TETRA TECH

July 6, 2018

Mr. Ramon Mendoza
On-Scene Coordinator
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Subject: **Letter Report regarding Ellsworth Industrial Park**
Revision 1
EPA Contract No.: EP-S5-13-01
Technical Direction Document No.: S05-0001-1806-204
Document Tracking No.: 2451A

Dear Mr. Mendoza:

The U.S. Environmental Protection Agency (EPA) tasked Tetra Tech, Inc., (Tetra Tech) to provide oversight and collect split samples during a vapor intrusion investigation involving sampling by the Potentially Responsible Party's (PRP) consultant, KPRG and Associates, Inc. (KPRG), at the Magnetrol building in the Ellsworth Industrial Park site (the site) in Downers Grove, DuPage County, Illinois. The identified PRP for this site is Magnetrol International, Inc. (Magnetrol).

The work was assigned under Superfund Technical Assessment and Response Team (START) Contract No. EP-S5-13-01, Technical Direction Document (TDD) No. S05-0001-1806-204.

As part of START activities, Tetra Tech completed a health and safety plan, prepared a sampling and analysis plan (SAP), collected soil gas samples, and documented site activities. KPRG prepared their own SAP for soil gas sampling. Soil gas sampling proceeded by use of 6-liter (L) SUMMA canisters for collections of one 5-minute sub-slab sample, one 24-hour indoor air sample, and a indoor air field duplicate sample over from June 18 to 19, 2018.

The following sections of this letter report indicate the site location, summarize the history of the site, describe site sampling activities, and present air sample results and conclusions.

Appendix A includes figures. Appendix B contains START Field Notes. Appendix C presents a photographic log of site activities. Appendix D includes air sample collection sheets. Appendix E presents Analytical Summary Table. Appendix F contains the Data Validation Report. Attachment

Tetra Tech, Inc.
1 S. Wacker Drive, 37th Floor, Chicago, Illinois 60606
Tel 312.201.7762 Fax 312.201.0031 email anna.nguyen@tetratech.com tetratech.com

1 contains figures from KPRG depicting the impacted area. Attachment 2 includes the laboratory data package from the air samples collected at the site.

SITE LOCATION

The Magnetrol building is within the Ellsworth Industrial Park at 5300 Belmont Road in Downers Grove, DuPage County, Illinois (Figure 1, Appendix A). The Magnetrol property encompasses approximately 10 acres of land. More than 40 percent of the land surface is developed, including a building structure (approximately 60,000 square feet) and asphalt or concrete (Figure 2, Appendix A). The building is vacant, and consists primarily of a large open warehouse, manufacturing area, and office space. Two truck docks are in the interior of the building, which is 4 feet below grade. The building is currently in the process of a real estate transaction.

North of the site is a heating, ventilation, and air conditioning service and the adjacent building is a technology consultant firm, with other commercial properties beyond; east of the site is Belmont Road, with residential properties beyond; south of the site is Inverness Avenue, with residential properties and a church beyond; and west of the site is a home furniture warehouse building, with a self-storage building beyond.

SITE HISTORY

Magnetrol manufactured level and flow process control instrumentation at its Downers Grove location. Magnetrol reports that it started using trichloroethene (TCE) and 1,1,1-trichloroethane (TCA) in its degreasing operations early in its operation. Magnetrol operated a TCE degreaser system and stored TCE in a 500-gallon above ground storage tank formerly located on a concrete pad outside and east of the building. TCE use ceased in 1990, and TCA use discontinued in 1991 (KPRG 2018). Magnetrol vacated the building in 2013, and the building has remained unoccupied to date.

In 2001, solvent-contaminated groundwater was identified in nearby residential potable water supply wells. Since then, the Ellsworth Industrial Park and Magnetrol building have been the subject of various Illinois Environmental Protection Agency (IEPA), EPA, and private party investigations. EPA performed a Remedial Investigation (RI) of the Ellsworth Industrial Park and Magnetrol property in 2006 to further delineate impacted soil and groundwater. Six sub-slab passive soil gas samples were collected within the interior of the Magnetrol building. Five soil borings advanced inside the building near the soil gas sample locations ranged in depths from 8 to 10 feet below ground surface (bgs). Fifteen soil borings advanced outside the building ranged in depths from 20 to 32 feet bgs. All soil samples were analyzed for volatile organic compounds

(VOC). Two temporary groundwater monitoring wells were installed at depths of 19 and 27 feet below grade. Six groundwater samples collected from newly installed and existing monitoring wells were analyzed for VOCs, anions, alkalinity, nitrate-nitrite, total organic carbon (TOC), dissolved gases, and sulfate (KPRG 2018).

Results of the RI indicated TCE concentrations exceeding the site-specific EPA removal management level (RML) of 1.2 milligrams per kilogram (mg/kg). EPA identified the extent of TCE-impacted soil within the building footprint—approximately 6,717 square feet (ft^2) extending at least 10 feet below the building concrete floor slab.

In February 2017, KPRG conducted a supplemental subsurface soil investigation on the Magnetrol property to obtain additional data for further delineation of VOC impacts within the Magnetrol building. TCE was the only VOC detected at concentrations exceeding the site-specific EPA RML for which removal measures were deemed warranted—at two locations beneath the former manufacturing portion of the building floor slab (one within the Former Degreaser Area and the other at KPRG's sampling location within Area B313 [see Attachment A]). Estimated area of TCE-impacted soil within the Former Degreaser Area was approximately 4,200 ft^2, with extent to average depth of 13 feet below the floor surface; estimated volume of TCE-impacted soil in the Former Degreaser Area was approximately 2,025 cubic yards (yd^3). Estimated area of TCE-impacted soil within Area B313 was 2,400 ft^2, with extent to approximately 6 to 10 feet below the building floor slab; estimated TCE-impacted volume of soil within Area B313 was 355 yd^3 (KPRG 2018).

SITE ACTIVITIES

This section summarizes site activities by START and KPRG at the Magnetrol property.

June 18, 2018

START, KPRG, and Cabeno (KPRG geoprobe sub-contractor) personnel and equipment mobilized to the site. A representative from Magnetrol was on site to allow access into the building. Upon arrival, START performed a site walkthrough inside the building to document site conditions such as floor drains, holes, and other possible entrances into the building. During the site walkthrough, START also inspected the building for any stored chemicals that may interfere with indoor air sample results. START noted (1) storage of paint cans and general cleaning supplies at the northwest corner of the building, and (2) eight drums containing decontamination rinse water and soil cores from the previous KPRG investigation secured in the building near the south loading dock (Appendix C).

KPRG opened the loading dock doors to allow sufficient air flow throughout the building during drilling activities. KPRG began marking locations for soil boring advancements, as well as the sub-slab sampling location. Five soil boring locations were selected within the Former Degreaser Area, and one soil boring location was selected within Area B313 (Figure 3, Appendix A). A private utility locater arrived on site and marked utilities in the vicinity of the soil boring and sub-slab sampling locations. Upon completion of the utility locate, Cabeno prepared the geoprobe for soil boring advancement and utilized a hammer drill to install the temporary sub-slab probe 3 feet below the floor surface within the Former Degreaser Area (Figure 3, Appendix A). The sub-slab soil gas probe was installed by lowering a soil gas implant and tubing into the drilled hole and sealing the boring with sand, bentonite, and Portland cement. After completion of the sub-slab probe installation, KPRG allowed the probe to set for several hours before performing a helium leak test.

Cabeno advanced soil borings to 14 feet below floor surface for collection of soil samples for waste characterization analysis within the Former Degreaser Area and Area B313. Soil samples for waste characterization was collected in anticipation of excavation in the Former Degreaser Area and Area B313 by the PRP. KPRG collected soil samples every 2 feet. Soil samples from boring B-406 were collected for hazardous waste characterization due to findings in previous site investigations; the other soil samples were collected for non-hazardous waste characterization (Figure 3, Appendix A). KPRG stated that the non-hazardous waste characterization samples would be composited by the lab for analyses. Soil borings appeared to be predominantly clay. During coring of the floor slab, Cabeno conducted dust suppression by spraying water on the floor slab and utilizing a shop vac to collect concrete dust.

Upon completion of soil boring advancements, Cabeno began abandoning those locations by filling borings with bentonite chips and covering the openings with floor slab cores removed prior to advancements of the soil borings. Once all borings had been abandoned, Cabeno removed the geoprobe equipment from the building to prevent interference with indoor air samples. Cabeno performed a helium leak test on the sub-slab soil gas probe, which passed. KPRG utilized a hand-held pump to purge remaining helium from the probe. KPRG used a MiniRAE to measure VOC concentration within the probe; the initial reading was 4.7 parts per million (ppm). KPRG decided to utilize the hand-held pump to purge any remaining helium, and measured the VOC concentration again, this time finding it at 70 ppm. START connected the 5-minute flow regulator to the 6-L SUMMA canister, and ensured absence of leaks in the connection. START then applied a sample duplicate ‘T’ to the probe to allow START to collect a split sample simultaneously with KPRG’s sub-slab sample. KPRG utilized a 1-L SUMMA canister, while START utilized a 6-L SUMMA canister to achieve lower detection limits. START recorded the sample time and initial

and final pressures within the 6-L SUMMA canister (Appendix F). Upon collection of the sub-slab sample, Cabeno abandoned the sub-slab soil gas probe.

Before collecting indoor air samples, KPRG closed all doors and entrances into the building to prevent interference of outdoor air with indoor air samples. START checked for leaks between the flow regulators and SUMMA cannisters. START collected a split indoor air sample and duplicate using 6-L SUMMA cannisters alongside KPRG's 24-hour indoor air 6-L SUMMA canister, which was positioned near the sub-slab probe location (Figure 3, Appendix A). START collected the sub-slab, indoor air sample, and indoor air sample duplicate in accordance with the site-specific SAP (Tetra Tech 2018).

At 16:00, Cabeno noticed a leaking drum containing decontamination rinse water from a previous investigation led by KPRG; the drum appeared to have just started leaking. The 55-gallon steel drum contained approximately 10 pin-sized holes; once Cabeno opened the drum, it began leaking spent rinse water onto the concrete floor in the loading dock. KPRG and Cabeno utilized a 5-gallon bucket to transfer the liquid into a new 55-gallon drum. KPRG salvaged the rinse water from the floor by utilizing a mop, and transferred the liquid into the new drum. Less than 5 gallons leaked onto the floor. Cabeno demobilized from the site; START was off site at 16:30.

June 19, 2018

START and KPRG arrived at the site to collect the 24-hour indoor air samples. START and KPRG recorded final pressures and sample times before closing the sample inlets (Appendix E). START sent the sub-slab and indoor air samples to ALS laboratory in Simi Valley for analysis for Low-Level VOCs via TO-15. KPRG and START were off site at 15:30.

AIR SAMPLE ANALYTICAL RESULTS

Results from the sub-slab and indoor air samples indicated presence of several VOCs below the floor slab of the building. Of the detected VOCs in the sub-slab sample, TCE was detected at 710,000 micrograms per cubic meter (µg/m³), exceeding the EPA commercial and industrial vapor intrusion screening levels (VISL) at the RML equivalence. VOCs *trans*- and *cis*-1,2-dichloroethene were also detected, but VISLs have not been established for these compounds.

Indoor air samples were found to contain TCE at levels exceeding EPA residential, commercial, and industrial VISLs at the RML equivalence. Indoor air samples collected by START contained TCE concentrations ranging from 20 to 22 µg/m³. Other VOCs detected in indoor air samples for

which EPA VISLs have not been established included cis- and *trans*-1,2-dichloroethene. Notably, the bentonite was not hydrated, allowing a direct conduit for entry of subslab soil gas into the building and potentially elevating indoor air results.

Summary tables in Appendix E fully list preliminary analytical results from the sub-slab and indoor air samples, and corresponding EPA VISLs. Table E-3 and E-4 present the KPRG and indoor air sample results collected by START and KPRG. The Data Validation Report is included in Appendix F. The Level IV data package from ALS is in Attachment 2.

SUMMARY AND FINDINGS

During site activities, KPRG collected soil samples from six soil borings advanced to 14 feet below the floor surface for hazardous and non-hazardous waste characterization analysis. START performed a site walkthrough and documented site conditions of the building and any chemicals stored on site. Cabeno installed a temporary sub-slab probe to 3 feet below the floor surface. START collected split sub-slab and indoor air samples with KPRG. Correlated TCE concentrations exceeding VISLs in the sub-slab and indoor air samples suggest the presence of a completed vapor intrusion pathway. However, no ambient air sample from outside of the building was collected, and therefore this pathway cannot be definitely confirmed. Tetra Tech suggests an additional sampling event may be needed to further delineate the extent of vapor intrusion to nearby residential areas.

Conditions at Magnetrol Building at the site could pose increased risk to public health or welfare if the building was occupied or if there is evidence of trespassers, and to the environment and may meet criteria for a time-critical removal action as specified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 *Code of Federal Regulations* (CFR) Section 300.415(b)(2). These criteria possibly include, but are not limited to, the following:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

TCE was found present in the sub-slab and indoor air samples at concentrations above residential and commercial VISLs. TCE was detected in the sub-slab sample at 710,000 µg/m³, and in the indoor air at concentrations up to 22 µg/m³. TCE is likely a human carcinogen.

Possible exposure routes include inhalation of contaminated air that may have migrated through the subsurface soil and groundwater (i.e., vapor intrusion). Potential human receptors include future occupants of the Magnetrol building.

TCE is a hazardous substance within the meaning of Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) because it is listed at 40 CFR Section 302.4.

If you have any questions or comments regarding this report, please call me at (312) 201-7762.

Sincerely,

Anna Nguyen
Project Manager

Appendices:

A – Figures
B – Field Notes
C – Photographic Documentation Log
D – Air Sample Collection Sheets
E – Analytical Summary Tables

Attachments

1 – KPRG Figure
2 – Laboratory Level IV Data Package

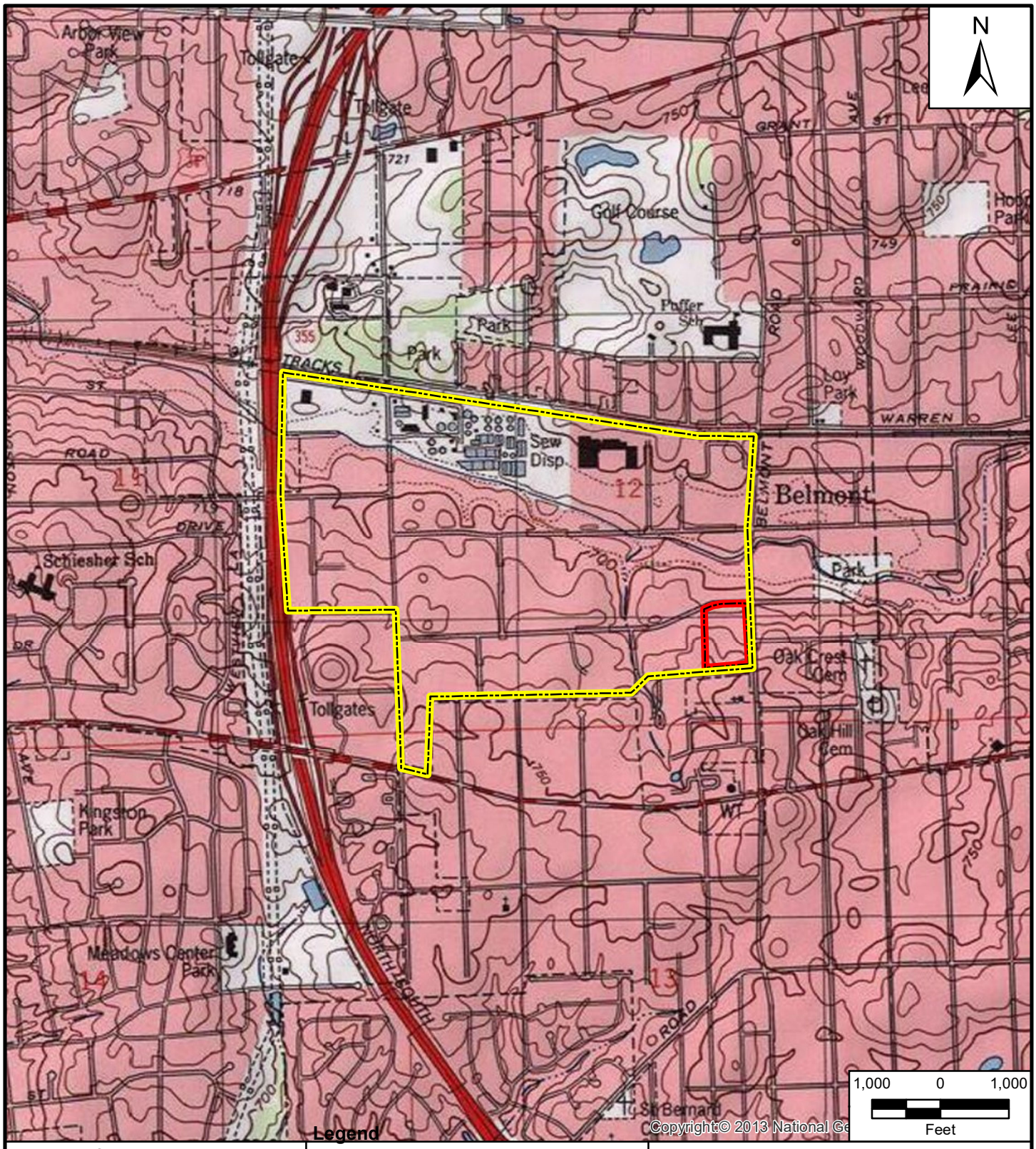
REFERENCES

Tetra Tech, Inc. (Tetra Tech). 2018. "Sampling and Analysis Plan – Revision 1, Ellsworth Industrial Park Site, Downers Grove, DuPage County, Illinois." June.

KPRG and Associates, Inc. (KPRG). 2018. "Removal Action Work Plan, Ellsworth Industrial Park, Magnetrol International, Inc., 5300 Belmont Road, Downers Grove, Illinois." April.

APPENDIX A

Figures



Legend

- Approximate Site Boundary
- Magnetrol Property

Reference Map

Source: Modified from USGS, Wheaton, Illinois
7.5-Minute (1:24,000 Scale) Topographic Map, 1998.

Ellsworth Industrial Park (Magnetrol Building)
Downers Grove, Illinois

Figure 1

Site Location Map

TETRA TECH

Prepared For: USEPA	Prepared By: Tetra Tech, Inc.

File Path: G:\G\G9026-START IV\Illinois\Ellsworth\mxd\Fig1_SiteLocation.mxd

Date Saved: 6/11/2018

EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1806-204 Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter

Reference Map

Legend

Magnetrol Property

Source: ESRI World Imagery Basemap (2017)

Ellsworth Industrial Park (Magnetrol Building)
Downers Grove, Illinois

Figure 2

Magnetrol Property Layout

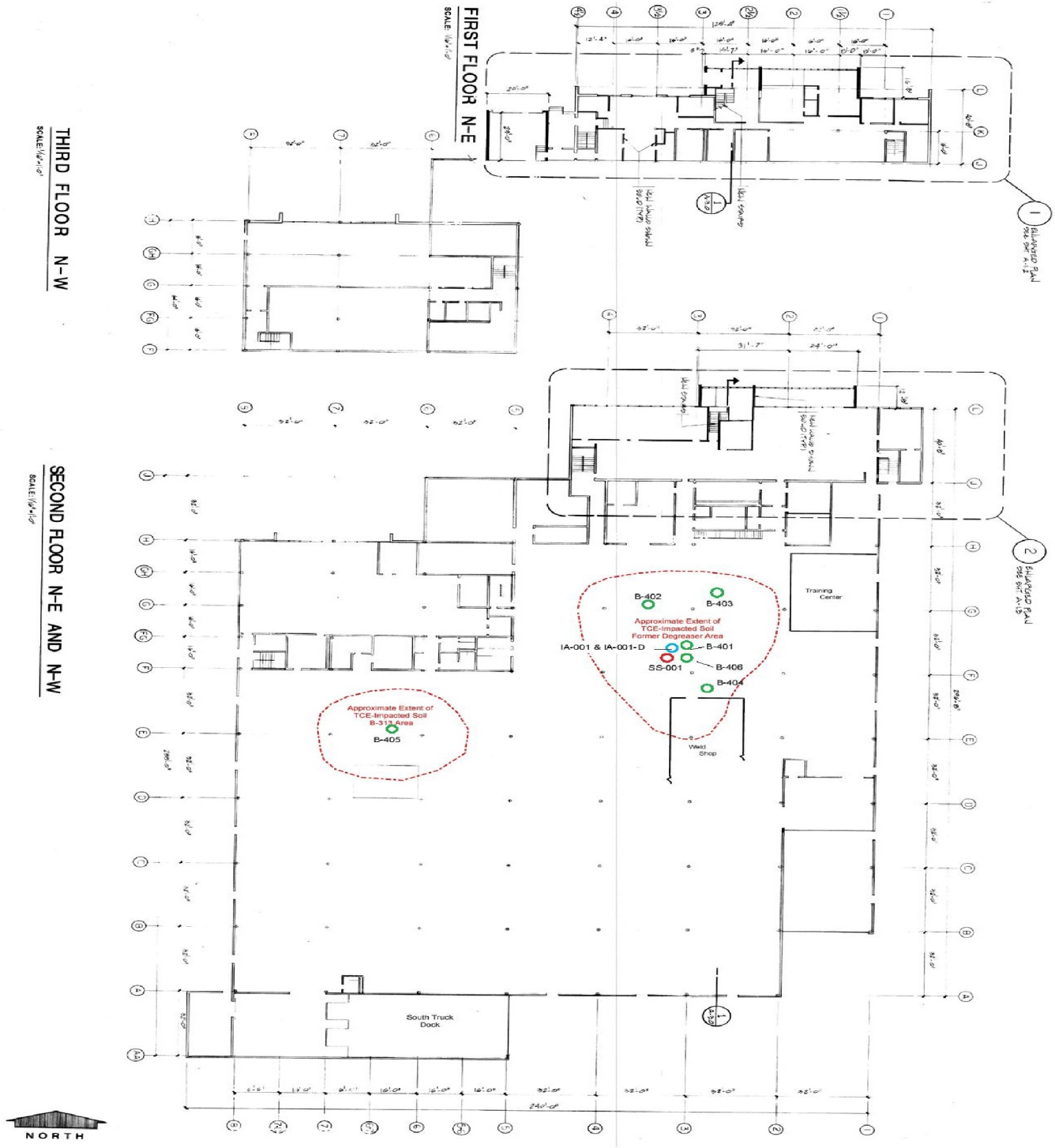
TETRA TECH

Prepared For: USEPA	Prepared By: Tetra Tech, Inc.

File Path: G:\IG\G9026-START IV\Illinois\Ellsworth\mxd\Fig2_SiteLayout.mxd

Date Saved: 6/12/2018

EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1806-204 Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter



Reference Map

Legend

- Sub-slab Sample Location
- Indoor Air Sample Location
- KPRG and Associates, Inc. Soil Boring Location

*TCE – trichloroethene

Source: ESRI World Imagery Basemap (2017) TDD No.: S05-0001-1806-204

Ellsworth Industrial Park (Magnetrol Building)
Downers Grove, Illinois

Figure 3
Vapor Intrusion Sampling and Soil Boring Locations

TETRA TECH

Prepared For: USEPA	Prepared By: Tetra Tech, Inc.

File Path: G:\G\G9026-START IV\Illinois\Ellsworth\mxd\Fig3_Vapor_Intrusion_Sampling_and_Soil_Boring_Locations (2).mxd

Date Saved: 6/29/2018 EPA Contract No.: EP-S5-13-01 Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter

APPENDIX B

Field Notes

Rite in the Rain®

ALL-WEATHER

FIELD

№ 351FX

Ellsworth Industrial Park

MADE IN TACOMA — SINCE 1916 —

Rite in the Rain®

— DEFYING MOTHER NATURE —

START FIELD LOGBOOK

Logbook Tracking Number CH203

Site Name Ellworth Industrial Park BB

Issue to Anna Nguyen

Date Issued 6/11/2018

TDD # 103X 9026 0001 S05 1806204

MADE IN USA · RITE GREEN · Archival paper

RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE

6-18-2018 Ellsworth Industrial Park

0730 START (NGUYEN & Villicana) onsite

0800 KPRG (Frank) onsite, Cabeno (geoprobe) onsite

Weather High 92°F, 40% chance rain, PM Thunderstorms 0.08 in, Winds 10-20mph WSW, 80% humidity

0750 Magnetrol representative onsite to allow access into building — AW

0800 Magnetrol offsite — AW

0810 8 drums containing soil cuttings, decon rinse water from previous sampling investigations onsite — AW

0815 5 1-gallon paint cans, 2 1-gallon containers of hydraulic oil, & 6 common house hold cleaning supply containers onsite — AW

0825 KPRG & Cabeno begins to mark waste characterization points — AW

0850 Cabeno prepares Geoprobe inside building at Former degreaser area — AW

0900 Utility locate onsite to locate utilities in the building — AW

0920 Private utility locate offsite — AW

0420 Cabeno begins drilling for subslab probe in former degreaser area

1000 Cabeno begins drilling for waste (cont)

6-18-2018 Ellsworth Industrial Park

Characterization Samples — AW

1035 Cabeno begins to use a core to continue to install probe — AW

NOTE First soil boring for waste characterization contains clay material — AW

1040 Cabeno Puts sand, bentonite, & portland cement at probe location

0850 Cabeno personnel onsite to deliver coring machine, START (Villicana) offsite — AW

1053 Subslab sampling probe left to set before Helium test — AW

1103 Cabeno begins drilling at second waste characterization sample location backhoe — AW

1010 Sample B-406 (4-6)' collected (KPRG)

1014 Sample B-406 (6-8') collected (KPRG)

1020 Sample B-406 (8-10') collected (KPRG)

1025 Sample B-406 (10-12') collected (KPRG)

1032 Sample B-406 (12-14') collected (KPRG)

NOTE B-406 ~~collection~~ sample collection began at 4' due to ~~soil~~

1115 Cabeno begins collecting soil cores from second location B-401 — AW

1121 B-401 (0-2') collected by KPRG

Rite in the Rain

6-18-2018 Ellsworth Industrial Park

1123 Sample B-401 (2-4) collected by KPRG
1127 Sample B-401 (4-6') collected by KPRG
1128 Sample B-401 (6-8') collected by KPRG
1130 Sample B-401 (8-10') collected by KPRG
1134 Sample B-401 (10-12') collected by KPRG
1136 Sample B-401 (12-14') collected by KPRG
1148 Sample B-402 (0-2') collected by KPRG
1149 Sample B-402 (2-4') collected by KPRG
1153 Sample B-402 (4-6') collected by KPRG
1155 Sample B-402 (6-8') collected by KPRG
1157 Sample B-402 (8-10') collected by KPRG
1220 KPRG, Cabeno, START break for lunch — AW
1255 Resume from lunch break — AW
Sample B-402 ~~(12-14')~~ (10-12') collected at 1213 by KPRG, unable to collect B-402 (12-14') due to limited ceiling space for geoprobe
1305 Cabeno begins drilling at B-403
1308 Sample B-403 (0-2') collected
1308 Sample B-403 (2-4') collected by KPRG
1311 Sample B-403 (4-6') collected by KPRG
1315 Sample B-403 (6-8') collected by KPRG
1318 Sample B-403 (8-10') collected by KPRG
1325 Sample B-403 (10-12') collected by KPRG — AW

6-18-2018 Ellsworth Industrial Park

1327 Sample B-403 (12-14') collected by KPRG — AW
1334 Cabeno begins drilling at 404
1345 Cabeno begins plugging boreholes with bentonite pellets — AW
1337 Sample B-404 (0-2') collected (KPRG)
1341 Sample B-404 (2-4') collected by KPRG
1344 Sample B-404 (4-6') collected by KPRG
1348 Sample B-404 (6-8') collected by KPRG
1351 Sample B-404 (8-10') (KPRG)
1355 Sample B-404 (10-12') (KPRG)
1359 Sample B-404 (12-14') (KPRG)
1405 Cabeno begins drilling at
1414 Sample ~~collected~~ B-405 collected (0-2)
1416 Sample B-405 (2-4') collected
1420 Sample B-405 (4-6') collected
1422 Sample B-405 (6-8') collected
1425 Sample B-405 (8-10') collected
1430 Sample B-405 (10-12') collected
1434 Sample B-405 (12-14') collected
1445 Helium leak test on sub slab, Ø leak & helium reading Ø at sub slab probe
1450 KPRG takes PID reading from sub slab probe, reading ~~is~~ at 4.7 ppm but fell back to 0 ppm — AW

Rite in the Rain

6-18-2018 - Ellsworth Industrial Park

1455 ~~START pumps probe again to see if higher PID reading is possible~~ AW

1508 KPRG & START deploy sub slab out 3' & perform leak test & passed

1514 KPRG collects SG-001 & START collects EPI-SS-001-061818

1515 KPRG collects additional PID sample & gets readings of 74ppm

1547 KPRG & START deploy indoor air samples AW

1600 Cabeno observes 10 pinholes in water decon drum, leaking water when Cabeno opened drum. KPRG & Cabeno transfer liquid from leaking drum to new steel drum AW

NOTE No odors or oil observed, less than 5 gallons of decon water leaked onto concrete AW

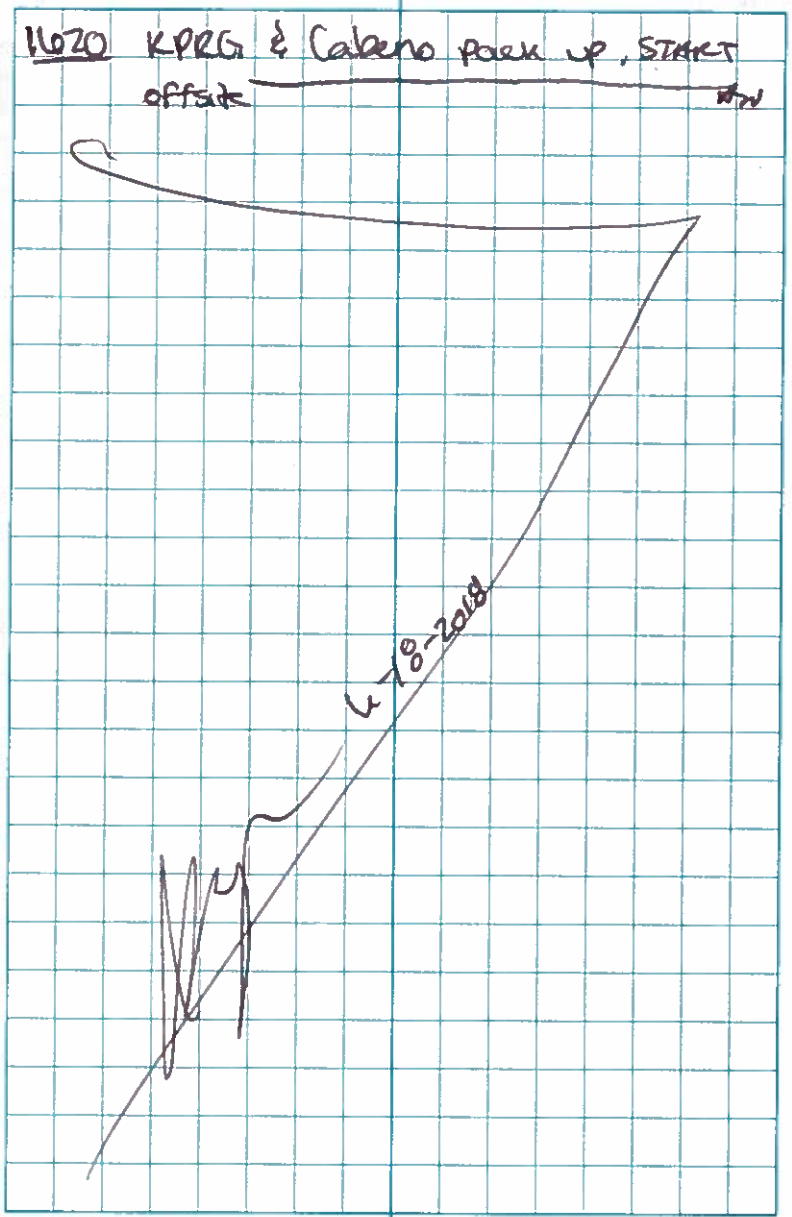
1605 KPRG mopping up & transferring decon water into drum AW

1615 KPRG will properly dispose of spent mop head AW

NOTE Cabeno abandons sub slab probe

NOTE Sub slab probe installed 3' AW

1620 KPRG & Cabeno pack up, START offsite AW



Rite in the Rain

6-19-2018 Ellsworth Industrial Park

1432 START onsite AN

Weather High 84°F, 80% chance rain & thunderstorms, winds NE 5-10mph humidity 68%. AN

1437 KPRG (Santella) onsite AN

1447 KPRG collects IA-001 & START collects split samples EPI-IA-001-061918 & EPI-IA-001-061918-D

1510 KPRG secures site, START offsite

6/19/2018

APPENDIX C

Photographic Documentation Log

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 1 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Interior of the Magnetrol Building at the Former Degreaser Area.	
Photograph No. 2 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Open pipe in the floor slab at Area B313.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 3 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Open pipe in the floor slab at Area B313.	
Photograph No. 4 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Cap to a possibly present former underground storage tank at the southern half of the building.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 5 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Floor drain at the west side of the building.	
Photograph No. 6 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Floor drain at the south end of the building.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 7 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Broken floor drain near Area B313.	
Photograph No. 8 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Fan on the south wall of the building leading outside.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

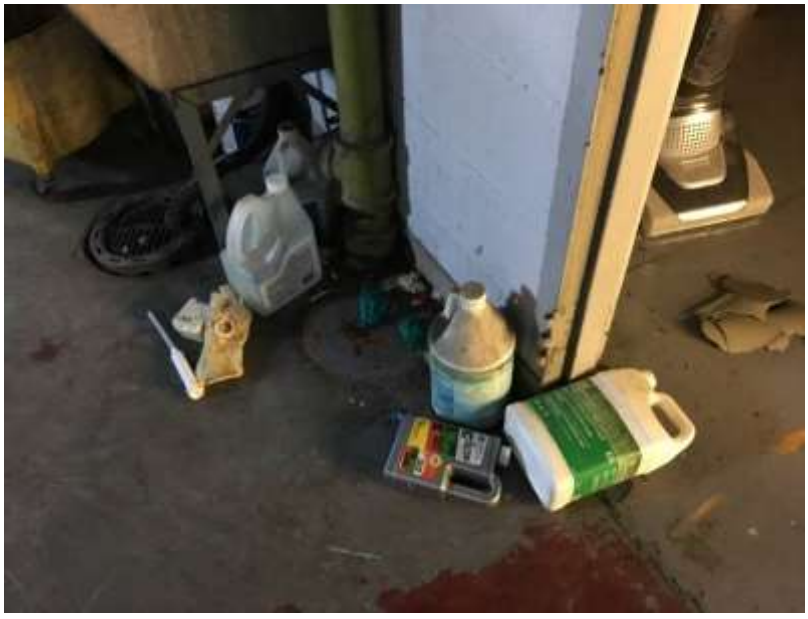
Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 9 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Hole in the wall leading outside, east of the Former Degreaser Area.	
Photograph No. 10 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Pipe that appears to extend through the floor slab at the south side of the building.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

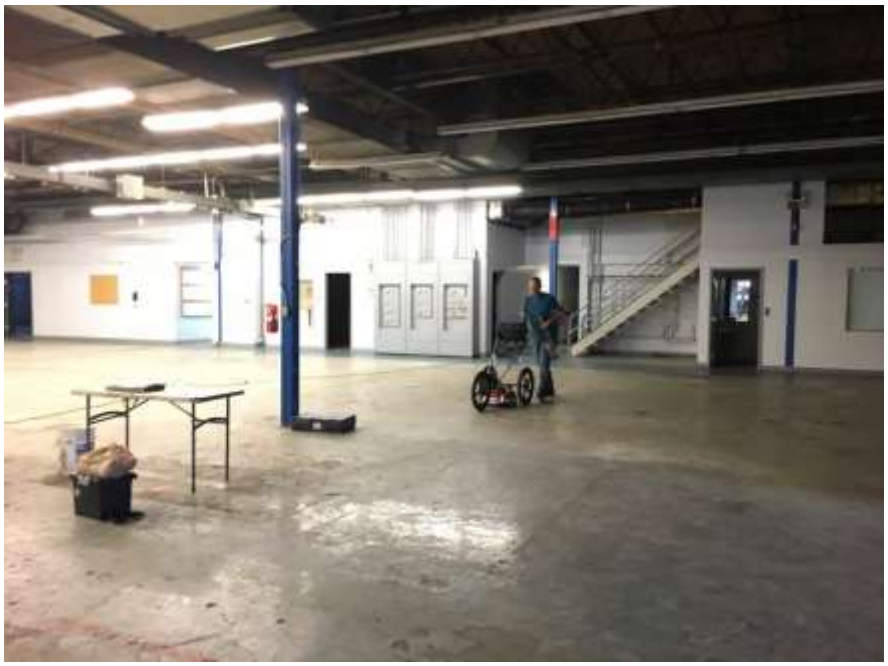
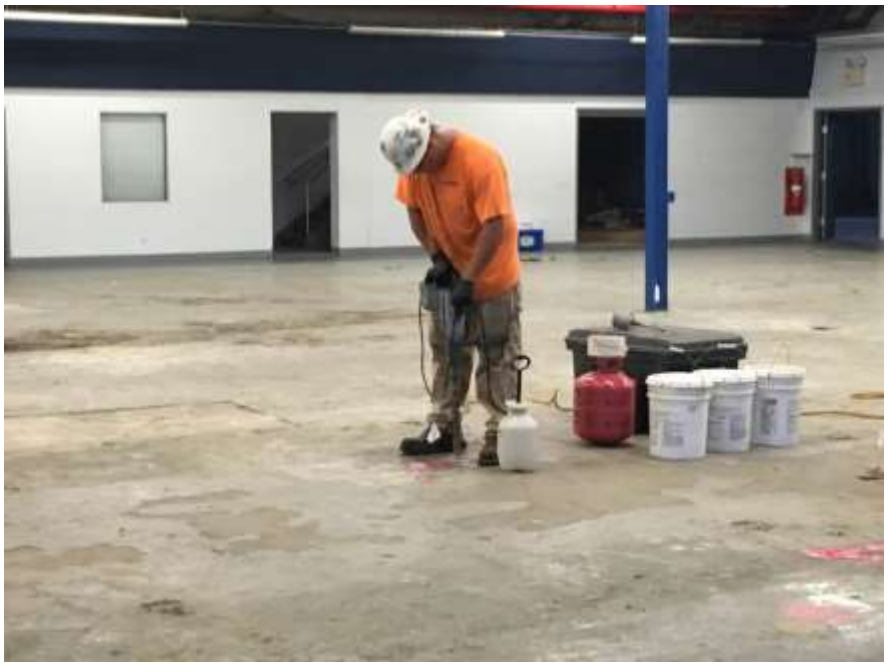
Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 11 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Damaged cap of a possibly present underground storage tank at the south side of the building.	
Photograph No. 12 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** General cleaning supplies at the northwest corner of the building.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 13 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Private utility locater seeking and marking utilities in the Former Degreaser Area.	
Photograph No. 14 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Geoprobe subcontractor Cabeno drilling through floor slab to install the temporary sub-slab probe.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 15 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Cabeno coring floor slab prior to soil boring advancement, and utilizing water and shop-vac as dust control.	
Photograph No. 16 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Cabeno advancing soil boring for waste characterization sampling.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 17 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description**: KPRG and Associates, Inc. (KPRG) collecting soil waste characterization samples.	
Photograph No. 18 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Soil boring obtained at location B-402.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 19 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Cabeno abandoning soil boring location with use of bentonite.	
Photograph No. 20 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Complete abandonment of soil boring location by placement of floor slab core.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 21 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Cabeno performing a helium leak test on the temporary sub-slab probe.	
Photograph No. 22 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Temporary sub-slab probe at the Former Degreaser Area.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 23 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** KRPG utilizing MultiRAE to measure concentrations of volatile organic compounds (VOC) in sub-slab probe.	
Photograph No. 24 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Abandoned temporary sub-slab probe following collection of sub-slab grab sample.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 25 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** Drum near the south loading dock leaking used decon rinse from previous KPRG investigation. KRPG mopping up that leaking rinse water.	
Photograph No. 26 **Photographer:** Anna Nguyen **Date:** 6/18/2018 **Description:** New 55-gallon steel drum containing rinse water from leaking drum.	

Photographic Documentation

Client: U.S. EPA Region 5
Site Name: Ellsworth Industrial Park
Location: Downers Grove, Illinois

Prepared by: Tetra Tech, Inc.
TDD Number: S05-0001-1806-204
Dates: June 18-19, 2018

Photograph No. 27 **Photographer:** Anna Nguyen **Date:** 6/19/2018 **Description:** 6-Liter SUMMA cannisters deployed by KPRG to collect indoor air samples and Superfund Technical Assessment and Response Team (START) split indoor air samples within the Former Degreaser Area.		

APPENDIX D

Field Sample Sheets

FIGURE 1

EXAMPLE
FIELD DATA SHEET
FOR SOIL GAS SAMPLING METHODS

Date: 6/18/2018 Site/Facility Name: Ellsworth Industrial Park

Time: S: 1508 E: 1514 Project No.: 103X902600015051806204

Sample Container:

Tedlar® Bag: _____ Syringe: _____ Summa canister: X Sorbent Tube: _____

Sampling location and depth: Former Degreaser area

Description of location: Former Degreaser area, sub-slab, 3 feet below floor slab

Sample location purged: Yes _____ FID or PID (circle one) Reading: 4.7 ppm & 74 ppm

Sample relinquished by: Anna Nguyen Date/Time: 6/18/2018 ~~15:00~~ AN

Sample received by: _____ Date/Time: _____

Attach field copy of sample label or write in sample number:

Notes: ~~EPE~~ ~~EIP-SS-001-060818~~ EIP-SS-001-060818
Starting PSI: 28 mm Hg
Ending PSI: 3.5 mm Hg
Flow regulator: 5min OA00326
1L Summa: AC01826

FIGURE 1

EXAMPLE
FIELD DATA SHEET
FOR SOIL GAS SAMPLING METHODS

Date: 6/18/2018 Site/Facility Name: Ellsworth Industrial Park

Time: S: 1547 (6/18/2018) E: 1447 (6/19/2018) Project No.: 103X9026000150518Ø204

Sample Container:

Tedlar® Bag: _____ Syringe: _____ Summa canister: X Sorbent Tube: _____

Sampling location and depth: Indoor air, breathing zone, Former Degreaser Area

Description of location: _____

Sample location purged: ~~Yes~~ N/A FID or PID (circle one) Reading: _____

Sample relinquished by: Anna Nguyen Date/Time: 6/19/2018

Sample received by: _____ Date/Time: _____

Attach field copy of sample label or write in sample number:

Notes: ~~EPI~~ EIP IA-001-Ø61918 AN

Starting pressure: 29 mmHg

Ending pressure: 5.5 mmHg

24 hr Flow regulator: AVGØ4829 & FCAØØ786

~~Summa w/ Canister: FCAØØ786~~ AN

6L Summa: ACØ989

FIGURE 1

EXAMPLE
FIELD DATA SHEET
FOR SOIL GAS SAMPLING METHODS

Date: 6/18/2018 Site/Facility Name: Ellsworth Industrial Park

Time: S: 6/18/2018 1547 E: 6/19/2018 1447 Project No.: 103x 902600015051808204

Sample Container:

Tedlar® Bag: _____ Syringe: _____ Summa canister: X Sorbent Tube: _____

Sampling location and depth: Indoor Air, breathing zone, Former Degreaser Area

Description of location: _____

Sample location purged: ~~Yes~~ N/A FID or PID (circle one) Reading: _____

Sample relinquished by: Anna Nguyen Date/Time: 6/19/2018

Sample received by: _____ Date/Time: _____

Attach field copy of sample label or write in sample number:

Notes: ~~EPI~~ EIP-IA-001-060918-D
Starting pressure: 30 mm Hg
Ending pressure: 9 mm Hg
24 hr flow regulator: AVG04544 & FCA0954
6L Summa: AC01603

APPENDIX E

Analytical Summary Table

Appendix E
Table 1
Sub-Slab Sample Results Summary Table

				Laboratory ID :	P1803155-001
				Sample Location :	Former Degreaser Area
				Client Sample ID :	EIP-SS-001-061818
				Date Collected :	6/18/2018 15:14
Analyte	EPA Commercial/ Industrial Soil Gas VISL-RML Equivalent[1]	EPA Residential Soil Gas VISL-RML Equivalent[2]	Method Detection Limit	Result	Data Qualifier
1,1,1-Trichloroethane	2,200,000	170,000	190	3,600	
1,1-Dichloroethene	88,000	7,000	210	940	
Chloroform	1,780	4.1	200	850	
cis -1,2-Dichloroethene	NA	NA	210	540	
Tetrachloroethene	18,000	3,600	200	9,400	
trans -1,2-Dichloroethene	NA	NA	210	3,900	
Trichloroethene	290	16	1,000	710,000	D

Notes:

All values in micrograms per cubic meter ($\mu g/m^3$)

D	Dilution datum (obtained from analysis of a dilution)
EPA	U.S. Environmental Protection Agency
NA	Not applicable
ND	Not detected
RML	Removal management level
RSL	Regional screening level
SS	Sub-slab
TCR	Total cancer risk
THQ	Total hazard quotient
VISL	Vapor intrusion screening level

Highlighted result exceeds Residential Indoor Air VISL

1 RML equivalents for soil gas analytes based on EPA VISL Calculator 3.4.6, November 2015; based on a Target Indoor Air Concentration at TCR = 1e-04 and THQ = 3.

Appendix E
Table 2
Preliminary Indoor Air Sample Results Summary Table

				Laboratory ID :	P1803155-002	P1803155-003	
				Sample Location :	Former Degreaser Area	Former Degreaser Area	
				Client Sample ID :	EIP-IA-001-061918	EIP-IA-001-061918-D	
				Date Collected :	6/19/2018 14:47	6/19/2018 14:47	
Analyte	EPA Commercial/ Industrial Indoor Air VISL-RML Equivalent[1]	EPA Residential Indoor Air VISL-RML Equivalent[1]	Method Detection Limit	Result	Data Qualifier	Result	Data Qualifier
1,1,1-Trichloroethane	6,600	16,000	0.53	4.2		3.9	
1,1-Dichloroethane	767	180	0.12	1		0.93	
1,1-Dichloroethene	2,630	630	0.11	0.63		0.55	
1,2,4-Trimethylbenzene	788	22	0.12	1		1.4	
1,2-Dichloroethane	47.2	11	0.13	0.68		0.62	
1,3-Butadiene	26	6.3	0.13	0.35		0.36	
Acetone	406,000	97,000	1.80	27		29	
alpha-Pinene	NA	NA	0.13	1.5		1.4	
Benzene	157	36	0.13	0.83		0.74	
Carbon tetrachloride	204	47	0.12	0.85		0.79	
Chloroform	53	12	0.11	0.28		0.26	
cis -1,2-Dichloroethene	NA	NA	0.13	0.53		0.41	
Dichlorodifluoromethane	1,310	310	0.087	2		1.8	
Ethanol	NA	NA	0.37	10		33	
Ethyl acetate	920	220	0.28	2.7		14	
Ethylbenzene	491	110	0.53	2.5		2.3	
m,p-Xylene	1,310	310	0.14	8.2		7.6	
n-Hexane	9,200	NA	0.88	4.8		4.3	
o-Xylene	1,310	310	0.24	2.3		2.2	
Propene	NA	NA	1	1.9		2.5	
Tetrachloroethene	526	130	0.11	0.31		0.33	
Toluene	65,700	16,000	0.11	2.4		2.5	
trans -1,2-Dichloroethene	NA	NA	0.074	1.5		2.7	
Trichloroethene	8.8	6.3	0.072	20		22	
Trichlorofluoromethane	NA	NA	0.65	1.6		1.4	

Notes:

All values in micrograms per cubic meter (µg/m^3)

EPA	U.S. Environmental Protection Agency
IA	Indoor air sample
NA	Not applicable
RML	Removal management level
TCR	Total cancer risk
THQ	Total hazard quotient
VISL	Vapor intrusion screening level

Highlighted result exceeds Residential Indoor Air VISL

1 RML equivalent for indoor air analytes based on EPA VISL Calculator 3.4.6, November 2015; based on a Target Indoor Air Concentration at TCR = 1e-04 and THQ = 3.

Appendix E
Table 3
Sub-Slab Sample Results Comparison Table

			Collected By :	Tetra Tech (START)	KPRG and Associates, Inc.
			Laboratory ID :	P1803155-001	NA
			Sample Location :	Former Degreaser Area	Former Degreaser Area
			Client Sample ID :	EIP-SS-001-061818	SG-001
			Date Collected :	6/18/2018 15:14	6/18/2018 15:14
Analyte	EPA Commercial/ Industrial Soil Gas VISL-RML Equivalent[1]	EPA Residential Soil Gas VISL-RML Equivalent[2]		Result	Result
1,1,1-Trichloroethane	2,200,000	170,000		3,600	804
1,1-Dichloroethane	25,600	590		280 U	296
1,2-Dichloroethane	1,570	3.6		310 U	771
1,1-Dichloroethene	88,000	7,000		940	326
Carbon Tetrachloride	6,810	160		310 U	<252
Chloroform	1,780	4.1		850	NA
cis -1,2-Dichloroethene	NA	NA		540	<182
Tetrachloroethene	18,000	3,600		9,400	9,470
trans -1,2-Dichloroethene	NA	NA		3,900	<182
Trichloroethene	290	16		710,000	1,350,000
Vinyl Chloride	9,290	5.6		280 U	<102

Notes:

All values in micrograms per cubic meter ($\mu g/m^3$)

EPA	U.S. Environmental Protection Agency
NA	Not applicable
RML	Removal management level
SS	Sub-slab
U	Analyte was analyzed for, but was not detected at or above the associated value (reporting limit)
VISL	Vapor intrusion screening level

Highlighted result exceeds VISL

1 RML equivalents for soil gas analytes based on EPA VISL Calculator 3.4.6, November 2015; based on a Target Indoor Air Concentration at TCR = 1e-04 and THQ = 3.

Appendix E
Table 4
Indoor Air Sample Results Comparison Table

			Collected By :	Tetra Tech (START)	Tetra Tech (START)	KPRG and Associates, Inc.
			Laboratory ID :	P1803155-002	P1803155-003	NA
			Sample Location :	Former Degreaser Area	Former Degreaser Area	Former Degreaser Area
			Client Sample ID :	EIP-IA-001-061918	EIP-IA-001-061918-D	IA-001
			Date Collected :	6/19/2018 14:47	6/19/2018 14:47	6/19/2018 14:47
Analyte	EPA Commercial/ Industrial Indoor Air VISL-RML Equivalent[1]	EPA Residential Indoor Air VISL-RML Equivalent[1]		Result	Result	Result
1,1,1-Trichloroethane	6,600	5,200		4.2	3.9	3.48
1,1-Dichloroethane	767	180		1	0.93	<0.802
1,1-Dichloroethene	2,630	630		0.63	0.55	<0.793
1,2-Dichloroethane	47.2	11		0.68	0.62	<0.810
Carbon tetrachloride	204	47		0.85	0.79	<1.26
cis -1,2-Dichloroethene	NA	NA		0.53	0.41	<0.793
trans -1,2-Dichloroethene	NA	NA		1.5 J	2.7 J	<0.793
Tetrachloroethene	526	130		0.31	0.33	<1.36
Trichloroethene	8.8	6.3		20	22	18.8
Vinly Chloride	280	17		0.15 U	0.17 U	<0.511

Notes:

All values in micrograms per cubic meter ($\mu g/m^3$)

EPA	U.S. Environmental Protection Agency
IA	Indoor air sample
J	The analyte was postively identified; the associated value is the approximate concentration of the analyte in the sample
NA	Not applicable
RML	Removal management level
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit)
VISL	Vapor intrusion screening level

Highlighted result exceeds VISL

1 RML equivalent for indoor air analytes based on EPA VISL Calculator 3.4.6, November 2015; based on a Target Indoor Air Concentration at TCR = 1e-04 and THQ = 3.

APPENDIX F

Data Validation Report

TETRA TECH

July 5, 2018

Mr. Ramon Mendoza
On-Scene Coordinator
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Subject: **Data Validation Report**
Ellsworth Industrial Park
EPA Contract No. EP-S5-13-01
Technical Direction Document No. S05-0001-1806-204
Document Tracking No. 2453

Dear Mr. Mendoza:

Tetra Tech, Inc. (Tetra Tech) is submitting this Data Validation Report for three air samples, including one field duplicate air sample, collected at the Ellsworth Industrial Park site. The samples were collected on June 18 and 19, 2018, and were analyzed for volatile organic compounds by ALS Environmental. The laboratory data package was received on June 29, 2018.

Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

The results for two analytes in two specific samples were rejected as unusable due to target analyte identification exceedances. The remaining results may be used as qualified based on the findings of this validation effort.

If you have any questions regarding this data validation report, please call me at (678) 775-3109.

Sincerely,

Shanna Davis

START Environmental Scientist

Enclosure
cc: Kevin Scott, Tetra Tech Program Manager
Anna Nguyen, Tetra Tech Project Manager
TDD File

Tetra Tech, Inc.
1 South Wacker Dr. Suite 3700, Chicago, IL 60606
Tel 312.201.7479 | Fax 312.201.0031
www.tetratech.com

DATA VALIDATION CHECKLIST – STAGE 4
EPA REGION 5 START CONTRACT

Site Name	Ellsworth Industrial Park	**TDD No.**	S05-0001-1806-204
Document Tracking No.	2453		
Data Reviewer (signature and date)	Shanna Davis July 2, 2018	**Technical Reviewer (signature and date)**	Jessica A. Vickers July 3, 2018
Laboratory Report No.	P1803155	**Laboratory**	ALS Environmental/Simi Valley, California
Analyses	Volatile organic compounds (VOC) by EPA Method TO-15		
Samples and Matrix	Three air samples, including one field duplicate air sample		
Field Duplicate Pairs	EPI-IA-001-061918/EPI-IA-001-061918-D		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017).

OVERALL EVALUATION

Results for the analytes acetone and alpha-pinene in two specific samples were rejected as unusable due to target analyte identification exceedances. The remaining results may be used as qualified based on the findings of this validation effort.

Data completeness:

Within Criteria	Exceedance/Notes
Y	The laboratory analytical data package presents sample results in micrograms per cubic meter (µg/m^3) and parts per billion by volume (ppbV); however, the laboratory EDD and the attached qualified data table presents sample results in µg/m^3 only. The laboratory incorrectly transcribed the sample names for samples EPI-IA-001-061918 and EPI-IA-001-061918-D. The laboratory transcribed them with the wrong date: EPI-IA-001-061**8**18 and EPI-IA-001-061**8**18-D. The errors have been corrected in the attached qualified data table.

DATA VALIDATION CHECKLIST – STAGE 4
EPA REGION 5 START CONTRACT

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
Y	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

Within Criteria	Exceedance/Notes
Y	

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
NA	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
Y	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
N	EPI-IA-001-061918/EPI-IA-001-061918-D: Relative percent difference values exceeded acceptance limits for ethanol, ethyl acetate, and trans-1,2-dichloroethene. Results for these three analytes were qualified as estimated (J) for both samples.

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Y	

Sample dilutions:

Within Criteria	Exceedance/Notes
Y	Dilution factors inherent in the sample's residual vacuum (called "container dilution factor") ranged from 1.42 to 1.68. The following additional dilutions were performed: • Sample EPI-SS-001-061818 was analyzed for trichloroethene using a 0.00010-liter subsample, which equals a 10,000-fold dilution. • Also for sample EPI-SS-001-061818, all other VOCs (except trichloroethene) were analyzed using a 0.00050-liter subsample, which equals a 2,000-fold dilution.

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Y	

Target analyte identification:

Within Criteria	Exceedance/Notes
N	Spectra indicated ratios were outside established criteria for the following: • EPI-IA-001-061918 – acetone, cis-1,2-dichloroethene, and alpha-pinene • EPI-IA-001-061918-D – acetone and alpha-pinene The acetone and alpha-pinene results in both samples were rejected as unusable (R). The cis-1,2-dichloroethene result for sample EPI-IA-001-061918 was qualified as non-detect (U) at the reported value.

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	The laboratory did not report positive results below each analyte's sample-specific reporting limit.

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Y	

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

ELLSWORTH INDUSTRIAL PARK
AIR ANALYTICAL RESULTS SUMMARY
ALS ENVIRONMENTAL REPORT NO. P1803155

Sample ID	Analyte	Lab Result	Lab Qual	MDL	RL	Units	Val Result	Val Qual
EPI-IA-001-061918	1,1,1-Trichloroethane	4.2		0.10	0.17	ug/m3	4.2	
EPI-IA-001-061918	1,1,2,2-Tetrachloroethane	ND		0.11	0.17	ug/m3	0.17	U
EPI-IA-001-061918	1,1,2-Trichloroethane	ND		0.083	0.17	ug/m3	0.17	U
EPI-IA-001-061918	1,1-Dichloroethane	1.0		0.12	0.15	ug/m3	1.0	
EPI-IA-001-061918	1,1-Dichloroethene	0.63		0.11	0.17	ug/m3	0.63	
EPI-IA-001-061918	1,2,4-Trichlorobenzene	ND		0.20	0.84	ug/m3	0.84	U
EPI-IA-001-061918	1,2,4-Trimethylbenzene	1.0		0.11	0.81	ug/m3	1.0	
EPI-IA-001-061918	1,2-Dibromo-3-chloropropane	ND		0.15	0.81	ug/m3	0.81	U
EPI-IA-001-061918	1,2-Dibromoethane	ND		0.095	0.17	ug/m3	0.17	U
EPI-IA-001-061918	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND		0.13	0.78	ug/m3	0.78	U
EPI-IA-001-061918	1,2-Dichlorobenzene	ND		0.12	0.83	ug/m3	0.83	U
EPI-IA-001-061918	1,2-Dichloroethane	0.68		0.090	0.17	ug/m3	0.68	
EPI-IA-001-061918	1,2-Dichloropropane	ND		0.10	0.17	ug/m3	0.17	U
EPI-IA-001-061918	1,3,5-Trimethylbenzene	ND		0.12	0.80	ug/m3	0.80	U
EPI-IA-001-061918	1,3-Butadiene	0.35		0.13	0.32	ug/m3	0.35	
EPI-IA-001-061918	1,3-Dichlorobenzene	ND		0.12	0.83	ug/m3	0.83	U
EPI-IA-001-061918	1,4-Dichlorobenzene	ND		0.13	0.81	ug/m3	0.81	U
EPI-IA-001-061918	1,4-Dioxane	ND		0.096	0.81	ug/m3	0.81	U
EPI-IA-001-061918	2-Butanone (MEK)	ND		0.17	8.1	ug/m3	8.1	U
EPI-IA-001-061918	2-Hexanone	ND		0.10	0.81	ug/m3	0.81	U
EPI-IA-001-061918	2-Propanol (Isopropyl Alcohol)	ND		0.34	8.1	ug/m3	8.1	U
EPI-IA-001-061918	3-Chloro-1-propene (Allyl Chloride)	ND		0.11	0.81	ug/m3	0.81	U
EPI-IA-001-061918	4-Ethyltoluene	ND		0.13	0.80	ug/m3	0.80	U
EPI-IA-001-061918	4-Methyl-2-pentanone	ND		0.11	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Acetone	27		1.8	8.1	ug/m3		R
EPI-IA-001-061918	Acetonitrile	ND		0.20	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Acrolein	ND		0.23	3.2	ug/m3	3.2	U
EPI-IA-001-061918	Acrylonitrile	ND		0.17	0.81	ug/m3	0.81	U
EPI-IA-001-061918	alpha-Pinene	1.5		0.13	0.80	ug/m3		R
EPI-IA-001-061918	Benzene	0.83		0.12	0.17	ug/m3	0.83	
EPI-IA-001-061918	Benzyl Chloride	ND		0.18	1.7	ug/m3	1.7	U
EPI-IA-001-061918	Bromodichloromethane	ND		0.12	0.17	ug/m3	0.17	U
EPI-IA-001-061918	Bromoform	ND		0.17	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Bromomethane	ND		0.11	0.31	ug/m3	0.31	U
EPI-IA-001-061918	Carbon Disulfide	ND		0.24	8.1	ug/m3	8.1	U

ELLSWORTH INDUSTRIAL PARK
AIR ANALYTICAL RESULTS SUMMARY
ALS ENVIRONMENTAL REPORT NO. P1803155

Sample ID	Analyte	Lab Result	Lab Qual	MDL	RL	Units	Val Result	Val Qual
EPI-IA-001-061918	Carbon Tetrachloride	0.85		0.11	0.17	ug/m3	0.85	
EPI-IA-001-061918	Chlorobenzene	ND		0.11	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Chloroethane	ND		0.10	0.31	ug/m3	0.31	U
EPI-IA-001-061918	Chloroform	0.28		0.11	0.17	ug/m3	0.28	
EPI-IA-001-061918	Chloromethane	ND		0.13	0.31	ug/m3	0.31	U
EPI-IA-001-061918	cis-1,2-Dichloroethene	0.53		0.11	0.17	ug/m3	0.53	U
EPI-IA-001-061918	cis-1,3-Dichloropropene	ND		0.13	0.86	ug/m3	0.86	U
EPI-IA-001-061918	Cumene	ND		0.12	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Cyclohexane	ND		0.23	1.7	ug/m3	1.7	U
EPI-IA-001-061918	Dibromochloromethane	ND		0.11	0.17	ug/m3	0.17	U
EPI-IA-001-061918	Dichlorodifluoromethane (CFC 12)	2.0		0.13	0.80	ug/m3	2.0	
EPI-IA-001-061918	d-Limonene	ND		0.17	0.77	ug/m3	0.77	U
EPI-IA-001-061918	Ethanol	10		0.57	8.1	ug/m3	10	J
EPI-IA-001-061918	Ethyl Acetate	2.7		0.43	1.7	ug/m3	2.7	J
EPI-IA-001-061918	Ethylbenzene	2.5		0.11	0.81	ug/m3	2.5	
EPI-IA-001-061918	Hexachlorobutadiene	ND		0.17	0.81	ug/m3	0.81	U
EPI-IA-001-061918	m,p-Xylenes	8.2		0.21	1.7	ug/m3	8.2	
EPI-IA-001-061918	Methyl Methacrylate	ND		0.29	1.7	ug/m3	1.7	U
EPI-IA-001-061918	Methyl tert-Butyl Ether	ND		0.096	0.83	ug/m3	0.83	U
EPI-IA-001-061918	Methylene Chloride	ND		0.23	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Naphthalene	ND		0.20	0.81	ug/m3	0.81	U
EPI-IA-001-061918	n-Butyl Acetate	ND		0.11	0.81	ug/m3	0.81	U
EPI-IA-001-061918	n-Heptane	ND		0.13	0.81	ug/m3	0.81	U
EPI-IA-001-061918	n-Hexane	4.8		0.17	0.81	ug/m3	4.8	
EPI-IA-001-061918	n-Nonane	ND		0.14	0.81	ug/m3	0.81	U
EPI-IA-001-061918	n-Octane	ND		0.18	0.81	ug/m3	0.81	U
EPI-IA-001-061918	n-Propylbenzene	ND		0.12	0.81	ug/m3	0.81	U
EPI-IA-001-061918	o-Xylene	2.3		0.12	0.81	ug/m3	2.3	
EPI-IA-001-061918	Propene	1.9		0.20	0.80	ug/m3	1.9	
EPI-IA-001-061918	Styrene	ND		0.13	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Tetrachloroethene	0.31		0.11	0.17	ug/m3	0.31	
EPI-IA-001-061918	Tetrahydrofuran (THF)	ND		0.10	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Toluene	2.4		0.099	0.81	ug/m3	2.4	
EPI-IA-001-061918	trans-1,2-Dichloroethene	1.5		0.11	0.17	ug/m3	1.5	J
EPI-IA-001-061918	trans-1,3-Dichloropropene	ND		0.17	0.81	ug/m3	0.81	U

ELLSWORTH INDUSTRIAL PARK
AIR ANALYTICAL RESULTS SUMMARY
ALS ENVIRONMENTAL REPORT NO. P1803155

Sample ID	Analyte	Lab Result	Lab Qual	MDL	RL	Units	Val Result	Val Qual
EPI-IA-001-061918	Trichloroethene	20		0.11	0.17	ug/m3	20	
EPI-IA-001-061918	Trichlorofluoromethane	1.6		0.12	0.81	ug/m3	1.6	
EPI-IA-001-061918	Trichlorotrifluoroethane	ND		0.12	0.81	ug/m3	0.81	U
EPI-IA-001-061918	Vinyl Acetate	ND		1.8	8.1	ug/m3	8.1	U
EPI-IA-001-061918	Vinyl Chloride	ND		0.087	0.15	ug/m3	0.15	U
EPI-IA-001-061918-D	1,1,1-Trichloroethane	3.9		0.11	0.18	ug/m3	3.9	
EPI-IA-001-061918-D	1,1,2,2-Tetrachloroethane	ND		0.12	0.18	ug/m3	0.18	U
EPI-IA-001-061918-D	1,1,2-Trichloroethane	ND		0.091	0.18	ug/m3	0.18	U
EPI-IA-001-061918-D	1,1-Dichloroethane	0.93		0.13	0.17	ug/m3	0.93	
EPI-IA-001-061918-D	1,1-Dichloroethene	0.55		0.12	0.18	ug/m3	0.55	
EPI-IA-001-061918-D	1,2,4-Trichlorobenzene	ND		0.22	0.92	ug/m3	0.92	U
EPI-IA-001-061918-D	1,2,4-Trimethylbenzene	1.4		0.12	0.89	ug/m3	1.4	
EPI-IA-001-061918-D	1,2-Dibromo-3-chloropropane	ND		0.17	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	1,2-Dibromoethane	ND		0.10	0.18	ug/m3	0.18	U
EPI-IA-001-061918-D	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND		0.14	0.86	ug/m3	0.86	U
EPI-IA-001-061918-D	1,2-Dichlorobenzene	ND		0.13	0.91	ug/m3	0.91	U
EPI-IA-001-061918-D	1,2-Dichloroethane	0.62		0.099	0.18	ug/m3	0.62	
EPI-IA-001-061918-D	1,2-Dichloropropane	ND		0.11	0.18	ug/m3	0.18	U
EPI-IA-001-061918-D	1,3,5-Trimethylbenzene	ND		0.13	0.87	ug/m3	0.87	U
EPI-IA-001-061918-D	1,3-Butadiene	0.36		0.15	0.35	ug/m3	0.36	
EPI-IA-001-061918-D	1,3-Dichlorobenzene	ND		0.13	0.91	ug/m3	0.91	U
EPI-IA-001-061918-D	1,4-Dichlorobenzene	ND		0.14	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	1,4-Dioxane	ND		0.11	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	2-Butanone (MEK)	ND		0.18	8.9	ug/m3	8.9	U
EPI-IA-001-061918-D	2-Hexanone	ND		0.11	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	2-Propanol (Isopropyl Alcohol)	ND		0.37	8.9	ug/m3	8.9	U
EPI-IA-001-061918-D	3-Chloro-1-propene (Allyl Chloride)	ND		0.12	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	4-Ethyltoluene	ND		0.14	0.87	ug/m3	0.87	U
EPI-IA-001-061918-D	4-Methyl-2-pentanone	ND		0.12	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Acetone	29		2.0	8.9	ug/m3		R
EPI-IA-001-061918-D	Acetonitrile	ND		0.22	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Acrolein	ND		0.25	3.5	ug/m3	3.5	U
EPI-IA-001-061918-D	Acrylonitrile	ND		0.18	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	alpha-Pinene	1.4		0.14	0.87	ug/m3		R
EPI-IA-001-061918-D	Benzene	0.74		0.13	0.18	ug/m3	0.74	

ELLSWORTH INDUSTRIAL PARK
AIR ANALYTICAL RESULTS SUMMARY
ALS ENVIRONMENTAL REPORT NO. P1803155

Sample ID	Analyte	Lab Result	Lab Qual	MDL	RL	Units	Val Result	Val Qual
EPI-IA-001-061918-D	Benzyl Chloride	ND		0.20	1.8	ug/m3	1.8	U
EPI-IA-001-061918-D	Bromodichloromethane	ND		0.13	0.18	ug/m3	0.18	U
EPI-IA-001-061918-D	Bromoform	ND		0.18	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Bromomethane	ND		0.12	0.34	ug/m3	0.34	U
EPI-IA-001-061918-D	Carbon Disulfide	ND		0.27	8.9	ug/m3	8.9	U
EPI-IA-001-061918-D	Carbon Tetrachloride	0.79		0.12	0.18	ug/m3	0.79	
EPI-IA-001-061918-D	Chlorobenzene	ND		0.12	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Chloroethane	ND		0.11	0.34	ug/m3	0.34	U
EPI-IA-001-061918-D	Chloroform	0.26		0.12	0.18	ug/m3	0.26	
EPI-IA-001-061918-D	Chloromethane	ND		0.14	0.34	ug/m3	0.34	U
EPI-IA-001-061918-D	cis-1,2-Dichloroethene	0.41		0.13	0.18	ug/m3	0.41	
EPI-IA-001-061918-D	cis-1,3-Dichloropropene	ND		0.14	0.94	ug/m3	0.94	U
EPI-IA-001-061918-D	Cumene	ND		0.13	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Cyclohexane	ND		0.25	1.8	ug/m3	1.8	U
EPI-IA-001-061918-D	Dibromochloromethane	ND		0.12	0.18	ug/m3	0.18	U
EPI-IA-001-061918-D	Dichlorodifluoromethane (CFC 12)	1.8		0.15	0.87	ug/m3	1.8	
EPI-IA-001-061918-D	d-Limonene	ND		0.18	0.84	ug/m3	0.84	U
EPI-IA-001-061918-D	Ethanol	33		0.62	8.9	ug/m3	33	J
EPI-IA-001-061918-D	Ethyl Acetate	14		0.47	1.8	ug/m3	14	J
EPI-IA-001-061918-D	Ethylbenzene	2.3		0.13	0.89	ug/m3	2.3	
EPI-IA-001-061918-D	Hexachlorobutadiene	ND		0.18	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	m,p-Xylenes	7.6		0.24	1.8	ug/m3	7.6	
EPI-IA-001-061918-D	Methyl Methacrylate	ND		0.32	1.8	ug/m3	1.8	U
EPI-IA-001-061918-D	Methyl tert-Butyl Ether	ND		0.11	0.91	ug/m3	0.91	U
EPI-IA-001-061918-D	Methylene Chloride	ND		0.25	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Naphthalene	ND		0.22	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	n-Butyl Acetate	ND		0.12	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	n-Heptane	ND		0.14	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	n-Hexane	4.3		0.18	0.89	ug/m3	4.3	
EPI-IA-001-061918-D	n-Nonane	ND		0.15	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	n-Octane	ND		0.20	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	n-Propylbenzene	ND		0.13	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	o-Xylene	2.2		0.13	0.89	ug/m3	2.2	
EPI-IA-001-061918-D	Propene	2.5		0.22	0.87	ug/m3	2.5	
EPI-IA-001-061918-D	Styrene	ND		0.14	0.89	ug/m3	0.89	U

ELLSWORTH INDUSTRIAL PARK
AIR ANALYTICAL RESULTS SUMMARY
ALS ENVIRONMENTAL REPORT NO. P1803155

Sample ID	Analyte	Lab Result	Lab Qual	MDL	RL	Units	Val Result	Val Qual
EPI-IA-001-061918-D	Tetrachloroethene	0.33		0.12	0.18	ug/m3	0.33	
EPI-IA-001-061918-D	Tetrahydrofuran (THF)	ND		0.11	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Toluene	2.5		0.11	0.89	ug/m3	2.5	
EPI-IA-001-061918-D	trans-1,2-Dichloroethene	2.7		0.12	0.18	ug/m3	2.7	J
EPI-IA-001-061918-D	trans-1,3-Dichloropropene	ND		0.18	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Trichloroethene	22		0.12	0.18	ug/m3	22	
EPI-IA-001-061918-D	Trichlorofluoromethane	1.4		0.14	0.89	ug/m3	1.4	
EPI-IA-001-061918-D	Trichlorotrifluoroethane	ND		0.13	0.89	ug/m3	0.89	U
EPI-IA-001-061918-D	Vinyl Acetate	ND		2.0	8.9	ug/m3	8.9	U
EPI-IA-001-061918-D	Vinyl Chloride	ND		0.096	0.17	ug/m3	0.17	U
EPI-SS-001-061818	1,1,1-Trichloroethane	3600		190	310	ug/m3	3600	
EPI-SS-001-061818	1,1,2,2-Tetrachloroethane	ND		210	310	ug/m3	310	U
EPI-SS-001-061818	1,1,2-Trichloroethane	ND		150	310	ug/m3	310	U
EPI-SS-001-061818	1,1-Dichloroethane	ND		220	280	ug/m3	280	U
EPI-SS-001-061818	1,1-Dichloroethene	940		210	310	ug/m3	940	
EPI-SS-001-061818	1,2,4-Trichlorobenzene	ND		370	1600	ug/m3	1600	U
EPI-SS-001-061818	1,2,4-Trimethylbenzene	ND		210	1500	ug/m3	1500	U
EPI-SS-001-061818	1,2-Dibromo-3-chloropropane	ND		280	1500	ug/m3	1500	U
EPI-SS-001-061818	1,2-Dibromoethane	ND		180	310	ug/m3	310	U
EPI-SS-001-061818	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND		240	1400	ug/m3	1400	U
EPI-SS-001-061818	1,2-Dichlorobenzene	ND		220	1500	ug/m3	1500	U
EPI-SS-001-061818	1,2-Dichloroethane	ND		170	310	ug/m3	310	U
EPI-SS-001-061818	1,2-Dichloropropane	ND		190	310	ug/m3	310	U
EPI-SS-001-061818	1,3,5-Trimethylbenzene	ND		220	1500	ug/m3	1500	U
EPI-SS-001-061818	1,3-Butadiene	ND		250	600	ug/m3	600	U
EPI-SS-001-061818	1,3-Dichlorobenzene	ND		230	1500	ug/m3	1500	U
EPI-SS-001-061818	1,4-Dichlorobenzene	ND		230	1500	ug/m3	1500	U
EPI-SS-001-061818	1,4-Dioxane	ND		180	1500	ug/m3	1500	U
EPI-SS-001-061818	2-Butanone (MEK)	ND		310	15000	ug/m3	15000	U
EPI-SS-001-061818	2-Hexanone	ND		190	1500	ug/m3	1500	U
EPI-SS-001-061818	2-Propanol (Isopropyl Alcohol)	ND		620	15000	ug/m3	15000	U
EPI-SS-001-061818	3-Chloro-1-propene (Allyl Chloride)	ND		200	1500	ug/m3	1500	U
EPI-SS-001-061818	4-Ethyltoluene	ND		240	1500	ug/m3	1500	U
EPI-SS-001-061818	4-Methyl-2-pentanone	ND		210	1500	ug/m3	1500	U
EPI-SS-001-061818	Acetone	ND		3400	15000	ug/m3	15000	U

ELLSWORTH INDUSTRIAL PARK
AIR ANALYTICAL RESULTS SUMMARY
ALS ENVIRONMENTAL REPORT NO. P1803155

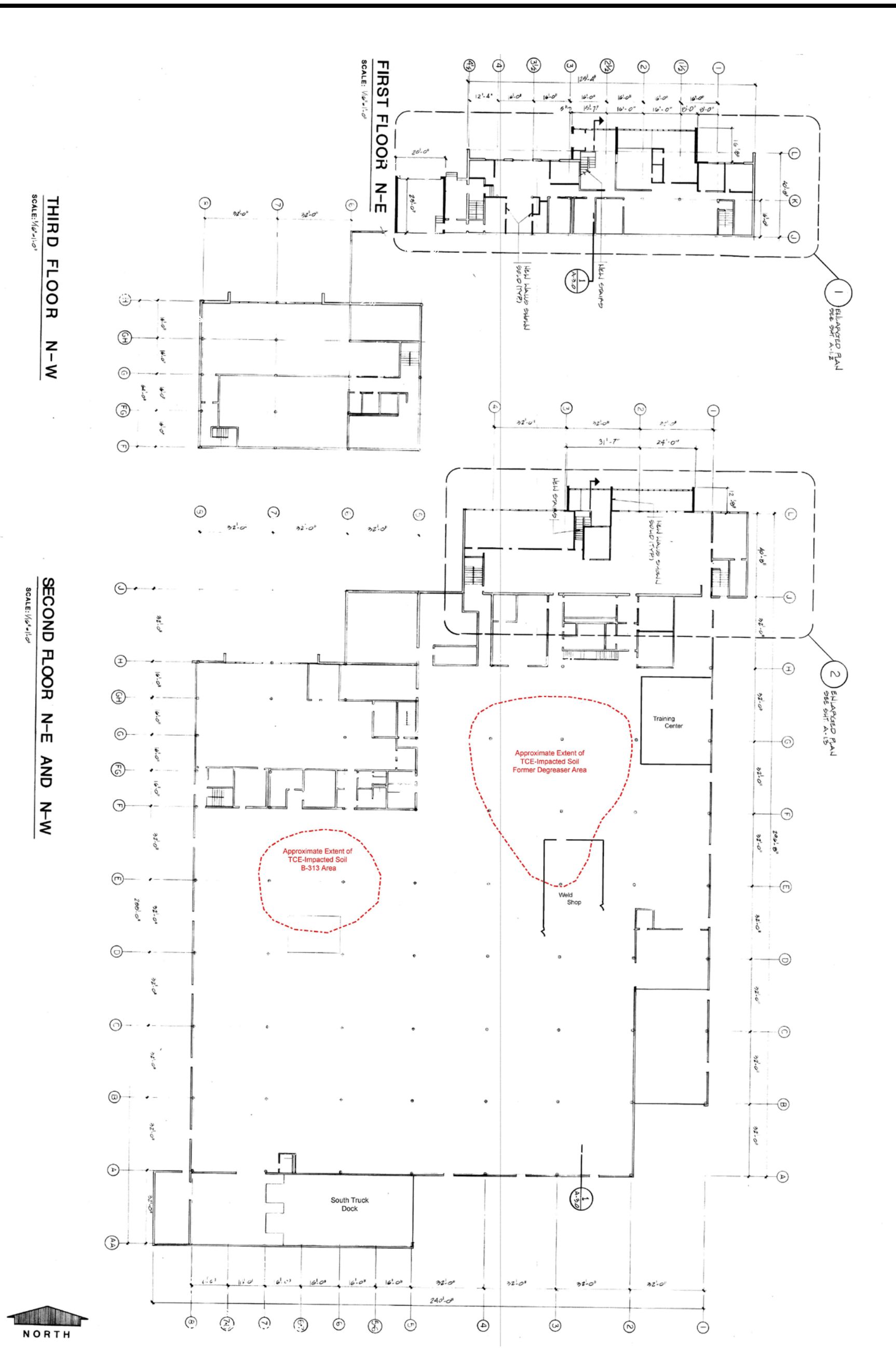
Sample ID	Analyte	Lab Result	Lab Qual	MDL	RL	Units	Val Result	Val Qual
EPI-SS-001-061818	Acetonitrile	ND		370	1500	ug/m3	1500	U
EPI-SS-001-061818	Acrolein	ND		430	6000	ug/m3	6000	U
EPI-SS-001-061818	Acrylonitrile	ND		310	1500	ug/m3	1500	U
EPI-SS-001-061818	alpha-Pinene	ND		230	1500	ug/m3	1500	U
EPI-SS-001-061818	Benzene	ND		220	310	ug/m3	310	U
EPI-SS-001-061818	Benzyl Chloride	ND		340	3100	ug/m3	3100	U
EPI-SS-001-061818	Bromodichloromethane	ND		220	310	ug/m3	310	U
EPI-SS-001-061818	Bromoform	ND		310	1500	ug/m3	1500	U
EPI-SS-001-061818	Bromomethane	ND		210	570	ug/m3	570	U
EPI-SS-001-061818	Carbon Disulfide	ND		450	15000	ug/m3	15000	U
EPI-SS-001-061818	Carbon Tetrachloride	ND		210	310	ug/m3	310	U
EPI-SS-001-061818	Chlorobenzene	ND		200	1500	ug/m3	1500	U
EPI-SS-001-061818	Chloroethane	ND		190	570	ug/m3	570	U
EPI-SS-001-061818	Chloroform	850		200	310	ug/m3	850	
EPI-SS-001-061818	Chloromethane	ND		240	570	ug/m3	570	U
EPI-SS-001-061818	cis-1,2-Dichloroethene	540		210	310	ug/m3	540	
EPI-SS-001-061818	cis-1,3-Dichloropropene	ND		240	1600	ug/m3	1600	U
EPI-SS-001-061818	Cumene	ND		220	1500	ug/m3	1500	U
EPI-SS-001-061818	Cyclohexane	ND		430	3100	ug/m3	3100	U
EPI-SS-001-061818	Dibromochloromethane	ND		200	310	ug/m3	310	U
EPI-SS-001-061818	Dichlorodifluoromethane (CFC 12)	ND		250	1500	ug/m3	1500	U
EPI-SS-001-061818	d-Limonene	ND		310	1400	ug/m3	1400	U
EPI-SS-001-061818	Ethanol	ND		1100	15000	ug/m3	15000	U
EPI-SS-001-061818	Ethyl Acetate	ND		800	3100	ug/m3	3100	U
EPI-SS-001-061818	Ethylbenzene	ND		210	1500	ug/m3	1500	U
EPI-SS-001-061818	Hexachlorobutadiene	ND		310	1500	ug/m3	1500	U
EPI-SS-001-061818	m,p-Xylenes	ND		400	3100	ug/m3	3100	U
EPI-SS-001-061818	Methyl Methacrylate	ND		540	3100	ug/m3	3100	U
EPI-SS-001-061818	Methyl tert-Butyl Ether	ND		180	1500	ug/m3	1500	U
EPI-SS-001-061818	Methylene Chloride	ND		430	1500	ug/m3	1500	U
EPI-SS-001-061818	Naphthalene	ND		370	1500	ug/m3	1500	U
EPI-SS-001-061818	n-Butyl Acetate	ND		210	1500	ug/m3	1500	U
EPI-SS-001-061818	n-Heptane	ND		240	1500	ug/m3	1500	U
EPI-SS-001-061818	n-Hexane	ND		310	1500	ug/m3	1500	U
EPI-SS-001-061818	n-Nonane	ND		250	1500	ug/m3	1500	U

ELLSWORTH INDUSTRIAL PARK
AIR ANALYTICAL RESULTS SUMMARY
ALS ENVIRONMENTAL REPORT NO. P1803155

Sample ID	Analyte	Lab Result	Lab Qual	MDL	RL	Units	Val Result	Val Qual
EPI-SS-001-061818	n-Octane	ND		340	1500	ug/m3	1500	U
EPI-SS-001-061818	n-Propylbenzene	ND		220	1500	ug/m3	1500	U
EPI-SS-001-061818	o-Xylene	ND		220	1500	ug/m3	1500	U
EPI-SS-001-061818	Propene	ND		370	1500	ug/m3	1500	U
EPI-SS-001-061818	Styrene	ND		240	1500	ug/m3	1500	U
EPI-SS-001-061818	Tetrachloroethene	9400		200	310	ug/m3	9400	
EPI-SS-001-061818	Tetrahydrofuran (THF)	ND		190	1500	ug/m3	1500	U
EPI-SS-001-061818	Toluene	ND		180	1500	ug/m3	1500	U
EPI-SS-001-061818	trans-1,2-Dichloroethene	3900		210	310	ug/m3	3900	
EPI-SS-001-061818	trans-1,3-Dichloropropene	ND		310	1500	ug/m3	1500	U
EPI-SS-001-061818	Trichloroethene	710000	D	1000	1600	ug/m3	710000	
EPI-SS-001-061818	Trichlorofluoromethane	ND		230	1500	ug/m3	1500	U
EPI-SS-001-061818	Trichlorotrifluoroethane	ND		220	1500	ug/m3	1500	U
EPI-SS-001-061818	Vinyl Acetate	ND		3400	15000	ug/m3	15000	U
EPI-SS-001-061818	Vinyl Chloride	ND		160	280	ug/m3	280	U

ATTACHMENT 1

KPRG Figure



KPRG ENVIRONMENTAL CONSULTATION & REMEDIATION KPRG and Associates, Inc.	**KPRG Project No.: 10716.1**	**FIGURE 2. AREAS OF CONCERN LOCATION MAP** **MAGNETROL INTERNATIONAL, INC.** **5300 BELMONT ROAD** **DOWNERS GROVE, ILLINOIS**

ATTACHMENT 2

Laboratory Level IV Data Package

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

June 27, 2018

Anna Nguyen
Tetra Tech EM Inc. - Chicago IL
1 South Wacker Dr., Suite 3700
Chicago, IL 60606

RE: Ellsworth Industrial Park / 103x90260001s051806204

Dear Anna:

Enclosed are the results of the samples submitted to our laboratory on June 20, 2018. For your reference, these analyses have been assigned our service request number P1803155.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 4:38 pm, Jun 27, 2018

Sue Anderson
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Tetra Tech EM Inc. - Chicago IL Service Request No: P1803155
Project: Ellsworth Industrial Park / 103x90260001s051806204

CASE NARRATIVE

The samples were received intact under chain of custody on June 20, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Volatile Organic Compound Analysis

The samples were analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.1 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-17-8
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA016272017-8
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Tetra Tech EM Inc. - Chicago IL Service Request: P1803155

Project ID: Ellsworth Industrial Park / 103x90260001s051806204

Date Received: 6/20/2018

Time Received: 09:20

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-15 - VOC Cans
EPI-SS-001-061818	P1803155-001	Air	6/18/2018	15:14	AC01826	-1.59	3.91	X
EPI-IA-001-061818	P1803155-002	Air	6/19/2018	14:47	AC01989	-2.73	3.57	X
EPI-IA-001-061818-D	P1803155-003	Air	6/19/2018	14:47	AC01603	-3.56	4.06	X

Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) (5 Day (25%)) 10 Day-Standard

ALS Project No. R1903153

Company Name & Address (Reporting Information)	Tetra Tech 1 S. Wacker Dr. STE 3700 Chicago IL. 60606
Project Manager	Anna Nguyen
Phone	312-201-7162 (209-303-1083)
Fax	
Email Address for Result Reporting	anna.nguyen@tetratech.com
Project Name	Ellsworth Industrial Park
Project Number	103x902600001S0518/0204
P.O. # / Billing Information	103x902600001S0518/0204
Sampler (Print & Sign)	Anna Nguyen
ALS Contact:	

