment.*

**SPECIFIC COMMENT 12: Section 3.6 – Site 36 – FAAF Sewage Treatment Plant (STP)** – Per the Report recommendations, soil sampling will be performed in the area of the Imhoff tank and evaporation ponds where excavation has not been performed and wastewater containing PFAS may have percolated into the ground and in an area where the A-Aquifer discharges to the ground surface as seepage from the bluffs above the Salinas River. Based on the rationale provided in General Comment no. 6 and the potential for a continued source of PFAS to groundwater, please include groundwater sampling as part of the PFAS investigation in this area.

---

<sup>9</sup> See the *Final Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12, Former Fort Ord, California* (Administrative Record No. BW-2721B).

**RESPONSE TO SPECIFIC COMMENT 12:** As noted in Section 3.6 (now Section 3.5), no additional groundwater investigation at Site 36 is recommended at this time because 1) historical analytical results for groundwater indicate limited migration of contaminants from the surface to groundwater, and 2) if any PFAS were discharged at the FAAF STP and migrated to groundwater, they would have already discharged to the ground surface at the bluffs. The Technical Summary Report was not revised per the comment.

**SPECIFIC COMMENT 13: Section 3.7 – Site 40A – East FAAF Helicopter Defueling Area** – Per the Report recommendations, soil sampling will be performed in this area as AFFF was reportedly used for a fuel spill response and may have resulted in AFFF entering the storm drain system that discharges at Outfall 22. Based on the rationale provided in General Comment no. 6 and the reported use of AFFF in this area, please include groundwater sampling as part of the PFAS investigation in this area.

**RESPONSE TO SPECIFIC COMMENT 13:** Section 3.7 (now Section 3.6) also states a groundwater investigation may be warranted depending on the results of the soil investigation. The Technical Summary Report was not revised per the comment; however, the discharge point was incorrectly identified as Outfall 22 and the Technical Summary Report was revised to delete this reference.

**SPECIFIC COMMENT 14: Figures 6, OU2 A-Aquifer Sampling Locations and Figure 7, OU2 Upper 180-Foot Aquifer Sampling Locations** – Please revise Figures 6 and 7 to show the groundwater flow directions in the respective aquifers.

**RESPONSE TO SPECIFIC COMMENT 14:** Figures 6 and 7 (now Figures 13 and 14) were revised per the comment.

**SPECIFIC COMMENT 15: Figure 10 – Site 12, Lower Meadow Disposal Area, Recommended Sampling Locations** – Please revise Figure 10 to show the locations of Outfall 15 and Outfall 31 and include proposed groundwater sampling locations per the comments on Section 2.6.1 and Section 3.4.

**RESPONSE TO SPECIFIC COMMENT 15:** Per the responses to Specific Comments 4 and 10, Figure 10 was deleted from the Technical Summary Report.

**SPECIFIC COMMENT 16: Figure 13 – Site 40A, East FAAF Helicopter Defueling Area Recommended Sampling Locations** – Please revise Figure 13 to label Outfall 22 and include proposed groundwater sampling locations per the comment on Section 3.7.

**RESPONSE TO SPECIFIC COMMENT 16:** Outfall 22 was incorrectly identified as the discharge point for the storm drain line that runs through the helicopter parking apron. The discharge point is shown in the Basewide Surface Water Outfall Investigation (HLA, 1995c), but it is not numbered; therefore, the discharge point is still labeled as “Storm Drain Discharge” on Figure 13 (now Figure 21). Groundwater sampling locations will be proposed based on the results of recommended soil sampling.

## **APPENDIX F**

### Responses to FOCAG Comments on the Draft Technical Summary Report

## Responses to Comments on the Draft Technical Summary Report — Perfluorooctanoic Acid and Perfluorooctane Sulfonate, Basewide Review of Historical Activities and Groundwater Monitoring at Operable Unit 2, Former Fort Ord, California<sup>1</sup> submitted by the Fort Ord Community Advisory Group (FOCAG)<sup>2</sup>

**COMMENT 1:** The FOCAG has had the opportunity to review this Draft document. We find it to be limited in its scope, but recognize it as a beginning, although a weak one. PFAS, as it has been cumulatively called, has three places likely to be found;