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	Analysis Method: VOCs Low-Level TO-15		Comments e.g. Actual Preservative or specific instruction
EPI-SS-001-061818	1	6/18/2018	1514	AC01826	OA00376	28	3.5	6L	✓		
EPI-IA-001-061918	2	6/19/2018	1447	AC01989	FCA00876	29	5.5	6L	✓		
EPI-IA-001-061918-D	3	6/19/2018	1447	AC01603	FCA00954	30	9	6L	✓		

Report Tier Levels - please select

Tier I - Results (Default if not specified) ____ Tier III (Results + QC & Calibration Summaries) ____
Tier II (Results + QC Summaries) ____ Tier IV (Data Validation Package) 10% Surcharge ✓

EDD required (Yes) / No Type: EVA STAET BSA Units: µg/m³ & ppbv

Chain of Custody Seal: (Circle) (INTACT) BROKEN ABSENT

Project Requirements (MRLs, QAPP)

	Date	Time		Date	Time
Relinquished by: (Signature)	6/19/2018	1505	Received by: (Signature)		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	6/20/18	0920

Cooler / Blank Temperature ___ °C

5 of 153

ALS Environmental
Sample Acceptance Check Form

Client: Tetra Tech EM Inc. - Chicago IL Work order: P1803155

Project: Ellsworth Industrial Park / 103x90260001s051806204

Sample(s) received on: 6/20/18 Date opened: 6/20/18 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Box sealing. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1803155-001.01	6.0 L Ambient Can					
P1803155-002.01	6.0 L Ambient Can					
P1803155-003.01	6.0 L Ambient Can					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-SS-001-061818** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-001

Test Code: EPA TO-15 Date Collected: 6/18/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.00050 Liter(s)
Test Notes: 0.00010 Liter(s)
Container ID: AC01826

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.91

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	1,500	ND	860	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	1,500	ND	300	
74-87-3	Chloromethane	ND	570	ND	280	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	1,400	ND	210	
75-01-4	Vinyl Chloride	ND	280	ND	110	
106-99-0	1,3-Butadiene	ND	600	ND	270	
74-83-9	Bromomethane	ND	570	ND	150	
75-00-3	Chloroethane	ND	570	ND	220	
64-17-5	Ethanol	ND	15,000	ND	8,000	
75-05-8	Acetonitrile	ND	1,500	ND	900	
107-02-8	Acrolein	ND	6,000	ND	2,600	
67-64-1	Acetone	ND	15,000	ND	6,300	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	1,500	ND	270	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	15,000	ND	6,100	
107-13-1	Acrylonitrile	ND	1,500	ND	690	
75-35-4	1,1-Dichloroethene	**940**	310	**240**	79	
75-09-2	Methylene Chloride	ND	1,500	ND	430	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	1,500	ND	480	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	1,500	ND	200	
75-15-0	Carbon Disulfide	ND	15,000	ND	4,800	
156-60-5	trans-1,2-Dichloroethene	**3,900**	310	**990**	79	
75-34-3	1,1-Dichloroethane	ND	280	ND	70	
1634-04-4	Methyl tert-Butyl Ether	ND	1,500	ND	430	
108-05-4	Vinyl Acetate	ND	15,000	ND	4,300	
78-93-3	2-Butanone (MEK)	ND	15,000	ND	5,100	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-SS-001-061818** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-001

Test Code: EPA TO-15 Date Collected: 6/18/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.00050 Liter(s)
Test Notes: 0.00010 Liter(s)
Container ID: AC01826

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.91

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	**540**	310	**140**	79	
141-78-6	Ethyl Acetate	ND	3,100	ND	870	
110-54-3	n-Hexane	ND	1,500	ND	430	
67-66-3	Chloroform	**850**	310	**170**	64	
109-99-9	Tetrahydrofuran (THF)	ND	1,500	ND	510	
107-06-2	1,2-Dichloroethane	ND	310	ND	77	
71-55-6	1,1,1-Trichloroethane	**3,600**	310	**660**	57	
71-43-2	Benzene	ND	310	ND	98	
56-23-5	Carbon Tetrachloride	ND	310	ND	50	
110-82-7	Cyclohexane	ND	3,100	ND	910	
78-87-5	1,2-Dichloropropane	ND	310	ND	68	
75-27-4	Bromodichloromethane	ND	310	ND	47	
79-01-6	Trichloroethene	**710,000**	1,600	**130,000**	290	**D**
123-91-1	1,4-Dioxane	ND	1,500	ND	420	
80-62-6	Methyl Methacrylate	ND	3,100	ND	760	
142-82-5	n-Heptane	ND	1,500	ND	370	
10061-01-5	cis-1,3-Dichloropropene	ND	1,600	ND	350	
108-10-1	4-Methyl-2-pentanone	ND	1,500	ND	370	
10061-02-6	trans-1,3-Dichloropropene	ND	1,500	ND	330	
79-00-5	1,1,2-Trichloroethane	ND	310	ND	57	
108-88-3	Toluene	ND	1,500	ND	400	
591-78-6	2-Hexanone	ND	1,500	ND	370	
124-48-1	Dibromochloromethane	ND	310	ND	37	
106-93-4	1,2-Dibromoethane	ND	310	ND	41	
123-86-4	n-Butyl Acetate	ND	1,500	ND	320	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
D = The reported result is from a dilution.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-SS-001-061818** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-001

Test Code: EPA TO-15 Date Collected: 6/18/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.00050 Liter(s)
Test Notes: 0.00010 Liter(s)
Container ID: AC01826

Initial Pressure (psig): -1.59 Final Pressure (psig): 3.91

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	1,500	ND	320	
127-18-4	Tetrachloroethene	**9,400**	310	**1,400**	46	
108-90-7	Chlorobenzene	ND	1,500	ND	330	
100-41-4	Ethylbenzene	ND	1,500	ND	350	
179601-23-1	m,p-Xylenes	ND	3,100	ND	720	
75-25-2	Bromoform	ND	1,500	ND	150	
100-42-5	Styrene	ND	1,500	ND	350	
95-47-6	o-Xylene	ND	1,500	ND	350	
111-84-2	n-Nonane	ND	1,500	ND	290	
79-34-5	1,1,2,2-Tetrachloroethane	ND	310	ND	46	
98-82-8	Cumene	ND	1,500	ND	310	
80-56-8	alpha-Pinene	ND	1,500	ND	270	
103-65-1	n-Propylbenzene	ND	1,500	ND	310	
622-96-8	4-Ethyltoluene	ND	1,500	ND	300	
108-67-8	1,3,5-Trimethylbenzene	ND	1,500	ND	300	
95-63-6	1,2,4-Trimethylbenzene	ND	1,500	ND	310	
100-44-7	Benzyl Chloride	ND	3,100	ND	600	
541-73-1	1,3-Dichlorobenzene	ND	1,500	ND	260	
106-46-7	1,4-Dichlorobenzene	ND	1,500	ND	250	
95-50-1	1,2-Dichlorobenzene	ND	1,500	ND	260	
5989-27-5	d-Limonene	ND	1,400	ND	250	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1,500	ND	160	
120-82-1	1,2,4-Trichlorobenzene	ND	1,600	ND	210	
91-20-3	Naphthalene	ND	1,500	ND	290	
87-68-3	Hexachlorobutadiene	ND	1,500	ND	140	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-IA-001-061818** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-002

Test Code: EPA TO-15 Date Collected: 6/19/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01989

Initial Pressure (psig): -2.73 Final Pressure (psig): 3.57

Container Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	**1.9**	0.80	**1.1**	0.46	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.0**	0.80	**0.40**	0.16	
74-87-3	Chloromethane	ND	0.31	ND	0.15	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.78	ND	0.11	
75-01-4	Vinyl Chloride	ND	0.15	ND	0.060	
106-99-0	1,3-Butadiene	**0.35**	0.32	**0.16**	0.15	
74-83-9	Bromomethane	ND	0.31	ND	0.079	
75-00-3	Chloroethane	ND	0.31	ND	0.12	
64-17-5	Ethanol	**10**	8.1	**5.5**	4.3	
75-05-8	Acetonitrile	ND	0.81	ND	0.48	
107-02-8	Acrolein	ND	3.2	ND	1.4	
67-64-1	Acetone	**27**	8.1	**12**	3.4	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.6**	0.81	**0.28**	0.14	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	8.1	ND	3.3	
107-13-1	Acrylonitrile	ND	0.81	ND	0.37	
75-35-4	1,1-Dichloroethene	**0.63**	0.17	**0.16**	0.042	
75-09-2	Methylene Chloride	ND	0.81	ND	0.23	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.81	ND	0.26	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.81	ND	0.11	
75-15-0	Carbon Disulfide	ND	8.1	ND	2.6	
156-60-5	trans-1,2-Dichloroethene	**1.5**	0.17	**0.38**	0.042	
75-34-3	1,1-Dichloroethane	**1.0**	0.15	**0.25**	0.038	
1634-04-4	Methyl tert-Butyl Ether	ND	0.83	ND	0.23	
108-05-4	Vinyl Acetate	ND	8.1	ND	2.3	
78-93-3	2-Butanone (MEK)	ND	8.1	ND	2.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-IA-001-061818** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-002

Test Code: EPA TO-15 Date Collected: 6/19/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01989

Initial Pressure (psig): -2.73 Final Pressure (psig): 3.57

Container Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	**0.53**	0.17	**0.13**	0.042	
141-78-6	Ethyl Acetate	**2.7**	1.7	**0.74**	0.47	
110-54-3	n-Hexane	**4.8**	0.81	**1.4**	0.23	
67-66-3	Chloroform	**0.28**	0.17	**0.058**	0.034	
109-99-9	Tetrahydrofuran (THF)	ND	0.81	ND	0.28	
107-06-2	1,2-Dichloroethane	**0.68**	0.17	**0.17**	0.042	
71-55-6	1,1,1-Trichloroethane	**4.2**	0.17	**0.77**	0.031	
71-43-2	Benzene	**0.83**	0.17	**0.26**	0.053	
56-23-5	Carbon Tetrachloride	**0.85**	0.17	**0.14**	0.027	
110-82-7	Cyclohexane	ND	1.7	ND	0.49	
78-87-5	1,2-Dichloropropane	ND	0.17	ND	0.036	
75-27-4	Bromodichloromethane	ND	0.17	ND	0.025	
79-01-6	Trichloroethene	**20**	0.17	**3.7**	0.031	
123-91-1	1,4-Dioxane	ND	0.81	ND	0.23	
80-62-6	Methyl Methacrylate	ND	1.7	ND	0.41	
142-82-5	n-Heptane	ND	0.81	ND	0.20	
10061-01-5	cis-1,3-Dichloropropene	ND	0.86	ND	0.19	
108-10-1	4-Methyl-2-pentanone	ND	0.81	ND	0.20	
10061-02-6	trans-1,3-Dichloropropene	ND	0.81	ND	0.18	
79-00-5	1,1,2-Trichloroethane	ND	0.17	ND	0.031	
108-88-3	Toluene	**2.4**	0.81	**0.65**	0.22	
591-78-6	2-Hexanone	ND	0.81	ND	0.20	
124-48-1	Dibromochloromethane	ND	0.17	ND	0.020	
106-93-4	1,2-Dibromoethane	ND	0.17	ND	0.022	
123-86-4	n-Butyl Acetate	ND	0.81	ND	0.17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-IA-001-061818** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-002

Test Code: EPA TO-15 Date Collected: 6/19/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01989

Initial Pressure (psig): -2.73 Final Pressure (psig): 3.57

Container Dilution Factor: 1.53

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.81	ND	0.17	
127-18-4	Tetrachloroethene	**0.31**	0.17	**0.046**	0.025	
108-90-7	Chlorobenzene	ND	0.81	ND	0.18	
100-41-4	Ethylbenzene	**2.5**	0.81	**0.57**	0.19	
179601-23-1	m,p-Xylenes	**8.2**	1.7	**1.9**	0.39	
75-25-2	Bromoform	ND	0.81	ND	0.078	
100-42-5	Styrene	ND	0.81	ND	0.19	
95-47-6	o-Xylene	**2.3**	0.81	**0.53**	0.19	
111-84-2	n-Nonane	ND	0.81	ND	0.15	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.17	ND	0.025	
98-82-8	Cumene	ND	0.81	ND	0.17	
80-56-8	alpha-Pinene	**1.5**	0.80	**0.27**	0.14	
103-65-1	n-Propylbenzene	ND	0.81	ND	0.17	
622-96-8	4-Ethyltoluene	ND	0.80	ND	0.16	
108-67-8	1,3,5-Trimethylbenzene	ND	0.80	ND	0.16	
95-63-6	1,2,4-Trimethylbenzene	**1.0**	0.81	**0.20**	0.17	
100-44-7	Benzyl Chloride	ND	1.7	ND	0.33	
541-73-1	1,3-Dichlorobenzene	ND	0.83	ND	0.14	
106-46-7	1,4-Dichlorobenzene	ND	0.81	ND	0.13	
95-50-1	1,2-Dichlorobenzene	ND	0.83	ND	0.14	
5989-27-5	d-Limonene	ND	0.77	ND	0.14	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.81	ND	0.084	
120-82-1	1,2,4-Trichlorobenzene	ND	0.84	ND	0.11	
91-20-3	Naphthalene	ND	0.81	ND	0.15	
87-68-3	Hexachlorobutadiene	ND	0.81	ND	0.076	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-IA-001-061818-D** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-003

Test Code: EPA TO-15 Date Collected: 6/19/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01603

Initial Pressure (psig): -3.56 Final Pressure (psig): 4.06

Container Dilution Factor: 1.68

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	**2.5**	0.87	**1.5**	0.51	
75-71-8	Dichlorodifluoromethane (CFC 12)	**1.8**	0.87	**0.36**	0.18	
74-87-3	Chloromethane	ND	0.34	ND	0.16	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.86	ND	0.12	
75-01-4	Vinyl Chloride	ND	0.17	ND	0.066	
106-99-0	1,3-Butadiene	**0.36**	0.35	**0.16**	0.16	
74-83-9	Bromomethane	ND	0.34	ND	0.087	
75-00-3	Chloroethane	ND	0.34	ND	0.13	
64-17-5	Ethanol	**33**	8.9	**18**	4.7	
75-05-8	Acetonitrile	ND	0.89	ND	0.53	
107-02-8	Acrolein	ND	3.5	ND	1.5	
67-64-1	Acetone	**29**	8.9	**12**	3.7	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.4**	0.89	**0.25**	0.16	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	8.9	ND	3.6	
107-13-1	Acrylonitrile	ND	0.89	ND	0.41	
75-35-4	1,1-Dichloroethene	**0.55**	0.18	**0.14**	0.047	
75-09-2	Methylene Chloride	ND	0.89	ND	0.26	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.89	ND	0.28	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.89	ND	0.12	
75-15-0	Carbon Disulfide	ND	8.9	ND	2.9	
156-60-5	trans-1,2-Dichloroethene	**2.7**	0.18	**0.68**	0.047	
75-34-3	1,1-Dichloroethane	**0.93**	0.17	**0.23**	0.042	
1634-04-4	Methyl tert-Butyl Ether	ND	0.91	ND	0.25	
108-05-4	Vinyl Acetate	ND	8.9	ND	2.5	
78-93-3	2-Butanone (MEK)	ND	8.9	ND	3.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-IA-001-061818-D** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-003

Test Code: EPA TO-15 Date Collected: 6/19/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01603

Initial Pressure (psig): -3.56 Final Pressure (psig): 4.06

Container Dilution Factor: 1.68

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	**0.41**	0.18	**0.10**	0.047	
141-78-6	Ethyl Acetate	**14**	1.8	**3.8**	0.51	
110-54-3	n-Hexane	**4.3**	0.89	**1.2**	0.25	
67-66-3	Chloroform	**0.26**	0.18	**0.053**	0.038	
109-99-9	Tetrahydrofuran (THF)	ND	0.89	ND	0.30	
107-06-2	1,2-Dichloroethane	**0.62**	0.18	**0.15**	0.046	
71-55-6	1,1,1-Trichloroethane	**3.9**	0.18	**0.72**	0.034	
71-43-2	Benzene	**0.74**	0.18	**0.23**	0.058	
56-23-5	Carbon Tetrachloride	**0.79**	0.18	**0.13**	0.029	
110-82-7	Cyclohexane	ND	1.8	ND	0.54	
78-87-5	1,2-Dichloropropane	ND	0.18	ND	0.040	
75-27-4	Bromodichloromethane	ND	0.18	ND	0.028	
79-01-6	Trichloroethene	**22**	0.18	**4.0**	0.034	
123-91-1	1,4-Dioxane	ND	0.89	ND	0.25	
80-62-6	Methyl Methacrylate	ND	1.8	ND	0.45	
142-82-5	n-Heptane	ND	0.89	ND	0.22	
10061-01-5	cis-1,3-Dichloropropene	ND	0.94	ND	0.21	
108-10-1	4-Methyl-2-pentanone	ND	0.89	ND	0.22	
10061-02-6	trans-1,3-Dichloropropene	ND	0.89	ND	0.20	
79-00-5	1,1,2-Trichloroethane	ND	0.18	ND	0.034	
108-88-3	Toluene	**2.5**	0.89	**0.66**	0.24	
591-78-6	2-Hexanone	ND	0.89	ND	0.22	
124-48-1	Dibromochloromethane	ND	0.18	ND	0.022	
106-93-4	1,2-Dibromoethane	ND	0.18	ND	0.024	
123-86-4	n-Butyl Acetate	ND	0.89	ND	0.19	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **EPI-IA-001-061818-D** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P1803155-003

Test Code: EPA TO-15 Date Collected: 6/19/18
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: 6/20/18
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01603

Initial Pressure (psig): -3.56 Final Pressure (psig): 4.06

Container Dilution Factor: 1.68

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.89	ND	0.19	
127-18-4	Tetrachloroethene	**0.33**	0.18	**0.049**	0.027	
108-90-7	Chlorobenzene	ND	0.89	ND	0.19	
100-41-4	Ethylbenzene	**2.3**	0.89	**0.53**	0.21	
179601-23-1	m,p-Xylenes	**7.6**	1.8	**1.8**	0.43	
75-25-2	Bromoform	ND	0.89	ND	0.086	
100-42-5	Styrene	ND	0.89	ND	0.21	
95-47-6	o-Xylene	**2.2**	0.89	**0.50**	0.21	
111-84-2	n-Nonane	ND	0.89	ND	0.17	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.18	ND	0.027	
98-82-8	Cumene	ND	0.89	ND	0.18	
80-56-8	alpha-Pinene	**1.4**	0.87	**0.25**	0.16	
103-65-1	n-Propylbenzene	ND	0.89	ND	0.18	
622-96-8	4-Ethyltoluene	ND	0.87	ND	0.18	
108-67-8	1,3,5-Trimethylbenzene	ND	0.87	ND	0.18	
95-63-6	1,2,4-Trimethylbenzene	**1.4**	0.89	**0.29**	0.18	
100-44-7	Benzyl Chloride	ND	1.8	ND	0.36	
541-73-1	1,3-Dichlorobenzene	ND	0.91	ND	0.15	
106-46-7	1,4-Dichlorobenzene	ND	0.89	ND	0.15	
95-50-1	1,2-Dichlorobenzene	ND	0.91	ND	0.15	
5989-27-5	d-Limonene	ND	0.84	ND	0.15	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.89	ND	0.092	
120-82-1	1,2,4-Trichlorobenzene	ND	0.92	ND	0.12	
91-20-3	Naphthalene	ND	0.89	ND	0.17	
87-68-3	Hexachlorobutadiene	ND	0.89	ND	0.084	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**

Client Sample ID: **Method Blank** ALS Project ID: P1803155

Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P180621-MB

Test Code: EPA TO-15 Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Wida Ang Date Analyzed: 6/21/18

Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.52	ND	0.30	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	ND	0.11	
74-87-3	Chloromethane	ND	0.20	ND	0.097	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.51	ND	0.073	
75-01-4	Vinyl Chloride	ND	0.10	ND	0.039	
106-99-0	1,3-Butadiene	ND	0.21	ND	0.095	
74-83-9	Bromomethane	ND	0.20	ND	0.052	
75-00-3	Chloroethane	ND	0.20	ND	0.076	
64-17-5	Ethanol	ND	5.3	ND	2.8	
75-05-8	Acetonitrile	ND	0.53	ND	0.32	
107-02-8	Acrolein	ND	2.1	ND	0.92	
67-64-1	Acetone	ND	5.3	ND	2.2	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.3	ND	2.2	
107-13-1	Acrylonitrile	ND	0.53	ND	0.24	
75-35-4	1,1-Dichloroethene	ND	0.11	ND	0.028	
75-09-2	Methylene Chloride	ND	0.53	ND	0.15	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.53	ND	0.17	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.53	ND	0.069	
75-15-0	Carbon Disulfide	ND	5.3	ND	1.7	
156-60-5	trans-1,2-Dichloroethene	ND	0.11	ND	0.028	
75-34-3	1,1-Dichloroethane	ND	0.10	ND	0.025	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
108-05-4	Vinyl Acetate	ND	5.3	ND	1.5	
78-93-3	2-Butanone (MEK)	ND	5.3	ND	1.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**

Client Sample ID: **Method Blank** ALS Project ID: P1803155

Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P180621-MB

Test Code: EPA TO-15 Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Wida Ang Date Analyzed: 6/21/18

Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.11	ND	0.028	
141-78-6	Ethyl Acetate	ND	1.1	ND	0.31	
110-54-3	n-Hexane	ND	0.53	ND	0.15	
67-66-3	Chloroform	ND	0.11	ND	0.023	
109-99-9	Tetrahydrofuran (THF)	ND	0.53	ND	0.18	
107-06-2	1,2-Dichloroethane	ND	0.11	ND	0.027	
71-55-6	1,1,1-Trichloroethane	ND	0.11	ND	0.020	
71-43-2	Benzene	ND	0.11	ND	0.034	
56-23-5	Carbon Tetrachloride	ND	0.11	ND	0.017	
110-82-7	Cyclohexane	ND	1.1	ND	0.32	
78-87-5	1,2-Dichloropropane	ND	0.11	ND	0.024	
75-27-4	Bromodichloromethane	ND	0.11	ND	0.016	
79-01-6	Trichloroethene	ND	0.11	ND	0.020	
123-91-1	1,4-Dioxane	ND	0.53	ND	0.15	
80-62-6	Methyl Methacrylate	ND	1.1	ND	0.27	
142-82-5	n-Heptane	ND	0.53	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.56	ND	0.12	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.11	ND	0.020	
108-88-3	Toluene	ND	0.53	ND	0.14	
591-78-6	2-Hexanone	ND	0.53	ND	0.13	
124-48-1	Dibromochloromethane	ND	0.11	ND	0.013	
106-93-4	1,2-Dibromoethane	ND	0.11	ND	0.014	
123-86-4	n-Butyl Acetate	ND	0.53	ND	0.11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Tetra Tech EM Inc. - Chicago IL**

Client Sample ID: **Method Blank** ALS Project ID: P1803155

Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P180621-MB

Test Code: EPA TO-15 Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA

Analyst: Wida Ang Date Analyzed: 6/21/18

Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.53	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.11	ND	0.016	
108-90-7	Chlorobenzene	ND	0.53	ND	0.12	
100-41-4	Ethylbenzene	ND	0.53	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.53	ND	0.051	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.53	ND	0.12	
111-84-2	n-Nonane	ND	0.53	ND	0.10	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.11	ND	0.016	
98-82-8	Cumene	ND	0.53	ND	0.11	
80-56-8	alpha-Pinene	ND	0.52	ND	0.093	
103-65-1	n-Propylbenzene	ND	0.53	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.52	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.52	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.53	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.53	ND	0.088	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.53	ND	0.055	
120-82-1	1,2,4-Trichlorobenzene	ND	0.55	ND	0.074	
91-20-3	Naphthalene	ND	0.53	ND	0.10	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Project ID: P1803155

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date(s) Collected: 6/18 - 6/19/18
Analyst: Wida Ang Date(s) Received: 6/20/18
Sample Type: 6.0 L Summa Canister(s) Date(s) Analyzed: 6/21/18
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P180621-MB	**89**	**98**	**106**	70-130	
Lab Control Sample	P180621-LCS	**89**	**97**	**108**	70-130	
EPI-SS-001-061818	P1803155-001	**90**	**97**	**107**	70-130	
EPI-IA-001-061818	P1803155-002	**89**	**96**	**107**	70-130	
EPI-IA-001-061818-D	P1803155-003	**89**	**97**	**109**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P180621-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
115-07-1	Propene	210	**170**	**81**	54-133	
75-71-8	Dichlorodifluoromethane (CFC 12)	213	**168**	**79**	64-115	
74-87-3	Chloromethane	210	**137**	**65**	47-140	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	211	**175**	**83**	60-112	
75-01-4	Vinyl Chloride	211	**158**	**75**	63-127	
106-99-0	1,3-Butadiene	210	**176**	**84**	57-149	
74-83-9	Bromomethane	210	**179**	**85**	63-132	
75-00-3	Chloroethane	210	**169**	**80**	68-129	
64-17-5	Ethanol	1,040	**813**	**78**	62-131	
75-05-8	Acetonitrile	210	**162**	**77**	56-136	
107-02-8	Acrolein	209	**170**	**81**	60-132	
67-64-1	Acetone	1,050	**801**	**76**	63-124	
75-69-4	Trichlorofluoromethane (CFC 11)	208	**167**	**80**	65-113	
67-63-0	2-Propanol (Isopropyl Alcohol)	422	**328**	**78**	62-135	
107-13-1	Acrylonitrile	212	**175**	**83**	68-138	
75-35-4	1,1-Dichloroethene	213	**179**	**84**	72-118	
75-09-2	Methylene Chloride	213	**172**	**81**	67-116	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	212	**178**	**84**	61-143	
76-13-1	Trichlorotrifluoroethane (CFC 113)	214	**184**	**86**	68-113	
75-15-0	Carbon Disulfide	214	**182**	**85**	68-120	
156-60-5	trans-1,2-Dichloroethene	214	**174**	**81**	71-125	
75-34-3	1,1-Dichloroethane	212	**169**	**80**	68-118	
1634-04-4	Methyl tert-Butyl Ether	213	**173**	**81**	60-123	
108-05-4	Vinyl Acetate	1,060	**977**	**92**	73-135	
78-93-3	2-Butanone (MEK)	212	**174**	**82**	70-129	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P180621-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	212	**169**	**80**	69-121	
141-78-6	Ethyl Acetate	426	**351**	**82**	66-140	
110-54-3	n-Hexane	213	**170**	**80**	61-124	
67-66-3	Chloroform	212	**170**	**80**	69-113	
109-99-9	Tetrahydrofuran (THF)	212	**171**	**81**	66-121	
107-06-2	1,2-Dichloroethane	212	**162**	**76**	62-120	
71-55-6	1,1,1-Trichloroethane	212	**177**	**83**	65-116	
71-43-2	Benzene	213	**171**	**80**	66-111	
56-23-5	Carbon Tetrachloride	214	**184**	**86**	64-122	
110-82-7	Cyclohexane	425	**362**	**85**	69-115	
78-87-5	1,2-Dichloropropane	212	**173**	**82**	69-121	
75-27-4	Bromodichloromethane	214	**183**	**86**	69-123	
79-01-6	Trichloroethene	212	**186**	**88**	69-112	
123-91-1	1,4-Dioxane	213	**181**	**85**	74-123	
80-62-6	Methyl Methacrylate	424	**381**	**90**	75-125	
142-82-5	n-Heptane	213	**175**	**82**	68-118	
10061-01-5	cis-1,3-Dichloropropene	208	**188**	**90**	74-129	
108-10-1	4-Methyl-2-pentanone	213	**177**	**83**	66-138	
10061-02-6	trans-1,3-Dichloropropene	213	**194**	**91**	75-130	
79-00-5	1,1,2-Trichloroethane	212	**185**	**87**	73-117	
108-88-3	Toluene	211	**198**	**94**	66-114	
591-78-6	2-Hexanone	211	**182**	**86**	58-146	
124-48-1	Dibromochloromethane	212	**215**	**101**	67-130	
106-93-4	1,2-Dibromoethane	211	**206**	**98**	70-127	
123-86-4	n-Butyl Acetate	215	**190**	**88**	62-140	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Tetra Tech EM Inc. - Chicago IL**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1803155
Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204** ALS Sample ID: P180621-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Date Received: NA
Analyst: Wida Ang Date Analyzed: 6/21/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
111-65-9	n-Octane	212	**189**	**89**	65-121	
127-18-4	Tetrachloroethene	212	**211**	**100**	62-119	
108-90-7	Chlorobenzene	212	**201**	**95**	66-115	
100-41-4	Ethylbenzene	212	**197**	**93**	69-117	
179601-23-1	m,p-Xylenes	424	**388**	**92**	67-117	
75-25-2	Bromoform	212	**232**	**109**	67-135	
100-42-5	Styrene	211	**207**	**98**	70-128	
95-47-6	o-Xylene	211	**196**	**93**	67-118	
111-84-2	n-Nonane	212	**185**	**87**	61-127	
79-34-5	1,1,2,2-Tetrachloroethane	212	**199**	**94**	70-125	
98-82-8	Cumene	212	**202**	**95**	68-116	
80-56-8	alpha-Pinene	213	**200**	**94**	69-122	
103-65-1	n-Propylbenzene	214	**203**	**95**	70-118	
622-96-8	4-Ethyltoluene	211	**218**	**103**	69-124	
108-67-8	1,3,5-Trimethylbenzene	212	**200**	**94**	65-117	
95-63-6	1,2,4-Trimethylbenzene	212	**199**	**94**	67-124	
100-44-7	Benzyl Chloride	212	**228**	**108**	75-142	
541-73-1	1,3-Dichlorobenzene	212	**210**	**99**	70-124	
106-46-7	1,4-Dichlorobenzene	214	**207**	**97**	63-124	
95-50-1	1,2-Dichlorobenzene	214	**213**	**100**	66-125	
5989-27-5	d-Limonene	213	**194**	**91**	64-135	
96-12-8	1,2-Dibromo-3-chloropropane	210	**232**	**110**	73-136	
120-82-1	1,2,4-Trichlorobenzene	218	**236**	**108**	70-141	
91-20-3	Naphthalene	209	**207**	**99**	71-146	
87-68-3	Hexachlorobutadiene	212	**222**	**105**	63-126	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Client: **Tetra Tech EM Inc. - Chicago IL** ALS Project ID: P1803155

Client Project ID: **Ellsworth Industrial Park / 103x90260001s051806204**

Internal Standard Area and RT Summary

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5975Cinert/6890N/MS16 Lab File ID: 06211802.D

Analyst: Wida Ang Date Analyzed: 6/21/18

Sample Type: 6.0 L Summa Canister(s) Time Analyzed: 05:05

Test Notes:

		IS1 (BCM)		IS2 (DFB)		IS3 (CBZ)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	24 Hour Standard	340602	11.33	1429937	13.44	613170	17.72
	Upper Limit	476843	11.66	2001912	13.77	858438	18.05
	Lower Limit	204361	11.00	857962	13.11	367902	17.39
	Client Sample ID						
01	Method Blank	333498	11.31	1431791	13.43	612033	17.72
02	Lab Control Sample	340885	11.33	1441358	13.44	611921	17.72
03	EPI-SS-001-061818	350482	11.32	1502713	13.43	643908	17.72
04	EPI-SS-001-061818 (Dilution)	343918	11.31	1483634	13.43	632528	17.72
05	EPI-IA-001-061818	336614	11.32	1449777	13.43	632656	17.72
06	EPI-IA-001-061818-D	337990	11.32	1447042	13.43	632758	17.72
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = 140% of internal standard area
AREA LOWER LIMIT = 60% of internal standard area
RT UPPER LIMIT = 0.33 minutes of internal standard RT
RT LOWER LIMIT = 0.33 minutes of internal standard RT

# Column used to flag values outside QC limits with an I.
I = Internal standard not within the specified limits.

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211808.D
Acq On : 21 Jun 2018 9:34 Operator: WA
Sample : P1803155-001 (0.50mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 14:29:33 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018 6/21/18
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	11.32	130	350482	12.500	ng	-0.02
37) 1,4-Difluorobenzene (IS2)	13.43	114	1502713	12.500	ng	-0.01
56) Chlorobenzene-d5 (IS3)	17.72	82	643908	12.500	ng	0.00
System Monitoring Compounds						
33) 1,2-Dichloroethane-d4(...	12.17	65	447627	11.299	ng	-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 90.40%			
57) Toluene-d8 (SS2)	15.87	98	1358467	12.149	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 97.20%			
73) Bromofluorobenzene (SS3)	19.09	174	475382	13.392	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.12%			
Target Compounds						Qvalue
2) Propene	4.10	42	990	N.D.		
3) Dichlorodifluoromethan...	0.00	85	0	N.D.		
4) Chloromethane	0.00	50	0	N.D.		
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.		
6) Vinyl Chloride	0.00	62	0	N.D.		
7) 1,3-Butadiene	0.00	54	0	N.D.		
8) Bromomethane	0.00	94	0	N.D.		
9) Chloroethane	0.00	64	0	N.D.		
10) Ethanol	6.45	45	2196	N.D.		
11) Acetonitrile	6.74	41	1127	N.D.		
12) Acrolein	6.93	56	105	N.D.		
13) Acetone	7.17	58	6272	0.184	ng #	83
14) Trichlorofluoromethane	0.00	101	0	N.D.		
15) 2-Propanol (Isopropanol)	7.68	45	1687	N.D.		
16) Acrylonitrile	7.94	53	110	N.D.		
17) 1,1-Dichloroethene	8.35	96	13268	0.332	ng	94
18) 2-Methyl-2-Propanol (t...	8.35	59	478	N.D.		
19) Methylene Chloride	8.58	84	564	N.D.		
20) 3-Chloro-1-propene (Al...	0.00	41	0	N.D.		
21) Trichlorotrifluoroethane	8.79	151	575	N.D.		
22) Carbon Disulfide	8.87	76	3530	N.D.		
23) trans-1,2-Dichloroethene	9.86	61	83582	1.381	ng	92
24) 1,1-Dichloroethane	10.12	63	5328	N.D.		
25) Methyl tert-Butyl Ether	0.00	73	0	N.D.		
26) Vinyl Acetate	0.00	86	0	N.D.		
27) 2-Butanone (MEK)	10.70	72	335	N.D.		
28) cis-1,2-Dichloroethene	11.14	61	11237	0.191	ng	92
29) Diisopropyl Ether	11.48	87	2153	N.D.		
30) Ethyl Acetate	0.00	61	0	N.D.		
31) n-Hexane	11.42	57	549	N.D.		
32) Chloroform	11.48	83	21174	0.299	ng	99
34) Tetrahydrofuran (THF)	11.94	72	454	N.D.		
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.		
36) 1,2-Dichloroethane	0.00	62	0	N.D.		
38) 1,1,1-Trichloroethane	12.57	97	73436	1.271	ng	97
39) Isopropyl Acetate	0.00	61	0	N.D.		
40) 1-Butanol	13.06	56	553	N.D.		
41) Benzene	13.04	78	5148	N.D.		
42) Carbon Tetrachloride	0.00	117	0	N.D.		
43) Cyclohexane	13.42	84	851	N.D.		
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.		
45) 1,2-Dichloropropane	0.00	63	0	N.D.		
46) Bromodichloromethane	0.00	83	0	N.D.	d	
47) Trichloroethene	14.14	130	12332010	285.199	ng	99
48) 1,4-Dioxane	0.00	88	0	N.D.		
49) 2,2,4-Trimethylpentane...	14.19	57	1239	N.D.		

Data File: I:\MS16\DATA\2018 06\21\06211808.D
Acq On : 21 Jun 2018 9:34 Operator: WA
Sample : P1803155-001 (0.50mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 14:29:33 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

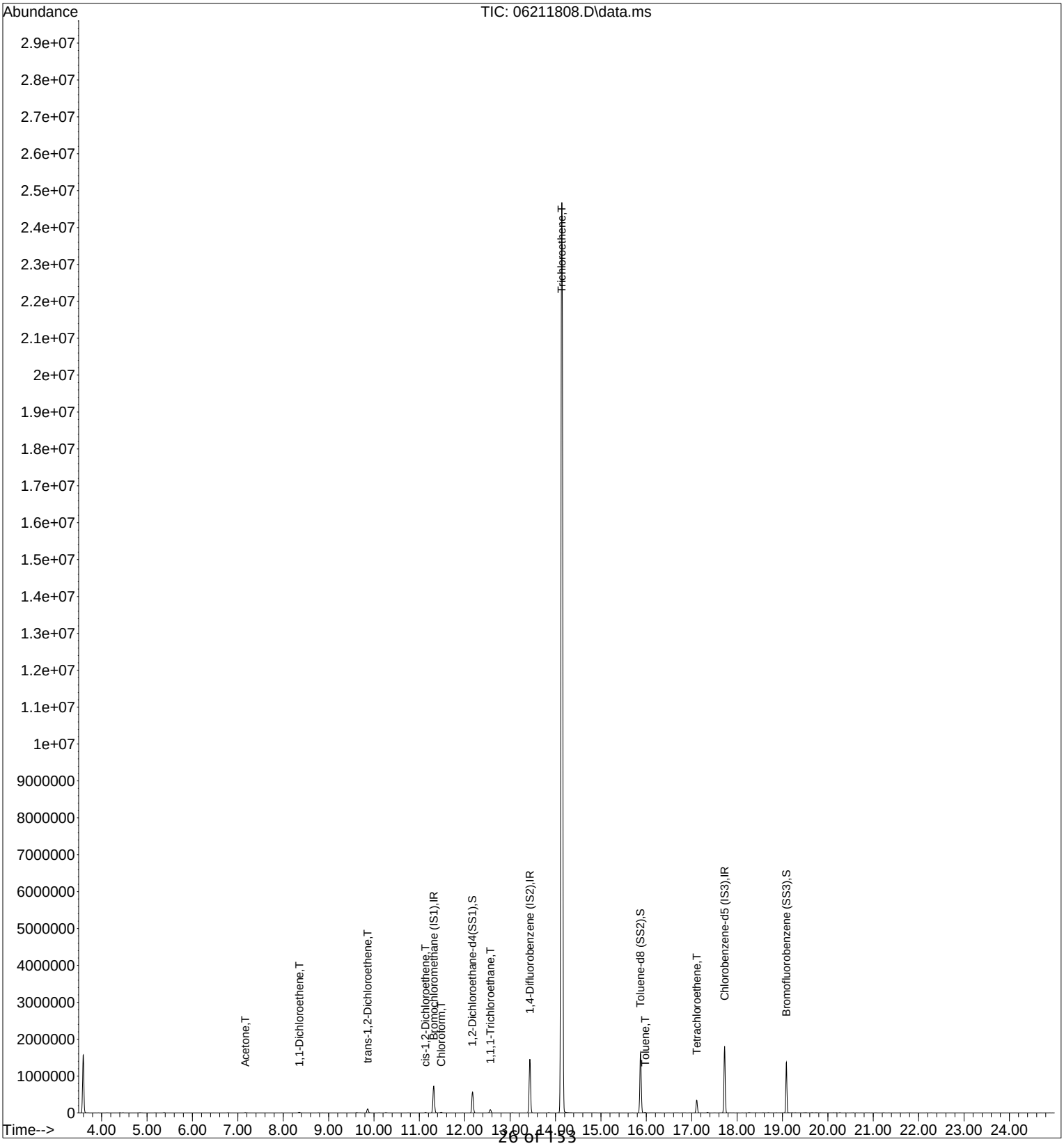
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
50) Methyl Methacrylate	0.00	100	0	N.D. d	
51) n-Heptane	14.45	71	249	N.D.	
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.	
53) 4-Methyl-2-pentanone	0.00	58	0	N.D.	
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.	
55) 1,1,2-Trichloroethane	15.69	97	1238	N.D.	
58) Toluene	15.98	91	13833	0.093 ng	91
59) 2-Hexanone	16.23	43	1006	N.D.	
60) Dibromochloromethane	0.00	129	0	N.D.	
61) 1,2-Dibromoethane	0.00	107	0	N.D.	
62) n-Butyl Acetate	16.84	43	297	N.D.	
63) n-Octane	16.96	57	185	N.D.	
64) Tetrachloroethene	17.11	166	136413	3.297 ng	99
65) Chlorobenzene	0.00	112	0	N.D.	
66) Ethylbenzene	18.11	91	3534	N.D.	
67) m- & p-Xylenes	18.26	91	11193	N.D.	
68) Bromoform	0.00	173	0	N.D.	
69) Styrene	18.59	104	396	N.D.	
70) o-Xylene	18.69	91	3774	N.D.	
71) n-Nonane	18.87	43	1463	N.D.	
72) 1,1,2,2-Tetrachloroethane	0.00	83	0	N.D.	
74) Cumene	19.20	105	852	N.D.	
75) alpha-Pinene	19.54	93	175	N.D.	
76) n-Propylbenzene	19.65	91	1257	N.D.	
77) 3-Ethyltoluene	19.73	105	2055	N.D.	
78) 4-Ethyltoluene	19.73	105	2055	N.D.	
79) 1,3,5-Trimethylbenzene	19.83	105	1704	N.D.	
80) alpha-Methylstyrene	0.00	118	0	N.D.	
81) 2-Ethyltoluene	20.00	105	1658	N.D.	
82) 1,2,4-Trimethylbenzene	20.19	105	4218	N.D.	
83) n-Decane	20.26	57	3529	N.D.	
84) Benzyl Chloride	20.31	91	545	N.D.	
85) 1,3-Dichlorobenzene	20.32	146	457	N.D.	
86) 1,4-Dichlorobenzene	20.39	146	1568	N.D.	
87) sec-Butylbenzene	20.42	105	434	N.D.	
88) 4-Isopropyltoluene (p-...	20.56	119	992	N.D.	
89) 1,2,3-Trimethylbenzene	20.56	105	1348	N.D.	
90) 1,2-Dichlorobenzene	20.69	146	179	N.D.	
91) d-Limonene	0.00	68	0	N.D.	
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.	
93) n-Undecane	21.34	57	1077	N.D.	
94) 1,2,4-Trichlorobenzene	22.17	180	546	N.D.	
95) Naphthalene	22.28	128	3122	N.D.	
96) n-Dodecane	22.24	57	585	N.D.	
97) Hexachlorobutadiene	0.00	225	0	N.D.	
98) Cyclohexanone	18.42	55	1336	N.D.	
99) tert-Butylbenzene	20.18	119	1153	N.D.	
100) n-Butylbenzene	20.91	91	571	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211808.D
Acq On : 21 Jun 2018 9:34 Operator: WA
Sample : P1803155-001 (0.50mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 14:29:33 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211808.D
Acq On : 21 Jun 2018 9:34 Operator: WA
Sample : P1803155-001 (0.50mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 14:29:33 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

WA 6/21/18

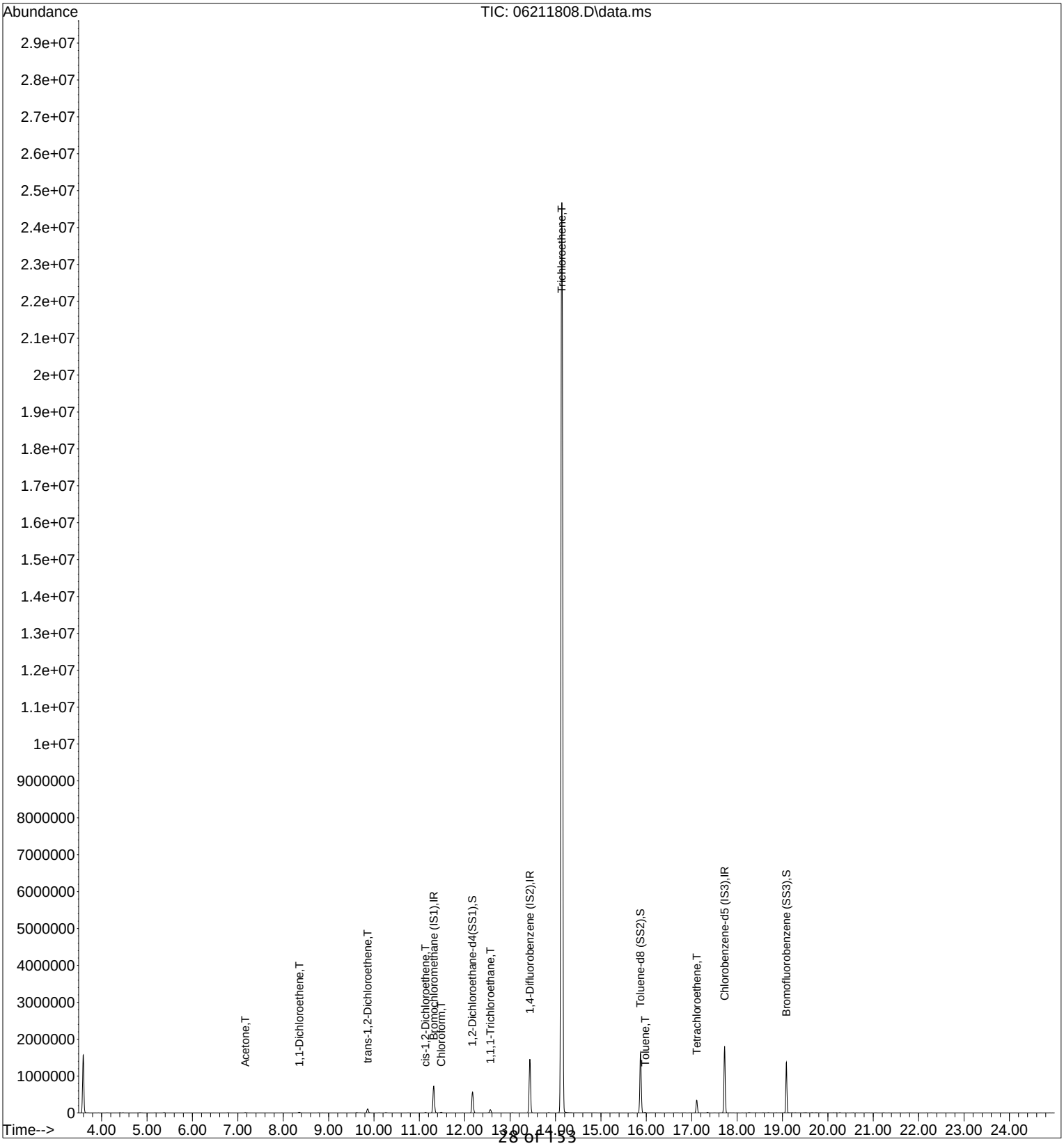
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Bromochloromethane (IS1)	11.32	130	350482	12.500	ng	-0.02
37) 1,4-Difluorobenzene (IS2)	13.43	114	1502713	12.500	ng	-0.01
56) Chlorobenzene-d5 (IS3)	17.72	82	643908	12.500	ng	0.00
System Monitoring Compounds						
33) 1,2-Dichloroethane-d4(...	12.17	65	447627	11.299	ng	-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 90.40%			
57) Toluene-d8 (SS2)	15.87	98	1358467	12.149	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 97.20%			
73) Bromofluorobenzene (SS3)	19.09	174	475382	13.392	ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.12%			
Target Compounds						Qvalue
13) Acetone	7.17	58	6272	0.184	ng	# 83
17) 1,1-Dichloroethene	8.35	96	13268	0.332	ng	94
23) trans-1,2-Dichloroethene	9.86	61	83582	1.381	ng	92
28) cis-1,2-Dichloroethene	11.14	61	11237	0.191	ng	92
32) Chloroform	11.48	83	21174	0.299	ng	99
38) 1,1,1-Trichloroethane	12.57	97	73436	1.271	ng	97
47) Trichloroethene	14.14	130	12332010	285.199	ng	99
58) Toluene	15.98	91	13833	0.093	ng	91
64) Tetrachloroethene	17.11	166	136413	3.297	ng	99

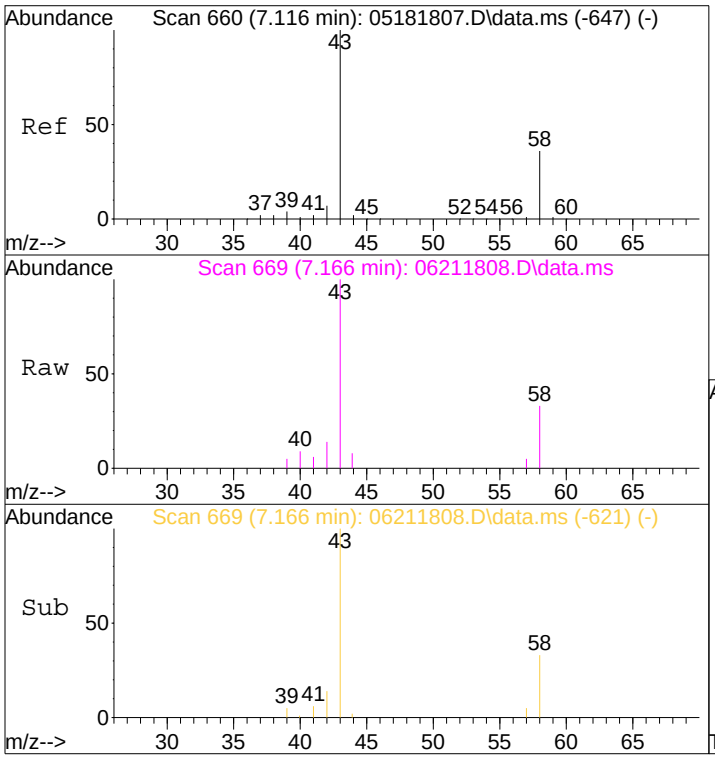
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211808.D
Acq On : 21 Jun 2018 9:34 Operator: WA
Sample : P1803155-001 (0.50mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 14:29:33 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

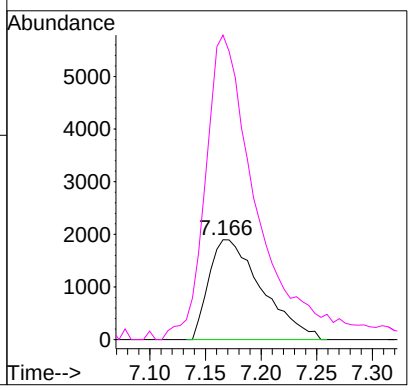


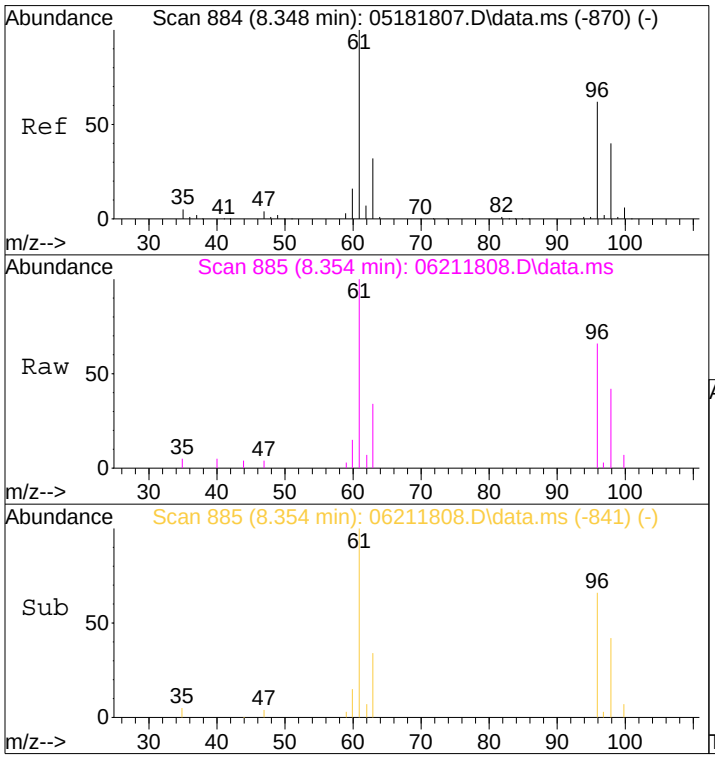


#13
Acetone
Concen: 0.18 ng
RT: 7.17 min Scan# 669
Delta R.T. 0.017 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion: 58 Resp: 6272

Ion	Ratio	Lower	Upper
58	100		
43	304.0	242.9	302.9#

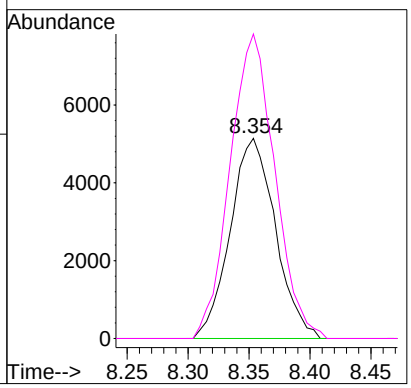


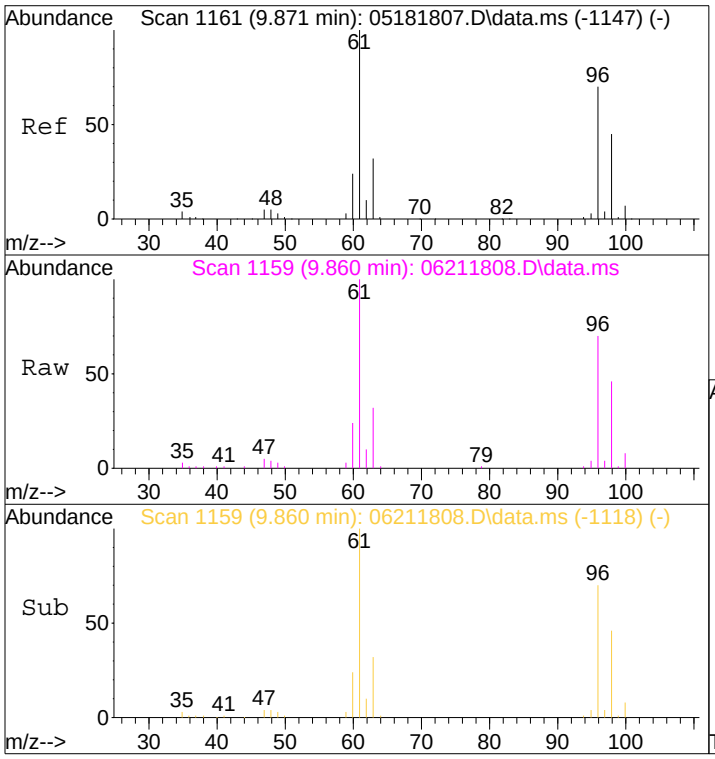


#17
1,1-Dichloroethene
Concen: 0.33 ng
RT: 8.35 min Scan# 885
Delta R.T. -0.005 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion: 96 Resp: 13268

Ion	Ratio	Lower	Upper
96	100		
61	150.9	123.5	163.5

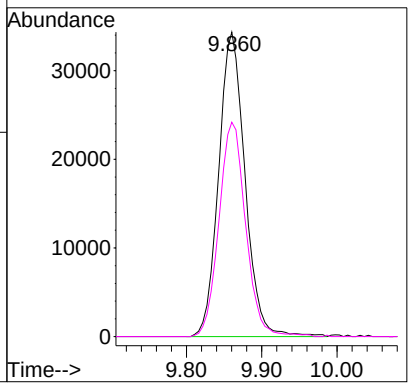


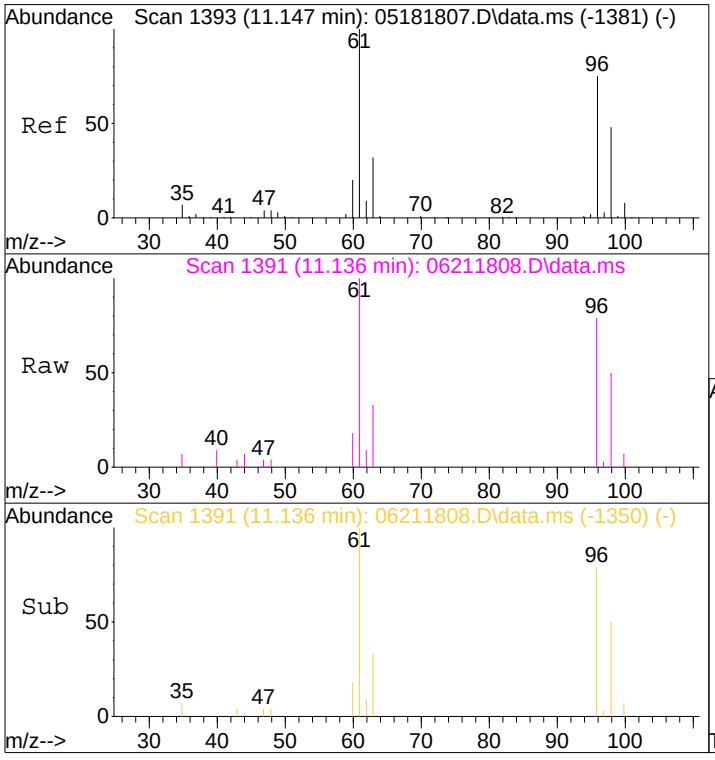


#23
trans-1,2-Dichloroethene
Concen: 1.38 ng
RT: 9.86 min Scan# 1159
Delta R.T. -0.022 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion: 61 Resp: 83582

Ion	Ratio	Lower	Upper
61	100		
96	71.4	58.8	98.8

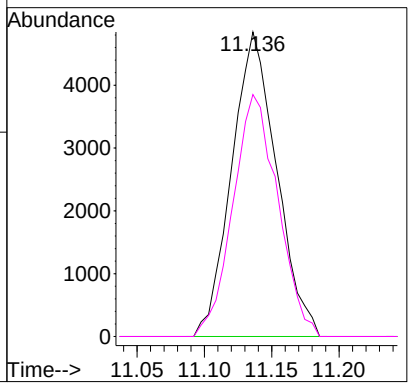


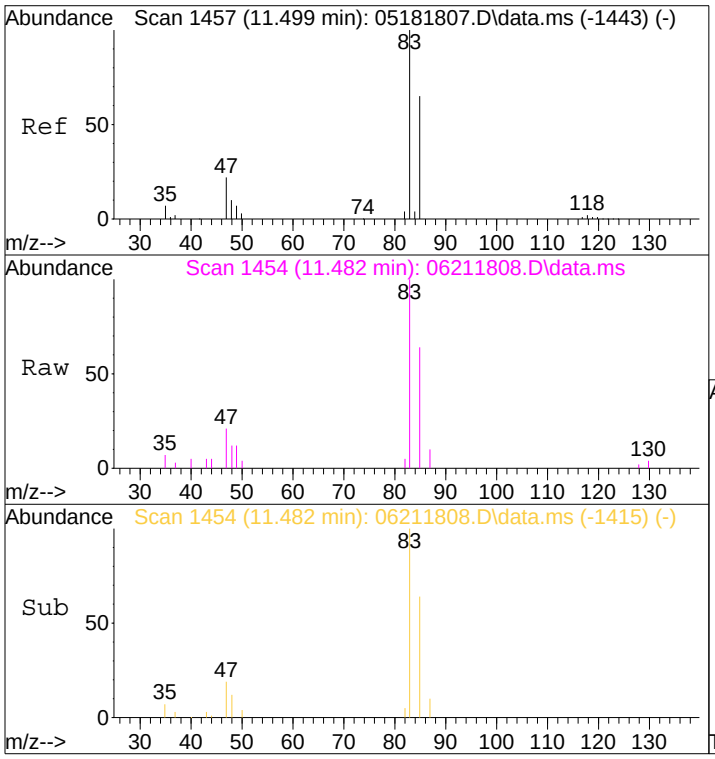


#28
cis-1,2-Dichloroethene
Concen: 0.19 ng
RT: 11.14 min Scan# 1391
Delta R.T. -0.022 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion: 61 Resp: 11237

Ion	Ratio	Lower	Upper
61	100		
96	79.4	66.3	106.3

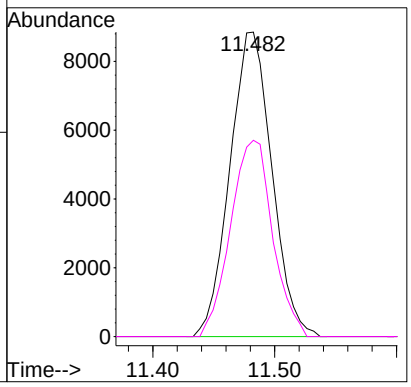


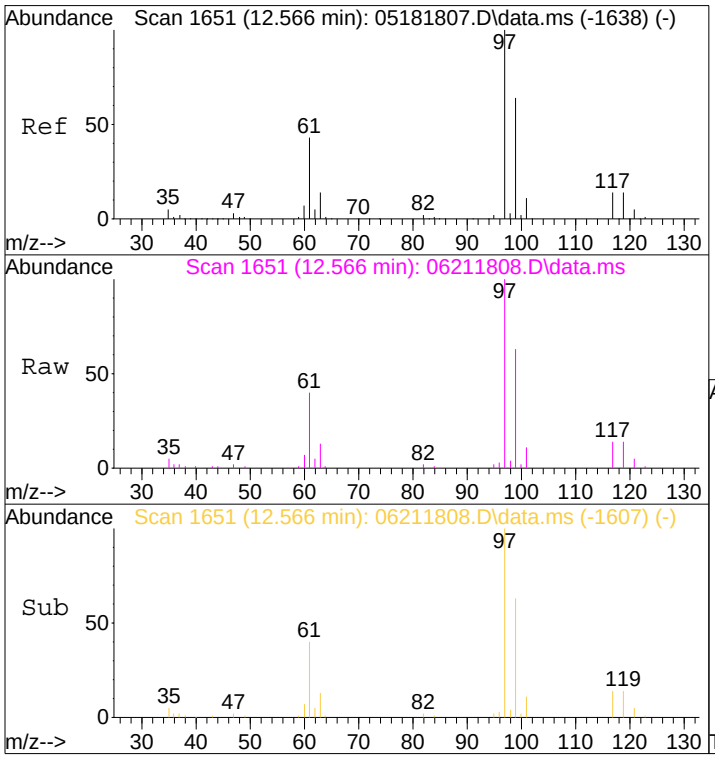


#32
Chloroform
Concen: 0.30 ng
RT: 11.48 min Scan# 1454
Delta R.T. -0.033 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion: 83 Resp: 21174

Ion	Ratio	Lower	Upper
83	100		
85	64.6	45.3	85.3

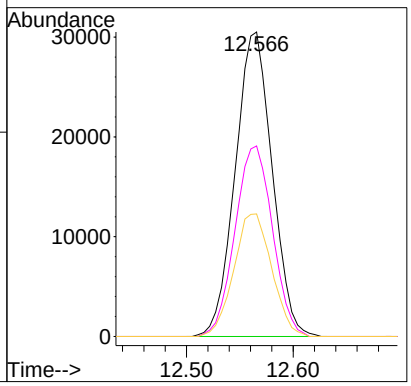


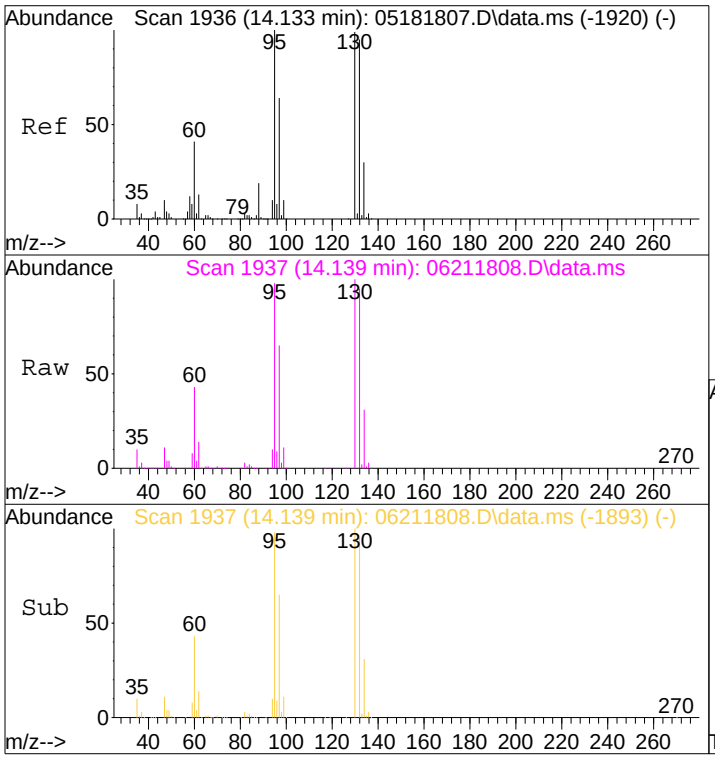


#38
1,1,1-Trichloroethane
Concen: 1.27 ng
RT: 12.57 min Scan# 1651
Delta R.T. -0.005 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion: 97 Resp: 73436

Ion	Ratio	Lower	Upper
97	100		
99	63.6	45.0	85.0
61	41.4	18.9	58.9

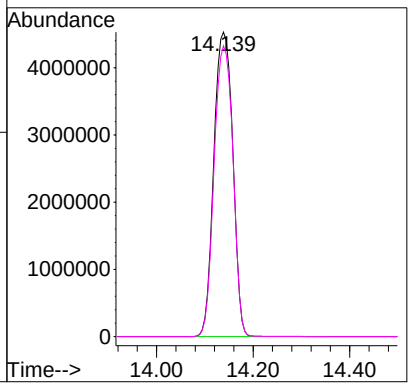


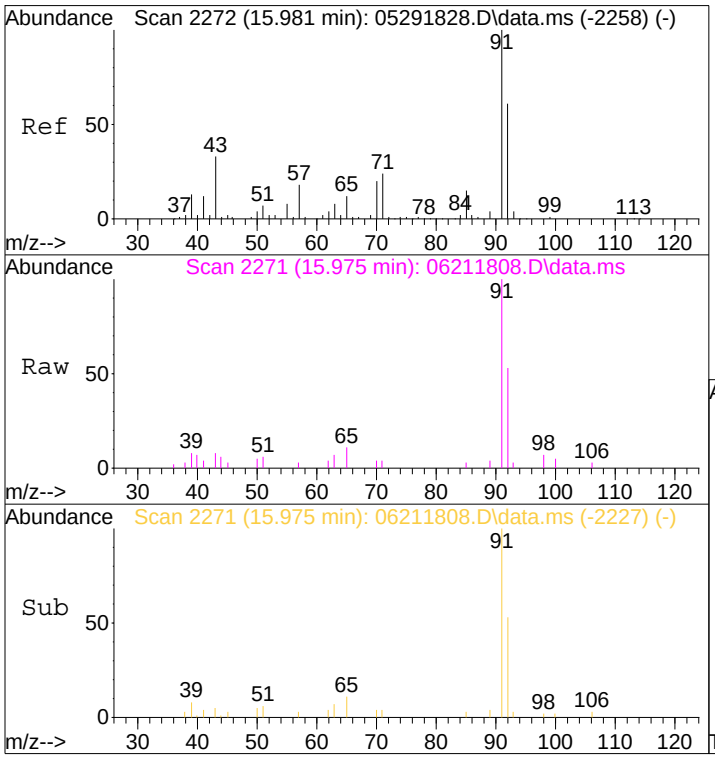


#47
Trichloroethene
Concen: 285.20 ng
RT: 14.14 min Scan# 1937
Delta R.T. -0.005 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion:130 Resp:12332010

Ion	Ratio	Lower	Upper
130	100		
132	95.1	76.0	116.0

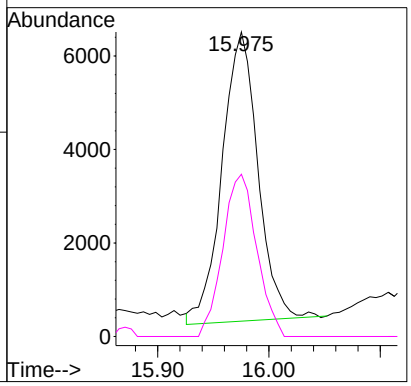


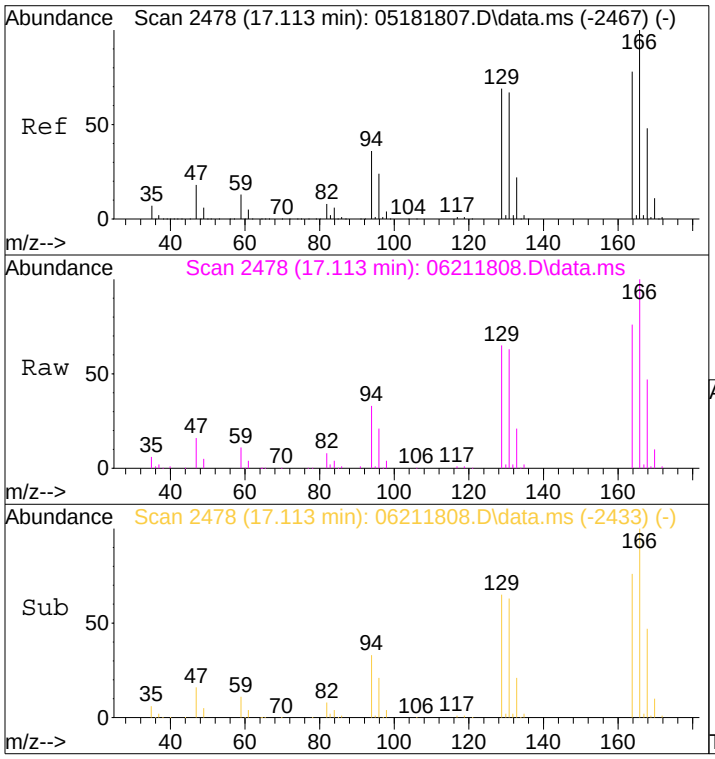


#58
Toluene
Concen: 0.09 ng
RT: 15.98 min Scan# 2271
Delta R.T. -0.006 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion: 91 Resp: 13833

Ion	Ratio	Lower	Upper
91	100		
92	53.0	39.7	79.7

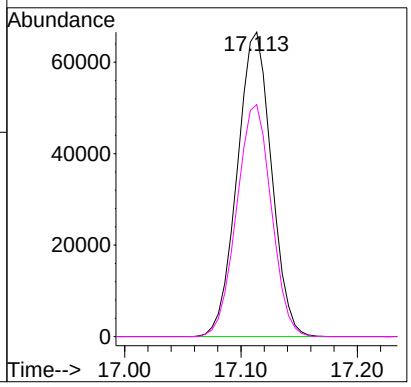




#64
Tetrachloroethene
Concen: 3.30 ng
RT: 17.11 min Scan# 2478
Delta R.T. 0.000 min
Lab File: 06211808.D
Acq: 21 Jun 2018 9:34

Tgt Ion:166 Resp: 136413

Ion	Ratio	Lower	Upper
166	100		
164	77.1	57.9	97.9



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211809.D
Acq On : 21 Jun 2018 10:07 Operator: WA
Sample : P1803155-001dil (0.10mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 14:28:58 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018 6/21/18
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Bromochloromethane (IS1)	11.31	130	343918	12.500 ng	-0.03
37) 1,4-Difluorobenzene (IS2)	13.43	114	1483634	12.500 ng	-0.02
56) Chlorobenzene-d5 (IS3)	17.72	82	632528	12.500 ng	0.00
System Monitoring Compounds					
33) 1,2-Dichloroethane-d4(...	12.17	65	441865	11.366 ng	-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 90.96%		
57) Toluene-d8 (SS2)	15.87	98	1339931	12.198 ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 97.60%		
73) Bromofluorobenzene (SS3)	19.09	174	469033	13.451 ng	0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.60%		
Target Compounds					Qvalue
2) Propene	4.10	42	456	N.D.	
3) Dichlorodifluoromethan...	0.00	85	0	N.D.	
4) Chloromethane	0.00	50	0	N.D.	
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.	
6) Vinyl Chloride	0.00	62	0	N.D.	
7) 1,3-Butadiene	0.00	54	0	N.D.	
8) Bromomethane	0.00	94	0	N.D.	
9) Chloroethane	0.00	64	0	N.D.	
10) Ethanol	6.51	45	52	N.D.	
11) Acetonitrile	6.74	41	657	N.D.	
12) Acrolein	0.00	56	0	N.D.	
13) Acetone	7.18	58	3216	0.096 ng	91
14) Trichlorofluoromethane	0.00	101	0	N.D.	
15) 2-Propanol (Isopropanol)	7.71	45	1475	N.D.	
16) Acrylonitrile	0.00	53	0	N.D.	
17) 1,1-Dichloroethene	8.36	96	10266	0.262 ng	94
18) 2-Methyl-2-Propanol (t...	8.35	59	430	N.D.	
19) Methylene Chloride	8.57	84	388	N.D.	
20) 3-Chloro-1-propene (Al...	0.00	41	0	N.D.	
21) Trichlorotrifluoroethane	8.79	151	479	N.D.	
22) Carbon Disulfide	8.86	76	2434	N.D.	
23) trans-1,2-Dichloroethene	9.86	61	8570	0.144 ng	97
24) 1,1-Dichloroethane	10.11	63	563	N.D.	
25) Methyl tert-Butyl Ether	0.00	73	0	N.D.	
26) Vinyl Acetate	0.00	86	0	N.D.	
27) 2-Butanone (MEK)	0.00	72	0	N.D.	
28) cis-1,2-Dichloroethene	11.14	61	1230	N.D.	
29) Diisopropyl Ether	0.00	87	0	N.D.	
30) Ethyl Acetate	0.00	61	0	N.D.	
31) n-Hexane	0.00	57	0	N.D.	
32) Chloroform	11.48	83	2567	N.D.	
34) Tetrahydrofuran (THF)	11.96	72	384	N.D.	
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.	
36) 1,2-Dichloroethane	0.00	62	0	N.D.	
38) 1,1,1-Trichloroethane	12.56	97	61269	1.074 ng	99
39) Isopropyl Acetate	0.00	61	0	N.D.	
40) 1-Butanol	0.00	56	0	N.D.	
41) Benzene	13.04	78	2853	N.D.	
42) Carbon Tetrachloride	0.00	117	0	N.D.	
43) Cyclohexane	13.42	84	928	N.D.	
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.	
45) 1,2-Dichloropropane	0.00	63	0	N.D.	
46) Bromodichloromethane	0.00	83	0	N.D. d	
47) Trichloroethene	14.13	130	2136346	50.042 ng	100
48) 1,4-Dioxane	0.00	88	0	N.D.	
49) 2,2,4-Trimethylpentane...	14.19	57	178	N.D.	

Data File: I:\MS16\DATA\2018 06\21\06211809.D
Acq On : 21 Jun 2018 10:07 Operator: WA
Sample : P1803155-001dil (0.10mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 14:28:58 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

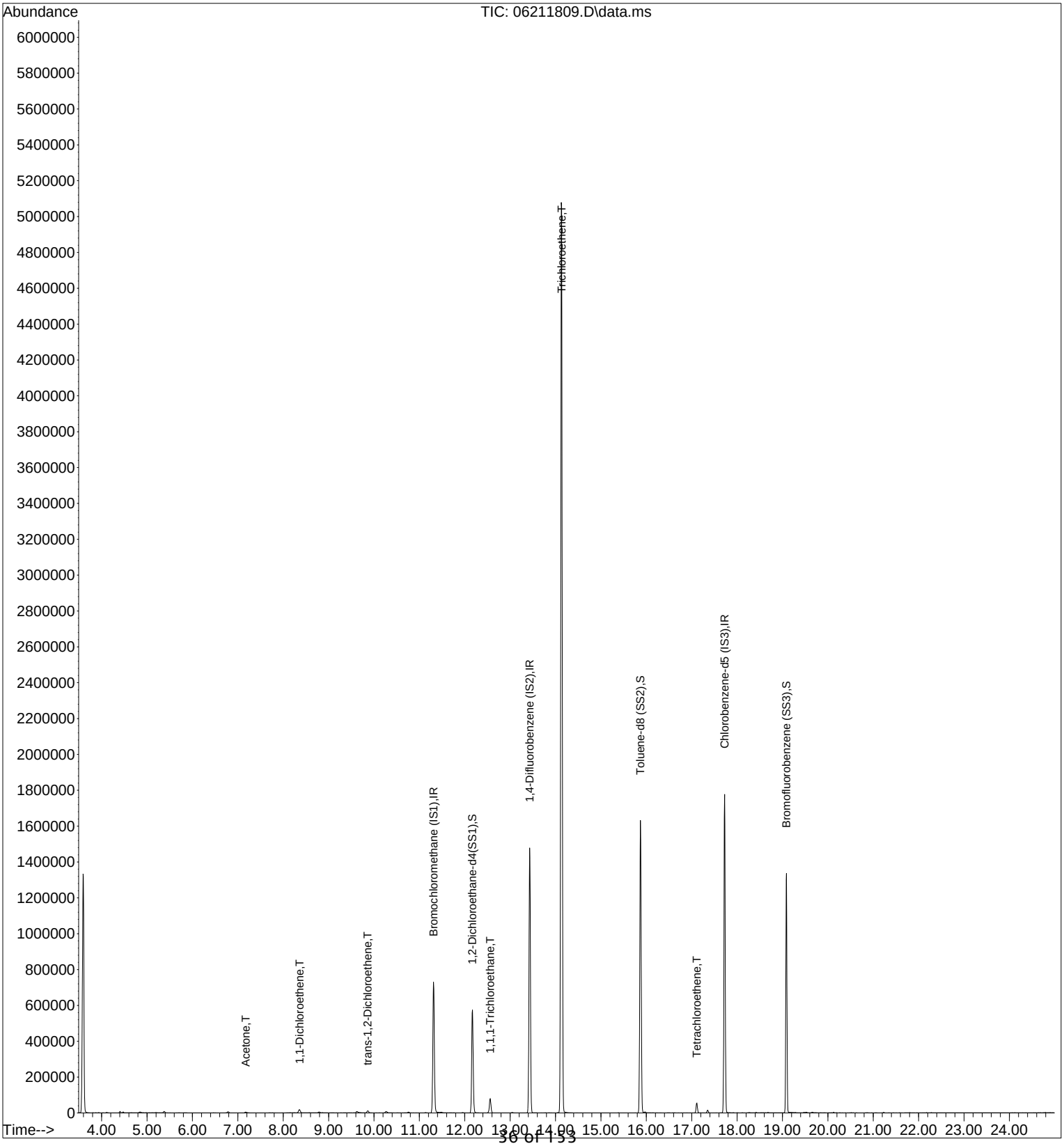
Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
50) Methyl Methacrylate	0.00	100	0	N.D. d	
51) n-Heptane	0.00	71	0	N.D.	
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.	
53) 4-Methyl-2-pentanone	0.00	58	0	N.D.	
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.	
55) 1,1,2-Trichloroethane	0.00	97	0	N.D.	
58) Toluene	15.97	91	5529	N.D.	
59) 2-Hexanone	16.23	43	112	N.D.	
60) Dibromochloromethane	0.00	129	0	N.D.	
61) 1,2-Dibromoethane	0.00	107	0	N.D.	
62) n-Butyl Acetate	16.97	43	169	N.D.	
63) n-Octane	0.00	57	0	N.D.	
64) Tetrachloroethene	17.11	166	21597	0.531 ng	100
65) Chlorobenzene	0.00	112	0	N.D.	
66) Ethylbenzene	18.11	91	1291	N.D.	
67) m- & p-Xylenes	18.26	91	3913	N.D.	
68) Bromoform	0.00	173	0	N.D.	
69) Styrene	0.00	104	0	N.D.	
70) o-Xylene	18.69	91	1752	N.D.	
71) n-Nonane	18.87	43	266	N.D.	
72) 1,1,2,2-Tetrachloroethane	0.00	83	0	N.D.	
74) Cumene	19.25	105	440	N.D.	
75) alpha-Pinene	0.00	93	0	N.D.	
76) n-Propylbenzene	19.63	91	877	N.D.	
77) 3-Ethyltoluene	19.74	105	647	N.D.	
78) 4-Ethyltoluene	19.78	105	463	N.D.	
79) 1,3,5-Trimethylbenzene	19.84	105	837	N.D.	
80) alpha-Methylstyrene	0.00	118	0	N.D.	
81) 2-Ethyltoluene	20.01	105	989	N.D.	
82) 1,2,4-Trimethylbenzene	20.19	105	1150	N.D.	
83) n-Decane	20.26	57	552	N.D.	
84) Benzyl Chloride	20.31	91	404	N.D.	
85) 1,3-Dichlorobenzene	20.33	146	183	N.D.	
86) 1,4-Dichlorobenzene	20.38	146	389	N.D.	
87) sec-Butylbenzene	20.56	105	288	N.D.	
88) 4-Isopropyltoluene (p-...	20.56	119	705	N.D.	
89) 1,2,3-Trimethylbenzene	20.56	105	288	N.D.	
90) 1,2-Dichlorobenzene	20.68	146	115	N.D.	
91) d-Limonene	0.00	68	0	N.D.	
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.	
93) n-Undecane	21.35	57	242	N.D.	
94) 1,2,4-Trichlorobenzene	22.17	180	347	N.D.	
95) Naphthalene	22.28	128	2051	N.D.	
96) n-Dodecane	22.25	57	118	N.D.	
97) Hexachlorobutadiene	0.00	225	0	N.D.	
98) Cyclohexanone	18.42	55	964	N.D.	
99) tert-Butylbenzene	20.19	119	190	N.D.	
100) n-Butylbenzene	20.92	91	196	N.D.	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211809.D
Acq On : 21 Jun 2018 10:07 Operator: WA
Sample : P1803155-001dil (0.10mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

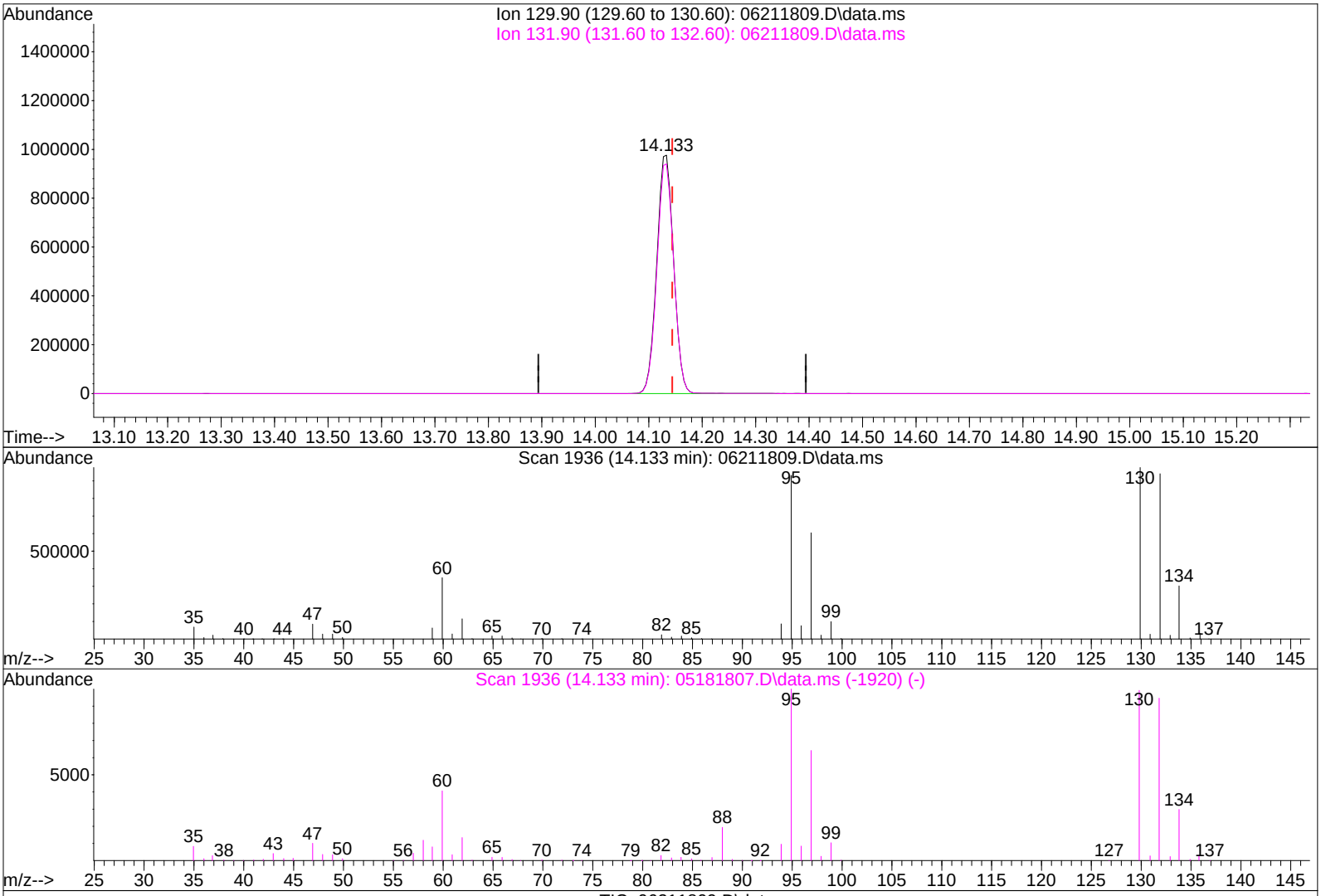
Quant Time: Jun 21 14:28:58 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (Qedit)

Data File: I:\MS16\DATA\2018 06\21\06211809.D
Acq On : 21 Jun 2018 10:07 Operator: WA
Sample : P1803155-001dil (0.10mL)
Misc : S31-04201801
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 21 11:23:19 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



TIC: 06211809.D\data.ms

(47) Trichloroethene (T)

14.133min (-0.011) 50.04ng

response 2136346

Ion	Exp%	Act%
129.90	100	100
131.90	96.00	96.35
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 14:27:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018 6/21/18
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.32	130	336614	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.43	114	1449777	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.72	82	632656	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.17	65	425058	11.171	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.36%				
57) Toluene-d8 (SS2)	15.87	98	1325072	12.061	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 96.48%				
73) Bromofluorobenzene (SS3)	19.09	174	468343	13.428	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.44%				
Target Compounds							Qvalue
2) Propene	4.04	42	56960	1.211	ng		98
3) Dichlorodifluoromethan...	4.22	85	97790	1.307	ng		100
4) Chloromethane	4.52	50	9343	0.140	ng		92
5) 1,2-Dichloro-1,1,2,2-t...	4.80	135	2437	N.D.			
6) Vinyl Chloride	0.00	62	0	N.D.			
7) 1,3-Butadiene	5.24	54	10890	0.230	ng		94
8) Bromomethane	5.70	94	643	N.D.			
9) Chloroethane	6.04	64	1460	N.D.			
10) Ethanol	6.42	45	217783	6.768	ng		100
11) Acetonitrile	6.70	41	25241	0.299	ng		93
12) Acrolein	6.89	56	35998	1.324	ng		99
13) Acetone	7.09	58	585421	17.855	ng	#	1
14) Trichlorofluoromethane	7.36	101	64535	1.020	ng		100
15) 2-Propanol (Isopropanol)	7.62	45	111779	1.081	ng		95
16) Acrylonitrile	7.90	53	2328	N.D.			
17) 1,1-Dichloroethene	8.35	96	15716	0.410	ng		96
18) 2-Methyl-2-Propanol (t...	0.00	59	0	N.D. d			
19) Methylene Chloride	8.57	84	6543	0.155	ng		86
20) 3-Chloro-1-propene (Al...	8.74	41	1130	N.D.			
21) Trichlorotrifluoroethane	9.00	151	10663	0.306	ng		94
22) Carbon Disulfide	8.85	76	24134	0.161	ng		100
23) trans-1,2-Dichloroethene	9.86	61	57883	0.995	ng		92
24) 1,1-Dichloroethane	10.11	63	47479	0.652	ng		95
25) Methyl tert-Butyl Ether	10.25	73	911	N.D.			
26) Vinyl Acetate	0.00	86	0	N.D. d			
27) 2-Butanone (MEK)	10.62	72	46210	1.629	ng	#	84
28) cis-1,2-Dichloroethene	11.14	61	19510m	0.345	ng		
29) Diisopropyl Ether	0.00	87	0	N.D. d			
30) Ethyl Acetate	11.44	61	26668	1.746	ng		98
31) n-Hexane	11.41	57	199105	3.146	ng		98
32) Chloroform	11.48	83	12568	0.185	ng		99
34) Tetrahydrofuran (THF)	11.93	72	2227	N.D.			
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	12.29	62	21768	0.444	ng		100
38) 1,1,1-Trichloroethane	12.56	97	153867	2.760	ng		99
39) Isopropyl Acetate	12.98	61	863	N.D.			
40) 1-Butanol	0.00	56	0	N.D. d			
41) Benzene	13.04	78	90310	0.542	ng		99
42) Carbon Tetrachloride	13.20	117	26689	0.558	ng		100
43) Cyclohexane	13.33	84	35106	0.593	ng		88
44) tert-Amyl Methyl Ether	0.00	73	0	N.D. d			
45) 1,2-Dichloropropane	13.89	63	1363	N.D.			
46) Bromodichloromethane	0.00	83	0	N.D. d			
47) Trichloroethene	14.13	130	547453	13.123	ng		99
48) 1,4-Dioxane	0.00	88	0	N.D. d			
49) 2,2,4-Trimethylpentane...	0.00	57	0	N.D. d			

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 14:27:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

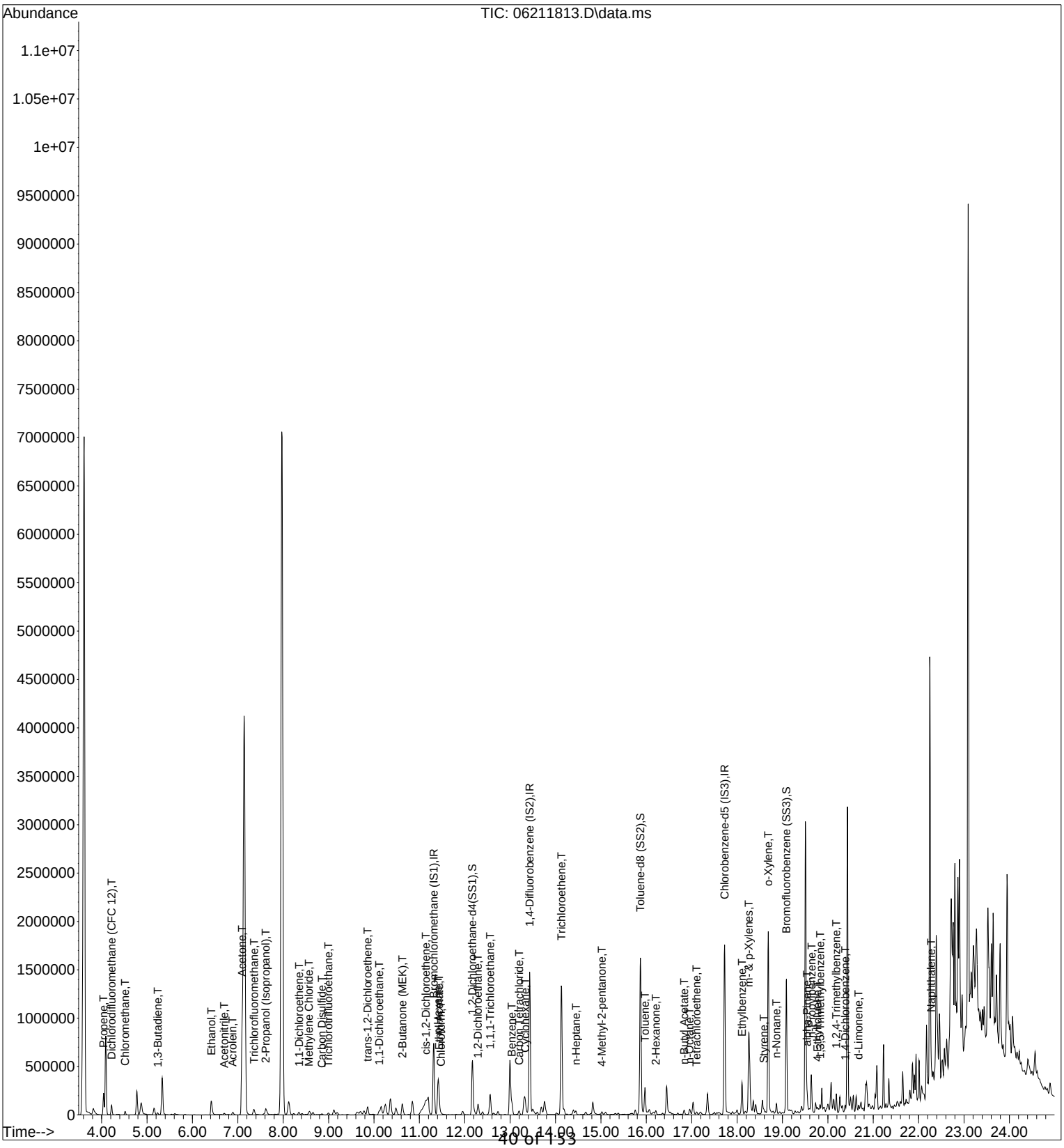
Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	1175	N.D.		
51) n-Heptane	14.45	71	10660	0.280 ng		93
52) cis-1,3-Dichloropropene	14.81	75	488	N.D.		
53) 4-Methyl-2-pentanone	15.02	58	9324	0.236 ng	#	80
54) trans-1,3-Dichloropropene	15.49	75	107	N.D.		
55) 1,1,2-Trichloroethane	15.68	97	161	N.D.		
58) Toluene	15.97	91	233711	1.596 ng		99
59) 2-Hexanone	16.21	43	30527	0.345 ng		94
60) Dibromochloromethane	0.00	129	0	N.D.		
61) 1,2-Dibromoethane	0.00	107	0	N.D.		
62) n-Butyl Acetate	16.83	43	37908	0.385 ng		98
63) n-Octane	16.95	57	12028	0.375 ng		85
64) Tetrachloroethene	17.11	166	8271	0.203 ng		99
65) Chlorobenzene	17.78	112	3441	N.D.		
66) Ethylbenzene	18.11	91	274008	1.631 ng		97
67) m- & p-Xylenes	18.26	91	684751	5.358 ng		99
68) Bromoform	18.35	173	128	N.D.		
69) Styrene	18.59	104	22922	0.225 ng		96
70) o-Xylene	18.69	91	196605	1.515 ng		99
71) n-Nonane	18.87	43	38338	0.518 ng		93
72) 1,1,2,2-Tetrachloroethane	18.69	83	967	N.D.		
74) Cumene	19.20	105	13066	N.D.		
75) alpha-Pinene	19.54	93	84461	0.978 ng	#	1
76) n-Propylbenzene	19.64	91	19823	0.101 ng	#	1
77) 3-Ethyltoluene	0.00	105	0	N.D. d		
78) 4-Ethyltoluene	19.77	105	17603	0.117 ng		97
79) 1,3,5-Trimethylbenzene	19.83	105	27541	0.208 ng		99
80) alpha-Methylstyrene	0.00	118	0	N.D. d		
81) 2-Ethyltoluene	0.00	105	0	N.D. d		
82) 1,2,4-Trimethylbenzene	20.19	105	87779	0.653 ng		89
83) n-Decane	0.00	57	0	N.D. d		
84) Benzyl Chloride	20.39	91	2289	N.D.		
85) 1,3-Dichlorobenzene	20.32	146	261	N.D.		
86) 1,4-Dichlorobenzene	20.39	146	20844	0.252 ng		98
87) sec-Butylbenzene	0.00	105	0	N.D. d		
88) 4-Isopropyltoluene (p-...	0.00	119	0	N.D. d		
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D. d		
90) 1,2-Dichlorobenzene	20.68	146	261	N.D.		
91) d-Limonene	20.68	68	18955	0.344 ng	#	55
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.		
93) n-Undecane	0.00	57	0	N.D. d		
94) 1,2,4-Trichlorobenzene	22.18	180	672	N.D.		
95) Naphthalene	22.28	128	78031	0.405 ng		95
96) n-Dodecane	0.00	57	0	N.D. d		
97) Hexachlorobutadiene	0.00	225	0	N.D.		
98) Cyclohexanone	0.00	55	0	N.D. d		
99) tert-Butylbenzene	0.00	119	0	N.D. d		
100) n-Butylbenzene	0.00	91	0	N.D. d		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 14:27:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 14:27:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration 6/21/18
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.32	130	336614	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.43	114	1449777	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.72	82	632656	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.17	65	425058	11.171	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.36%				
57) Toluene-d8 (SS2)	15.87	98	1325072	12.061	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 96.48%				
73) Bromofluorobenzene (SS3)	19.09	174	468343	13.428	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.44%				
Target Compounds							Qvalue
2) Propene	4.04	42	56960	1.211	ng		98
3) Dichlorodifluoromethan...	4.22	85	97790	1.307	ng		100
4) Chloromethane	4.52	50	9343	0.140	ng		92
7) 1,3-Butadiene	5.24	54	10890	0.230	ng		94
10) Ethanol	6.42	45	217783	6.768	ng		100
11) Acetonitrile	6.70	41	25241	0.299	ng		93
12) Acrolein	6.89	56	35998	1.324	ng		99
13) Acetone	7.09	58	585421	17.855	ng	#	1
14) Trichlorofluoromethane	7.36	101	64535	1.020	ng		100
15) 2-Propanol (Isopropanol)	7.62	45	111779	1.081	ng		95
17) 1,1-Dichloroethene	8.35	96	15716	0.410	ng		96
19) Methylene Chloride	8.57	84	6543	0.155	ng		86
21) Trichlorotrifluoroethane	9.00	151	10663	0.306	ng		94
22) Carbon Disulfide	8.85	76	24134	0.161	ng		100
23) trans-1,2-Dichloroethene	9.86	61	57883	0.995	ng		92
24) 1,1-Dichloroethane	10.11	63	47479	0.652	ng		95
27) 2-Butanone (MEK)	10.62	72	46210	1.629	ng	#	84
28) cis-1,2-Dichloroethene	11.14	61	19510m	0.345	ng		
30) Ethyl Acetate	11.44	61	26668	1.746	ng		98
31) n-Hexane	11.41	57	199105	3.146	ng		98
32) Chloroform	11.48	83	12568	0.185	ng		99
36) 1,2-Dichloroethane	12.29	62	21768	0.444	ng		100
38) 1,1,1-Trichloroethane	12.56	97	153867	2.760	ng		99
41) Benzene	13.04	78	90310	0.542	ng		99
42) Carbon Tetrachloride	13.20	117	26689	0.558	ng		100
43) Cyclohexane	13.33	84	35106	0.593	ng		88
47) Trichloroethene	14.13	130	547453	13.123	ng		99
51) n-Heptane	14.45	71	10660	0.280	ng		93
53) 4-Methyl-2-pentanone	15.02	58	9324	0.236	ng	#	80
58) Toluene	15.97	91	233711	1.596	ng		99
59) 2-Hexanone	16.21	43	30527	0.345	ng		94
62) n-Butyl Acetate	16.83	43	37908	0.385	ng		98
63) n-Octane	16.95	57	12028	0.375	ng		85
64) Tetrachloroethene	17.11	166	8271	0.203	ng		99
66) Ethylbenzene	18.11	91	274008	1.631	ng		97
67) m- & p-Xylenes	18.26	91	684751	5.358	ng		99
69) Styrene	18.59	104	22922	0.225	ng		96
70) o-Xylene	18.69	91	196605	1.515	ng		99
71) n-Nonane	18.87	43	38338	0.518	ng		93
75) alpha-Pinene	19.54	93	84461	0.978	ng	#	1
76) n-Propylbenzene	19.64	91	19823	0.101	ng	#	1
78) 4-Ethyltoluene	19.77	105	17603	0.117	ng		97
79) 1,3,5-Trimethylbenzene	19.83	105	27541	0.208	ng		99
82) 1,2,4-Trimethylbenzene	20.19	105	87779	0.653	ng		89
86) 1,4-Dichlorobenzene	20.39	146	20844	0.252	ng		98
91) d-Limonene	20.68	68	18955	0.344	ng	#	55

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 14:27:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

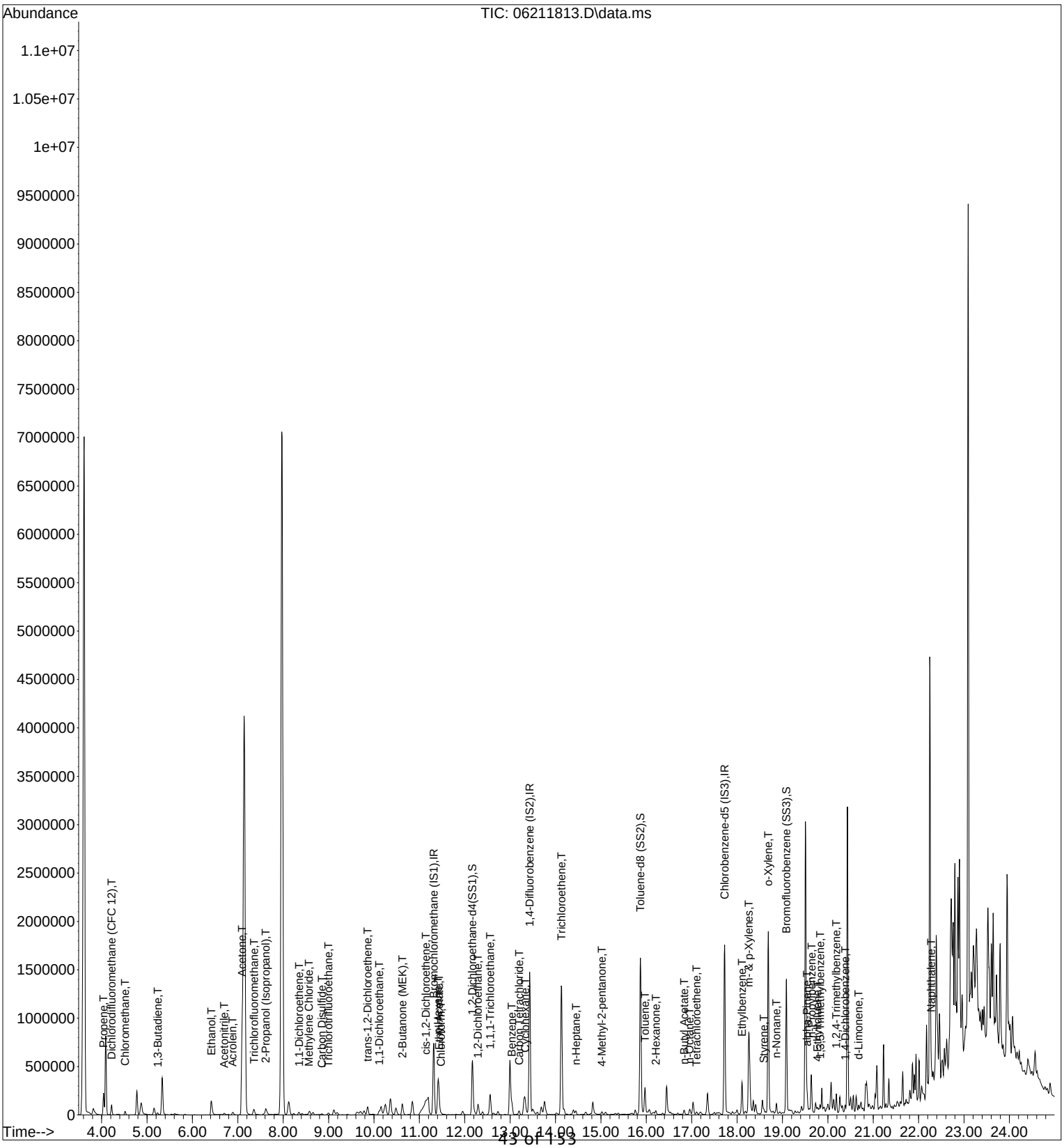
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
95) Naphthalene	22.28	128	78031	0.405	ng	95

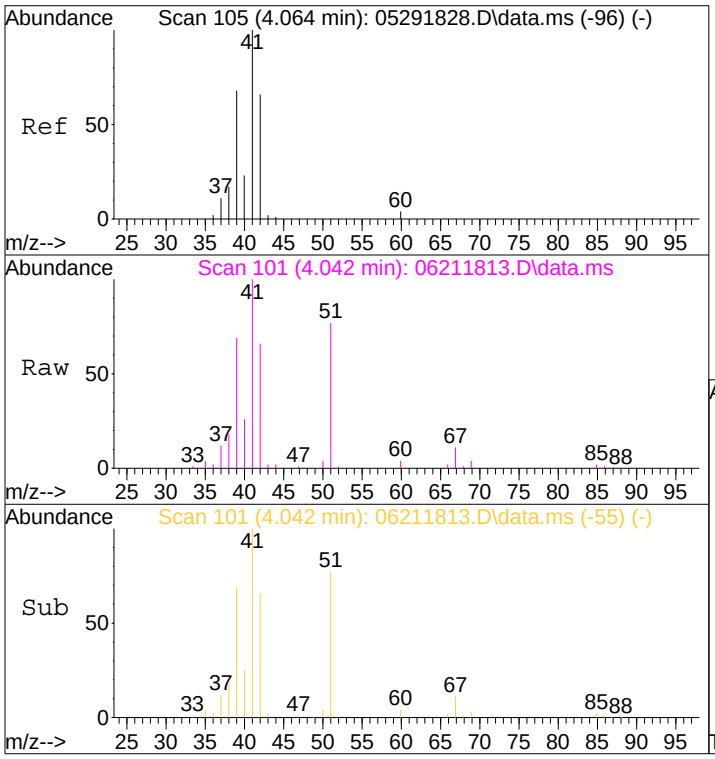
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 14:27:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

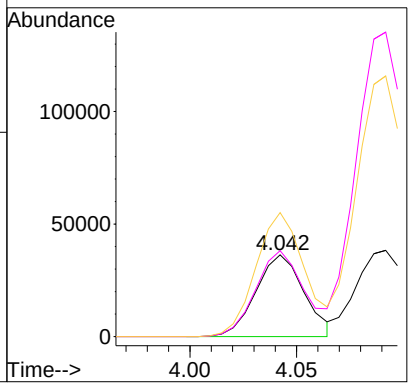


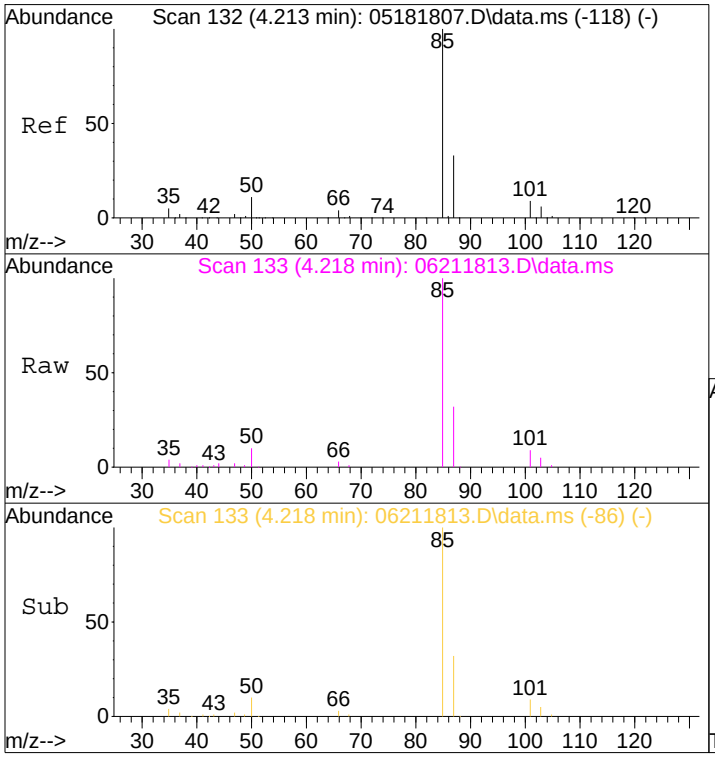


#2
Propene
Concen: 1.21 ng
RT: 4.04 min Scan# 101
Delta R.T. 0.000 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 42 Resp: 56960

Ion	Ratio	Lower	Upper
42	100		
39	108.6	86.8	126.8
41	154.3	130.4	170.4

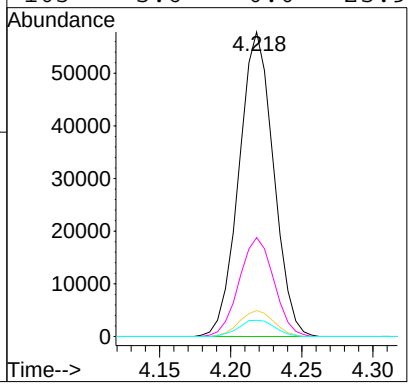


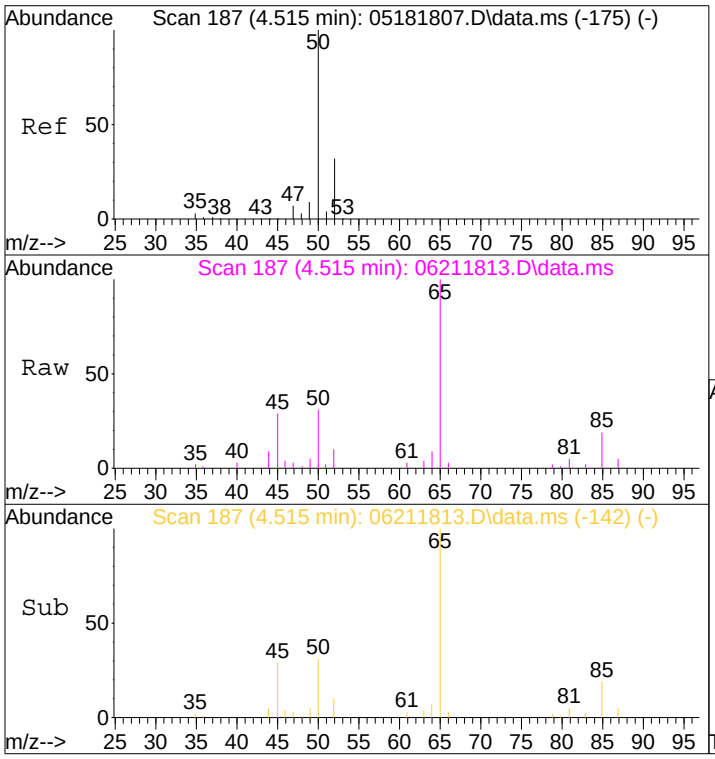


#3
Dichlorodifluoromethane (CFC 12)
Concen: 1.31 ng
RT: 4.22 min Scan# 133
Delta R.T. 0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 85 Resp: 97790

Ion	Ratio	Lower	Upper
85	100		
87	32.6	12.6	52.6
101	8.5	0.0	29.1
103	5.6	0.0	25.9

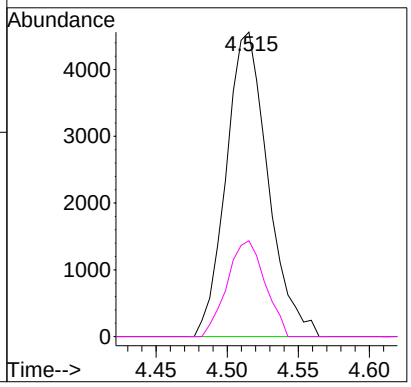


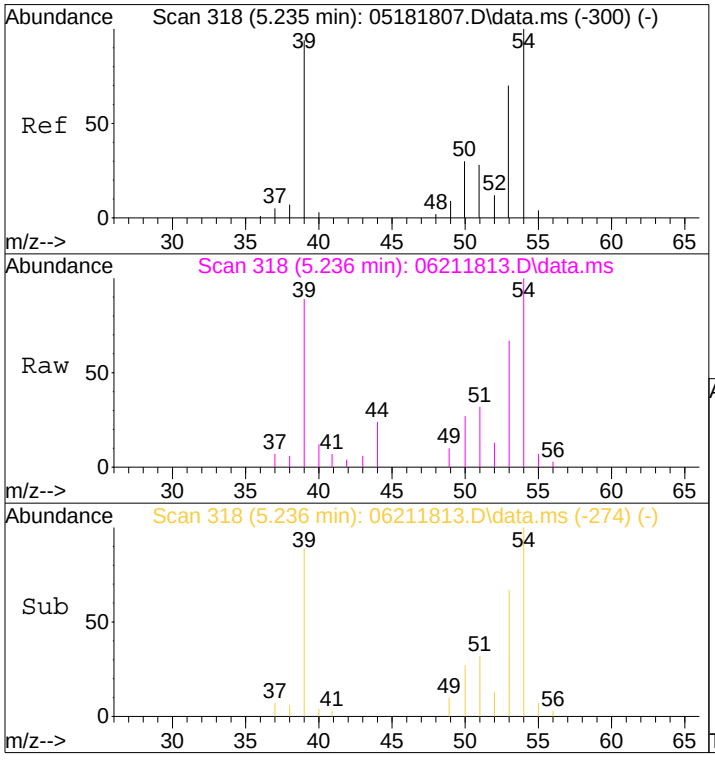


#4
Chloromethane
Concen: 0.14 ng
RT: 4.52 min Scan# 187
Delta R.T. 0.000 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 50 Resp: 9343

Ion	Ratio	Lower	Upper
50	100		
52	28.6	13.0	53.0

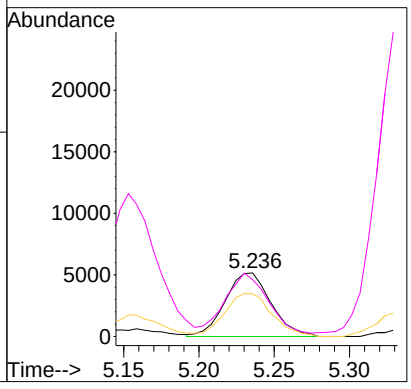


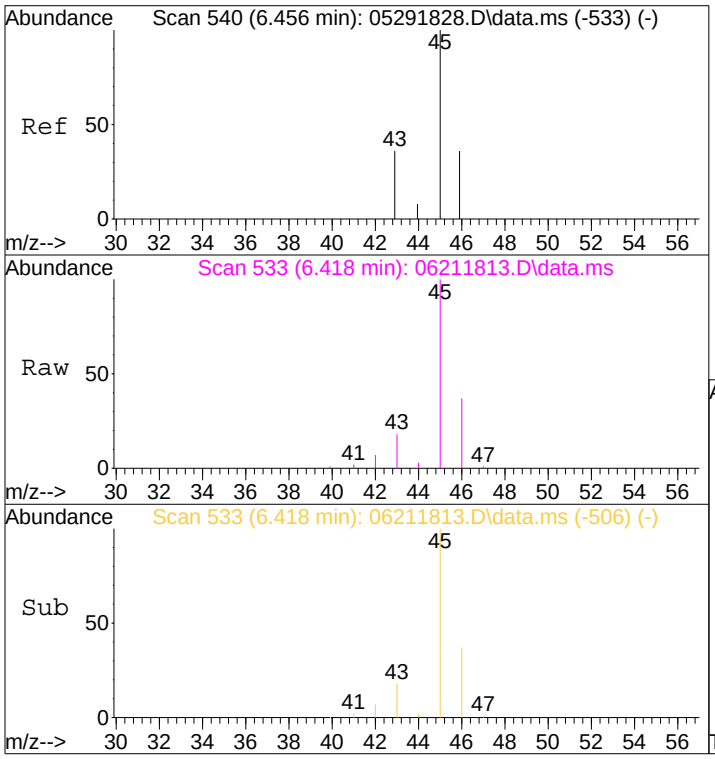


#7
1,3-Butadiene
Concen: 0.23 ng
RT: 5.24 min Scan# 318
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 54 Resp: 10890

Ion	Ratio	Lower	Upper
54	100		
39	99.2	70.4	110.4
53	69.7	49.2	89.2

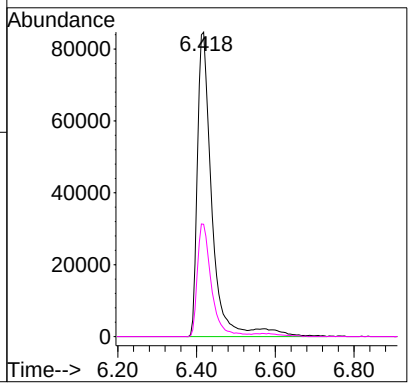


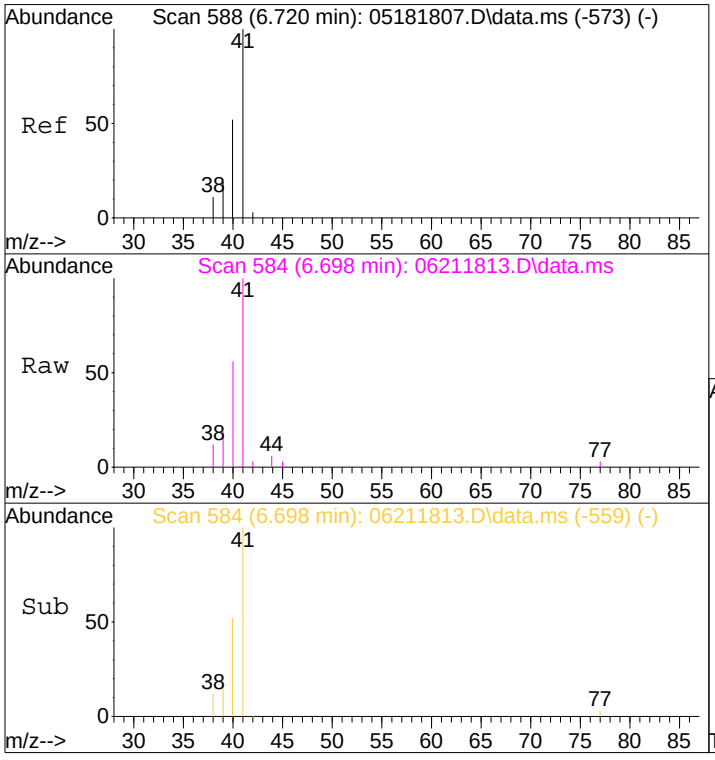


#10
Ethanol
Concen: 6.77 ng
RT: 6.42 min Scan# 533
Delta R.T. -0.099 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 45 Resp: 217783

Ion	Ratio	Lower	Upper
45	100		
46	37.4	17.2	57.2

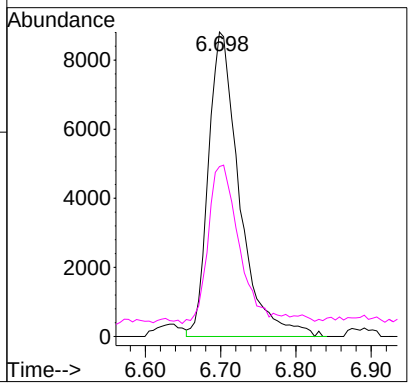


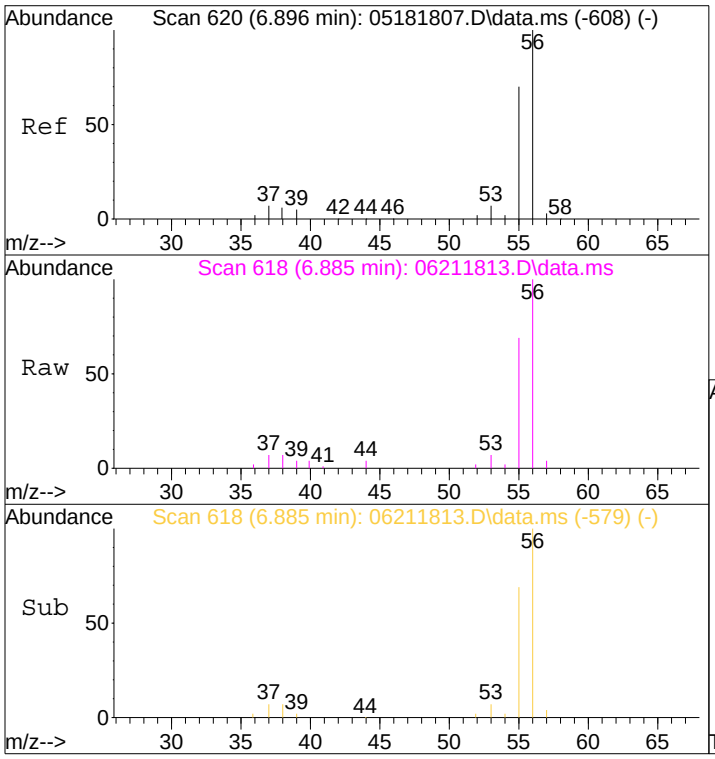


#11
Acetonitrile
Concen: 0.30 ng
RT: 6.70 min Scan# 584
Delta R.T. -0.060 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 41 Resp: 25241

Ion	Ratio	Lower	Upper
41	100		
40	58.3	33.1	73.1

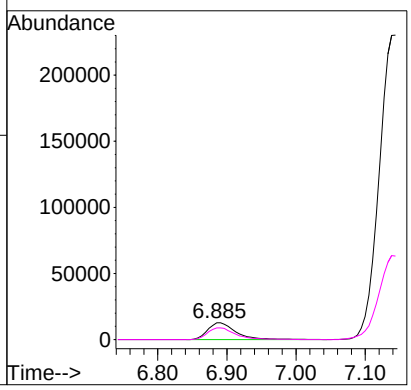


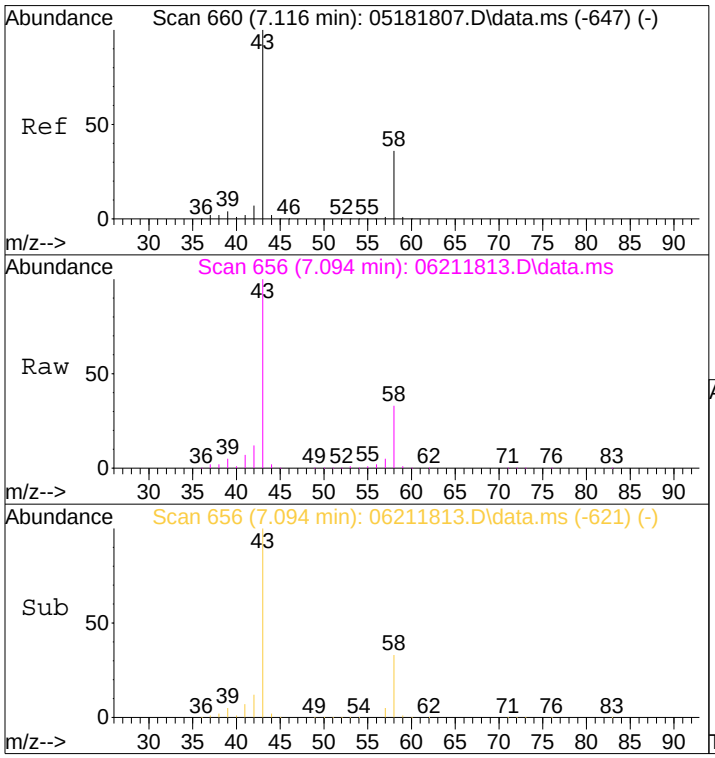


#12
Acrolein
Concen: 1.32 ng
RT: 6.89 min Scan# 618
Delta R.T. -0.033 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 56 Resp: 35998

Ion	Ratio	Lower	Upper
56	100		
55	69.1	49.7	89.7

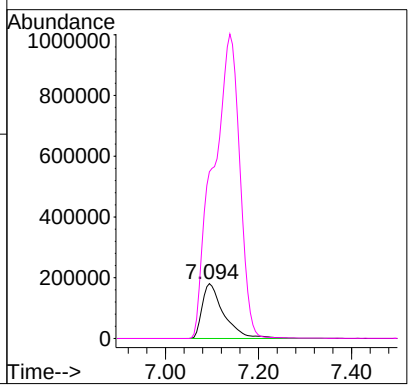


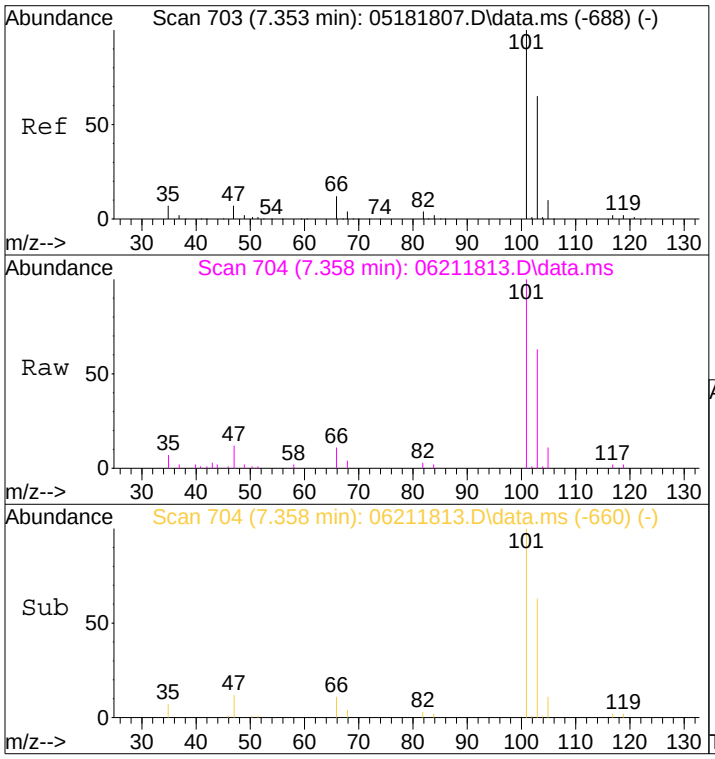


#13
Acetone
Concen: 17.86 ng
RT: 7.09 min Scan# 656
Delta R.T. -0.055 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 58 Resp: 585421

Ion	Ratio	Lower	Upper
58	100		
43	683.0	242.9	302.9#

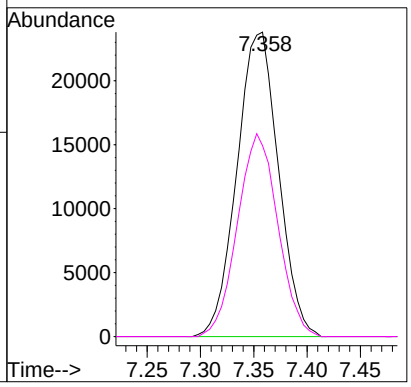


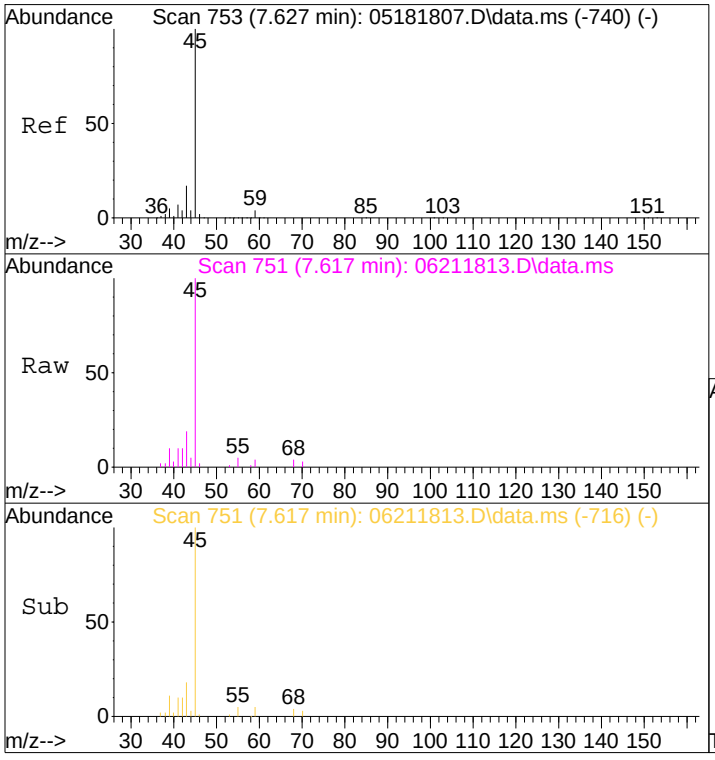


#14
Trichlorofluoromethane
Concen: 1.02 ng
RT: 7.36 min Scan# 704
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:101 Resp: 64535

Ion	Ratio	Lower	Upper
101	100		
103	64.7	44.9	84.9

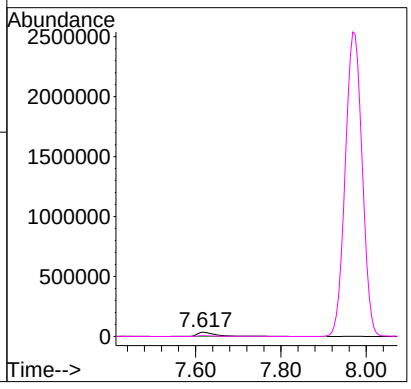


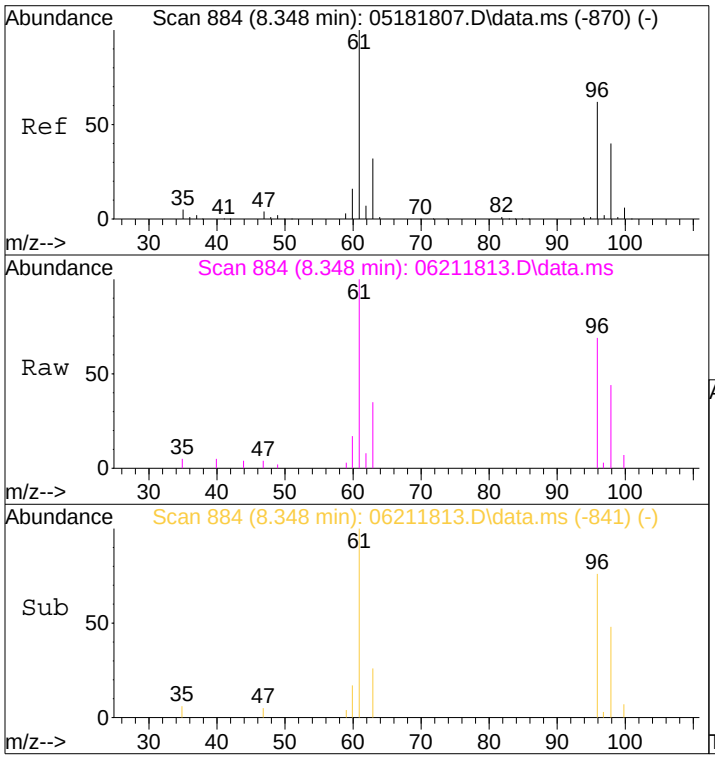


#15
2-Propanol (Isopropanol)
Concen: 1.08 ng
RT: 7.62 min Scan# 751
Delta R.T. -0.055 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 45 Resp: 111779

Ion	Ratio	Lower	Upper
45	100		
43	19.7	0.0	37.4

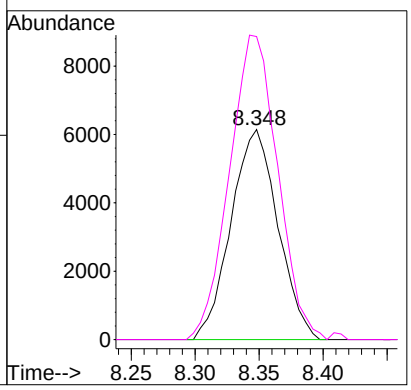


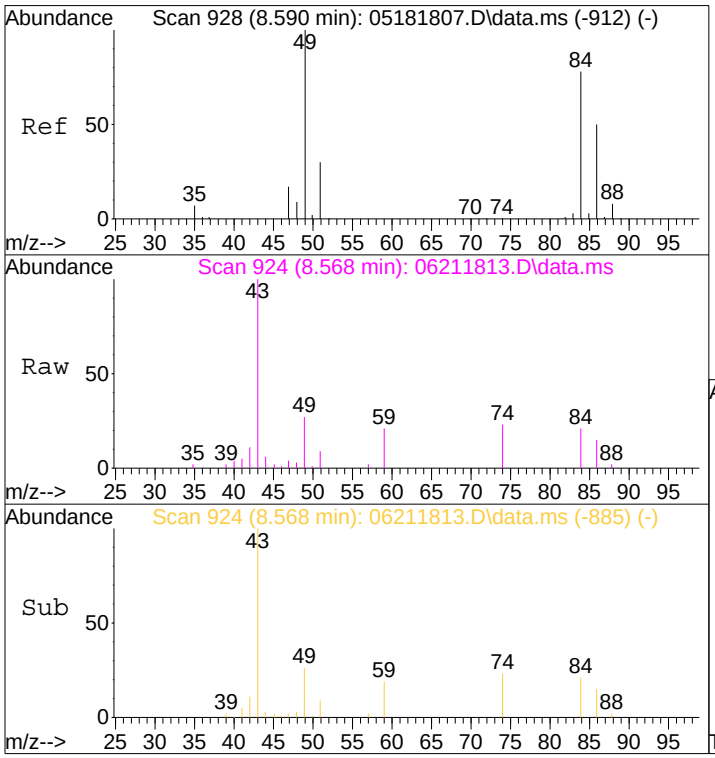


#17
1,1-Dichloroethene
Concen: 0.41 ng
RT: 8.35 min Scan# 884
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 96 Resp: 15716

Ion	Ratio	Lower	Upper
96	100		
61	148.8	123.5	163.5

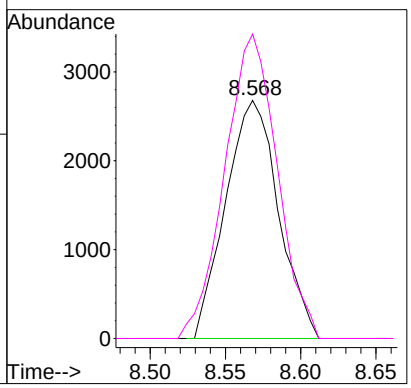


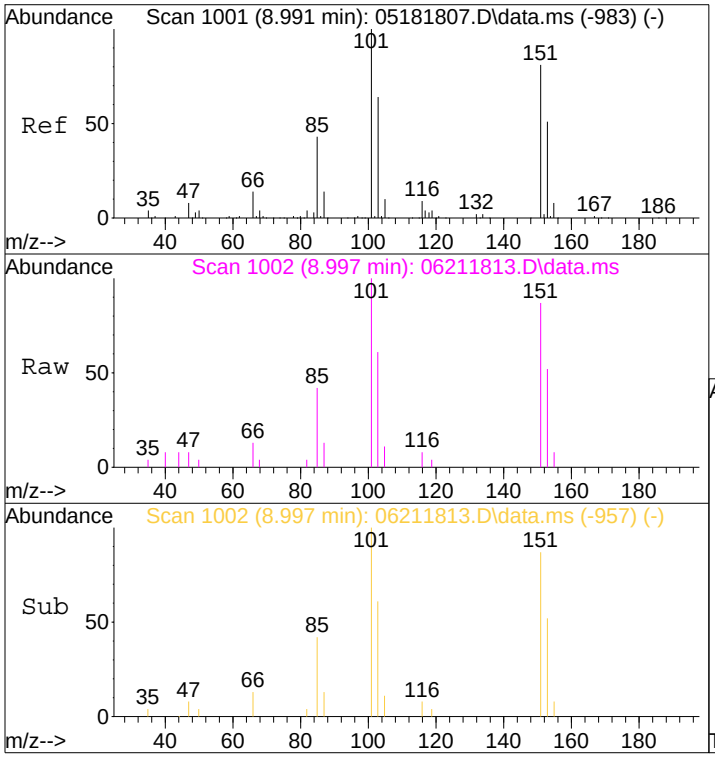


#19
Methylene Chloride
Concen: 0.15 ng
RT: 8.57 min Scan# 924
Delta R.T. -0.033 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 84 Resp: 6543

Ion	Ratio	Lower	Upper
84	100		
49	126.9	87.3	137.3

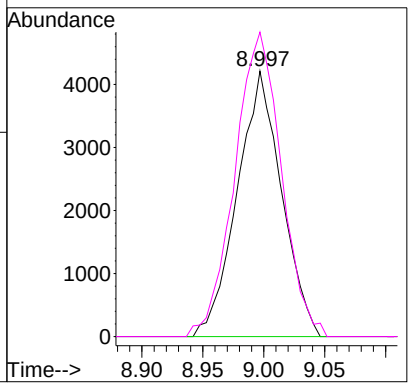


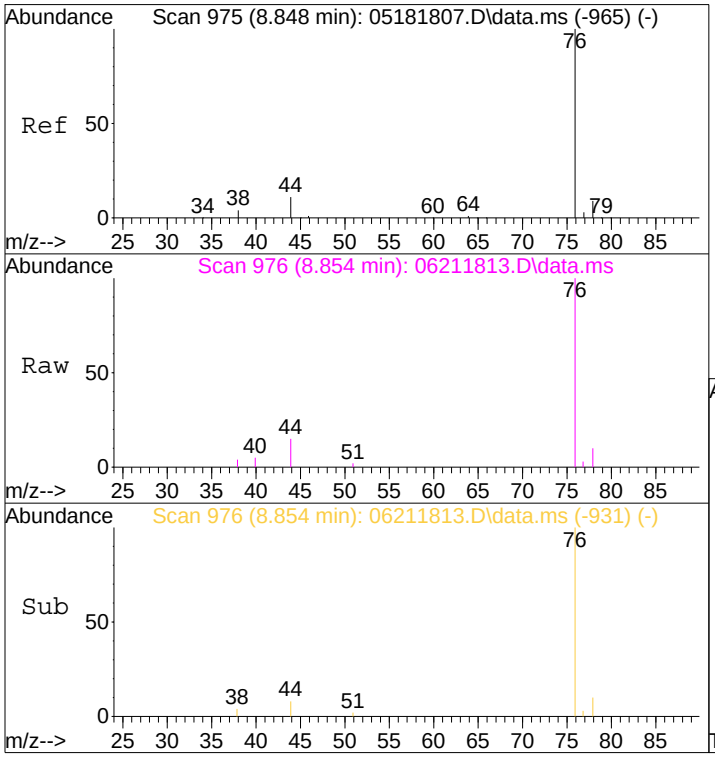


#21
Trichlorotrifluoroethane
Concen: 0.31 ng
RT: 9.00 min Scan# 1002
Delta R.T. 0.000 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:151 Resp: 10663

Ion	Ratio	Lower	Upper
151	100		
101	120.6	94.6	134.6

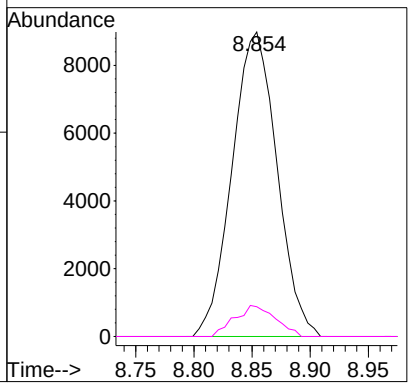


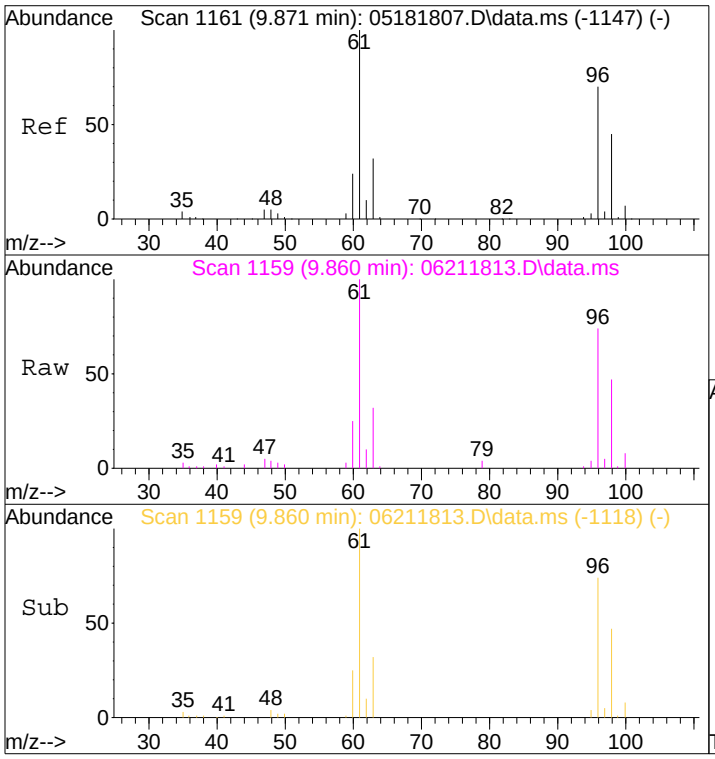


#22
Carbon Disulfide
Concen: 0.16 ng
RT: 8.85 min Scan# 976
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 76 Resp: 24134

Ion	Ratio	Lower	Upper
76	100		
78	9.2	0.0	29.2

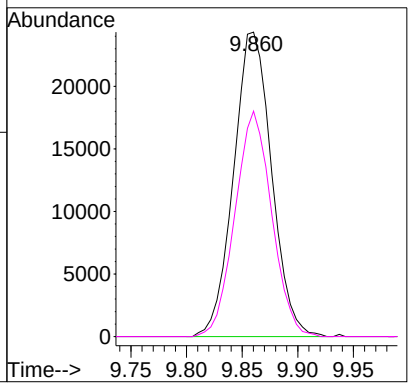


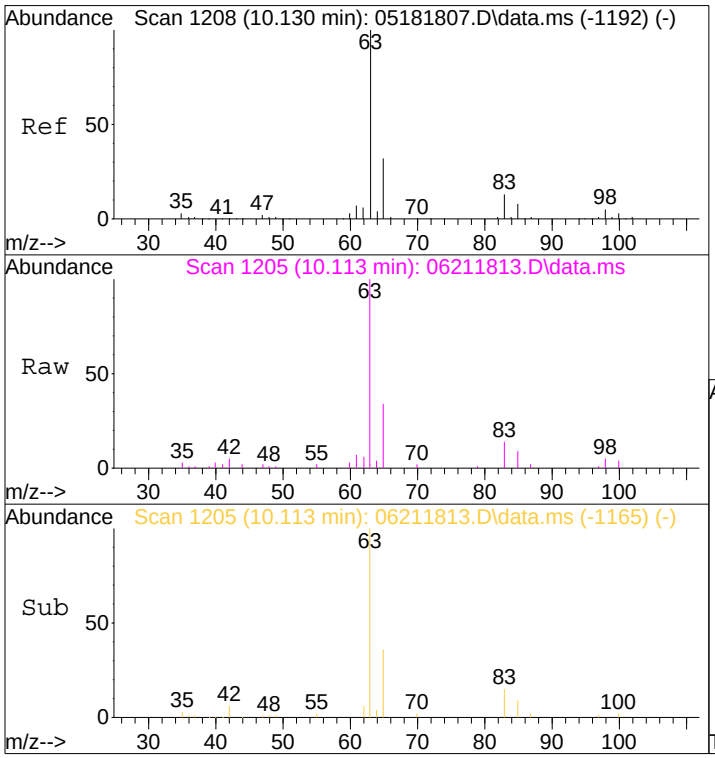


#23
trans-1,2-Dichloroethene
Concen: 1.00 ng
RT: 9.86 min Scan# 1159
Delta R.T. -0.022 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 61 Resp: 57883

Ion	Ratio	Lower	Upper
61	100		
96	71.4	58.8	98.8

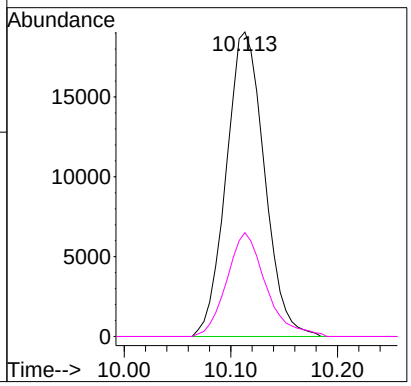


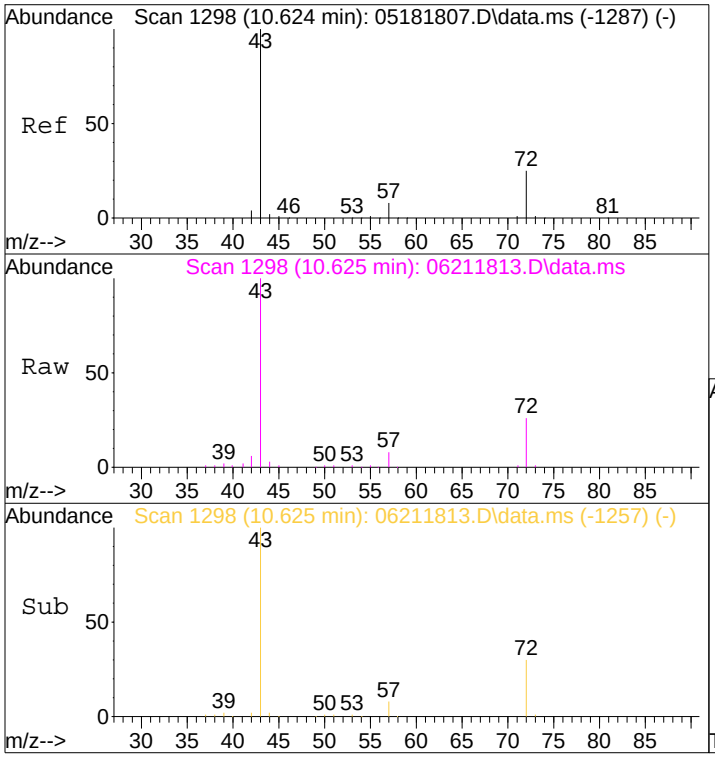


#24
1,1-Dichloroethane
Concen: 0.65 ng
RT: 10.11 min Scan# 1205
Delta R.T. -0.027 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 63 Resp: 47479

Ion	Ratio	Lower	Upper
63	100		
65	34.9	12.2	52.2

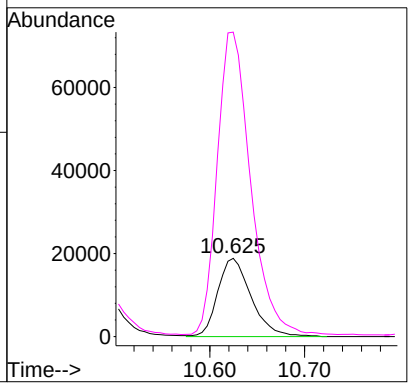


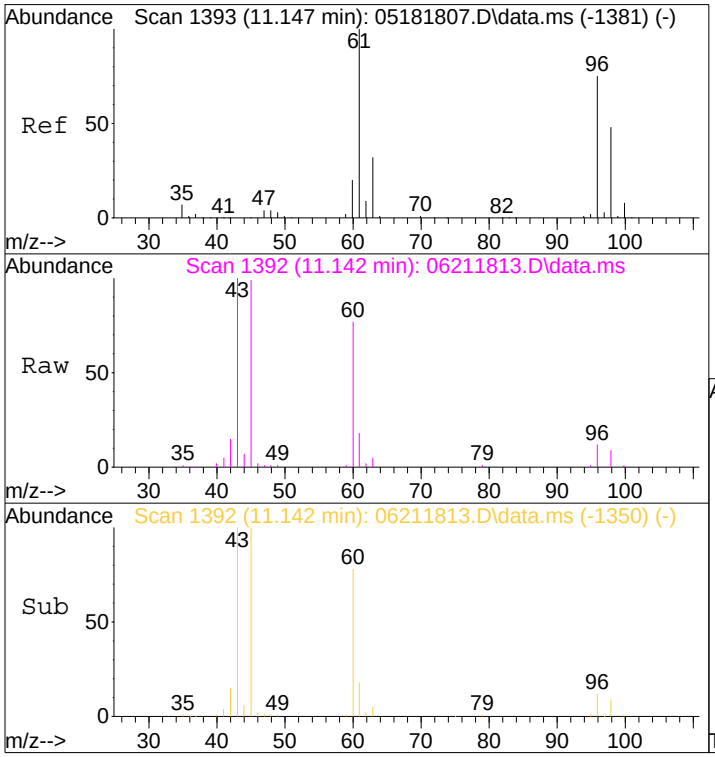


#27
2-Butanone (MEK)
Concen: 1.63 ng
RT: 10.62 min Scan# 1298
Delta R.T. -0.022 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 72 Resp: 46210

Ion	Ratio	Lower	Upper
72	100		
43	384.4	330.0	370.0#

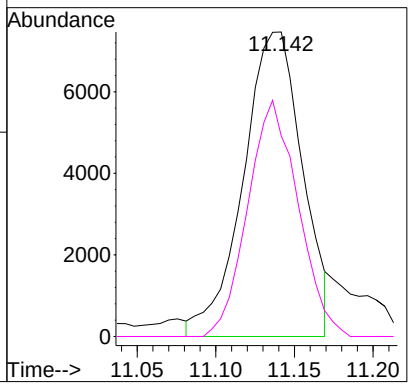


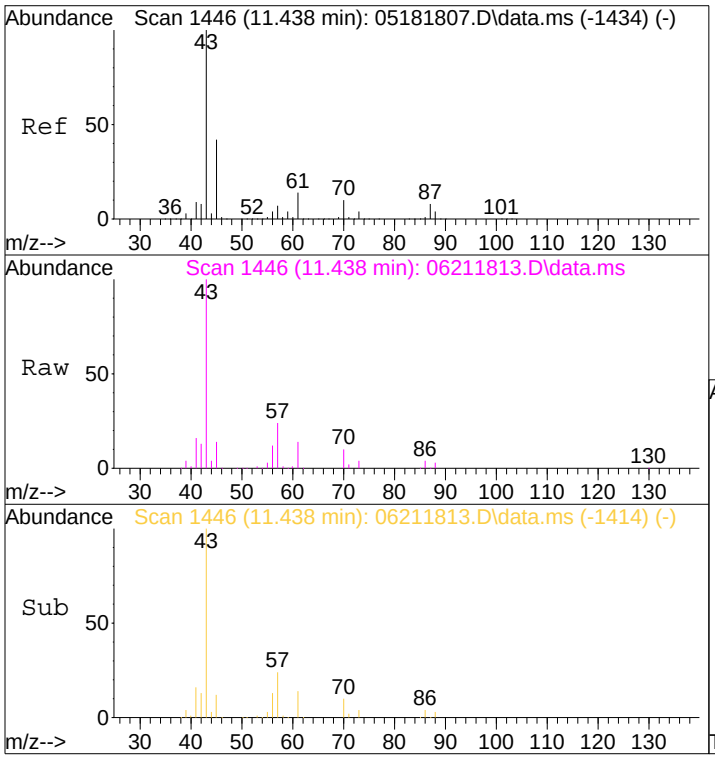


#28
cis-1,2-Dichloroethene
Concen: 0.35 ng m
RT: 11.14 min Scan# 1392
Delta R.T. -0.016 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 61 Resp: 19510

Ion	Ratio	Lower	Upper
61	100		
96	66.0	66.3	106.3#

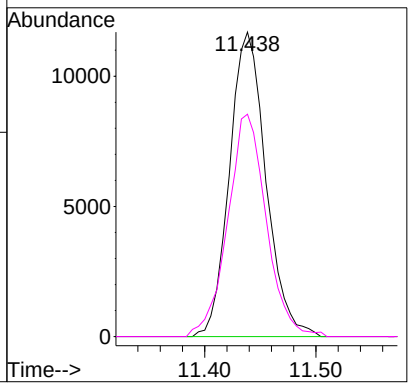


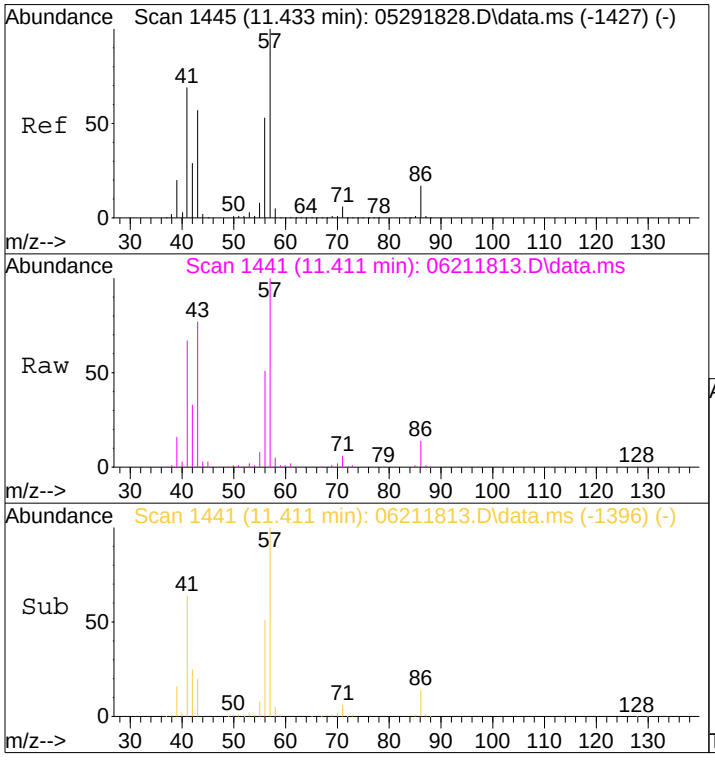


#30
Ethyl Acetate
Concen: 1.75 ng
RT: 11.44 min Scan# 1446
Delta R.T. -0.022 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 61 Resp: 26668

Ion	Ratio	Lower	Upper
61	100		
70	77.2	59.3	99.3

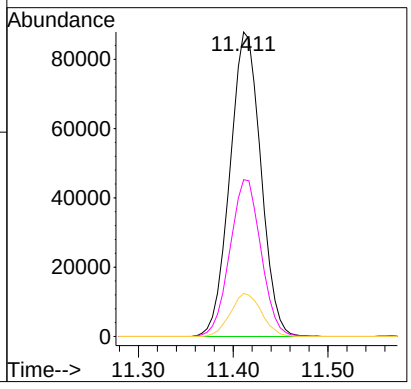


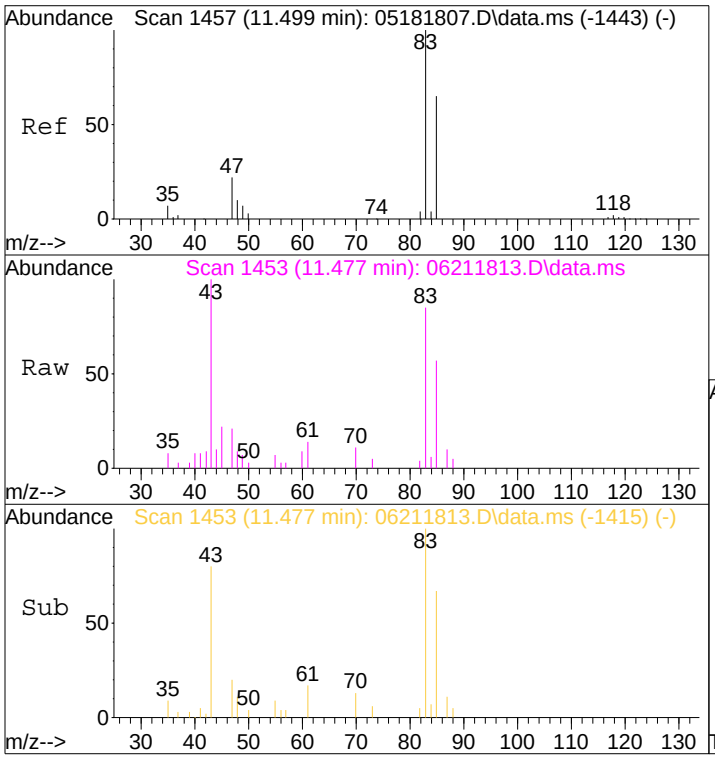


#31
n-Hexane
Concen: 3.15 ng
RT: 11.41 min Scan# 1441
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 57 Resp: 199105

Ion	Ratio	Lower	Upper
57	100		
56	51.8	40.6	61.0
86	14.2	13.0	19.4

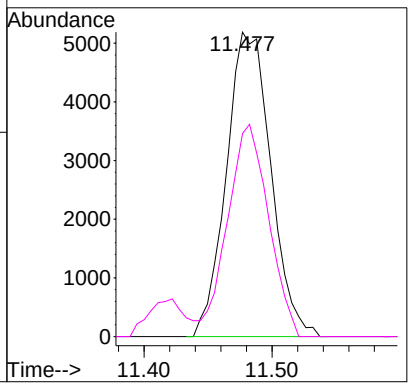


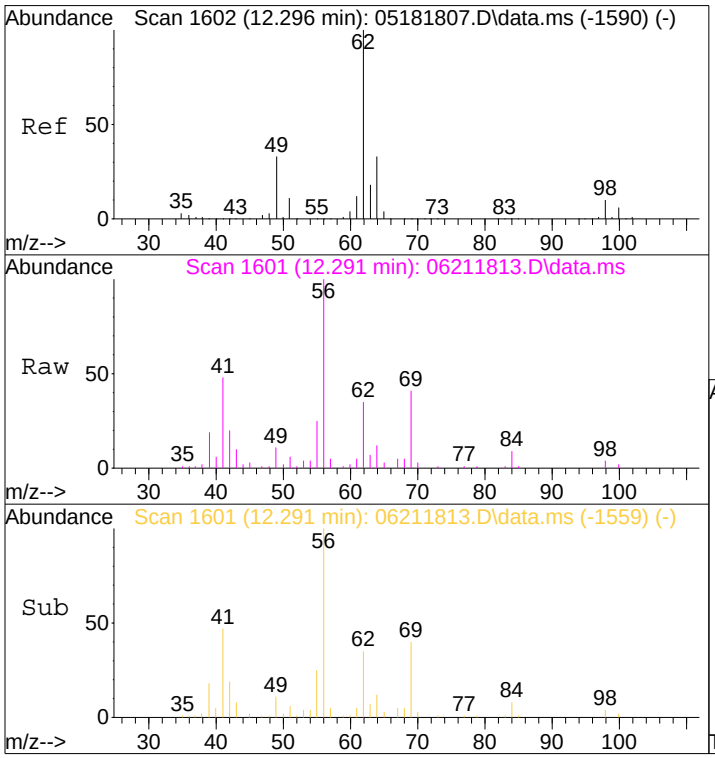


#32
Chloroform
Concen: 0.18 ng
RT: 11.48 min Scan# 1453
Delta R.T. -0.038 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 83 Resp: 12568

Ion	Ratio	Lower	Upper
83	100		
85	64.5	45.3	85.3

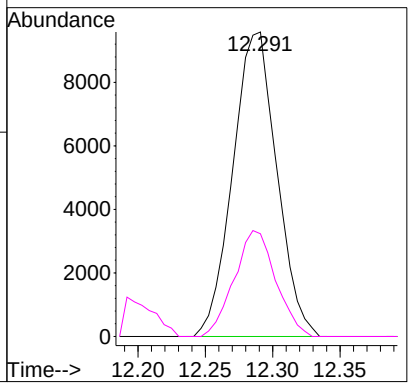


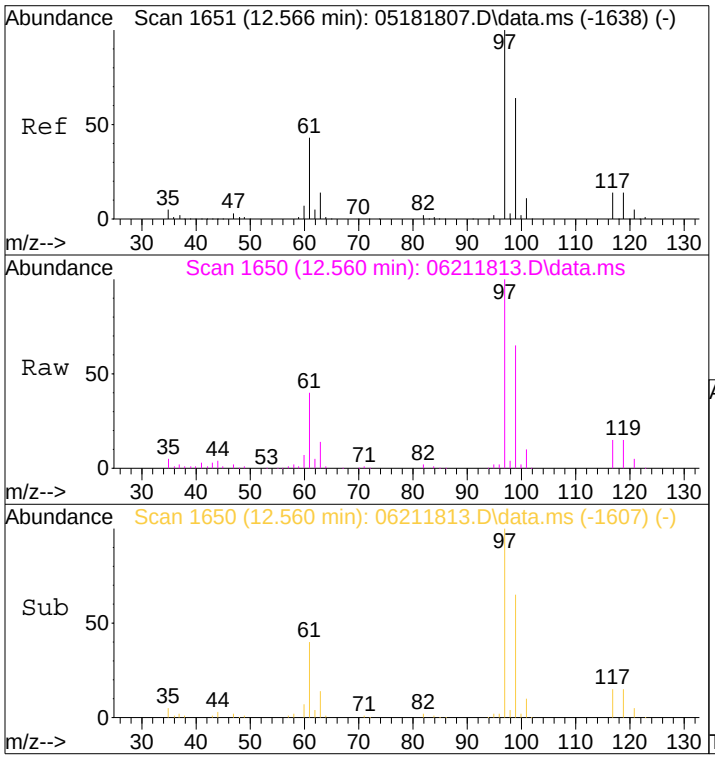


#36
1,2-Dichloroethane
Concen: 0.44 ng
RT: 12.29 min Scan# 1601
Delta R.T. -0.016 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 62 Resp: 21768

Ion	Ratio	Lower	Upper
62	100		
64	32.9	12.9	52.9

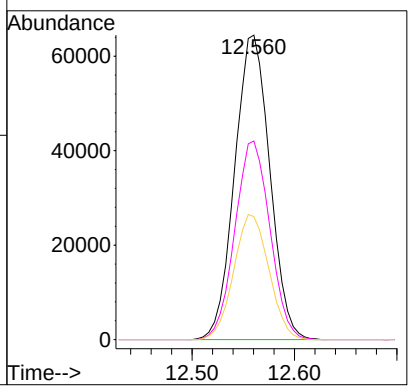


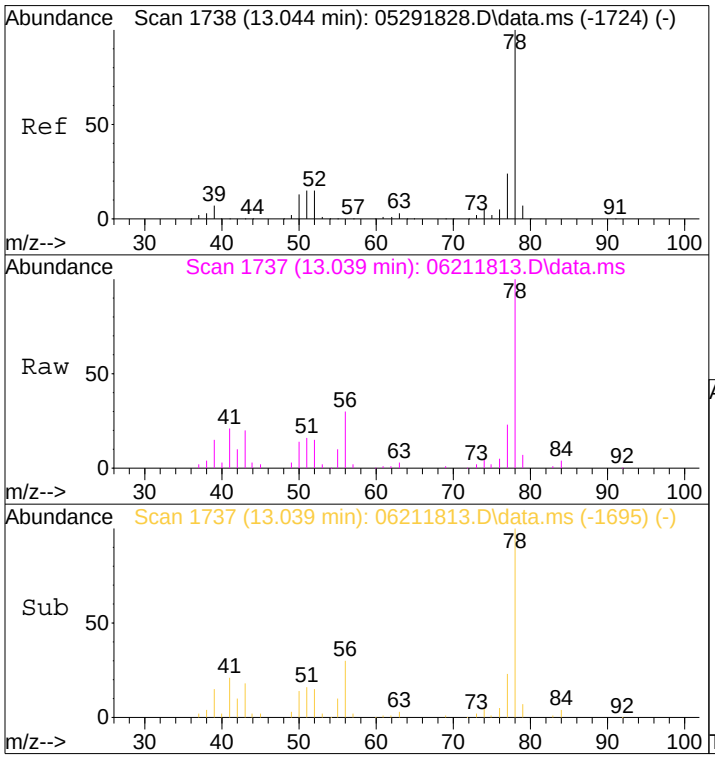


#38
1,1,1-Trichloroethane
Concen: 2.76 ng
RT: 12.56 min Scan# 1650
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 97 Resp: 153867

Ion	Ratio	Lower	Upper
97	100		
99	65.0	45.0	85.0
61	41.1	18.9	58.9

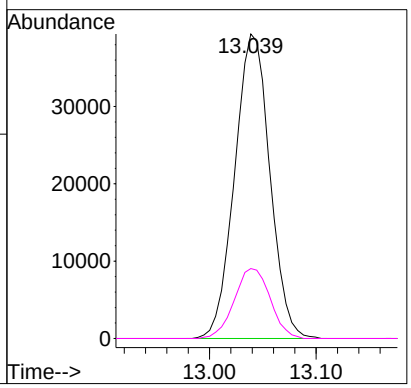


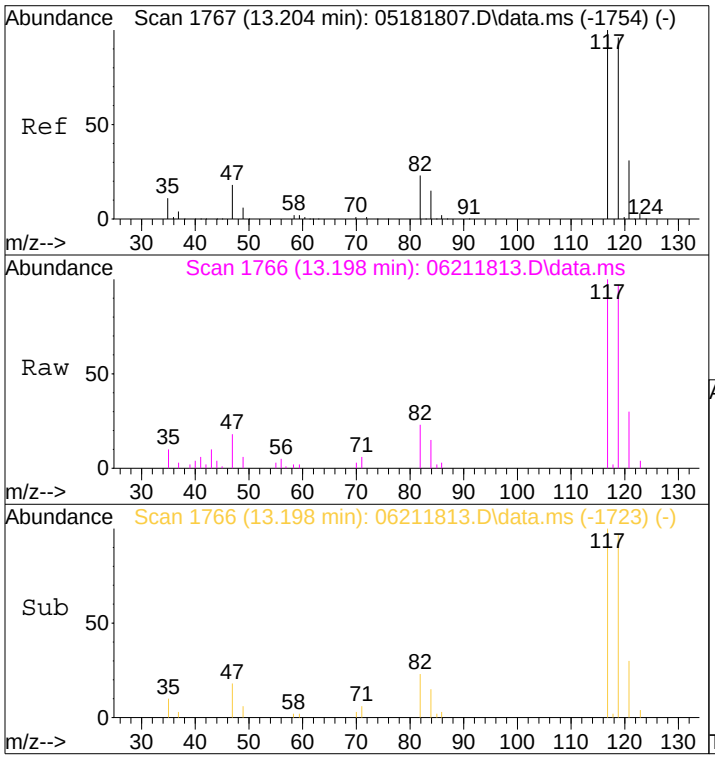


#41
Benzene
Concen: 0.54 ng
RT: 13.04 min Scan# 1737
Delta R.T. -0.016 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 78 Resp: 90310

Ion	Ratio	Lower	Upper
78	100		
77	23.4	3.1	43.1

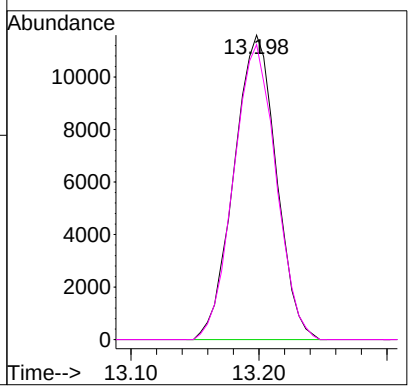


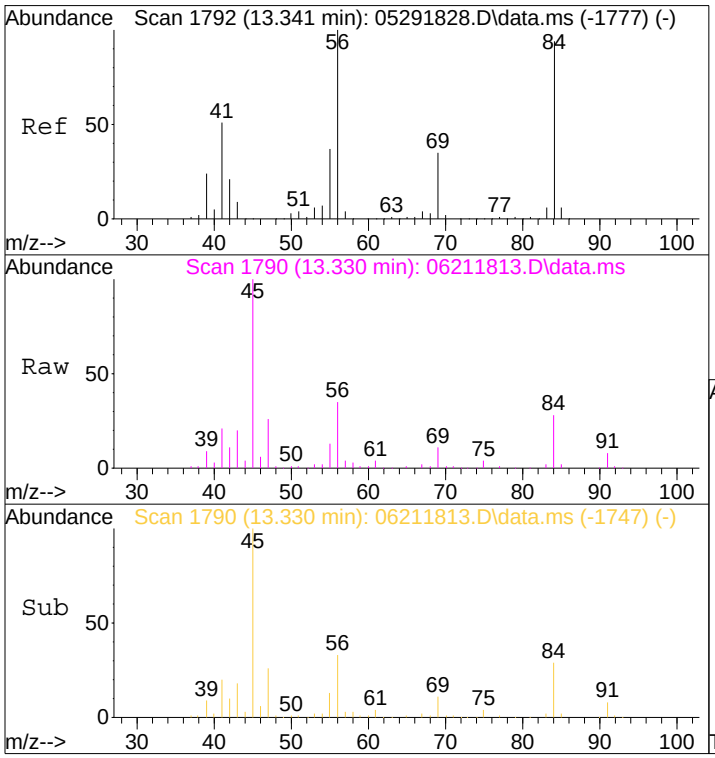


#42
Carbon Tetrachloride
Concen: 0.56 ng
RT: 13.20 min Scan# 1766
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:117 Resp: 26689

Ion	Ratio	Lower	Upper
117	100		
119	96.7	76.7	116.7

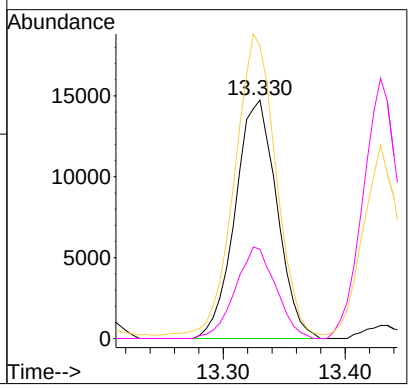


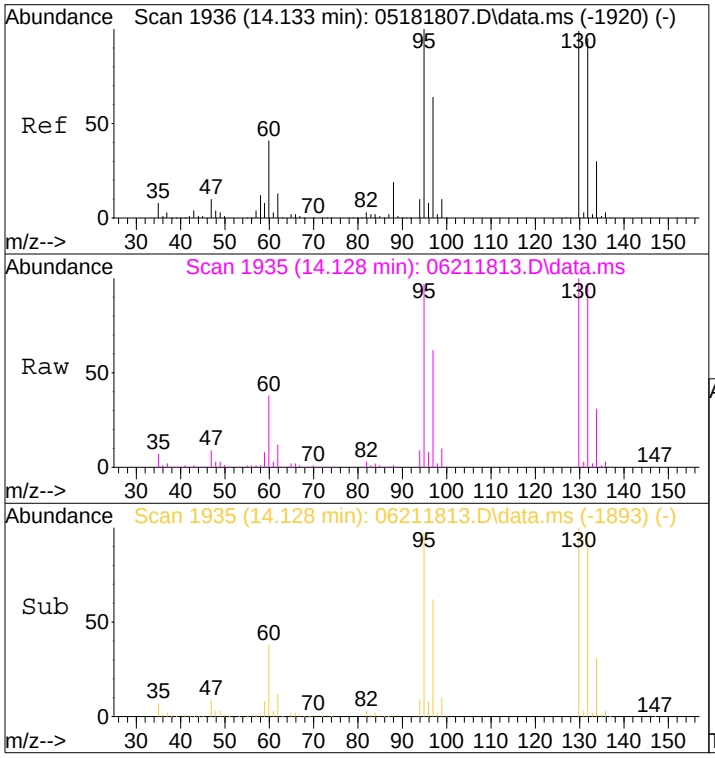


#43
Cyclohexane
Concen: 0.59 ng
RT: 13.33 min Scan# 1790
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 84 Resp: 35106

Ion	Ratio	Lower	Upper
84	100		
69	37.2	15.6	55.6
56	124.3	88.8	128.8

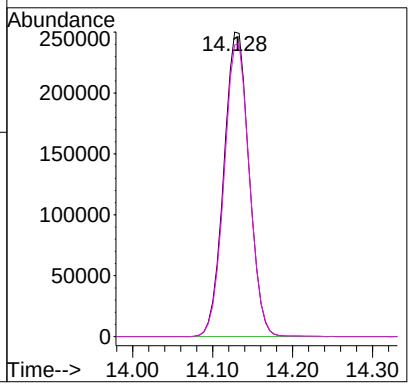


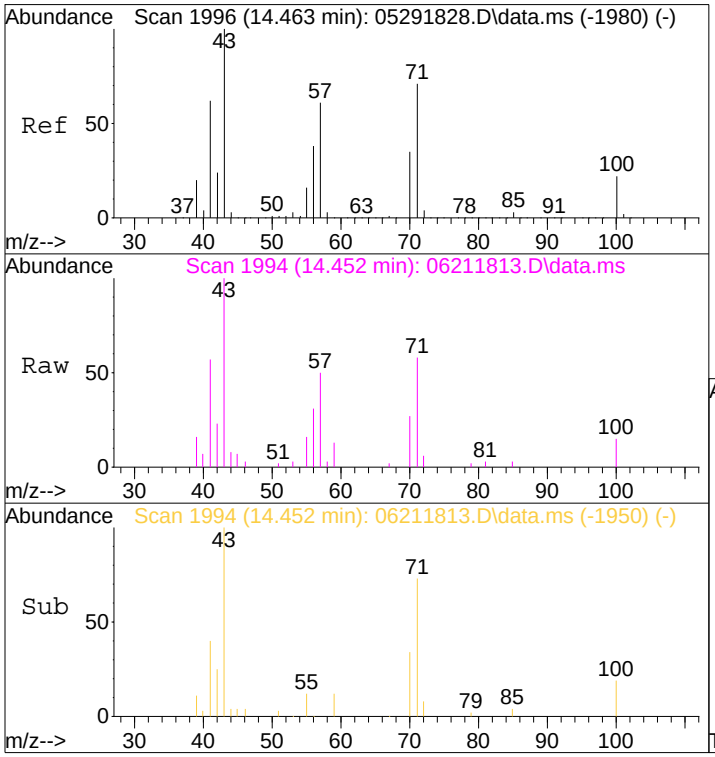


#47
Trichloroethene
Concen: 13.12 ng
RT: 14.13 min Scan# 1935
Delta R.T. -0.016 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:130 Resp: 547453