1. Former Military Bases - Here we have the second largest Army training base in the U.S., used for infantry training since 2017. Fires occurred when munitions set off grass fires, that were put out by Army personnel. The history of Fort Ord range fires has not been investigated with this Draft report. Firefighting was also practiced with fire pits.
2. Airports - Here we have two, one being the former Fritsche Army Airfield, the second being the Monterey Regional Airport at Del Rey Oaks that borders the former Fort Ord. We could not find any mention of Del Rey Oaks, or for that matter much of anything on other neighboring communities in this Draft report. Regarding Del Rey Oaks, recall the Frog Pond there was discovered to have the frogs dying off several years ago. The water was contaminated. This area was not tested for PFAS.
3. Landfills - here we have multiple landfills on former Fort Ord badged with letter identifiers A through F. These in addition to the Army practice of burying waste on former Fort Ord. We also have a nearby County Landfill in Marina.

**RESPONSE TO COMMENT 1:** *The U.S. Department of the Army (Army) scoped and developed the Technical Summary Report based on requests for information from the U.S. Environmental Protection Agency (USEPA) and the California Department of Toxic Substances Control (DTSC):*

- *In a letter dated June 7, 2017, USEPA requested the Army “conduct a site-wide review of historical activities with the potential to cause PFOA [perfluorooctanoic acid]/PFOS [perfluorooctane sulfonate] contamination in soil and groundwater at Fort Ord, and that the results be summarized in a technical memo... site[s] on Fort Ord where products containing PFOA/PFOS were possibly used or disposed of, should be evaluated.”<sup>3</sup>*
- *In a letter dated January 27, 2017, DTSC requested PFOA and PFOS be added to the list of analytes for groundwater at Sites 2 and 12, Operable Unit 2 (OU2), and Operable Unit Carbon Tetrachloride Plume (OUCTP).<sup>4</sup> The Army agreed to sample groundwater associated with OU2 because it is possible products containing PFOA and PFOS were disposed of at the Fort Ord Landfills.<sup>5</sup>*

---

<sup>1</sup> Administrative Record No. OU2-722.

<sup>2</sup> In a letter dated October 28, 2019 (Administrative Record No. OU2-722.2). The comments are reproduced here as provided to the Army and there have been no changes to spelling, grammar, or punctuation.

<sup>3</sup> From USEPA comments on the 4<sup>th</sup> Five-Year Review Report for Fort Ord Superfund Site (Administrative Record No. BW-2834).

<sup>4</sup> Administrative Record No. BW-2785B.2.

<sup>5</sup> Administrative Record No. BW-2785D.

The Technical Summary Report contains sufficient information to evaluate historical activities with the potential to cause per- and polyfluoroalkyl substances (PFAS) contamination in soil and groundwater at the former Fort Ord per USEPA's request, and includes recommendations for additional investigation in areas associated with former fire training areas (FTAs), airfields, and landfills at the former Fort Ord.

**RESPONSE TO COMMENT 1-1:** It is noted in Section 2.8 that water tenders were used historically to fight fires in the Inland Ranges; therefore, there is no suspected release of PFAS associated with Aqueous Film-Forming Foam (AFFF) in the Inland Ranges. FTAs at the former Fort Ord are specifically addressed in Sections 2.1, 3.1, and 3.3 of the draft final Technical Summary Report.

**RESPONSE TO COMMENT 1-2:** The purpose of the Technical Summary Report is to review Army activities with the potential to cause perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) contamination in soil and groundwater at the former Fort Ord. The Monterey Regional Airport, Del Rey Oaks, and the other nearby communities are not part of the former Fort Ord and are therefore not within the scope of the Technical Summary Report; however, the State Water Resources Control Board (SWRCB) issued an order to airports throughout California, including the Monterey Regional Airport, to investigate for the presence of PFAS.<sup>6</sup> The area of the Frog Pond was not tested for PFAS because there is no evidence of any Army activity in this area that would have resulted in a release of PFAS to the environment.