Ion	Ratio	Lower	Upper
130	100		
132	96.7	76.0	116.0

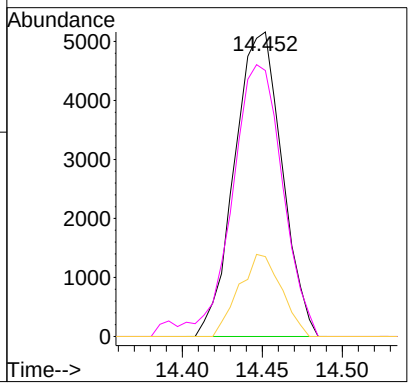


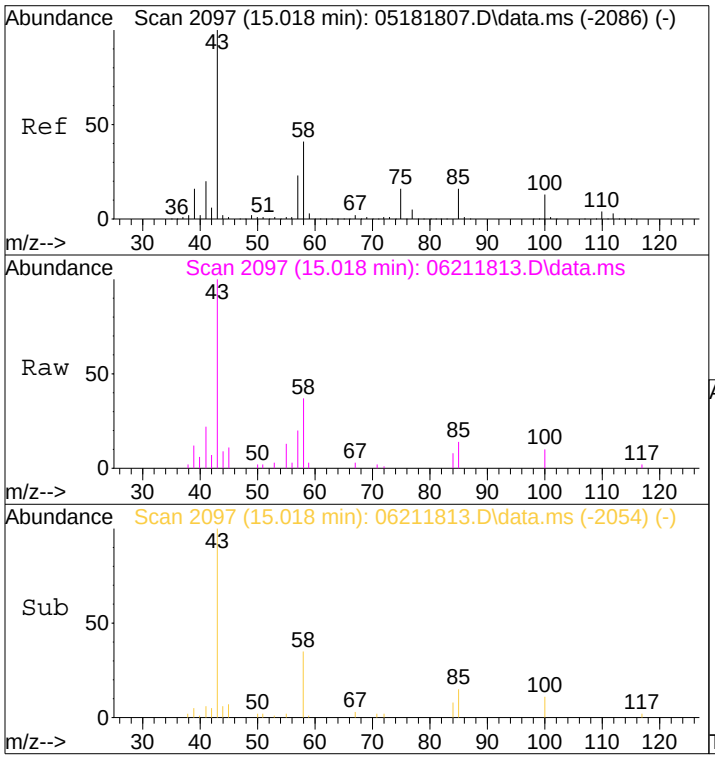


#51
n-Heptane
Concen: 0.28 ng
RT: 14.45 min Scan# 1994
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 71 Resp: 10660

Ion	Ratio	Lower	Upper
71	100		
57	94.2	67.9	107.9
100	24.0	9.2	49.2

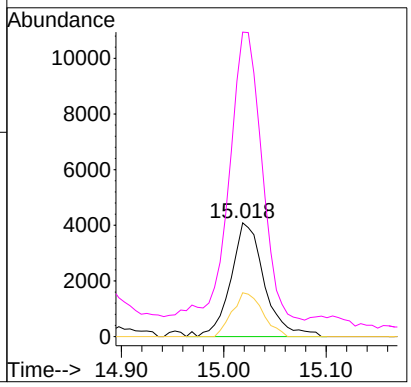


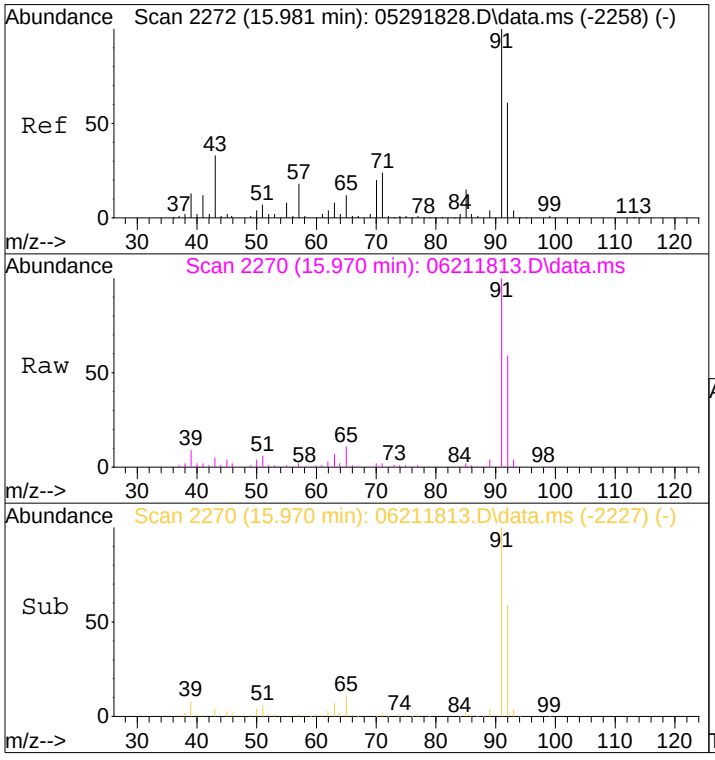


#53
4-Methyl-2-pentanone
Concen: 0.24 ng
RT: 15.02 min Scan# 2097
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 58 Resp: 9324

Ion	Ratio	Lower	Upper
58	100		
43	259.8	181.7	272.5
85	34.9	37.8	56.6#

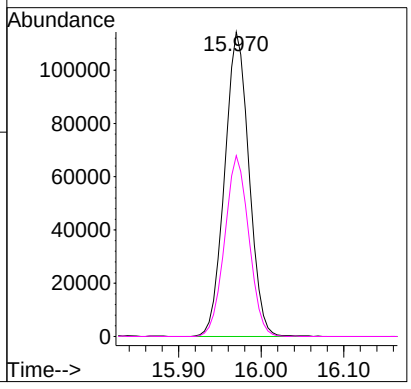


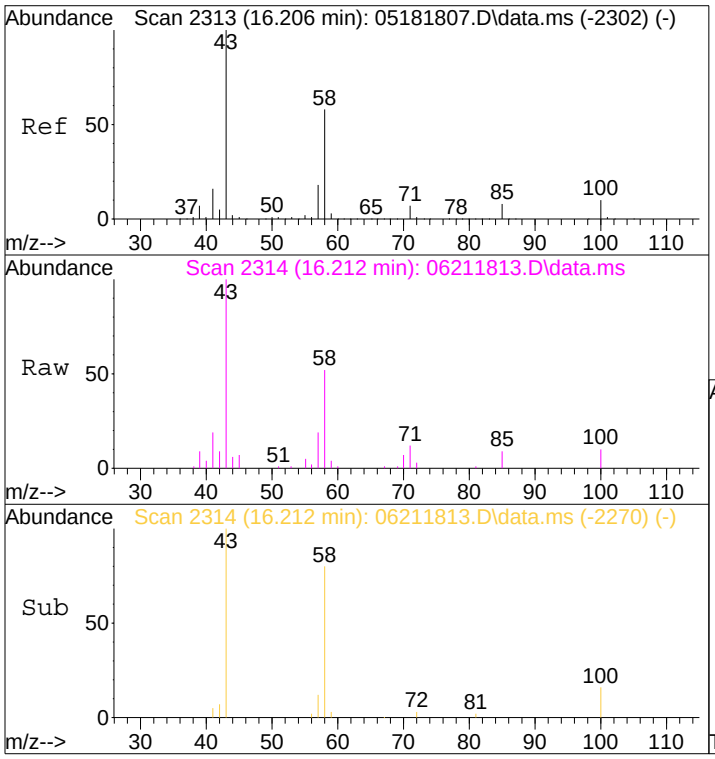


#58
Toluene
Concen: 1.60 ng
RT: 15.97 min Scan# 2270
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 91 Resp: 233711

Ion	Ratio	Lower	Upper
91	100		
92	59.1	39.7	79.7

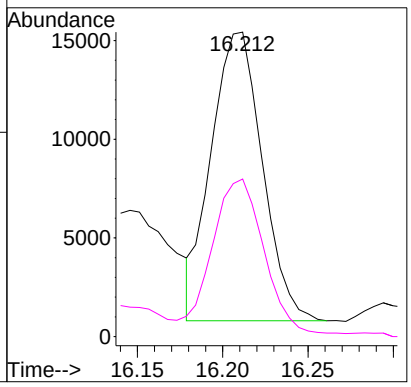


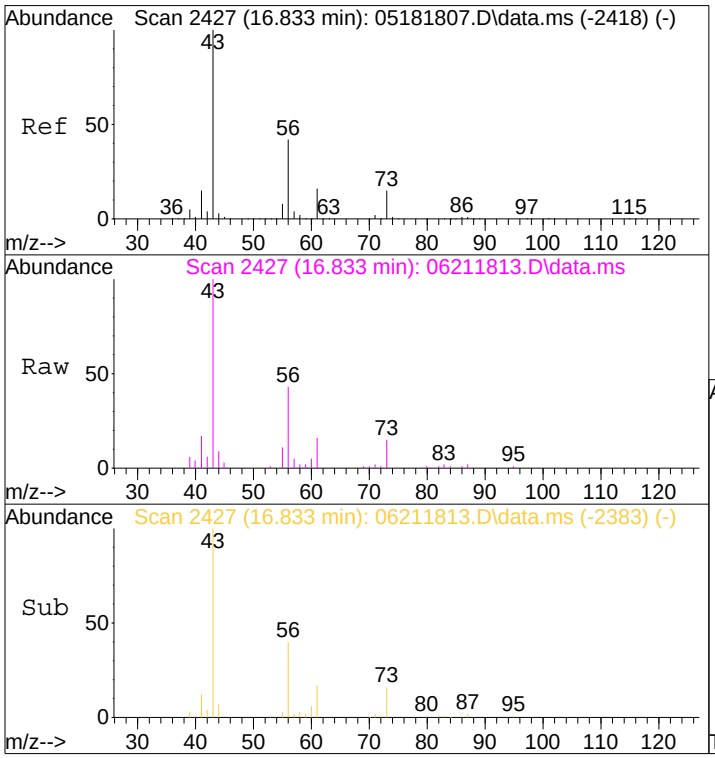


#59
2-Hexanone
Concen: 0.35 ng
RT: 16.21 min Scan# 2314
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 43 Resp: 30527

Ion	Ratio	Lower	Upper
43	100		
58	57.4	42.1	82.1

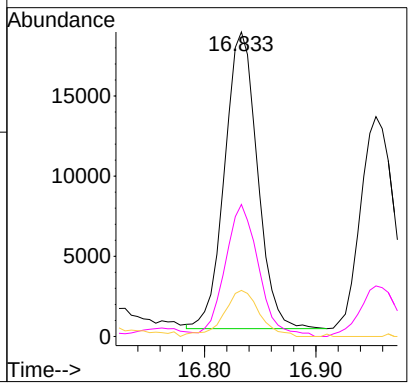


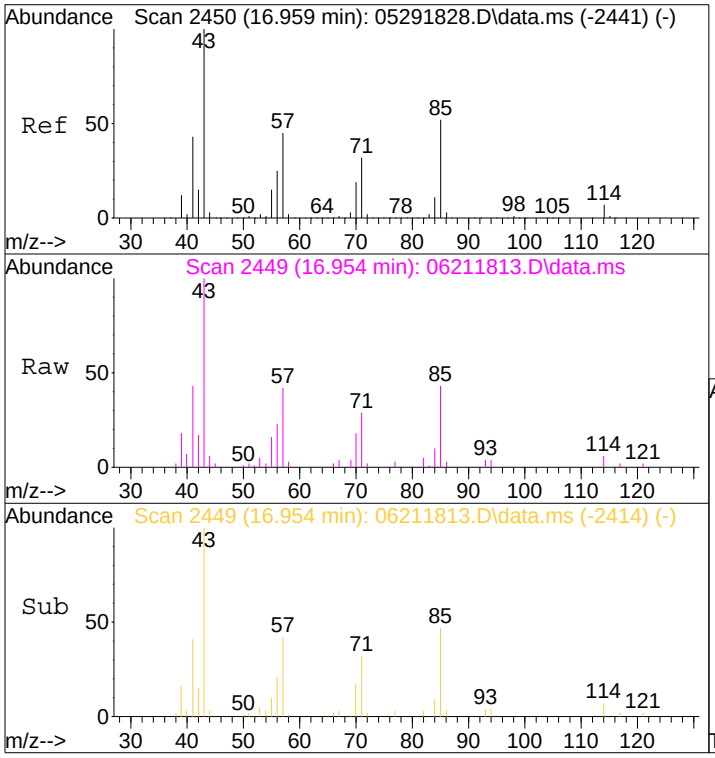


#62
n-Butyl Acetate
Concen: 0.38 ng
RT: 16.83 min Scan# 2427
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 43 Resp: 37908

Ion	Ratio	Lower	Upper
43	100		
56	45.3	23.7	63.7
73	16.9	0.0	36.6

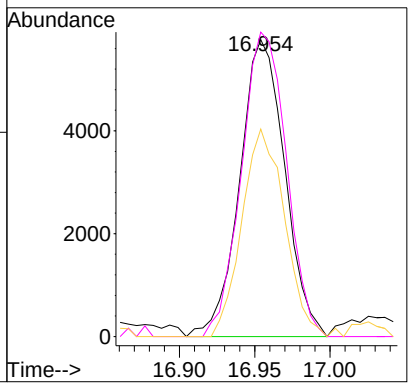


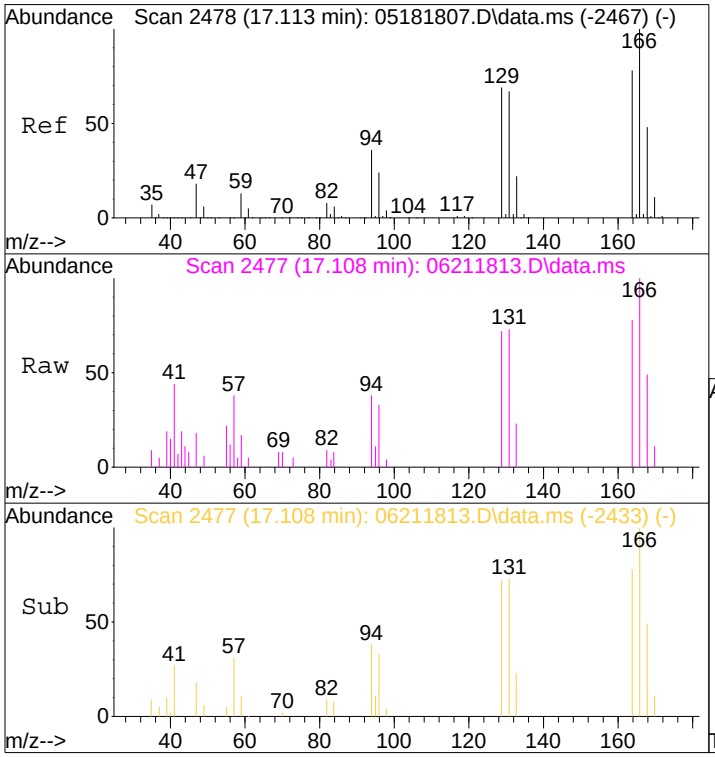


#63
n-Octane
Concen: 0.38 ng
RT: 16.95 min Scan# 2449
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 57 Resp: 12028

Ion	Ratio	Lower	Upper
57	100		
85	102.3	98.2	147.4
71	65.9	58.9	88.3

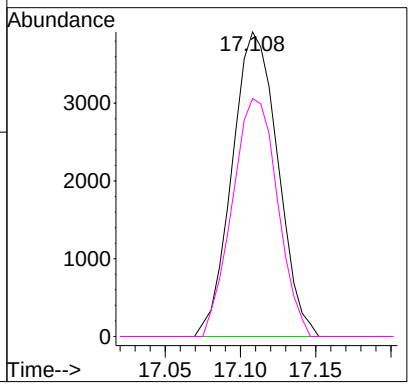


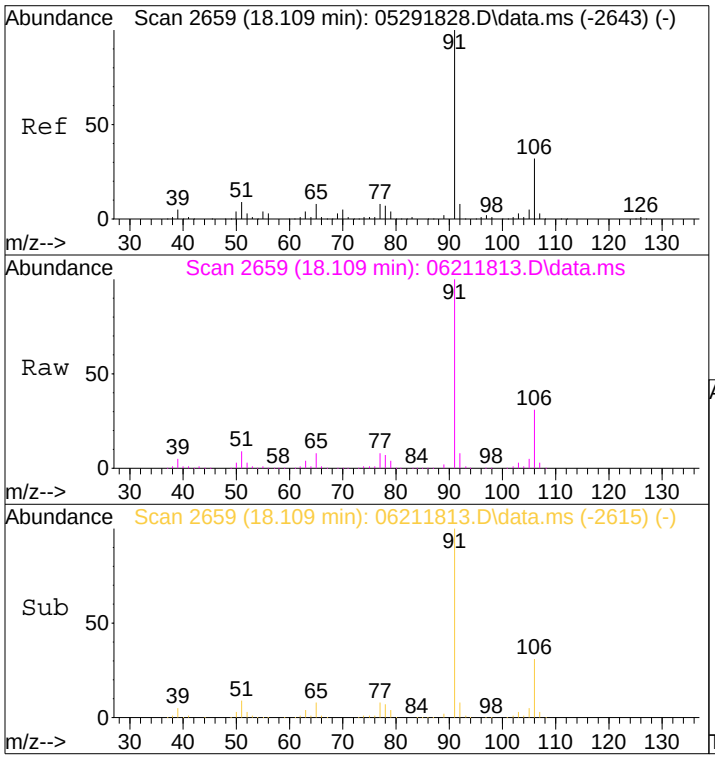


#64
Tetrachloroethene
Concen: 0.20 ng
RT: 17.11 min Scan# 2477
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:166 Resp: 8271

Ion	Ratio	Lower	Upper
166	100		
164	77.4	57.9	97.9

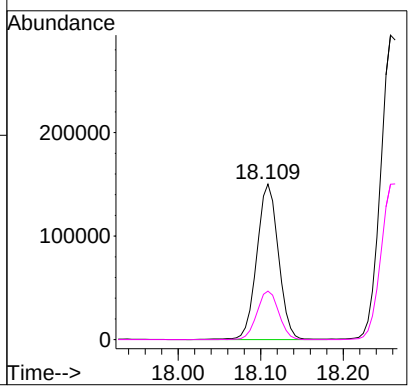


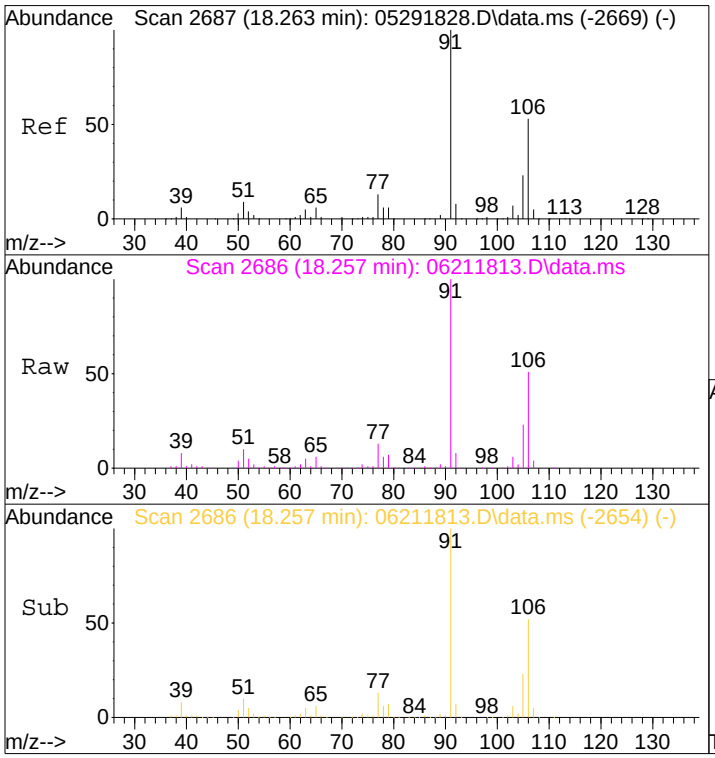


#66
Ethylbenzene
Concen: 1.63 ng
RT: 18.11 min Scan# 2659
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 91 Resp: 274008

Ion	Ratio	Lower	Upper
91	100		
106	31.4	12.9	52.9

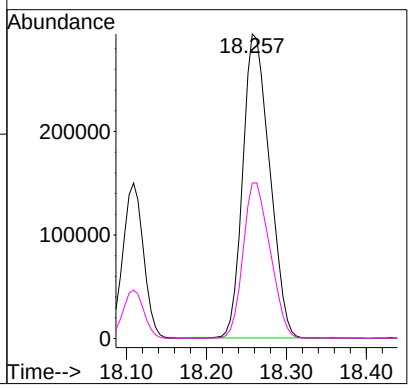


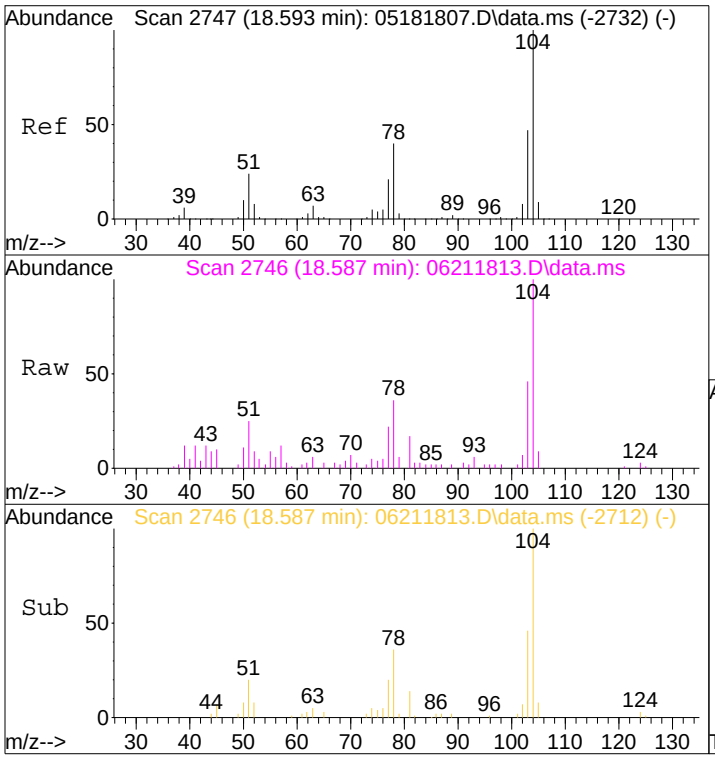


#67
m- & p-Xylenes
Concen: 5.36 ng
RT: 18.26 min Scan# 2686
Delta R.T. -0.022 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 91 Resp: 684751

Ion	Ratio	Lower	Upper
91	100		
106	51.9	32.6	72.6

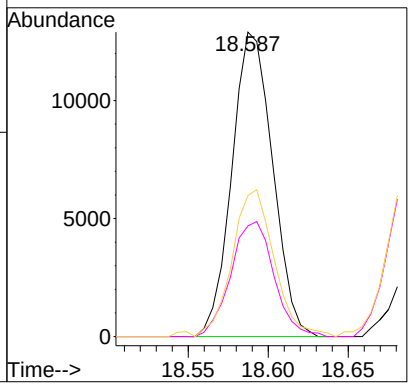


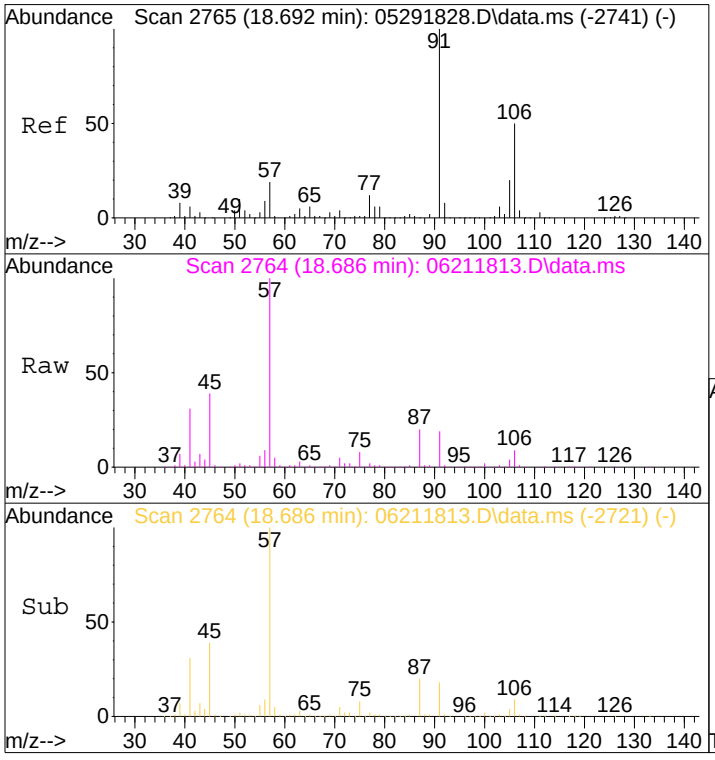


#69
Styrene
Concen: 0.22 ng
RT: 18.59 min Scan# 2746
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:104 Resp: 22922

Ion	Ratio	Lower	Upper
104	100		
78	39.9	18.3	58.3
103	50.2	26.7	66.7

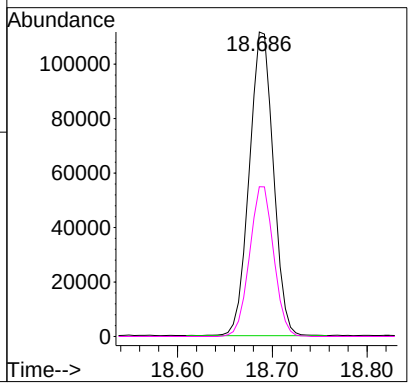


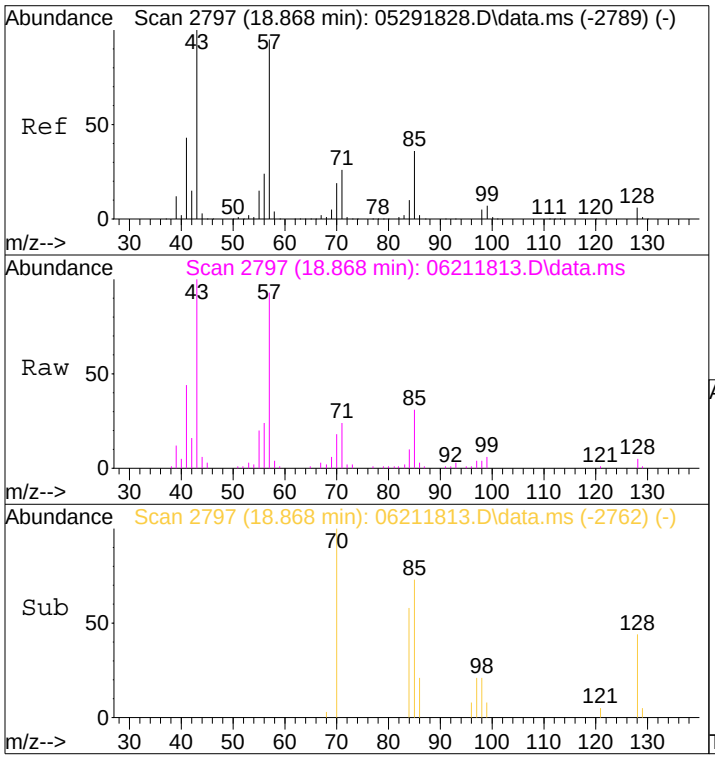


#70
o-Xylene
Concen: 1.52 ng
RT: 18.69 min Scan# 2764
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 91 Resp: 196605

Ion	Ratio	Lower	Upper
91	100		
106	49.5	30.0	70.0

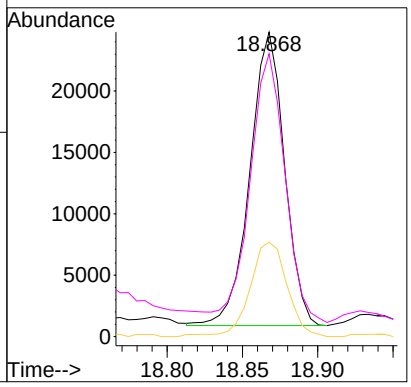


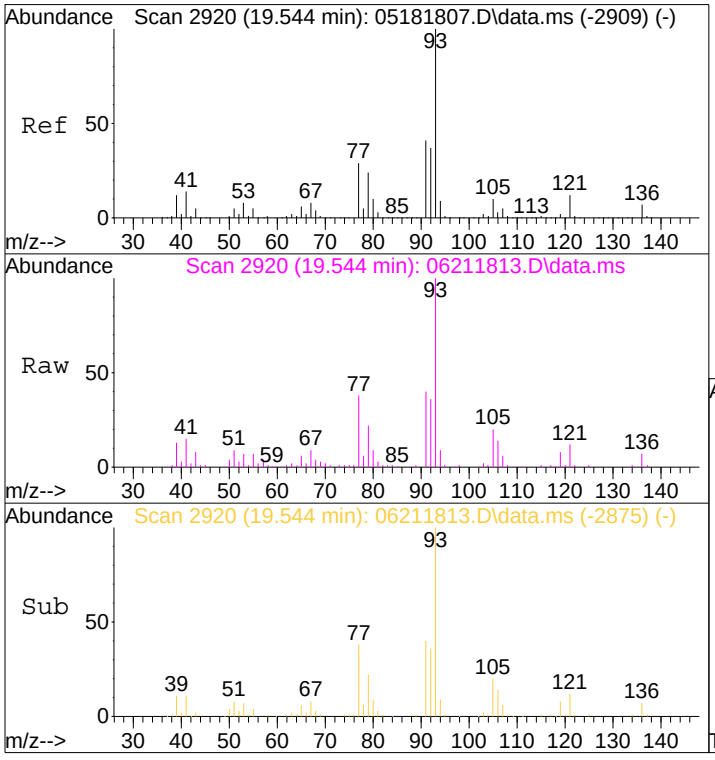


#71
n-Nonane
Concen: 0.52 ng
RT: 18.87 min Scan# 2797
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 43 Resp: 38338

Ion	Ratio	Lower	Upper
43	100		
57	91.9	77.9	117.9
85	34.4	20.8	60.8

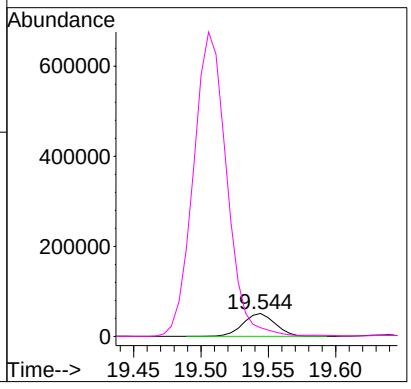


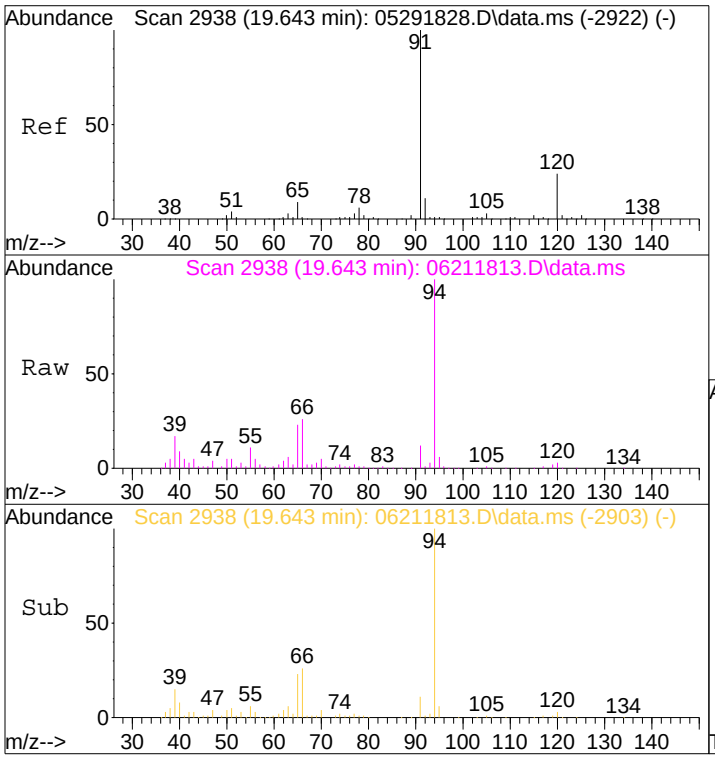


#75
alpha-Pinene
Concen: 0.98 ng
RT: 19.54 min Scan# 2920
Delta R.T. 0.000 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 93 Resp: 84461

Ion	Ratio	Lower	Upper
93	100		
77	1380.2	9.1	49.1#

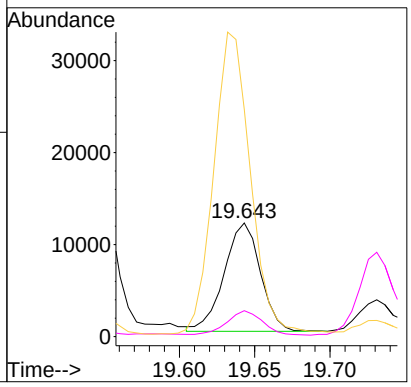


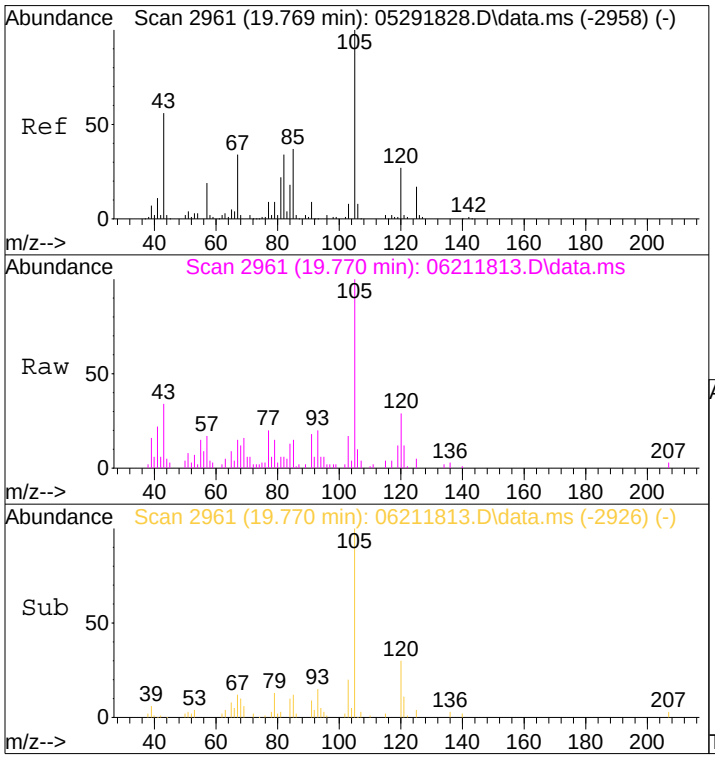


#76
n-Propylbenzene
Concen: 0.10 ng
RT: 19.64 min Scan# 2938
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 91 Resp: 19823

Ion	Ratio	Lower	Upper
91	100		
120	22.7	4.7	44.7
65	281.7	0.0	29.2#

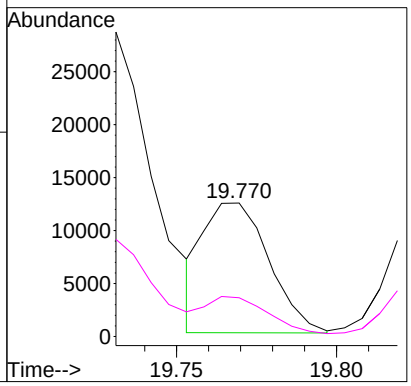


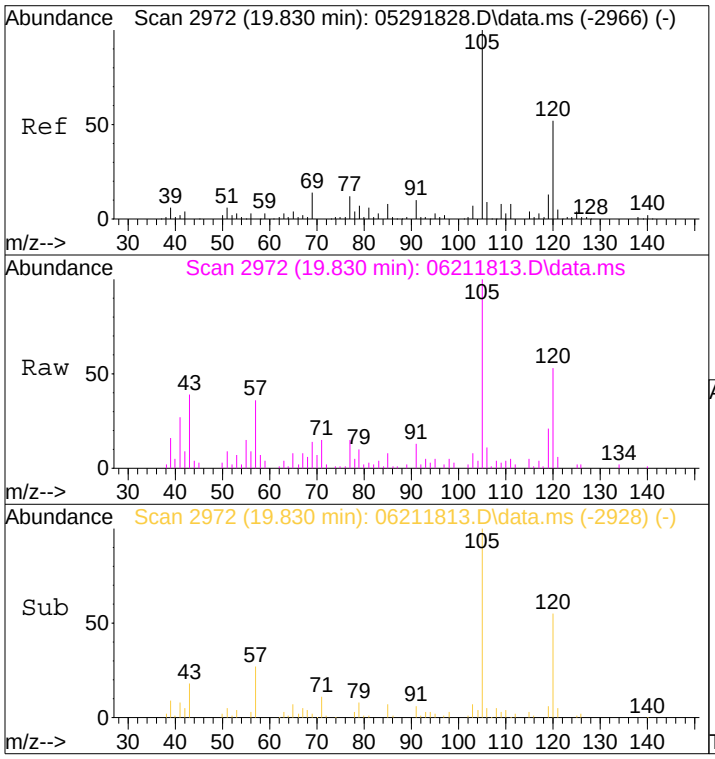


#78
4-Ethyltoluene
Concen: 0.12 ng
RT: 19.77 min Scan# 2961
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:105 Resp: 17603

Ion	Ratio	Lower	Upper
105	100		
120	30.3	8.5	48.5

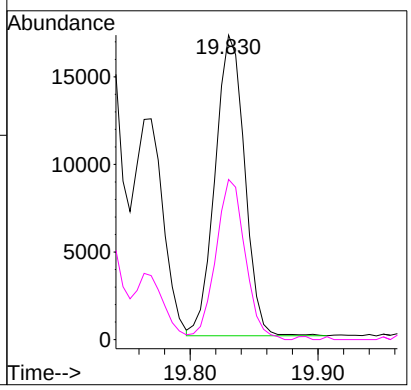


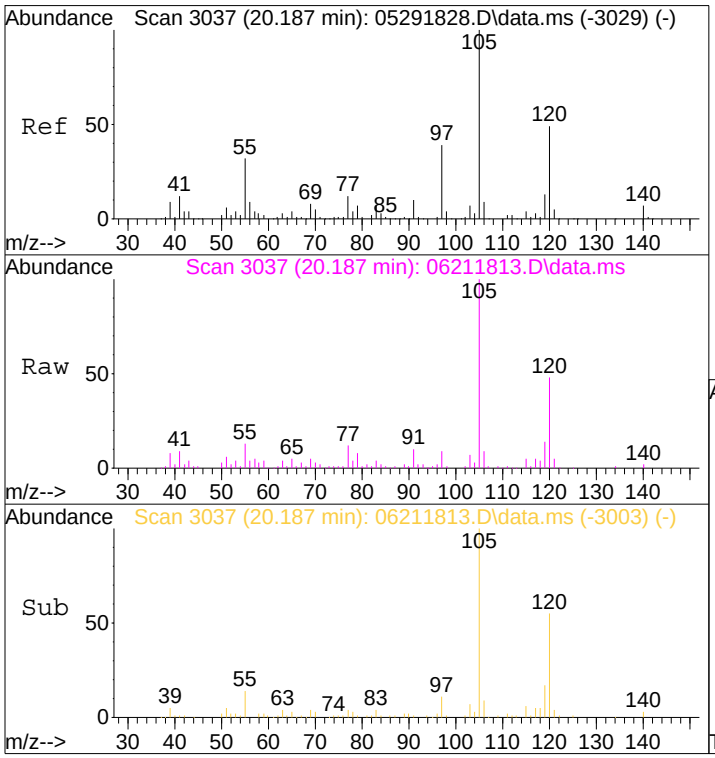


#79
1,3,5-Trimethylbenzene
Concen: 0.21 ng
RT: 19.83 min Scan# 2972
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:105 Resp: 27541

Ion	Ratio	Lower	Upper
105	100		
120	53.1	32.6	72.6

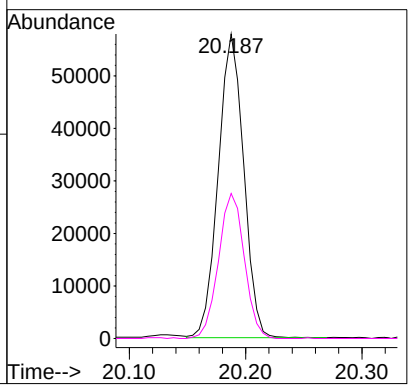


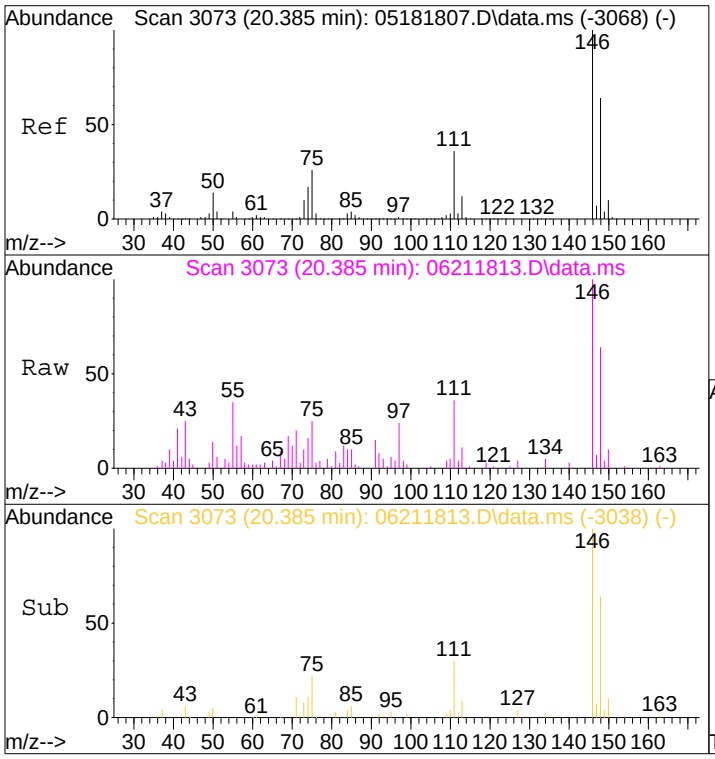


#82
1,2,4-Trimethylbenzene
Concen: 0.65 ng
RT: 20.19 min Scan# 3037
Delta R.T. -0.011 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:105 Resp: 87779

Ion	Ratio	Lower	Upper
105	100		
120	48.5	36.4	76.4

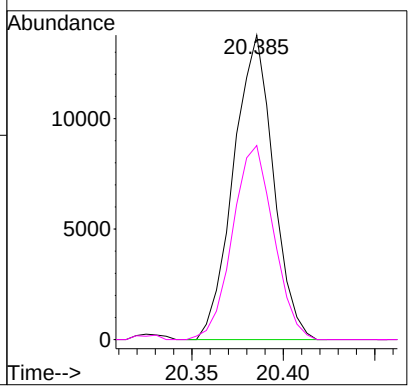


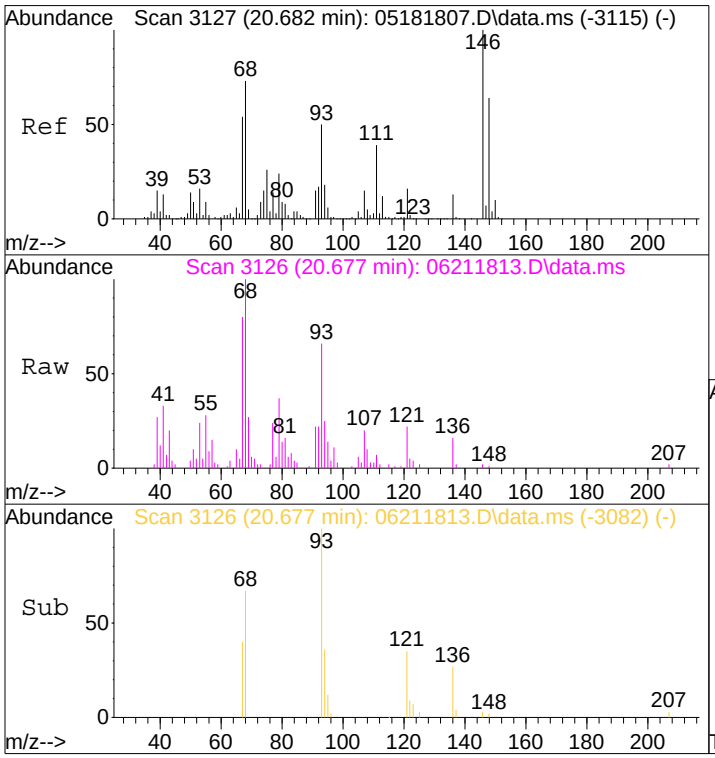


#86
1,4-Dichlorobenzene
Concen: 0.25 ng
RT: 20.39 min Scan# 3073
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:146 Resp: 20844

Ion	Ratio	Lower	Upper
146	100		
148	65.9	44.1	84.1

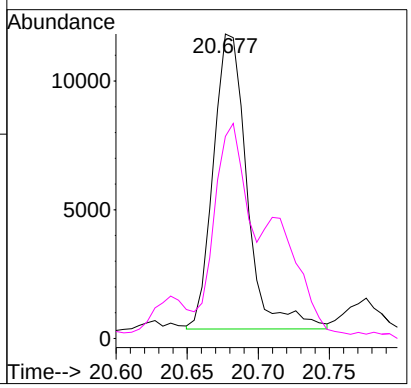


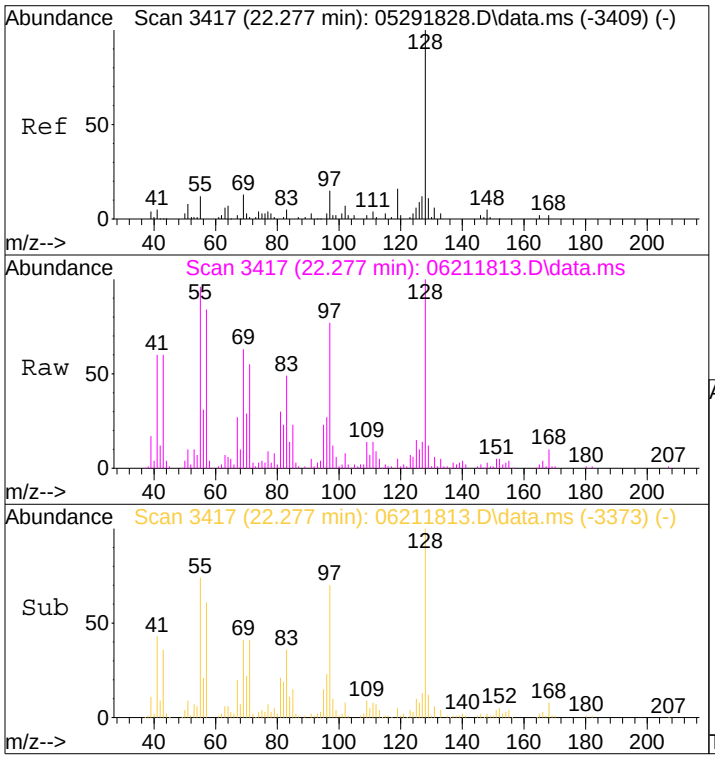


#91
d-Limonene
Concen: 0.34 ng
RT: 20.68 min Scan# 3126
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion: 68 Resp: 18955

Ion	Ratio	Lower	Upper
68	100		
93	112.7	54.6	94.6#

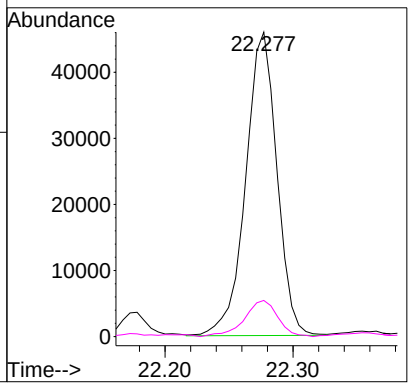




#95
Naphthalene
Concen: 0.40 ng
RT: 22.28 min Scan# 3417
Delta R.T. -0.005 min
Lab File: 06211813.D
Acq: 21 Jun 2018 12:30

Tgt Ion:128 Resp: 78031

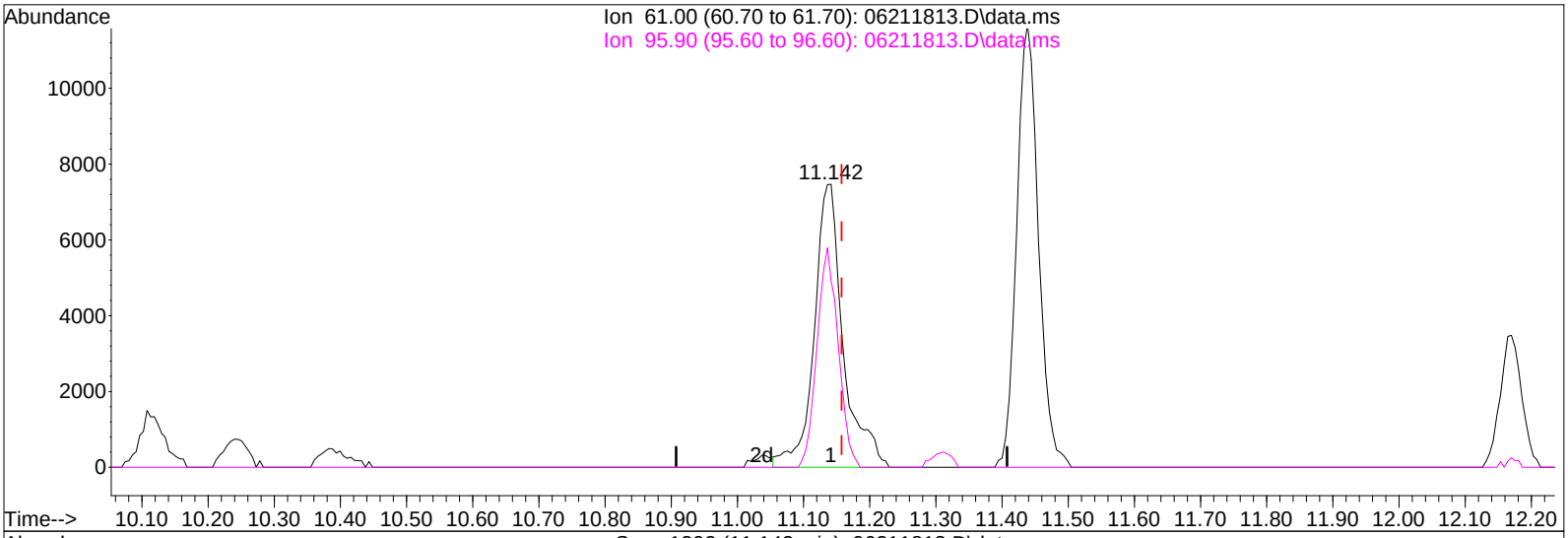
Ion	Ratio	Lower	Upper
128	100		
129	12.7	0.0	31.0

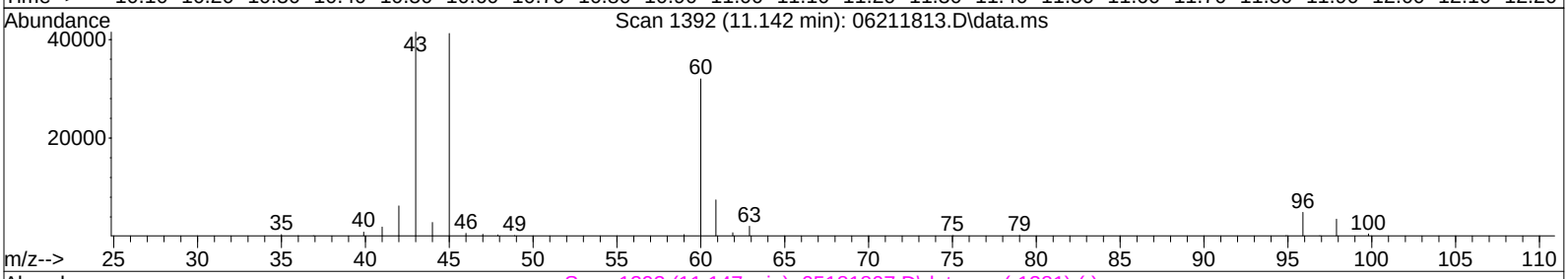


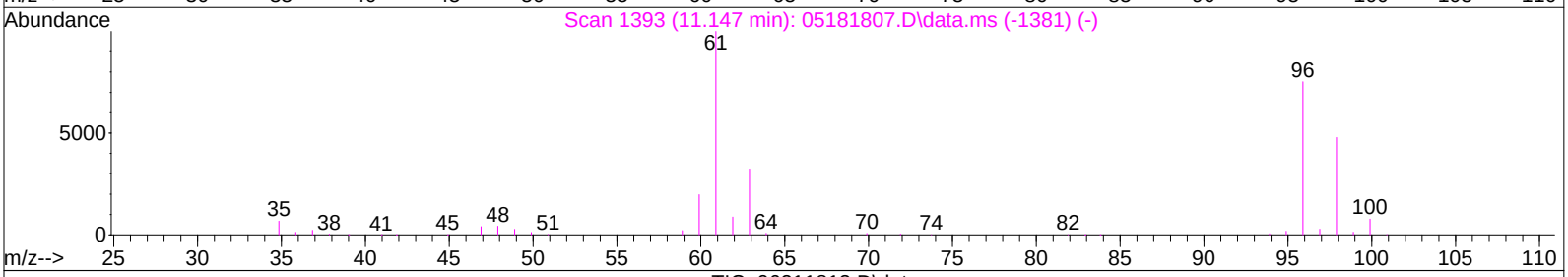
Quantitation Report (Qedit)

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 13:40:45 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M







TIC: 06211813.D\data.ms

(28) cis-1,2-Dichloroethene (T)

11.142min (-0.016) 0.40ng

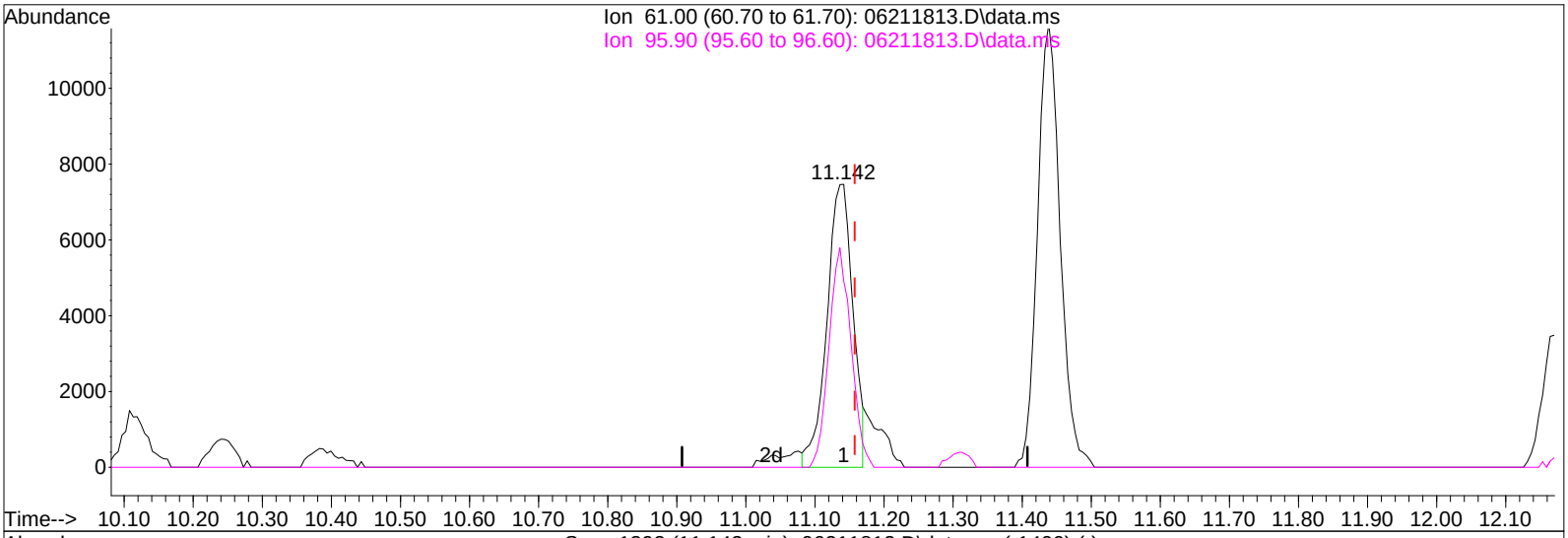
response 22750

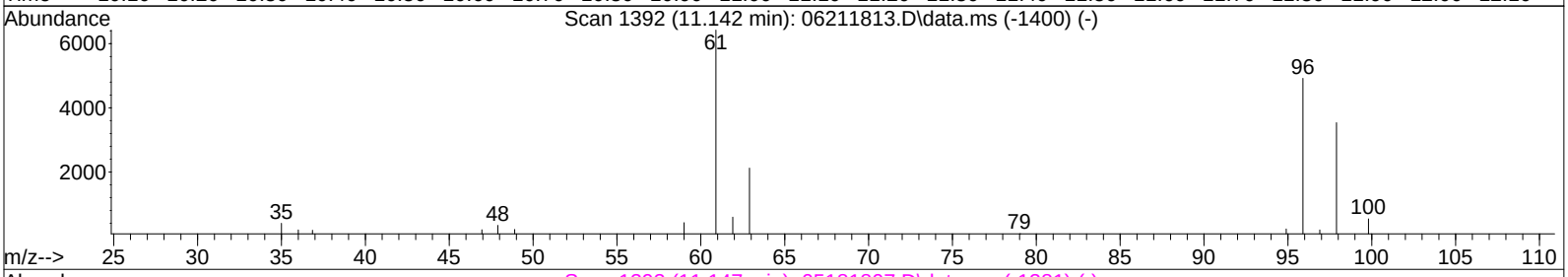
Ion	Exp%	Act%
61.00	100	100
95.90	86.30	56.61#
0.00	0.00	0.00
0.00	0.00	0.00

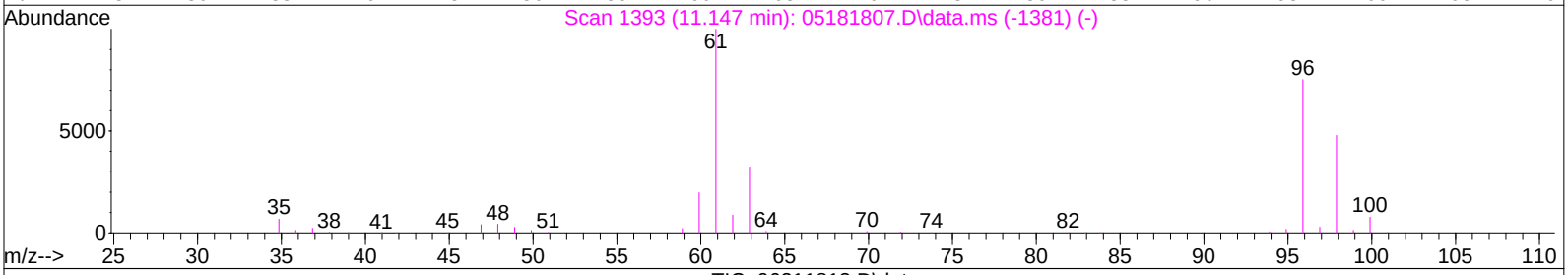
Quantitation Report (Qedit)

Data File: I:\MS16\DATA\2018 06\21\06211813.D
Acq On : 21 Jun 2018 12:30 Operator: WA
Sample : P1803155-002 (1000mL)
Misc : S31-04201801
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jun 21 13:40:45 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M







TIC: 06211813.D\data.ms

(28) cis-1,2-Dichloroethene (T)

11.142min (-0.016) 0.35ng m

response 19510

Ion	Exp%	Act%
61.00	100	100
95.90	86.30	66.01#
0.00	0.00	0.00
0.00	0.00	0.00

IPC ABS

6/21/18

RS 6/22/18

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 14:24:02 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS) WA 6/21/18
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.32	130	337990	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.43	114	1447042	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.72	82	632758	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.17	65	426568	11.165	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.36%				
57) Toluene-d8 (SS2)	15.87	98	1329708	12.101	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 96.80%				
73) Bromofluorobenzene (SS3)	19.09	174	473329	13.569	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.56%				
Target Compounds							Qvalue
2) Propene	4.04	42	70841	1.500	ng		97
3) Dichlorodifluoromethan...	4.22	85	79162	1.053	ng		100
4) Chloromethane	4.51	50	8782	0.131	ng		92
5) 1,2-Dichloro-1,1,2,2-t...	4.79	135	2012	N.D.			
6) Vinyl Chloride	0.00	62	0	N.D.			
7) 1,3-Butadiene	5.23	54	10336	0.217	ng		93
8) Bromomethane	5.69	94	683	N.D.			
9) Chloroethane	6.03	64	1091	N.D.			
10) Ethanol	6.42	45	643331	19.912	ng		100
11) Acetonitrile	6.70	41	23263	0.275	ng		92
12) Acrolein	6.89	56	38902	1.425	ng		100
13) Acetone	7.09	58	567605	17.241	ng	#	1
14) Trichlorofluoromethane	7.35	101	53838	0.847	ng		100
15) 2-Propanol (Isopropanol)	7.62	45	269851	2.600	ng		100
16) Acrylonitrile	7.89	53	3571	N.D.			
17) 1,1-Dichloroethene	8.35	96	12703	0.330	ng		90
18) 2-Methyl-2-Propanol (t...	0.00	59	0	N.D.	d		
19) Methylene Chloride	8.56	84	6193	0.146	ng		88
20) 3-Chloro-1-propene (Al...	8.74	41	884	N.D.			
21) Trichlorotrifluoroethane	9.00	151	8915	0.255	ng		95
22) Carbon Disulfide	8.85	76	20624	0.137	ng		97
23) trans-1,2-Dichloroethene	9.86	61	93239	1.597	ng		93
24) 1,1-Dichloroethane	10.11	63	40284	0.551	ng		97
25) Methyl tert-Butyl Ether	0.00	73	0	N.D.	d		
26) Vinyl Acetate	10.34	86	30899	3.584	ng	#	72
27) 2-Butanone (MEK)	10.62	72	48572	1.705	ng	#	84
28) cis-1,2-Dichloroethene	11.14	61	13710m	0.242	ng		
29) Diisopropyl Ether	0.00	87	0	N.D.	d		
30) Ethyl Acetate	11.43	61	126362	8.240	ng		91
31) n-Hexane	11.41	57	163919	2.580	ng		98
32) Chloroform	11.48	83	10572	0.155	ng		100
34) Tetrahydrofuran (THF)	11.93	72	2824	0.099	ng	#	1
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	12.29	62	18221	0.370	ng		99
38) 1,1,1-Trichloroethane	12.56	97	130226	2.340	ng		98
39) Isopropyl Acetate	12.98	61	1127	N.D.			
40) 1-Butanol	0.00	56	0	N.D.	d		
41) Benzene	13.04	78	73302	0.441	ng		99
42) Carbon Tetrachloride	13.20	117	22554	0.472	ng		99
43) Cyclohexane	13.32	84	29863	0.505	ng		86
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.	d		
45) 1,2-Dichloropropane	13.90	63	1268	N.D.			
46) Bromodichloromethane	0.00	83	0	N.D.	d		
47) Trichloroethene	14.13	130	535579	12.863	ng		99
48) 1,4-Dioxane	0.00	88	0	N.D.	d		
49) 2,2,4-Trimethylpentane...	0.00	57	0	N.D.	d		

Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 14:24:02 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

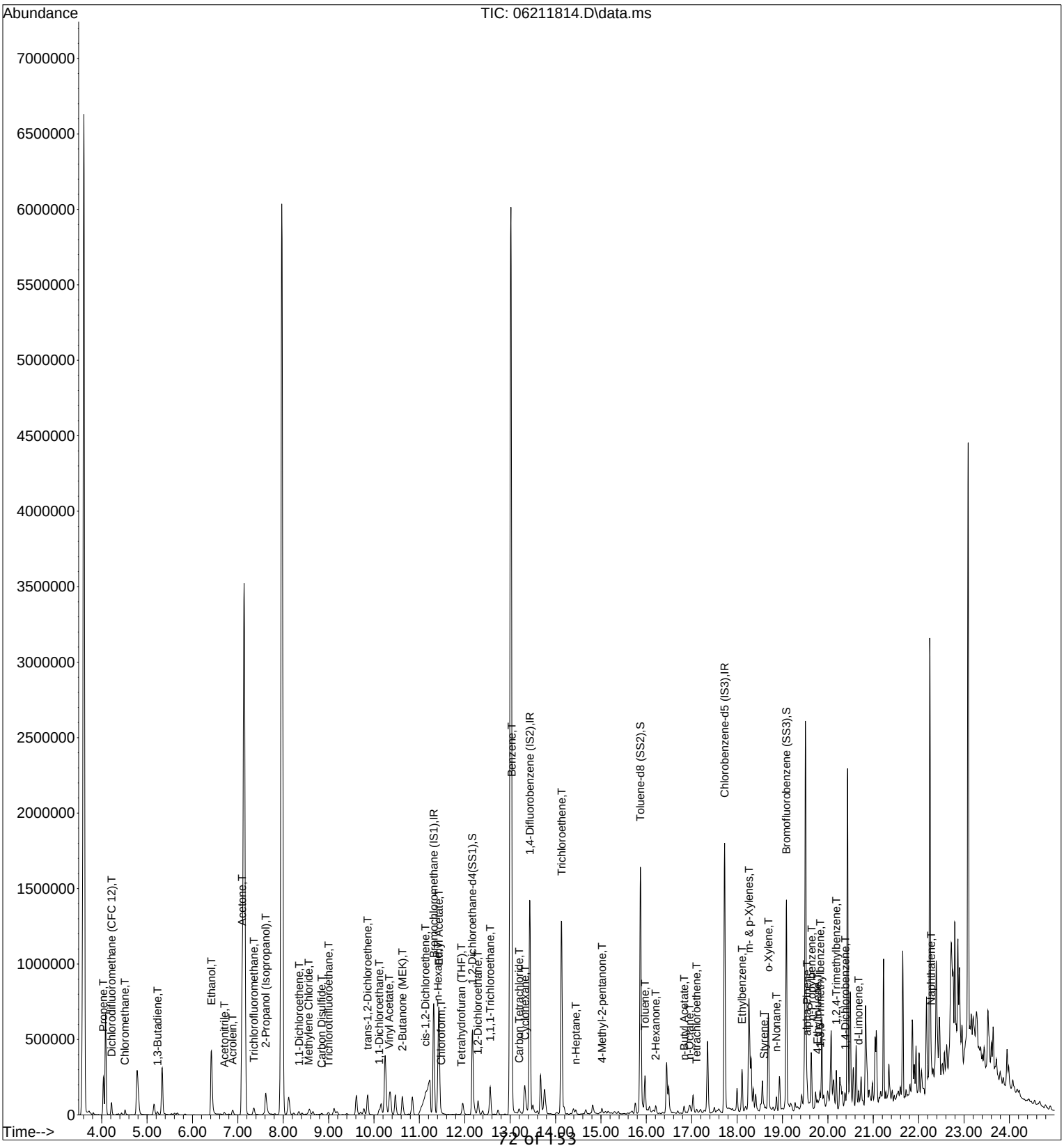
Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	1118	N.D.		
51) n-Heptane	14.45	71	7921	0.208 ng		92
52) cis-1,3-Dichloropropene	15.16	75	142	N.D.		
53) 4-Methyl-2-pentanone	15.02	58	12357	0.314 ng	#	75
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.		
55) 1,1,2-Trichloroethane	15.67	97	1377	N.D.		
58) Toluene	15.97	91	215761	1.473 ng		98
59) 2-Hexanone	16.21	43	38594	0.437 ng		96
60) Dibromochloromethane	0.00	129	0	N.D.		
61) 1,2-Dibromoethane	0.00	107	0	N.D.		
62) n-Butyl Acetate	16.83	43	39094	0.397 ng		99
63) n-Octane	16.95	57	9114	0.284 ng		92
64) Tetrachloroethene	17.11	166	8109	0.199 ng		99
65) Chlorobenzene	17.78	112	3650	N.D.		
66) Ethylbenzene	18.11	91	229458	1.365 ng		99
67) m- & p-Xylenes	18.26	91	580917	4.545 ng		99
68) Bromoform	18.34	173	361	N.D.		
69) Styrene	18.59	104	21033	0.206 ng		90
70) o-Xylene	18.69	91	169035	1.303 ng		92
71) n-Nonane	18.87	43	33524	0.453 ng		89
72) 1,1,2,2-Tetrachloroethane	18.69	83	1435	N.D.		
74) Cumene	19.20	105	12474	N.D.		
75) alpha-Pinene	19.54	93	71799	0.831 ng	#	46
76) n-Propylbenzene	19.64	91	17761	0.090 ng	#	1
77) 3-Ethyltoluene	0.00	105	0	N.D. d		
78) 4-Ethyltoluene	19.77	105	19096	0.127 ng		94
79) 1,3,5-Trimethylbenzene	19.83	105	36177	0.273 ng		100
80) alpha-Methylstyrene	0.00	118	0	N.D. d		
81) 2-Ethyltoluene	0.00	105	0	N.D. d		
82) 1,2,4-Trimethylbenzene	20.19	105	113209	0.842 ng		89
83) n-Decane	0.00	57	0	N.D. d		
84) Benzyl Chloride	20.39	91	3238	N.D.		
85) 1,3-Dichlorobenzene	20.32	146	255	N.D.		
86) 1,4-Dichlorobenzene	20.39	146	18933	0.229 ng		99
87) sec-Butylbenzene	20.42	105	11127	N.D.		
88) 4-Isopropyltoluene (p-...	0.00	119	0	N.D. d		
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D. d		
90) 1,2-Dichlorobenzene	20.68	146	291	N.D.		
91) d-Limonene	20.68	68	26102	0.474 ng		78
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.		
93) n-Undecane	0.00	57	0	N.D. d		
94) 1,2,4-Trichlorobenzene	22.17	180	533	N.D.		
95) Naphthalene	22.28	128	73129	0.379 ng		97
96) n-Dodecane	0.00	57	0	N.D. d		
97) Hexachlorobutadiene	0.00	225	0	N.D.		
98) Cyclohexanone	0.00	55	0	N.D. d		
99) tert-Butylbenzene	0.00	119	0	N.D. d		
100) n-Butylbenzene	0.00	91	0	N.D. d		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 14:24:02 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 14:24:02 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

WA 6/21/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.32	130	337990	12.500	ng		-0.02
37) 1,4-Difluorobenzene (IS2)	13.43	114	1447042	12.500	ng		-0.01
56) Chlorobenzene-d5 (IS3)	17.72	82	632758	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.17	65	426568	11.165	ng		-0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.36%				
57) Toluene-d8 (SS2)	15.87	98	1329708	12.101	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 96.80%				
73) Bromofluorobenzene (SS3)	19.09	174	473329	13.569	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.56%				
Target Compounds							Qvalue
2) Propene	4.04	42	70841	1.500	ng		97
3) Dichlorodifluoromethan...	4.22	85	79162	1.053	ng		100
4) Chloromethane	4.51	50	8782	0.131	ng		92
7) 1,3-Butadiene	5.23	54	10336	0.217	ng		93
10) Ethanol	6.42	45	643331	19.912	ng		100
11) Acetonitrile	6.70	41	23263	0.275	ng		92
12) Acrolein	6.89	56	38902	1.425	ng		100
13) Acetone	7.09	58	567605	17.241	ng	#	1
14) Trichlorofluoromethane	7.35	101	53838	0.847	ng		100
15) 2-Propanol (Isopropanol)	7.62	45	269851	2.600	ng		100
17) 1,1-Dichloroethene	8.35	96	12703	0.330	ng		90
19) Methylene Chloride	8.56	84	6193	0.146	ng		88
21) Trichlorotrifluoroethane	9.00	151	8915	0.255	ng		95
22) Carbon Disulfide	8.85	76	20624	0.137	ng		97
23) trans-1,2-Dichloroethene	9.86	61	93239	1.597	ng		93
24) 1,1-Dichloroethane	10.11	63	40284	0.551	ng		97
26) Vinyl Acetate	10.34	86	30899	3.584	ng	#	72
27) 2-Butanone (MEK)	10.62	72	48572	1.705	ng	#	84
28) cis-1,2-Dichloroethene	11.14	61	13710m	0.242	ng		
30) Ethyl Acetate	11.43	61	126362	8.240	ng		91
31) n-Hexane	11.41	57	163919	2.580	ng		98
32) Chloroform	11.48	83	10572	0.155	ng		100
34) Tetrahydrofuran (THF)	11.93	72	2824	0.099	ng	#	1
36) 1,2-Dichloroethane	12.29	62	18221	0.370	ng		99
38) 1,1,1-Trichloroethane	12.56	97	130226	2.340	ng		98
41) Benzene	13.04	78	73302	0.441	ng		99
42) Carbon Tetrachloride	13.20	117	22554	0.472	ng		99
43) Cyclohexane	13.32	84	29863	0.505	ng		86
47) Trichloroethene	14.13	130	535579	12.863	ng		99
51) n-Heptane	14.45	71	7921	0.208	ng		92
53) 4-Methyl-2-pentanone	15.02	58	12357	0.314	ng	#	75
58) Toluene	15.97	91	215761	1.473	ng		98
59) 2-Hexanone	16.21	43	38594	0.437	ng		96
62) n-Butyl Acetate	16.83	43	39094	0.397	ng		99
63) n-Octane	16.95	57	9114	0.284	ng		92
64) Tetrachloroethene	17.11	166	8109	0.199	ng		99
66) Ethylbenzene	18.11	91	229458	1.365	ng		99
67) m- & p-Xylenes	18.26	91	580917	4.545	ng		99
69) Styrene	18.59	104	21033	0.206	ng		90
70) o-Xylene	18.69	91	169035	1.303	ng		92
71) n-Nonane	18.87	43	33524	0.453	ng		89
75) alpha-Pinene	19.54	93	71799	0.831	ng	#	46
76) n-Propylbenzene	19.64	91	17761	0.090	ng	#	1
78) 4-Ethyltoluene	19.77	105	19096	0.127	ng		94
79) 1,3,5-Trimethylbenzene	19.83	105	36177	0.273	ng		100
82) 1,2,4-Trimethylbenzene	20.19	105	113209	0.842	ng		89

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 14:24:02 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

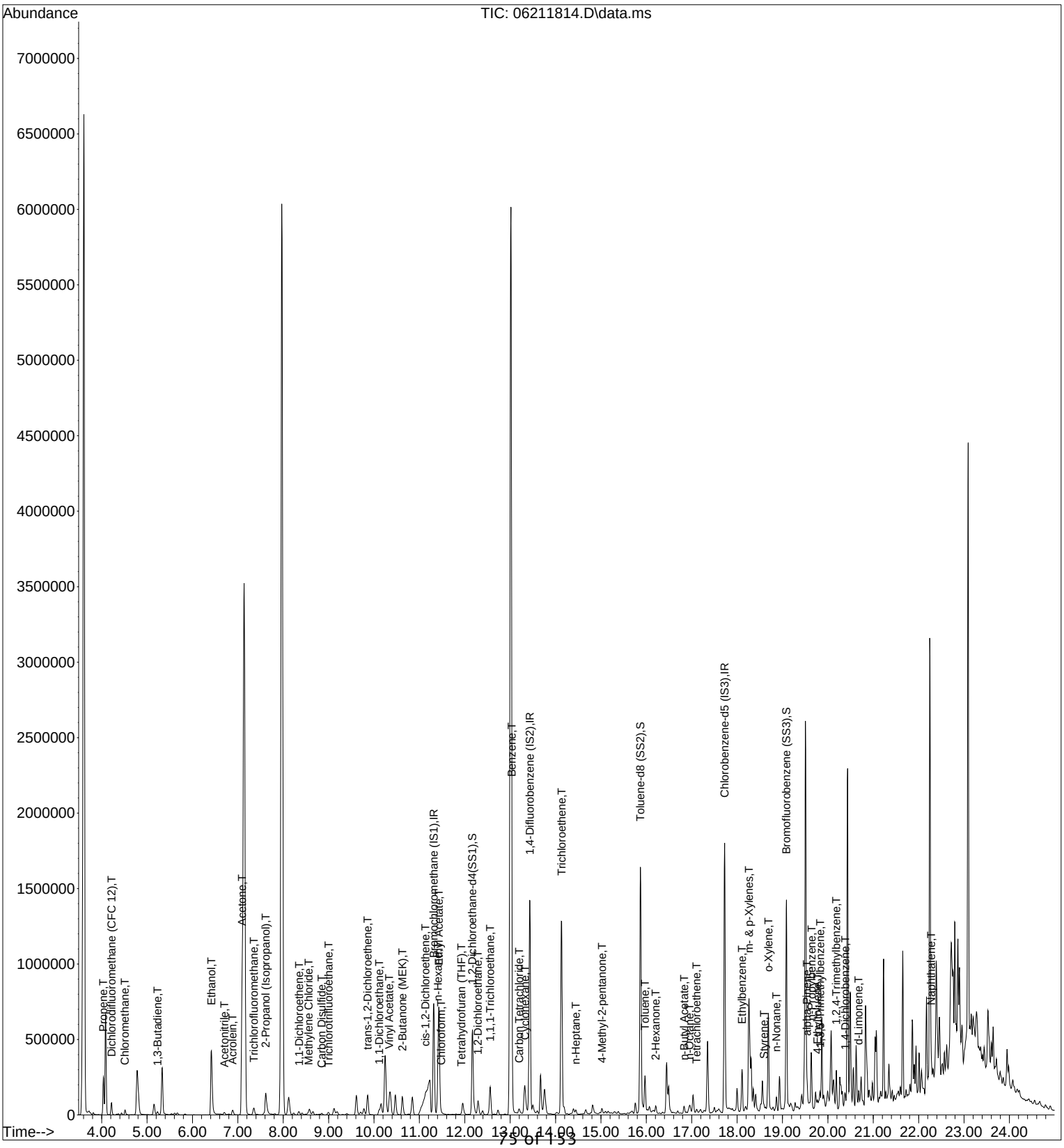
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,4-Dichlorobenzene	20.39	146	18933	0.229	ng	99
91) d-Limonene	20.68	68	26102	0.474	ng	78
95) Naphthalene	22.28	128	73129	0.379	ng	97

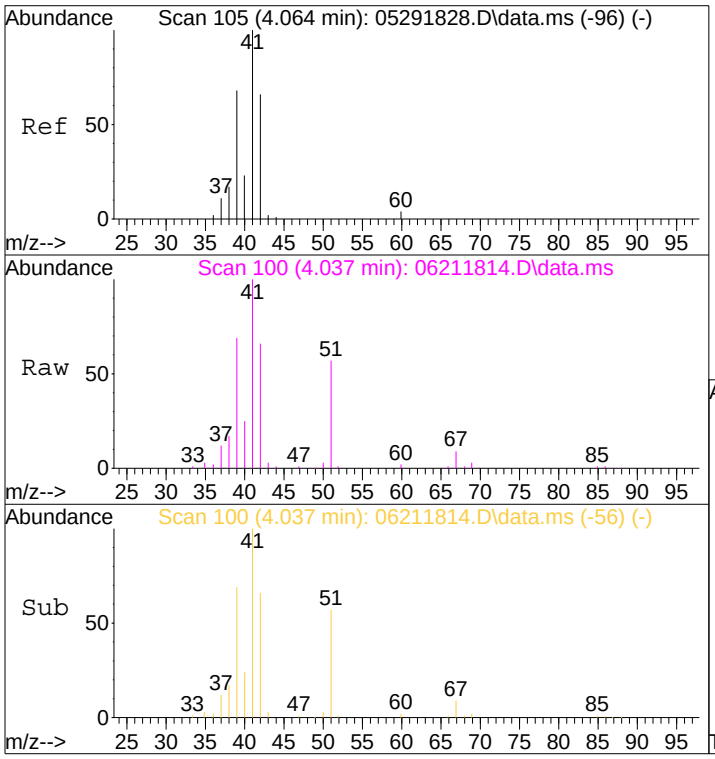
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 14:24:02 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

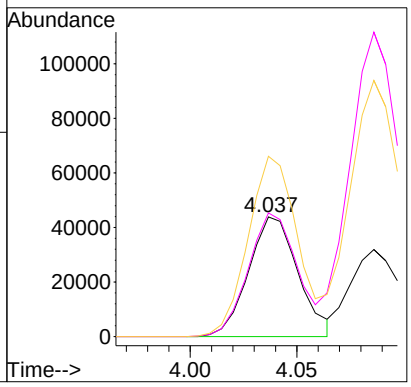


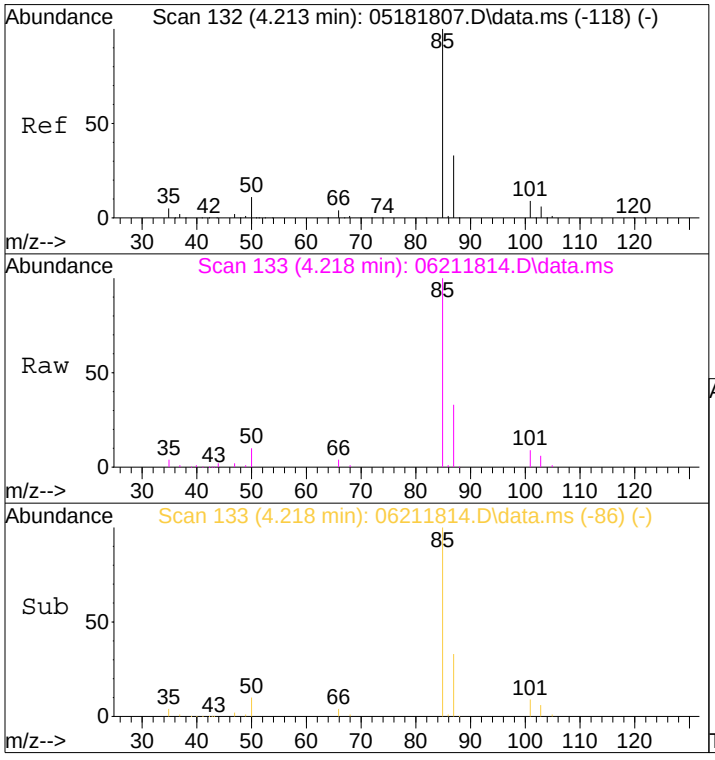


#2
Propene
Concen: 1.50 ng
RT: 4.04 min Scan# 100
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 42 Resp: 70841

Ion	Ratio	Lower	Upper
42	100		
39	102.2	86.8	126.8
41	147.7	130.4	170.4

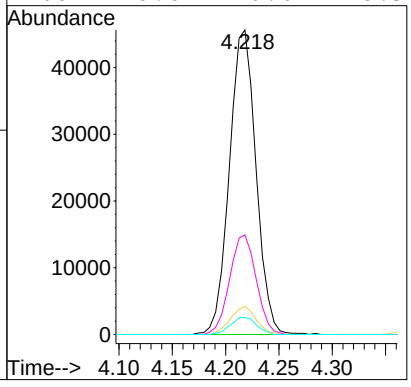


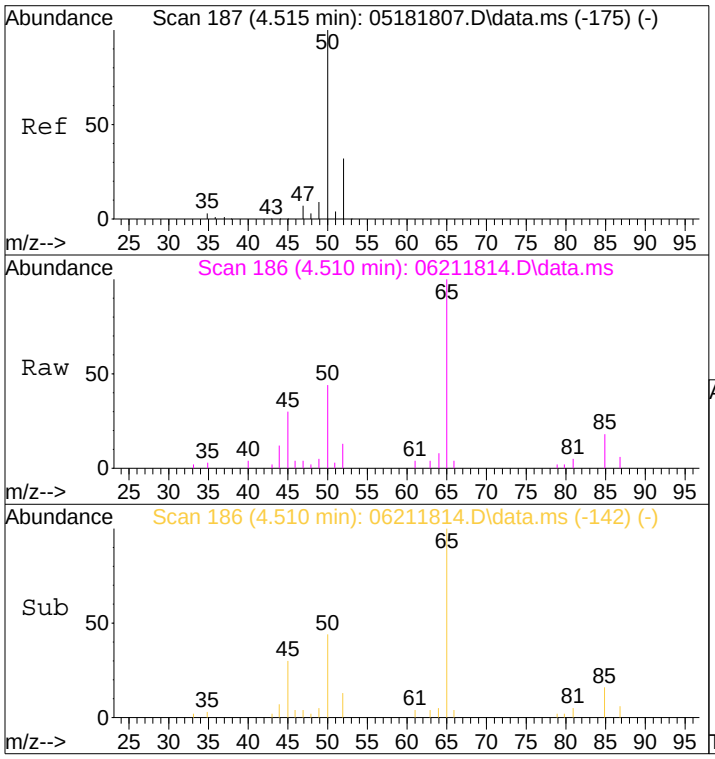


#3
Dichlorodifluoromethane (CFC 12)
Concen: 1.05 ng
RT: 4.22 min Scan# 133
Delta R.T. 0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 85 Resp: 79162

Ion	Ratio	Lower	Upper
85	100		
87	32.5	12.6	52.6
101	8.8	0.0	29.1
103	5.5	0.0	25.9

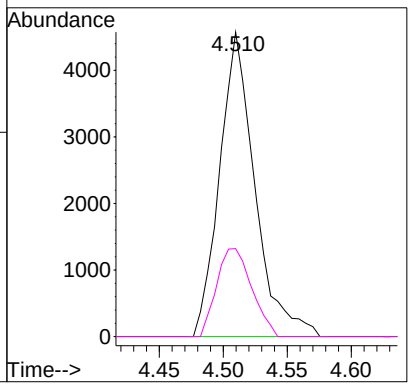


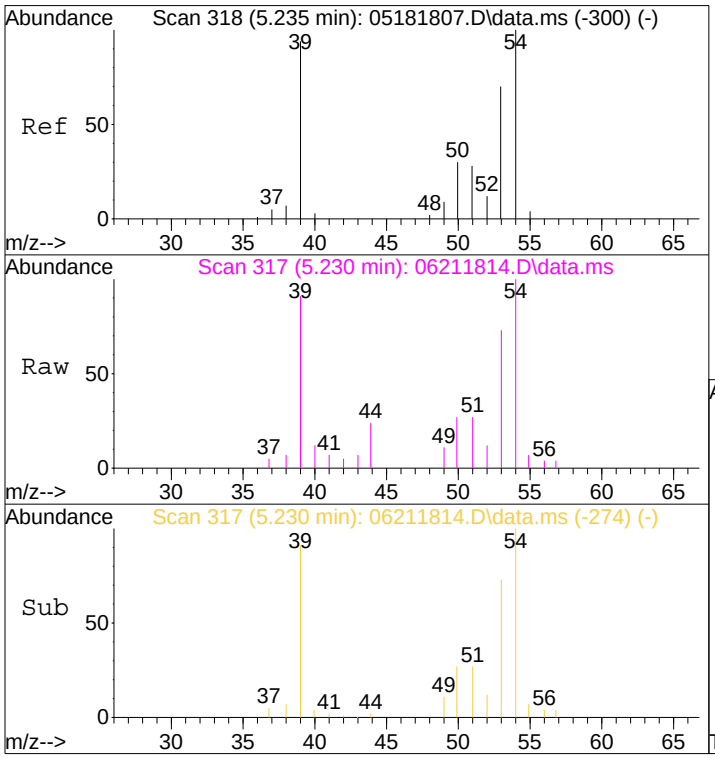


#4
Chloromethane
Concen: 0.13 ng
RT: 4.51 min Scan# 186
Delta R.T. -0.006 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 50 Resp: 8782

Ion	Ratio	Lower	Upper
50	100		
52	28.7	13.0	53.0

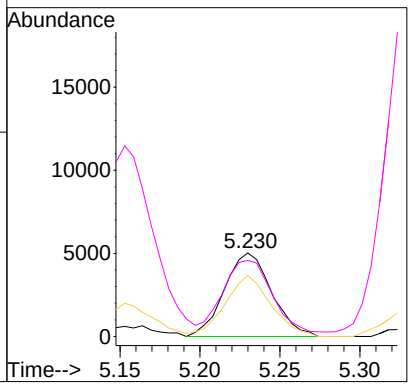


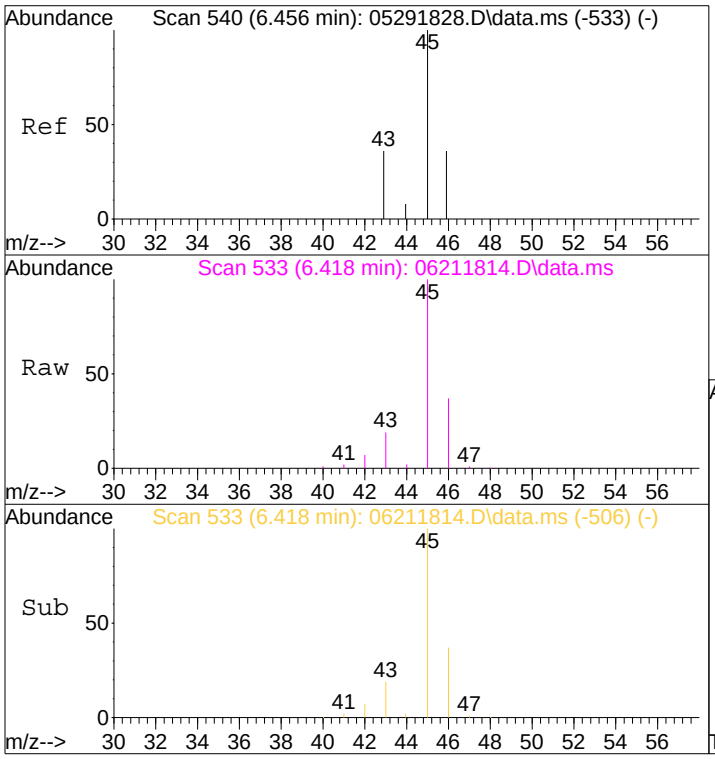


#7
1,3-Butadiene
Concen: 0.22 ng
RT: 5.23 min Scan# 317
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 54 Resp: 10336

Ion	Ratio	Lower	Upper
54	100		
39	100.2	70.4	110.4
53	70.6	49.2	89.2

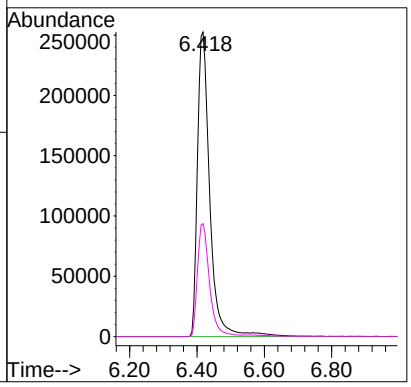


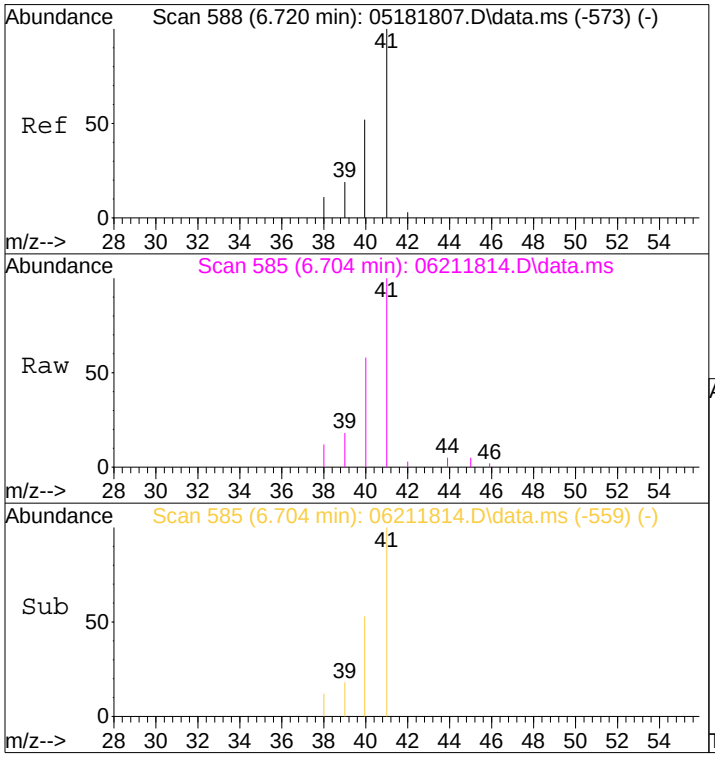


#10
Ethanol
Concen: 19.91 ng
RT: 6.42 min Scan# 533
Delta R.T. -0.099 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 45 Resp: 643331

Ion	Ratio	Lower	Upper
45	100		
46	37.1	17.2	57.2

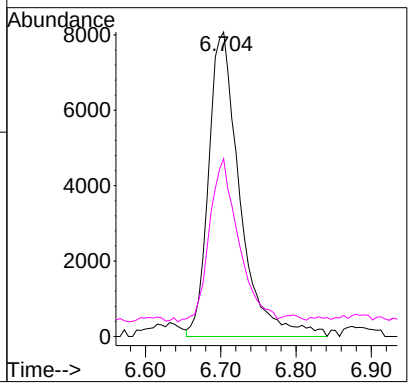


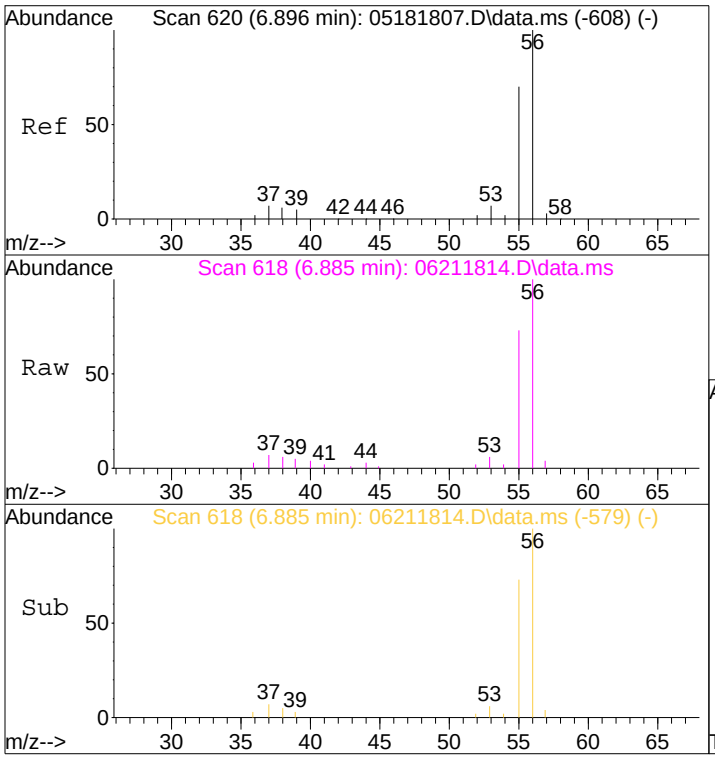


#11
Acetonitrile
Concen: 0.27 ng
RT: 6.70 min Scan# 585
Delta R.T. -0.055 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 41 Resp: 23263

Ion	Ratio	Lower	Upper
41	100		
40	58.7	33.1	73.1

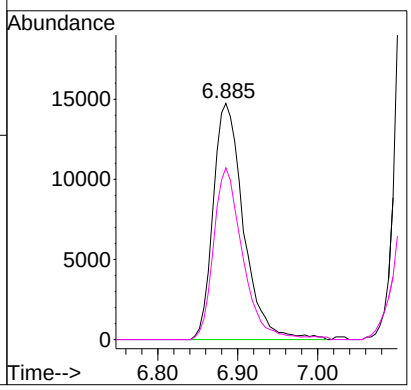


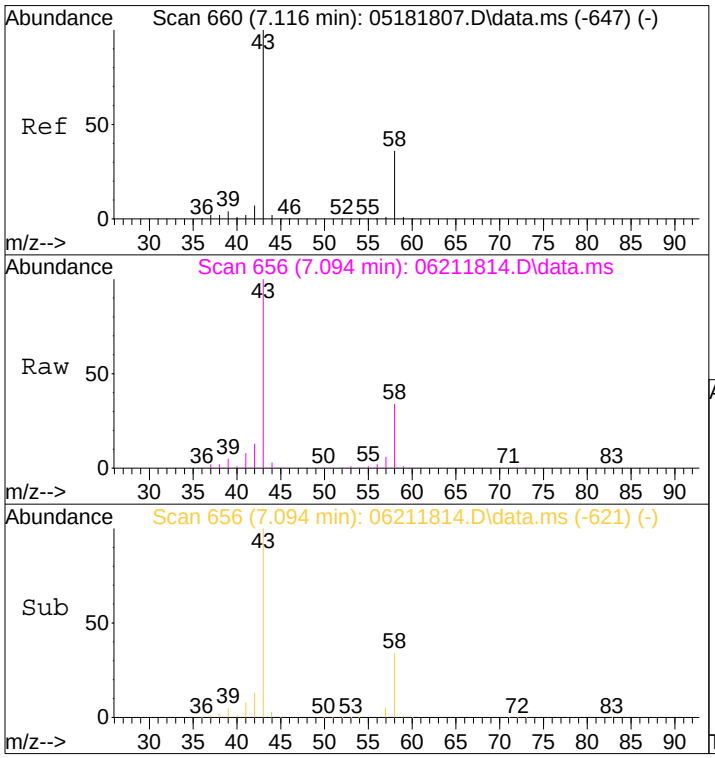


#12
Acrolein
Concen: 1.42 ng
RT: 6.89 min Scan# 618
Delta R.T. -0.033 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 56 Resp: 38902

Ion	Ratio	Lower	Upper
56	100		
55	69.9	49.7	89.7

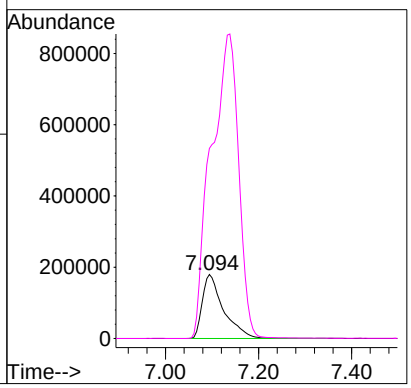


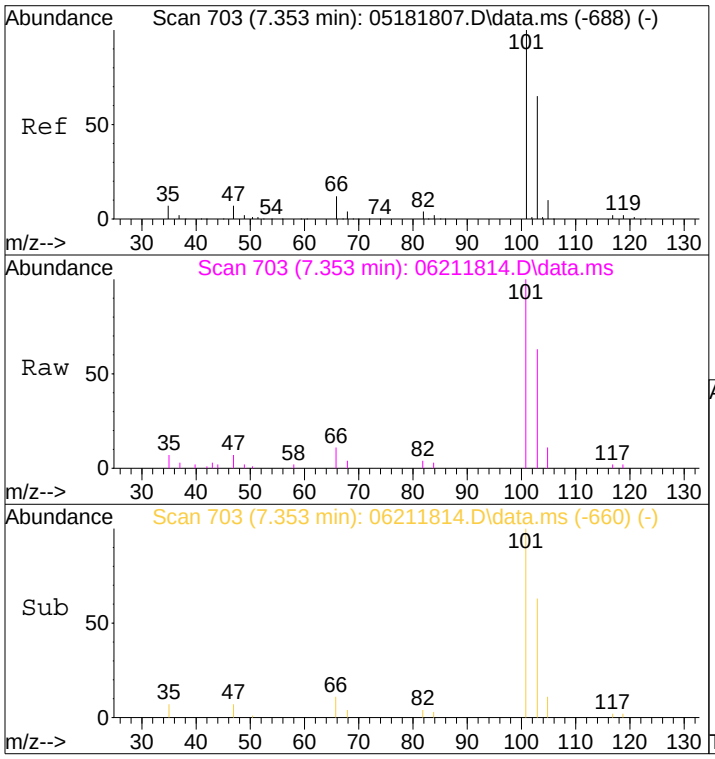


#13
Acetone
Concen: 17.24 ng
RT: 7.09 min Scan# 656
Delta R.T. -0.055 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 58 Resp: 567605

Ion	Ratio	Lower	Upper
58	100		
43	617.8	242.9	302.9#

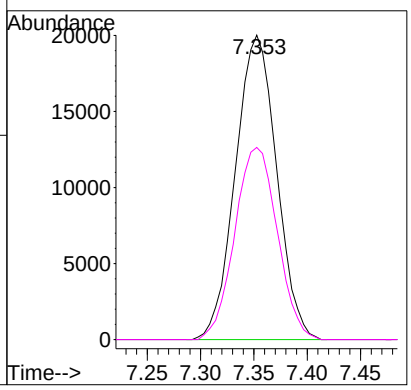


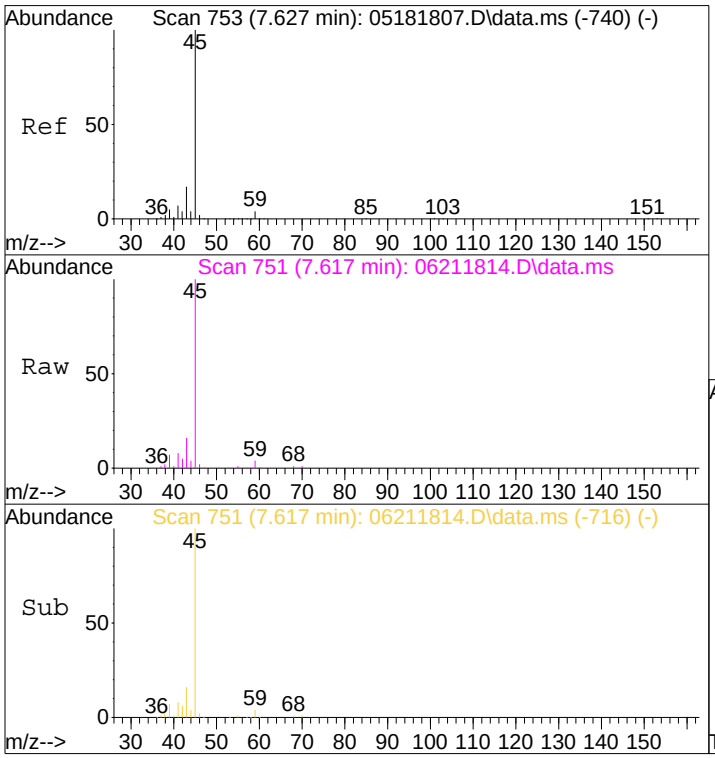


#14
Trichlorofluoromethane
Concen: 0.85 ng
RT: 7.35 min Scan# 703
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:101 Resp: 53838

Ion	Ratio	Lower	Upper
101	100		
103	65.2	44.9	84.9

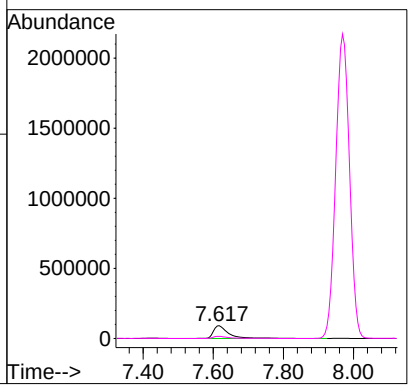


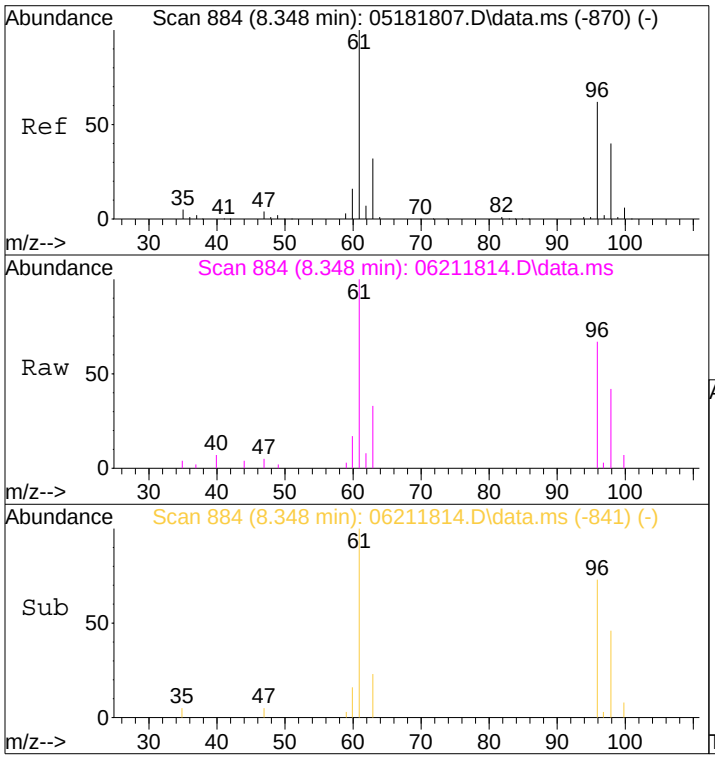


#15
2-Propanol (Isopropanol)
Concen: 2.60 ng
RT: 7.62 min Scan# 751
Delta R.T. -0.055 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 45 Resp: 269851

Ion	Ratio	Lower	Upper
45	100		
43	17.5	0.0	37.4

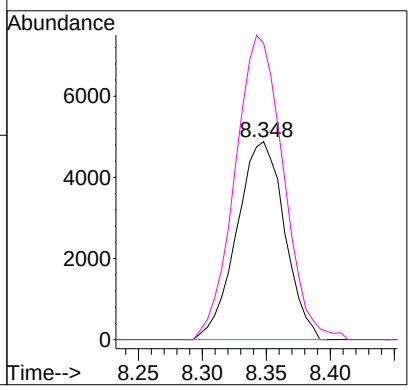


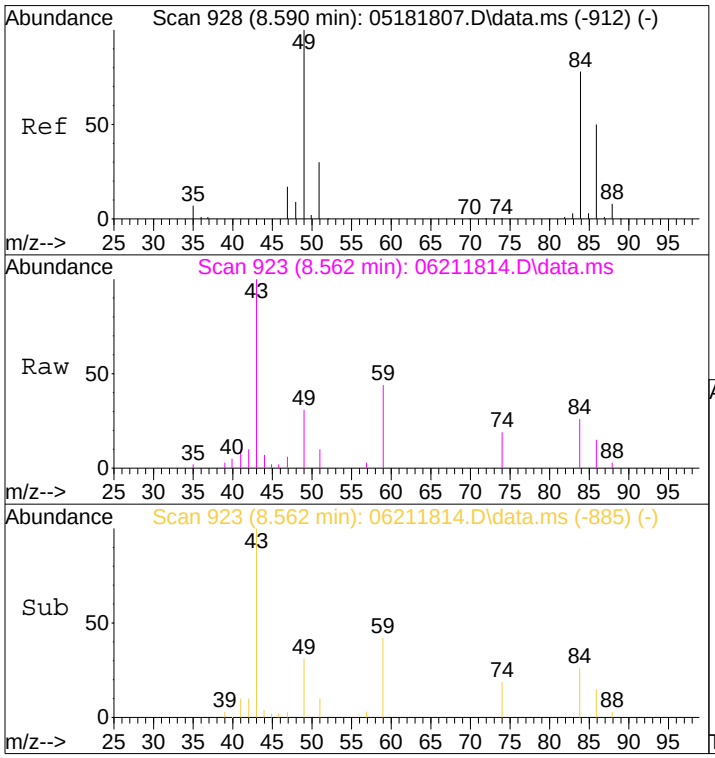


#17
1,1-Dichloroethene
Concen: 0.33 ng
RT: 8.35 min Scan# 884
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 96 Resp: 12703

Ion	Ratio	Lower	Upper
96	100		
61	155.7	123.5	163.5

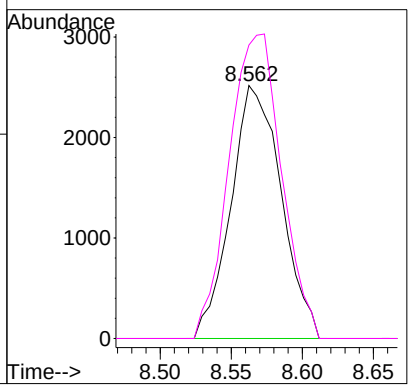


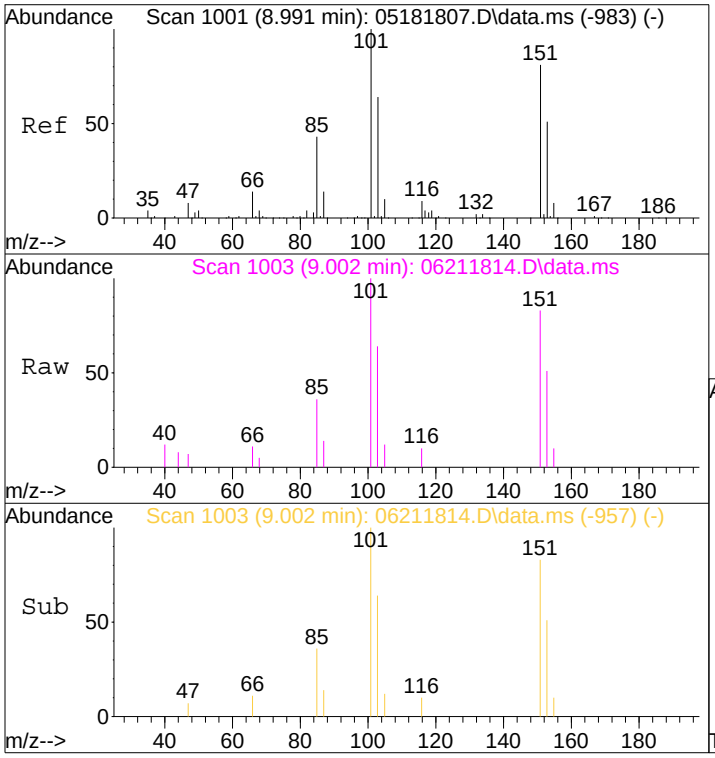


#19
Methylene Chloride
Concen: 0.15 ng
RT: 8.56 min Scan# 923
Delta R.T. -0.038 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 84 Resp: 6193

Ion	Ratio	Lower	Upper
84	100		
49	125.6	87.3	137.3

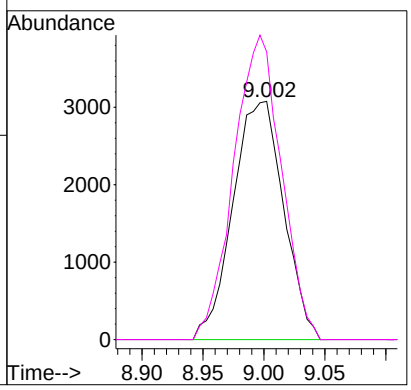


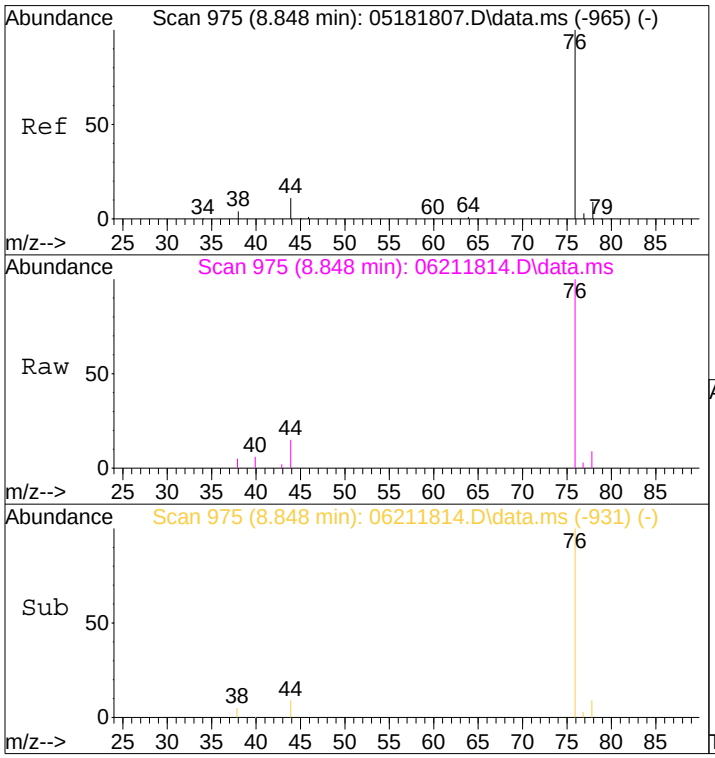


#21
Trichlorotrifluoroethane
Concen: 0.25 ng
RT: 9.00 min Scan# 1003
Delta R.T. 0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:151 Resp: 8915

Ion	Ratio	Lower	Upper
151	100		
101	120.2	94.6	134.6

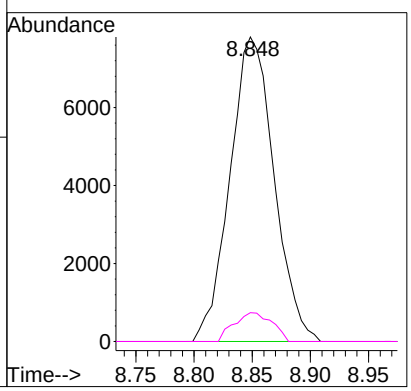


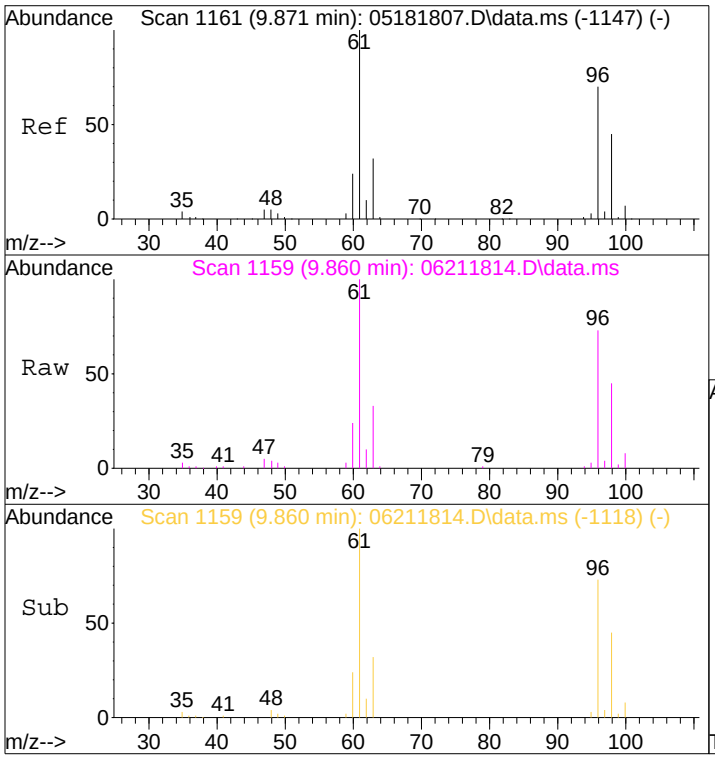


#22
Carbon Disulfide
Concen: 0.14 ng
RT: 8.85 min Scan# 975
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 76 Resp: 20624

Ion	Ratio	Lower	Upper
76	100		
78	8.2	0.0	29.2

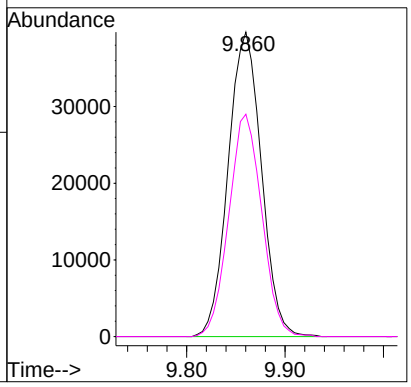


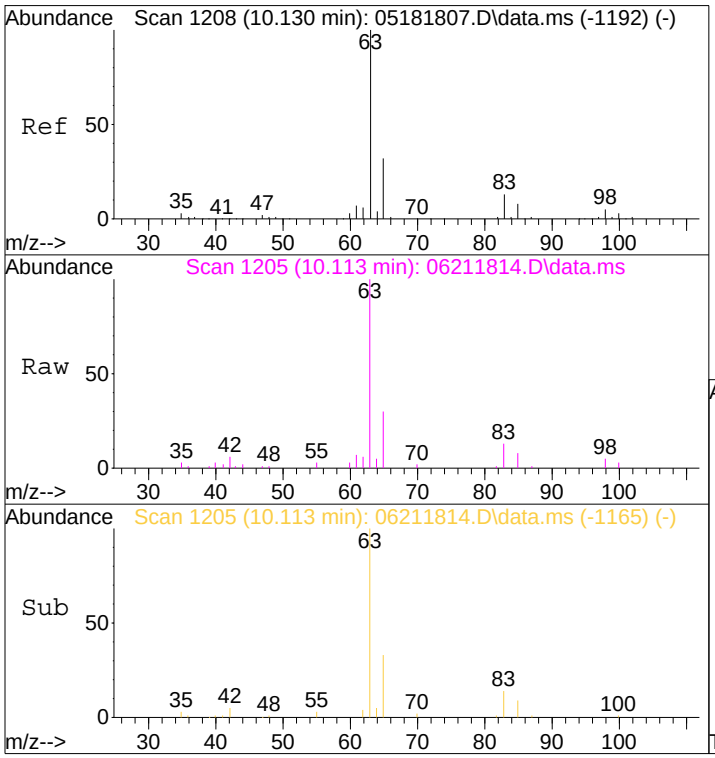


#23
trans-1,2-Dichloroethene
Concen: 1.60 ng
RT: 9.86 min Scan# 1159
Delta R.T. -0.022 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 61 Resp: 93239

Ion	Ratio	Lower	Upper
61	100		
96	72.5	58.8	98.8

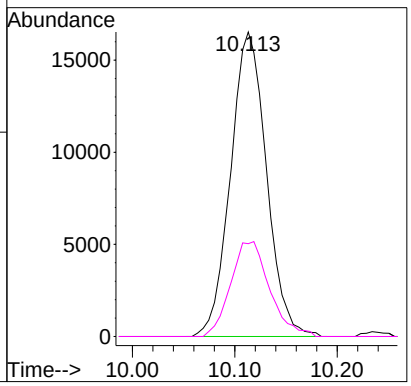


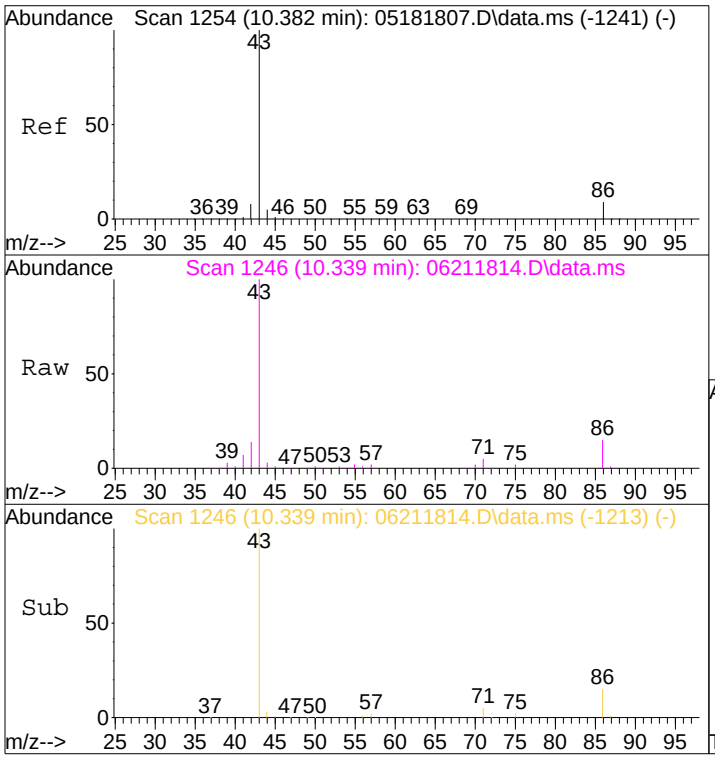


#24
1,1-Dichloroethane
Concen: 0.55 ng
RT: 10.11 min Scan# 1205
Delta R.T. -0.027 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 63 Resp: 40284

Ion	Ratio	Lower	Upper
63	100		
65	33.8	12.2	52.2

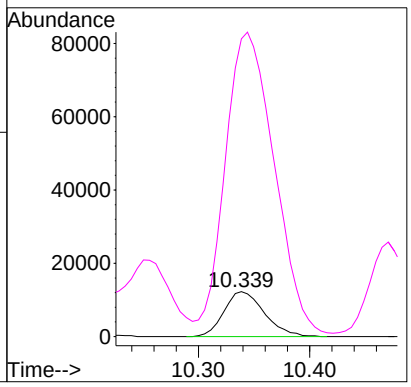


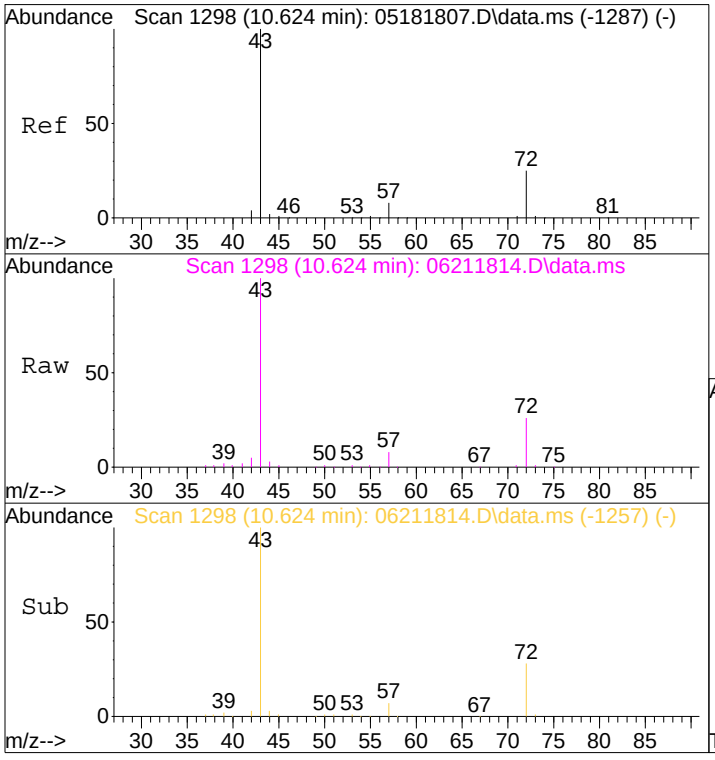


#26
Vinyl Acetate
Concen: 3.58 ng
RT: 10.34 min Scan# 1246
Delta R.T. -0.066 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 86 Resp: 30899

Ion	Ratio	Lower	Upper
86	100		
43	815.3	915.5	955.5#

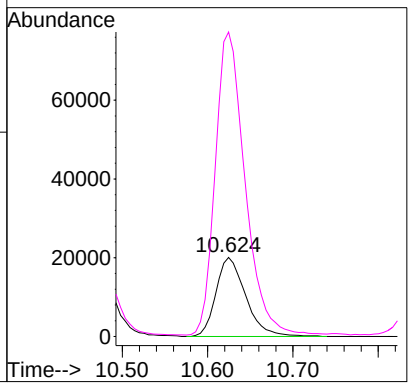


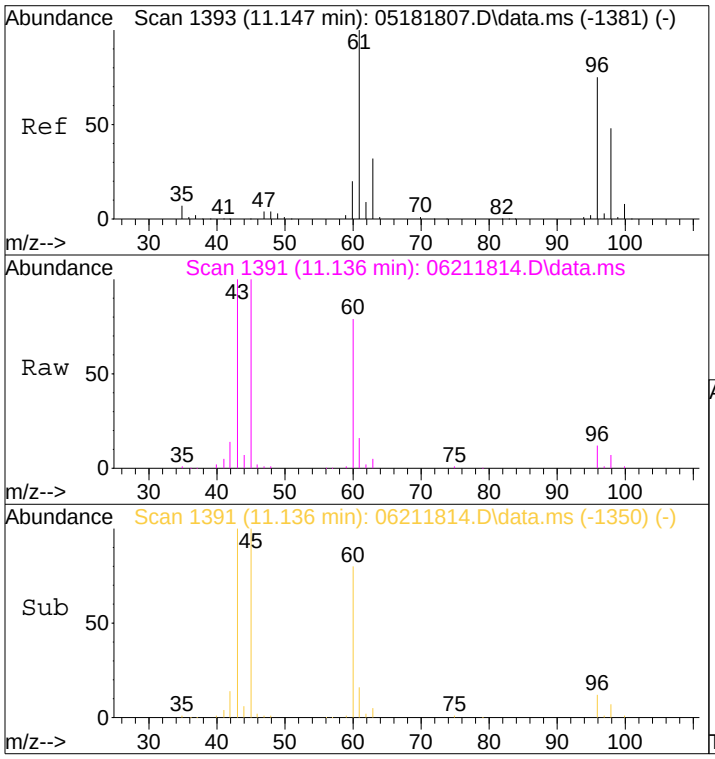


#27
2-Butanone (MEK)
Concen: 1.71 ng
RT: 10.62 min Scan# 1298
Delta R.T. -0.022 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 72 Resp: 48572

Ion	Ratio	Lower	Upper
72	100		
43	383.7	330.0	370.0#

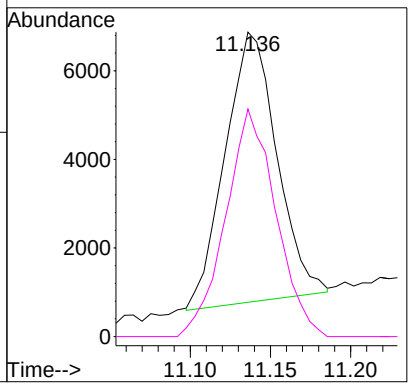


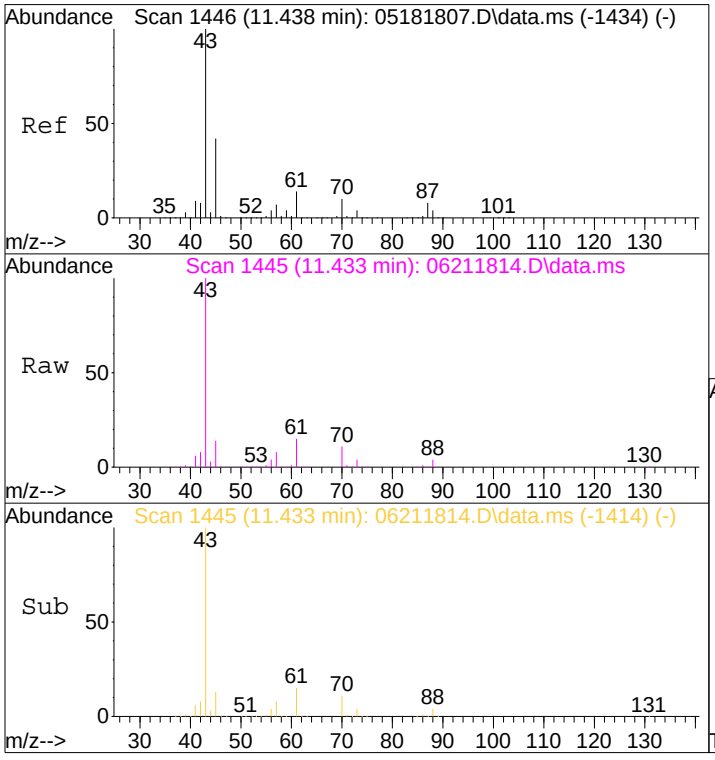


#28
cis-1,2-Dichloroethene
Concen: 0.24 ng m
RT: 11.14 min Scan# 1391
Delta R.T. -0.022 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 61 Resp: 13710

Ion	Ratio	Lower	Upper
61	100		
96	81.3	66.3	106.3

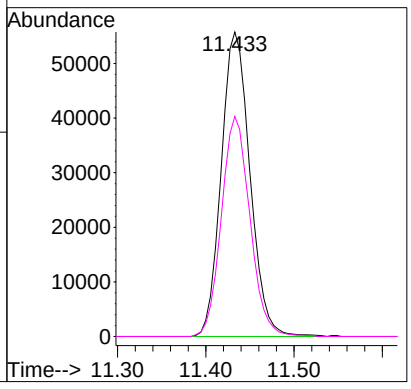


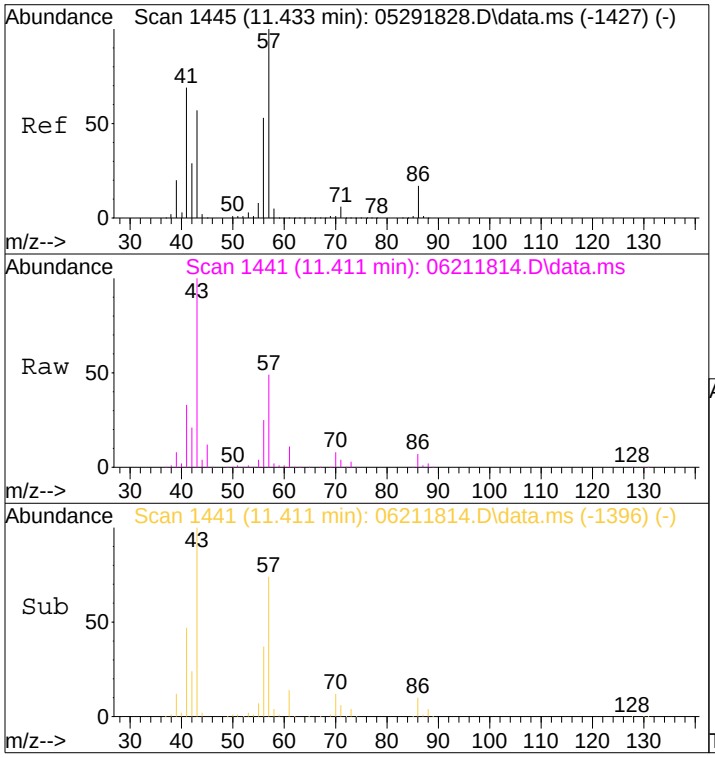


#30
Ethyl Acetate
Concen: 8.24 ng
RT: 11.43 min Scan# 1445
Delta R.T. -0.027 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 61 Resp: 126362

Ion	Ratio	Lower	Upper
61	100		
70	71.7	59.3	99.3

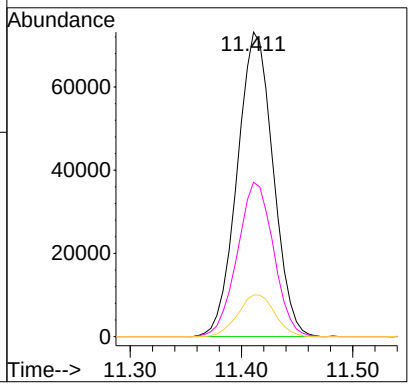


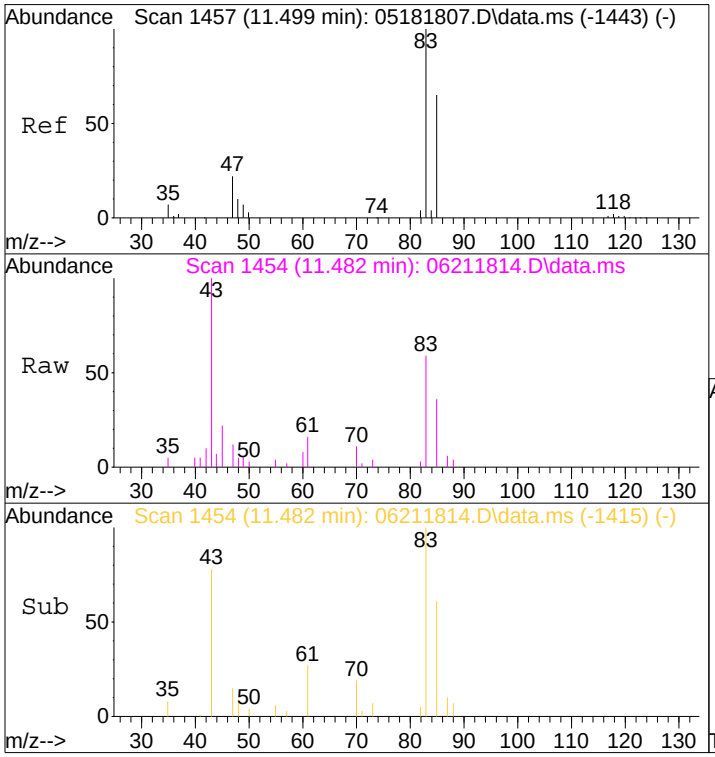


#31
n-Hexane
Concen: 2.58 ng
RT: 11.41 min Scan# 1441
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 57 Resp: 163919

Ion	Ratio	Lower	Upper
57	100		
56	51.1	40.6	61.0
86	14.1	13.0	19.4

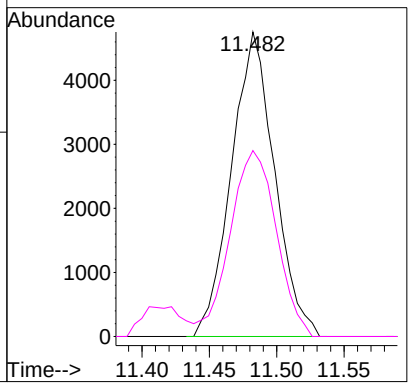


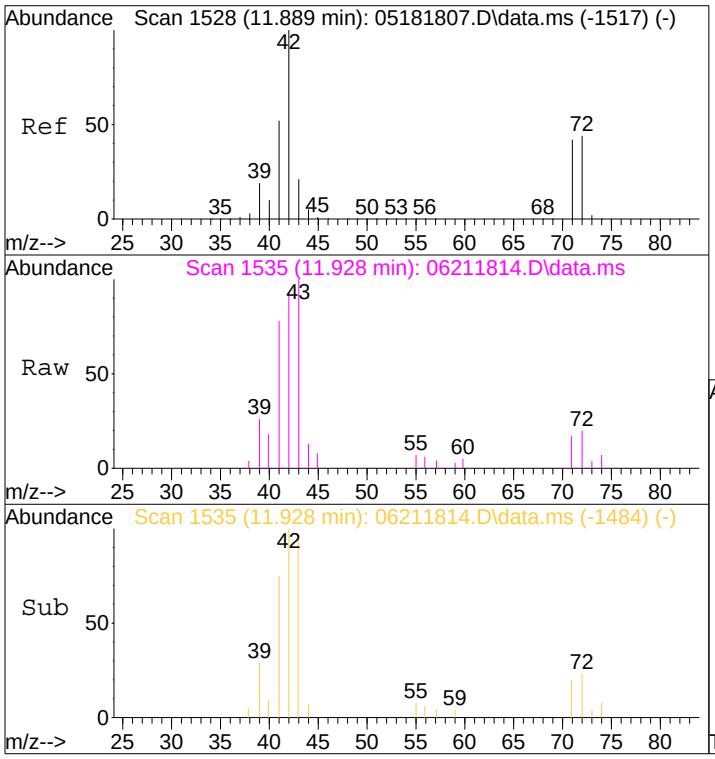


#32
Chloroform
Concen: 0.15 ng
RT: 11.48 min Scan# 1454
Delta R.T. -0.033 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 83 Resp: 10572

Ion	Ratio	Lower	Upper
83	100		
85	65.6	45.3	85.3

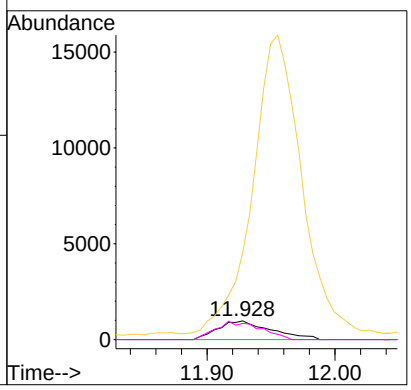


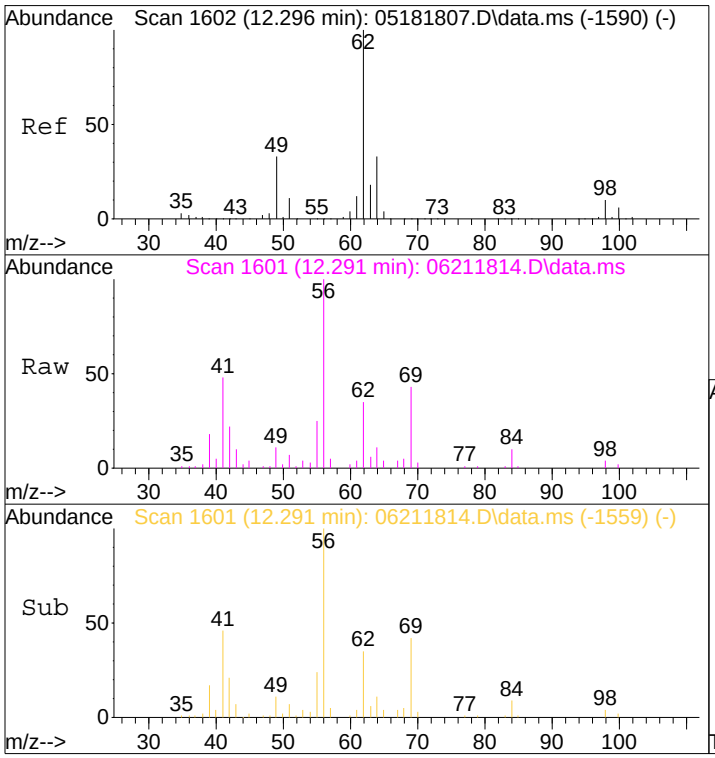


#34
Tetrahydrofuran (THF)
Concen: 0.10 ng
RT: 11.93 min Scan# 1535
Delta R.T. 0.033 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 72 Resp: 2824

Ion	Ratio	Lower	Upper
72	100		
71	81.6	76.1	116.1
42	1527.0	179.9	219.9#

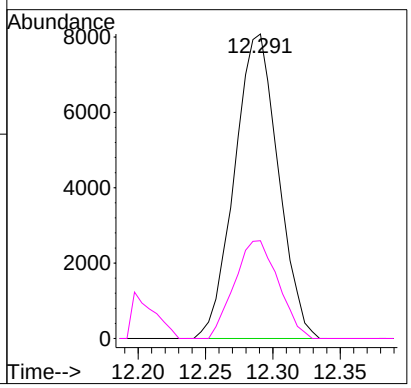


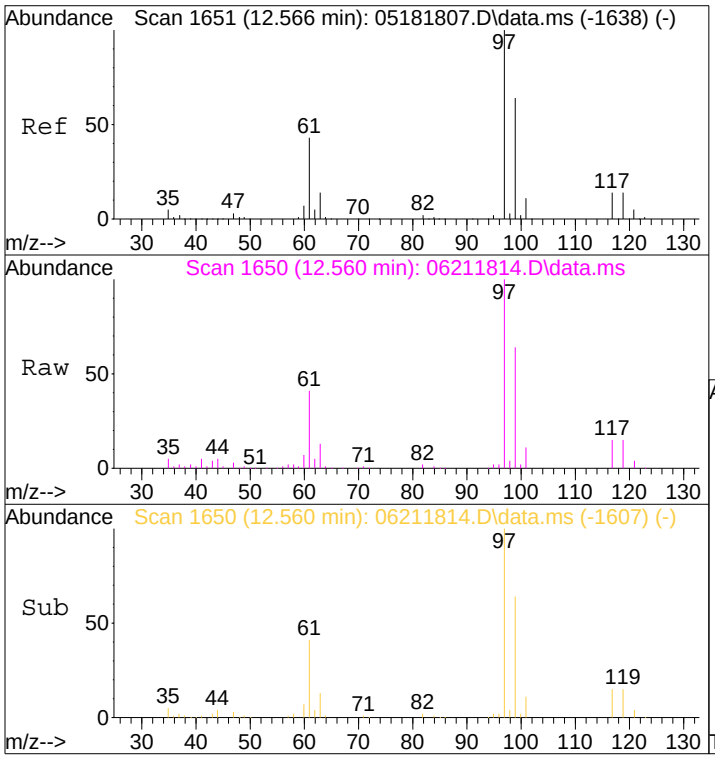


#36
1,2-Dichloroethane
Concen: 0.37 ng
RT: 12.29 min Scan# 1601
Delta R.T. -0.017 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 62 Resp: 18221

Ion	Ratio	Lower	Upper
62	100		
64	32.3	12.9	52.9

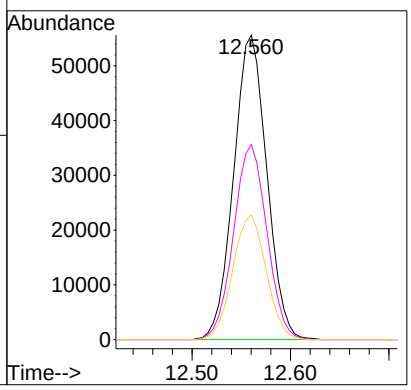


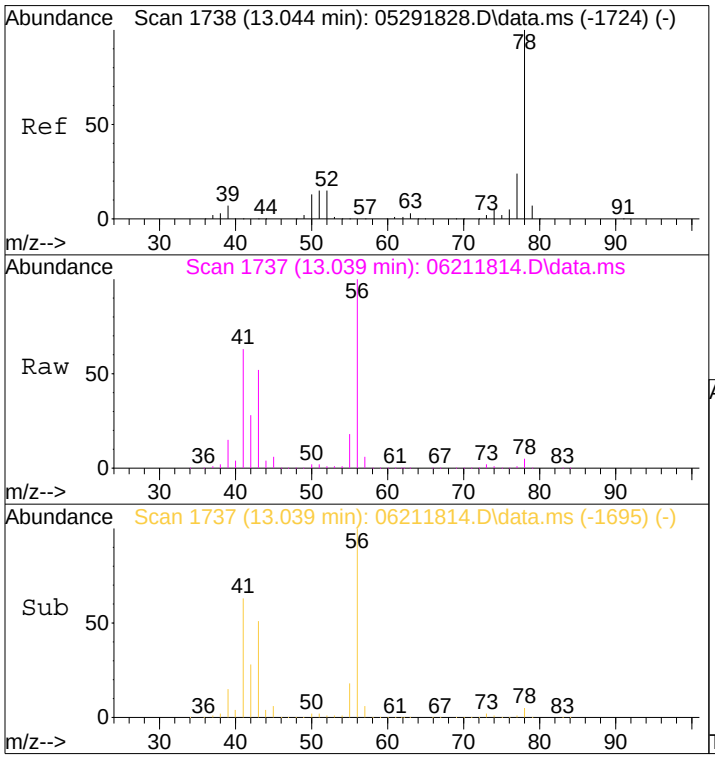


#38
1,1,1-Trichloroethane
Concen: 2.34 ng
RT: 12.56 min Scan# 1650
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 97 Resp: 130226

Ion	Ratio	Lower	Upper
97	100		
99	64.3	45.0	85.0
61	41.3	18.9	58.9

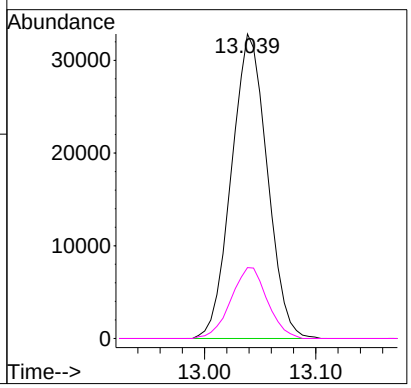


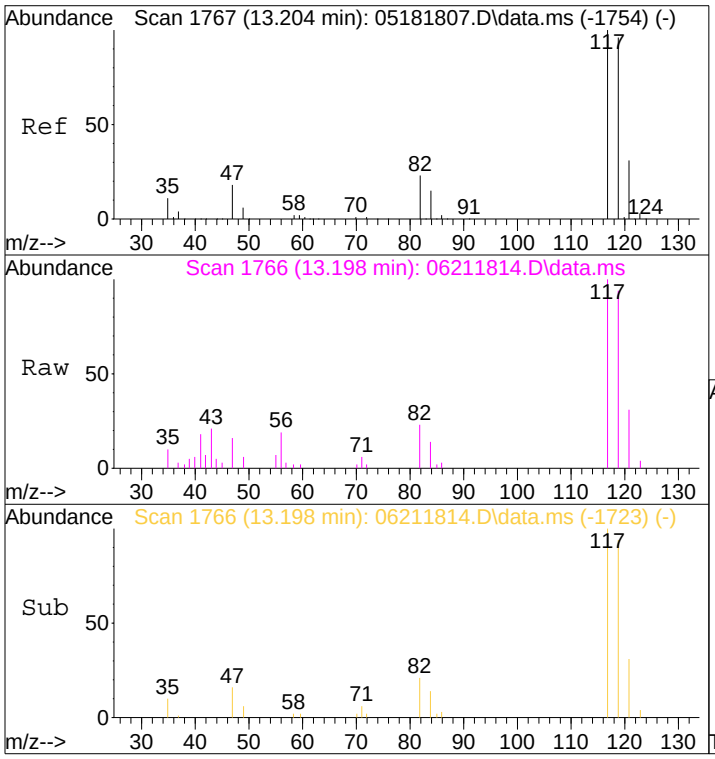


#41
Benzene
Concen: 0.44 ng
RT: 13.04 min Scan# 1737
Delta R.T. -0.017 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 78 Resp: 73302

Ion	Ratio	Lower	Upper
78	100		
77	23.7	3.1	43.1

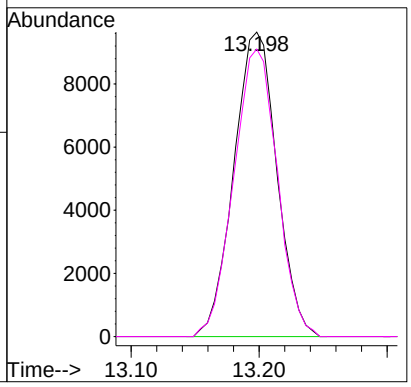


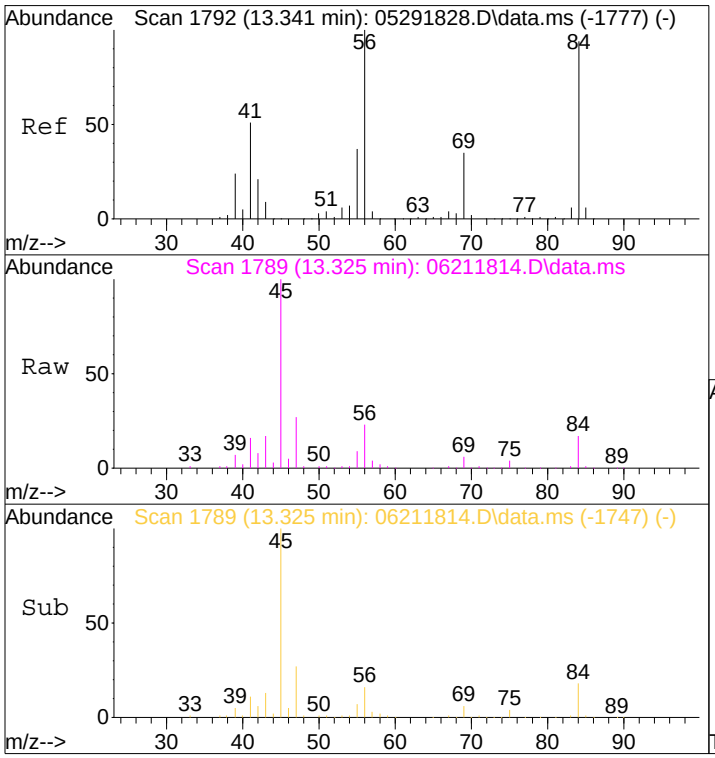


#42
Carbon Tetrachloride
Concen: 0.47 ng
RT: 13.20 min Scan# 1766
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:117 Resp: 22554

Ion	Ratio	Lower	Upper
117	100		
119	95.5	76.7	116.7

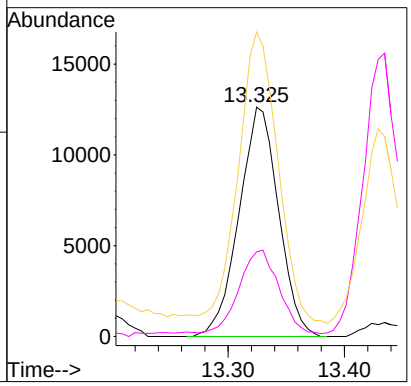


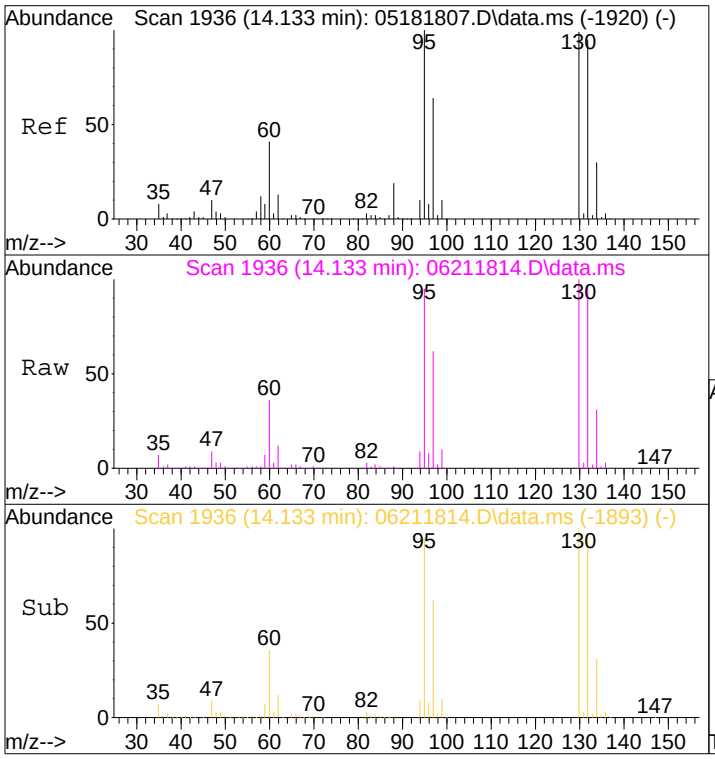


#43
Cyclohexane
Concen: 0.50 ng
RT: 13.32 min Scan# 1789
Delta R.T. -0.017 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 84 Resp: 29863

Ion	Ratio	Lower	Upper
84	100		
69	36.5	15.6	55.6
56	127.9	88.8	128.8

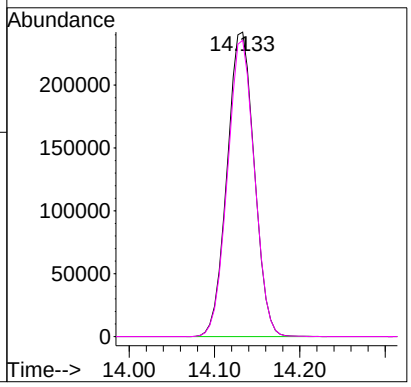


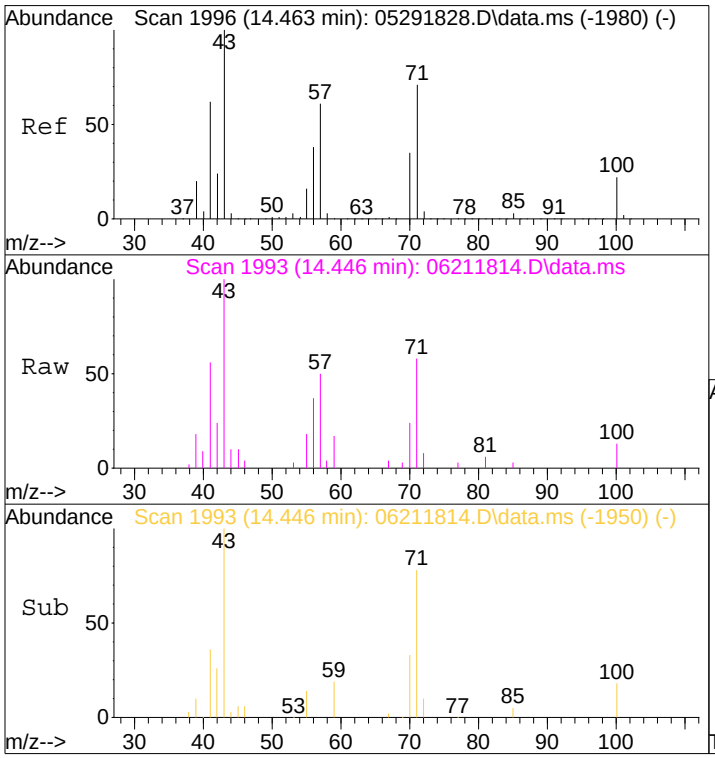


#47
Trichloroethene
Concen: 12.86 ng
RT: 14.13 min Scan# 1936
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:130 Resp: 535579

Ion	Ratio	Lower	Upper
130	100		
132	96.6	76.0	116.0

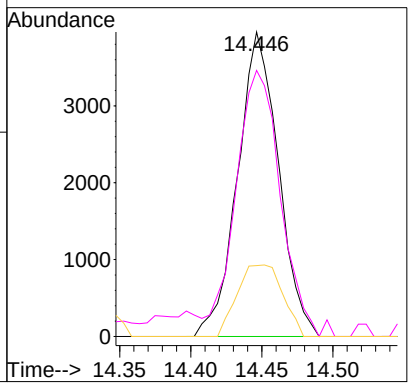


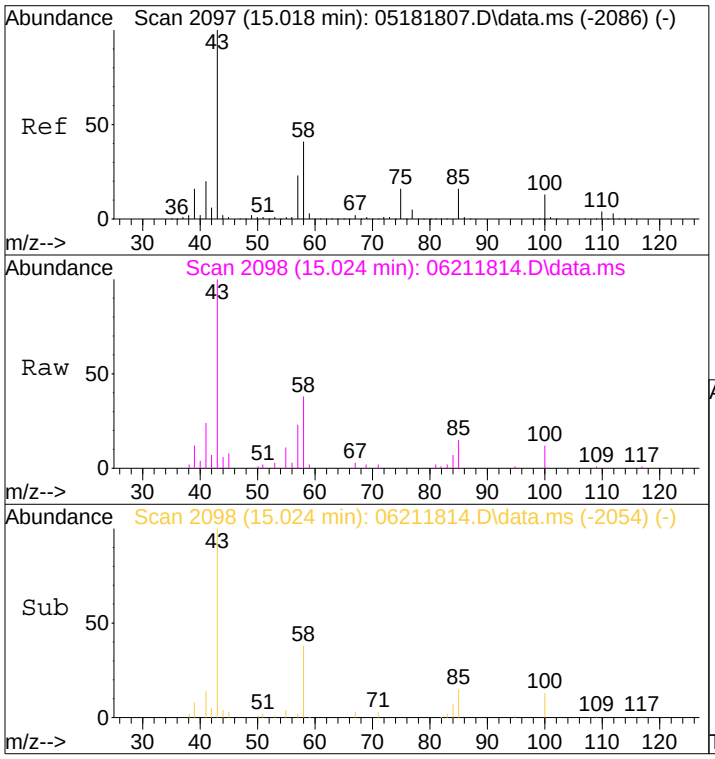


#51
n-Heptane
Concen: 0.21 ng
RT: 14.45 min Scan# 1993
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 71 Resp: 7921

Ion	Ratio	Lower	Upper
71	100		
57	95.7	67.9	107.9
100	26.0	9.2	49.2

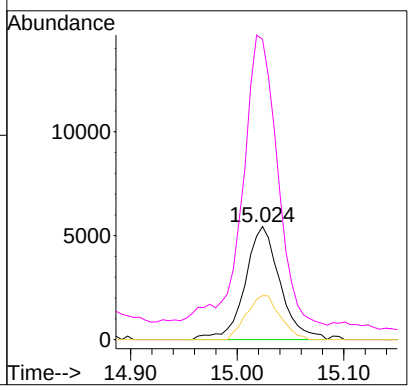


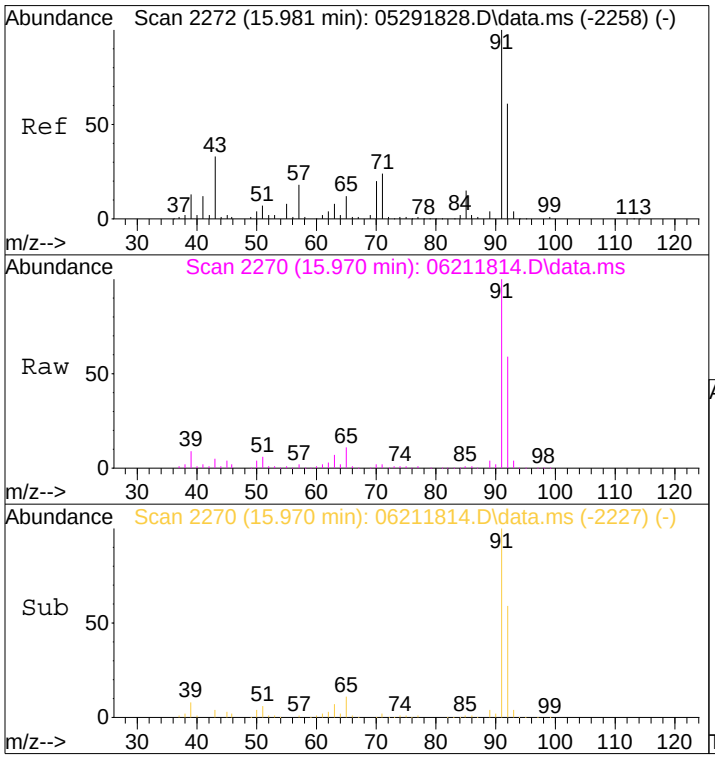


#53
4-Methyl-2-pentanone
Concen: 0.31 ng
RT: 15.02 min Scan# 2098
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 58 Resp: 12357

Ion	Ratio	Lower	Upper
58	100		
43	271.2	181.7	272.5
85	37.5	37.8	56.6#

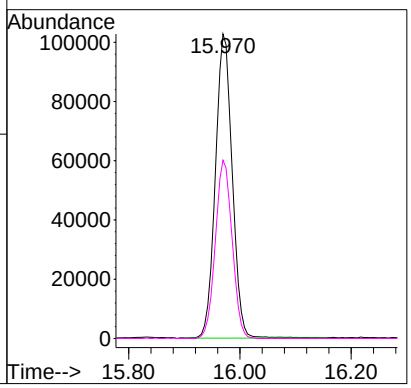


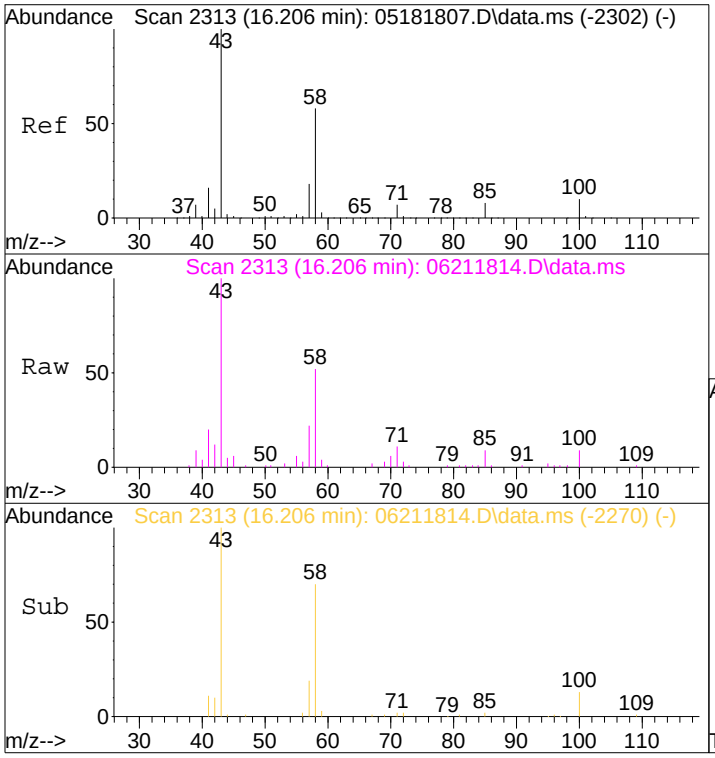


#58
Toluene
Concen: 1.47 ng
RT: 15.97 min Scan# 2270
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 91 Resp: 215761

Ion	Ratio	Lower	Upper
91	100		
92	58.3	39.7	79.7

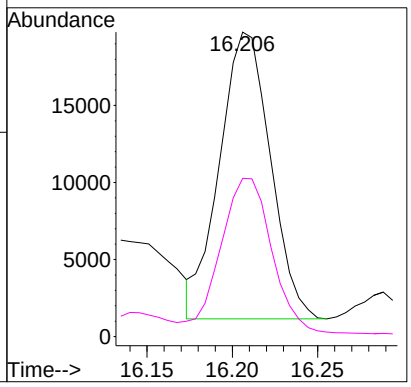


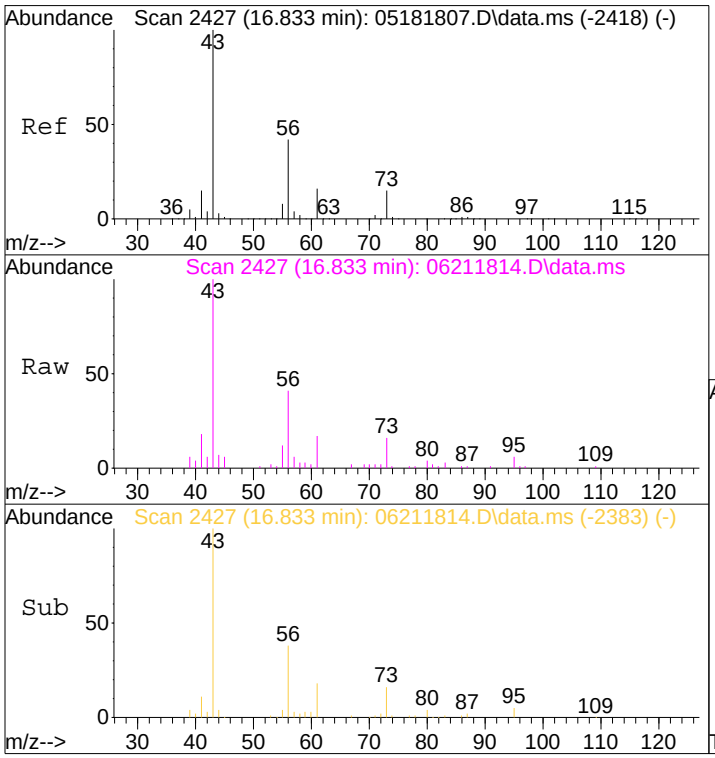


#59
2-Hexanone
Concen: 0.44 ng
RT: 16.21 min Scan# 2313
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 43 Resp: 38594

Ion	Ratio	Lower	Upper
43	100		
58	58.8	42.1	82.1

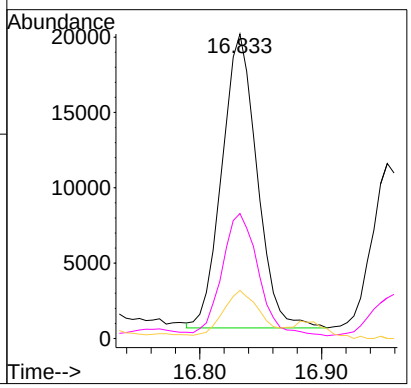


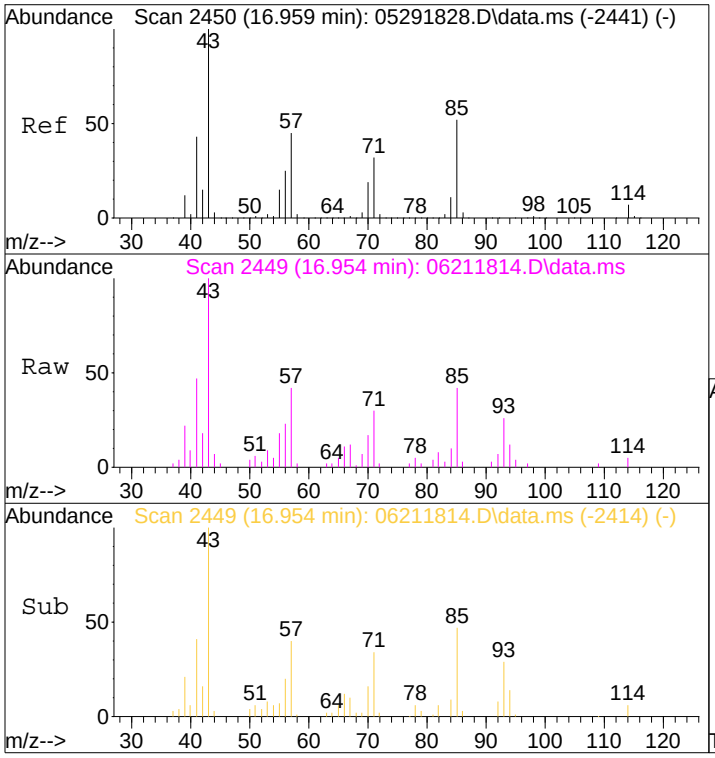


#62
n-Butyl Acetate
Concen: 0.40 ng
RT: 16.83 min Scan# 2427
Delta R.T. -0.006 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 43 Resp: 39094

Ion	Ratio	Lower	Upper
43	100		
56	43.0	23.7	63.7
73	15.8	0.0	36.6

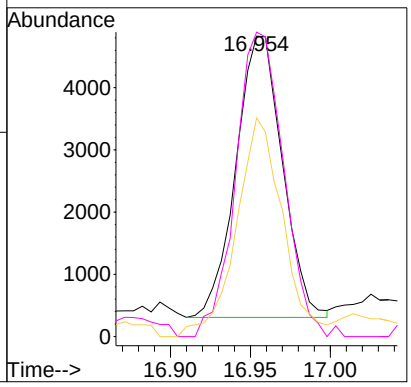


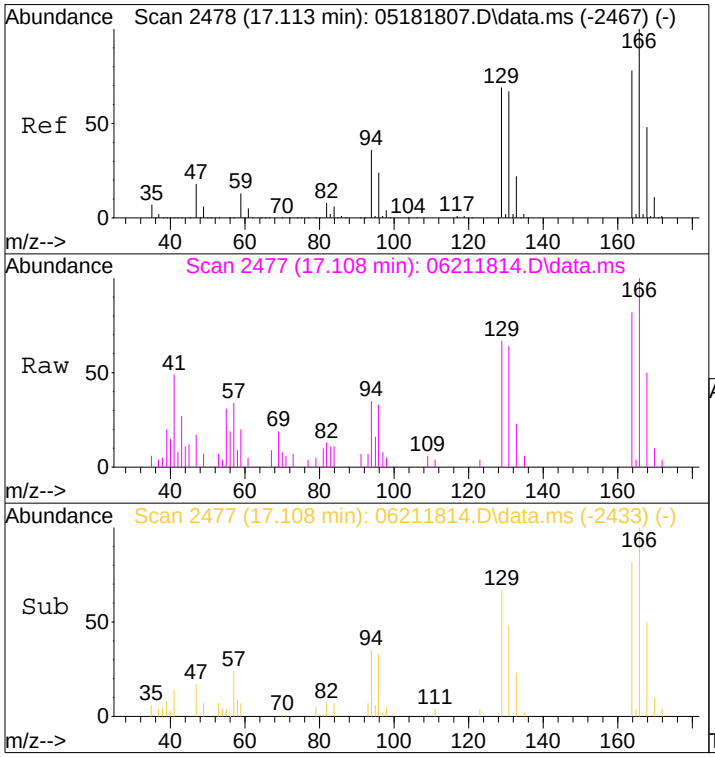


#63
n-Octane
Concen: 0.28 ng
RT: 16.95 min Scan# 2449
Delta R.T. -0.006 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 57 Resp: 9114

Ion	Ratio	Lower	Upper
57	100		
85	111.8	98.2	147.4
71	77.1	58.9	88.3

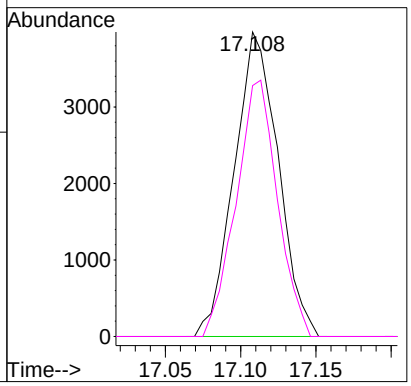


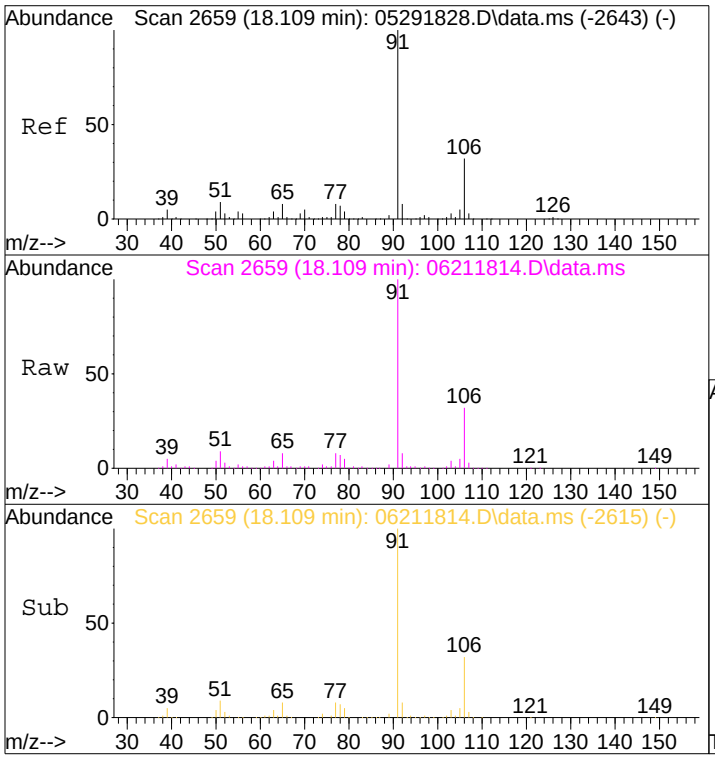


#64
Tetrachloroethene
Concen: 0.20 ng
RT: 17.11 min Scan# 2477
Delta R.T. -0.006 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:166 Resp: 8109

Ion	Ratio	Lower	Upper
166	100		
164	78.8	57.9	97.9

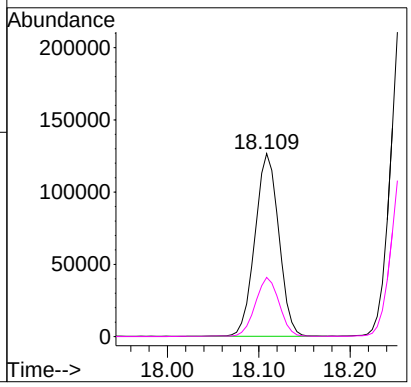


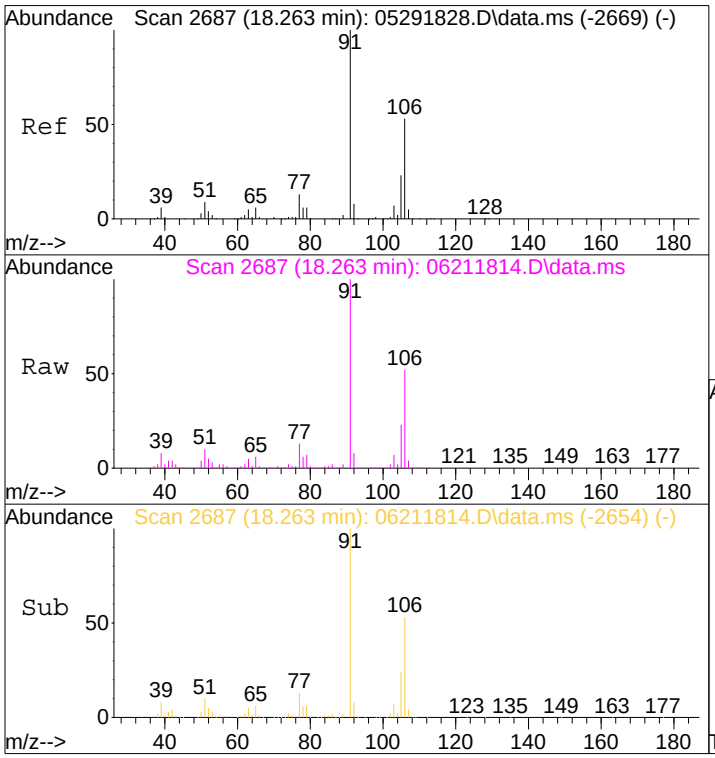


#66
Ethylbenzene
Concen: 1.37 ng
RT: 18.11 min Scan# 2659
Delta R.T. -0.006 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 91 Resp: 229458