**RESPONSE TO COMMENT 1-3:** As shown in Figure 13, the Fort Ord Landfills historically consisted of six landfill areas (lettered A through F); however, Area A was clean closed and no landfill waste remains in this area. Historically, wastes were buried in other areas of the former Fort Ord (e.g., see descriptions in Section 2.6); however, the Army removed the wastes and contaminated soil from these areas and consolidated them in the Fort Ord Landfills, Areas B through F. The Monterey Peninsula Landfill, located north of the City of Marina, is not and never has been part of the former Fort Ord, nor has it ever been an Army-owned or operated facility, and is therefore not within the scope of the Technical Summary Report; however, the SWRCB issued an order to landfills throughout California, including the Monterey Peninsula Landfill, to investigate for the presence of PFAS.<sup>7</sup>

**COMMENT 2:** Of the twelve monitoring wells sampled, eight were discovered with PFOA or PFOS. The Draft report tells us most detections were estimated results.

**RESPONSE TO COMMENT 2:** PFOA or PFOS were detected in samples collected from eight monitoring wells associated with Operable Unit 2. As shown in Table 3, several of these detections were qualified as estimated because, while it could be determined that PFOA or PFOS was present in the samples, the quantity was so small that a precise measurement could not be made with the laboratory instruments.

**COMMENT 3:** There is only one sentence, found on the bottom of page 19, that states that granular activated carbon treatment is effectively removing PFOA and PFOS! This apparent conclusion is based on a few GWTP sampling points downstream of the influent.

---

<sup>6</sup> The order sent to airports can be found at [https://www.waterboards.ca.gov/pfas/docs/airport\\_pfas\\_13267\\_go\\_03202019.pdf](https://www.waterboards.ca.gov/pfas/docs/airport_pfas_13267_go_03202019.pdf)

<sup>7</sup> The order sent to landfills can be found at [https://www.waterboards.ca.gov/pfas/docs/landfill\\_pfas\\_13267\\_go\\_03202019.pdf](https://www.waterboards.ca.gov/pfas/docs/landfill_pfas_13267_go_03202019.pdf)

**RESPONSE TO COMMENT 3:** As shown in Table 3, PFOA and PFOS were detected at the Operable Unit 2 (OU2) groundwater treatment plant (GWTP) influent at concentrations below the U.S. Environmental Protection Agency (USEPA) Health Advisory (HA) level; however, PFOA and PFOS were not detected in the samples collected from the lead granular activated carbon (GAC) vessel effluents or the GWTP effluent, indicating GAC is effective at removing PFOA and PFOS from water. Additionally, the USEPA has determined GAC is one of four treatment technologies that are effective at removing PFAS from water (see <https://www.epa.gov/pfas/treating-pfas-drinking-water>).

**COMMENT 4:** Page 20, the testing done near the Sewage Treatment Plant on the corner of Fort Ord Dunes State Park. PFOA and PFOA seems to have been dismissed here also. How much trouble would it have been to also test for lead here?

**RESPONSE TO COMMENT 4:** As noted in Section 2.7.1 on page 20 of the Technical Summary Report, the Ord Village Sewage Treatment Plant (STP) served a residential area and did not receive wastewater from industrial or commercial facilities that used or disposed of PFAS-containing effluents. Therefore, there is no suspected release of PFAS and the Ord Village STP. Soil and groundwater at the Ord Village STP were sampled during site characterization, and there were no detections of lead exceeding preliminary remediation goals or maximum background concentrations (see Administrative Record No. BW-1370).

**COMMENT 5:** The potential for downward leaching of PFAS although recognized as possible, is pretty much dismissed with this Draft report.

**RESPONSE TO COMMENT 5:** Downward leaching is acknowledged as a transport mechanism for PFAS in Section 3.0 of the Technical Summary Report, and this is the basis for recommending additional groundwater sampling at the Fritzsche Army Airfield (FAAF) Fire Drill Area, OU2, and Site 10.

**COMMENT 6:** The consultants writing the report seem convinced the “showercaps” put atop the unlined landfills will prevent contaminants reaching groundwater.

**RESPONSE TO COMMENT 6:** The remedy for the Fort Ord Landfills is functioning as designed and is protective of human health and the environment. The engineered landfill cover system, constructed in accordance with the remedy identified in the Record of Decision, Operable Unit 2, Fort Ord Landfills (Administrative Record No. OU2-480), is specifically designed to prevent leaching to the soil and groundwater.