Ion	Ratio	Lower	Upper
91	100		
106	32.2	12.9	52.9

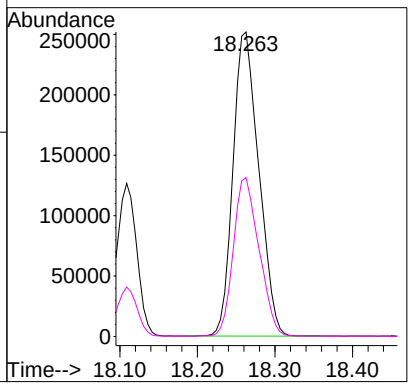


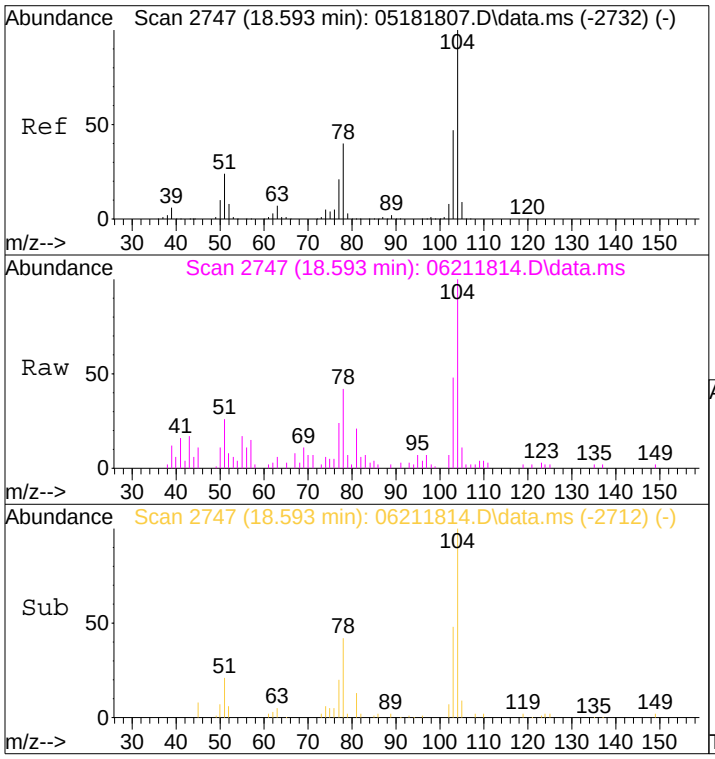


#67
m- & p-Xylenes
Concen: 4.54 ng
RT: 18.26 min Scan# 2687
Delta R.T. -0.017 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 91 Resp: 580917

Ion	Ratio	Lower	Upper
91	100		
106	52.0	32.6	72.6

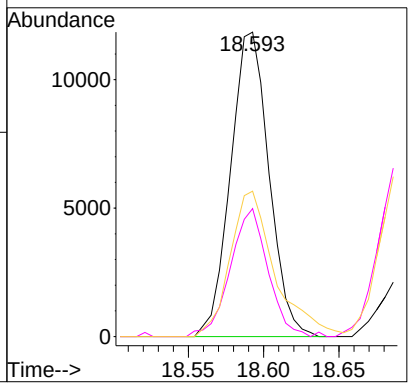


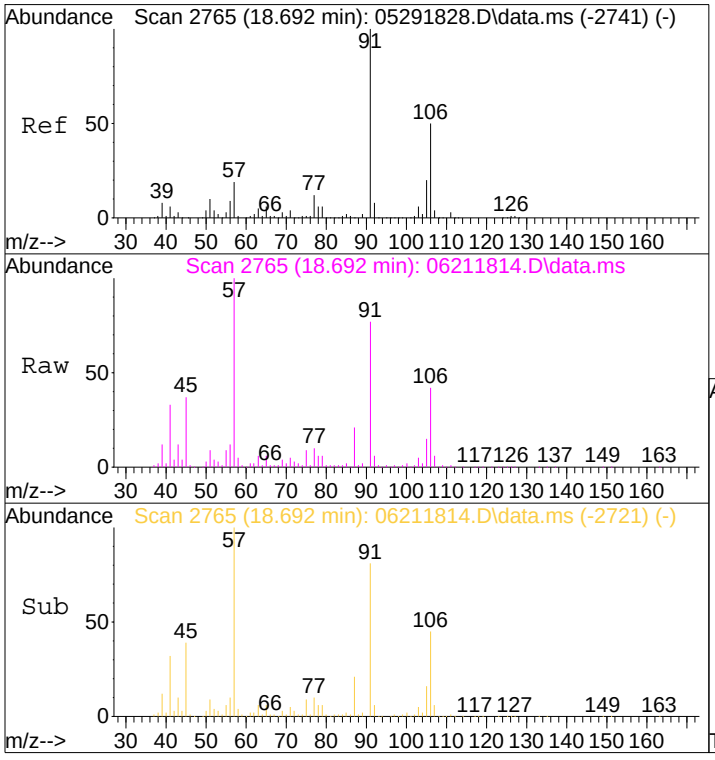


#69
Styrene
Concen: 0.21 ng
RT: 18.59 min Scan# 2747
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:104 Resp: 21033

Ion	Ratio	Lower	Upper
104	100		
78	41.2	18.3	58.3
103	55.7	26.7	66.7

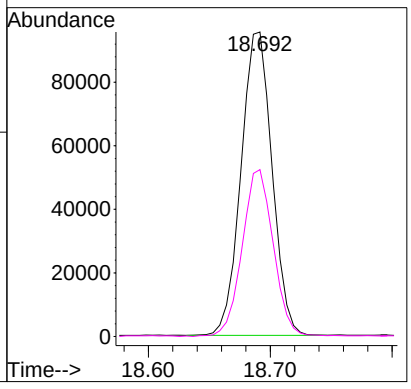


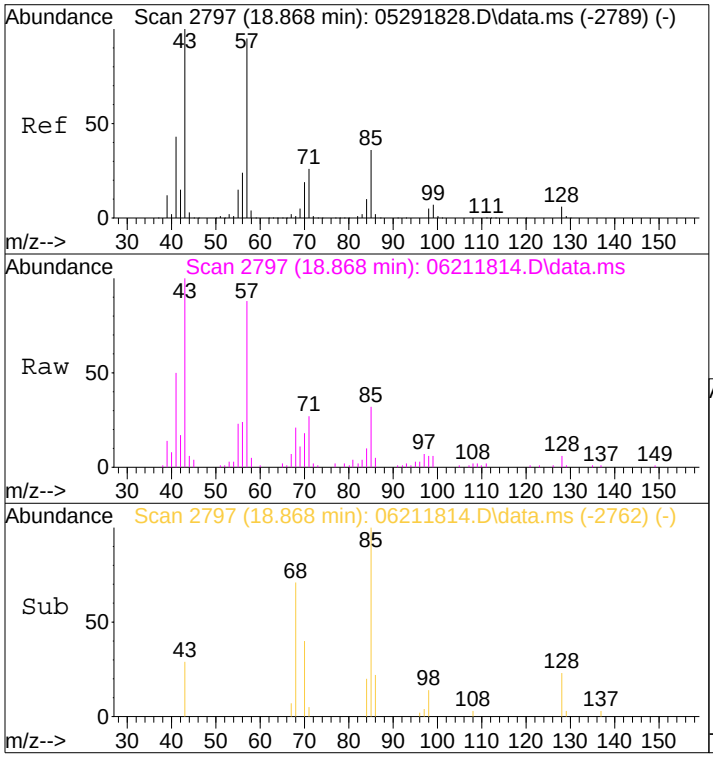


#70
o-Xylene
Concen: 1.30 ng
RT: 18.69 min Scan# 2765
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 91 Resp: 169035

Ion	Ratio	Lower	Upper
91	100		
106	55.9	30.0	70.0

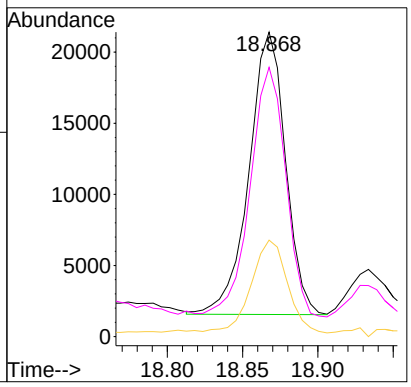


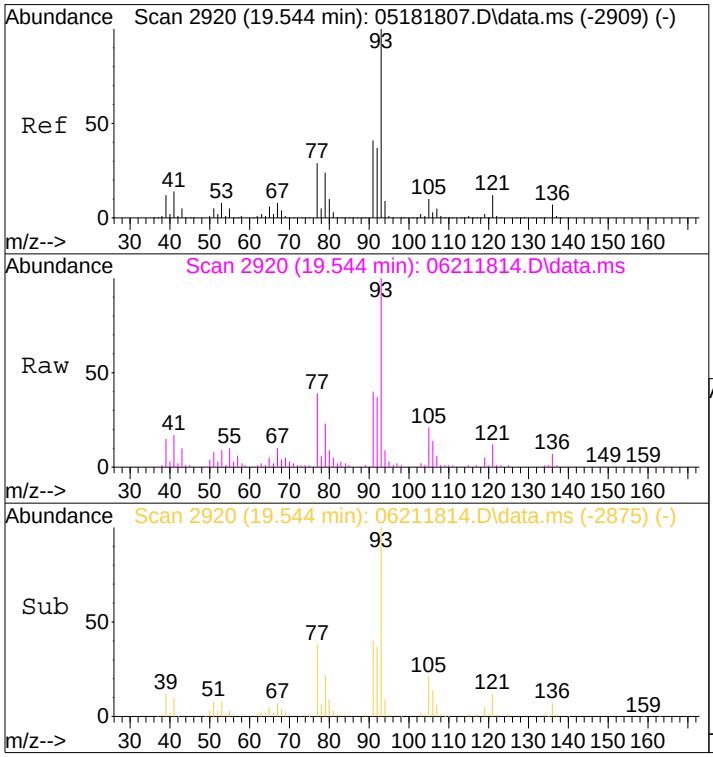


#71
n-Nonane
Concen: 0.45 ng
RT: 18.87 min Scan# 2797
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 43 Resp: 33524

Ion	Ratio	Lower	Upper
43	100		
57	87.4	77.9	117.9
85	32.5	20.8	60.8

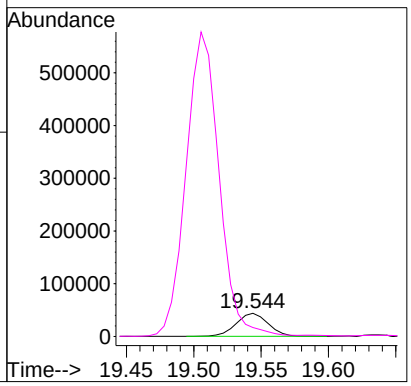


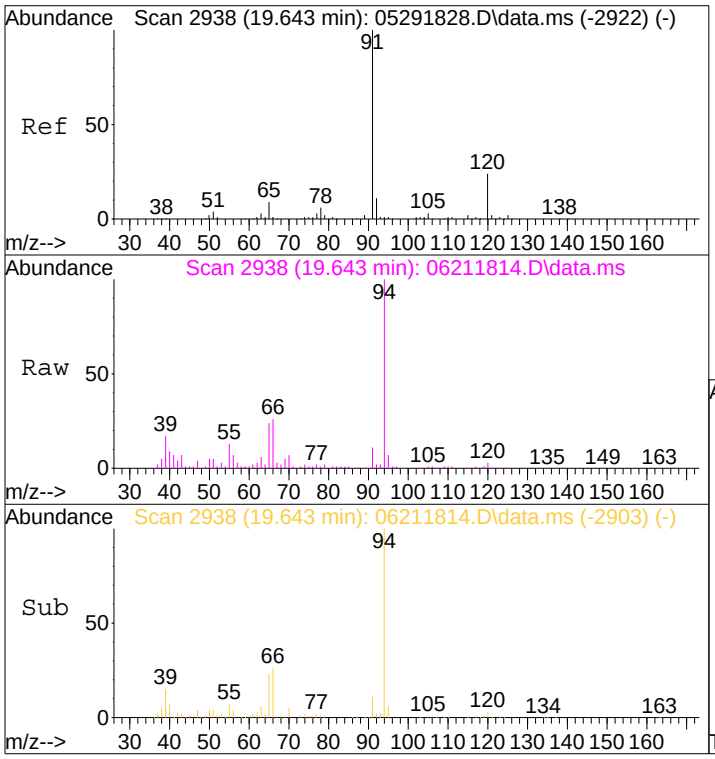


#75
alpha-Pinene
Concen: 0.83 ng
RT: 19.54 min Scan# 2920
Delta R.T. 0.000 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 93 Resp: 71799

Ion	Ratio	Lower	Upper
93	100		
77	0.0	9.1	49.1#

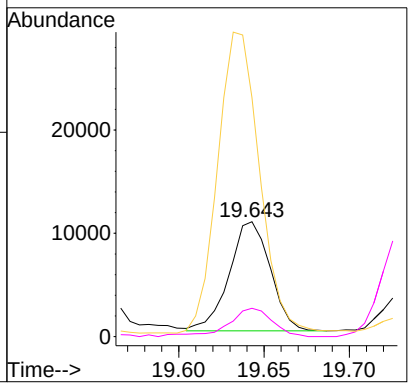


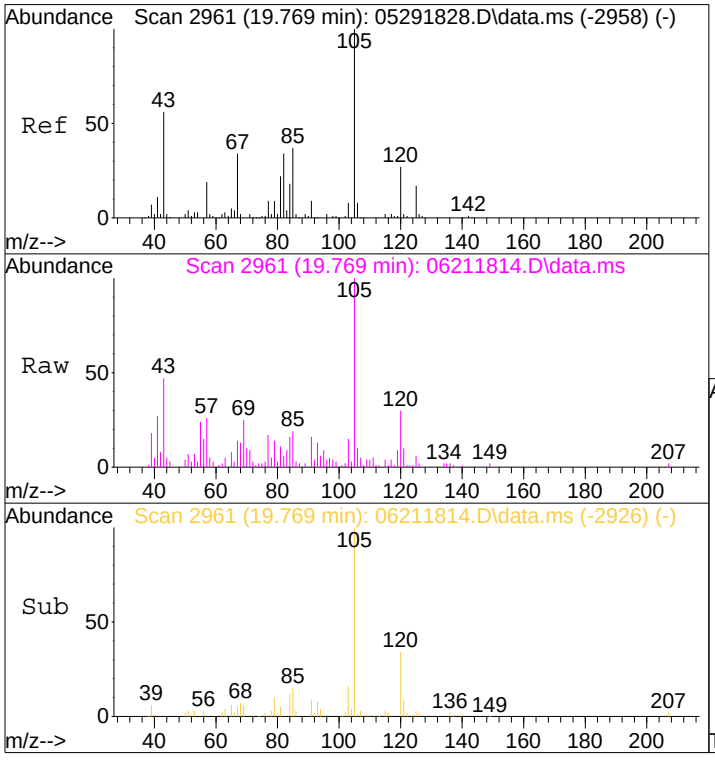


#76
n-Propylbenzene
Concen: 0.09 ng
RT: 19.64 min Scan# 2938
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 91 Resp: 17761

Ion	Ratio	Lower	Upper
91	100		
120	28.0	4.7	44.7
65	281.9	0.0	29.2#

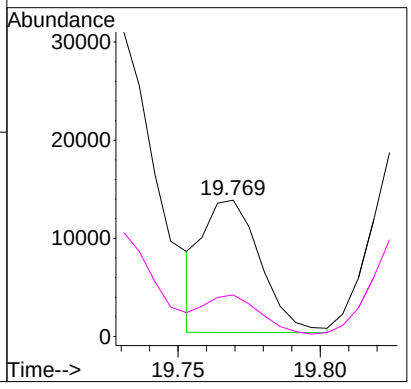


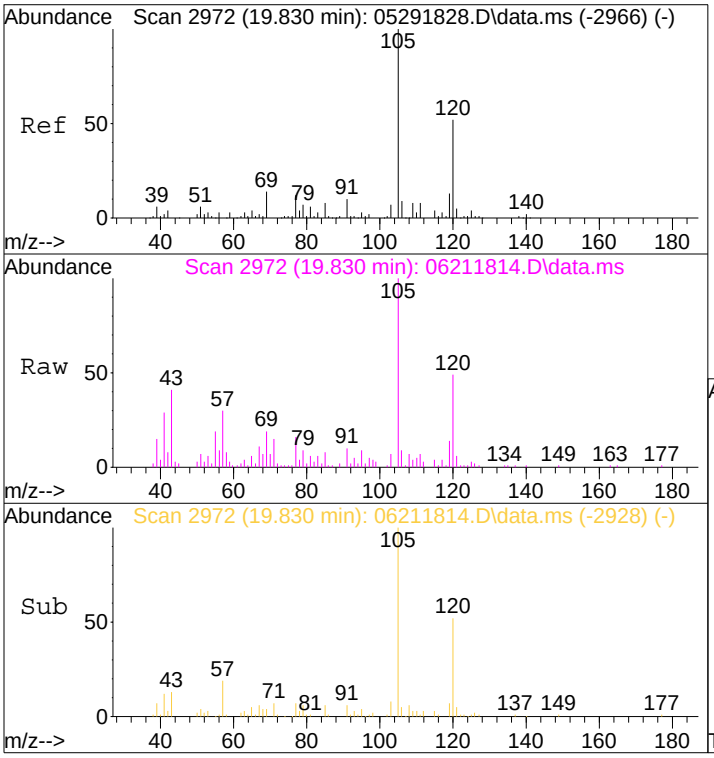


#78
4-Ethyltoluene
Concen: 0.13 ng
RT: 19.77 min Scan# 2961
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:105 Resp: 19096

Ion	Ratio	Lower	Upper
105	100		
120	31.9	8.5	48.5

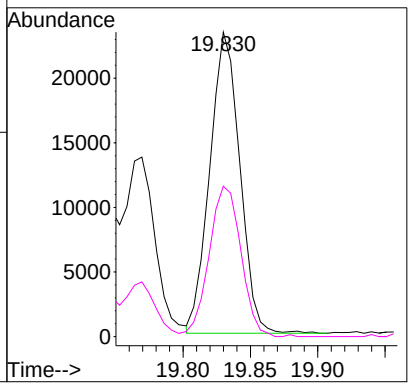


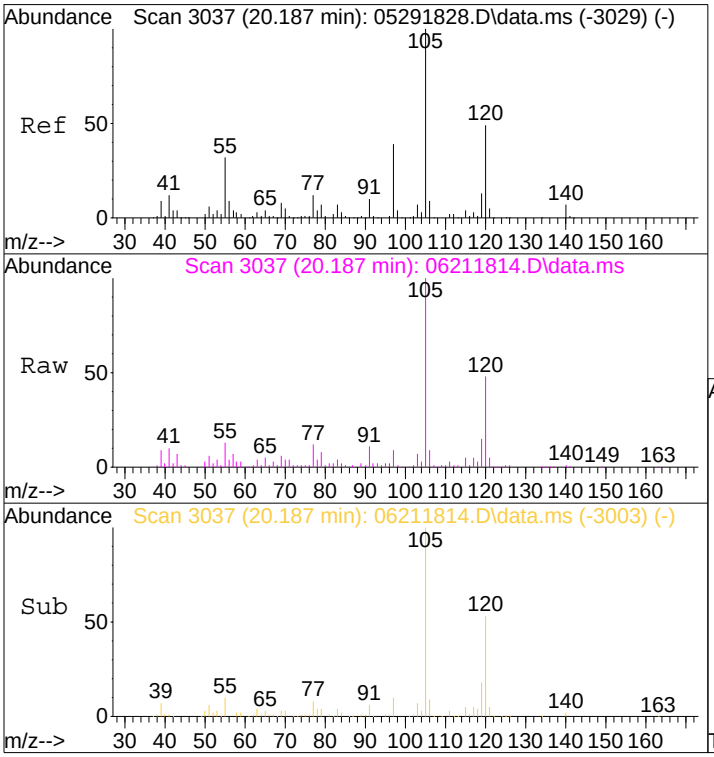


#79
1,3,5-Trimethylbenzene
Concen: 0.27 ng
RT: 19.83 min Scan# 2972
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:105 Resp: 36177

Ion	Ratio	Lower	Upper
105	100		
120	52.8	32.6	72.6

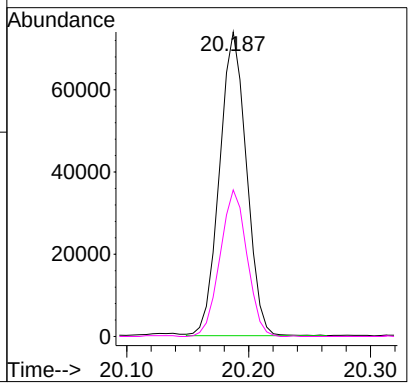


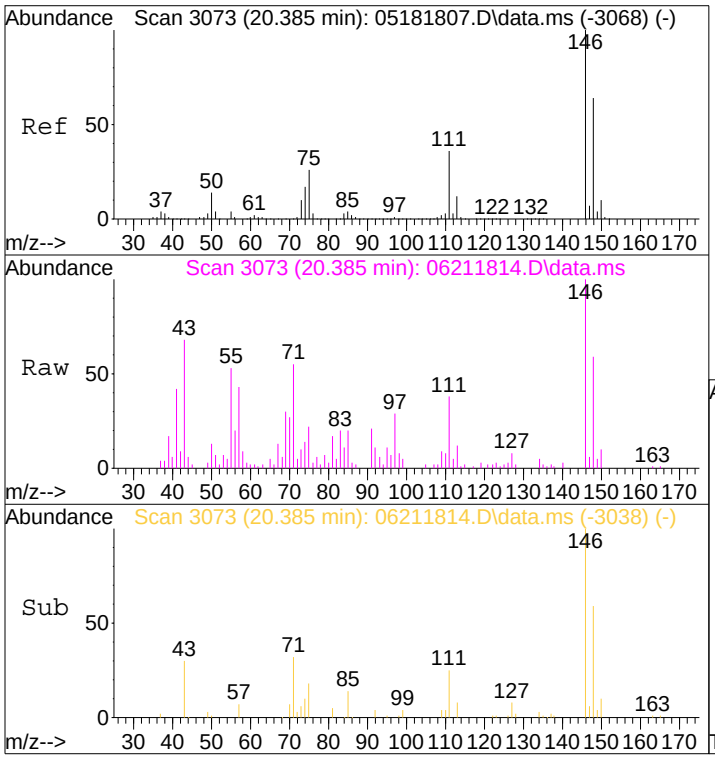


#82
1,2,4-Trimethylbenzene
Concen: 0.84 ng
RT: 20.19 min Scan# 3037
Delta R.T. -0.011 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:105 Resp: 113209

Ion	Ratio	Lower	Upper
105	100		
120	48.2	36.4	76.4

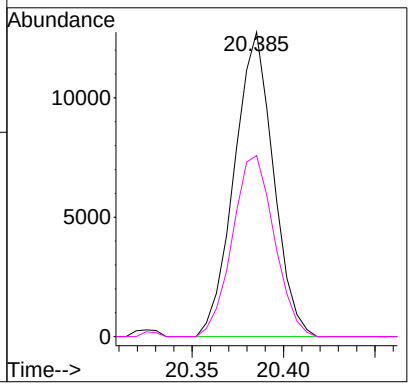


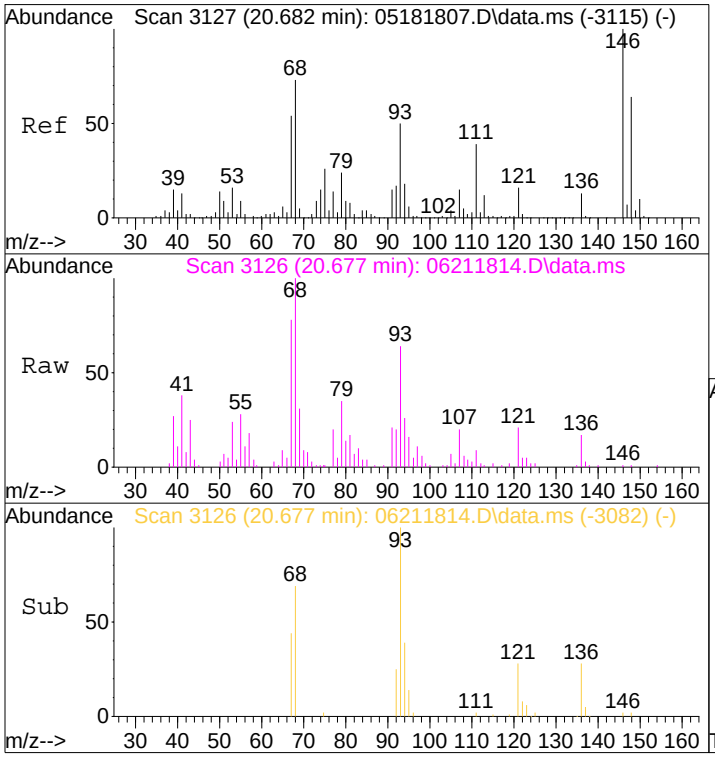


#86
1,4-Dichlorobenzene
Concen: 0.23 ng
RT: 20.39 min Scan# 3073
Delta R.T. -0.006 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion:146 Resp: 18933

Ion	Ratio	Lower	Upper
146	100		
148	63.7	44.1	84.1

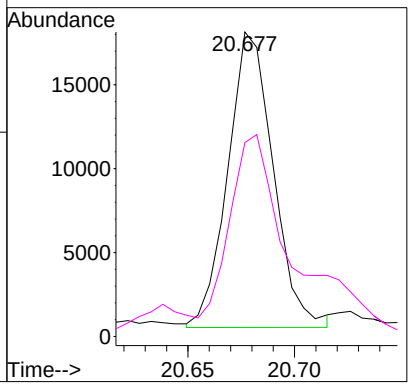


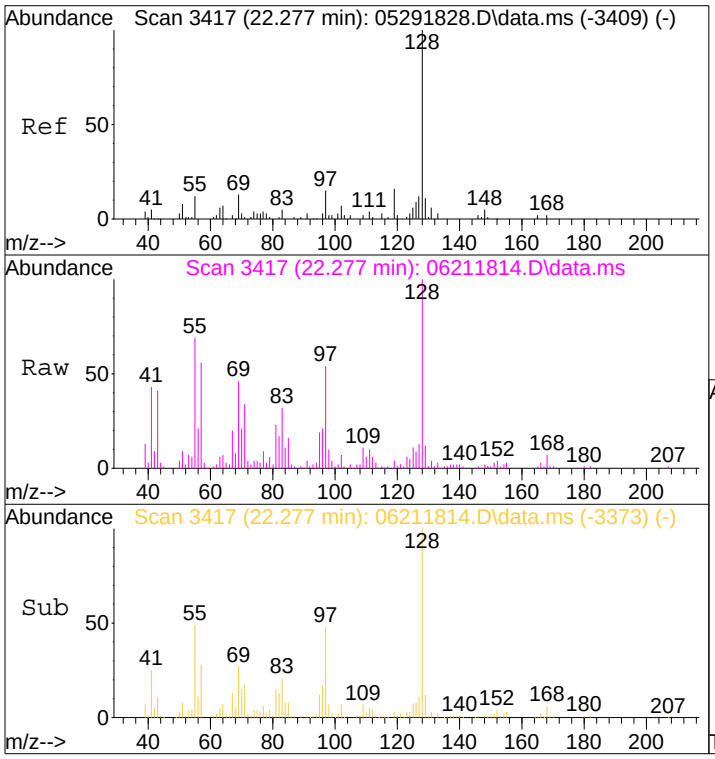


#91
d-Limonene
Concen: 0.47 ng
RT: 20.68 min Scan# 3126
Delta R.T. -0.005 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

Tgt Ion: 68 Resp: 26102

Ion	Ratio	Lower	Upper
68	100		
93	93.0	54.6	94.6

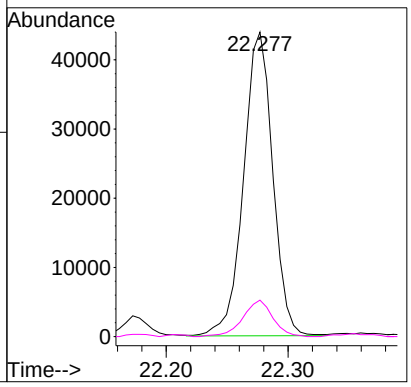




#95
Naphthalene
Concen: 0.38 ng
RT: 22.28 min Scan# 3417
Delta R.T. -0.006 min
Lab File: 06211814.D
Acq: 21 Jun 2018 13:04

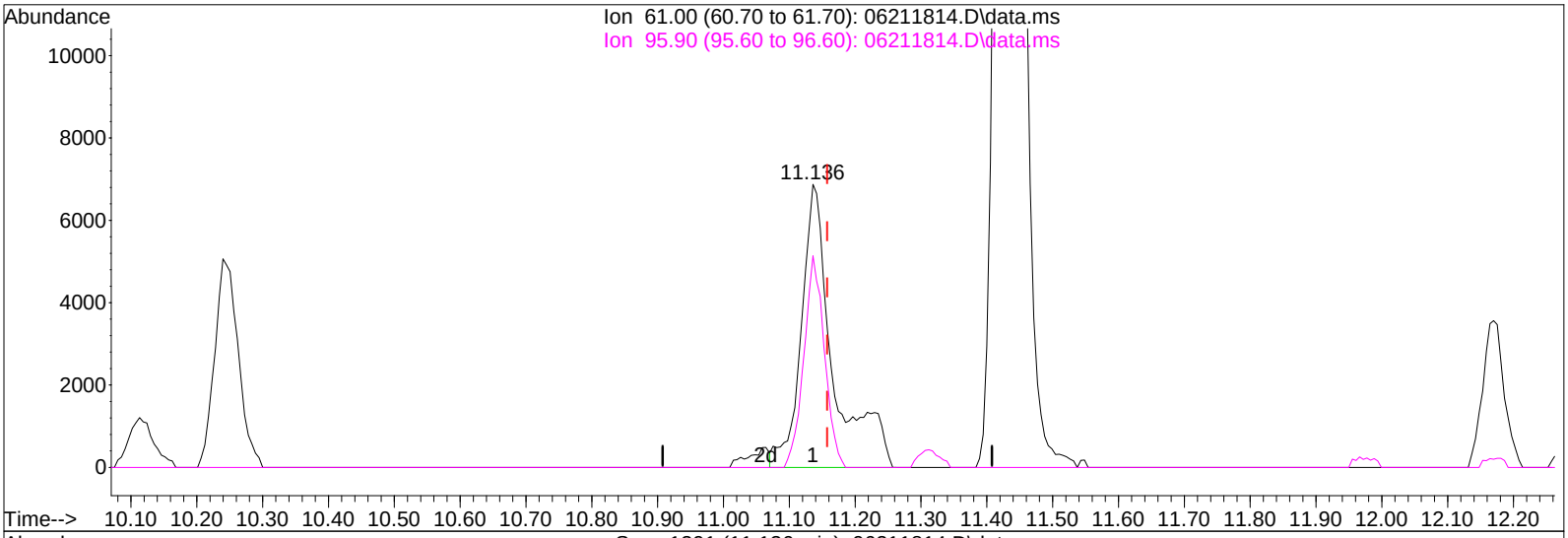
Tgt Ion:128 Resp: 73129

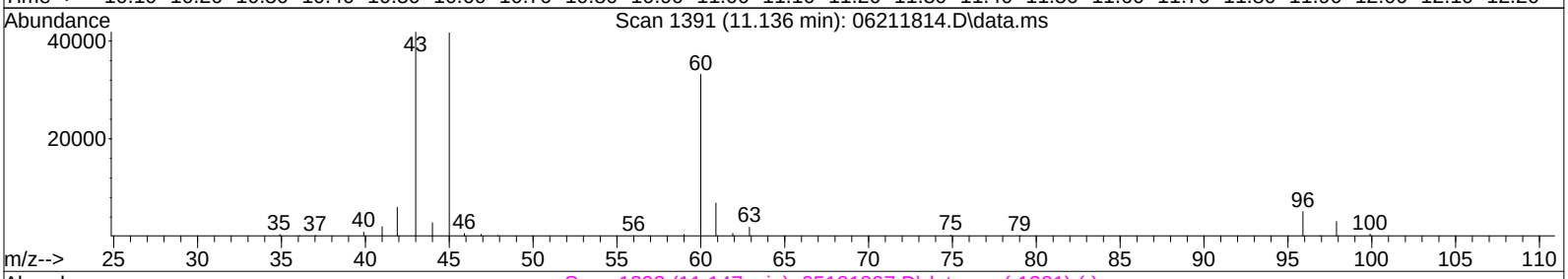
Ion	Ratio	Lower	Upper
128	100		
129	12.3	0.0	31.0

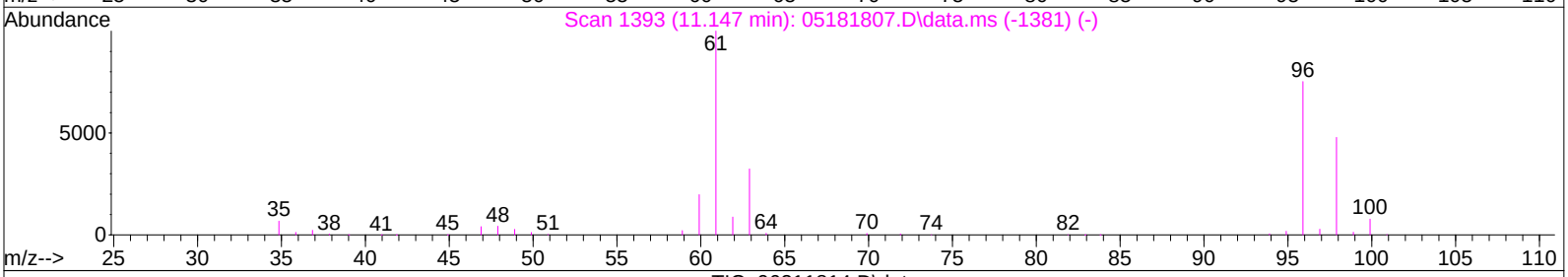


Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 13:41:01 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M







TIC: 06211814.D\data.ms

(28) cis-1,2-Dichloroethene (T)

11.136min (-0.022) 0.41ng

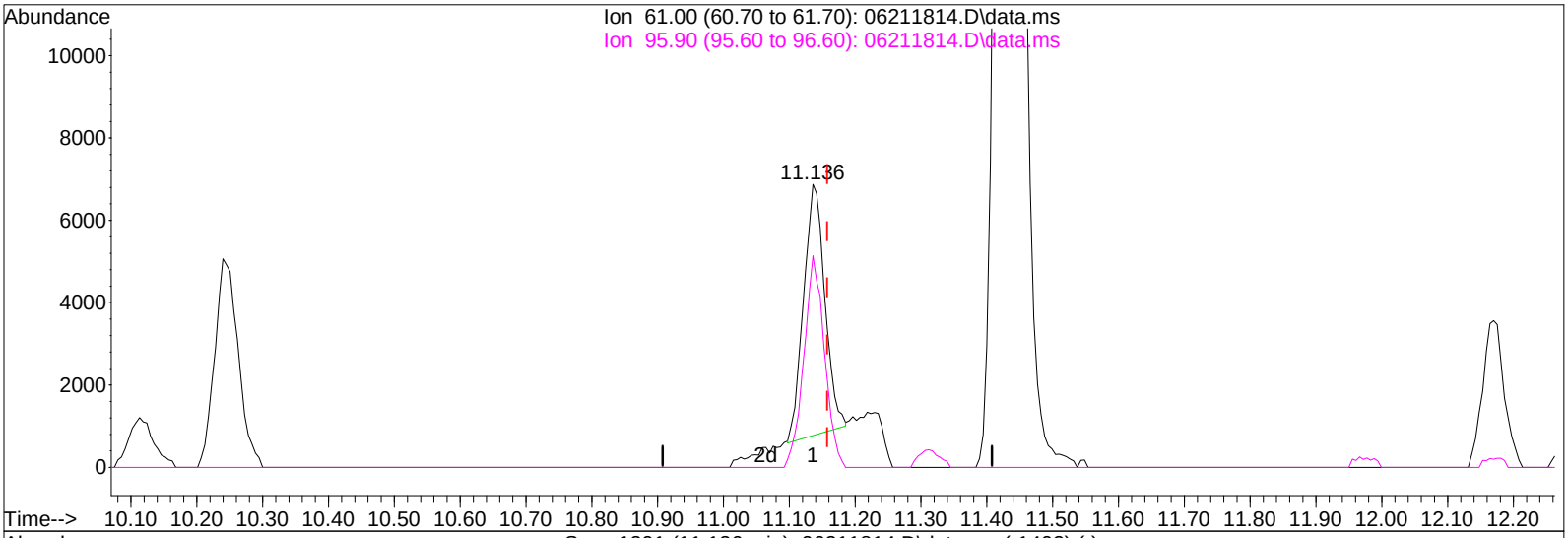
response 23137

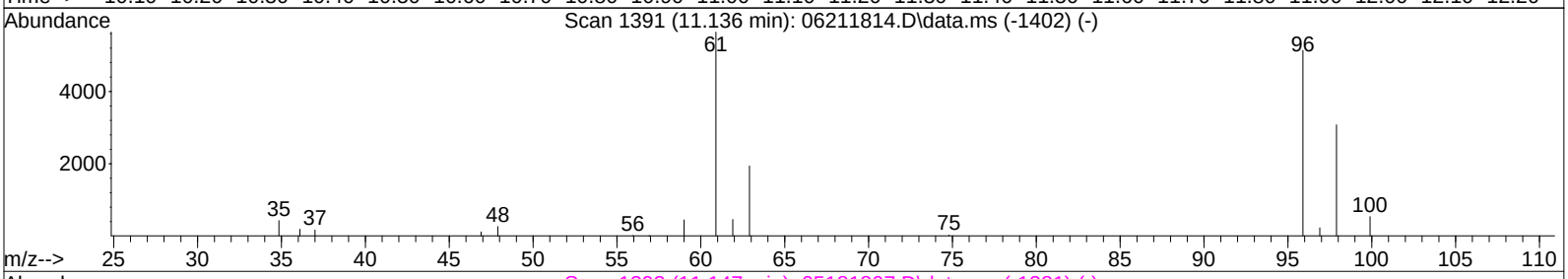
Ion	Exp%	Act%
61.00	100	100
95.90	86.30	48.20#
0.00	0.00	0.00
0.00	0.00	0.00

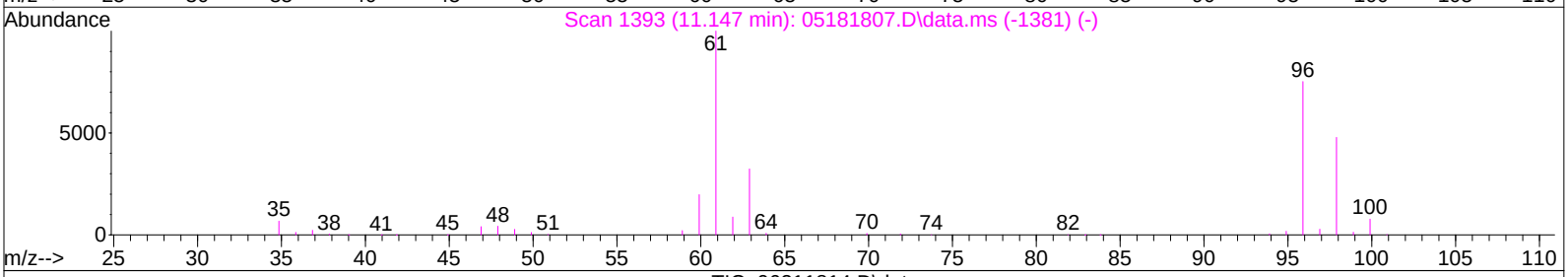
Quantitation Report (Qedit)

Data File: I:\MS16\DATA\2018 06\21\06211814.D
Acq On : 21 Jun 2018 13:04 Operator: WA
Sample : P1803155-003 (1000mL)
Misc : S31-04201801
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 21 13:41:01 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M







TIC: 06211814.D\data.ms

(28) cis-1,2-Dichloroethene (T)

11.136min (-0.022) 0.24ng m

response 13710

Ion	Exp%	Act%
61.00	100	100
95.90	86.30	81.34
0.00	0.00	0.00
0.00	0.00	0.00

BLC ABS

6/21/18

RS 6/22/18

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211804.D
Acq On : 21 Jun 2018 6:12 Operator: WA
Sample : MB R16062118 1000mL
Misc : S31-04201801/AC00442
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 08:27:59 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

WA 6/21/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.31	130	333498	12.500	ng		-0.03
37) 1,4-Difluorobenzene (IS2)	13.43	114	1431791	12.500	ng		-0.02
56) Chlorobenzene-d5 (IS3)	17.72	82	612033	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.16	65	419510	11.129	ng		-0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.04%				
57) Toluene-d8 (SS2)	15.87	98	1307372	12.300	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 98.40%				
73) Bromofluorobenzene (SS3)	19.09	174	447723	13.270	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 106.16%				
Target Compounds							Qvalue
2) Propene	4.09	42	941	0.020	ng	#	66
3) Dichlorodifluoromethan...	0.00	85	0	N.D.			
4) Chloromethane	0.00	50	0	N.D.			
5) 1,2-Dichloro-1,1,2,2-t...	0.00	135	0	N.D.			
6) Vinyl Chloride	0.00	62	0	N.D.			
7) 1,3-Butadiene	0.00	54	0	N.D.			
8) Bromomethane	0.00	94	0	N.D.			
9) Chloroethane	0.00	64	0	N.D.			
10) Ethanol	6.44	45	3180	0.100	ng		86
11) Acetonitrile	0.00	41	0	N.D.	d		
12) Acrolein	6.92	56	950	0.035	ng		83
13) Acetone	7.15	58	8018	0.247	ng		94
14) Trichlorofluoromethane	0.00	101	0	N.D.			
15) 2-Propanol (Isopropanol)	0.00	45	0	N.D.	d		
16) Acrylonitrile	7.92	53	470	0.008	ng	#	73
17) 1,1-Dichloroethene	0.00	96	0	N.D.			
18) 2-Methyl-2-Propanol (t...	0.00	59	0	N.D.			
19) Methylene Chloride	8.57	84	456	0.011	ng		80
20) 3-Chloro-1-propene (Al...	0.00	41	0	N.D.			
21) Trichlorotrifluoroethane	8.79	151	572	0.017	ng	#	1
22) Carbon Disulfide	0.00	76	0	N.D.	d		
23) trans-1,2-Dichloroethene	0.00	61	0	N.D.	d		
24) 1,1-Dichloroethane	0.00	63	0	N.D.			
25) Methyl tert-Butyl Ether	0.00	73	0	N.D.			
26) Vinyl Acetate	10.35	86	476	0.056	ng	#	13
27) 2-Butanone (MEK)	10.66	72	801	0.028	ng	#	1
28) cis-1,2-Dichloroethene	0.00	61	0	N.D.			
29) Diisopropyl Ether	0.00	87	0	N.D.			
30) Ethyl Acetate	0.00	61	0	N.D.			
31) n-Hexane	11.41	57	901	0.014	ng	#	72
32) Chloroform	0.00	83	0	N.D.			
34) Tetrahydrofuran (THF)	0.00	72	0	N.D.	d		
35) Ethyl tert-Butyl Ether	0.00	87	0	N.D.			
36) 1,2-Dichloroethane	0.00	62	0	N.D.			
38) 1,1,1-Trichloroethane	12.55	97	3373	0.061	ng		96
39) Isopropyl Acetate	0.00	61	0	N.D.			
40) 1-Butanol	13.04	56	3858	0.090	ng		89
41) Benzene	13.04	78	3330	0.020	ng		93
42) Carbon Tetrachloride	0.00	117	0	N.D.			
43) Cyclohexane	0.00	84	0	N.D.	d		
44) tert-Amyl Methyl Ether	0.00	73	0	N.D.			
45) 1,2-Dichloropropane	0.00	63	0	N.D.			
46) Bromodichloromethane	0.00	83	0	N.D.			
47) Trichloroethene	0.00	130	0	N.D.			
48) 1,4-Dioxane	14.14	88	386	0.012	ng	#	7
49) 2,2,4-Trimethylpentane...	14.19	57	2125	0.012	ng		88

Data File: I:\MS16\DATA\2018 06\21\06211804.D
Acq On : 21 Jun 2018 6:12 Operator: WA
Sample : MB R16062118 1000mL
Misc : S31-04201801/AC00442
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 08:27:59 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

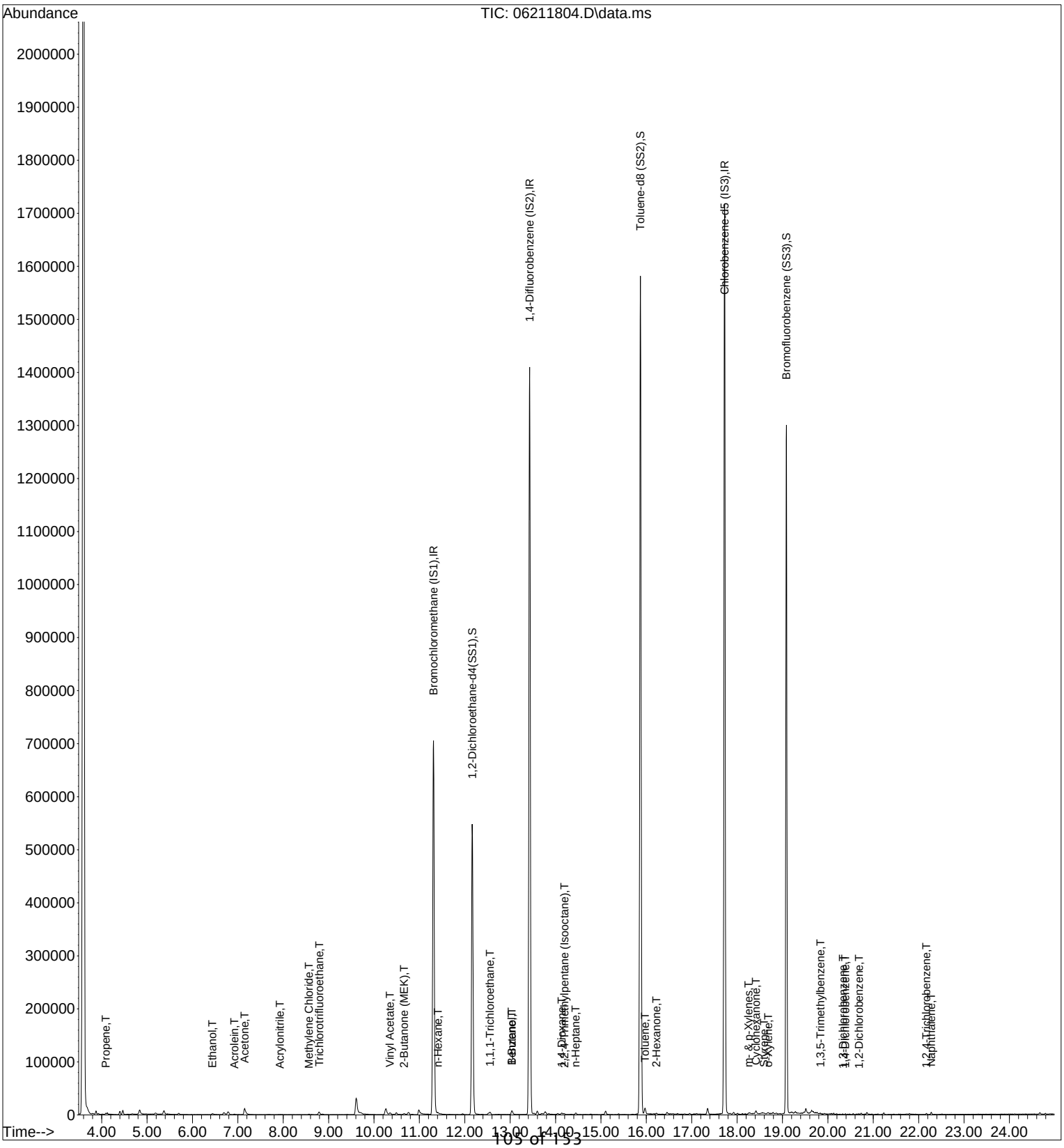
Internal Standards	R.T.	QIon	Response	Conc Units		Dev(Min)
50) Methyl Methacrylate	0.00	100	0	N.D.		
51) n-Heptane	14.44	71	865	0.023 ng	#	75
52) cis-1,3-Dichloropropene	0.00	75	0	N.D.		
53) 4-Methyl-2-pentanone	0.00	58	0	N.D.		
54) trans-1,3-Dichloropropene	0.00	75	0	N.D.		
55) 1,1,2-Trichloroethane	0.00	97	0	N.D.		
58) Toluene	15.97	91	11912m	0.084 ng		
59) 2-Hexanone	16.22	43	2038	0.024 ng	#	69
60) Dibromochloromethane	0.00	129	0	N.D.		
61) 1,2-Dibromoethane	0.00	107	0	N.D.		
62) n-Butyl Acetate	0.00	43	0	N.D. d		
63) n-Octane	0.00	57	0	N.D. d		
64) Tetrachloroethene	0.00	166	0	N.D. d		
65) Chlorobenzene	0.00	112	0	N.D. d		
66) Ethylbenzene	0.00	91	0	N.D. d		
67) m- & p-Xylenes	18.25	91	5416	0.044 ng	#	55
68) Bromoform	0.00	173	0	N.D.		
69) Styrene	18.59	104	517	0.005 ng	#	69
70) o-Xylene	18.69	91	1004	0.008 ng		79
71) n-Nonane	0.00	43	0	N.D. d		
72) 1,1,2,2-Tetrachloroethane	0.00	83	0	N.D.		
74) Cumene	0.00	105	0	N.D. d		
75) alpha-Pinene	0.00	93	0	N.D. d		
76) n-Propylbenzene	0.00	91	0	N.D. d		
77) 3-Ethyltoluene	0.00	105	0	N.D. d		
78) 4-Ethyltoluene	0.00	105	0	N.D. d		
79) 1,3,5-Trimethylbenzene	19.84	105	930	0.007 ng		92
80) alpha-Methylstyrene	0.00	118	0	N.D.		
81) 2-Ethyltoluene	0.00	105	0	N.D. d		
82) 1,2,4-Trimethylbenzene	0.00	105	0	N.D. d		
83) n-Decane	0.00	57	0	N.D. d		
84) Benzyl Chloride	0.00	91	0	N.D. d		
85) 1,3-Dichlorobenzene	20.33	146	692	0.009 ng		82
86) 1,4-Dichlorobenzene	20.39	146	881	0.011 ng		91
87) sec-Butylbenzene	0.00	105	0	N.D. d		
88) 4-Isopropyltoluene (p-...	0.00	119	0	N.D. d		
89) 1,2,3-Trimethylbenzene	0.00	105	0	N.D. d		
90) 1,2-Dichlorobenzene	20.69	146	416	0.006 ng		96
91) d-Limonene	0.00	68	0	N.D.		
92) 1,2-Dibromo-3-Chloropr...	0.00	157	0	N.D.		
93) n-Undecane	0.00	57	0	N.D. d		
94) 1,2,4-Trichlorobenzene	22.17	180	826	0.015 ng	#	87
95) Naphthalene	22.28	128	4135	0.022 ng		92
96) n-Dodecane	0.00	57	0	N.D.		
97) Hexachlorobutadiene	0.00	225	0	N.D.		
98) Cyclohexanone	18.42	55	2463	0.042 ng	#	92
99) tert-Butylbenzene	0.00	119	0	N.D. d		
100) n-Butylbenzene	0.00	91	0	N.D. d		

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211804.D
Acq On : 21 Jun 2018 6:12 Operator: WA
Sample : MB R16062118 1000mL
Misc : S31-04201801/AC00442
ALS Vial : 2 Sample Multiplier: 1

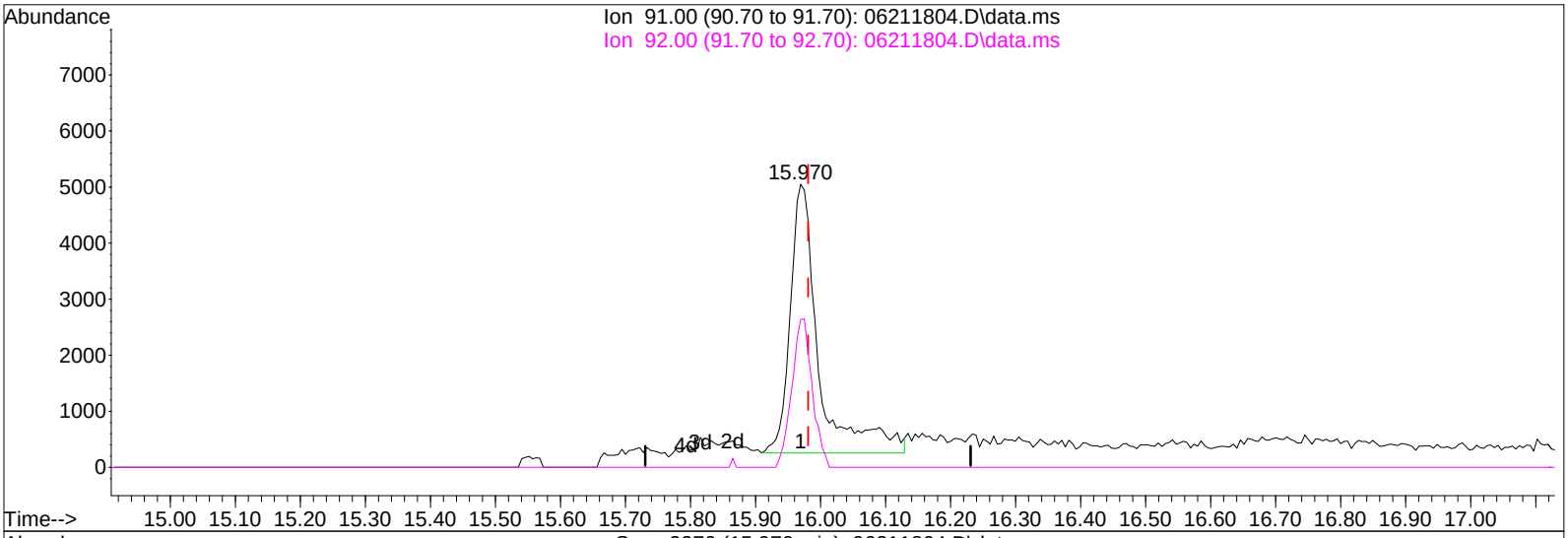
Quant Time: Jun 21 08:27:59 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

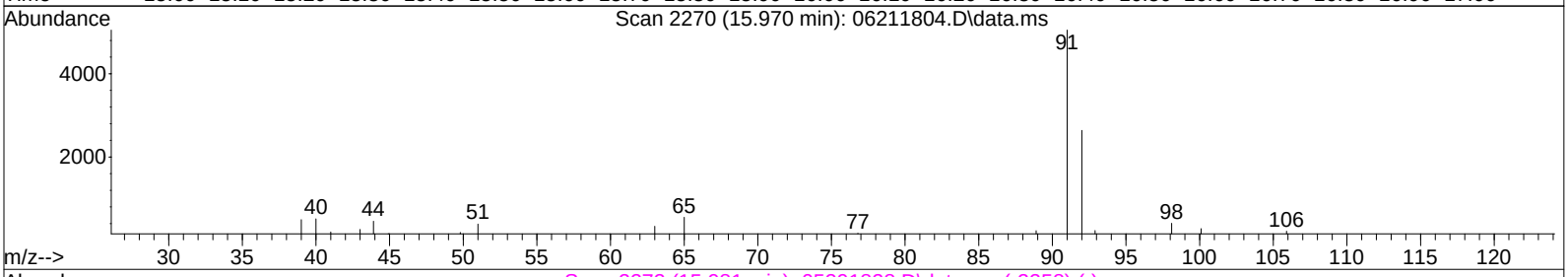


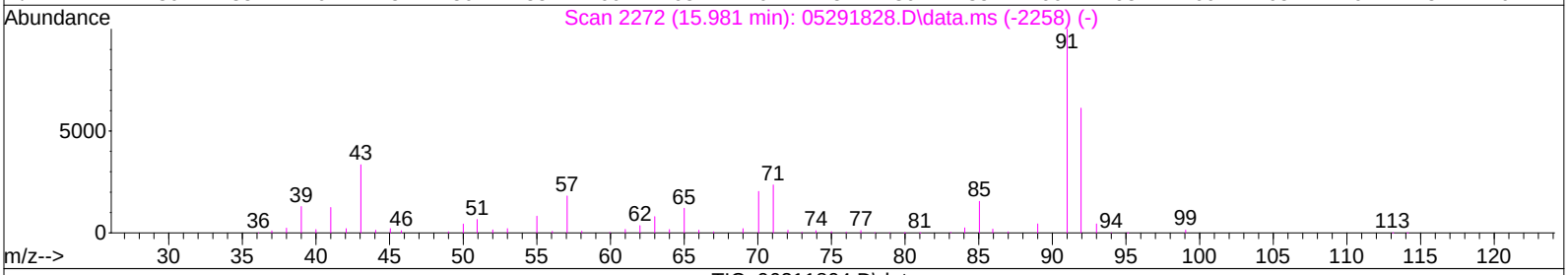
Quantitation Report (Qedit)

Data File: I:\MS16\DATA\2018 06\21\06211804.D
Acq On : 21 Jun 2018 6:12 Operator: WA
Sample : MB R16062118 1000mL
Misc : S31-04201801/AC00442
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 08:24:54 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M







TIC: 06211804.D\data.ms

(58) Toluene (T)

15.970min (-0.011) 0.10ng

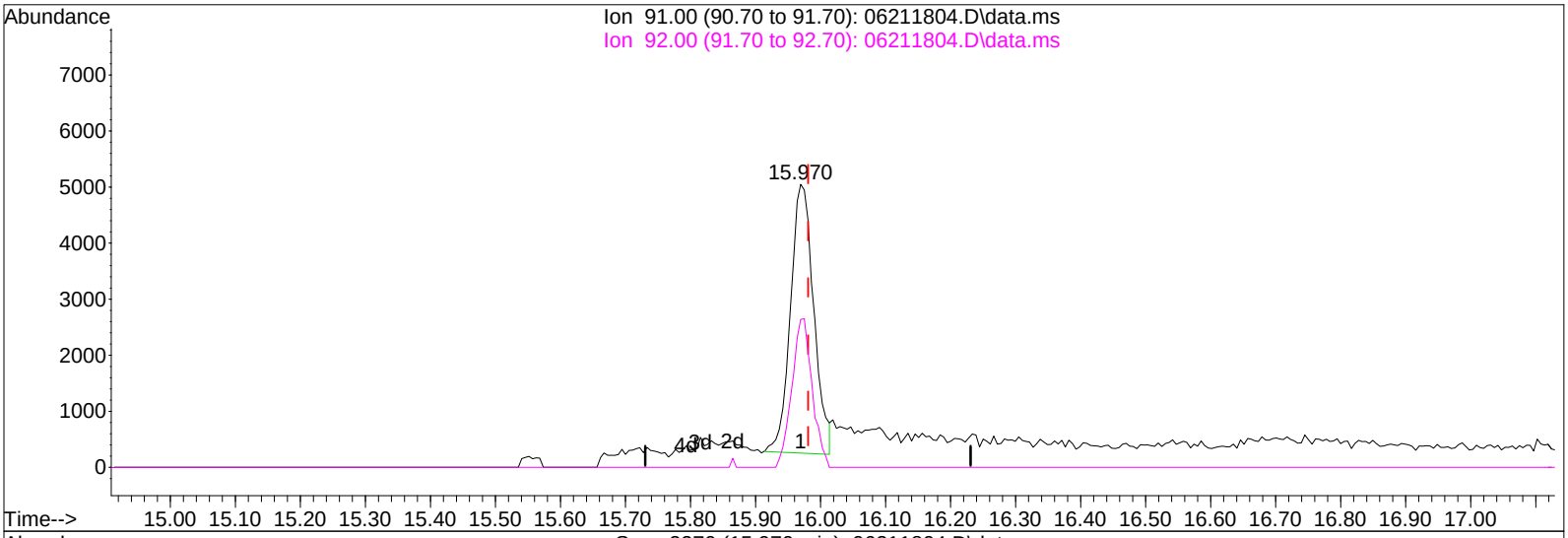
response 14571

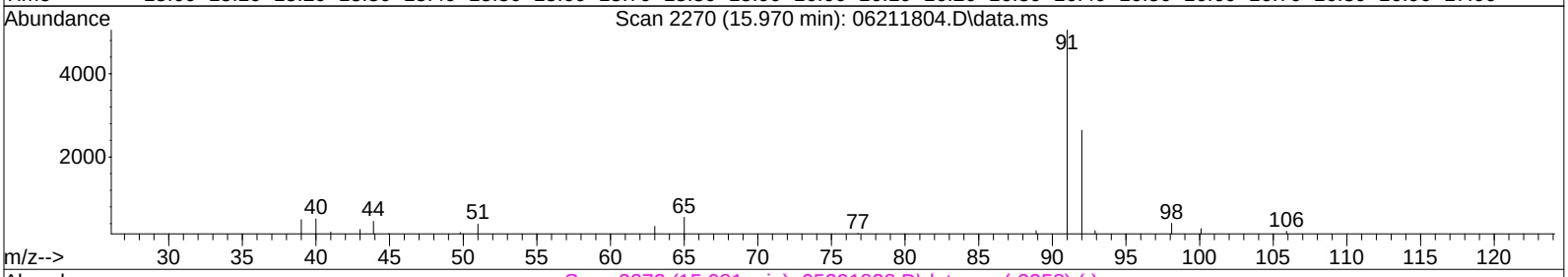
Ion	Exp%	Act%
91.00	100	100
92.00	59.70	39.55#
0.00	0.00	0.00
0.00	0.00	0.00

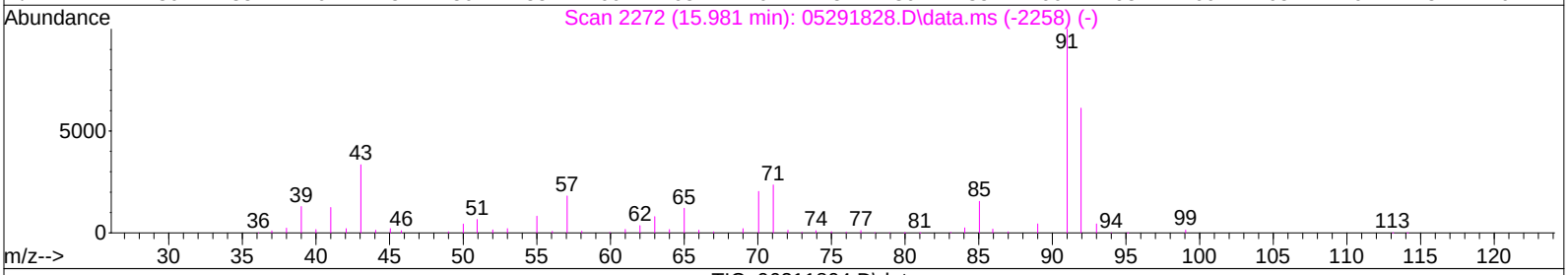
Quantitation Report (Qedit)

Data File: I:\MS16\DATA\2018 06\21\06211804.D
Acq On : 21 Jun 2018 6:12 Operator: WA
Sample : MB R16062118 1000mL
Misc : S31-04201801/AC00442
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 08:24:54 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M







TIC: 06211804.D\data.ms

(58) Toluene (T)

15.970min (-0.011) 0.08ng m

response 11912

Ion	Exp%	Act%
91.00	100	100
92.00	59.70	48.38
0.00	0.00	0.00
0.00	0.00	0.00

BLC

6/21/18

RS 6/22/18

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211805.D
Acq On : 21 Jun 2018 6:45 Operator: WA
Sample : LCS R16062118 25ng
Misc : S31-04201801/S31-05311801 (6/29)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 08:28:22 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

WJA 6/21/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.33	130	340885	12.500	ng		0.00
37) 1,4-Difluorobenzene (IS2)	13.44	114	1441358	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	611921	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.18	65	427082	11.084	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 88.64%				
57) Toluene-d8 (SS2)	15.88	98	1292167	12.160	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 97.28%				
73) Bromofluorobenzene (SS3)	19.09	174	455758	13.510	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.08%				
Target Compounds							Qvalue
2) Propene	4.04	42	1012750	21.269	ng		99
3) Dichlorodifluoromethan...	4.21	85	1588722	20.960	ng		99
4) Chloromethane	4.51	50	1157481	17.163	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.78	135	901484	21.842	ng		100
6) Vinyl Chloride	4.95	62	1324321	19.761	ng		100
7) 1,3-Butadiene	5.23	54	1054277	21.983	ng		98
8) Bromomethane	5.69	94	851554	22.399	ng		99
9) Chloroethane	6.04	64	668816	21.152	ng		100
10) Ethanol	6.45	45	3312367	101.652	ng		100
11) Acetonitrile	6.71	41	1733016	20.280	ng		99
12) Acrolein	6.90	56	583604	21.191	ng		100
13) Acetone	7.11	58	3323138	100.086	ng		97
14) Trichlorofluoromethane	7.35	101	1334008	20.814	ng		100
15) 2-Propanol (Isopropanol)	7.63	45	4292844	41.011	ng		98
16) Acrylonitrile	7.91	53	1267465	21.826	ng		100
17) 1,1-Dichloroethene	8.35	96	871317	22.422	ng		93
18) 2-Methyl-2-Propanol (t...	8.52	59	4417726	43.043	ng		99
19) Methylene Chloride	8.59	84	921447	21.529	ng		91
20) 3-Chloro-1-propene (Al...	8.74	41	1338718	22.249	ng		92
21) Trichlorotrifluoroethane	8.99	151	809891	22.969	ng		95
22) Carbon Disulfide	8.85	76	3443679	22.738	ng		100
23) trans-1,2-Dichloroethene	9.87	61	1279480	21.729	ng		93
24) 1,1-Dichloroethane	10.13	63	1557829	21.136	ng		100
25) Methyl tert-Butyl Ether	10.21	73	2580915	21.640	ng		97
26) Vinyl Acetate	10.38	86	1061437	122.073	ng	#	70
27) 2-Butanone (MEK)	10.62	72	626370	21.803	ng	#	85
28) cis-1,2-Dichloroethene	11.15	61	1206403	21.080	ng		94
29) Diisopropyl Ether	11.42	87	701451	21.884	ng	#	72
30) Ethyl Acetate	11.44	61	679121	43.911	ng		97
31) n-Hexane	11.42	57	1359163	21.209	ng		99
32) Chloroform	11.50	83	1462337	21.206	ng		100
34) Tetrahydrofuran (THF)	11.89	72	616157	21.344	ng	#	91
35) Ethyl tert-Butyl Ether	12.02	87	1031388	22.135	ng		90
36) 1,2-Dichloroethane	12.30	62	1005959	20.248	ng		100
38) 1,1,1-Trichloroethane	12.57	97	1227312	22.141	ng		98
39) Isopropyl Acetate	12.98	61	1163734	44.157	ng		95
40) 1-Butanol	13.01	56	1911566	44.181	ng		96
41) Benzene	13.05	78	3529493	21.313	ng		100
42) Carbon Tetrachloride	13.20	117	1094511	23.016	ng		100
43) Cyclohexane	13.33	84	2662696	45.203	ng		92
44) tert-Amyl Methyl Ether	13.67	73	2532333	22.175	ng		97
45) 1,2-Dichloropropane	13.90	63	893051	21.661	ng		99
46) Bromodichloromethane	14.09	83	1168586	22.937	ng		100
47) Trichloroethene	14.14	130	964933	23.266	ng		100
48) 1,4-Dioxane	14.11	88	757472	22.592	ng		93
49) 2,2,4-Trimethylpentane...	14.19	57	3731129	21.376	ng		99

Data File: I:\MS16\DATA\2018 06\21\06211805.D
Acq On : 21 Jun 2018 6:45 Operator: WA
Sample : LCS R16062118 25ng
Misc : S31-04201801/S31-05311801 (6/29)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 08:28:22 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

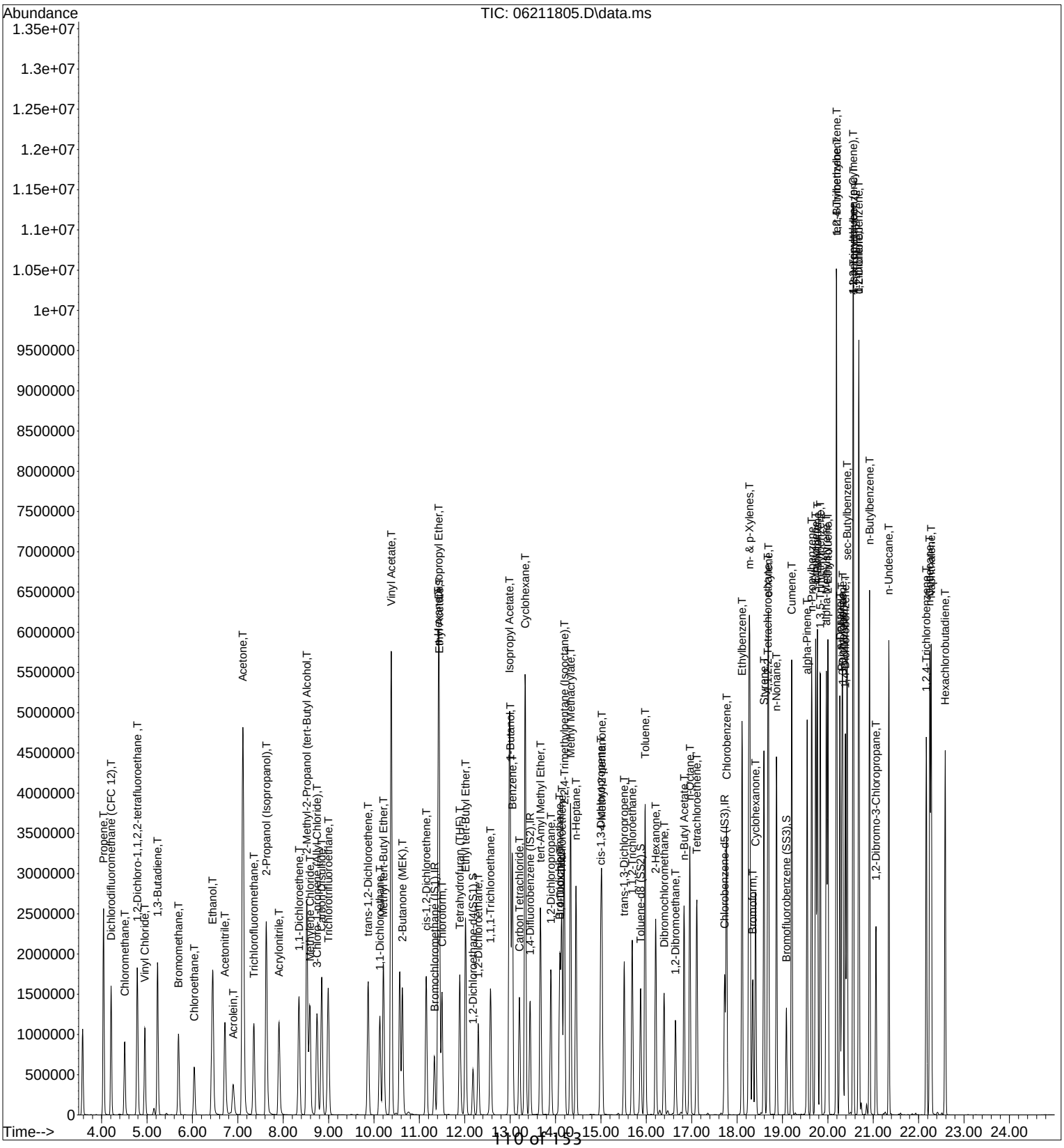
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
50) Methyl Methacrylate	14.33	100	740745	47.599	ng	91
51) n-Heptane	14.45	71	829227	21.902	ng	96
52) cis-1,3-Dichloropropene	15.00	75	1453738	23.489	ng	100
53) 4-Methyl-2-pentanone	15.02	58	866932	22.082	ng	95
54) trans-1,3-Dichloropropene	15.51	75	1309324	24.295	ng	100
55) 1,1,2-Trichloroethane	15.69	97	879936	23.113	ng	97
58) Toluene	15.98	91	3499847	24.715	ng	100
59) 2-Hexanone	16.21	43	1948448	22.789	ng	97
60) Dibromochloromethane	16.39	129	1046553	26.827	ng	100
61) 1,2-Dibromoethane	16.64	107	1012534	25.694	ng	99
62) n-Butyl Acetate	16.83	43	2259973	23.708	ng	98
63) n-Octane	16.96	57	733515	23.644	ng	92
64) Tetrachloroethene	17.11	166	1034696	26.315	ng	100
65) Chlorobenzene	17.77	112	2382208	25.081	ng	100
66) Ethylbenzene	18.11	91	3999647	24.608	ng	99
67) m- & p-Xylenes	18.27	91	5990708	48.461	ng	99
68) Bromoform	18.35	173	932758	29.028	ng	100
69) Styrene	18.59	104	2547951	25.848	ng	99
70) o-Xylene	18.69	91	3075930	24.509	ng	99
71) n-Nonane	18.87	43	1652325	23.075	ng	94
72) 1,1,2,2-Tetrachloroethane	18.68	83	1608365	24.918	ng	100
74) Cumene	19.20	105	4013940	25.289	ng	99
75) alpha-Pinene	19.54	93	2093427	25.053	ng	100
76) n-Propylbenzene	19.64	91	4837753	25.396	ng	98
77) 3-Ethyltoluene	19.73	105	3794978	24.006	ng	99
78) 4-Ethyltoluene	19.77	105	3975548	27.265	ng	99
79) 1,3,5-Trimethylbenzene	19.84	105	3202556	24.985	ng	99
80) alpha-Methylstyrene	19.97	118	1787331	26.211	ng	99
81) 2-Ethyltoluene	20.00	105	3848000	24.965	ng	99
82) 1,2,4-Trimethylbenzene	20.19	105	3224962	24.814	ng	99
83) n-Decane	20.26	57	1771614	24.536	ng	96
84) Benzyl Chloride	20.31	91	3046650	28.558	ng	98
85) 1,3-Dichlorobenzene	20.33	146	2044013	26.295	ng	100
86) 1,4-Dichlorobenzene	20.39	146	2069863	25.842	ng	99
87) sec-Butylbenzene	20.42	105	4372281	25.378	ng	99
88) 4-Isopropyltoluene (p-...	20.56	119	3988332	25.564	ng	99
89) 1,2,3-Trimethylbenzene	20.56	105	3291799	25.683	ng	99
90) 1,2-Dichlorobenzene	20.68	146	1950088	26.633	ng	100
91) d-Limonene	20.68	68	1295174	24.297	ng	94
92) 1,2-Dibromo-3-Chloropr...	21.06	157	771033	28.955	ng	94
93) n-Undecane	21.34	57	1911160	27.196	ng	96
94) 1,2,4-Trichlorobenzene	22.17	180	1630381	29.481	ng	100
95) Naphthalene	22.28	128	4832382	25.912	ng	100
96) n-Dodecane	22.24	57	1933323	28.177	ng	95
97) Hexachlorobutadiene	22.59	225	997895	27.733	ng	100
98) Cyclohexanone	18.41	55	1323555	22.648	ng	96
99) tert-Butylbenzene	20.19	119	3124574	25.275	ng	99
100) n-Butylbenzene	20.92	91	3565415	25.088	ng	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211805.D
Acq On : 21 Jun 2018 6:45 Operator: WA
Sample : LCS R16062118 25ng
Misc : S31-04201801/S31-05311801 (6/29)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 08:28:22 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Response Factor Report GCMS-16

Method Path : I:\MS16\METHODS\
Method File : R16051818.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Fri May 18 10:36:37 2018
Response Via : Initial Calibration

LH 5/18/18

Calibration Files
0.10=05181802.D 0.20=05181803.D ~~0.40~~=05181804.D 1.0 =05181805.D 5.0 =05181806.D 25 =05181
100 =05181809.D

0.50

		Compound	0.10	0.20	~~0.40~~	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethane...	----------	ISTD	----------							
2)	T	Propene		1.946	1.925	1.712	1.827	1.626	1.591	1.595	1.746	8.77
3)	T	Dichlorodifluo...	3.333	3.040	3.123	2.744	2.791	2.631	2.426	2.147	2.779	13.87
4)	T	Chloromethane	3.196	2.889	2.755	2.612	2.314	2.411	2.084	1.523	2.473	20.94
5)	T	1,2-Dichloro-1...	1.841	1.594	1.672	1.478	1.491	1.429	1.344	1.257	1.513	12.30
6)	T	Vinyl Chloride	2.933	2.617	2.739	2.438	2.460	2.321	2.163	1.988	2.457	12.47
7)	T	1,3-Butadiene	2.057	1.841	1.820	1.765	1.768	1.742	1.616	1.459	1.759	9.86
8)	T	Bromomethane	1.609	1.477	1.510	1.366	1.369	1.336	1.267	1.218	1.394	9.34
9)	T	Chloroethane	1.348	1.212	1.261	1.140	1.141	1.102	1.051	1.020	1.159	9.46
10)	T	Ethanol	1.435	1.262	1.241	1.206	1.179	1.172	1.080	0.984	1.195	11.09
11)	T	Acetonitrile	3.738	3.302	3.330	3.082	3.076	2.975	2.834	2.731	3.134	10.20
12)	T	Acrolein	1.152	1.046	1.048	1.000	1.036	0.973	0.930	0.895	1.010	7.90
13)	T	Acetone	1.597	1.351	1.366	1.224	1.221	1.122	1.003	0.856	1.218	18.87
14)	T	Trichlorofluor...	2.875	2.509	2.594	2.233	2.321	2.181	2.074	2.015	2.350	12.37
15)	T	2-Propanol (Is...	4.598	4.155	4.215	3.952	3.863	3.960	3.433	2.531	3.838	16.24
16)	T	Acrylonitrile	2.283	2.131	2.240	2.132	2.164	2.117	2.013	1.955	2.129	5.06
17)	T	1,1-Dichloroet...	1.614	1.463	1.541	1.373	1.416	1.383	1.318	1.291	1.425	7.72
18)	T	2-Methyl-2-Pro...	4.366	3.954	4.065	3.781	3.925	3.783	3.527	2.708	3.764	13.04
19)	T	Methylene Chlo...	1.900	1.698	1.706	1.512	1.520	1.473	1.403	1.343	1.569	11.77
20)	T	3-Chloro-1-pro...	2.660	2.244	2.180	2.098	2.182	2.188	2.089	2.010	2.206	8.94
21)	T	Trichlorotrifl...	1.553	1.348	1.417	1.245	1.258	1.216	1.166	1.141	1.293	10.72
22)	T	Carbon Disulfide		6.032	6.165	5.533	5.647	5.482	5.144	4.873	5.554	8.21
23)	T	trans-1,2-Dich...	2.499	2.206	2.284	2.124	2.153	2.089	1.999	1.920	2.159	8.25
24)	T	1,1-Dichloroet...	3.093	2.865	2.940	2.643	2.682	2.570	2.455	2.373	2.703	9.13
25)	T	Methyl tert-Bu...	5.196	4.576	4.743	4.261	4.352	4.148	3.952	3.759	4.373	10.49
26)	T	Vinyl Acetate	0.337	0.314	0.329	0.315	0.332	0.335	0.314	0.276	0.319	6.22
27)	T	2-Butanone (MEK)	1.180	1.104	1.141	1.008	1.066	1.018	0.972	0.938	1.053	8.00
28)	T	cis-1,2-Dichlo...	2.408	2.197	2.273	2.071	2.080	2.013	1.911	1.835	2.099	8.99
29)	T	Diisopropyl Ether	1.444	1.318	1.316	1.149	1.154	1.094	1.019	0.910	1.175	14.91
30)	T	Ethyl Acetate	0.650	0.573	0.630	0.554	0.591	0.563	0.521	0.454	0.567	10.89
31)	T	n-Hexane		2.746	2.849	2.347	2.461	2.179	2.037	1.831	2.350	15.67
32)	T	Chloroform	3.010	2.656	2.758	2.461	2.500	2.402	2.270	2.170	2.529	10.76
33)	S	1,2-Dichloroet...	1.462	1.436	1.435	1.401	1.421	1.396	1.383	1.371	1.413	2.18
34)	T	Tetrahydrofura...	1.309	1.116	1.108	0.991	1.032	1.008	0.965	0.938	1.059	11.28
35)	T	Ethyl tert-But...	1.988	1.754	1.875	1.651	1.693	1.639	1.568	1.502	1.709	9.35
36)	T	1,2-Dichloroet...	2.189	1.935	1.993	1.777	1.794	1.710	1.623	1.555	1.822	11.42
37)	IR	1,4-Difluorobenzen...	----------	ISTD	----------							
38)	T	1,1,1-Trichlor...	0.561	0.506	0.510	0.478	0.468	0.462	0.437	0.424	0.481	9.17
39)	T	Isopropyl Acetate	0.261	0.241	0.246	0.227	0.228	0.225	0.209	0.191	0.229	9.61
40)	T	1-Butanol	0.387	0.350	0.368	0.407	0.426	0.394	0.361	0.308	0.375	9.82
41)	T	Benzene	1.911	1.667	1.546	1.409	1.365	1.315	1.219	1.057	1.436	18.65
42)	T	Carbon Tetrach...	0.477	0.418	0.428	0.408	0.404	0.407	0.385	0.374	0.412	7.58
43)	T	Cyclohexane	0.606	0.547	0.557	0.518	0.505	0.495	0.456	0.404	0.511	12.23
44)	T	tert-Amyl Meth...	1.175	1.029	1.047	0.982	0.971	0.963	0.907	0.849	0.990	9.88
45)	T	1,2-Dichloropr...	0.424	0.377	0.379	0.349	0.348	0.340	0.325	0.317	0.358	9.73
46)	T	Bromodichlorom...	0.493	0.444	0.456	0.438	0.442	0.443	0.419	0.400	0.442	6.05
47)	T	Trichloroethene	0.423	0.378	0.379	0.356	0.350	0.346	0.328	0.317	0.360	9.34
48)	T	1,4-Dioxane	0.321	0.300	0.309	0.288	0.289	0.288	0.273	0.259	0.291	6.73
49)	T	2,2,4-Trimethy...	1.821	1.628	1.637	1.541	1.493	1.461	1.338	1.191	1.514	12.78
50)	T	Methyl Methacr...	0.150	0.136	0.140	0.133	0.136	0.135	0.128	0.121	0.135	6.18
51)	T	n-Heptane	0.410	0.361	0.364	0.321	0.315	0.299	0.283	0.274	0.328	14.07
52)	T	cis-1,3-Dichlo...	0.569	0.529	0.543	0.525	0.547	0.551	0.525	0.505	0.537	3.73
53)	T	4-Methyl-2-pen...	0.375	0.354	0.358	0.343	0.342	0.338	0.318	0.295	0.340	7.24
54)	T	trans-1,3-Dich...	0.471	0.438	0.459	0.453	0.483	0.494	0.476	0.465	0.467	3.81

55)	T	1,1,2-Trichlor...	0.377	0.339	0.350	0.327	0.326	0.322	0.306	0.296	0.330	7.64
56)	IR	Chlorobenzene-d5 (...	----------	----------	----------	ISTD	----------	----------	----------	----------	----------	
57)	S	Toluene-d8 (SS2)	2.160	2.168	2.169	2.161	2.182	2.170	2.173	2.183	2.171	0.40
58)	T	Toluene		3.317	3.252	2.946	2.897	2.811	2.624	2.402	2.893	11.22
59)	T	2-Hexanone	2.046	1.827	1.834	1.763	1.751	1.693	1.582	1.475	1.747	9.86
60)	T	Dibromochlorom...	0.835	0.763	0.804	0.769	0.815	0.831	0.791	0.767	0.797	3.61
61)	T	1,2-Dibromoethane	0.890	0.811	0.831	0.791	0.802	0.804	0.765	0.747	0.805	5.37
62)	T	n-Butyl Acetate	2.275	1.980	2.015	1.934	1.950	1.927	1.809	1.687	1.947	8.70
63)	T	n-Octane	0.738	0.665	0.688	0.627	0.628	0.612	0.575	0.538	0.634	9.98
64)	T	Tetrachloroethene	0.920	0.832	0.858	0.781	0.787	0.783	0.744	0.722	0.803	7.97
65)	T	Chlorobenzene	2.304	2.043	2.056	1.923	1.905	1.865	1.759	1.666	1.940	10.16
66)	T	Ethylbenzene	4.091	3.511	3.529	3.289	3.308	3.249	2.993	2.592	3.320	13.07
67)	T	m- & p-Xylenes	3.369	2.685	2.680	2.513	2.492	2.431	2.202	1.829	2.525	17.46
68)	T	Bromoform	0.629	0.605	0.628	0.626	0.682	0.723	0.689	0.669	0.656	6.17
69)	T	Styrene	2.260	2.025	2.078	2.015	2.063	2.057	1.898	1.712	2.014	7.81
70)	T	o-Xylene	3.094	2.714	2.794	2.626	2.572	2.509	2.270	1.930	2.564	13.60
71)	T	n-Nonane	1.719	1.572	1.593	1.510	1.491	1.430	1.289	1.098	1.463	13.22
72)	T	1,1,2,2-Tetrac...	1.449	1.368	1.412	1.357	1.351	1.338	1.220	1.052	1.319	9.60
73)	S	Bromofluoroben...	0.689	0.690	0.686	0.691	0.693	0.696	0.685	0.683	0.689	0.61
74)	T	Cumene	3.808	3.490	3.514	3.296	3.280	3.221	2.906	2.423	3.242	13.00
75)	T	alpha-Pinene	1.937	1.784	1.798	1.682	1.744	1.713	1.585	1.412	1.707	9.16
76)	T	n-Propylbenzene	4.642	4.249	4.255	4.046	3.986	3.872	3.435	2.646	3.891	15.71
77)	T	3-Ethyltoluene	3.660	3.376	3.464	3.319	3.300	3.419	2.956	2.341	3.229	12.69
78)	T	4-Ethyltoluene	3.554	3.161	3.220	3.151	3.097	2.811	2.601	2.235	2.979	13.84
79)	T	1,3,5-Trimethy...	3.001	2.734	2.793	2.718	2.695	2.622	2.358	2.027	2.618	11.40
80)	T	alpha-Methylst...	1.466	1.381	1.464	1.427	1.475	1.448	1.318	1.163	1.393	7.67
81)	T	2-Ethyltoluene	3.806	3.328	3.425	3.308	3.209	3.096	2.740	2.276	3.149	14.71
82)	T	1,2,4-Trimethy...	3.357	2.800	2.834	2.781	2.737	2.647	2.262	1.821	2.655	16.96
83)	T	n-Decane	1.653	1.519	1.551	1.586	1.557	1.487	1.333	1.113	1.475	11.74
84)	T	Benzyl Chloride				2.025	2.307	2.440	2.235	1.890	2.179	10.11
85)	T	1,3-Dichlorobe...	1.908	1.664	1.668	1.626	1.606	1.581	1.411	1.240	1.588	12.34
86)	T	1,4-Dichlorobe...	1.971	1.706	1.716	1.690	1.655	1.599	1.456	1.296	1.636	12.15
87)	T	sec-Butylbenzene	4.151	3.781	3.863	3.732	3.655	3.509	3.054	2.411	3.519	15.54
88)	T	4-Isopropyltol...	3.683	3.426	3.534	3.472	3.428	3.200	2.681	2.073	3.187	17.02
89)	T	1,2,3-Trimethy...	3.006	2.757	2.854	2.805	2.776	2.657	2.271	1.820	2.618	14.76
90)	T	1,2-Dichlorobe...	1.786	1.576	1.596	1.569	1.558	1.494	1.303	1.083	1.496	14.24
91)	T	d-Limonene	1.213	1.129	1.181	1.152	1.175	1.136	0.968	0.759	1.089	14.00
92)	T	1,2-Dibromo-3-...	0.516	0.486	0.537	0.545	0.587	0.593	0.560	0.529	0.544	6.59
93)	T	n-Undecane	1.359	1.248	1.325	1.645	1.671	1.610	1.443	1.184	1.435	13.07
94)	T	1,2,4-Trichlor...	1.203	1.031	1.075	1.163	1.202	1.190	1.124	1.048	1.130	6.26
95)	T	Naphthalene	4.456	3.825	3.942	4.082	4.183	3.886	3.441	2.663	3.810	14.40
96)	T	n-Dodecane			0.949	1.612	1.688	1.556	1.423	1.182	1.402	20.27
97)	T	Hexachlorobuta...	0.778	0.736	0.741	0.728	0.743	0.759	0.720	0.676	0.735	4.08
98)	T	Cyclohexanone	1.382	1.220	1.244	1.221	1.204	1.171	1.093	1.016	1.194	9.07
99)	T	tert-Butylbenzene	3.009	2.758	2.780	2.665	2.649	2.500	2.124	1.717	2.525	16.42
100)	T	n-Butylbenzene	3.347	3.054	3.133	3.076	3.054	2.916	2.568	2.077	2.903	13.78