**COMMENT 7:** Page 29, References, we find a footnote that informs us that some documents in the Administrative Record “may have been superseded” and were subsequently withdrawn. The FOCAG asks for a listing of documents withdrawn from the Administrative Record.

**RESPONSE TO COMMENT 7:** Please contact the Fort Ord Administrative Record regarding this request.

Telephone: 831-393-9693

Email: [adminrecord@fortordcleanup.com](mailto:adminrecord@fortordcleanup.com)

**COMMENT 8:** We read a rather seminal report was written by Fromel, T., C. Gremmel, I. Dimzon, and P. de Voogt in year 2016. We also find in this Draft report that monitoring wells were being decommissioned on former Fort Ord in year 2017.

**RESPONSE TO COMMENT 8:** The document prepared by Frömel et al. provided information relevant to the discussion of wastewater treatment plants and PFAS. Monitoring wells at the former Fort Ord are

occasionally decommissioned when they are no longer needed for monitoring chemicals of concern in groundwater. A determination that a well may be decommissioned is in accordance with decision rules found in groundwater monitoring quality assurance project plans (e.g., see Administrative Record No. BW-27851); however, as indicated in the Technical Summary Report, it also may occasionally be necessary to install new wells in areas where old wells were decommissioned to investigate for the presence of emergent contaminants, such as PFAS, that were not previously known about.

**COMMENT 9:** This reports Table 2. **Sites Recommended for Additional Investigation** lists only 7!

**RESPONSE TO COMMENT 9:** The Basewide Review for the former Fort Ord initially identified seven sites where there might have been significant discharges of PFAS to the environment that would justify additional investigation; however, based on additional information received after the draft Technical Summary Report was issued, Site 12 – Lower Meadow Disposal Area, was eliminated from further evaluation and there are now six sites listed in Table 2.

**COMMENT 10:** This reports Table 3. **Summary of Groundwater Monitoring Analytical results, March 7, 2019**

Of the 19 Monitoring wells tested, 9 detected PFAS!

**RESPONSE TO COMMENT 10:** Samples were collected from twelve monitoring wells and five sample points at the OU2 GWTP. PFOA or PFOS was detected at eight monitoring wells and the influent sample point at the OU2 GWTP; however, concentrations of PFOA and PFOS only exceeded the USEPA HA at one well (MW-OU2-23-180), hence the recommendation for additional groundwater monitoring at OU2 (see Section 3.2).

**COMMENT 11:** This reports Table 4. Recommended PFAS Target Analyte List\*

\* From Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances (PFAS)

**The FOCAG finds this “Army Guidance” has no date, length, who wrote it, when?**

**RESPONSE TO COMMENT 11:** Table 4 was revised to include additional information about the Army Guidance. The guidance was prepared by the Army and issued in September 2018, and is also listed in the references in Section 4.0.

**COMMENT 12:** Fort Ord Site Map Figure 1 shows part of the City of Marina, but fails to show nearby Monterey Regional Airport or the Marina Landfill locations.

**RESPONSE TO COMMENT 12:** See the responses to Comments 1-2 and 1-3. The Monterey Regional Airport and the Monterey Peninsula Landfills are not associated with the former Fort Ord and are not within the scope of the Technical Summary Report. Note that Figure 1 is now Figure 2.

**COMMENT 13:** The toxic monitoring well MW-OU2-23-180 is South of Imjin Parkway and also South of residential housing, including new housing that is going up. The FOCAG asks,

What is the General Groundwater Flow Direction near where this toxic monitoring well is?

**RESPONSE TO COMMENT 13:** The general direction of groundwater flow at MW-OU2-23-180 is to the northeast.



**COMMENT 14:** The FOCAG recommends, indeed requests, given the seriousness of this PFAS, that an independent group of experts be brought in to review this Draft and do further testing. Ahtna Environmental, Inc. prepares a lot of documents for BRAC, and they cannot be experts at all things, or do all things. We believe Derek Lieberman deserves a lot of outside assistance with this investigation. It needs to be far more comprehensive in scope.

**RESPONSE TO COMMENT 14:** *Ahtna Environmental, Inc. prepared the Technical Summary Report; however, significant technical expertise and peer review were provided by the Army, U.S. Army Corps of Engineers, USEPA, California Department of Toxic Substances Control, and California Central Coast Regional Water Quality Control Board.*