(#) = Out of Range

R16051818.M Fri May 18 11:30:26 2018

Primary Source Standards Concentrations (Working & Initial Calibration)

LH 5/18/18

1ng/L Std. ID:
4ng/L Std. ID: S31-05161805
20ng/L Std. ID: S31-05161803
200ng/L Std. ID: S31-05161801

Dilution Factors:		5	50	250	1000	Working STD Conc.(ng/L):	4	4	4	20	20	200	200	200
	Source Std.	Primary Working Standards				Injection (L):	0.025	0.050	0.125	0.050	0.25	0.125	0.25	0.50
Compounds	mg/m³	200ng/L	20ng/L	4ng/L	1ng/L	ICAL Points:	0.1ng	0.2ng	0.5ng	1ng	5ng	25ng	50ng	100ng
Propene	1.037	207.4	20.74	4.148	1.037		0.1037	0.2074	0.5185	1.037	5.185	25.925	51.85	103.7
Dichlorodifluoromethane	1.048	209.6	20.96	4.192	1.048		0.1048	0.2096	0.5240	1.048	5.240	26.200	52.40	104.8
Chloromethane	1.006	201.2	20.12	4.024	1.006		0.1006	0.2012	0.5030	1.006	5.030	25.150	50.30	100.6
Freon-114	1.021	204.2	20.42	4.084	1.021		0.1021	0.2042	0.5105	1.021	5.105	25.525	51.05	102.1
Vinyl Chloride	1.032	206.4	20.64	4.128	1.032		0.1032	0.2064	0.5160	1.032	5.160	25.800	51.60	103.2
1,3-Butadiene	1.059	211.8	21.18	4.236	1.059		0.1059	0.2118	0.5295	1.059	5.295	26.475	52.95	105.9
Bromomethane	0.993	198.6	19.86	3.972	0.993		0.0993	0.1986	0.4965	0.993	4.965	24.825	49.65	99.3
Chloroethane	1.012	202.4	20.24	4.048	1.012		0.1012	0.2024	0.5060	1.012	5.060	25.300	50.60	101.2
Ethanol	5.271	1054.2	105.42	21.084	5.271		0.5271	1.0542	2.6355	5.271	26.355	131.775	263.55	527.1
Acetonitrile	1.059	211.8	21.18	4.236	1.059		0.1059	0.2118	0.5295	1.059	5.295	26.475	52.95	105.9
Acrolein	1.054	210.8	21.08	4.216	1.054		0.1054	0.2108	0.5270	1.054	5.270	26.350	52.70	105.4
Acetone	5.322	1064.4	106.44	21.288	5.322		0.5322	1.0644	2.6610	5.322	26.610	133.050	266.10	532.2
Trichlorofluoromethane	1.051	210.2	21.02	4.204	1.051		0.1051	0.2102	0.5255	1.051	5.255	26.275	52.55	105.1
Isopropanol	2.107	421.4	42.14	8.428	2.107		0.2107	0.4214	1.0535	2.107	10.535	52.675	105.35	210.7
Acrylonitrile	1.056	211.2	21.12	4.224	1.056		0.1056	0.2112	0.5280	1.056	5.280	26.400	52.80	105.6
1,1-Dichloroethene	1.061	212.2	21.22	4.244	1.061		0.1061	0.2122	0.5305	1.061	5.305	26.525	53.05	106.1
tert-Butanol	2.120	424.0	42.40	8.480	2.120		0.2120	0.4240	1.0600	2.120	10.600	53.000	106.00	212.0
Methylene Chloride	1.058	211.6	21.16	4.232	1.058		0.1058	0.2116	0.5290	1.058	5.290	26.450	52.90	105.8
Allyl Chloride	1.054	210.8	21.08	4.216	1.054		0.1054	0.2108	0.5270	1.054	5.270	26.350	52.70	105.4
Trichlorotrifluoroethane	1.053	210.6	21.06	4.212	1.053		0.1053	0.2106	0.5265	1.053	5.265	26.325	52.65	105.3
Carbon Disulfide	1.063	212.6	21.26	4.252	1.063		0.1063	0.2126	0.5315	1.063	5.315	26.575	53.15	106.3
trans-1,2-Dichloroethene	1.081	216.2	21.62	4.324	1.081		0.1081	0.2162	0.5405	1.081	5.405	27.025	54.05	108.1
1,1-Dichloroethane	1.022	204.4	20.44	4.088	1.022		0.1022	0.2044	0.5110	1.022	5.110	25.550	51.10	102.2
Methyl tert-Butyl Ether	1.070	214.0	21.40	4.280	1.070		0.1070	0.2140	0.5350	1.070	5.350	26.750	53.50	107.0
Vinyl Acetate	5.281	1056.2	105.62	21.124	5.281		0.5281	1.0562	2.6405	5.281	26.405	132.025	264.05	528.1
2-Butanone	1.052	210.4	21.04	4.208	1.052		0.1052	0.2104	0.5260	1.052	5.260	26.300	52.60	105.2
cis-1,2-Dichloroethene	1.067	213.4	21.34	4.268	1.067		0.1067	0.2134	0.5335	1.067	5.335	26.675	53.35	106.7
Diisopropyl Ether	1.065	213.0	21.30	4.260	1.065		0.1065	0.2130	0.5325	1.065	5.325	26.625	53.25	106.5
Ethyl Acetate	2.136	427.2	42.72	8.544	2.136		0.2136	0.4272	1.0680	2.136	10.680	53.400	106.80	213.6
n-Hexane	1.066	213.2	21.32	4.264	1.066		0.1066	0.2132	0.5330	1.066	5.330	26.650	53.30	106.6
Chloroform	1.061	212.2	21.22	4.244	1.061		0.1061	0.2122	0.5305	1.061	5.305	26.525	53.05	106.1
Tetrahydrofuran	1.064	212.8	21.28	4.256	1.064		0.1064	0.2128	0.5320	1.064	5.320	26.600	53.20	106.4
Ethyl tert-Butyl Ether	1.059	211.8	21.18	4.236	1.059		0.1059	0.2118	0.5295	1.059	5.295	26.475	52.95	105.9
1,2-Dichloroethane	1.055	211.0	21.10	4.220	1.055		0.1055	0.2110	0.5275	1.055	5.275	26.375	52.75	105.5
1,1,1-Trichloroethane	1.077	215.4	21.54	4.308	1.077		0.1077	0.2154	0.5385	1.077	5.385	26.925	53.85	107.7
Isopropyl Acetate	2.113	422.6	42.26	8.452	2.113		0.2113	0.4226	1.0565	2.113	10.565	52.825	105.65	211.3
1-Butanol	2.114	422.8	42.28	8.456	2.114		0.2114	0.4228	1.0570	2.114	10.570	52.850	105.70	211.4
Benzene	1.057	211.4	21.14	4.228	1.057		0.1057	0.2114	0.5285	1.057	5.285	26.425	52.85	105.7
Carbon Tetrachloride	1.060	212.0	21.20	4.240	1.060		0.1060	0.2120	0.5300	1.060	5.300	26.500	53.00	106.0
Cyclohexane	2.135	427.0	42.70	8.540	2.135		0.2135	0.4270	1.0675	2.135	10.675	53.375	106.75	213.5
tert-Amyl Methyl Ether	1.057	211.4	21.14	4.228	1.057		0.1057	0.2114	0.5285	1.057	5.285	26.425	52.85	105.7
1,2-Dichloropropane	1.066	213.2	21.32	4.264	1.066		0.1066	0.2132	0.5330	1.066	5.330	26.650	53.30	106.6
Bromodichloromethane	1.067	213.4	21.34	4.268	1.067		0.1067	0.2134	0.5335	1.067	5.335	26.675	53.35	106.7
Trichloroethene	1.061	212.2	21.22	4.244	1.061		0.1061	0.2122	0.5305	1.061	5.305	26.525	53.05	106.1
1,4-Dioxane	1.063	212.6	21.26	4.252	1.063		0.1063	0.2126	0.5315	1.063	5.315	26.575	53.15	106.3
Isooctane	1.060	212.0	21.20	4.240	1.060		0.1060	0.2120	0.5300	1.060	5.300	26.500	53.00	106.0
Methyl Methacrylate	2.112	422.4	42.24	8.448	2.112		0.2112	0.4224	1.0560	2.112	10.560	52.800	105.60	211.2
n-Heptane	1.065	213.0	21.30	4.260	1.065		0.1065	0.2130	0.5325	1.065	5.325	26.625	53.25	106.5

Q:\TO15 Std. Concentrations\MS16 Std. Conc\2018\R16051818\ICAL Conc. (Primary Source)

Date Updated: 05/04/18
Version: 1

Primary Source Standards Concentrations (Working & Initial Calibration)

LH 5/18/18

1ng/L Std. ID:
4ng/L Std. ID: S31-05161805
20ng/L Std. ID: S31-05161803
200ng/L Std. ID: S31-05161801

Dilution Factors:		5	50	250	1000	Working STD Conc.(ng/L):	4	4	4	20	20	200	200	200
	Source Std.	Primary Working Standards				Injection (L):	0.025	0.050	0.125	0.050	0.25	0.125	0.25	0.50
Compounds	mg/m^3	200ng/L	20ng/L	4ng/L	1ng/L	ICAL Points:	0.1ng	0.2ng	0.5ng	1ng	5ng	25ng	50ng	100ng
cis-1,3-Dichloropropene	1.120	224.0	22.40	4.480	1.120		0.1120	0.2240	0.5600	1.120	5.600	28.000	56.00	112.0
4-Methyl-2-pentanone	1.059	211.8	21.18	4.236	1.059		0.1059	0.2118	0.5295	1.059	5.295	26.475	52.95	105.9
trans-1,3-Dichloropropene	1.067	213.4	21.34	4.268	1.067		0.1067	0.2134	0.5335	1.067	5.335	26.675	53.35	106.7
1,1,2-Trichloroethane	1.064	212.8	21.28	4.256	1.064		0.1064	0.2128	0.5320	1.064	5.320	26.600	53.20	106.4
Toluene	1.054	210.8	21.08	4.216	1.054		0.1054	0.2108	0.5270	1.054	5.270	26.350	52.70	105.4
2-Hexanone	1.060	212.0	21.20	4.240	1.060		0.1060	0.2120	0.5300	1.060	5.300	26.500	53.00	106.0
Dibromochloromethane	1.061	212.2	21.22	4.244	1.061		0.1061	0.2122	0.5305	1.061	5.305	26.525	53.05	106.1
1,2-Dibromoethane	1.064	212.8	21.28	4.256	1.064		0.1064	0.2128	0.5320	1.064	5.320	26.600	53.20	106.4
n-Butyl Acetate	1.068	213.6	21.36	4.272	1.068		0.1068	0.2136	0.5340	1.068	5.340	26.700	53.40	106.8
n-Octane	1.060	212.0	21.20	4.240	1.060		0.1060	0.2120	0.5300	1.060	5.300	26.500	53.00	106.0
Tetrachloroethene	1.063	212.6	21.26	4.252	1.063		0.1063	0.2126	0.5315	1.063	5.315	26.575	53.15	106.3
Chlorobenzene	1.066	213.2	21.32	4.264	1.066		0.1066	0.2132	0.5330	1.066	5.330	26.650	53.30	106.6
Ethylbenzene	1.052	210.4	21.04	4.208	1.052		0.1052	0.2104	0.5260	1.052	5.260	26.300	52.60	105.2
m-&p-Xylene	2.123	424.6	42.46	8.492	2.123		0.2123	0.4246	1.0615	2.123	10.615	53.075	106.15	212.3
Bromoform	1.063	212.6	21.26	4.252	1.063		0.1063	0.2126	0.5315	1.063	5.315	26.575	53.15	106.3
Styrene	1.058	211.6	21.16	4.232	1.058		0.1058	0.2116	0.5290	1.058	5.290	26.450	52.90	105.8
o-Xylene	1.055	211.0	21.10	4.220	1.055		0.1055	0.2110	0.5275	1.055	5.275	26.375	52.75	105.5
n-Nonane	1.054	210.8	21.08	4.216	1.054		0.1054	0.2108	0.5270	1.054	5.270	26.350	52.70	105.4
1,1,2,2-Tetrachloroethane	1.057	211.4	21.14	4.228	1.057		0.1057	0.2114	0.5285	1.057	5.285	26.425	52.85	105.7
Cumene	1.052	210.4	21.04	4.208	1.052		0.1052	0.2104	0.5260	1.052	5.260	26.300	52.60	105.2
alpha-Pinene	1.046	209.2	20.92	4.184	1.046		0.1046	0.2092	0.5230	1.046	5.230	26.150	52.30	104.6
n-Propylbenzene	1.064	212.8	21.28	4.256	1.064		0.1064	0.2128	0.5320	1.064	5.320	26.600	53.20	106.4
3-Ethyltoluene	1.050	210.0	21.00	4.200	1.050		0.1050	0.2100	0.5250	1.050	5.250	26.250	52.50	105.0
4-Ethyltoluene	1.049	209.8	20.98	4.196	1.049		0.1049	0.2098	0.5245	1.049	5.245	26.225	52.45	104.9
1,3,5-Trimethylbenzene	1.049	209.8	20.98	4.196	1.049		0.1049	0.2098	0.5245	1.049	5.245	26.225	52.45	104.9
alpha-Methylstyrene	1.049	209.8	20.98	4.196	1.049		0.1049	0.2098	0.5245	1.049	5.245	26.225	52.45	104.9
2-Ethyltoluene	1.060	212.0	21.20	4.240	1.060		0.1060	0.2120	0.5300	1.060	5.300	26.500	53.00	106.0
1,2,4-Trimethylbenzene	1.051	210.2	21.02	4.204	1.051		0.1051	0.2102	0.5255	1.051	5.255	26.275	52.55	105.1
n-Decane	1.059	211.8	21.18	4.236	1.059		0.1059	0.2118	0.5295	1.059	5.295	26.475	52.95	105.9
Benzyl Chloride	1.074	214.8	21.48	4.296	1.074		0.1074	0.2148	0.5370	1.074	5.370	26.850	53.70	107.4
1,3-Dichlorobenzene	1.071	214.2	21.42	4.284	1.071		0.1071	0.2142	0.5355	1.071	5.355	26.775	53.55	107.1
1,4-Dichlorobenzene	1.064	212.8	21.28	4.256	1.064		0.1064	0.2128	0.5320	1.064	5.320	26.600	53.20	106.4
sec-Butylbenzene	1.055	211.0	21.10	4.220	1.055		0.1055	0.2110	0.5275	1.055	5.275	26.375	52.75	105.5
p-Isopropyltoluene	1.026	205.2	20.52	4.104	1.026		0.1026	0.2052	0.5130	1.026	5.130	25.650	51.30	102.6
1,2,3-Trimethylbenzene	1.026	205.2	20.52	4.104	1.026		0.1026	0.2052	0.5130	1.026	5.130	25.650	51.30	102.6
1,2-Dichlorobenzene	1.083	216.6	21.66	4.332	1.083		0.1083	0.2166	0.5415	1.083	5.415	27.075	54.15	108.3
d-Limonene	1.005	201.0	20.10	4.020	1.005		0.1005	0.2010	0.5025	1.005	5.025	25.125	50.25	100.5
1,2-Dibromo-3-chloropropane	1.051	210.2	21.02	4.204	1.051		0.1051	0.2102	0.5255	1.051	5.255	26.275	52.55	105.1
n-Undecane	1.053	210.6	21.06	4.212	1.053		0.1053	0.2106	0.5265	1.053	5.265	26.325	52.65	105.3
1,2,4-Trichlorobenzene	1.097	219.4	21.94	4.388	1.097		0.1097	0.2194	0.5485	1.097	5.485	27.425	54.85	109.7
Naphthalene	1.056	211.2	21.12	4.224	1.056		0.1056	0.2112	0.5280	1.056	5.280	26.400	52.80	105.6
n-Dodecane	1.056	211.2	21.12	4.224	1.056		0.1056	0.2112	0.5280	1.056	5.280	26.400	52.80	105.6
Hexachloro-1,3-butadiene	1.057	211.4	21.14	4.228	1.057		0.1057	0.2114	0.5285	1.057	5.285	26.425	52.85	105.7
Methacrylonitrile	1.067	213.4	21.34	4.268	1.067		0.1067	0.2134	0.5335	1.067	5.335	26.675	53.35	106.7
Cyclohexanone	1.039	207.8	20.78	4.156	1.039		0.1039	0.2078	0.5195	1.039	5.195	25.975	51.95	103.9
tert-Butylbenzene	1.050	210.0	21.00	4.200	1.050		0.1050	0.2100	0.5250	1.050	5.250	26.250	52.50	105.0
n-Butylbenzene	1.054	210.8	21.08	4.216	1.054		0.1054	0.2108	0.5270	1.054	5.270	26.350	52.70	105.4

Calibration Status Report GCMS-16

Method : I:\MS16\METHODS\R16051818.M (RTE Integrator)
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Fri May 18 10:36:37 2018
Response via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
2	0.10	13	13	I:\MS16\DATA\2018_05\18\05181802.D
3	0.20	13	13	I:\MS16\DATA\2018_05\18\05181803.D
4	0.40	13	13	I:\MS16\DATA\2018_05\18\05181804.D
5	1.0	13	13	I:\MS16\DATA\2018_05\18\05181805.D
6	5.0	13	13	I:\MS16\DATA\2018_05\18\05181806.D
7	25	13	13	I:\MS16\DATA\2018_05\18\05181807.D
8	50	13	13	I:\MS16\DATA\2018_05\18\05181808.D

#	ID	Update Time	Quant Time	Acquisition Time
2	0.10	May 18 10:35 2018	May 18 10:31 2018	18 May 2018 00:57
3	0.20	May 18 10:35 2018	May 18 10:31 2018	18 May 2018 1:30
4	0.40	May 18 10:35 2018	May 18 10:31 2018	18 May 2018 2:04
5	1.0	May 18 10:36 2018	May 18 10:31 2018	18 May 2018 2:37
6	5.0	May 18 10:36 2018	May 18 10:31 2018	18 May 2018 3:10
7	25	May 18 10:36 2018	May 18 10:31 2018	18 May 2018 3:43
8	50	May 18 10:36 2018	May 18 10:31 2018	18 May 2018 4:16

R16051818.M Fri May 18 11:29:41 2018

LH 5/18/18

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181802.D
Acq On : 18 May 2018 00:57 Operator: LH
Sample : 0.1ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:29 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 5/18/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.31	130	374568	12.500	ng		0.00
37) 1,4-Difluorobenzene (IS2)	13.43	114	1623893	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	762684	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.16	65	547573	13.725	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 109.84%				
57) Toluene-d8 (SS2)	15.87	98	1647144	11.060	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 88.48%				
73) Bromofluorobenzene (SS3)	19.09	174	525381	9.773	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 78.16%				
Target Compounds							Qvalue
2) Propene	4.08	42	6825	0.178	ng		99
3) Dichlorodifluoromethan...	4.24	85	10466	0.144	ng		98
4) Chloromethane	4.54	50	9633	0.177	ng		97
5) 1,2-Dichloro-1,1,2,2-t...	4.81	135	5634	0.132	ng		94
6) Vinyl Chloride	4.98	62	9070	0.154	ng		97
7) 1,3-Butadiene	5.25	54	6529	0.158	ng		92
8) Bromomethane	5.71	94	4787	0.137	ng		99
9) Chloroethane	6.05	64	4089	0.153	ng		95
10) Ethanol	6.41	45	22667	0.886	ng		95
11) Acetonitrile	6.71	41	11861	0.180	ng		97
12) Acrolein	6.91	56	3637	0.167	ng		97
13) Acetone	7.12	58	25471	0.912	ng		84
14) Trichlorofluoromethane	7.36	101	9053	0.145	ng		97
15) 2-Propanol (Isopropanol)	7.64	45	29032	0.339	ng		88
16) Acrylonitrile	7.90	53	7225	0.155	ng		100
17) 1,1-Dichloroethene	8.35	96	5133	0.141	ng	#	80
18) 2-Methyl-2-Propanol (t...	8.55	59	27734	0.306	ng		93
19) Methylene Chloride	8.57	84	6025	0.153	ng		80
20) 3-Chloro-1-propene (Al...	8.73	41	8400	0.181	ng		79
21) Trichlorotrifluoroethane	8.99	151	4899	0.136	ng		90
22) Carbon Disulfide	8.85	76	21824	0.157	ng		98
23) trans-1,2-Dichloroethene	9.86	61	8094	0.162	ng		85
24) 1,1-Dichloroethane	10.11	63	9471	0.150	ng		97
25) Methyl tert-Butyl Ether	10.22	73	16659	0.157	ng		95
26) Vinyl Acetate	10.37	86	5328	0.675	ng	#	15
27) 2-Butanone (MEK)	10.64	72	3721	0.150	ng	#	12
28) cis-1,2-Dichloroethene	11.13	61	7699	0.157	ng		88
29) Diisopropyl Ether	11.43	87	4609	0.148	ng	#	43
30) Ethyl Acetate	11.44	61	4162	0.315	ng		95
31) n-Hexane	11.41	57	10068	0.179	ng	#	98
32) Chloroform	11.48	83	9571	0.150	ng		99
34) Tetrahydrofuran (THF)	11.92	72	4175	0.168	ng	#	78
35) Ethyl tert-Butyl Ether	12.02	87	6309	0.145	ng	#	80
36) 1,2-Dichloroethane	12.29	62	6920	0.155	ng		98
38) 1,1,1-Trichloroethane	12.55	97	7849	0.153	ng		94
39) Isopropyl Acetate	12.99	61	7165	0.330	ng	#	77
40) 1-Butanol	13.02	56	10617	0.310	ng		88
41) Benzene	13.04	78	26243	0.183	ng		100
42) Carbon Tetrachloride	13.19	117	6568	0.145	ng		98
43) Cyclohexane	13.32	84	16809	0.321	ng		86
44) tert-Amyl Methyl Ether	13.67	73	16135	0.164	ng		82
45) 1,2-Dichloropropane	13.89	63	5877	0.174	ng		98
46) Bromodichloromethane	14.08	83	6827	0.151	ng		97
47) Trichloroethene	14.13	130	5834	0.147	ng		96
48) 1,4-Dioxane	14.12	88	4429	0.150	ng		79
49) 2,2,4-Trimethylpentane...	14.19	57	25083	0.177	ng		94

Data File: I:\MS16\DATA\2018 05\18\05181802.D
Acq On : 18 May 2018 00:57 Operator: LH
Sample : 0.1ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:29 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

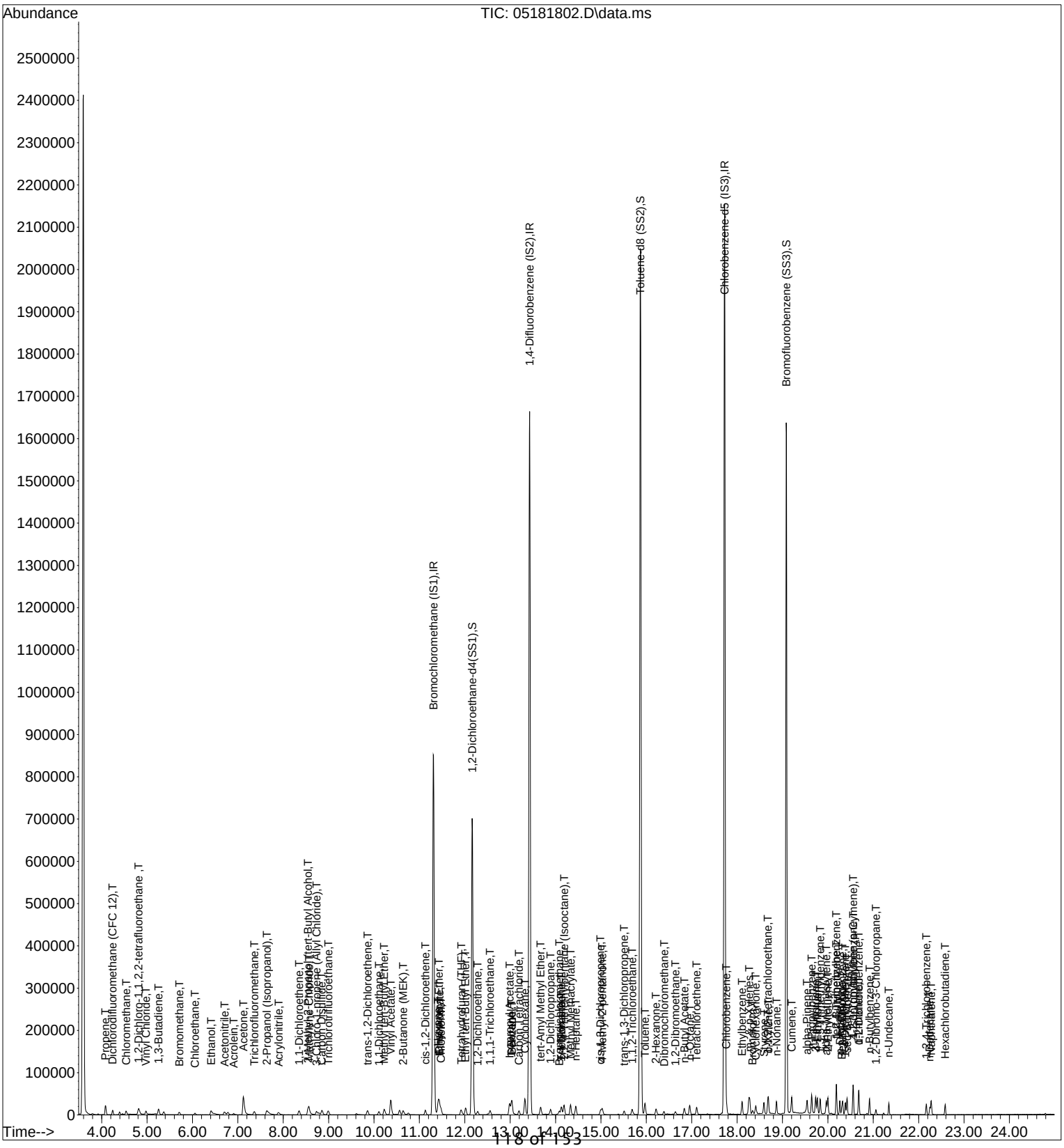
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	4119	0.288	ng	#	83
51) n-Heptane	14.45	71	5667	0.178	ng		95
52) cis-1,3-Dichloropropene	14.99	75	8283	0.155	ng		93
53) 4-Methyl-2-pentanone	15.03	58	5157	0.163	ng		82
54) trans-1,3-Dichloropropene	15.51	75	6533	0.139	ng		94
55) 1,1,2-Trichloroethane	15.69	97	5206	0.152	ng		97
58) Toluene	15.97	91	27132	0.164	ng		88
59) 2-Hexanone	16.21	43	13230	0.161	ng		83
60) Dibromochloromethane	16.39	129	5405	0.117	ng		97
61) 1,2-Dibromoethane	16.64	107	5776	0.128	ng		98
62) n-Butyl Acetate	16.84	43	14828	0.161	ng		91
63) n-Octane	16.96	57	4774	0.153	ng		88
64) Tetrachloroethene	17.11	166	5965	0.121	ng		97
65) Chlorobenzene	17.76	112	14987	0.134	ng		99
66) Ethylbenzene	18.11	91	26258	0.144	ng		96
67) m- & p-Xylenes	18.27	91	43646	0.318	ng		88
68) Bromoform	18.34	173	4081	0.103	ng		98
69) Styrene	18.59	104	14589	0.131	ng		94
70) o-Xylene	18.69	91	19917	0.140	ng		95
71) n-Nonane	18.87	43	11052	0.158	ng		87
72) 1,1,2,2-Tetrachloroethane	18.68	83	9348	0.133	ng		98
74) Cumene	19.20	105	24445	0.132	ng		98
75) alpha-Pinene	19.54	93	12361	0.132	ng	#	31
76) n-Propylbenzene	19.64	91	30135	0.139	ng		94
77) 3-Ethyltoluene	19.73	105	23448	0.126	ng		100
78) 4-Ethyltoluene	19.77	105	22744	0.134	ng		99
79) 1,3,5-Trimethylbenzene	19.83	105	19205	0.128	ng		97
80) alpha-Methylstyrene	19.97	118	9385	0.119	ng		92
81) 2-Ethyltoluene	20.00	105	24618	0.137	ng		97
82) 1,2,4-Trimethylbenzene	20.19	105	21528	0.146	ng		92
83) n-Decane	20.26	57	10684	0.144	ng		93
84) Benzyl Chloride	20.31	91	12103	0.108	ng		91
85) 1,3-Dichlorobenzene	20.32	146	12467	0.134	ng		100
86) 1,4-Dichlorobenzene	20.39	146	12798	0.136	ng		99
87) sec-Butylbenzene	20.42	105	26722	0.132	ng		98
88) 4-Isopropyltoluene (p-...	20.56	119	23054	0.124	ng		93
89) 1,2,3-Trimethylbenzene	20.56	105	18818	0.126	ng		99
90) 1,2-Dichlorobenzene	20.68	146	11805	0.134	ng		98
91) d-Limonene	20.68	68	7438	0.132	ng		89
92) 1,2-Dibromo-3-Chloropr...	21.06	157	3307	0.104	ng	#	66
93) n-Undecane	21.34	57	8729	0.118	ng		92
94) 1,2,4-Trichlorobenzene	22.17	180	8055	0.125	ng		97
95) Naphthalene	22.28	128	28708	0.136	ng		99
96) n-Dodecane	22.24	57	5877	0.090	ng		92
97) Hexachlorobutadiene	22.58	225	5017	0.107	ng		98
98) Cyclohexanone	18.41	55	8763	0.153	ng	#	91
99) tert-Butylbenzene	20.19	119	19276	0.131	ng		97
100) n-Butylbenzene	20.92	91	21522	0.135	ng		95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181802.D
Acq On : 18 May 2018 00:57 Operator: LH
Sample : 0.1ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:29 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181803.D
Acq On : 18 May 2018 1:30 Operator: LH
Sample : 0.2ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 5/18/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.31	130	378921	12.500	ng		0.00
37) 1,4-Difluorobenzene (IS2)	13.43	114	1624401	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	755818	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.16	65	544139	13.482	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.84%				
57) Toluene-d8 (SS2)	15.87	98	1638469	11.102	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 88.80%				
73) Bromofluorobenzene (SS3)	19.09	174	521835	9.795	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 78.40%				
Target Compounds							Qvalue
2) Propene	4.08	42	12233	0.315	ng		97
3) Dichlorodifluoromethan...	4.23	85	19313	0.263	ng		99
4) Chloromethane	4.53	50	17619	0.320	ng		98
5) 1,2-Dichloro-1,1,2,2-t...	4.80	135	9866	0.229	ng		98
6) Vinyl Chloride	4.97	62	16376	0.274	ng		98
7) 1,3-Butadiene	5.25	54	11819	0.283	ng		94
8) Bromomethane	5.71	94	8893	0.252	ng		98
9) Chloroethane	6.05	64	7439	0.275	ng		98
10) Ethanol	6.40	45	40345	1.558	ng		100
11) Acetonitrile	6.69	41	21203	0.318	ng		90
12) Acrolein	6.90	56	6681	0.303	ng		96
13) Acetone	7.11	58	43589	1.543	ng	#	82
14) Trichlorofluoromethane	7.36	101	15985	0.253	ng		99
15) 2-Propanol (Isopropanol)	7.62	45	53072	0.613	ng		92
16) Acrylonitrile	7.89	53	13640	0.289	ng		98
17) 1,1-Dichloroethene	8.34	96	9408	0.256	ng	#	82
18) 2-Methyl-2-Propanol (t...	8.54	59	50824	0.554	ng		94
19) Methylene Chloride	8.56	84	10893	0.273	ng		83
20) 3-Chloro-1-propene (Al...	8.74	41	14339	0.305	ng		82
21) Trichlorotrifluoroethane	8.99	151	8607	0.237	ng		90
22) Carbon Disulfide	8.85	76	38876	0.276	ng		99
23) trans-1,2-Dichloroethene	9.85	61	14460	0.286	ng		88
24) 1,1-Dichloroethane	10.11	63	17754	0.278	ng		98
25) Methyl tert-Butyl Ether	10.22	73	29688	0.276	ng		95
26) Vinyl Acetate	10.37	86	10060	1.260	ng	#	12
27) 2-Butanone (MEK)	10.64	72	7044	0.280	ng	#	60
28) cis-1,2-Dichloroethene	11.13	61	14214	0.287	ng		88
29) Diisopropyl Ether	11.42	87	8507	0.271	ng	#	55
30) Ethyl Acetate	11.44	61	7423	0.555	ng		96
31) n-Hexane	11.41	57	17744	0.312	ng		98
32) Chloroform	11.47	83	17088	0.266	ng		99
34) Tetrahydrofuran (THF)	11.92	72	7200	0.287	ng	#	80
35) Ethyl tert-Butyl Ether	12.02	87	11263	0.256	ng	#	80
36) 1,2-Dichloroethane	12.29	62	12374	0.273	ng		98
38) 1,1,1-Trichloroethane	12.55	97	14163	0.276	ng		97
39) Isopropyl Acetate	12.98	61	13262	0.611	ng	#	78
40) 1-Butanol	13.02	56	19252	0.562	ng	#	78
41) Benzene	13.04	78	45808	0.320	ng		100
42) Carbon Tetrachloride	13.19	117	11510	0.254	ng		98
43) Cyclohexane	13.32	84	30332	0.579	ng		86
44) tert-Amyl Methyl Ether	13.67	73	28280	0.287	ng		88
45) 1,2-Dichloropropane	13.89	63	10445	0.309	ng		98
46) Bromodichloromethane	14.08	83	12313	0.272	ng		99
47) Trichloroethene	14.13	130	10425	0.263	ng		98
48) 1,4-Dioxane	14.12	88	8281	0.279	ng		84
49) 2,2,4-Trimethylpentane...	14.19	57	44856	0.317	ng		97

Data File: I:\MS16\DATA\2018 05\18\05181803.D
Acq On : 18 May 2018 1:30 Operator: LH
Sample : 0.2ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

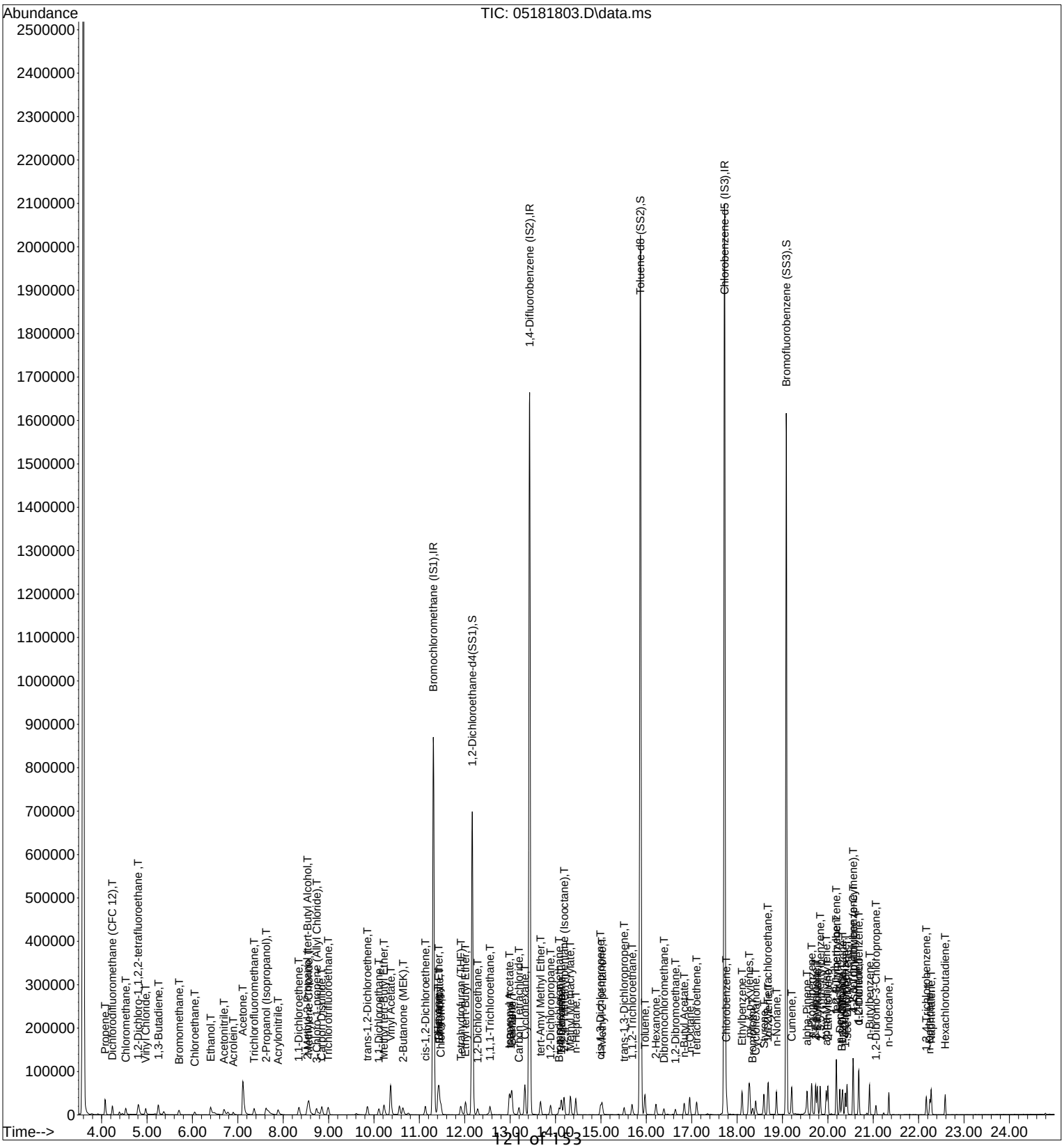
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	7458	0.522	ng	#	81
51) n-Heptane	14.45	71	9983	0.313	ng		94
52) cis-1,3-Dichloropropene	14.99	75	15385	0.287	ng		99
53) 4-Methyl-2-pentanone	15.02	58	9745	0.308	ng	#	80
54) trans-1,3-Dichloropropene	15.51	75	12135	0.258	ng		98
55) 1,1,2-Trichloroethane	15.69	97	9362	0.273	ng		94
58) Toluene	15.97	91	42274	0.258	ng		97
59) 2-Hexanone	16.21	43	23426	0.289	ng		88
60) Dibromochloromethane	16.39	129	9790	0.213	ng		98
61) 1,2-Dibromoethane	16.64	107	10430	0.234	ng		100
62) n-Butyl Acetate	16.83	43	25575	0.281	ng		93
63) n-Octane	16.96	57	8519	0.276	ng		88
64) Tetrachloroethene	17.11	166	10693	0.219	ng		99
65) Chlorobenzene	17.76	112	26343	0.238	ng		99
66) Ethylbenzene	18.11	91	44663	0.248	ng		97
67) m- & p-Xylenes	18.27	91	68935	0.508	ng		94
68) Bromoform	18.34	173	7778	0.197	ng		98
69) Styrene	18.59	104	25907	0.235	ng		98
70) o-Xylene	18.69	91	34632	0.246	ng		96
71) n-Nonane	18.87	43	20039	0.290	ng		86
72) 1,1,2,2-Tetrachloroethane	18.68	83	17491	0.252	ng		99
74) Cumene	19.20	105	44397	0.241	ng		98
75) alpha-Pinene	19.54	93	22571	0.242	ng	#	60
76) n-Propylbenzene	19.64	91	54675	0.255	ng		94
77) 3-Ethyltoluene	19.73	105	42864	0.233	ng		93
78) 4-Ethyltoluene	19.77	105	40096	0.238	ng		95
79) 1,3,5-Trimethylbenzene	19.83	105	34677	0.233	ng		96
80) alpha-Methylstyrene	19.97	118	17524	0.224	ng		97
81) 2-Ethyltoluene	20.00	105	42660	0.240	ng		96
82) 1,2,4-Trimethylbenzene	20.19	105	35587	0.243	ng		97
83) n-Decane	20.26	57	19448	0.264	ng		93
84) Benzyl Chloride	20.31	91	22111	0.200	ng		91
85) 1,3-Dichlorobenzene	20.32	146	21551	0.234	ng		100
86) 1,4-Dichlorobenzene	20.39	146	21952	0.235	ng		98
87) sec-Butylbenzene	20.42	105	48235	0.240	ng		95
88) 4-Isopropyltoluene (p-...	20.56	119	42502	0.230	ng		94
89) 1,2,3-Trimethylbenzene	20.56	105	34211	0.231	ng		99
90) 1,2-Dichlorobenzene	20.68	146	20640	0.237	ng		100
91) d-Limonene	20.68	68	13717	0.247	ng		90
92) 1,2-Dibromo-3-Chloropr...	21.06	157	6171	0.196	ng	#	66
93) n-Undecane	21.34	57	15891	0.217	ng		94
94) 1,2,4-Trichlorobenzene	22.17	180	13679	0.214	ng		99
95) Naphthalene	22.28	128	48843	0.234	ng		99
96) n-Dodecane	22.24	57	10942	0.169	ng		92
97) Hexachlorobutadiene	22.59	225	9409	0.203	ng		99
98) Cyclohexanone	18.41	55	15325	0.271	ng		91
99) tert-Butylbenzene	20.19	119	35025	0.241	ng		99
100) n-Butylbenzene	20.92	91	38926	0.246	ng		95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181803.D
Acq On : 18 May 2018 1:30 Operator: LH
Sample : 0.2ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:32 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181804.D
Acq On : 18 May 2018 2:04 Operator: LH
Sample : 0.5ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:34 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 5/18/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.31	130	338913	12.500	ng		0.00
37) 1,4-Difluorobenzene (IS2)	13.43	114	1488643	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	690094	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.16	65	486262	13.471	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 107.76%				
57) Toluene-d8 (SS2)	15.87	98	1497098	11.110	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 88.88%				
73) Bromofluorobenzene (SS3)	19.09	174	473355	9.732	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 77.84%				
Target Compounds							Qvalue
2) Propene	4.07	42	27063	0.779	ng		98
3) Dichlorodifluoromethan...	4.23	85	44376	0.677	ng		99
4) Chloromethane	4.53	50	37577	0.762	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.80	135	23146	0.600	ng		99
6) Vinyl Chloride	4.97	62	38323	0.718	ng		100
7) 1,3-Butadiene	5.24	54	26123	0.700	ng		96
8) Bromomethane	5.70	94	20330	0.644	ng		100
9) Chloroethane	6.04	64	17304	0.716	ng		98
10) Ethanol	6.40	45	88649	3.828	ng		99
11) Acetonitrile	6.69	41	47813	0.802	ng		99
12) Acrolein	6.89	56	14979	0.760	ng		99
13) Acetone	7.10	58	98532	3.900	ng		86
14) Trichlorofluoromethane	7.35	101	36965	0.654	ng		99
15) 2-Propanol (Isopropanol)	7.60	45	120405	1.554	ng		93
16) Acrylonitrile	7.88	53	32073	0.760	ng		99
17) 1,1-Dichloroethene	8.34	96	22172	0.675	ng	#	84
18) 2-Methyl-2-Propanol (t...	8.51	59	116816	1.424	ng		95
19) Methylene Chloride	8.56	84	24467	0.687	ng		83
20) 3-Chloro-1-propene (Al...	8.73	41	31156	0.740	ng		87
21) Trichlorotrifluoroethane	8.99	151	20228	0.623	ng		93
22) Carbon Disulfide	8.84	76	88840	0.706	ng		100
23) trans-1,2-Dichloroethene	9.85	61	33475	0.740	ng		89
24) 1,1-Dichloroethane	10.11	63	40738	0.714	ng		100
25) Methyl tert-Butyl Ether	10.21	73	68801	0.715	ng		97
26) Vinyl Acetate	10.37	86	23522	3.295	ng	#	20
27) 2-Butanone (MEK)	10.63	72	16274	0.723	ng	#	62
28) cis-1,2-Dichloroethene	11.13	61	32884	0.741	ng		87
29) Diisopropyl Ether	11.42	87	18996	0.676	ng	#	46
30) Ethyl Acetate	11.44	61	18251	1.526	ng		94
31) n-Hexane	11.41	57	41169	0.809	ng		98
32) Chloroform	11.48	83	39674	0.689	ng		100
34) Tetrahydrofuran (THF)	11.91	72	15985	0.711	ng	#	80
35) Ethyl tert-Butyl Ether	12.02	87	26911	0.685	ng	#	84
36) 1,2-Dichloroethane	12.29	62	28498	0.704	ng		100
38) 1,1,1-Trichloroethane	12.55	97	32719	0.695	ng		96
39) Isopropyl Acetate	12.98	61	31014	1.558	ng	#	80
40) 1-Butanol	13.01	56	46272	1.474	ng		82
41) Benzene	13.04	78	97300	0.741	ng		100
42) Carbon Tetrachloride	13.19	117	27000	0.649	ng		100
43) Cyclohexane	13.32	84	70808	1.474	ng		87
44) tert-Amyl Methyl Ether	13.67	73	65883	0.730	ng		93
45) 1,2-Dichloropropane	13.89	63	24082	0.779	ng		100
46) Bromodichloromethane	14.08	83	28975	0.698	ng		99
47) Trichloroethene	14.13	130	23949	0.660	ng		100
48) 1,4-Dioxane	14.11	88	19571	0.721	ng		89
49) 2,2,4-Trimethylpentane...	14.19	57	103302	0.796	ng		97

Data File: I:\MS16\DATA\2018 05\18\05181804.D
Acq On : 18 May 2018 2:04 Operator: LH
Sample : 0.5ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:34 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

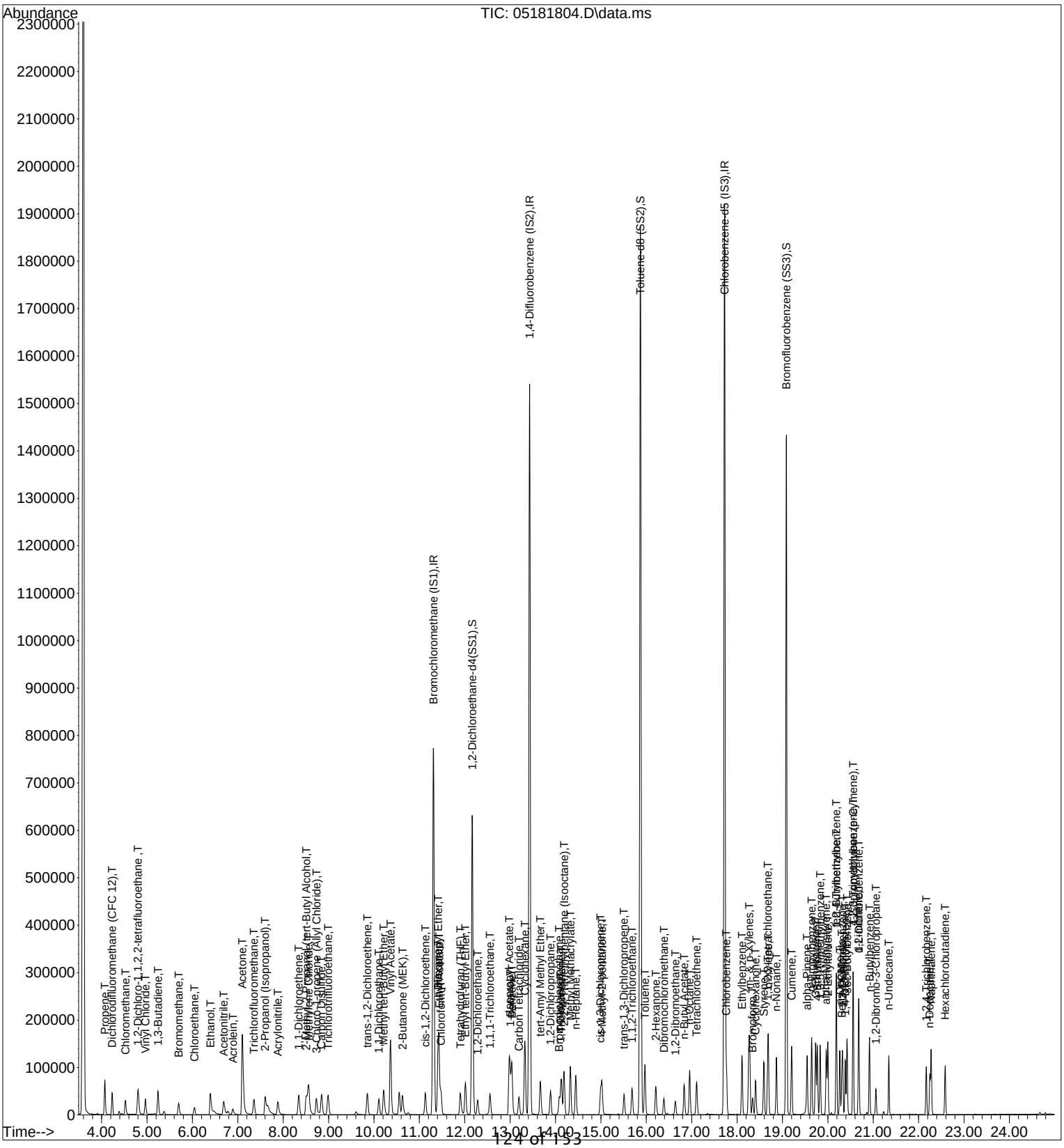
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	17568	1.342	ng	#	82
51) n-Heptane	14.45	71	23053	0.790	ng		94
52) cis-1,3-Dichloropropene	14.99	75	36222	0.737	ng		100
53) 4-Methyl-2-pentanone	15.02	58	22598	0.780	ng		83
54) trans-1,3-Dichloropropene	15.51	75	29143	0.675	ng		99
55) 1,1,2-Trichloroethane	15.68	97	22162	0.704	ng		97
58) Toluene	15.97	91	94618	0.634	ng		98
59) 2-Hexanone	16.21	43	53659	0.724	ng		92
60) Dibromochloromethane	16.39	129	23535	0.562	ng		99
61) 1,2-Dibromoethane	16.64	107	24399	0.599	ng		100
62) n-Butyl Acetate	16.83	43	59416	0.715	ng		95
63) n-Octane	16.95	57	20125	0.713	ng		87
64) Tetrachloroethene	17.11	166	25173	0.566	ng		99
65) Chlorobenzene	17.76	112	60509	0.599	ng		99
66) Ethylbenzene	18.11	91	102486	0.622	ng		96
67) m- & p-Xylenes	18.27	91	157031	1.266	ng		96
68) Bromoform	18.34	173	18426	0.512	ng		100
69) Styrene	18.59	104	60697	0.604	ng		97
70) o-Xylene	18.69	91	81365	0.634	ng		96
71) n-Nonane	18.87	43	46358	0.734	ng		89
72) 1,1,2,2-Tetrachloroethane	18.68	83	41208	0.650	ng		100
74) Cumene	19.20	105	102044	0.607	ng		98
75) alpha-Pinene	19.54	93	51922	0.611	ng		79
76) n-Propylbenzene	19.64	91	124976	0.638	ng		94
77) 3-Ethyltoluene	19.73	105	100399	0.597	ng		92
78) 4-Ethyltoluene	19.77	105	93229	0.606	ng		96
79) 1,3,5-Trimethylbenzene	19.83	105	80879	0.595	ng		98
80) alpha-Methylstyrene	19.96	118	42405	0.593	ng		93
81) 2-Ethyltoluene	20.00	105	100215	0.618	ng		96
82) 1,2,4-Trimethylbenzene	20.19	105	82220	0.615	ng		98
83) n-Decane	20.26	57	45353	0.673	ng		94
84) Benzyl Chloride	20.31	91	55808	0.552	ng		91
85) 1,3-Dichlorobenzene	20.32	146	49298	0.587	ng		99
86) 1,4-Dichlorobenzene	20.39	146	50400	0.590	ng		99
87) sec-Butylbenzene	20.42	105	112486	0.614	ng		97
88) 4-Isopropyltoluene (p-...	20.56	119	100077	0.594	ng		97
89) 1,2,3-Trimethylbenzene	20.56	105	80823	0.597	ng		97
90) 1,2-Dichlorobenzene	20.68	146	47714	0.599	ng		100
91) d-Limonene	20.68	68	32750	0.645	ng		93
92) 1,2-Dibromo-3-Chloropr...	21.06	157	15566	0.540	ng	#	71
93) n-Undecane	21.34	57	38502	0.575	ng		93
94) 1,2,4-Trichlorobenzene	22.17	180	32546	0.558	ng		98
95) Naphthalene	22.28	128	114915	0.603	ng		99
96) n-Dodecane	22.24	57	27658	0.467	ng		92
97) Hexachlorobutadiene	22.59	225	21625	0.511	ng		100
98) Cyclohexanone	18.41	55	35675	0.690	ng	#	91
99) tert-Butylbenzene	20.19	119	80587	0.606	ng		98
100) n-Butylbenzene	20.92	91	91158	0.631	ng		97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181804.D
Acq On : 18 May 2018 2:04 Operator: LH
Sample : 0.5ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161805 (6/14)
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 10:31:34 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181805.D
Acq On : 18 May 2018 2:37 Operator: LH
Sample : 1.0ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161803 (6/14)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 10:31:36 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS) LH 5/18/18
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.31	130	377272	12.500	ng		0.00
37) 1,4-Difluorobenzene (IS2)	13.43	114	1569608	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	731098	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.17	65	528631	13.155	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 105.28%				
57) Toluene-d8 (SS2)	15.87	98	1579663	11.065	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 88.56%				
73) Bromofluorobenzene (SS3)	19.09	174	505261	9.805	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 78.40%				
Target Compounds							Qvalue
2) Propene	4.06	42	53574	1.384	ng		99
3) Dichlorodifluoromethan...	4.22	85	86809	1.189	ng		100
4) Chloromethane	4.52	50	79315	1.445	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.80	135	45554	1.061	ng		99
6) Vinyl Chloride	4.96	62	75939	1.278	ng		99
7) 1,3-Butadiene	5.24	54	56429	1.358	ng		96
8) Bromomethane	5.69	94	40954	1.165	ng		100
9) Chloroethane	6.04	64	34815	1.294	ng		98
10) Ethanol	6.40	45	191864	7.443	ng		100
11) Acetonitrile	6.68	41	98496	1.484	ng		99
12) Acrolein	6.88	56	31802	1.450	ng		100
13) Acetone	7.09	58	196655	6.992	ng		87
14) Trichlorofluoromethane	7.35	101	70821	1.125	ng		100
15) 2-Propanol (Isopropanol)	7.60	45	251315	2.914	ng		96
16) Acrylonitrile	7.88	53	67956	1.446	ng		98
17) 1,1-Dichloroethene	8.34	96	43965	1.202	ng	#	82
18) 2-Methyl-2-Propanol (t...	8.50	59	241943	2.649	ng		95
19) Methylene Chloride	8.56	84	48295	1.218	ng		82
20) 3-Chloro-1-propene (Al...	8.73	41	66725	1.424	ng		88
21) Trichlorotrifluoroethane	8.99	151	39578	1.095	ng		90
22) Carbon Disulfide	8.84	76	177521	1.267	ng		100
23) trans-1,2-Dichloroethene	9.85	61	69297	1.376	ng		87
24) 1,1-Dichloroethane	10.11	63	81538	1.283	ng		99
25) Methyl tert-Butyl Ether	10.21	73	137593	1.284	ng		96
26) Vinyl Acetate	10.36	86	50185	6.315	ng	#	25
27) 2-Butanone (MEK)	10.62	72	32016	1.279	ng	#	69
28) cis-1,2-Dichloroethene	11.13	61	66696	1.350	ng		87
29) Diisopropyl Ether	11.42	87	36937	1.180	ng	#	48
30) Ethyl Acetate	11.43	61	35714	2.682	ng		93
31) n-Hexane	11.41	57	75505	1.334	ng		99
32) Chloroform	11.48	83	78806	1.230	ng		100
34) Tetrahydrofuran (THF)	11.90	72	31829	1.272	ng	#	81
35) Ethyl tert-Butyl Ether	12.02	87	52760	1.206	ng	#	83
36) 1,2-Dichloroethane	12.29	62	56585	1.256	ng		100
38) 1,1,1-Trichloroethane	12.56	97	64657	1.302	ng		96
39) Isopropyl Acetate	12.98	61	60144	2.866	ng	#	75
40) 1-Butanol	13.00	56	108131	3.266	ng		87
41) Benzene	13.04	78	186946	1.350	ng		100
42) Carbon Tetrachloride	13.19	117	54324	1.238	ng		99
43) Cyclohexane	13.32	84	138868	2.741	ng		87
44) tert-Amyl Methyl Ether	13.67	73	130342	1.370	ng		94
45) 1,2-Dichloropropane	13.89	63	46777	1.434	ng		99
46) Bromodichloromethane	14.08	83	58664	1.340	ng		98
47) Trichloroethene	14.13	130	47433	1.240	ng		100
48) 1,4-Dioxane	14.11	88	38382	1.341	ng		88
49) 2,2,4-Trimethylpentane...	14.19	57	205126	1.499	ng		97

Data File: I:\MS16\DATA\2018 05\18\05181805.D
Acq On : 18 May 2018 2:37 Operator: LH
Sample : 1.0ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161803 (6/14)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 10:31:36 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

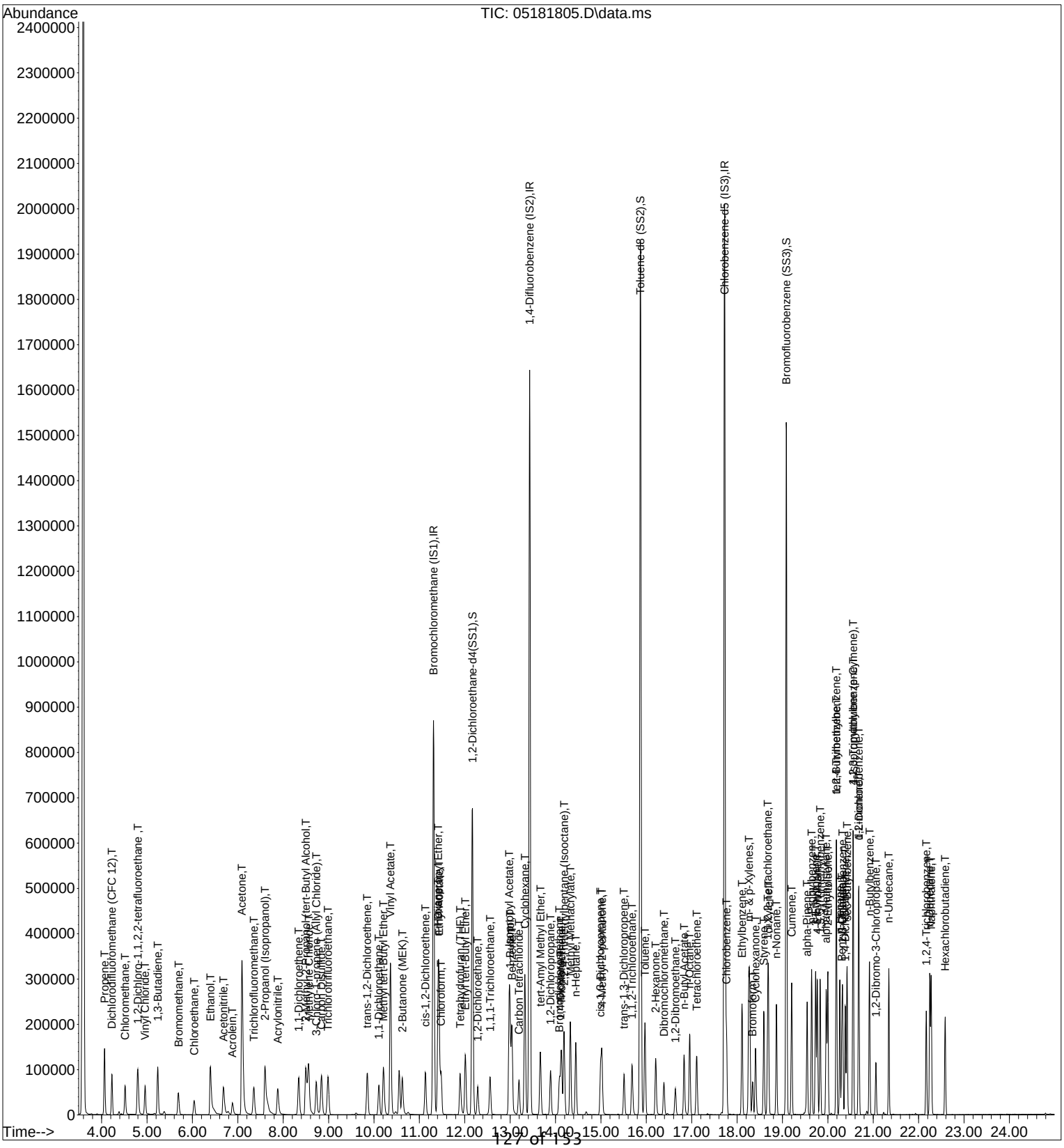
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	35401	2.564	ng	#	83
51) n-Heptane	14.45	71	42963	1.396	ng		91
52) cis-1,3-Dichloropropene	14.99	75	73782	1.424	ng		100
53) 4-Methyl-2-pentanone	15.02	58	45622	1.493	ng		86
54) trans-1,3-Dichloropropene	15.51	75	60684	1.334	ng		100
55) 1,1,2-Trichloroethane	15.68	97	43646	1.315	ng		97
58) Toluene	15.97	91	181590	1.148	ng		98
59) 2-Hexanone	16.21	43	109315	1.392	ng		91
60) Dibromochloromethane	16.39	129	47750	1.076	ng		100
61) 1,2-Dibromoethane	16.64	107	49200	1.141	ng		99
62) n-Butyl Acetate	16.83	43	120833	1.372	ng		95
63) n-Octane	16.95	57	38862	1.300	ng		88
64) Tetrachloroethene	17.11	166	48538	1.029	ng		99
65) Chlorobenzene	17.77	112	119867	1.119	ng		100
66) Ethylbenzene	18.11	91	202355	1.160	ng		97
67) m- & p-Xylenes	18.26	91	312022	2.375	ng		97
68) Bromoform	18.34	173	38900	1.020	ng		99
69) Styrene	18.59	104	124715	1.171	ng		97
70) o-Xylene	18.69	91	162024	1.191	ng		97
71) n-Nonane	18.87	43	93100	1.391	ng		89
72) 1,1,2,2-Tetrachloroethane	18.68	83	83896	1.250	ng		99
74) Cumene	19.20	105	202797	1.139	ng		98
75) alpha-Pinene	19.54	93	102922	1.143	ng		91
76) n-Propylbenzene	19.64	91	251791	1.214	ng		96
77) 3-Ethyltoluene	19.73	105	203823	1.143	ng		93
78) 4-Ethyltoluene	19.77	105	193341	1.187	ng		97
79) 1,3,5-Trimethylbenzene	19.83	105	166765	1.157	ng		97
80) alpha-Methylstyrene	19.96	118	87572	1.156	ng		99
81) 2-Ethyltoluene	20.00	105	205069	1.193	ng		97
82) 1,2,4-Trimethylbenzene	20.19	105	170976	1.206	ng		98
83) n-Decane	20.26	57	98226	1.377	ng		93
84) Benzyl Chloride	20.31	91	127218	1.187	ng		93
85) 1,3-Dichlorobenzene	20.32	146	101859	1.145	ng		99
86) 1,4-Dichlorobenzene	20.39	146	105173	1.163	ng		98
87) sec-Butylbenzene	20.42	105	230277	1.186	ng		97
88) 4-Isopropyltoluene (p-...	20.56	119	208356	1.167	ng		97
89) 1,2,3-Trimethylbenzene	20.56	105	168332	1.173	ng		98
90) 1,2-Dichlorobenzene	20.68	146	99371	1.178	ng		100
91) d-Limonene	20.68	68	67710	1.258	ng		91
92) 1,2-Dibromo-3-Chloropr...	21.06	157	33516	1.098	ng	#	75
93) n-Undecane	21.34	57	101282	1.428	ng		93
94) 1,2,4-Trichlorobenzene	22.17	180	74623	1.208	ng		100
95) Naphthalene	22.28	128	252119	1.248	ng		99
96) n-Dodecane	22.24	57	99544	1.586	ng		92
97) Hexachlorobutadiene	22.58	225	45001	1.003	ng		100
98) Cyclohexanone	18.41	55	74201	1.355	ng		91
99) tert-Butylbenzene	20.19	119	163681	1.163	ng		97
100) n-Butylbenzene	20.92	91	189635	1.240	ng		96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181805.D
Acq On : 18 May 2018 2:37 Operator: LH
Sample : 1.0ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161803 (6/14)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 10:31:36 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181806.D
Acq On : 18 May 2018 3:10 Operator: LH
Sample : 5.0ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161803 (6/14)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 10:31:38 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018 LH 5/18/18
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.32	130	337237	12.500	ng		0.01
37) 1,4-Difluorobenzene (IS2)	13.43	114	1470901	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	676395	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.17	65	479134	13.339	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 106.72%				
57) Toluene-d8 (SS2)	15.87	98	1475745	11.173	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.36%				
73) Bromofluorobenzene (SS3)	19.09	174	468598	9.829	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 78.64%				
Target Compounds							Qvalue
2) Propene	4.05	42	255566	7.388	ng		99
3) Dichlorodifluoromethan...	4.22	85	394515	6.047	ng		99
4) Chloromethane	4.51	50	314027	6.400	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.79	135	205414	5.353	ng		100
6) Vinyl Chloride	4.95	62	342398	6.447	ng		99
7) 1,3-Butadiene	5.23	54	252620	6.800	ng		97
8) Bromomethane	5.69	94	183441	5.839	ng		99
9) Chloroethane	6.04	64	155814	6.481	ng		100
10) Ethanol	6.41	45	838095	36.370	ng		100
11) Acetonitrile	6.69	41	439468	7.409	ng		99
12) Acrolein	6.89	56	147287	7.515	ng		100
13) Acetone	7.09	58	876470	34.863	ng		89
14) Trichlorofluoromethane	7.35	101	329031	5.848	ng		99
15) 2-Propanol (Isopropanol)	7.61	45	1097896	14.241	ng		100
16) Acrylonitrile	7.89	53	308222	7.340	ng		100
17) 1,1-Dichloroethene	8.34	96	202666	6.199	ng		85
18) 2-Methyl-2-Propanol (t...	8.50	59	1122480	13.751	ng		97
19) Methylene Chloride	8.57	84	216992	6.120	ng		82
20) 3-Chloro-1-propene (Al...	8.73	41	310268	7.405	ng		88
21) Trichlorotrifluoroethane	8.99	151	178679	5.528	ng		89
22) Carbon Disulfide	8.84	76	809690	6.467	ng		100
23) trans-1,2-Dichloroethene	9.86	61	313965	6.975	ng		88
24) 1,1-Dichloroethane	10.11	63	369748	6.510	ng		99
25) Methyl tert-Butyl Ether	10.20	73	628110	6.556	ng		96
26) Vinyl Acetate	10.37	86	236166	33.247	ng	#	32
27) 2-Butanone (MEK)	10.62	72	151220	6.756	ng	#	72
28) cis-1,2-Dichloroethene	11.14	61	299357	6.781	ng		88
29) Diisopropyl Ether	11.42	87	165761	5.926	ng	#	42
30) Ethyl Acetate	11.43	61	170361	14.311	ng		94
31) n-Hexane	11.41	57	353916	6.994	ng		99
32) Chloroform	11.49	83	357840	6.250	ng		100
34) Tetrahydrofuran (THF)	11.89	72	148088	6.623	ng	#	84
35) Ethyl tert-Butyl Ether	12.01	87	241804	6.182	ng	#	83
36) 1,2-Dichloroethane	12.29	62	255254	6.339	ng		99
38) 1,1,1-Trichloroethane	12.56	97	296460	6.371	ng		97
39) Isopropyl Acetate	12.98	61	283586	14.418	ng	#	78
40) 1-Butanol	12.99	56	530053	17.083	ng		94
41) Benzene	13.04	78	848621	6.538	ng		100
42) Carbon Tetrachloride	13.20	117	251656	6.122	ng		100
43) Cyclohexane	13.32	84	634554	13.366	ng		87
44) tert-Amyl Methyl Ether	13.67	73	603689	6.771	ng		95
45) 1,2-Dichloropropane	13.89	63	218157	7.138	ng		99
46) Bromodichloromethane	14.08	83	277201	6.755	ng		99
47) Trichloroethene	14.13	130	218631	6.099	ng		99
48) 1,4-Dioxane	14.11	88	180941	6.744	ng		89
49) 2,2,4-Trimethylpentane...	14.19	57	931329	7.261	ng		98

Data File: I:\MS16\DATA\2018 05\18\05181806.D
Acq On : 18 May 2018 3:10 Operator: LH
Sample : 5.0ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161803 (6/14)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 10:31:38 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

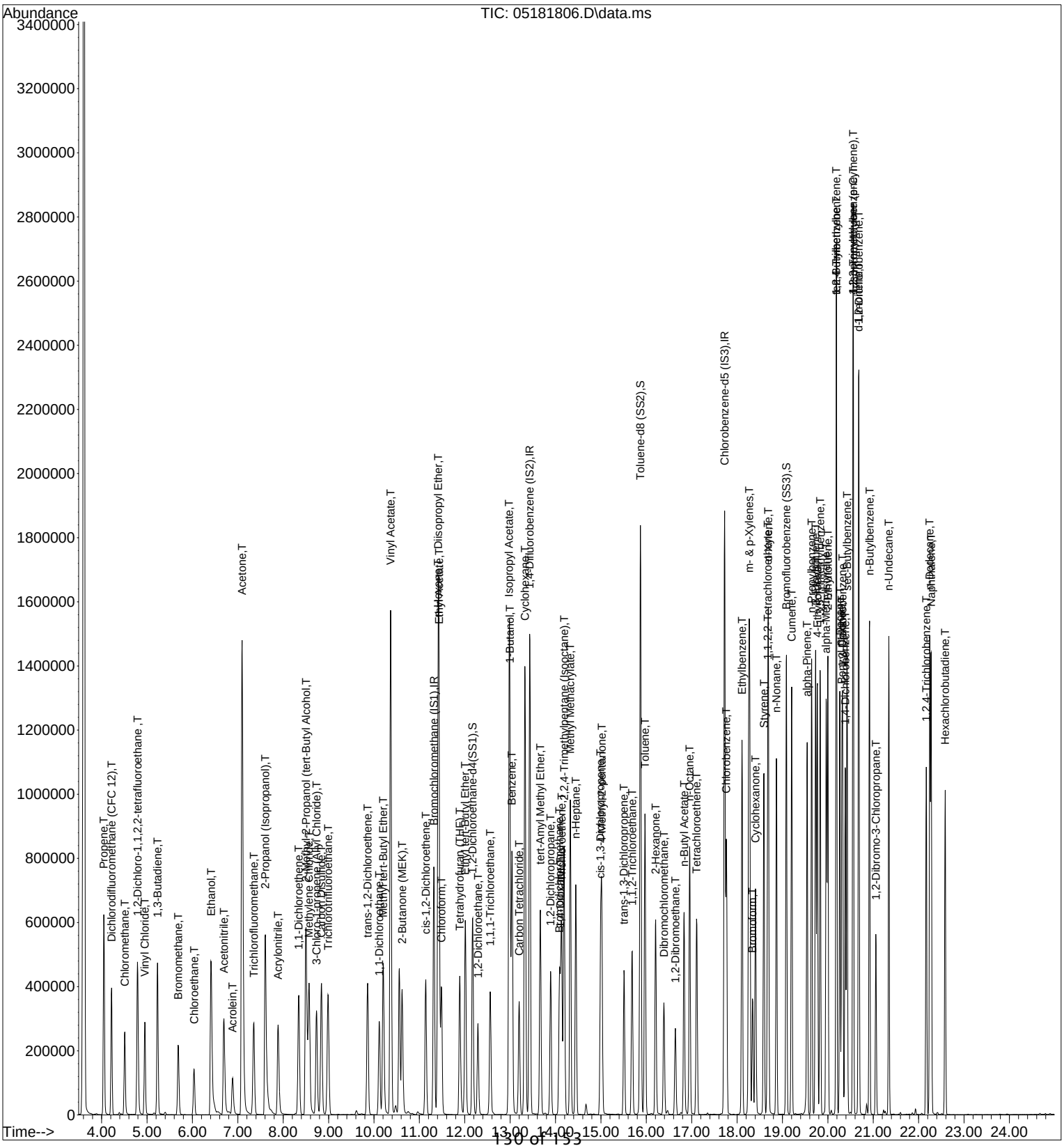
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	169058	13.065	ng	#	83
51) n-Heptane	14.45	71	197608	6.851	ng		93
52) cis-1,3-Dichloropropene	14.99	75	360725	7.429	ng		100
53) 4-Methyl-2-pentanone	15.02	58	212958	7.435	ng		89
54) trans-1,3-Dichloropropene	15.51	75	302964	7.107	ng		100
55) 1,1,2-Trichloroethane	15.69	97	203788	6.552	ng		96
58) Toluene	15.97	91	826183	5.644	ng		100
59) 2-Hexanone	16.21	43	502311	6.913	ng		94
60) Dibromochloromethane	16.39	129	233850	5.698	ng		100
61) 1,2-Dibromoethane	16.64	107	230930	5.789	ng		100
62) n-Butyl Acetate	16.83	43	563375	6.914	ng		96
63) n-Octane	16.95	57	179998	6.509	ng		88
64) Tetrachloroethene	17.11	166	226245	5.187	ng		100
65) Chlorobenzene	17.76	112	549386	5.544	ng		100
66) Ethylbenzene	18.11	91	941574	5.833	ng		97
67) m- & p-Xylenes	18.27	91	1431525	11.778	ng		97
68) Bromoform	18.34	173	196220	5.561	ng		100
69) Styrene	18.59	104	590406	5.990	ng		98
70) o-Xylene	18.69	91	734191	5.834	ng		97
71) n-Nonane	18.87	43	425236	6.869	ng		90
72) 1,1,2,2-Tetrachloroethane	18.68	83	386437	6.221	ng		99
74) Cumene	19.20	105	933543	5.669	ng		98
75) alpha-Pinene	19.54	93	493489	5.923	ng		96
76) n-Propylbenzene	19.64	91	1147518	5.981	ng		96
77) 3-Ethyltoluene	19.73	105	937359	5.683	ng		93
78) 4-Ethyltoluene	19.77	105	878840	5.832	ng		97
79) 1,3,5-Trimethylbenzene	19.83	105	764915	5.738	ng		98
80) alpha-Methylstyrene	19.96	118	418626	5.971	ng		93
81) 2-Ethyltoluene	20.00	105	920227	5.788	ng		98
82) 1,2,4-Trimethylbenzene	20.19	105	778275	5.935	ng		99
83) n-Decane	20.26	57	446205	6.759	ng		93
84) Benzyl Chloride	20.31	91	670249	6.760	ng		95
85) 1,3-Dichlorobenzene	20.32	146	465390	5.655	ng		100
86) 1,4-Dichlorobenzene	20.39	146	476440	5.694	ng		100
87) sec-Butylbenzene	20.42	105	1043277	5.809	ng		98
88) 4-Isopropyltoluene (p-...	20.56	119	951502	5.758	ng		98
89) 1,2,3-Trimethylbenzene	20.56	105	770616	5.804	ng		98
90) 1,2-Dichlorobenzene	20.68	146	456577	5.849	ng		100
91) d-Limonene	20.68	68	319488	6.416	ng		91
92) 1,2-Dibromo-3-Chloropr...	21.06	157	166826	5.909	ng		82
93) n-Undecane	21.34	57	476188	7.258	ng		93
94) 1,2,4-Trichlorobenzene	22.17	180	356852	6.243	ng		100
95) Naphthalene	22.28	128	1195079	6.393	ng		100
96) n-Dodecane	22.24	57	482184	8.305	ng		92
97) Hexachlorobutadiene	22.59	225	212510	5.120	ng		100
98) Cyclohexanone	18.41	55	338412	6.680	ng		92
99) tert-Butylbenzene	20.19	119	752572	5.777	ng		97
100) n-Butylbenzene	20.92	91	870818	6.153	ng		97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181806.D
Acq On : 18 May 2018 3:10 Operator: LH
Sample : 5.0ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161803 (6/14)
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 10:31:38 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181807.D
Acq On : 18 May 2018 3:43 Operator: LH
Sample : 25ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:40 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 5/18/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.33	130	350770	12.500	ng		0.02
37) 1,4-Difluorobenzene (IS2)	13.44	114	1489721	12.500	ng		0.01
56) Chlorobenzene-d5 (IS3)	17.72	82	684390	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.18	65	489539	13.103	ng		0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 104.80%				
57) Toluene-d8 (SS2)	15.87	98	1485352	11.115	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 88.88%				
73) Bromofluorobenzene (SS3)	19.09	174	476032	9.868	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 78.96%				
Target Compounds							Qvalue
2) Propene	4.05	42	1183133	32.884	ng		99
3) Dichlorodifluoromethan...	4.21	85	1934695	28.511	ng		100
4) Chloromethane	4.52	50	1701686	33.343	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.79	135	1023887	25.651	ng		100
6) Vinyl Chloride	4.95	62	1680632	30.422	ng		100
7) 1,3-Butadiene	5.24	54	1294318	33.495	ng		97
8) Bromomethane	5.70	94	930521	28.478	ng		99
9) Chloroethane	6.04	64	782191	31.281	ng		100
10) Ethanol	6.45	45	4333702	180.809	ng		100
11) Acetonitrile	6.72	41	2210229	35.823	ng		99
12) Acrolein	6.90	56	719568	35.298	ng		100
13) Acetone	7.12	58	4188057	160.159	ng		94
14) Trichlorofluoromethane	7.35	101	1608237	27.483	ng		100
15) 2-Propanol (Isopropanol)	7.63	45	5853135	72.993	ng		99
16) Acrylonitrile	7.91	53	1568412	35.907	ng		100
17) 1,1-Dichloroethene	8.35	96	1029265	30.269	ng		87
18) 2-Methyl-2-Propanol (t...	8.52	59	5626275	66.266	ng		98
19) Methylene Chloride	8.59	84	1093372	29.647	ng		84
20) 3-Chloro-1-propene (Al...	8.74	41	1617706	37.121	ng		89
21) Trichlorotrifluoroethane	8.99	151	898534	26.727	ng		91
22) Carbon Disulfide	8.85	76	4088090	31.392	ng		100
23) trans-1,2-Dichloroethene	9.87	61	1583894	33.832	ng		89
24) 1,1-Dichloroethane	10.13	63	1842372	31.184	ng		99
25) Methyl tert-Butyl Ether	10.21	73	3114040	31.247	ng		96
26) Vinyl Acetate	10.38	86	1242959	168.231	ng	#	54
27) 2-Butanone (MEK)	10.62	72	750966	32.256	ng	#	76
28) cis-1,2-Dichloroethene	11.15	61	1506761	32.815	ng		89
29) Diisopropyl Ether	11.42	87	817082	28.084	ng	#	53
30) Ethyl Acetate	11.44	61	844218	68.180	ng		95
31) n-Hexane	11.42	57	1629230	30.952	ng		99
32) Chloroform	11.50	83	1788219	30.026	ng		99
34) Tetrahydrofuran (THF)	11.89	72	752775	32.369	ng	#	86
35) Ethyl tert-Butyl Ether	12.02	87	1217681	29.929	ng	#	85
36) 1,2-Dichloroethane	12.30	62	1265427	30.214	ng		100
38) 1,1,1-Trichloroethane	12.57	97	1481631	31.436	ng		97
39) Isopropyl Acetate	12.98	61	1415788	71.074	ng	#	87
40) 1-Butanol	13.01	56	2483923	79.043	ng		95
41) Benzene	13.05	78	4142353	31.511	ng		100
42) Carbon Tetrachloride	13.20	117	1284966	30.865	ng		100
43) Cyclohexane	13.33	84	3146762	65.445	ng		87
44) tert-Amyl Methyl Ether	13.67	73	3031851	33.577	ng		96
45) 1,2-Dichloropropane	13.90	63	1080042	34.894	ng		99
46) Bromodichloromethane	14.09	83	1408134	33.882	ng		99
47) Trichloroethene	14.13	130	1094982	30.161	ng		99
48) 1,4-Dioxane	14.11	88	911363	33.539	ng		89
49) 2,2,4-Trimethylpentane...	14.19	57	4613562	35.515	ng		99

Data File: I:\MS16\DATA\2018 05\18\05181807.D
Acq On : 18 May 2018 3:43 Operator: LH
Sample : 25ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:40 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

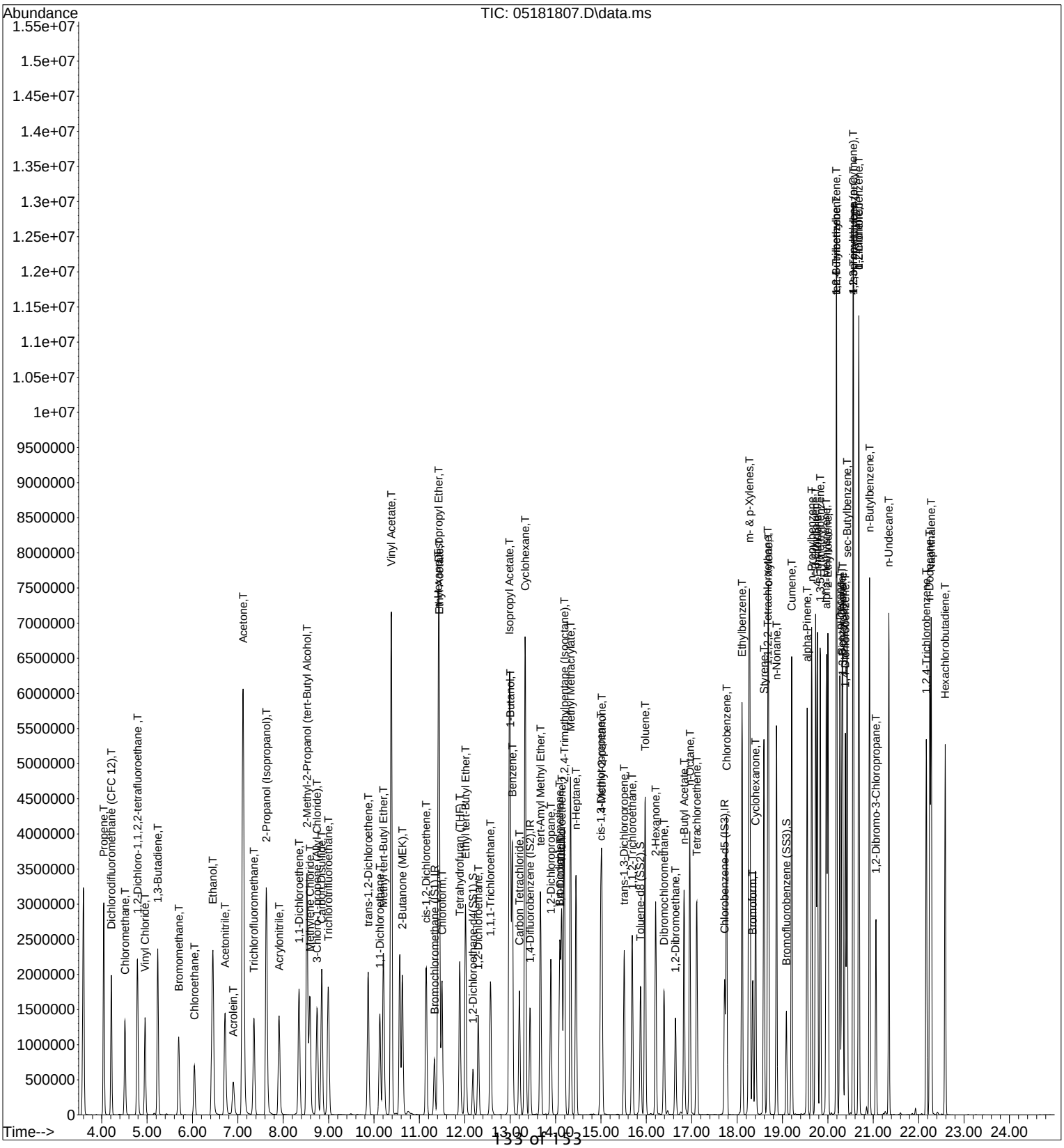
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	848843	64.772	ng	#	84
51) n-Heptane	14.45	71	948819	32.481	ng		93
52) cis-1,3-Dichloropropene	15.00	75	1839602	37.407	ng		100
53) 4-Methyl-2-pentanone	15.02	58	1067308	36.793	ng		91
54) trans-1,3-Dichloropropene	15.51	75	1571023	36.388	ng		100
55) 1,1,2-Trichloroethane	15.69	97	1019962	32.378	ng		95
58) Toluene	15.98	91	4056046	27.383	ng		100
59) 2-Hexanone	16.21	43	2457070	33.422	ng		95
60) Dibromochloromethane	16.39	129	1206888	29.065	ng		100
61) 1,2-Dibromoethane	16.64	107	1171542	29.025	ng		99
62) n-Butyl Acetate	16.83	43	2816824	34.167	ng		96
63) n-Octane	16.96	57	887908	31.732	ng		89
64) Tetrachloroethene	17.11	166	1139431	25.816	ng		100
65) Chlorobenzene	17.77	112	2721934	27.148	ng		100
66) Ethylbenzene	18.11	91	4678808	28.649	ng		98
67) m- & p-Xylenes	18.27	91	7065521	57.452	ng		97
68) Bromoform	18.35	173	1052235	29.472	ng		100
69) Styrene	18.59	104	2979325	29.874	ng		98
70) o-Xylene	18.69	91	3623235	28.456	ng		98
71) n-Nonane	18.87	43	2062372	32.924	ng		92
72) 1,1,2,2-Tetrachloroethane	18.68	83	1935271	30.791	ng		99
74) Cumene	19.20	105	4638799	27.840	ng		98
75) alpha-Pinene	19.54	93	2452489	29.094	ng		99
76) n-Propylbenzene	19.64	91	5638733	29.047	ng		97
77) 3-Ethyltoluene	19.73	105	4914113	29.447	ng		93
78) 4-Ethyltoluene	19.77	105	4035481	26.468	ng		96
79) 1,3,5-Trimethylbenzene	19.83	105	3764587	27.912	ng		98
80) alpha-Methylstyrene	19.97	118	2078700	29.305	ng		99
81) 2-Ethyltoluene	20.00	105	4492671	27.929	ng		98
82) 1,2,4-Trimethylbenzene	20.19	105	3807627	28.699	ng		98
83) n-Decane	20.26	57	2154992	32.261	ng		94
84) Benzyl Chloride	20.31	91	3586253	35.746	ng		96
85) 1,3-Dichlorobenzene	20.33	146	2317030	27.823	ng		99
86) 1,4-Dichlorobenzene	20.39	146	2328971	27.509	ng		100
87) sec-Butylbenzene	20.42	105	5066975	27.882	ng		98
88) 4-Isopropyltoluene (p-...	20.56	119	4494042	26.878	ng		98
89) 1,2,3-Trimethylbenzene	20.56	105	3731398	27.774	ng		97
90) 1,2-Dichlorobenzene	20.68	146	2214233	28.033	ng		100
91) d-Limonene	20.68	68	1562485	31.011	ng		92
92) 1,2-Dibromo-3-Chloropr...	21.06	157	853331	29.873	ng		85
93) n-Undecane	21.34	57	2320164	34.949	ng		94
94) 1,2,4-Trichlorobenzene	22.17	180	1787499	30.905	ng		100
95) Naphthalene	22.28	128	5616477	29.696	ng		100
96) n-Dodecane	22.24	57	2249732	38.294	ng		93
97) Hexachlorobutadiene	22.58	225	1097780	26.140	ng		100
98) Cyclohexanone	18.41	55	1665031	32.481	ng		93
99) tert-Butylbenzene	20.19	119	3592432	27.256	ng		98
100) n-Butylbenzene	20.92	91	4206352	29.376	ng		98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181807.D
Acq On : 18 May 2018 3:43 Operator: LH
Sample : 25ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:40 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181808.D
Acq On : 18 May 2018 4:16 Operator: LH
Sample : 50ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:43 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 5/18/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.33	130	357584	12.500	ng		0.02
37) 1,4-Difluorobenzene (IS2)	13.44	114	1536141	12.500	ng		0.01
56) Chlorobenzene-d5 (IS3)	17.72	82	706093	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.19	65	494390	12.981	ng		0.02
Spiked Amount 12.500	Range 70 - 130		Recovery = 103.84%				
57) Toluene-d8 (SS2)	15.88	98	1534540	11.130	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.04%				
73) Bromofluorobenzene (SS3)	19.09	174	483691	9.719	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 77.76%				
Target Compounds							Qvalue
2) Propene	4.04	42	2360493	64.358	ng		99
3) Dichlorodifluoromethan...	4.20	85	3636913	52.576	ng		100
4) Chloromethane	4.51	50	2998591	57.635	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.78	135	1962666	48.233	ng		100
6) Vinyl Chloride	4.96	62	3193427	56.705	ng		100
7) 1,3-Butadiene	5.24	54	2448285	62.150	ng		98
8) Bromomethane	5.70	94	1799273	54.017	ng		99
9) Chloroethane	6.04	64	1521338	59.681	ng		99
10) Ethanol	6.48	45	8142184	333.232	ng		100
11) Acetonitrile	6.73	41	4292754	68.251	ng		99
12) Acrolein	6.90	56	1401914	67.460	ng		100
13) Acetone	7.13	58	7636279	286.461	ng		99
14) Trichlorofluoromethane	7.35	101	3118063	52.268	ng		100
15) 2-Propanol (Isopropanol)	7.64	45	10344835	126.550	ng		99
16) Acrylonitrile	7.92	53	3040215	68.276	ng		100
17) 1,1-Dichloroethene	8.35	96	1999963	57.695	ng		88
18) 2-Methyl-2-Propanol (t...	8.54	59	10694224	123.556	ng		98
19) Methylene Chloride	8.60	84	2122517	56.455	ng		85
20) 3-Chloro-1-propene (Al...	8.75	41	3149107	70.885	ng		89
21) Trichlorotrifluoroethane	8.99	151	1755597	51.226	ng		91
22) Carbon Disulfide	8.85	76	7820948	58.912	ng		100
23) trans-1,2-Dichloroethene	9.87	61	3090131	64.747	ng		89
24) 1,1-Dichloroethane	10.14	63	3588295	59.579	ng		99
25) Methyl tert-Butyl Ether	10.21	73	6048886	59.540	ng		95
26) Vinyl Acetate	10.39	86	2368394	314.447	ng	#	92
27) 2-Butanone (MEK)	10.63	72	1462906	61.638	ng	#	79
28) cis-1,2-Dichloroethene	11.15	61	2916353	62.303	ng		90
29) Diisopropyl Ether	11.43	87	1552414	52.342	ng	#	64
30) Ethyl Acetate	11.44	61	1591204	126.058	ng		97
31) n-Hexane	11.42	57	3105970	57.883	ng		99
32) Chloroform	11.50	83	3445168	56.745	ng		99
34) Tetrahydrofuran (THF)	11.89	72	1469332	61.976	ng	#	87
35) Ethyl tert-Butyl Ether	12.02	87	2374884	57.260	ng	#	86
36) 1,2-Dichloroethane	12.30	62	2448629	57.351	ng		100
38) 1,1,1-Trichloroethane	12.57	97	2892134	59.509	ng		97
39) Isopropyl Acetate	12.98	61	2716231	132.236	ng		93
40) 1-Butanol	13.02	56	4693244	144.835	ng		96
41) Benzene	13.05	78	7920346	58.429	ng		100
42) Carbon Tetrachloride	13.20	117	2504353	58.337	ng		100
43) Cyclohexane	13.34	84	5976072	120.533	ng		89
44) tert-Amyl Methyl Ether	13.67	73	5893279	63.294	ng		96
45) 1,2-Dichloropropane	13.90	63	2128354	66.684	ng		99
46) Bromodichloromethane	14.09	83	2749515	64.159	ng		99
47) Trichloroethene	14.14	130	2135770	57.052	ng		99
48) 1,4-Dioxane	14.11	88	1785146	63.710	ng		89
49) 2,2,4-Trimethylpentane...	14.19	57	8714906	65.061	ng		99

Data File: I:\MS16\DATA\2018 05\18\05181808.D
Acq On : 18 May 2018 4:16 Operator: LH
Sample : 50ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:43 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

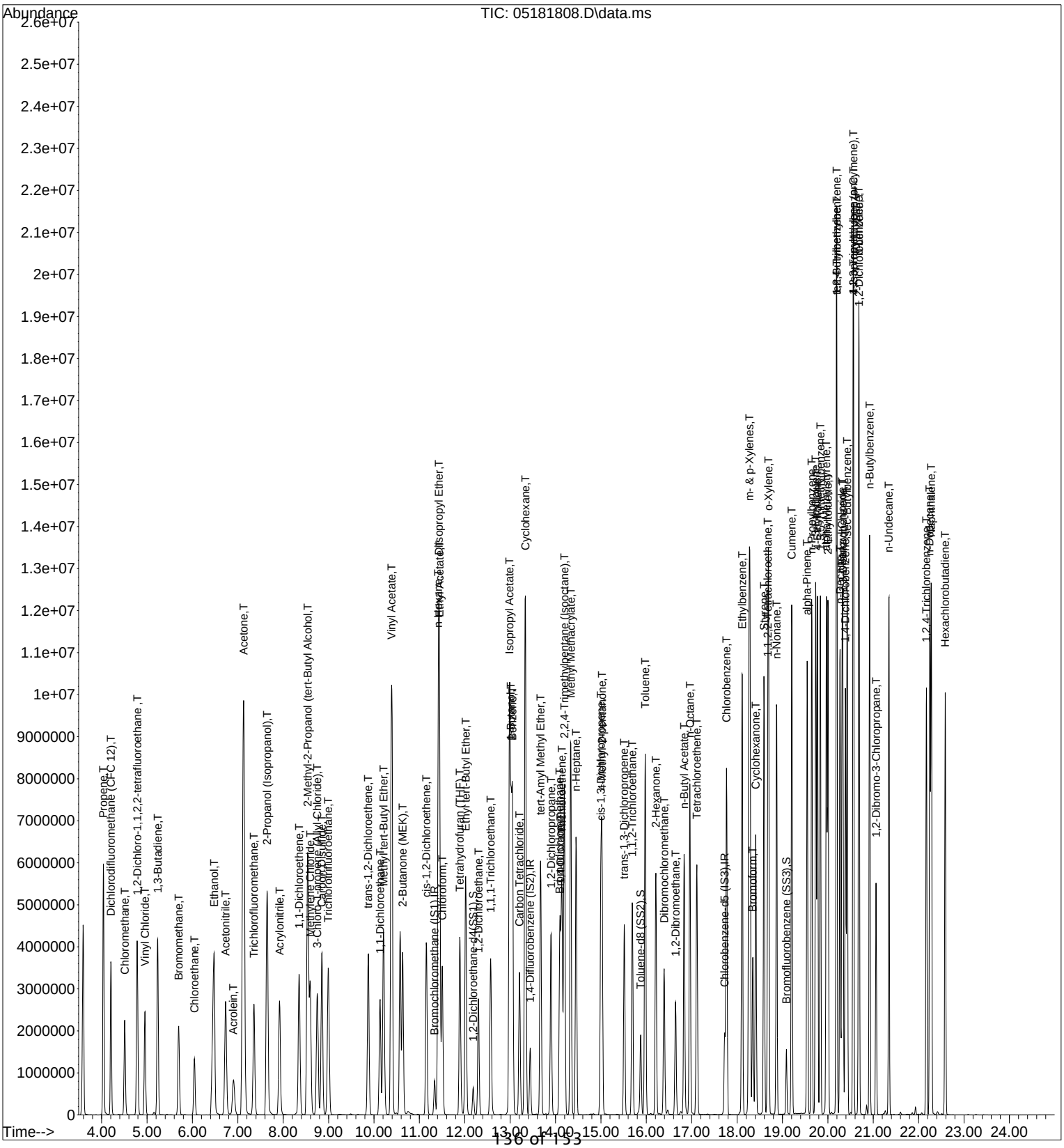
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.34	100	1663094	123.069	ng	#	86
51) n-Heptane	14.45	71	1855112	61.587	ng		94
52) cis-1,3-Dichloropropene	15.00	75	3612646	71.241	ng		100
53) 4-Methyl-2-pentanone	15.02	58	2072282	69.279	ng		93
54) trans-1,3-Dichloropropene	15.51	75	3123251	70.155	ng		100
55) 1,1,2-Trichloroethane	15.69	97	2002607	61.651	ng		95
58) Toluene	15.98	91	7810450	51.110	ng		100
59) 2-Hexanone	16.21	43	4736824	62.452	ng		96
60) Dibromochloromethane	16.39	129	2370841	55.342	ng		100
61) 1,2-Dibromoethane	16.65	107	2298895	55.204	ng		99
62) n-Butyl Acetate	16.83	43	5456479	64.151	ng		97
63) n-Octane	16.96	57	1722446	59.665	ng		89
64) Tetrachloroethene	17.11	166	2233572	49.051	ng		100
65) Chlorobenzene	17.77	112	5295469	51.193	ng		100
66) Ethylbenzene	18.11	91	8892517	52.776	ng		98
67) m- & p-Xylenes	18.27	91	13204685	104.072	ng		97
68) Bromoform	18.35	173	2068566	56.158	ng		100
69) Styrene	18.59	104	5672590	55.130	ng		97
70) o-Xylene	18.69	91	6763407	51.486	ng		98
71) n-Nonane	18.87	43	3837380	59.378	ng		93
72) 1,1,2,2-Tetrachloroethane	18.68	83	3643144	56.183	ng		99
74) Cumene	19.20	105	8635441	50.233	ng		99
75) alpha-Pinene	19.54	93	4683204	53.849	ng		98
76) n-Propylbenzene	19.64	91	10322063	51.539	ng		98
77) 3-Ethyltoluene	19.73	105	8765374	50.910	ng		94
78) 4-Ethyltoluene	19.77	105	7707588	49.000	ng		95
79) 1,3,5-Trimethylbenzene	19.84	105	6986222	50.206	ng		98
80) alpha-Methylstyrene	19.97	118	3904298	53.350	ng		99
81) 2-Ethyltoluene	20.00	105	8203366	49.430	ng		99
82) 1,2,4-Trimethylbenzene	20.19	105	6713835	49.049	ng		97
83) n-Decane	20.27	57	3986589	57.847	ng		95
84) Benzyl Chloride	20.31	91	6778494	65.488	ng		98
85) 1,3-Dichlorobenzene	20.33	146	4269552	49.694	ng		100
86) 1,4-Dichlorobenzene	20.39	146	4375356	50.092	ng		100
87) sec-Butylbenzene	20.42	105	9099089	48.530	ng		98
88) 4-Isopropyltoluene (p-...	20.56	119	7768974	45.036	ng		97
89) 1,2,3-Trimethylbenzene	20.56	105	6580238	47.474	ng		97
90) 1,2-Dichlorobenzene	20.69	146	3986052	48.914	ng		100
91) d-Limonene	20.68	68	2746964	52.843	ng		94
92) 1,2-Dibromo-3-Chloropr...	21.06	157	1661813	56.387	ng		87
93) n-Undecane	21.34	57	4290529	62.642	ng		95
94) 1,2,4-Trichlorobenzene	22.17	180	3484013	58.385	ng		99
95) Naphthalene	22.28	128	10263332	52.598	ng		99
96) n-Dodecane	22.24	57	4242928	70.002	ng		95
97) Hexachlorobutadiene	22.59	225	2148316	49.583	ng		100
98) Cyclohexanone	18.41	55	3207059	60.640	ng		94
99) tert-Butylbenzene	20.19	119	6297958	46.314	ng		99
100) n-Butylbenzene	20.92	91	7645445	51.753	ng		99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181808.D
Acq On : 18 May 2018 4:16 Operator: LH
Sample : 50ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:43 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181809.D
Acq On : 18 May 2018 4:49 Operator: LH
Sample : 100ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:46 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

LH 5/18/18

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.34	130	362549	12.500	ng		0.03
37) 1,4-Difluorobenzene (IS2)	13.45	114	1553971	12.500	ng		0.02
56) Chlorobenzene-d5 (IS3)	17.73	82	710217	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.19	65	496903	12.868	ng		0.03
Spiked Amount 12.500	Range 70 - 130		Recovery = 102.96%				
57) Toluene-d8 (SS2)	15.88	98	1550511	11.181	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.44%				
73) Bromofluorobenzene (SS3)	19.09	174	485224	9.693	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 77.52%				
Target Compounds							Qvalue
2) Propene	4.04	42	4797573	129.013	ng		99
3) Dichlorodifluoromethan...	4.21	85	6525510	93.041	ng		100
4) Chloromethane	4.52	50	4444767	84.261	ng		100
5) 1,2-Dichloro-1,1,2,2-t...	4.79	135	3722346	90.225	ng		100
6) Vinyl Chloride	4.96	62	5949031	104.189	ng		100
7) 1,3-Butadiene	5.24	54	4480374	112.177	ng		98
8) Bromomethane	5.71	94	3507225	103.850	ng		99
9) Chloroethane	6.05	64	2993069	115.808	ng		99
10) Ethanol	6.52	45	15046850	607.384	ng		100
11) Acetonitrile	6.76	41	8388264	131.540	ng		99
12) Acrolein	6.92	56	2735413	129.825	ng		100
13) Acetone	7.15	58	13218986	489.095	ng		91
14) Trichlorofluoromethane	7.36	101	6141872	101.547	ng		100
15) 2-Propanol (Isopropanol)	7.67	45	15469402	186.648	ng		99
16) Acrylonitrile	7.94	53	5988859	132.653	ng		100
17) 1,1-Dichloroethene	8.36	96	3974324	113.081	ng		89
18) 2-Methyl-2-Propanol (t...	8.56	59	16650903	189.742	ng		98
19) Methylene Chloride	8.60	84	4120619	108.100	ng		86
20) 3-Chloro-1-propene (Al...	8.76	41	6145693	136.442	ng		91
21) Trichlorotrifluoroethane	9.00	151	3484145	100.271	ng		91
22) Carbon Disulfide	8.86	76	15024006	111.619	ng		99
23) trans-1,2-Dichloroethene	9.88	61	6020933	124.428	ng		90
24) 1,1-Dichloroethane	10.14	63	7034835	115.205	ng		100
25) Methyl tert-Butyl Ether	10.22	73	11665562	113.253	ng		95
26) Vinyl Acetate	10.40	86	4226662	553.481	ng	#	58
27) 2-Butanone (MEK)	10.65	72	2862359	118.951	ng	#	85
28) cis-1,2-Dichloroethene	11.16	61	5678675	119.654	ng		91
29) Diisopropyl Ether	11.43	87	2810889	93.475	ng	#	85
30) Ethyl Acetate	11.46	61	2811486	219.680	ng		99
31) n-Hexane	11.42	57	5662613	104.083	ng		99
32) Chloroform	11.52	83	6678105	108.488	ng		100
34) Tetrahydrofuran (THF)	11.89	72	2893973	120.396	ng	#	89
35) Ethyl tert-Butyl Ether	12.03	87	4613163	109.703	ng		90
36) 1,2-Dichloroethane	12.31	62	4758839	109.933	ng		100
38) 1,1,1-Trichloroethane	12.57	97	5676404	115.458	ng		97
39) Isopropyl Acetate	12.99	61	5005307	240.882	ng	#	90
40) 1-Butanol	13.04	56	8095271	246.957	ng		95
41) Benzene	13.06	78	13889793	101.290	ng		99
42) Carbon Tetrachloride	13.21	117	4924290	113.392	ng		99
43) Cyclohexane	13.34	84	10717984	213.693	ng		92
44) tert-Amyl Methyl Ether	13.68	73	11153062	118.409	ng		96
45) 1,2-Dichloropropane	13.90	63	4204987	130.237	ng		99
46) Bromodichloromethane	14.09	83	5312088	122.533	ng		99
47) Trichloroethene	14.14	130	4179135	110.355	ng		99
48) 1,4-Dioxane	14.12	88	3416979	120.550	ng		90
49) 2,2,4-Trimethylpentane...	14.20	57	15689528	115.785	ng		97

Data File: I:\MS16\DATA\2018 05\18\05181809.D
Acq On : 18 May 2018 4:49 Operator: LH
Sample : 100ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:46 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

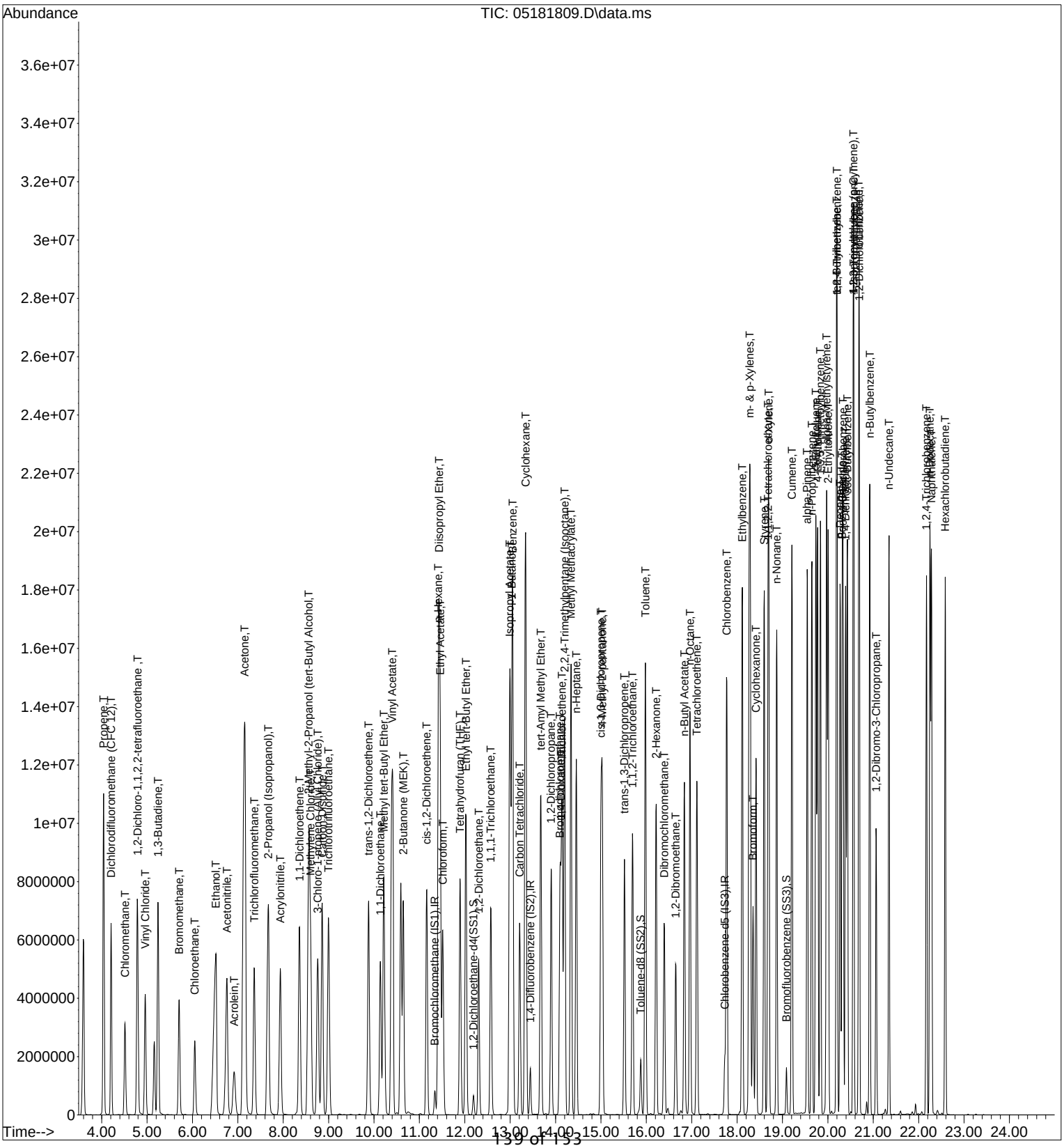
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
50) Methyl Methacrylate	14.34	100	3187965	233.202	ng	90
51) n-Heptane	14.46	71	3625826	118.991	ng	95
52) cis-1,3-Dichloropropene	15.00	75	7026245	136.967	ng	100
53) 4-Methyl-2-pentanone	15.03	58	3883622	128.345	ng	97
54) trans-1,3-Dichloropropene	15.52	75	6172672	137.060	ng	100
55) 1,1,2-Trichloroethane	15.69	97	3916542	119.189	ng	94
58) Toluene	15.98	91	14383336	93.574	ng	98
59) 2-Hexanone	16.22	43	8881493	116.416	ng	97
60) Dibromochloromethane	16.39	129	4625547	107.345	ng	99
61) 1,2-Dibromoethane	16.65	107	4514153	107.771	ng	99
62) n-Butyl Acetate	16.84	43	10238271	119.670	ng	98
63) n-Octane	16.96	57	3237483	111.495	ng	92
64) Tetrachloroethene	17.11	166	4359664	95.186	ng	99
65) Chlorobenzene	17.77	112	10091388	96.990	ng	100
66) Ethylbenzene	18.11	91	15490672	91.401	ng	98
67) m- & p-Xylenes	18.28	91	22060083	172.855	ng	99
68) Bromoform	18.35	173	4040064	109.045	ng	100
69) Styrene	18.60	104	10293605	99.460	ng	95
70) o-Xylene	18.70	91	11571270	87.575	ng	98
71) n-Nonane	18.87	43	6574695	101.143	ng	97
72) 1,1,2,2-Tetrachloroethane	18.68	83	6316327	96.843	ng	100
74) Cumene	19.21	105	14483262	83.762	ng	97
75) alpha-Pinene	19.54	93	8389592	95.906	ng	96
76) n-Propylbenzene	19.65	91	15993021	79.390	ng	93
77) 3-Ethyltoluene	19.74	105	13965872	80.644	ng	96
78) 4-Ethyltoluene	19.77	105	13321250	84.196	ng	96
79) 1,3,5-Trimethylbenzene	19.84	105	12081225	86.317	ng	100
80) alpha-Methylstyrene	19.97	118	6934367	94.204	ng	98
81) 2-Ethyltoluene	20.01	105	13708053	82.119	ng	97
82) 1,2,4-Trimethylbenzene	20.20	105	10875659	78.992	ng	98
83) n-Decane	20.27	57	6699301	96.644	ng	98
84) Benzyl Chloride	20.31	91	11535566	110.799	ng	99
85) 1,3-Dichlorobenzene	20.34	146	7543898	87.295	ng	100
86) 1,4-Dichlorobenzene	20.39	146	7833459	89.162	ng	99
87) sec-Butylbenzene	20.43	105	14452687	76.636	ng	94
88) 4-Isopropyltoluene (p-...	20.56	119	12085905	69.654	ng	95
89) 1,2,3-Trimethylbenzene	20.57	105	10608634	76.092	ng	96
90) 1,2-Dichlorobenzene	20.69	146	6666655	81.333	ng	100
91) d-Limonene	20.68	68	4331261	82.837	ng	98
92) 1,2-Dibromo-3-Chloropr...	21.07	157	3158572	106.551	ng	88
93) n-Undecane	21.35	57	7086027	102.855	ng	98
94) 1,2,4-Trichlorobenzene	22.17	180	6531198	108.814	ng	99
95) Naphthalene	22.28	128	15976019	81.399	ng	95
96) n-Dodecane	22.25	57	7093776	116.358	ng	98
97) Hexachlorobutadiene	22.58	225	4058221	93.119	ng	100
98) Cyclohexanone	18.42	55	5996050	112.717	ng	95
99) tert-Butylbenzene	20.19	119	10242955	74.888	ng	99
100) n-Butylbenzene	20.92	91	12438689	83.710	ng	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181809.D
Acq On : 18 May 2018 4:49 Operator: LH
Sample : 100ng TO-15 ICAL STD
Misc : S31-04201801/S31-05161801 (6/14)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 10:31:46 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:31:09 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181810.D
Acq On : 18 May 2018 5:22 Operator: LH
Sample : 25ng TO-15 ICV STD
Misc : S31-04201801/S31-05081803 (6/6)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 11:27:54 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:36:37 2018 LH 5/18/18
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.33	130	367239	12.500	ng		-0.01
37) 1,4-Difluorobenzene (IS2)	13.44	114	1573105	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	712518	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.18	65	504510	12.154	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 97.20%				
57) Toluene-d8 (SS2)	15.87	98	1560723	12.613	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 100.88%				
73) Bromofluorobenzene (SS3)	19.09	174	488051	12.425	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 99.36%				
Target Compounds							Qvalue
2) Propene	4.04	42	1157038	22.556	ng		99
3) Dichlorodifluoromethan...	4.21	85	1874501	22.956	ng		100
4) Chloromethane	4.51	50	1646513	22.662	ng		99
5) 1,2-Dichloro-1,1,2,2-t...	4.78	135	1022277	22.991	ng		100
6) Vinyl Chloride	4.96	62	1617742	22.407	ng		100
7) 1,3-Butadiene	5.23	54	1236345	23.929	ng		97
8) Bromomethane	5.69	94	978162	23.883	ng		99
9) Chloroethane	6.04	64	795545	23.354	ng		100
10) Ethanol	6.45	45	4250109	121.070	ng		100
11) Acetonitrile	6.71	41	2165345	23.521	ng		99
12) Acrolein	6.90	56	709929	23.928	ng		100
13) Acetone	7.11	58	4101026	114.650	ng		94
14) Trichlorofluoromethane	7.35	101	1606713	23.270	ng		100
15) 2-Propanol (Isopropanol)	7.63	45	5614354	49.787	ng		99
16) Acrylonitrile	7.91	53	1556661	24.883	ng		100
17) 1,1-Dichloroethene	8.35	96	1027056	24.533	ng		88
18) 2-Methyl-2-Propanol (t...	8.52	59	5418759	49.007	ng		98
19) Methylene Chloride	8.58	84	1094088	23.728	ng		85
20) 3-Chloro-1-propene (Al...	8.74	41	1669652	25.758	ng		90
21) Trichlorotrifluoroethane	8.99	151	912049	24.010	ng		91
22) Carbon Disulfide	8.85	76	4086861	25.048	ng		100
23) trans-1,2-Dichloroethene	9.87	61	1568878	24.732	ng		90
24) 1,1-Dichloroethane	10.13	63	1905897	24.003	ng		99
25) Methyl tert-Butyl Ether	10.21	73	3120856	24.289	ng		96
26) Vinyl Acetate	10.38	86	1245623	132.975	ng	#	55
27) 2-Butanone (MEK)	10.62	72	754986	24.394	ng	#	76
28) cis-1,2-Dichloroethene	11.15	61	1489147	24.154	ng		89
29) Diisopropyl Ether	11.42	87	825052	23.892	ng	#	57
30) Ethyl Acetate	11.44	61	835979	50.174	ng		96
31) n-Hexane	11.42	57	1633161	23.656	ng		99
32) Chloroform	11.50	83	1771934	23.852	ng		99
34) Tetrahydrofuran (THF)	11.89	72	747169	24.025	ng	#	86
35) Ethyl tert-Butyl Ether	12.02	87	1229235	24.488	ng	#	85
36) 1,2-Dichloroethane	12.30	62	1262656	23.591	ng		100
38) 1,1,1-Trichloroethane	12.57	97	1468988	24.281	ng		97
39) Isopropyl Acetate	12.98	61	1387735	48.247	ng	#	86
40) 1-Butanol	13.01	56	2362660	50.034	ng		93
41) Benzene	13.04	78	4194163	23.205	ng		100
42) Carbon Tetrachloride	13.20	117	1294327	24.939	ng		100
43) Cyclohexane	13.33	84	3150413	49.003	ng		88
44) tert-Amyl Methyl Ether	13.67	73	3064336	24.587	ng		96
45) 1,2-Dichloropropane	13.90	63	1080508	24.013	ng		99
46) Bromodichloromethane	14.09	83	1414432	25.437	ng		100
47) Trichloroethene	14.13	130	1093335	24.154	ng		100
48) 1,4-Dioxane	14.11	88	906112	24.762	ng		89
49) 2,2,4-Trimethylpentane...	14.19	57	4617040	24.236	ng		99

Data File: I:\MS16\DATA\2018 05\18\05181810.D
Acq On : 18 May 2018 5:22 Operator: LH
Sample : 25ng TO-15 ICV STD
Misc : S31-04201801/S31-05081803 (6/6)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 11:27:54 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:36:37 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

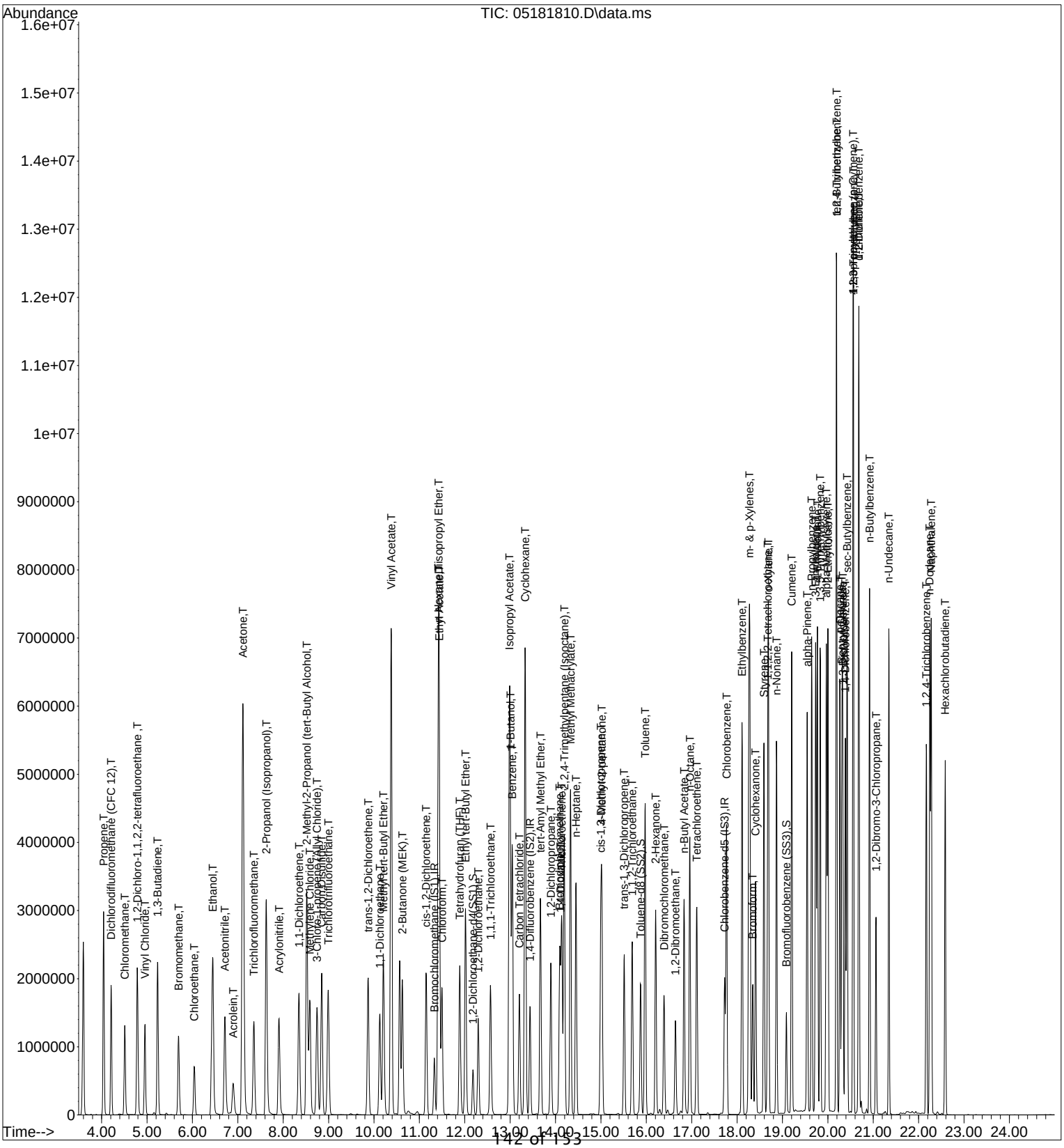
Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
50) Methyl Methacrylate	14.33	100	854316	50.299	ng	#	85
51) n-Heptane	14.45	71	961848	23.277	ng		94
52) cis-1,3-Dichloropropene	15.00	75	1746664	25.859	ng		100
53) 4-Methyl-2-pentanone	15.02	58	1051881	24.548	ng		91
54) trans-1,3-Dichloropropene	15.51	75	1591881	27.064	ng		100
55) 1,1,2-Trichloroethane	15.69	97	1020781	24.567	ng		96
58) Toluene	15.98	91	4063006	24.641	ng		100
59) 2-Hexanone	16.21	43	2419760	24.306	ng		95
60) Dibromochloromethane	16.39	129	1213137	26.707	ng		100
61) 1,2-Dibromoethane	16.64	107	1171936	25.540	ng		99
62) n-Butyl Acetate	16.83	43	2773992	24.991	ng		96
63) n-Octane	16.96	57	892000	24.693	ng		89
64) Tetrachloroethene	17.11	166	1144211	24.992	ng		100
65) Chlorobenzene	17.77	112	2730807	24.692	ng		100
66) Ethylbenzene	18.11	91	4701248	24.841	ng		98
67) m- & p-Xylenes	18.27	91	7101471	49.336	ng		97
68) Bromoform	18.35	173	1045836	27.951	ng		100
69) Styrene	18.59	104	2994152	26.086	ng		98
70) o-Xylene	18.69	91	3650599	24.981	ng		98
71) n-Nonane	18.87	43	2072684	24.859	ng		92
72) 1,1,2,2-Tetrachloroethane	18.68	83	1915437	25.486	ng		99
74) Cumene	19.20	105	4687427	25.362	ng		98
75) alpha-Pinene	19.54	93	2518587	25.886	ng		99
76) n-Propylbenzene	19.64	91	5679973	25.607	ng		97
77) 3-Ethyltoluene	19.73	105	4829389	26.236	ng		93
78) 4-Ethyltoluene	19.77	105	4244178	24.998	ng		96
79) 1,3,5-Trimethylbenzene	19.83	105	3785129	25.360	ng		97
80) alpha-Methylstyrene	19.97	118	2177129	27.420	ng		99
81) 2-Ethyltoluene	20.00	105	4527779	25.228	ng		98
82) 1,2,4-Trimethylbenzene	20.19	105	3834612	25.339	ng		98
83) n-Decane	20.26	57	2174657	25.866	ng		94
84) Benzyl Chloride	20.31	91	3640453	29.306	ng		96
85) 1,3-Dichlorobenzene	20.33	146	2325433	25.692	ng		100
86) 1,4-Dichlorobenzene	20.39	146	2356555	25.267	ng		100
87) sec-Butylbenzene	20.42	105	5091718	25.381	ng		98
88) 4-Isopropyltoluene (p-...	20.56	119	4608593	25.369	ng		97
89) 1,2,3-Trimethylbenzene	20.56	105	3912145	26.213	ng		97
90) 1,2-Dichlorobenzene	20.68	146	2230066	26.157	ng		100
91) d-Limonene	20.68	68	1655685	26.675	ng		91
92) 1,2-Dibromo-3-Chloropr...	21.06	157	871544	28.109	ng		85
93) n-Undecane	21.34	57	2333419	28.517	ng		94
94) 1,2,4-Trichlorobenzene	22.17	180	1869455	29.032	ng		100
95) Naphthalene	22.28	128	5754912	26.502	ng		100
96) n-Dodecane	22.24	57	2345971	29.364	ng		94
97) Hexachlorobutadiene	22.58	225	1109222	26.474	ng		100
98) Cyclohexanone	18.41	55	1607248	23.620	ng		93
99) tert-Butylbenzene	20.19	119	3636061	25.260	ng		98
100) n-Butylbenzene	20.92	91	4218477	25.492	ng		98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 05\18\05181810.D
Acq On : 18 May 2018 5:22 Operator: LH
Sample : 25ng TO-15 ICV STD
Misc : S31-04201801/S31-05081803 (6/6)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 11:27:54 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 10:36:37 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M



LH 5/18/18

Initial Calibration Verification/LABORATORY CONTROL SAMPLE CHECK SHEET

Data File Name: **05181810.D** Acq. Method File: **TO15.M**
Data File Path: **I:\MS16\DATA\2018_05\18** Sample Name: **25ng TO-15 ICV STD**
Operator: **LH** Misc Info: **S31-04201801/S31-05081803 (**
Date Acquired: **5/18/18** **5:22** Instrument Name: **GCMS-16**

#	Compound Name	Ret. Time	Amt. (ng)	Spike Amt.(ng)	% Rec.	Lower Limit	Upper Limit	* OR Fail	ICV/AZ 70-130%
2)	**Propene**	**4.04**	**22.556**	26.275	86	**54**	**133**	*	*
3)	**Dichlorodifluoromethane (CFC 1**	**4.21**	**22.956**	**26.600**	86	**64**	**115**	*	*
4)	**Chloromethane**	**4.51**	**22.662**	**26.250**	86	**47**	**140**	*	*
5)	**1,2-Dichloro-1,1,2,2-tetrafluoroet**	**4.78**	**22.991**	**26.325**	87	**60**	**112**	*	*
6)	**Vinyl Chloride**	**4.96**	**22.407**	**26.350**	85	**63**	**127**	*	*
7)	**1,3-Butadiene**	**5.23**	**23.929**	**26.225**	91	**57**	**149**	*	*
8)	**Bromomethane**	**5.69**	**23.883**	**26.225**	91	**63**	**132**	*	*
9)	**Chloroethane**	**6.04**	**23.354**	**26.250**	89	**68**	**129**	*	*
10)	**Ethanol**	**6.45**	**121.070**	**130.375**	93	**62**	**131**	*	*
11)	**Acetonitrile**	**6.71**	**23.521**	**26.200**	90	**56**	**136**	*	*
12)	**Acrolein**	**6.90**	**23.928**	**26.075**	92	**60**	**132**	*	*
13)	**Acetone**	**7.11**	**114.650**	**131.825**	87	**63**	**124**	*	*
14)	**Trichlorofluoromethane**	**7.35**	**23.270**	**26.025**	89	**65**	**113**	*	*
15)	**2-Propanol (Isopropanol)**	**7.63**	**49.787**	**52.775**	94	**62**	**135**	*	*
16)	**Acrylonitrile**	**7.91**	**24.883**	**26.450**	94	**68**	**138**	*	*
17)	**1,1-Dichloroethene**	**8.35**	**24.533**	**26.675**	92	**72**	**118**	*	*
18)	2-Methyl-2-Propanol (tert-Butyl Alc	8.52	49.007	53.350	92	61	128	*	*
19)	**Methylene Chloride**	**8.58**	**23.728**	**26.600**	89	**67**	**116**	*	*
20)	**3-Chloro-1-propene (Allyl Chlorid**	**8.74**	**25.758**	**26.525**	97	**61**	**143**	*	*
21)	**Trichlorotrifluoroethane**	**8.99**	**24.010**	**26.750**	90	**68**	**113**	*	*
22)	**Carbon Disulfide**	**8.85**	**25.048**	**26.725**	94	**68**	**120**	*	*
23)	**trans-1,2-Dichloroethene**	**9.87**	**24.732**	**26.700**	93	**71**	**125**	*	*
24)	**1,1-Dichloroethane**	**10.13**	**24.003**	**26.525**	90	**68**	**118**	*	*
25)	**Methyl tert-Butyl Ether**	**10.21**	**24.289**	**26.625**	91	**60**	**123**	*	*
26)	**Vinyl Acetate**	**10.38**	**132.975**	**132.750**	100	**73**	**135**	*	*
27)	**2-Butanone (MEK)**	**10.62**	**24.394**	**26.450**	92	**70**	**129**	*	*
28)	**cis-1,2-Dichloroethene**	**11.15**	**24.154**	**26.475**	91	**69**	**121**	*	*
29)	Diisopropyl Ether	11.42	23.892	26.600	90	65	117	*	*
30)	**Ethyl Acetate**	**11.44**	**50.174**	**53.300**	94	**66**	**140**	*	*
31)	**n-Hexane**	**11.42**	**23.656**	**26.625**	89	**61**	**124**	*	*
32)	**Chloroform**	**11.50**	**23.852**	**26.500**	90	**69**	**113**	*	*
34)	**Tetrahydrofuran (THF)**	**11.89**	**24.025**	**26.550**	90	**66**	**121**	*	*
35)	Ethyl tert-Butyl Ether	12.02	24.488	26.525	92	69	120	*	*
36)	**1,2-Dichloroethane**	**12.30**	**23.591**	**26.500**	89	**62**	**120**	*	*
38)	**1,1,1-Trichloroethane**	**12.57**	**24.281**	**26.525**	92	**65**	**116**	*	*
39)	Isopropyl Acetate	12.98	48.247	53.275	91	70	126	*	*
40)	1-Butanol	13.01	50.034	53.300	94	62	141	*	*
41)	**Benzene**	**13.04**	**23.205**	**26.625**	87	**66**	**111**	*	*
42)	**Carbon Tetrachloride**	**13.20**	**24.939**	**26.700**	93	**64**	**122**	*	*
43)	**Cyclohexane**	**13.33**	**49.003**	**53.150**	92	**69**	**115**	*	*
44)	tert-Amyl Methyl Ether	13.67	24.587	**26.550**	93	68	119	*	*
45)	**1,2-Dichloropropane**	**13.90**	**24.013**	**26.525**	91	**69**	**121**	*	*
46)	**Bromodichloromethane**	**14.09**	**25.437**	**26.700**	95	**69**	**123**	*	*
47)	**Trichloroethene**	**14.13**	**24.154**	**26.550**	91	**69**	**112**	*	*
48)	**1,4-Dioxane**	**14.11**	**24.762**	**26.600**	93	**74**	**123**	*	*
49)	2,2,4-Trimethylpentane (Isooctane)	14.19	24.236	26.525	91	67	120	*	*

Bold = 75 Compound List
*** = Pass**

Initial Calibration Verification/LABORATORY CONTROL SAMPLE CHECK SHEET

Data File Name: **05181810.D** **TO15.M**
Data File Path: **I:\MS16\DATA\2018_05\18** Sample Name: **25ng TO-15 ICV STD**
Operator: **LH** Misc Info: **S31-04201801/S31-05081803 (**
Date Acquired: **5/18/18** **5:22** Instrument Name: **GCMS-16**

#	Compound Name	Ret. Time	Amt. (ng)	Spike Amt.(ng)	% Rec.	Lower Limit	Upper Limit	* OR Fail	ICV/AZ 70-130%
50)	**Methyl Methacrylate**	**14.33**	**50.299**	**52.950**	95	**75**	**125**	*	*
51)	**n-Heptane**	**14.45**	**23.277**	**26.625**	87	**68**	**118**	*	*
52)	**cis-1,3-Dichloropropene**	**15.00**	**25.859**	**26.025**	99	**74**	**129**	*****	*
53)	**4-Methyl-2-pentanone**	**15.02**	**24.548**	**26.650**	92	**66**	**138**	*****	*
54)	**trans-1,3-Dichloropropene**	**15.51**	**27.064**	**26.625**	102	**75**	**130**	*****	*
55)	**1,1,2-Trichloroethane**	**15.69**	**24.567**	**26.500**	93	**73**	**117**	*****	*
58)	**Toluene**	**15.98**	**24.641**	**26.400**	93	**66**	**114**	*****	*
59)	**2-Hexanone**	**16.21**	**24.306**	**26.425**	92	**58**	**146**	*****	*
60)	**Dibromochloromethane**	**16.39**	**26.707**	**26.450**	101	**67**	**130**	*****	*
61)	**1,2-Dibromoethane**	**16.64**	**25.540**	**26.425**	97	**70**	**127**	*****	*
62)	**n-Butyl Acetate**	**16.83**	**24.991**	**26.850**	93	**62**	**140**	*****	*
63)	**n-Octane**	**16.96**	**24.693**	**26.525**	93	**65**	**121**	*	*
64)	**Tetrachloroethene**	**17.11**	**24.992**	**26.500**	94	**62**	**119**	*****	*
65)	**Chlorobenzene**	**17.77**	**24.692**	**26.525**	93	**66**	**115**	*****	*
66)	**Ethylbenzene**	**18.11**	**24.841**	**26.475**	94	**69**	**117**	*****	*
67)	**m- & p-Xylenes**	**18.27**	**49.336**	**52.975**	93	**67**	**117**	*****	*
68)	**Bromoform**	**18.35**	**27.951**	**26.525**	105	**67**	**135**	*****	*
69)	**Styrene**	**18.59**	**26.086**	**26.350**	99	**70**	**128**	*****	*
70)	**o-Xylene**	**18.69**	**24.981**	**26.400**	95	**67**	**118**	*****	*
71)	**n-Nonane**	**18.87**	**24.859**	**26.500**	94	**61**	**127**	*****	*
72)	**1,1,2,2-Tetrachloroethane**	**18.68**	**25.486**	**26.450**	96	**70**	**125**	*****	*
74)	**Cumene**	**19.20**	**25.362**	**26.525**	96	**68**	**116**	*****	*
75)	**alpha-Pinene**	**19.54**	**25.886**	**26.600**	97	**69**	**122**	*****	*
76)	**n-Propylbenzene**	**19.64**	**25.607**	**26.750**	96	**70**	**118**	*	*
77)	3-Ethyltoluene	19.73	26.236	26.450	99	68	117	*	*
78)	**4-Ethyltoluene**	**19.77**	**24.998**	**26.425**	**95**	**69**	**124**	*****	*****
79)	**1,3,5-Trimethylbenzene**	**19.83**	**25.360**	**26.500**	**96**	**65**	**117**	*****	*****
80)	alpha-Methylstyrene	19.97	27.420	26.525	**103**	71	132	*	*****
81)	2-Ethyltoluene	20.00	25.228	26.700	**94**	67	119	*	*****
82)	**1,2,4-Trimethylbenzene**	**20.19**	**25.339**	**26.550**	**95**	**67**	**124**	*****	*****
83)	n-Decane	20.26	25.866	26.625	**97**	63	129	*	*****
84)	**Benzyl Chloride**	**20.31**	**29.306**	**26.550**	**110**	**75**	**142**	*****	*****
85)	**1,3-Dichlorobenzene**	**20.33**	**25.692**	**26.475**	**97**	**70**	**124**	*****	*****
86)	**1,4-Dichlorobenzene**	**20.39**	**25.267**	**26.750**	**94**	**63**	**124**	*****	*****
87)	sec-Butylbenzene	20.42	25.381	26.575	**96**	68	119	*	*****
88)	4-Isopropyltoluene (p-Cymene)	20.56	25.369	26.600	**95**	65	122	*	*****
89)	1,2,3-Trimethylbenzene	20.56	26.213	26.600	**99**	66	128	*	*****
90)	**1,2-Dichlorobenzene**	**20.68**	**26.157**	**26.750**	**98**	**66**	**125**	*****	*****
91)	**d-Limonene**	**20.68**	**26.675**	**26.625**	**100**	**64**	**135**	*****	*****
92)	**1,2-Dibromo-3-Chloropropane**	**21.06**	**28.109**	**26.300**	**107**	**73**	**136**	*****	*****
93)	n-Undecane	21.34	28.517	26.775	**107**	67	135	*	*****
94)	**1,2,4-Trichlorobenzene**	**22.17**	**29.032**	**27.200**	**107**	**70**	**141**	*****	*****
95)	**Naphthalene**	**22.28**	**26.502**	**26.125**	**101**	**71**	**146**	*****	*****
96)	n-Dodecane	22.24	29.364	26.825	**109**	69	152	*	*****
97)	**Hexachlorobutadiene**	**22.58**	**26.474**	**26.550**	**100**	63	126	*	*****
98)	Cyclohexanone	18.41	23.620	26.150	90	58	138	*	*****
99)	tert-Butylbenzene	20.19	25.260	26.525	95	65	121	*	*****
100)	n-Butylbenzene	20.92	25.492	26.575	96	71	125	*	*****

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2018 06\21\06211802.D
Acq On : 21 Jun 2018 5:05 Operator: WA
Sample : CCV R16062118 25ng
Misc : S31-04201801/S31-06041804 (7/2)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 06:25:14 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min 6/21/18
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	97	0.00
2	T	Propene	1.746	1.360	22.1	81	0.00
3	T	Dichlorodifluoromethane (CF	2.779	2.296	17.4	85	0.00
4	T	Chloromethane	2.473	1.945	21.4	78	0.00
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.513	1.306	13.7	89	0.00
6	T	Vinyl Chloride	2.457	1.924	21.7	80	0.00
7	T	1,3-Butadiene	1.759	1.533	12.8	85	0.00
8	T	Bromomethane	1.394	1.241	11.0	90	-0.01
9	T	Chloroethane	1.159	0.978	15.6	86	0.00
10	T	Ethanol	1.195	0.948	20.7	79	-0.07
11	T	Acetonitrile	3.134	2.497	20.3	81	-0.04
12	T	Acrolein	1.010	0.826	18.2	82	-0.02
13	T	Acetone	1.218	0.953	21.8	83	-0.04
14	T	Trichlorofluoromethane	2.350	1.925	18.1	86	-0.01
15	T	2-Propanol (Isopropanol)	3.838	3.291	14.3	81	-0.04
16	T	Acrylonitrile	2.129	1.829	14.1	84	-0.03
17	T	1,1-Dichloroethene	1.425	1.255	11.9	88	-0.01
18	T	2-Methyl-2-Propanol (tert-B	3.764	3.225	14.3	83	-0.04
19	T	Methylene Chloride	1.569	1.326	15.5	87	-0.01
20	T	3-Chloro-1-propene (Allyl C	2.206	1.880	14.8	83	-0.02
21	T	Trichlorotrifluoroethane	1.293	1.158	10.4	92	0.00
22	T	Carbon Disulfide	5.554	4.954	10.8	88	-0.01
23	T	trans-1,2-Dichloroethene	2.159	1.825	15.5	85	-0.01
24	T	1,1-Dichloroethane	2.703	2.261	16.4	85	-0.01
25	T	Methyl tert-Butyl Ether	4.373	3.703	15.3	87	-0.01
26	T	Vinyl Acetate	0.319	0.300	6.0	87	-0.02
27	T	2-Butanone (MEK)	1.053	0.910	13.6	87	-0.02
28	T	cis-1,2-Dichloroethene	2.099	1.753	16.5	85	0.00
29	T	Diisopropyl Ether	1.175	0.999	15.0	89	-0.01
30	T	Ethyl Acetate	0.567	0.489	13.8	84	-0.02
31	T	n-Hexane	2.350	1.946	17.2	87	0.00
32	T	Chloroform	2.529	2.126	15.9	86	-0.02
33	S	1,2-Dichloroethane-d4(SS1)	1.413	1.264	10.5	88	-0.01
34	T	Tetrahydrofuran (THF)	1.059	0.895	15.5	86	0.00
35	T	Ethyl tert-Butyl Ether	1.709	1.495	12.5	89	-0.01
36	T	1,2-Dichloroethane	1.822	1.464	19.6	83	-0.01
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	96	0.00
38	T	1,1,1-Trichloroethane	0.481	0.421	12.5	88	0.00
39	T	Isopropyl Acetate	0.229	0.200	12.7	85	0.00
40	T	1-Butanol	0.375	0.330	12.0	80	-0.03
41	T	Benzene	1.436	1.205	16.1	88	0.00
42	T	Carbon Tetrachloride	0.412	0.370	10.2	87	0.00
43	T	Cyclohexane	0.511	0.456	10.8	88	-0.01
44	T	tert-Amyl Methyl Ether	0.990	0.876	11.5	87	-0.01
45	T	1,2-Dichloropropane	0.358	0.308	14.0	87	0.00
46	T	Bromodichloromethane	0.442	0.398	10.0	86	0.00
47	T	Trichloroethene	0.360	0.333	7.5	92	0.00
48	T	1,4-Dioxane	0.291	0.263	9.6	88	-0.01
49	T	2,2,4-Trimethylpentane (Iso	1.514	1.293	14.6	85	0.00
50	T	Methyl Methacrylate	0.135	0.128	5.2	91	-0.01
51	T	n-Heptane	0.328	0.282	14.0	91	0.00
52	T	cis-1,3-Dichloropropene	0.537	0.506	5.8	88	0.00
53	T	4-Methyl-2-pentanone	0.340	0.299	12.1	85	-0.01
54	T	trans-1,3-Dichloropropene	0.467	0.451	3.4	88	0.00

Evaluate Continuing Calibration Report

Data File: I:\MS16\DATA\2018 06\21\06211802.D
Acq On : 21 Jun 2018 5:05 Operator: WA
Sample : CCV R16062118 25ng
Misc : S31-04201801/S31-06041804 (7/2)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 06:25:14 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55	T	1,1,2-Trichloroethane	0.330	0.303	8.2	90	0.00
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	90	0.00
57	S	Toluene-d8 (SS2)	2.171	2.115	2.6	87	0.00
58	T	Toluene	2.893	2.843	1.7	91	0.00
59	T	2-Hexanone	1.747	1.582	9.4	84	-0.01
60	T	Dibromochloromethane	0.797	0.848	-6.4	91	0.00
61	T	1,2-Dibromoethane	0.805	0.815	-1.2	91	0.00
62	T	n-Butyl Acetate	1.947	1.791	8.0	83	0.00
63	T	n-Octane	0.634	0.594	6.3	87	0.00
64	T	Tetrachloroethene	0.803	0.832	-3.6	95	0.00
65	T	Chlorobenzene	1.940	1.916	1.2	92	0.00
66	T	Ethylbenzene	3.320	3.247	2.2	90	0.00
67	T	m- & p-Xylenes	2.525	2.423	4.0	89	0.00
68	T	Bromoform	0.656	0.760	-15.9	94	0.00
69	T	Styrene	2.014	2.105	-4.5	92	0.00
70	T	o-Xylene	2.564	2.495	2.7	89	0.00
71	T	n-Nonane	1.463	1.347	7.9	84	0.00
72	T	1,1,2,2-Tetrachloroethane	1.319	1.316	0.2	88	0.00
73	S	Bromofluorobenzene (SS3)	0.689	0.749	-8.7	96	0.00
74	T	Cumene	3.242	3.249	-0.2	90	0.00
75	T	alpha-Pinene	1.707	1.712	-0.3	90	0.00
76	T	n-Propylbenzene	3.891	3.872	0.5	90	0.00
77	T	3-Ethyltoluene	3.229	3.447	-6.8	90	0.00
78	T	4-Ethyltoluene	2.979	2.861	4.0	91	0.00
79	T	1,3,5-Trimethylbenzene	2.618	2.634	-0.6	90	0.00
80	T	alpha-Methylstyrene	1.393	1.516	-8.8	94	0.00
81	T	2-Ethyltoluene	3.149	3.110	1.2	90	0.00
82	T	1,2,4-Trimethylbenzene	2.655	2.634	0.8	89	0.00
83	T	n-Decane	1.475	1.442	2.2	87	0.00
84	T	Benzyl Chloride	2.179	2.428	-11.4	89	0.00
85	T	1,3-Dichlorobenzene	1.588	1.644	-3.5	93	0.00
86	T	1,4-Dichlorobenzene	1.636	1.674	-2.3	94	0.00
87	T	sec-Butylbenzene	3.519	3.560	-1.2	91	0.00
88	T	4-Isopropyltoluene (p-Cymen	3.187	3.282	-3.0	92	0.00
89	T	1,2,3-Trimethylbenzene	2.618	2.669	-1.9	90	0.00
90	T	1,2-Dichlorobenzene	1.496	1.555	-3.9	93	-0.01
91	T	d-Limonene	1.089	1.113	-2.2	88	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.544	0.624	-14.7	94	0.00
93	T	n-Undecane	1.435	1.575	-9.8	88	0.00
94	T	1,2,4-Trichlorobenzene	1.130	1.266	-12.0	95	0.00
95	T	Naphthalene	3.810	4.036	-5.9	93	0.00
96	T	n-Dodecane	1.402	1.573	-12.2	91	0.00
97	T	Hexachlorobutadiene	0.735	0.812	-10.5	96	0.00
98	T	Cyclohexanone	1.194	1.082	9.4	83	-0.01
99	T	tert-Butylbenzene	2.525	2.530	-0.2	91	0.00
100	T	n-Butylbenzene	2.903	2.919	-0.6	90	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211802.D
Acq On : 21 Jun 2018 5:05 Operator: WA
Sample : CCV R16062118 25ng
Misc : S31-04201801/S31-06041804 (7/2)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 06:25:14 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018 6/21/18
Response via : Initial Calibration
DataAcq Meth:TO15.M

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) Bromochloromethane (IS1)	11.33	130	340602	12.500	ng		0.00
37) 1,4-Difluorobenzene (IS2)	13.44	114	1429937	12.500	ng		0.00
56) Chlorobenzene-d5 (IS3)	17.72	82	613170	12.500	ng		0.00
System Monitoring Compounds							
33) 1,2-Dichloroethane-d4(...	12.18	65	430456	11.181	ng		-0.01
Spiked Amount 12.500	Range 70 - 130		Recovery = 89.44%				
57) Toluene-d8 (SS2)	15.87	98	1296564	12.176	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 97.44%				
73) Bromofluorobenzene (SS3)	19.09	174	458958	13.577	ng		0.00
Spiked Amount 12.500	Range 70 - 130		Recovery = 108.64%				
Target Compounds							Qvalue
2) Propene	4.05	42	960807	20.195	ng		98
3) Dichlorodifluoromethan...	4.21	85	1638989	21.641	ng		100
4) Chloromethane	4.51	50	1332707	19.777	ng		100
5) 1,2-Dichloro-1,1,2,2-t...	4.78	135	908433	22.028	ng		100
6) Vinyl Chloride	4.95	62	1352509	20.199	ng		100
7) 1,3-Butadiene	5.24	54	1105980	23.080	ng		98
8) Bromomethane	5.70	94	839155	22.092	ng		99
9) Chloroethane	6.04	64	674486	21.349	ng		100
10) Ethanol	6.45	45	3405506	104.597	ng		100
11) Acetonitrile	6.71	41	1801289	21.096	ng		99
12) Acrolein	6.90	56	593412	21.565	ng		100
13) Acetone	7.11	58	3456688	104.194	ng		96
14) Trichlorofluoromethane	7.35	101	1378208	21.522	ng		100
15) 2-Propanol (Isopropanol)	7.63	45	4723579	45.164	ng		98
16) Acrylonitrile	7.91	53	1315956	22.680	ng		100
17) 1,1-Dichloroethene	8.35	96	906935	23.358	ng		94
18) 2-Methyl-2-Propanol (t...	8.52	59	4657576	45.417	ng		99
19) Methylene Chloride	8.59	84	955940	22.353	ng		91
20) 3-Chloro-1-propene (Al...	8.74	41	1349676	22.450	ng		92
21) Trichlorotrifluoroethane	8.99	151	830901	23.584	ng		95
22) Carbon Disulfide	8.85	76	3587250	23.705	ng		100
23) trans-1,2-Dichloroethene	9.87	61	1343864	22.841	ng		93
24) 1,1-Dichloroethane	10.13	63	1573943	21.373	ng		100
25) Methyl tert-Butyl Ether	10.21	73	2699427	22.652	ng		96
26) Vinyl Acetate	10.38	86	1081039	124.430	ng	#	70
27) 2-Butanone (MEK)	10.62	72	652257	22.723	ng	#	85
28) cis-1,2-Dichloroethene	11.15	61	1273874	22.278	ng		94
29) Diisopropyl Ether	11.42	87	724873	22.633	ng	#	71
30) Ethyl Acetate	11.44	61	711184	46.022	ng		97
31) n-Hexane	11.42	57	1413010	22.068	ng		99
32) Chloroform	11.50	83	1536917	22.306	ng		100
34) Tetrahydrofuran (THF)	11.89	72	648448	22.481	ng	#	91
35) Ethyl tert-Butyl Ether	12.02	87	1078834	23.172	ng		90
36) 1,2-Dichloroethane	12.30	62	1052341	21.199	ng		100
38) 1,1,1-Trichloroethane	12.57	97	1297420	23.593	ng		98
39) Isopropyl Acetate	12.98	61	1208592	46.226	ng		95
40) 1-Butanol	13.01	56	1994341	46.463	ng		96
41) Benzene	13.05	78	3641097	22.162	ng		100
42) Carbon Tetrachloride	13.20	117	1122652	23.797	ng		100
43) Cyclohexane	13.33	84	2782257	47.610	ng		92
44) tert-Amyl Methyl Ether	13.67	73	2647682	23.371	ng		97
45) 1,2-Dichloropropane	13.90	63	938834	22.954	ng		99
46) Bromodichloromethane	14.09	83	1215294	24.044	ng		99
47) Trichloroethene	14.14	130	1011561	24.585	ng		100
48) 1,4-Dioxane	14.11	88	800060	24.053	ng		93
49) 2,2,4-Trimethylpentane...	14.19	57	3920387	22.639	ng		99

Data File: I:\MS16\DATA\2018 06\21\06211802.D
Acq On : 21 Jun 2018 5:05 Operator: WA
Sample : CCV R16062118 25ng
Misc : S31-04201801/S31-06041804 (7/2)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 06:25:14 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

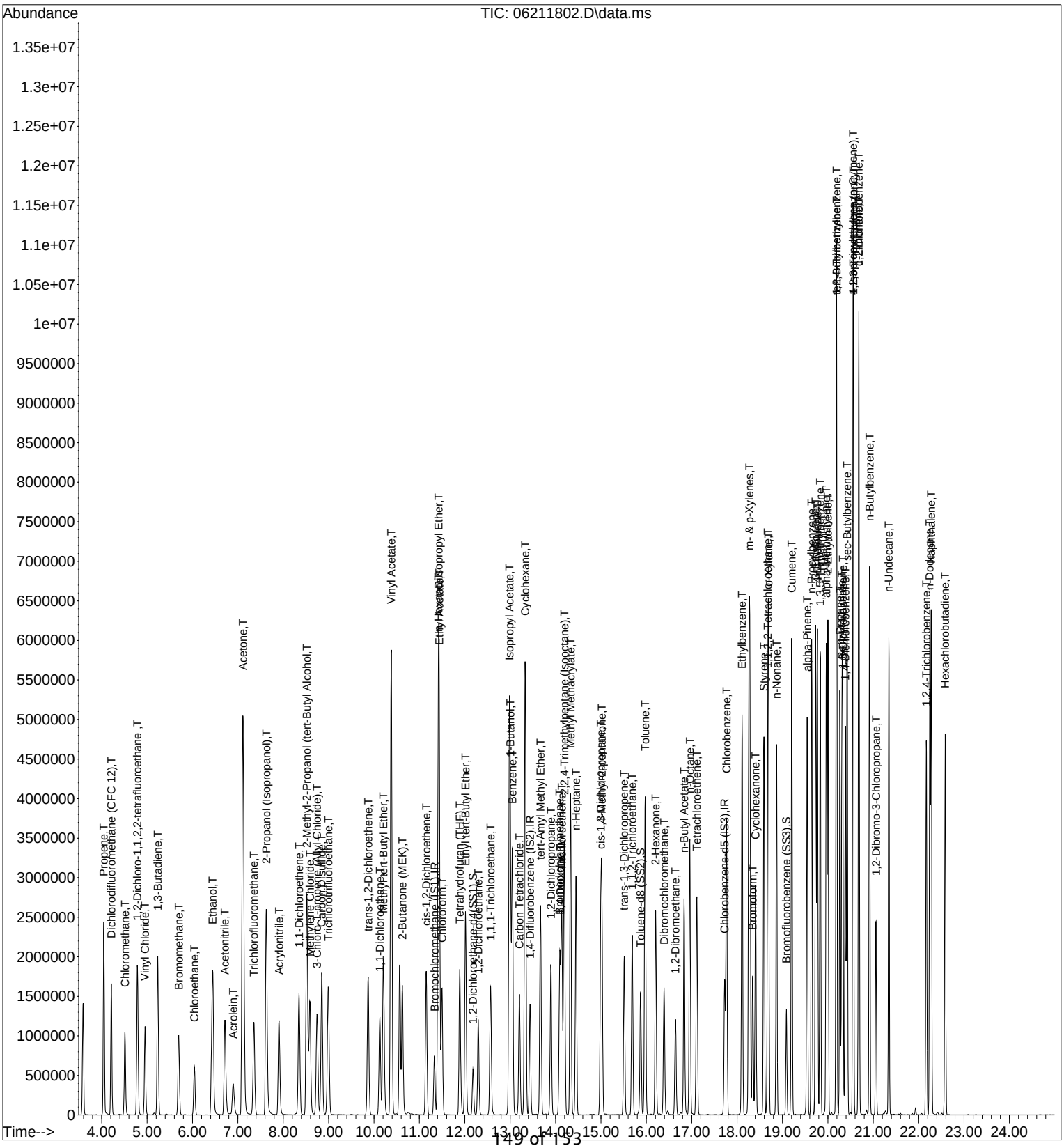
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
50) Methyl Methacrylate	14.33	100	774951	50.195	ng	92
51) n-Heptane	14.45	71	859509	22.883	ng	96
52) cis-1,3-Dichloropropene	15.00	75	1619370	26.375	ng	100
53) 4-Methyl-2-pentanone	15.02	58	905679	23.253	ng	95
54) trans-1,3-Dichloropropene	15.51	75	1375005	25.718	ng	100
55) 1,1,2-Trichloroethane	15.69	97	922553	24.426	ng	98
58) Toluene	15.98	91	3675134	25.900	ng	100
59) 2-Hexanone	16.21	43	2057079	24.011	ng	97
60) Dibromochloromethane	16.39	129	1103463	28.229	ng	100
61) 1,2-Dibromoethane	16.64	107	1062837	26.915	ng	99
62) n-Butyl Acetate	16.83	43	2345879	24.559	ng	98
63) n-Octane	16.96	57	771993	24.834	ng	92
64) Tetrachloroethene	17.11	166	1084558	27.527	ng	100
65) Chlorobenzene	17.77	112	2504303	26.312	ng	100
66) Ethylbenzene	18.11	91	4189103	25.721	ng	99
67) m- & p-Xylenes	18.27	91	6308621	50.929	ng	99
68) Bromoform	18.35	173	991385	30.789	ng	100
69) Styrene	18.59	104	2731256	27.651	ng	99
70) o-Xylene	18.69	91	3228086	25.669	ng	99
71) n-Nonane	18.87	43	1741150	24.266	ng	94
72) 1,1,2,2-Tetrachloroethane	18.68	83	1705345	26.367	ng	99
74) Cumene	19.20	105	4192180	26.358	ng	99
75) alpha-Pinene	19.54	93	2195717	26.224	ng	100
76) n-Propylbenzene	19.64	91	5052874	26.471	ng	98
77) 3-Ethyltoluene	19.73	105	4439145	28.024	ng	94
78) 4-Ethyltoluene	19.77	105	3680823	25.192	ng	95
79) 1,3,5-Trimethylbenzene	19.83	105	3388651	26.383	ng	99
80) alpha-Methylstyrene	19.97	118	1949638	28.533	ng	99
81) 2-Ethyltoluene	20.00	105	4042419	26.173	ng	99
82) 1,2,4-Trimethylbenzene	20.19	105	3395362	26.071	ng	99
83) n-Decane	20.26	57	1873000	25.887	ng	95
84) Benzyl Chloride	20.31	91	3198439	29.920	ng	98
85) 1,3-Dichlorobenzene	20.33	146	2159216	27.721	ng	100
86) 1,4-Dichlorobenzene	20.39	146	2184723	27.220	ng	100
87) sec-Butylbenzene	20.42	105	4605562	26.677	ng	99
88) 4-Isopropyltoluene (p-...	20.56	119	4129618	26.416	ng	99
89) 1,2,3-Trimethylbenzene	20.56	105	3358140	26.147	ng	98
90) 1,2-Dichlorobenzene	20.68	146	2064996	28.145	ng	100
91) d-Limonene	20.68	68	1371548	25.678	ng	94
92) 1,2-Dibromo-3-Chloropr...	21.06	157	804165	30.138	ng	94
93) n-Undecane	21.34	57	2033852	28.883	ng	95
94) 1,2,4-Trichlorobenzene	22.17	180	1702729	30.727	ng	100
95) Naphthalene	22.28	128	5226283	27.967	ng	100
96) n-Dodecane	22.24	57	2036956	29.627	ng	95
97) Hexachlorobutadiene	22.58	225	1053124	29.208	ng	100
98) Cyclohexanone	18.41	55	1378543	23.541	ng	96
99) tert-Butylbenzene	20.19	119	3257152	26.294	ng	99
100) n-Butylbenzene	20.92	91	3772424	26.491	ng	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data File: I:\MS16\DATA\2018 06\21\06211802.D
Acq On : 21 Jun 2018 5:05 Operator: WA
Sample : CCV R16062118 25ng
Misc : S31-04201801/S31-06041804 (7/2)
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jun 21 06:25:14 2018
Quant Method : I:\MS16\METHODS\R16051818.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Fri May 18 12:13:28 2018
Response via : Initial Calibration
DataAcq Meth:TO15.M

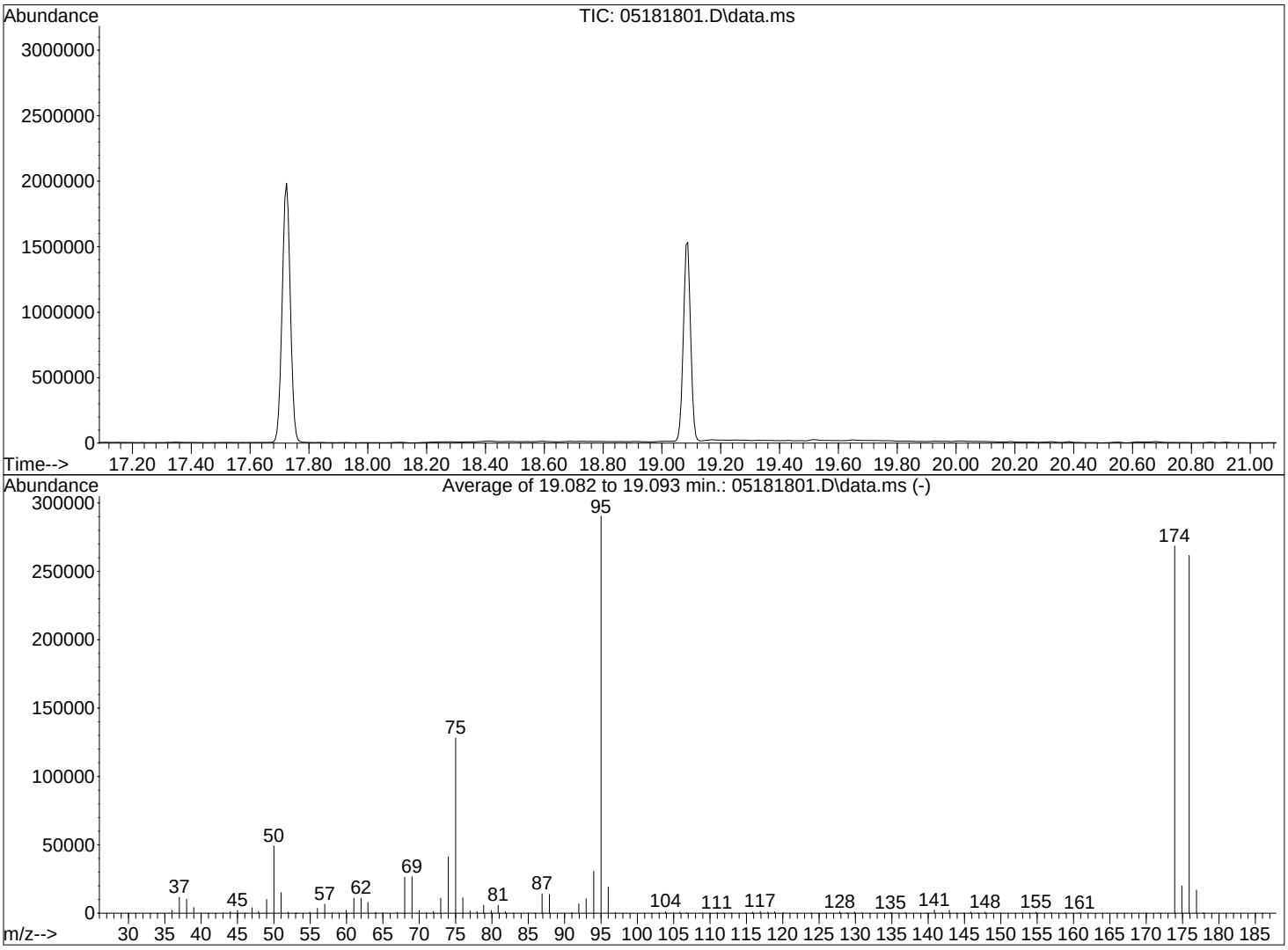


BFB

Data Path : I:\MS16\DATA\2018 05\18\
Data File : 05181801.D
Acq On : 18 May 2018 00:24
Operator : LH
Sample : 12.5ng TO-15 BFB
Misc : S31-04201801
ALS Vial : 2 Sample Multiplier: 1

Integration File: LSCINT.P

Method : I:\MS16\METHODS\R16051818.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Fri Apr 13 10:32:15 2018



AutoFind: Scans 2836, 2837, 2838; Background Corrected with Scan 2828

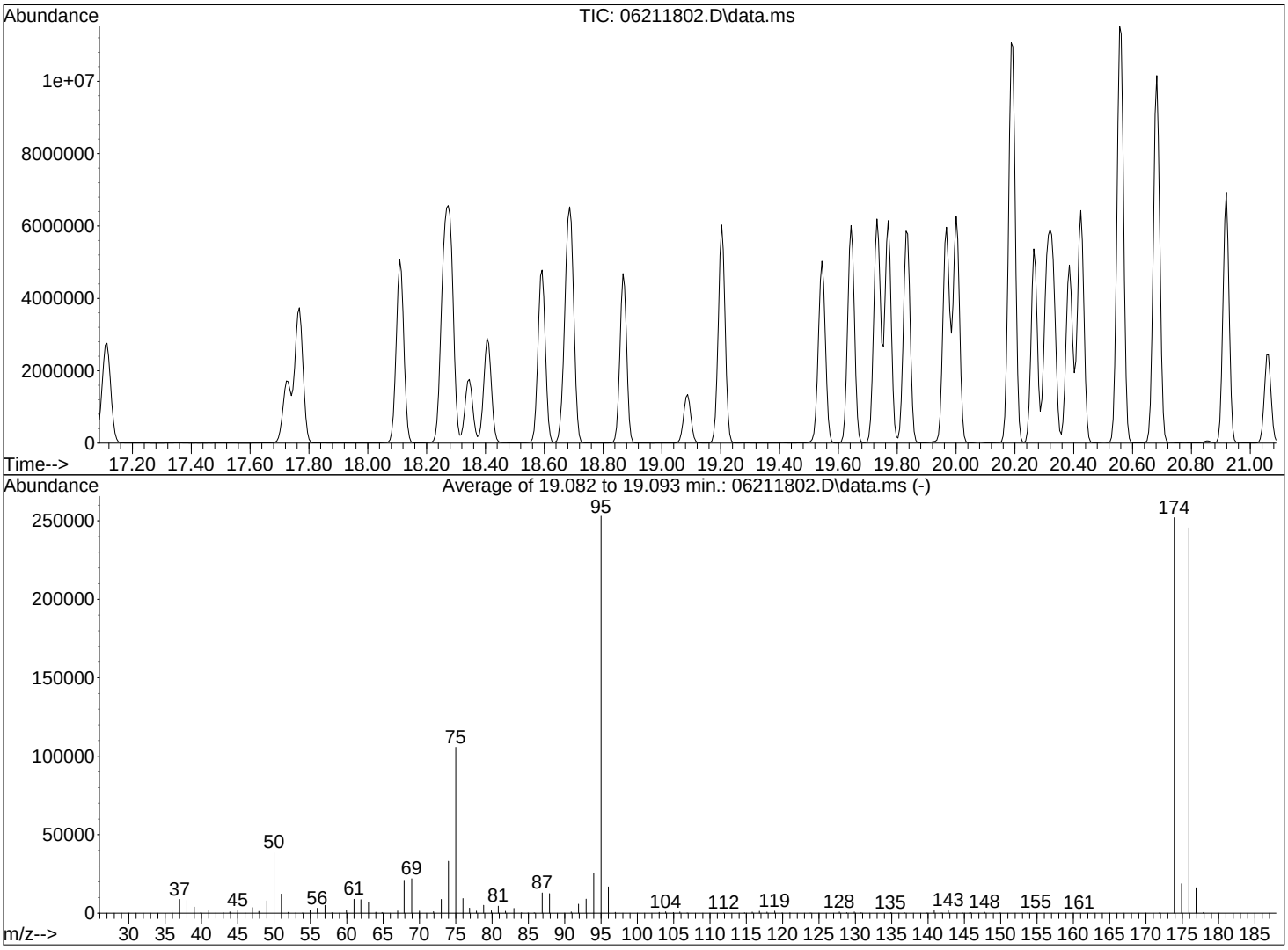
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	16.9	49194	PASS
75	95	30	66	44.1	128147	PASS
95	95	100	100	100.0	290368	PASS
96	95	5	9	6.6	19122	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	92.5	268587	PASS
175	174	4	9	7.4	19968	PASS
176	174	93	101	97.4	261696	PASS
177	176	5	9	6.5	16970	PASS

LH 5/18/18

Data Path : I:\MS16\DATA\2018 06\21\
Data File : 06211802.D
Acq On : 21 Jun 2018 5:05
Operator : WA
Sample : CCV R16062118 25ng
Misc : S31-04201801/S31-06041804 (7/2)
ALS Vial : 2 Sample Multiplier: 1

Integration File: LSCINT.P

Method : I:\MS16\METHODS\R16051818.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Fri May 18 12:13:28 2018



AutoFind: Scans 2836, 2837, 2838; Background Corrected with Scan 2827

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	15.3	38765	PASS
75	95	30	66	41.8	105765	PASS
95	95	100	100	100.0	252971	PASS
96	95	5	9	6.6	16800	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	99.6	252011	PASS
175	174	4	9	7.5	18781	PASS
176	174	93	101	97.4	245525	PASS
177	176	5	9	6.6	16198	PASS

WA 6/21/18

Injection Log

Directory: I:\MS16\DATA\2018_05\18\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Vial	Comment
1	5/18/18 0:24	05181801.D	12.5ng TO-15 BFB	S31-04201801	LH	2	passed
2	5/18/18 0:57	05181802.D	0.1ng TO-15 ICAL STD	S31-04201801/S31-05161805 (6/14)	LH	5	
3	5/18/18 1:30	05181803.D	0.2ng TO-15 ICAL STD	S31-04201801/S31-05161805 (6/14)	LH	5	
4	5/18/18 2:04	05181804.D	0.5ng TO-15 ICAL STD	S31-04201801/S31-05161805 (6/14)	LH	5	
5	5/18/18 2:37	05181805.D	1.0ng TO-15 ICAL STD	S31-04201801/S31-05161803 (6/14)	LH	6	
6	5/18/18 3:10	05181806.D	5.0ng TO-15 ICAL STD	S31-04201801/S31-05161803 (6/14)	LH	6	
7	5/18/18 3:43	05181807.D	25ng TO-15 ICAL STD	S31-04201801/S31-05161801 (6/14)	LH	2	R16051818.M
8	5/18/18 4:16	05181808.D	50ng TO-15 ICAL STD	S31-04201801/S31-05161801 (6/14)	LH	2	
9	5/18/18 4:49	05181809.D	100ng TO-15 ICAL STD	S31-04201801/S31-05161801 (6/14)	LH	2	
10	5/18/18 5:22	05181810.D	25ng TO-15 ICV STD	S31-04201801/S31-05081803 (6/6)	LH	2	passed
	ICAL R16051818.M passed for all compounds 0.1ng-100ng, except: propene, carbon disulfide, hexane, toluene 0.2ng-100ng,						
	benzyl chloride 1.0ng-100ng, dodecane 0.5ng-100ng						
					LH 5/18/18		
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							
##							

Injection Log

Directory: I:\MS16\DATA\2018_06\21\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Vial	Comment
1	6/21/18 4:32	06211801.D	CCV C16062118_25ng	S31-04201801/S31-06051806 (7/4)	WA	2	*Passes*
2	6/21/18 5:05	06211802.D	CCV R16062118_25ng	S31-04201801/S31-06041804 (7/2)	WA	2	*Passes*
3	6/21/18 5:38	06211803.D	Blank	S31-04201801	WA	2	
4	6/21/18 6:12	06211804.D	MB R16062118_1000mL	S31-04201801/AC00442	WA	2	*Passes*
5	6/21/18 6:45	06211805.D	LCS R16062118_25ng	S31-04201801/S31-05311801 (6/29)	WA	2	*Passes*
6	6/21/18 7:18	06211806.D	LCSD R16062118_25ng	S31-04201801/S31-05311801 (6/29)	WA	2	*Passes*
7	6/21/18 9:01	06211807.D	P1803155-001 (0.25mL)	S31-04201801	WA	1	
8	6/21/18 9:34	06211808.D	P1803155-001 (0.50mL)	S31-04201801	WA	1	
9	6/21/18 10:07	06211809.D	P1803155-001dil (0.10mL)	S31-04201801	WA	1	
10	6/21/18 10:41	06211810.D	P1803155-002dil (100mL)	S31-04201801	WA	4	
11	6/21/18 11:15	06211811.D	P1803156-002dil (1.0mL)	S31-04201801	WA	1	
12	6/21/18 11:56	06211812.D	P1803156-002dil (0.1mL)	S31-04201801	WA	1	
13	6/21/18 12:30	06211813.D	P1803155-002 (1000mL)	S31-04201801	WA	4	
14	6/21/18 13:04	06211814.D	P1803155-003 (1000mL)	S31-04201801	WA	5	
15	6/21/18 14:01	06211815.D	P1803156-003 (10mL)	S31-04201801	WA	1	
16	6/21/18 14:52	06211816.D	P1803156-004 (50mL)	S31-04201801	WA	6	
17	6/21/18 15:28	06211817.D	P1803156-004dil (15mL)	S31-04201801	WA	6	
18	6/21/18 16:15	06211818.D	P1803156-005 (1000mL)	S31-04201801	WA	7	
19	6/21/18 16:49	06211819.D	Blank	S31-04201801	WA	2	
20	6/21/18 17:22	06211820.D	P1803156-006 (1000mL)	S31-04201801	WA	8	
21	6/21/18 17:56	06211821.D	P1803156-006dup (1000mL)	S31-04201801	WA	8	*Passes*
22	6/21/18 18:30	06211822.D	Blank	S31-04201801	WA	2	
23	6/21/18 19:03	06211823.D	P1803115-001 (400mL)	S31-04201801	WA	9	
24	6/21/18 19:37	06211824.D	P1803115-002 (400mL)	S31-04201801	WA	10	
25	6/21/18 20:11	06211825.D	P1803115-003 (400mL)	S31-04201801	WA	11	
26	6/21/18 20:44	06211826.D	P1803115-004 (400mL)	S31-04201801	WA	12	
27	6/21/18 21:18	06211827.D	P1803115-005 (400mL)	S31-04201801	WA	13	
28	6/21/18 21:51	06211828.D	P1803115-006 (400mL)	S31-04201801	WA	14	

WA 6/22/18